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Aviation Tactical Employment

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Preface

Army Techniques Publication (ATP) 3-04.1 facilitates the implementation of the doctrinal concepts discussed in Field Manual (FM) 3-04. Army Aviation units face a complex and often vague and unpredictable operational environment (OE). ATP 3-04.1 provides the tactics, techniques, and procedures (TTP) that inform the execution of the seven core competencies of Army Aviation. ATP 3-04.1 applies to all Army leaders, but is focused from the aviation battalion to team level, unless otherwise stated.

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 ensure that their decisions and actions comply with applicable United States, international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure that their Soldiers operate in accordance with the law of war and the rules of engagement. (See FM 27-10.)

Terms for which ATP 3-04.1 is the proponent (the authority) are indicated with an asterisk in the glossary. Definitions for which ATP 3-04.1 is the proponent are printed in boldface in the text.

ATP 3-04.1 applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR).

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.mbx.doctrine-branch@mail.mil, or mailed to Commander, USAACE, ATTN: ATZQ-TDD, Fort Rucker, Alabama 36362-5263.

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Introduction

To apply ATP 3-04.1, the reader must first understand the doctrinal fundamentals contained in FM 3-04, 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, 3-98, 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. This publication derives from FMs 1-100, 3-04.111, 3-04.113, 3-04.126, and 3-04.155. Upon approval of ATP 3-04.1, these publications will be rescinded.

This publication provides Army Aviation formations with doctrine relevant to Army and joint operations. It explains how Army Aviation, executing operations grounded in the seven core competencies, provides maneuver commanders with superior speed, flexibility, adaptability, and lethality. This publication provides doctrinal guidance for all formations assigned to combat aviation brigades (CABs), expeditionary combat aviation brigades (ECABs), and theater aviation brigade (TABs).

ATP 3-04.1 contains 9 chapters and 6 appendices:

- Chapter 1 addresses Mission Command, Aviation command posts, key aviation staff members, and mission command systems.
- Chapter 2 discusses attack operations from planning through execution, and includes engagement area (EA) development, maneuver and weapons delivery TTP, and key support requests, briefs, and checklists.
- Chapter 3 begins with an overview, followed by a detailed discussion of how Army Aviation conducts reconnaissance and integrates into unified land operations as a member of the combined arms team.
- Chapter 4 addresses security operations, with specific aviation considerations for employment and maneuver.
- Chapter 5 discusses air assault operations, the detailed planning involved in the five step reverse planning process, and how this capability greatly enhances the operational reach of the ground maneuver commander.
- Chapter 6 describes air movement and the specific considerations for planning and requesting transport of personnel, supplies, and equipment.
- Chapter 7 outlines how Army Aviation supports the theater medical support plan with organic air ambulance companies for aeromedical evacuation, and how utility and heavy lift helicopters may support casualty evacuation (CASEVAC).
- Chapter 8 provides an overview of how Army Aviation supports personnel recovery from planning though execution.
- Chapter 9 describes specific Army Aviation considerations for support operations, including convoys, assembly area (AA) operations, forward arming and refueling points, and downed aircraft recovery.
- The 6 appendices address aviation task force and aeromedical evacuation considerations, sample briefs and checklists for offensive operations, aviation ground support operations, and manned-unmanned teaming planning considerations and TTPs.

Regardless of the type of mission performed by the ground force, 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.

ATP 3-04.1 updates previous doctrine and integrates aviation operations into unified land operations. This publication focuses on the tactical employment of Army Aviation through air-ground operations (AGO) in support of ground maneuver units conducting decisive action across the range of military operations and the conflict continuum.

Chapter 1

Mission Command

The ability of Army Aviation leaders to exercise mission command is essential to the execution of air-ground operations. The optimal establishment of commands post, incorporation of the staff, and utilization of mission command systems are integral to the commander's ability to understand, visualize, describe, direct, lead, and assess operations. Army Aviation facilitates mission command with airborne command and control systems and communication relay packages.

SECTION I – OVERVIEW

1-1. *Mission command* is the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations (ADP 6-0). Army Aviation commanders and staffs exercise mission command through a series of mutually supporting tasks that ultimately enable unified land operations. Mission command is the foundation for air-ground operations and provides legitimacy to the training and empowerment of Army Aviation commanders, from the air mission commander (AMC) through brigade commander. The commander issues guidance and intent through which the staff integrates and synchronizes operations, and manages information exercising mission command.

1-2. Commanders build combined arms organizations using the principles of mission command. Operations under the concept of mission command philosophy require trust up and down the chain of command, and left and right between units. This mutual trust is earned through the conduct of operations and training while shared understanding focuses team efforts towards mission objectives. Throughout the operations process, Army Aviation leaders receive intent from supported ground maneuver commanders, exercise disciplined initiative throughout execution, and constantly assess risk to ensure success. This is critical to Army Aviation as a member of a combined arms team, where units can be task organized into smaller elements and leaders must adapt to decentralized operations in complex environments. Furthermore, AMCs may find themselves as the senior ranking aviator representing the unit during air-ground operations. This requires that all elements of aviation leadership, from the AMC to the aviation brigade commander, be thoroughly familiar with both the aviation commander's intent and the ground force commander's intent, and have shared understanding of the OE, including both the mission variables of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) and operational variables of political, military, economic, social, information, infrastructure, physical environment, and time (PMESII-PT). For detailed information on common command and support relationships for Army Aviation, see FM 3-04, Army Aviation, and FM 6-0, Commander and Staff Organization and Operations.

1-3. Habitual relationships between aviation and ground maneuver forces increase the effectiveness of air ground. The employment of aviation liaison elements, and the utilization of the brigade aviation element (BAE) is critical to maintaining habitual relationships. Synergy is further enhanced through the disciplined application of common doctrine and terminology to facilitate communication.

1-4. The effectiveness and efficiency of air-ground operations are enabled through multiple tactics, techniques, and procedures (TTP). Combined leader professional development and briefs highlighting capabilities, limitations, and employment considerations are essential to creating mutual trust and shared understanding between the ground force and the supporting aviation element. Integrated planning and preparation from the inception of an operation is paramount to well-planned and executed air-ground operations. Combined mission briefs and rehearsals must be conducted. During execution, communication utilizing standardized formats and procedures facilitates the ability to operate in a complex environment, such as air to ground check-in brief and medical evacuation (MEDEVAC) request. Commanders and staffs' capacity to direct and enable cohesive and habitual air-ground operations facilitate the execution of the seven core competencies of Army Aviation (see FM 3-04).

SECTION II – COMMAND POST OPERATIONS

1-5. To assist in controlling operations, commanders organize personnel and individual mission command systems into command posts (CPs). Commanders may decide to cross-functionally organize elements of staff sections into multiple CP and CP cells. By doing this, commanders disperse their staff and mission command capabilities. CPs provide staff expertise, communications, and information systems that work in concert to aid commanders in planning and controlling operations. (See FM 6-0.)

1-6. Activities common to all CPs include—

- Managing information.
- Controlling operations.
- Developing and disseminating orders.
- Assessing operations.
- Maintaining running estimates.
- Coordinating with higher, lower, and adjacent units
- Maintaining the common operational picture (COP).

1-7. CPs enable mission command. The dynamics of the OE require the highest level of organizational and operational efficiency within every CP. Combat aviation brigade (CAB), battalion, and task force mission command facilities include—

- Main CP.
- Tactical command post (TAC CP).
- Subordinate unit CP.

SECTION III – MAIN COMMAND POST

1-8. The *main command post* is a facility containing the majority of the staff designed to control current operations, conduct detailed analysis, and plan future operations (FM 6-0). It is organized into five functional cells as described in the following paragraphs. The executive officer is responsible for the main CP at the battalion, task force, and CAB levels.

1-9. During operations the preponderance of the staff is normally located in the main CP. Often the commander and selected members of the main CP will go forward as a tailored force to conduct mission command of current operations. This may be at the TAC CP or another location.

1-10. The main CP is the primary mission command structure for the CAB and subordinate elements. Its primary missions are to enable the mission command warfighting function, control operations, and to prepare and publish orders and plans. The commander operates from the main CP when not operating from the TAC CP, command vehicle, or an aircraft.

1-11. Main CP functions are as follows:

- Communicates with subordinate, higher, and adjacent units.
- Informs and assists the commander and subordinate commanders.
- Prepares and issues fragmentary orders (FRAGORDs), operations orders (OPORDs), operational plans, intelligence summaries, intelligence reports, and situation reports.
- Operates on a 24-hour basis.
- Conducts future planning.
- Maintain running estimates.
- Maintains situational understanding across the Army warfighting functions.
- Receives, evaluates, and processes tactical information from subordinate units and higher headquarters.
- Tracks and answers commander’s critical information requirements (CCIR).

- Maintains maps graphically depicting friendly, enemy, and noncombatant situations.
- Validates and evaluates intelligence.
- Controls all immediate fire support, including close air support (CAS), for units under aviation brigade mission command (may also be done by TAC CP).
- Coordinates airspace control and air defense operations.
- Coordinates maneuver requirements.
- Coordinates terrain management for mission command facilities.
- 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.
- Maintains journals.
- Processes air movement requests.

SECTION IV – COMMAND POST ORGANIZATION

1-12. The standardized integrated CP system is a mission command enabler, providing the platform to conduct CP activities anywhere on the battlefield. Its primary purpose is to support mission command of digitized units by housing their Army mission command systems (MCS). Standardized integrated CP system is designed to facilitate CP operations by providing flexibility, commonality, and operational capabilities needed to enhance unit mobility and integrate MCS and associated communication and networking equipment.

1-13. Commanders organize their CPs by functional and integrating cells. The five functional cells group personnel and equipment by warfighting function (minus mission command). Integrating cells group personnel and equipment by planning horizon (current operations, future operations, and plans). In aviation formations, flight operations are integral to current operations.

CURRENT OPERATIONS

1-14. The commander receives operations updates and may monitor the battle from the current operations cell within the main CP. The battle captain continuously monitors actions within the operations cell, and ensures proper personnel are available for the mission at hand. The battle captain performs battle tracking, management, and makes decisions within delegated authorities' assigned responsibilities based on the commander's intent.

1-15. The current operations cell is responsible for assessing the current situation while regulating forces and warfighting functions in accordance with the mission, commander's intent, and concept of operations. Normally, all staff sections are represented in the current operations cell. The unit's operations staff officer (S-3), supported by an assistant S-3, leads this cell.

1-16. In order to accurately coordinate, track, and synchronize operations, the main CP S-3 or designated representative (typically the battle captain), employs various mission command systems. The primary means of facilitating current and future operations is through the Command Post of the Future (CPOF). Supporting systems include internet chat programs, Blue Force Tracking hardware and software, and voice over secure internet protocol communication systems. These systems supplement standard radio communications with aircraft during operations and exist to coordinate with higher and adjacent units. Additionally, the one system remote viewing terminal (OSRVT) enables enhanced situational awareness and understanding by providing real-time unmanned aircraft system (UAS) or manned aircraft video to the CP.

1-17. Staff representatives in the current operations cell actively assist subordinate units by providing them information to synchronize their activities and coordinate their support requests. The current operations cell solves problems and acts within the authority delegated by the commander. It also performs short-range planning in a time-constrained environment or recommends decisions and resynchronizes operations.

1-18. As intelligence and maneuver continuously influence operations, Army Aviation CPs and staffs work to provide accurate and timely information to supported ground maneuver commanders. Applying the processing, exploitation, and dissemination (PED) process, commanders direct the conversion of collected information into forms suitable to the production of intelligence (JP 2-01). PED enablers are the specialized intelligence and communications systems, advanced technologies, and the associated personnel that conduct intelligence processing as well as single-source analysis within units (ADRP 2-0). Army Aviation commanders control the employment of manned and unmanned assets that directly contribute to PED activities and at the CAB level, are task-organized with personnel to perform PED functions. These personnel may operate in the main CP at a TAC CP or at a reach-back location to facilitate sharing of information collected by unit assets.

FUTURE OPERATIONS/PLANS

1-19. The future operations cell or Plans Section is responsible for planning and assessing operations for the mid to long-range time horizons to include preparing branches to the existing plan. . The Plans Section performs similar actions, but focuses on long-range time horizons. The cells consist of a core group of planners led by an assistant S-3. All staff sections assist as required.

FIRES

1-20. The fires cell coordinates activities and systems that provide collective and coordinated use of Army indirect fires and joint fires. This includes tasks associated with lethal and non-lethal targeting and the targeting process. The fire support officer leads this cell, which includes a fire support non-commissioned officer, and employs the Advanced Field Artillery Tactical Data System (AFATDS) to integrate joint fires with maneuver. The AFATDS communicates with key mission command systems to provide commanders and staffs with improved situational awareness for planning and operations.

INTELLIGENCE

1-21. The intelligence cell coordinates activities and systems that facilitate understanding of the enemy, terrain, weather, and civil considerations. This includes tasks associated with intelligence preparation of the battlefield (IPB) and information collection. The unit's intelligence staff officer (S-2) leads this cell, and may be enhanced with a PED team, depending on task organization. The primary mission command system available to the S-2 is the Defense Common Ground System-Army (DCGS-A).

SUSTAINMENT

1-22. The sustainment cell coordinates activities and systems that provide logistics and support services required to ensure freedom of action, sustain combat power, extend operational reach, and prolong endurance. In the CAB, the sustainment cell is normally led by the logistics staff officer (S-4).

SECTION V – TACTICAL COMMAND POST

1-23. The TAC CP is a facility containing a tailored portion of a unit headquarters designed to control portions of an operation for a limited time. The TAC CP may include representatives of all the warfighting functions. It can be deployed to higher or subordinate headquarters to facilitate parallel planning or when distances are too great to operate from the main CP. It must communicate with higher headquarters, adjacent units, employed subordinate units, and the main CP. The TAC CP relies on the main CP for planning, detailed analysis, and coordination.

1-24. The TAC CP is agile and flexible mission command node which greatly extends the commander's tactical reach. Its organizational layout, personnel, and equipment should be detailed in the unit standard operating procedures. Depending on mission variables, the TAC CP may perform limited operations from an airborne mission command platform.

1-25. The TAC CP is normally comprised of personnel from the S-2 and S-3, and the fires cell. The S-3 section is responsible for the TAC CP. Augmentation may include the standardization pilot, aviation mission survivability officer, aviation safety officer, air liaison officer (ALO), the personnel staff officer (S-1) and/or S-4 (if the main CP is displacing), and civil affairs staff officer, if available. Members of the command group may position themselves at the TAC CP based on mission variables and the commander's intent.

1-26. Normal TAC CP functions include the following:

- Controlling current operations to include resynchronizing forces and warfighting functions.
- Providing information to the COP.
- Monitoring and assessing the progress of operations.
- Monitoring and assessing the progress of higher and adjacent units.
- Performing immediate targeting for current operations.
- Performing short-range planning.
- Providing input to future operations planning.
- Providing a facility for the commander to control operations, issue orders, and conduct rehearsals.
- Maintaining the COP and assisting in developing situational understanding.
- Analyzing information for immediate intelligence.
- Tracking and answering commander's critical information requirements.
- Developing combat intelligence of immediate interest to the commander.
- Maneuvering forces.
- Controlling and coordinating fire support.
- Coordinating with adjacent units and forward air defense elements.
- Monitoring and communicating sustainment requirements (Classes III and V) to the main CP.

SECTION VI – COMMAND POST SURVIVABILITY

1-27. A CP presents numerous signatures that may be detected by an enemy. Electronic, thermal, acoustic, visual, and moving-target signatures may be exploited if detected by enemy reconnaissance or surveillance. If detected, a CP can be destroyed through overt enemy action or disrupted and exploited by electronic means unless measures are taken to reduce vulnerability. These measures include:

- Maintaining active local security, including air guards for counter-UAS.
- Locating on reverse slopes to deny enemy direct and indirect fire effects.
- Locating in urban areas to harden and reduce infrared or visual signatures. Collateral damage to the local population must be considered if exercising this option.
- Remotely locating and dispersing antennas.
- Dispersing CP sub-elements.
- Displacing as required by METT-TC.
- Using low probability of interception techniques—landlines, directional antennas, and messengers.
- Providing communications security.
- Employing camouflage nets.
- Exercising noise and light discipline.
- Minimizing vehicle and aircraft traffic in and around the CP.
- Employing chemical, biological, radiological, and nuclear (CBRN) warning systems.
- Using hardened structures in built up areas.
- Digging in or using sand bags to reduce noise and thermal generator signatures.
- Employing redundant power sources.
- Emplacing wire obstacles.
- Minimizing access control points.

1-28. In most cases, survivability requires employment of a combination of the protective measures listed above. Commanders balance employment of these measures against maintaining CP operations and effectiveness. Frequent displacement, for example, might reduce the vulnerability of a CP, but such movement may greatly degrade its mission command functions.

1-29. A critical time during operations occurs when one or more CPs are displacing or on the move. Commanders assuage the inherent friction associated with these critical transitions by imparting clear guidance for communications and succession of command. Staffs ensure maximum redundancy and operability through rehearsal and refinement of drills associated with mission command on the move, displacement, and degraded operations. For more information on battle drills see Appendix A.

SECTION VII – COMPANY / TROOP COMMAND POSTS AND PLANNING

1-30. CPs at the company / troop level are responsible for conducting troop leading procedures, refining higher headquarter plans, tracking current and future operations, and serve as the central hub for information at this echelon. The commander designates planning cells based on mission requirements and requests information from appropriate staff cells through the higher headquarters operations section.

1-31. The aviation company/troop commander selects the CP location based on mission variables (METT TC), operational variables (PMESII-PT), the military aspects of terrain, and the higher headquarters mission. Special considerations for company CP placement may include: personnel and equipment augmentation, communications planning, and logistics sustainment. For company / troop planning cells and checklists, refer to Appendix C.

SECTION VIII – AVIATION UNIT STAFF

1-32. The staff must function as a single, cohesive unit, and professional team. Effective staff members know their respective responsibilities and duties. They are also familiar with the responsibilities and duties of other staff members. While ADP/ ADRP 6-0 details staff duties and responsibilities, there are some unique aspects to developing and employing an aviation unit staff. Aviation commanders and staffs must be able to exercise mission command over long distances, using electronic systems, communications, and commander’s intent through the AMC. The unique and complex aspects of combat aviation operations require the interaction and input of several staff officers not found in ground units. At all times, the aviation unit staff coordinates, anticipates, verifies, and follows up to help the commander exercise mission command, control operations, inform commander decisions, track and answer the commander’s critical information requirements, and must always be able to answer these questions:

- What is happening?
- What am I (the staff) doing about it?
- Who else needs to know?
- How does this affect my running estimate?
- Does this answer a portion of the CCIR?
- Is this a decision point or trigger for the commander?
- What is my recommendation or course of action based on time available?

1-33. The staff consists of officers and enlisted personnel who plan, supervise, and synchronize the planning and execution of aviation operations, to include sustainment, according to the commander's concept and intent. Except in scope, duties and responsibilities of the staff are similar to those of a brigade combat team (BCT) staff and are often similar to the higher echelon staff. Key staff and personnel must be positioned on the battlefield where they can carry out their duties.

1-34. The processes of staff development, training, and employment vary based on the requirements and missions of a unit. For Army Aviation units conducting air-ground operations as members of a combined arms team, staffs are joined and trained based on the needs of the task force for a specific long term mission. These missions can be part of offensive, defensive, stability, and defense support of civil authorities. While the operations process is simple in concept (plan, prepare, execute, assess), it requires frequent attention, reassessment of success metrics and parallel planning for contingencies that may arise before, during and after mission execution.

COMMON STAFF DUTIES AND RESPONSIBILITIES

1-35. In addition to the specific duties outlined below, all staff officers and sections are responsible for the following common duties and responsibilities:

- Advising and informing the commander.
- Building and maintaining running estimates.
- Providing recommendations.

- Preparing plans and orders.
- Assessing operations.
- Managing information.
- Identifying and analyzing problems.
- Conducting staff assistance visits.
- Performing risk management.
- Performing intelligence preparation of the battlefield within their area of expertise.
- Conducting staff inspections.
- Conducting staff research.
- Performing administrative functions.
- Supervising area of expertise.

COMMANDER

1-36. The commander's guidance informs a detailed mission analysis and is supported by a thorough and current intelligence preparation of the battlefield. The aviation force influences the entire area of operations (AO), therefore the commander must see the AO from the same perspective as the higher commander to have shared understanding. Tactical decisions must be constantly aimed at synchronizing the unit's combat power with other elements of the combined arms team. The commander must be able to understand the friendly situation, understand the enemy situation, understand the civil considerations and understand the terrain (physical and environmental conditions).

1-37. The commander relies on the staff and subordinate commanders to advise, plan, and supervise simultaneous and continuous operations. The commander must understand the staff's capabilities and limitations and trains them to execute operations in the commander's absence. The commander institutes cross-training among the staff to optimize manning and better facilitate decentralized operations over wide areas. Aviation operations, conducted at great distances from the unit's headquarters or assembly area (AA), are led by an air mission commander, air battle commander, or from a TAC CP. Once planning and preparation is complete and the execution phase of an operation begins, leaders with delegated authority oversee the execution of the operation. Upon completion of an operation, commanders and staff assess the effects and determine whether the mission is accomplished or follow on operations are required to achieve the higher commander's intent.

1-38. The commander operates from the point where he or she can best influence the operation through personal presence and leadership. During combat operations, the commander maintains situational understanding, makes decisions, and influences the outcome of the engagement from either a CP, vehicle, or an aircraft. This decision is based on mission variables, as well as the commander's assessment of whether personal presence may be crucial to mission accomplishment. Ultimately, it is the commander's ability to understand, visualize, describe, direct, lead, and assess their formation and operations that enables aviation integration into the combined arms team.

EXECUTIVE OFFICER

1-39. The executive officer (XO) is second in command and principal assistant to the commander. The scope of XO duties is often tailored by the commander's requirements. Normally, the XO directs, supervises, and ensures coordination of staff work and logistics, except in those specific areas reserved by the commander. The XO monitors the staff's work and provides quality control. The XO must understand the commander's guidance and ensures the staff receives the necessary information and resources for operations. The XO determines timelines for the staff, establishes back-brief times and locations, enforces the information management plan, and provides any unique instructions to guide the staff in completing the military decision making process (MDMP) and establishing running estimates.

1-40. Logistics, particularly forward arming and refueling point (FARP) operations, and maintenance are often the center of gravity for aviation operations. The XO is the primary senior leader on the staff ensuring the planning and execution of the logistics and maintenance effort. The XO is normally positioned in the main CP. He remains current on the tactical situation and must be prepared to assume command.

1-41. Based on the unit's footprint, task organization, and mission sets, the commander may designate either the executive officer or the S-3 to command the unit in the commander's absence, or may have either or both command detached elements of the unit at another location.

1-42. As staff coordinator and supervisor, the XO—

- Leads the operations process (MDMP).
- Formulates and announces staff operating policies.
- Ensures the commander and staff are informed on matters affecting the command.
- Supervises main CP operations.
- Supervises logistics and maintenance efforts.
- Ensures execution of staff tasks and coordinated efforts of staff members.
- Ensures the staff performs as a team; assigns responsibilities.
- Supervises preparation and execution of rehearsals.
- Transmits the commander's decisions to the staff and subordinate commanders, when applicable, for the commander (Staff members may deal directly with the commander; however, they should inform the XO of the commander's instructions or requirements to maintain unity of effort and shared understanding.)
- Establishes and monitors liaison and liaison activities.
- Supervises the information management program.
- Coordinates the staff to ensure MCS operations across battlefield-automated system (BAS).
- Ensures staff integrates and coordinates its MCS activities internally, vertically (with higher headquarters and subordinate units), and horizontally (with adjacent units).
- Manages the CCIR; ensures satisfaction of the CCIR.
- Directs creation and distribution of the COP to include procedures for updating enemy and friendly situational understanding.
- Monitors information filters, collection plans, and networks that distribute the COP.
- Provides guidance for automation support.
- Coordinates the staff to ensure automation support.
- Coordinates procedures for inter-CP video teleconference and whiteboard sessions.
- Monitors liaison teams with analog (non-digitized) units and joint/allied forces for their contribution to the COP.

PERSONAL STAFF

1-43. Personal staff officers work under the immediate control of, and have direct access to, the commander. The commander establishes guidelines or gives guidance on when a personal staff officer informs or coordinates with the XO or other staff members. Some personal staff officers have responsibilities as special staff officers and work with a coordinating staff officer and also may work under the supervision of the XO. A more detailed discussion of personal staff organizations and responsibilities can be found in FM 6-0. Key personal staff unique to Army Aviation include the command chief warrant officer in the CAB, and flight surgeon at the aviation battalion level and above. Chaplains are members of the personal staff.

COMMAND CHIEF WARRANT OFFICER

1-44. The command chief warrant officer serves as the senior warrant officer advisor to the CAB commander. Command chief warrant officers carry out policies and enforce standards for the performance, training, and conduct of warrant officers. In operations, a commander employs the command chief warrant officer throughout the area of operations to extend command influence, assess the morale of the force, and assist during critical events. Upon assignment, the command chief warrant officer assists the commander in the following ways:

- Advises the commander on all warrant officer functions.
- Advises the commander on Army Aviation tactical employment.
- Monitors warrant officer professional, technical, and tactical development.

- Participate in the operations and planning processes.
- Warrant officer mentorship, assignments, and training.
- Monitors subordinate unit morale.
- Performs specific missions as directed by the commander.

COMMAND SERGEANT MAJOR

1-45. The command sergeant major (CSM) acts in the name of the commander and is the commander's primary advisor concerning all Soldiers. Command sergeants' major carry out policies and enforce standards for the performance, training, and conduct of all Soldiers. In operations, a commander employs the command sergeant major throughout the area of operations to extend command influence, assess the morale of the force, and assist during critical events. The command sergeant major focuses attention on functions critical to the success of the operation. The command sergeant major assists the commander in the following ways:

- Monitors noncommissioned officer (NCO) development, promotions, and assignments.
- Identifies, plans, and assesses Soldier training.
- Monitors vehicle and equipment maintenance programs and readiness status.
- Provides recommendations and expedites procurement and preparation of enlisted replacements for subordinate units.
- Assists in controlling movements.
- Advises and directs force protection in tactical AAs.
- May lead the advance or quartering party during a major movement, coordinating closely with the headquarters and headquarters company commander.
- Monitors subordinate unit morale.
- Monitors food service and other logistics operations.
- Performs specific missions as directed by the commander.

COORDINATING STAFF

1-46. The coordinating staff is comprised of the commander's principle assistants who are responsible for one or a combination of broad fields of interest (personnel, intelligence, operations, planning, logistics, and communications). Coordinating staff members help the commander coordinate and supervise execution of plans, operations, and activities. Collectively, through the XO, they are accountable for the commander's entire field of responsibility.

HUMAN RESOURCES OFFICER

1-47. The S-1 is the principal staff officer for all matters concerning human resources support. The S-1 is normally collocated with the S-4 in the sustainment cell of the main CP. The S-1 and S-4 should cross-train to enable continuous operations.

1-48. The S-1 assesses personnel readiness and combat effectiveness for the organization. For more information, see FM 1-0, *Human Resources Support*, and ATP 1-0.1, *G-1/AG and S-1 Operations*. The S-1 provides the following support to Soldiers and their families:

- Personnel accountability.
- Strength reporting.
- Casualty operations.
- Personnel information management.
- Personnel readiness.
- Essential personnel services.
- Postal operations.

Human Resource Section

1-49. During steady-state operations, the S-1 works closely with the standardization officer to complete the aircrew manning portion of the Unit Status Report. The aviation unit S-1 must possess a detailed understanding of aviation military occupational specialties for commissioned officers, warrant officers, and enlisted personnel, and be able to advise the Commander on the fill of aviation MTOE positions.

1-50. The S-1 is responsible for all matters concerning human resources including personnel readiness and services. The S-1 manages personnel strength and replacement; works with the flight surgeon to plan health services; coordinates morale support activities, financial, and postal services; maintains the awards program; and provides casualty operations management.

INTELLIGENCE OFFICER

1-51. The S-2 leads the intelligence staff section consisting of the S-2 section, Geospatial Information Section (brigade level), PED team (brigade level), and joint surveillance target attack radar system ground station team (if assigned). The S-2 is responsible for all matters concerning information collection. The S-2 provides current information and analyzed intelligence of tactical value concerning enemy, terrain, weather, and civil considerations.

1-52. The S-2 must focus on using predictive analysis tools to identify surface to air threats to aviation teams in order to assist the commander and S-3 in mitigating these threats. Early and detailed interaction with supported ground maneuver units and other joint air intelligence assets is critical to this effort. The S-2 must also apply the elements of military aspects of terrain to aviation planning and operations. The commander focuses the collection efforts of the S-2 through CCIR. The commander may also have the S-2 report to the S-3 officer in charge, instead of the executive officer, for optimal intelligence fusion with operations.

1-53. In aviation, the duties of the S-2 expand further to include the processes of developing aviation-centric intelligence such as the security of frequented air routes for lift and cargo operations to focusing of aerial reconnaissance efforts. The expanded considerations of an aviation unit's intelligence officer can be, but are not limited to:

- Aviation specific threat consideration.
- EA selection and development criteria.
- Identify friend or foe requirements.
- Munitions load requirements.
- Interpretation of full motion video.
- Understanding the advantages and limitations to aerial reconnaissance and aviation platforms.
- Developing security and deception plans for aviation assets.
- Assessing threats to aviation ground elements.
- Providing terrain analysis for landing and pickup zones, FARPS, and attack by fire positions.
- Understanding and tracking aviation weather impacts.

1-54. The S-2 has the following duties and responsibilities:

- Acts as staff proponent for all source analysis system (DCGS-A) related requirements and issues.
- Supervises DCGS-A operations and support.
- Provides guidance on employment and support of DCGS-A.
- Supervises the information security program; evaluates security vulnerabilities.
- Assists the S-6 in implementing and enforcing local area network security policies.
- Provides software application expertise on proponent systems.

Intelligence Section

1-55. The S-2 section provides intelligence, including collecting, processing, and analyzing information. The S-2 section prepares intelligence collection plans; receives and analyzes battlefield information; disseminates intelligence products; and provides up-to-date intelligence information to assist in planning for and coordinating operations.

1-56. The aviation unit intelligence section focuses on collecting and analyzing information about threats to friendly aircraft, air and ground threat trends, indicators and warnings, and pattern analysis, but also works closely with the operations section for mission analysis and the targeting process. Likewise, the CAB and battalion/task force S-2s should establish close working relationships with adjacent and supported aviation and ground units to improve predictive analysis of threats in the AO. This synergy benefits information collection and analysis at all levels.

1-57. The S-2 staff section performs the following functions:

- Coordinates intelligence activities.
- Nominates specific information requirements to the commander for designation as CCIR.
- Facilitates the intelligence preparation of the battlefield process.
- Helps develop the decision support template.
- Develops the information collection plan.
- Frequently updates the commander and staff on the enemy situation.
- Maintains isolated personnel reports (ISOPREPs).
- Works closely with the fire cell and S-3 section ensuring information is passed throughout the brigade.
- Performs intelligence support to effects and targeting.
- Processes relevant information to assist in creating the COP.
- Provides aircrews with intelligence summaries and pre-flight update briefs.
- Conducts post-flight debrief for intelligence gathering.
- Develops operational targets.
- Develops high-payoff targets and high value targets.

Geographic Information and Services Geospatial Engineer Element (CAB and above)

1-58. The geospatial information and services geospatial engineer element provides the following support:

- Database management.
- Geospatial database development (pre-deployment).
- Terrain analysis.
- Geospatial survey.
- Geospatial production.

Processing, Exploitation, and Dissemination Element (CAB and above)

1-59. The PED element is responsible for the conversion of collected information into forms suitable to the production of intelligence and the delivery of intelligence to users in a suitable form and the application of the intelligence to appropriate missions, tasks, and functions. The PED element is responsible for the following support:

- Input to the tasking of collection systems.
- Receive collection.
- Process larger volumes of data and conversions in into usable format.
- Provide refined guidance for targeting.
- Support to time-sensitive requirements.
- Report collected information to other intelligence and operational elements.

OPERATIONS OFFICER

1-60. The S-3 is responsible for matters pertaining to the organization, employment, training, and operations of the unit and supporting elements. The S-3 is responsible for planning, organizing, and supervising unit training and integrating supporting elements. The S-3 monitors the battle, ensures necessary sustainment assets are provided when and where required, and anticipates developing situations.

1-61. Depending on the size, location, and types of missions to be performed by the aviation unit, there may multiple assistant S-3s in the operations cell. The battle captain is also an assistant S-3, focusing on the current operations of the CP. In a task force organization, where varying types of airframe and missions may be used, experienced assistant planners may be required for a future operations cell and the air mission request cell. Selection and training of these individuals is critical to the smooth transition of a unit from garrison to combat operations, ensuring a mission can be efficiently planned and conducted with aviation support.

1-62. The S-3 has the following duties and responsibilities:

- Develops collection annex to plans and orders.
- Allocates information collection tasks.
- Integrates fires into operations.
- Plans tactical troop movements.
- Develops ammunition usage rates ICW S-2 and S-4.
- Participates in course of action and decision support template development.
- Recommends CP locations.
- Recommends task organization and assigns missions and tasks to subordinate units.
- Creates, maintains, and displays the COP; maintains situational understanding of all units.
- Monitors the current battle and controls unit execution according to the commander's intent, OPORDs, FRAGORDs, and the unit SOP.
- Recommends Friendly Force Information Requirements (FFIR) to incorporate in the CCIR.
- Coordinates with S-6 for the tactical communications plan to support operations.
- Establishes and maintains relationships with higher, adjacent, and supported headquarters
- Collects and distributes post mission results/battle damage assessment (BDA).
- Proof and approves reports for release to higher headquarters (authority delegated by the Commander in SOP).
- Develops and ensures implementation of force protection plans and measures.
- Conducts liaison with supported and higher units.

ASSISTANT S-3 (BATTLE CAPTAIN)

- The assistant S-3 (Battle Captain) is responsible for managing, coordinating and synchronizing current operations from the main CP through the current operations staff. Given the complexity and importance of the battle captain position, the battle captain must have thorough knowledge of the seven core competencies of Army Aviation.
- Thorough knowledge of the unit tactical and staff operations SOPs.
- Thorough knowledge in the execution of staff battle drills.
- Ability to communicate concisely and accurately to the staff, the commander, and the crews executing missions.
- Full understanding of the AO; missions and tasks to subordinate units; the commander's intent at echelon and two levels higher and the commander's critical information requirements. Ability to manage multiple missions and operations, and react or adapt to any contingencies that may arise.
- Ability to monitor, and eventually predict, changes that will require timely intervention or reaction by aviation assets.

AVIATION MASTER GUNNER

1-63. The master gunner is designated by the commander and serves on the unit standardization committee. The master gunner is the principle advisor to the commander and S-3 on aviation weapons employment, collateral damage estimate development for direct fires, assists in forecasting and allocating ammunition, and monitors gunnery training device usage. The master gunner supports the battalions in developing gunnery training to include realistic target arrays, and assists in the coordination of scheduling with local range-control officials. During training events, the master gunner may serve as the senior evaluator on live-fire ranges.

1-64. The master gunner is a weapons and tactics expert who should be qualified as a standardization instructor pilot. At a minimum, the master gunner should be a current instructor pilot who is aircraft weapon system qualified and current in one of the attack or armed reconnaissance aircraft within the brigade. Additionally the battalion and brigade master gunner must be a graduate of the United States Army Aviation Center of Excellence master gunner course and have the H-8 additional skill identifier.

Note. For further information about the Master Gunner and the development of a Gunnery Program, please refer to TC 3-04.45.

AVIATION MISSION SURVIVABILITY OFFICER

1-65. The aviation mission survivability officer (AMSO) is the commander's primary advisor and tactical/technical expert on aviation mission analysis for tactical employment of army aircraft, aircraft combat survivability, and personnel recovery including TTP designed to reduce aviation mission threat risk to the lowest extent possible. AMSOs are critical staff officers who participate in all phases of the operations process. The AMSO conducts combat survivability analysis throughout tactical aviation operational planning. The AMSO provides support to the intelligence section, characterizing enemy threat capabilities and limitations that affect the commander's ability to conduct aviation missions in the assigned area of operations. The AMSO assists in the integration of aviation operational airspace requirements into theater/joint airspace control systems. The AMSO also assists in integrating joint capabilities to Army Aviation operations. AMSOs are responsible for training programs with respect to aviation survivability, personnel recovery, and the aviation mission planning system (AMPS).

UAS OPERATIONS TECHNICIAN (150U)

1-66. UAS Operations technicians (150U) provide subject matter expertise on the tactical employment of UAS during the operations process; supervise the enlisted management of the commander's aircrew training program; supervise UAS operations to include mission planning, payload operations, launch and recovery operations, and mission execution. They manage the safety, maintenance, and reporting programs; coordinate UAS airspace and frequencies, and other requirements to facilitate UAS operations. Manage UAS logistical requirements, and interface with appropriate UAS system managers.

S-3 AIR OFFICER (BRIGADE AND HIGHER)

1-67. The aviation brigade S-3 Air Officer, organic to brigade operations sections, is responsible for coordinating air space issues, joint air attack team operations, and joint air operations. The aviation brigade S-3 Air is responsible for airspace control planning, coordination, and airspace de-confliction for joint and combined operations in the aviation brigade.

1-68. The S-3 Air oversees the following functions:

- Developing airspace control procedures, plans, standard operating procedures (SOP), and the airspace control appendix.
- Submitting requests for airspace coordinating measures (ACM).
- Advising the brigade commander and staff on actions required at brigade to follow or implement required ACMs.
- Ensuring restrictions are incorporated in fire support planning.
- Obtaining and distributing the current air control order for each subordinate battalion size headquarters.
- Obtaining and distributing applicable portions of the special instructions (SPINS) and air tasking order (ATO) to subordinate units.
- Incorporating applicable ACMs into the aviation brigade scheme of maneuver.
- Maintaining the airspace control overlay.
- Establishing and monitoring the flight following net (air traffic services network) for brigade aircraft, when required.
- Assisting the S-3 and Fires cell in joint suppression of enemy air defense (JSEAD) fires planning.

- Coordinating for additional Army and joint aviation support to support aviation operations such as movement of unit equipment, supplies, ammunition, and fuel.
- Assisting the S-3 in planning, organizing, and coordinating aviation brigade participation in joint air attack team operations.

PLANS SECTION

1-69. The plans section officer is responsible for planning future operations. They monitor the COP, stay abreast of current operations by coordinating with the S-3, and plan branches and sequels accordingly. The plans officer coordinates for operations to be conducted in the next phase, normally occurring in the unit's contingency or orientation planning horizons. However, the commander may task them to plan operations in the current phase or near-term horizon. Other plans officer responsibilities include—

- Producing OPORDs and warning orders (WARNORDs) transition to future operations.
- Coordinating with the S-3 for transitioning from current to future operations.
- Producing current operational plans for the S-3, when requested.
- Participating in the targeting process.
- Performing long-range assessment of an operation's progress.

USAF Weather Team (Brigade and above)

1-70. The brigade normally receives weather team support whether in garrison or deployed. While operating in remote locations the Air Force weather squadron provides their own weather-unique equipment and will normally establish a weather team at the brigade CP, or wherever a supplemental/remote airfield is established. Weather data is briefed daily during battle update briefings and to aircrews prior to missions by the staff weather officer (SWO).

1-71. Due to the frequent changes in weather team personnel, leadership should anticipate requirements for training and familiarization of new weather support personnel. While frequent turn-over prevents complacency in teams, it can cause a gap in the understanding of weather patterns that is learned through time and experience in a specific location. This can also create instability with working relationships between weather personnel, battalion and brigade staff, and aircrews who rely on Air Force weather teams to provide detailed and tailored weather for the CAB specific needs.

Personnel

1-72. The SWO package will normally consist of an officer in charge (OIC), NCOIC, and three forecasters. During deployments/contingency support, Headquarters Air Combat Command and Pacific Air Forces through the Air and Space Expeditionary Center will task global weather units to provide SWO teams to deployed forces.

Responsibilities

1-73. It is the responsibility of the weather team to establish and man the weather information FM net in order to provide pilot-to-metro service. The weather team obtains, creates, and disseminates mission forecasts at least every 12 hours to brigade staff in the format approved by the CAB commander, and issues watches, warnings, advisories, and forecast amendments to the brigade staff and aircrews. The weather team relays pilot reports to the division staff weather officer and mission crews as well as provides flight weather briefings with DD Form 175-1 (Flight Weather Briefing) to requesting units.

AIR DEFENSE AND AIRSPACE MANAGEMENT ELEMENT (BRIGADE AND ABOVE)

1-74. The air defense and airspace management (ADAM) element provides liaison between the aviation brigade and air defense units. The employment of the ADAM element is essential in de-conflicting airspace and preventing fratricide of friendly aircraft operating throughout the area of operations.

FIRE SUPPORT OFFICER (CAB, ATTACK RECONNAISSANCE BATTALION (ARB)/ARS, AHB)

1-75. The fires cell is led by the fire support officer (FSO). The FSO provides fires integration for the scheme of maneuver by developing a scheme of fires and leading the targeting working group in close coordination with the S-3 and commander. Both missions are critical to the success of aviation operations.

1-76. The FSO plans, controls, and synchronizes all fire support for operations. He coordinates Army and joint suppression of enemy air defenses, and integrates and coordinates offensive information operations into fire support planning. He works with the S-3 and airspace control element regarding field artillery firing unit locations and changes to fire support coordination measures (FSCM) and ACMs. The FSO maintains digital and voice communications with supporting artillery.

1-77. Targeting functions include:

- Develop the high-payoff target list to include collection and attack triggers.
- Establish target selection standards.
- Nominate targets to higher headquarters.
- Synchronize the information collection plan.
- Synchronize maneuver and fire support.
- Integrate counter-mobility, mobility, and survivability operations.
- Receive and evaluate BDA.
- Develop and synchronize the information collection plan with targeting.

Fires Cell

1-78. The fires cell plans, coordinates, integrates, synchronizes and deconflicts the employment and assessment of fires for both current and future operations. The brigade fires cell is generally organized with a fire support officer and assistants, an ADAM element, an electronic warfare element, a targeting element, and digital systems operators. The BAE typically collocates with the ADAM. The fires cell plans, prepares, coordinates and integrates the execution and assessment of fires including artillery, mortar, radar, electronic attack, air support, naval surface fire support, and other joint assets.

1-79. Primary functions of brigade fires cell also include:

- Integrate and synchronize Army indirect fires, joint fires, and multinational fires with the other warfighting functions.
- Recommends and manages FSCM and ACMs to support current and future operations.
- Requests and coordinates CAS and air interdiction for surface forces.
- Coordinate airspace requirements.
- Coordinate clearance for attacks against targets (clearance of fires).

LOGISTICS OFFICER

1-80. The S-4 is responsible for coordination of all external and internal logistical support including supply, maintenance, and transportation. The S-4 develops the requirements of the unit's concept of support and is responsible for writing paragraph IV and annex F (sustainment) of the operations order. In addition to providing logistics visibility for the command, the S-4 manages the property book, budget, operational needs statements, and any contract or host nation support. The S-4 is the primary staff officer for planning and executing deployment and redeployment operations.

1-81. The S-4 works with the aviation materiel officer or production control officer to resource personnel with the right sets, kits, and outfits for aviation maintenance operations. The S-4 must also understand the operational needs statement as a method of resourcing the unit for combat operations, and will assist the commander in identifying equipment shortfalls and concerns via the unit status report. Maintenance and supply tracking may be a significant concern for developing a comprehensive supply line for aircraft. Ammunition and fuel planning become a concern to ensure that correct lot and Department of Defense identification code are requested to meet aircraft limitations and mission requirements. Liaison with the aviation support battalion may be required to ensure that the proper supplies are being requested for the critical points in the fight, based on mission priority.

1-82. The S-4 has the following duties and responsibilities:

- Maintain maintenance oversight as it pertains to unit readiness.
- Oversee battalion aviation maintenance operations through the brigade aviation materiel officer (AMO).
- Manage the property book including coordinating new equipment fielding, replenishments due to battle-loss or other loss, and manage financial liability investigations for property loss.
- Manage unit finances (budget).
- Coordinate contracting support as required by the headquarters and subordinate units.
- Provide sustenance oversight.
- Requisition CL IX end item combat loss replacements.

1-83. Although not a brigade staff officer, the support operations officer (SPO) in the Aviation Support Battalion, is critical to the sustainment support of the CAB. Working closely with the brigade S-4, the SPO develops the brigade concept of support and is responsible for external and internal coordination for all sustainment within the brigade. The SPO staff section oversees maintenance, transportation, and supplies and services. The SPO manages resupply of Class III (bulk) and Class V for FSC/FST FARPs throughout the brigade. This may be through the aviation support battalion (ASB) distribution company or via throughput directly from the sustainment brigade. In addition to these, the SPO has the following responsibilities:

- Manage all classes of supply.
- Manage aviation maintenance (especially Class II, IX repair parts) and ground level maintenance support.
- Provide Sustainment Automation Support Management Office support to the brigade.
- Provide mortuary affairs oversight and support.
- Manage and coordinate general support (GS) and reinforcing sustainment support to the aviation battalions.

Logistics Section

1-84. The S-4 section provides supervision and coordination of food service, supply, transportation, and maintenance support for the brigade. S-4 section responsibilities include–

- Recommending basic loads and supply requirements.
- Recommending the ammunition required supply rate to the S-3.
- Conducting planning for operational movement control and mode and terminal operations.
- Coordinating with civil affairs for host nation support.
- Coordinating battlefield procurement and contracting.

Aviation Materiel Officer

1-85. The AMO is the commander's primary advisor on generating aviation combat power and aviation maintenance. The aviation materiel officer coordinates field and sustainment-level maintenance operations and works closely with the staff, ASB SPO, and subordinate units to sustain aviation operations. AMOs provide aviation sustainment analysis to the S-3 and S-4 during all planning processes. They identify and address unit maintenance capability gaps with respect to doctrine, organizational, training, materiel, logistics, and facilities

1-86. The AMO is the subject matter expert, trainer, and peer leader for the subordinate unit aviation maintenance officers. The aviation materiel officer recommends actions and forecasts future capabilities based on the existing maintenance posture.

1-87. The AMO plans maintenance actions based on operational necessities and maintains a daily status of all aircraft. The AMO is responsible for the following:

- Advises the commander on aviation maintenance and logistics.
- Coordinates for and monitors contract maintenance personnel
- Advises the commander on aircraft modifications and safety-of-use, safety-of flight, aviation safety action messages.

- Standardization of all maintenance procedures and is a primary member of the safety and standardization council.
- Develops the brigade concept of support for aviation.
- Leads the maintenance synch meeting, set at a battle rhythm dictated by operations.
- Monitor aviation maintenance training. Monitor aircraft deployment planning and execution.
- Enlisted personnel should be assigned to the section to assist the brigade aviation materiel officer (BAMO) to provide continuous maintenance and logistics information to the commander and staff. The BAMO keeps the command informed about current and future capabilities based on the current maintenance posture and plans maintenance actions based on operational necessities.

1-88. The brigade AMO is the technical advisor to the commander for aircraft readiness, logistical support, maintenance policy and procedures and force modernization while conducting interface between subordinate units and division, corps, installation, Major Army Command, and Department of the Army.

SPECIAL STAFF

1-89. Special staff officers assist the commander and other staff members in the performance of their functional responsibilities. These include the standardization officer, unit ministry teams and chaplain sections, aviation safety officer (ASO), ALO, and aviation liaison elements.

STANDARDIZATION OFFICER

1-90. The standardization officer is the primary advisor to the commander for the aircrew training program. The standardization officer is unique to aviation units in that he or she monitors and provides assistance to the commander in the development and implementation of training programs and standardized execution of unit mission essential tasks. They are key contributors to all Army Aviation planning processes.

FLIGHT SURGEON

1-91. The flight surgeon is the primary advisor to commanders in all matters concerning the medical condition of the command including preventive, curative, and restorative care. The flight surgeon is responsible for and provides medical direction and oversight of all medical personnel assigned to aviation formations. The flight surgeon periodically flies with aircrews to monitor medical and environmental factors affecting crew readiness. The flight surgeon 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 headquarters and headquarters company (HHC). The flight surgeon is also responsible for investigating the history of individuals involved in aviation mishaps, injuries involved in the accident, and the role of aircraft design, life support and personal protective equipment in the accident. The flight surgeon is also responsible for the aviation medical aspects of the command safety program and unit field sanitation. The flight surgeon, in conjunction with the physician assistant, operates the aid station normally located in the AA.

AVIATION SAFETY OFFICER

1-92. The safety officer serves as the principle advisor to the commander and staff on all aviation and ground safety matters and manages the command’s aviation safety program. They are key contributors to all Army Aviation planning processes. The safety officer assists the staff and commander during the risk management process, monitors all brigade and subordinate unit missions to identify and address potential hazards, and recommends actions improving safe mission accomplishment. The ASO is responsible for providing safety education throughout the command and ensures the incorporation of safety standards and procedures into all functions.

1-93. The ASO maintains the appropriate aviation safety records and mishap statistics; and works with the quality assurance/analysis section to develop local maintenance instruction and procedures. With assistance of the quality assurance/analysis, the ASO investigates mishaps, incidents, and hazards in the command, which includes development and management of a pre-accident plan. The safety officer administers or monitors safety-related programs and advises subordinate unit safety officers as required.

AIR LIAISON OFFICER (BRIGADE AND ABOVE)

1-94. The ALO is an Air Force officer assigned to the brigade to support operations of joint and multinational air support to include CAS, air interdiction, joint suppression of enemy air defenses, aerial reconnaissance, and airlift operations. If additional qualified personnel are assigned, the ALO will lead a tactical air control party (TACP). The TACP assigned to a ground unit functions as the primary advisor to the ground commander on air power. CABs are not normally assigned their own ALOs and must request ALO support from the division. The TAC CP will act as an inter-service liaison, provide precision terminal attack guidance to U. S. and coalition CAS, other air-to-surface aircraft munitions, and can also control naval gunfire. In the absence of an ALO, normally the S-3 ensures these duties are accomplished for the commander.

AVIATION LIAISON ELEMENTS

1-95. The aviation brigade, battalion or task force headquarters contains an aviation liaison element to facilitate operations with higher headquarters and/or supported ground maneuver units. Liaison elements develop relationships and understand processes with higher and adjacent headquarters. Since the aviation brigade has limited liaison assets available, liaison elements are organic to aviation battalions and represent their units as directed to facilitate air-ground operations and planning. The element typically consists of an experienced and knowledgeable team that includes an aviation officer, a senior aviation warrant officer (e.g. Aviation Mission Survivability Officer), and a flight operations specialist, but will be tailored to mission requirements

1-96. Although a BAE conducts many of the functions traditionally performed by liaison officers (LNO), aviation liaison elements remain a critical part of the process and thus must be staffed appropriately.

1-97. While a BAE works directly for the BCT commander as a permanent member of the commanders staff, aviation liaison elements represent the supporting aviation task force (TF) at designated maneuver headquarters for the duration of a specific operation.

1-98. The liaison element maneuvers between assigned and supported headquarters. The aviation liaison element normally works directly with the brigade aviation officer as a functioning addition to the BAE staff section. Effective employment of LNO is imperative for coordination and synchronization. Often aviation liaison elements coordinate with the BAE and proceed to a supported ground maneuver battalion. An example would be an aviation liaison element in support of an infantry battalion performing an air assault to seize a key piece of terrain as a part of a mechanized BCT scheme of maneuver.

1-99. Aviation liaison elements integrate with the BAE, Division aviation element, or other headquarters and monitor the following operations and support requirements:

- Aviation unit locations.
- Aircraft/equipment status.
- Crew availability and fighter management cycle status.
- Class III/V status.
- Continuous updates to the aviation commander and staff on the BCT or higher headquarter plan.

BRIGADE AVIATION ELEMENT

1-100. The BAE is a planning and coordination cell in the BCT whose major function is to incorporate aviation into the ground commander's scheme of maneuver. The BAE focuses on providing employment advice and initial planning for aviation missions, UASs, airspace planning and coordination, and synchronization with the ALO and the fires officer. The BAE also coordinates directly with the aviation brigade or the supporting aviation TF for detailed mission planning.

1-101. The BAE does not take the place of aviation TF involvement in the planning process. It assists the BCT in aviation planning and provides the aviation brigade or the supporting aviation TF leadership with BCT mission information. It is critical that aviation commanders and S-3s participate and lead aviation mission planning in support of the BCT.

1-102. The BAE is involved in the mission from receipt of the WARNORD from higher through planning. This includes movement to the port of embarkation (POE); deployment; reception, staging, onward movement, and integration (RSOI) into the force; the MDMP, combat operations; and redeployment, reintegration, reconstitution and retraining (R4).

1-103. The mission of the BAE is to provide—

- Integration and synchronization of aviation into the BCT's scheme of maneuver.
- Employment advice and planning for attack reconnaissance elements, assault helicopters, airborne assets facilitating mission command, heavy helicopters, air ambulance helicopters, and UASs.
- Direct coordination with aviation brigades and TFs.
- Close integration/synchronization with BCT ALO and FSO.
- Airspace control planning and coordination for combined arms and joint, interorganizational, and multinational (JIM) operations.

SECTION IX – AVIATION TASK FORCE CONSIDERATIONS

1-104. This section highlights the benefits and considerations for leader understanding of subdividing a CAB into battalion-sized task forces. Aviation battalions and squadrons may often operate as task forces, providing commanders the opportunity to employ a variety of aircraft to perform various missions. The intent of this section and additional considerations located in Appendix A, provide commanders with specific considerations for forming and employing an aviation task force (ATF).

THE TASK FORCE

1-105. A task force is a temporary grouping of units, under one commander, formed for the purpose of carrying out a specific operation or mission (ADRP 1-02). It can also be a semi-permanent organization of units, also under one commander, formed for carrying out a continuing specific task, such as homeland defense or defense support to civil authorities during a natural disaster. The formation of aviation elements into a task force is typically done at the battalion level. All task forces are not alike, but are tailored for the mission of the supported unit. For example, an ATF that supports an infantry brigade combat team (IBCT) may be more assault aircraft heavy than an ATF that supports an armored BCT. For examples of common ATF organization, see Chapter 2 of FM 3-04, Army Aviation.

1-106. The aviation task force (ATF), most commonly organized into aviation battalion or squadron task forces (ATF) performs combined arms maneuver, wide area security, and support missions through execution of the seven core competencies of Army Aviation (see FM 3-04, Army Aviation). Commanders direct the organization of Army Aviation task forces based on analysis of the mission variables (METT-TC) and the operational variables (PMESII-PT).

1-107. The following considerations affect ATF formulation:

- ATFs must be formed as soon as feasible to enable effective mission command and risk management.
- Brigade level SOPs should be standardized to enable rapid ATF formation.
- ATF may be ad hoc for single missions or formalized as semi-permanent organizations for longer duration operations.
- Proper ATF organization, planning, and training are essential to accomplish assigned missions.
- Aviation maintenance and logistics support must be tailored based on the configuration, numbers, and types of aircraft assigned.
- If the CAB/ECAB is within supporting range, enabling capabilities may remain centralized for hub and spoke support.

ORGANIZATION

1-108. The ATF is not a standing unit with a published table of organization and equipment. An ATF organizational structure is tailored to meet mission requirements. There are numerous possibilities when organizing an ATF. Mission and operational variables are driving factors for ATF organization.

1-109. The ATF may receive additional assault and heavy helicopter forces from a general support aviation battalion (GSAB), theater aviation brigade, or uncommitted forces to augment its air assault capability. Likewise, it may receive additional attack reconnaissance assets if employment is expected to be more reconnaissance, security or attack centric. Such augmentation could be in the form of full companies, platoons, or sections, or it could be as small as additional crews with or without additional aircraft.

MISSION

1-110. An ATF is capable of conducting all aviation missions when task organized with the appropriate amount of utility, cargo, attack, reconnaissance, and aeromedical evacuation personnel and assets. Specific ATF missions may include missions commensurate with the seven core competencies of Army Aviation, and are kept task organized until the completion of assigned missions.

1-111. An aviation task force (ATF) may provide a ground force with an array of aviation capabilities across a variety of missions. This allows a CAB to provide tailored support to a larger area of operations. The mix of aircraft provide improved flexibility, to the ground commander to better support various missions such as:

- Reconnaissance.
- Attack.
- Lift (both air assault and air movement).
- Mission command support.
- Aeromedical evacuation.

LIMITATIONS OF AN AVIATION TASK FORCE

1-112. Most ATF are limited by the numbers of specific aircraft assigned. For instance, a task force supporting an IBCT that is to accomplish a battalion air assault will generally require reinforcement by additional lift aircraft. Limitations may be affected by:

- Type of mission to be supported and selecting the proper force to fulfill the mission.
- Distance, terrain, time and amount of forces that will require support from aviation.
- Conflicting support requirements where the ATF provides GS to multiple brigades or forces.
- Sustainability and logistics capabilities.

SECTION X – MISSION COMMAND SUPPORT SYSTEMS

1-113. Aviation provides mission command support aircraft to allow commanders to maintain communications with their forces and provide timely information for critical decisions without sacrificing mobility and efficiency. There are currently two types of mission command support systems, known as airborne *mission command on the move* systems, employed aboard the UH-60 helicopter. The first is the *Army Airborne Command and Control System* and the second system is the *Airborne Battle Command Console*. In addition to these two systems, the UH-60 aircraft are also equipped with a 12-point intercommunications system (ICS) that is used for mission command and for keeping key personnel aboard the aircraft linked into the communications. These systems allow the commander access to the common operational picture and the means to command maneuver forces. When using these mission command system equipped aircraft, the commander achieves maximum mobility while maintaining access to information and continuity of operations. Mission command support aircraft may also employ extended range fuel systems to extend flight time (or station time) for up to six hours. Although support missions are normally flown in the mission command equipped aircraft, other UH-60 aircraft without the systems may perform this role using just the 12-point ICS.

1-114. The mission command support systems provide these operational roles—

- Mission command on the move platform.
- Tactical CP.
- Mobile CP.
- Early entry CP.

ARMY AIRBORNE COMMAND AND CONTROL SYSTEM

1-115. Mission command support can often require independent operations by aircrews with aircraft placed under operational control (OPCON) to a maneuver commander down to the brigade or battalion level. The Army airborne command and control system (A2C2S) provides the maneuver commander with a highly mobile, self-contained and reliable airborne CP with the mission command support systems needed to operate in the unified action environment. The A2C2S allows the commander and staff to maintain voice and digital connectivity with required support elements. The A2C2S will roughly replicate the systems and capabilities of a digitized maneuver brigade tactical command post.

1-116. The A2C2S provides the maneuver commander with the means to perform all mission command and coordination functions. The A2C2S provides tactical internet access to manipulate, store, manage, and analyze information, intelligence data, mission plans, and mission progress data. This provides the commander the ability to visualize and understand his portion of the area of operations in order to exercise mission command regardless of location, to rapidly respond to fluid situations, and control his part of the battle.

CAPABILITIES

1-117. The capabilities of the A2C2S console include the following:

- Real-time common operating picture displays.
- Digital connectivity with all Army battle command systems.
- Provides retransmission capability increasing the communications range of the supported unit.
- Five automated, reconfigurable and removable workstations (each incorporates a keyboard, monitor and audio communications unit), a command database, and two large common displays.

LIMITATIONS

1-118. The limitations of the A2C2S console includes—

- Requires an individual trained in operation of the console system for effective operation. The crew chiefs of the aircraft are not mission command support system operators; therefore, the supported unit should have dedicated and trained console operators.
- Removal from the aircraft is timely. It takes at least one hour and four personnel to remove the mission command support console from the aircraft for ground-based operations. Reinstallation in the aircraft requires special mounting hardware.
- Limited frequency modulation communications. With only one single-channel ground and airborne radio system radio, the console can only load six frequency modulation frequency hop sets at a time. This limits the commander's ability to communicate and retransmission capability is lost.

CONFIGURATIONS

1-119. The assault configuration typically consists of—

- Three ARC-231 radios (2 multiband and 1 satellite communications [SATCOM]).
- An optional land mobile radio (Wulfsberg).
- Iridium SATCOM phone (secure/non-secure).
- Blue Force Tracking.
- UAS Level 2 OSRVT.
- Fully capable tactical operations center network (TOCNET) intercom at 11 seat locations.
- System weight: 700 pounds.

1-120. The battle staff configuration typically consists of all assault configuration capabilities plus the following—

- Increase from 1 to 3 workstations.
- One INMARSAT broadband data for secure and non-secure internet protocol router network.
- Two ABC2 or 1 CP of the future as required.

- Fully capable TOCNET intercom at 7 seat locations.
- System weight: 1,290 pounds.

1-121. The command configuration typically consists of all assault configuration capabilities plus the following—

- Two user workstations with network connections for laptop computers.
- One INMARSAT broadband data for secure and non-secure internet protocol router network.
- A TOCNET intercom at 10 seat locations.
- System weight: 1,100 pounds.

1-122. The A2C2S console runs off aircraft power and uses internal aircraft antennas. It contains radio sets, console controls and six ICS boxes for internal aircraft communications and receiving/transmitting on the console radio systems. The back row of the aircraft cabin contains a map board with four additional ICS boxes allowing ten personnel to be hooked up to the radio systems. The A2C2S console is night vision device-compatible allowing the commander to conduct mission command support operations at night.

Operation as a Ground Command Post

1-123. The A2C2S console has the capability to operate in a ground mode. In this configuration, the console can either remain mounted on the aircraft or be dismounted and operated away from the aircraft. If used as a ground mode it requires external power and compatible external radio antennas.

1-124. When operating as a ground CP, the preferred power source is commercial power; a generator is the next preferred power source. If external power is not available, then aircraft power is required. Extended ground times may require an aircraft ground power unit, which could be brought in via sling-load. Or a tactical ground vehicle such as a high mobility multipurpose wheeled vehicle with a generator kit could be used.

AIRBORNE BATTLE COMMAND CONSOLE

1-125. The airborne battle command console (ABC2) system is a smaller and lighter version of the A2C2S, and provides the maneuver commander with a highly mobile lightweight mission command capability with the essential systems needed to communicate with forces in the most extreme OEs. The ABC2 provides the commander with real-time situational understanding and mission command functionality by building and maintaining the common operational picture.

Capabilities

1-126. The ABC2 includes the following—

- Three PRC-117 radios (2 multiband and 1 SATCOM).
- Iridium SATCOM phone (secure/non-secure).
- UAS Level 2 control via OSRVT.
- Blue Force Tracker-aviation.
- Ten ICS boxes for operators and personnel.
- Two user workstations with 9 troop seats.
- System weight: 415 pounds.

Limitations

1-127. The limitations of the ABC2 includes the following requirements:

- A trained individual knowledgeable in the operations of the console systems.
- The supported unit provides trained console operators.
- The aircraft must have an A-kit installed, since this system will not work in a standard aircraft.

TACTICAL AIRSPACE INTEGRATION SYSTEM

1-128. Organic to the CAB, BCT ADAM/BAE, Division, Corps, and Battlefield Coordination Detachment, the Tactical Airspace Integration System provides the commander and staff with real-time airspace control, and enhances situational awareness of fires and other airspace users. The Tactical Airspace Integration System is a versatile airspace management system for unified land operations and supports the mission command mission area as part of the operational architecture. It is specifically designed for information system functions to support mission assessment, planning and execution with tactical displays, integrated information management with other digital mission command systems, multi-net operational communications, and decision and planning aids. For additional information regarding this system, and airspace control, see FM 3-52.

UNMANNED AIRCRAFT SYSTEM MISSION COMMAND SUPPORT

1-129. CAB assigned UAS conduct missions in support of the combined arms team by executing reconnaissance, security, communications relay and attack missions as a member of a manned-unmanned team or alone. BCTs use assigned UAS primarily for information collection and communication relay in support of operations.

1-130. The Gray Eagle and Shadow extend the tactical reach and mission command of the ARB and ARS as an integrated, organic asset, and may do the same for supported units, higher, and adjacent headquarters. Manned-unmanned teams enable operational fire and maneuver efforts, enhance mission command, and increase reconnaissance capabilities available to the commander. They provide flexible reconnaissance, security and precision fires to the maneuver force while operating at extended ranges.

1-131. While the Gray Eagle is a division-level asset assigned to the ARB, the Shadow is a company-level asset assigned to the ARS. Acting as a member of a manned-unmanned team or alone, UAS may extend the range of mission command systems through the use of communications relay packages if equipped. Teaming with other systems may improve system survivability, and should be a primary consideration when planning UAS operations.

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Chapter 2

Offensive Operations

Army Aviation's lethality and mobility enables the ground commander to be decisive. Whether operating autonomously, or as a member of a combined arms team, Army Aviation attack elements enable the commander to drive the tempo of the battle by presenting the enemy with multiple dilemmas, attacking at the time and place of choice and attacking the enemy when he is most vulnerable to achieve surprise through speed, mobility and shock. Attacks require the commander to continuously maneuver to positions of advantage to keep the enemy off balance until the enemy force culminates or is destroyed.

SECTION I – CHARACTERISTICS OF THE OFFENSE

2-1. The offense is the decisive form of war. While strategic, operational, or tactical considerations may require defending for a period of time, defeat of the enemy eventually requires shifting to the offense. Army forces strike the enemy using offensive action in times, places, or manners for which the enemy is not prepared to seize, retain, and exploit the operational initiative (ADP 3-90).

2-2. Offensive operations conducted by Army Aviation include the following characteristics:

- Audacity.
- Concentration.
- Surprise.
- Tempo.

2-3. Effective offensive actions capitalize on accurate and timely intelligence and other relevant information regarding enemy forces, weather, and terrain. The commander maneuvers forces to advantageous positions before contact. Protection tasks, such as security operations, operations security (OPSEC), and information protection keep or inhibit the enemy from acquiring accurate information about friendly forces. Contact with enemy forces before the decisive operation is deliberate, designed to shape the optimum situation for the decisive operation. The decisive operation that conclusively determines the outcome of the major operation, battle, and engagement capitalizes on subordinate initiative and a common operational picture to expand throughout the AO. Without hesitation, the commander violently executes both maneuver and fires—within the higher commander's intent—to break the enemy's will or destroy the enemy.

AUDACITY

2-4. Audacity means boldly executing a simple plan of action. Commanders display audacity by developing bold, inventive plans that produce decisive results. Commanders demonstrate audacity by violently applying combat power. They understand when and where to take risks, and they do not hesitate as they execute their plan. Commanders dispel uncertainty through action; they compensate for lack of information by seizing the initiative and pressing the battle.

CONCENTRATION

2-5. Concentration is the massing of overwhelming effects of combat power to achieve a single purpose. Commanders balance the necessity for concentrating forces to mass effects with the need to disperse them to avoid creating lucrative targets. Advances in ground and air mobility, target acquisition, and long-range precision munitions enable attackers to rapidly concentrate effects. Mission command systems provide reliable, relevant information that assists commanders in determining when to concentrate forces to mass effects.

2-6. Attacking commanders manipulate their own and the enemy's force concentration by combining dispersion, concentration, military deception, and attacks. By dispersing, attackers stretch enemy defenses and deny lucrative targets to enemy fires. By massing forces rapidly along converging axes and synchronizing the effects of available supporting assets, attackers overwhelm enemy forces at decisive points with concentrated combat power. (Commanders and staffs ensure that the opportunity costs of any delays in execution occurring as a result of that synchronization process do not outweigh the benefits of that synchronization.) After a successful attack, commanders keep their forces concentrated to take advantage of their momentum to consolidate gains or exploit follow on opportunities. Should enemy forces threaten them, they may disperse again. Commanders adopt the posture that best suits the situation, protects the force, and sustains the attack's momentum.

2-7. Concentration requires coordination with other Services and multinational partners. At every stage of an attack, commanders integrate joint intelligence assets with joint fires. They capitalize on air superiority to deny the enemy the ability to detect or strike friendly forces from the air. Commanders direct ground, air, and sea resources to delay, disrupt, or destroy enemy reconnaissance elements or capabilities. They also direct security, information protection, and counterfire to protect friendly forces as they concentrate.

SURPRISE

2-8. In the offense, commanders achieve surprise by attacking the enemy at a time or place the enemy does not expect or in a manner that the enemy is unprepared for. Estimating the enemy commander's intent and denying that commander the ability to gain thorough and timely situational understanding is necessary to achieve surprise. Unpredictability and boldness help gain surprise. The direction, timing, and force of the attack also help achieve surprise. Surprise delays enemy reactions, overloads and confuses the enemy commander's command and control systems, induces psychological shock in enemy soldiers and leaders, and reduces the coherence of the defense. By diminishing enemy combat power, surprise enables attackers to exploit enemy paralysis and hesitancy.

2-9. Operational and tactical surprise complement each other. Operational surprise creates the conditions for successful tactical operations. Tactical surprise can cause the enemy to hesitate or misjudge a situation. But tactical surprise is fleeting. Commanders must exploit it before the enemy realizes what is happening.

2-10. Outright surprise is difficult to achieve. Modern surveillance and warning systems, the availability of commercial imagery products, and global commercial news networks make surprise more difficult. Nonetheless, commanders achieve surprise by operating in a way the enemy does not expect. They deceive the enemy as to the nature, timing, objective, and force of an attack. They can use bad weather, seemingly impassable terrain and military deception activities, such as feints, demonstrations, and false communications, to lead the enemy into inaccurate perceptions. Sudden, violent, and unanticipated attacks have a paralyzing effect. Airborne, air assault, and special operations forces attacks—combined with strikes by Army and joint fires against objectives the enemy regards as secure—create disconcerting psychological effects on the enemy.

2-11. Commanders conceal the concentration of their forces. Units mask activity that might reveal the direction or timing of an attack. Commanders direct action to deceive the enemy and deny the enemy's ability to collect information.

TEMPO

2-12. Controlling or altering tempo is necessary to retain the initiative. At the operational level, a faster tempo allows attackers to disrupt enemy defensive plans by achieving results quicker than the enemy can respond. At the tactical level, a faster tempo allows attackers to quickly penetrate barriers and defenses and destroy enemy forces in depth before they can react.

2-13. Commanders adjust tempo as tactical situations, sustainment necessity, or operational opportunities allow to ensure synchronization and proper coordination, but not at the expense of losing opportunities to defeat the enemy. Rapid tempo demands quick decisions. It denies the enemy the chance to rest, and it continually creates opportunities.

2-14. By increasing tempo, commanders maintain momentum. They identify the best means, such as air and ground maneuver, Army and joint fires, and avenues for attack; plan the action in depth; provide for quick transitions to other operations; and concentrate and combine forces effectively. Commanders and staffs ensure that sustainment operations enable sustained offensive operations to prevent culmination. Once combat begins, attackers execute violently. They follow reconnaissance units or successful probes and quickly exploit gaps before defenders recover. Attackers shift combat power quickly to widen penetrations, roll up exposed flanks, and reinforce successes. Friendly forces attack in depth with fires and maneuver to destroy the enemy's coherence and overwhelm the enemy's command and control. While maintaining a tempo faster than the enemy's, attackers balance that tempo with the ability to exercise mission command. Commanders never permit the enemy to recover from the shock of the initial assault. They prevent defenders from massing effects against the friendly decisive operation.

SECTION II – OFFENSIVE TASKS

2-15. Army aviation may conduct offensive operations employing both manned and unmanned assets to defeat, destroy, or neutralize the enemy force. Manned-unmanned teaming (MUM-T) is the integrated maneuver of Army Aviation rotary-wing (RW) and UAS to conduct movement to contact, attack, reconnaissance, and security tasks (FM 3-04). It contributes to shaping the OE by conducting air-ground operations (AGO) as the aviation maneuver force of the combined arms team. There are four offensive tasks—

- Movement to contact.
- Attack.
- Exploitation.
- Pursuit.

2-16. Attack reconnaissance units can expect to conduct a movement to contact and an attack as part of its higher headquarters' conduct of exploitation and pursuits. Based on the nature of the threat, the attack reconnaissance unit can also conduct local exploitation to take advantage of successful attacks. The unit acts to maintain contact with the enemy and when directed by its higher headquarters, takes actions designed to catch or cut off a hostile force with the aim of destroying it.

2-17. Army aviation may conduct offensive operations employing both manned and unmanned assets to defeat, destroy, or neutralize the enemy force. It contributes to shaping the OE by conducting AGO as the aviation maneuver force of the combined arms team. This is accomplished through the simultaneous or synchronized employment of ground forces with aviation maneuver and fires to seize, retain, and exploit the initiative.

MOVEMENT TO CONTACT

2-18. A movement to contact is an offensive task designed to develop the situation and to establish or regain contact (ADRP 3-90). 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. The commander conducts a movement to contact when the enemy situation is vague or not specific enough to conduct an attack. The goal is to make initial contact with a small element while retaining enough combat power to develop the situation and mitigate the associated risk. The speed, range, lethality, long range communications and persistent reconnaissance capabilities of Army Aviation attack reconnaissance units, using MUM-T, make them ideally suited to conduct movement to contact. Army Aviation plans and executes the movement to contact focusing on finding the enemy force, developing the situation early, and preventing the premature deployment of the supported ground maneuver force main body. Once contact is made with an enemy force, the commander has five options: attack, defend, bypass, delay, or withdraw.

2-19. When executing a movement to contact the commander may choose to move continuously with the traveling or traveling overwatch method, or by bounds using the bounding overwatch method. The unit moves by bounds when contact with the enemy is imminent and the terrain and environmental conditions allow such movements. Regardless of the movement technique, care must be taken to avoid losing momentum.

2-20. The process of gaining initial contact with an enemy force, without the threat of coming under fire, has become more of a reality with technologies such as manned-unmanned teaming. With the addition of unmanned aircraft to the fight, a unit has the potential to conduct their actions on contact without the enemy force becoming aware of their presence until a course of action has already been executed against it.

2-21. Once the attack reconnaissance unit makes contact, it concentrates its effects against detected enemy forces. Attack reconnaissance units engage the enemy as required with organic fires, indirect fires, or Joint fires or using the MUM-T TTP to preclude the enemy influence on the main body. Actions on contact occur rapidly at team, platoon, and company level to defeat the enemy force within its capability and prevent unnecessary deployment of other assets. If the enemy situation requires, the attack reconnaissance unit establishes a screen while assisting ground forces to maneuver against enemy units and supports those ground forces with direct and indirect fires. With its organic fire power, the attack element maintains surveillance and contains small forces until follow on elements maneuver to a position of advantage to destroy the enemy. It is crucial to focus fire power rapidly and remain mobile to ensure increased survivability. The movement to contact terminates when the attack element reaches the objective or limit of advance without enemy contact or upon contact with an enemy force.

FUNDAMENTALS

2-22. The fundamentals of movement to contact include:

- 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.

Focus all efforts on finding the enemy

2-23. Attack reconnaissance elements find the enemy by performing a movement to contact. The movement to contact is specifically focused on enemy force location and composition. Stealth by the force is of great importance, if the force is able to locate the enemy without being detected, it allows the commander time to develop the situation properly.

Gain enemy contact early with the smallest reconnaissance force within the allotted time

2-24. UAS platforms have the capability to stay oriented on the objective for long periods of time. These assets are well suited for gaining enemy contact with minimal detection and at standoff distance that complements their ability to remain stealthy, while setting the conditions for follow-on attacks by manned platforms. Conversely, manned platforms are fully capable of gaining contact, but may require more detailed planning for battle handovers and reliefs on station.

Maintain contact and fix the enemy while retaining the freedom of maneuver to prevent premature commitment of the protected force

2-25. If the battalion or squadron is the fixing unit, consideration must be given to augmentation with other enablers or maneuver forces unless the requirement is to fix by direct fire. An example of a common tactic for fixing is to block an enemy element from moving along its most likely avenue of departure. This blocking can be accomplished by mounted or dismounted elements, aviation forces, mines, or obstacles covered by fire. The key is ensuring the fixing unit has sufficient combat power and capability to react to the enemy in unanticipated locations. Aviation units generally require augmentation for fixing missions depending on enemy size and capability.

Maintain adequate follow on combat power to rapidly develop the situation after gaining enemy contact

2-26. UAS allows attack elements to develop the situation early and provide situational awareness about the enemy. A weaponized UAS takes advantage of its altitude and mobility to provide fires and targeting information. Select UAS can deliver onboard munitions or laser designate for munitions fired by joint and Army air or ground platforms.

Destroy, defeat, disrupt, divert, or delay enemy forces within capability or conduct battle handover or bypass in accordance with the commander's intent

2-27. Any maneuver force with the combat power to destroy the designated enemy force may accomplish this. Attack reconnaissance elements help destroy the enemy by massing fires in a hasty or deliberate attack, either independently or in combination with ground forces. The key to success for this part of the mission is the ability to bring the combat power to bear at the key time when the fixing force has halted the enemy's movement.

SEARCH AND ATTACK

2-28. A search and attack mission is a specialized technique of conducting a movement to contact to destroy enemy forces or deny an area to the enemy using smaller, maneuver units and attack reconnaissance or air assault forces in large areas. A search and attack may be best conducted against a dispersed enemy that only engages when he feels he has the advantage, in terrain, unsuitable for ground maneuver, in rear areas against enemy forces, infiltrators, unconventional forces, or as an area security mission to clear assigned zones. A search and attack is best used when the enemy is operating in small teams, over a large area in a generally decentralized manner. The purpose of a search and attack is destruction of the enemy, area denial, and/or force protection. Attack reconnaissance unit's conduct the search and attack mission similar to a movement to contact or an area security mission. The major elements of the search and attack are: find the enemy, fix the enemy, and destroy the enemy.

ATTACK

2-29. An attack is an offensive operation that destroys or defeats enemy forces, seizes and secures terrain, or both. An attack differs from a movement to contact because, in an attack, the commander knows part of the enemy disposition. This knowledge enables the commander to better synchronize and employ combat power more effectively. When the commander decides to attack or the opportunity to attack occurs during combat operations, the execution of that attack must mass the effects of overwhelming combat power against selected portions of the enemy force with a tempo and intensity that cannot be matched by the enemy. The resulting combat should not be a contest between near equals. The attacker must be determined to seek decision on the ground of his choosing through the deliberate synchronization and employment of his combined arms team (FM 3-90-1).

2-30. 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. Attacks are designed to destroy, defeat, disrupt, divert, and delay.

ATTACKS AGAINST ENEMY FORCES IN CLOSE FRIENDLY CONTACT

2-31. 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 coordination of Army Aviation fires.

2-32. 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.

2-33. When conducting attacks against enemy forces in close friendly contact, air mission commanders should have a clear understanding of the ground maneuver commander's intent. The attack reconnaissance unit uses terrain and the mutual protection of ground maneuver forces to maneuver unpredictably, while limiting exposure to enemy fires. Once the engagement is complete, the attack reconnaissance unit air mission commander provides the ground commander with a BDA. The air mission commander also provides a follow-on recommendation, such as re-attack, execution of a follow on task, or end-of-mission.

ATTACKS AGAINST ENEMY FORCES OUT OF FRIENDLY CONTACT

2-34. Army Aviation rotary-wing and unmanned aircraft systems, 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 air mission commander controls the maneuver and fires of Army Aviation within an area of operations 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 airspace control element.

2-35. 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 OE, Army Aviation attacks against enemy forces out of contact may be conducted as hasty attacks, but most often are deliberate attacks. This type of attack requires detailed planning and the full integration of manned and unmanned aircraft systems, and the simultaneous or sequential employment of CAS, indirect fires, and other enabling capabilities to mass effects, isolate, and destroy key enemy forces and capabilities.

2-36. When conducting attacks against enemy forces out of friendly contact, targets may be beyond the forward line of 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.

ATTACK FORMS

2-37. The amount of planning time available determines which form of attack the unit executes. Army Aviation conducts attacks with precise and discriminate fires to destroy, defeat, disrupt, divert, or delay the enemy. These attacks may be hasty or deliberate, depending on the level of detail and synchronization with the supported unit and higher headquarters.

Deliberate Attack

2-38. A deliberate attack is planned and carefully coordinated with all involved elements to provide synchronization of combat power at the decisive point. The deliberate attack requires thorough reconnaissance, evaluation of all available intelligence and relative combat strength, analysis of various courses of action (COAs), and other factors affecting the situation. To conduct a successful deliberate attack, the attack reconnaissance unit must effectively integrate with the overall ground scheme of maneuver, or the joint, operational, or tactical plan to shape the enemy prior to ground force contact.

2-39. Army aviation conducts deliberate attacks through the employment of both manned and unmanned aircraft systems. Attack reconnaissance units are employed as a highly mobile and lethal combat multiplier that provides the ground force commander aerial firepower and agile maneuver. Attack reconnaissance units conduct shaping with joint fires and air attacks to disrupt enemy elements forward or to the flanks of friendly ground elements.

Planning Considerations

2-40. Critical planning considerations for a deliberate attack include–

- Plan aerial passage of lines or cross LD.
- Air corridor and/or attack route planning.
- Determine ABFs and SBFs.
- EA development.
- Gaining and maintaining enemy contact.
- Integrate joint fires.
- Effects on the enemy.
- Develop direct fire plan and fire distribution technique to be utilized.
- Develop sustainment plan.

- Determine battle handover considerations.
- Communication plan
- Develop target priorities.

Hasty Attack

2-41. A hasty attack is an attack launched with the forces at hand and with minimal preparation to maintain the momentum or take advantage of the enemy situation. The objectives are to overwhelm the enemy quickly and seize the initiative. Speed is paramount; if momentum is lost, the hasty attack can fail. An attack with speed, audacity, and boldness can offset the lack of thorough preparation. The hasty attack depends on timely and accurate information as well as speed. When contact is made, commanders must immediately evaluate their chances of success. Attacking rapidly before the threat can react often brings success even when the threat possesses local combat superiority.

2-42. Hasty attacks often result from unexpected enemy contact. Unexpected contacts occur most often during reconnaissance, security, movement to contact, and in response to an enemy attack. In all cases, the attack reconnaissance unit conducts hasty attacks to rapidly develop the situation or overwhelm the enemy before it can adequately prepare. Hasty attacks are normally conducted without knowledge of the attack time, location, and threat until shortly before the mission or until making enemy contact. SOPs, battle drills, and contingency planning based on probable enemy actions and IPB improve the success or hasty attacks.

2-43. When contact is made, the unit commander or AMC must evaluate the chances of success in conducting a hasty attack and possible alternative COAs including maintaining contact and conducting a battle handover with a more capable force or bypassing the enemy force. Units report accurate and timely information to the higher headquarters to determine whether the hasty attack will be reinforced.

2-44. When the attack begins, crews develop the situation quickly and employ direct and/or indirect fires, to include joint fires. These actions also provide suppressive fires for maneuvering ground elements. Air reconnaissance provides OE information and situational updates on which the commander can base immediate decisions concerning the attack. The maneuver higher headquarters facilitates the sequencing of supporting assets into the attack. If CAS assets are available, an immediate joint air attack team (JAAT) may be executed.

Critical Tasks

2-45. The attack reconnaissance unit conducts a hasty attack to maintain momentum for current and future operations. This momentum relies on the unit's ability to destroy or force the threat to withdraw while maintaining combat power. The attacking unit accomplishes critical tasks to ensure the success of the hasty attack. These tasks may include—

- Establishing weapons delivery technique.
- Designating security responsibilities.
- Coordinating for indirect fires (if time available).
- Developing direct fire plan and fire distribution technique to be utilized.
- Develop sustainment plan.
- Conducting battle handover to ground elements if necessary.
- Reporting all combat information to higher.

EXPLOITATION

2-46. *Exploitation* is an offensive task that usually follows the conduct of a successful attack and is designed to disorganize the enemy in depth (ADRP 3-90). Exploitations seek to disintegrate enemy forces to the point where they have no alternative but surrender or take flight. Exploitations take advantage of tactical opportunities.

2-47. Attack reconnaissance elements may support a ground commander's successful attack and subsequent exploitation through follow-on attacks. Depending on the enemy's disposition following the initial attack, operations in support of exploitation may be hasty or deliberate. The level and depth of planning, synchronized with ongoing information collection efforts, directly contributes to the attack reconnaissance element's speed of action and support.

PURSUIT

2-48. A *pursuit* is an offensive task designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it (ADRP 3-90). A pursuit normally follows a successful exploitation. However, any offensive task can transition into a pursuit, if enemy resistance has broken down and the enemy is fleeing the battlefield. Pursuits entail rapid movement and decentralized control.

2-49. Similarly, the mobility and persistence of attack reconnaissance elements make them well-suited to support a ground commander's pursuit of a fleeting enemy. The enhanced operational reach enables the ground commander to destroy enemy forces in depth.

SECTION III – EMPLOYMENT

EMPLOYMENT METHODS

2-50. Timing is critical to the successful employment of the battalion. Employed too early, the battalion may have to disengage before mission completion because of low fuel. Employed too late, it may miss all or part of the targeted enemy unit, consequently failing to destroy the enemy force at the designated time and/or place.

2-51. The battalion commander employs the battalion after detailed coordination with the companies, support elements, and sustainment elements. The three methods of employment are:

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

CONTINUOUS ATTACK

2-52. To exert constant pressure on the enemy force, the battalion commander employs companies using the continuous attack method (figure 2-1). This method ensures at least one company will be in the battle at all times. While one company is engaged in the battle, the other two companies prepare to relieve the engaged company by positioning at the holding area (HA) or FARP, or maneuvering to the BP or ABF. The continuous attack method provides the commander with the most flexibility as well as the most efficient operation of the FARP.

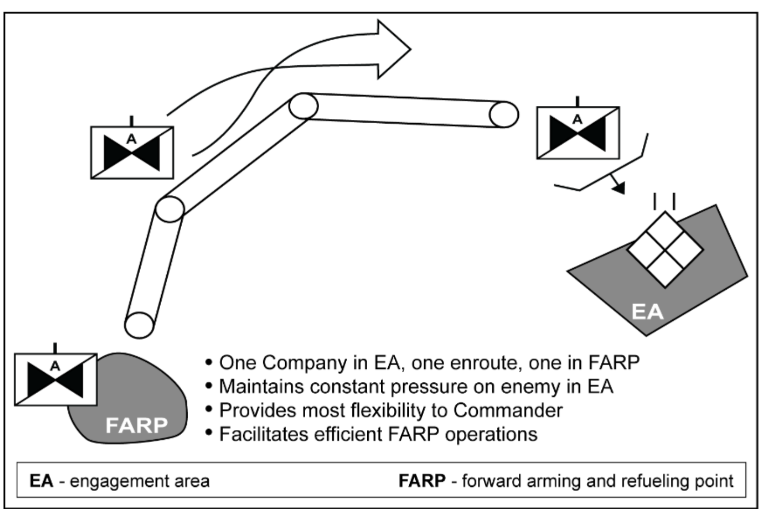


Figure 2-1. Example a continuous attack

PHASED ATTACK

2-53. To exert increased firepower of the battalion on the enemy force, the battalion commander employs one company to begin attacking the enemy and then quickly phases in the second company from a different BP or ABF (figure 2-2). The third company is phased into the fight when either of the other companies is low on fuel or ammunition. The commander may choose to modify this method of employment, for example, one company may be employed to set the conditions for the other companies to exploit the attack. During the phased attack, it is important to minimize aircraft turnaround time at the FARP. Generally, due to FARP limitations, the phased attack will eventually revert to the continuous attack method.

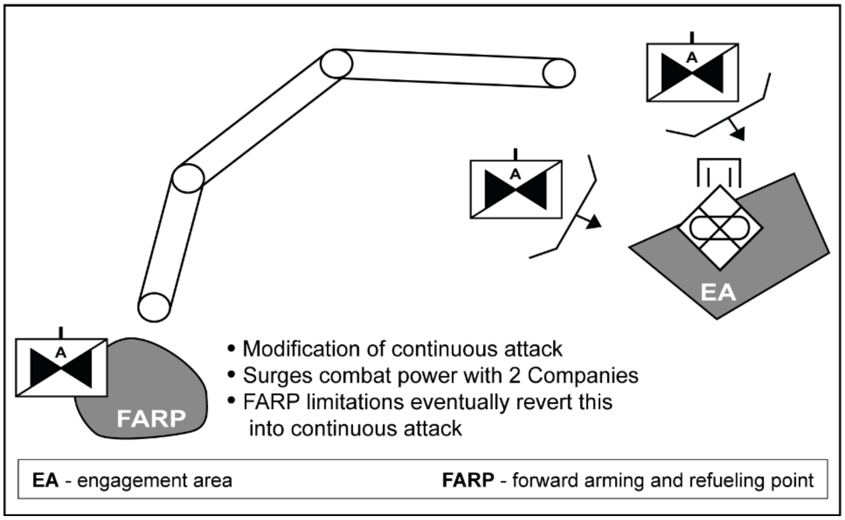


Figure 2-2. Example of a phased attack

MAXIMUM DESTRUCTION

2-54. To exert maximum combat power on the enemy force, the battalion commander will employ the maximum destruction method (figure 2-3). To overwhelm the enemy force with massed fires, the battalion will attack with all three companies simultaneously. While employing this method, it is important for the supported commander to understand the entire battalion may be out of the fight for 45 to 90 minutes at the completion of the initial attack. The time away from the fight will be dependent on the distance to the FARP and time required for refueling and rearming after the initial engagement.

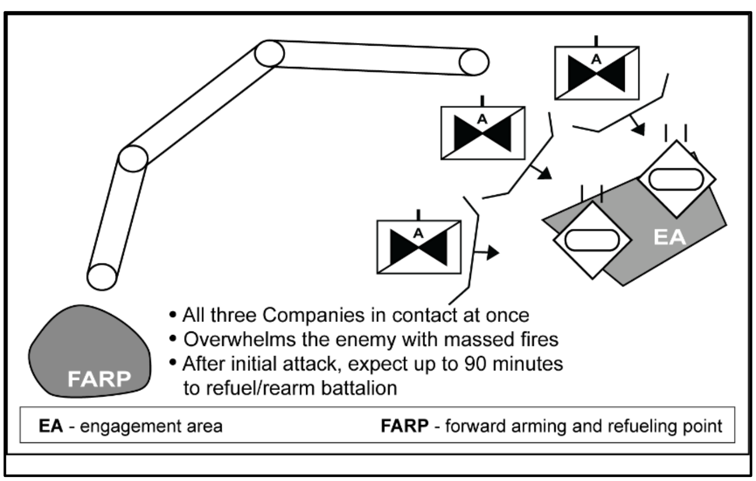


Figure 2-3. Example of a maximum destruction attack

COMMON OFFENSIVE CONTROL MEASURES

2-55. This section defines common control measures that a commander uses to synchronize the effects of combat power. The commander uses the minimum control measures required to successfully complete the mission while providing subordinates the flexibility needed to respond to changes in the situation.

ATTACK BY FIRE POSITION

2-56. An attack by fire (ABF) position designates the general position from which a unit conducts the tactical task of attack by fire (figure 2-4). The purpose of these positions is to mass the effects of direct fire systems for one or multiple locations toward the enemy. An attack by fire position is a non-restrictive control measure and does not indicate the specific site but a general location. Attack by fire positions are rarely applicable to units larger than company size.

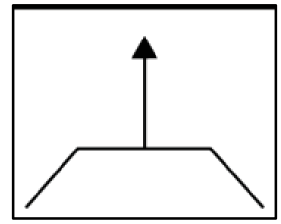


Figure 2-4. Attack by fire

SUPPORT BY FIRE POSITION

2-57. A support by fire (SBF) position designates the general position from which a unit conducts the tactical mission task of support by fire (figure 2-5). The purpose of these positions is to increase the supported force's freedom of maneuver by placing direct fires on an objective that is going to be assaulted by a friendly force. Support by fire positions are located within the maximum friendly direct-fire range of the enemy positions. The commander selects them so that the moving assault force does not mask its supporting fires. For this reason, support by fire positions are normally located on the flank of the assault force.

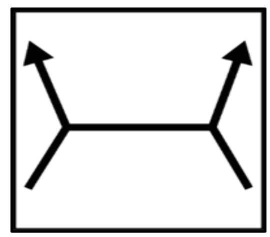


Figure 2-5. Support by fire

BATTLE POSITION

2-58. A battle position (BP) is an area designated for attack helicopters, in which they can maneuver and fire into a designated EA (figure 2-6). The BP is a restrictive control measure that depicts the location and general orientation of the attack unit. The commander selects positions based on the nature of the target, obstacles, range to target, multiple firing positions, and area to maneuver.

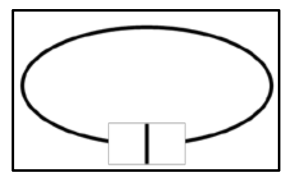


Figure 2-6. Battle position

FIRE POSITION

2-59. Attack helicopter pilots in command (PICs) select the actual firing positions (FPs) that provide standoff ranges and good fields of fire within their BP, ABF, or SBF. Ingress and egress routes should be well-concealed, and the background of the FP should reduce the risk of visual acquisition by the enemy. Selected FPs must also allow freedom of movement for the attack helicopters and permit them to be hovered without raising dust or debris. To increase aircraft survivability, attack helicopter aircrews should limit the number of engagements from a single FP and move before they receive effective counter-fire (figure 2-7).

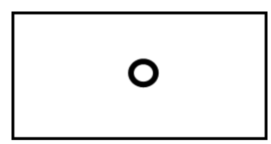


Figure 2-7. Fire position

HOLDING AREA

2-60. The HA is the last covered and concealed position prior to the objective which allows for final reconnaissance and coordination of assets by the commander. It is normally located 2 to 5 kilometers behind the FLOT. The HA may also be located in a forward operating base or a tactical assembly area (TAA) to facilitate efficient FARP operations. Occupation of the HA is based on METT-TC and should adhere to the following guidelines:

- Aircraft remain at NOE altitudes at or within the vicinity of the HA.
- Aircraft maintain operating revolutions per minute (aircraft will not be shut down).
- Aircrews maintain radio silence.
- Separate HAs are established for each company.

- Aircraft establish positions that provide 360-degree security (figure 2-8).
- The 12 o'clock position is oriented towards the enemy.
- HA is terrain masked and free of sources of rotor wash signature.

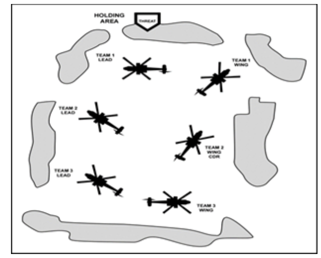


Figure 2-8 Holding area occupation

ENGAGEMENT AREA

2-61. The EA is an area in which the commander intends to trap and destroy an enemy force with the massed fires of all available weapons and supporting systems (figure 2-9). Commanders must use obstacles (natural and/or man-made), FS, fire distribution plans, and a thorough IPB to coordinate both combined and joint fires and mass them against the enemy force as it arrives in the EA. To exploit enemy weaknesses and maximize the advantages of terrain, battle and firing positions are selected in relation to EAs. A good EA should have at least the four characteristics listed below.

- **(1) BPs.** The EA should have several BPs for attacking the enemy from various directions.
- **(2) Obstacles to movement.** Obstacles, either natural or man-made, are desirable in the EA to slow target movement and permit the effective use of direct and indirect fires.
- **(3) Long-range fires.** To enhance aircraft survivability, an EA should allow aircrews to engage targets at the maximum range that permits a high probability of kill (Pk).
- **(4) Continuous target visibility.** Long-range engagements require that the target be in view during terminal guidance. As a rule, EAs should provide an unobstructed view of the target from firing or designating positions. Planning should concentrate on sensor ranges, not weapon maximum standoff ranges, for EAs.

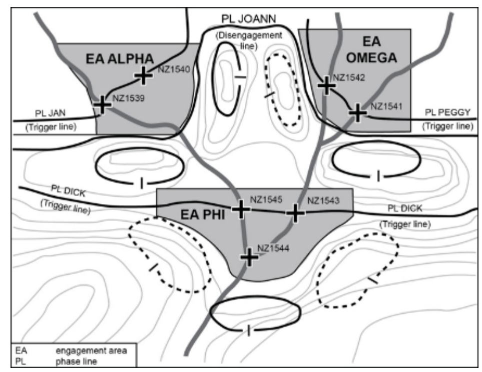


Figure 2-9. Example of engagement areas

TARGET REFERENCE POINT

2-62. A target reference point (TRP) is an easily recognizable point on the ground (either natural or man-made) used to initiate, distribute, and control fires (figure 2-10). TRPs can also designate the center of an area where the commander plans to distribute or converge the fires of all his weapons rapidly. TRPs are designated using the standard target symbol and numbers issued by the fire support officer. Once designated, TRPs may also constitute indirect fire targets.

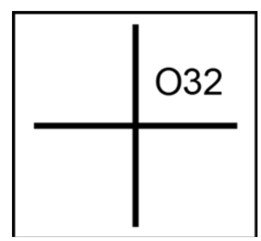


Figure 2-10. Target reference point

CONTROL MEASURE CONSIDERATIONS

2-63. Aircrews and staff use the mnemonic NORMA as a starting guide to select optimum ABF and BPs for attack helicopters and the mnemonic BRASSCRAF to select individual attack helicopter firing positions. Additional consideration of enemy threat effects must also factor into position selection, and fire and maneuver.

SELECTION OF BP/ABF/SBF

2-64. The crew/staff selects positions based on the following considerations (NORMA):

Nature of the Target

- The primary target's type, quantity, and location.
- Target's vulnerability and desired aim points selected to cause maximum damage.
- Target signatures: visual, forward looking infrared (FLIR), NVG, or radar cues to identify target.
- Target passive defenses: camouflage, concealment, and deception (CCD) techniques expected.
- Target active defenses: Define enemy weapons engagement zone.

Obstacles

- Physical obstacles to target attack such as intervening terrain and vegetation.
- Man-made structures such as power lines highway, noise walls. ATO "No-Strike List" protected sites or other restrictions to attack directions or ordinance. Civilian population/collateral damage concerns in close proximity to possible target area.
- Environmental restrictions: cloud ceilings, visibility, icing excessive winds, heat, and density altitude.

Range to Target

- Determine weapon system to be employed in attack.
- Determine friendly weapons engagement zone in 4-dimenstions.
- Does proposed ABF allow for maximum standoff distance from the target?
- Does proposed ABF allow for adequate maneuver area for unexpected contacts or events?
- Consider exposure time, element of surprise, and time required to engage target.

Multiple Firing Positions/Lanes

- ABF should support mutual coverage between aircraft within a team while still allowing for sufficient distance for individual maneuvering to avoid the possibility of becoming a single target for the enemy.
- The positions/lanes must support the aircraft by keeping exposure time for team elements to a minimum.

Area to Maneuver

- Allows freedom of movement for maneuver with sufficient distance between aircraft and teams while supporting mutual coverage.

SELECTION OF FIRING POSITIONS

2-65. Selection of firing positions should be based on the following considerations (BRASSCRAF):

- **Background**. The crew should utilize indirect terrain masking to ensure the helicopter is not silhouetted.
- **Range**. The kill zone should be within the last one-third of the weapon's range for aircraft survivability. Range must be within the minimum and maximum effective range of the selected weapon system, and should be outside the enemy's maximum effective range.
- **Target altitude**. The firing position should be level with or higher than the target area, if possible. Altitudes above the target may affect minimum engagement ranges for Hellfire lock on after launch (LOAL) engagements. It may not be possible to engage targets above the aircraft.
- **Sun or full moon**. Plan to attack with the sun/moon behind or to the side of the helicopter to restrict enemy aided or unaided vision.
- **Shadow**. The firing position should be within an area covered by sun shadow, moon shadow, or artificially produced shadow.
- **Concealment**. Terrain, man-made objects or vegetation around the firing area should be sufficient for the helicopter to remain masked.
- **Rotor wash**. The location of the firing position should avoid or reduce the visual signature caused by the effect of rotor wash on the surrounding terrain (for example, debris, trees, snow, and dust).
- **Maneuver area**. The position should permit concealed entry and exit and obstacle avoidance to successfully accomplish evasive and emergency procedure maneuvers. This may require the establishment of running or diving fire lanes.
- **Fields of fire**. The target/EA must be visible throughout the kill zone.

2-66. The firing position must allow for autonomous direct fire engagements, and provide obstacle clearance for ordnance delivery. The field of fire must allow for the time of flight of the helicopter's weapons to impact before the enemy can transition to cover.

TECHNIQUES OF WEAPONS DELIVERY

2-67. Attack reconnaissance units use varying delivery techniques to engage the enemy. The environmental conditions, aircraft performance limitations and characteristics, type of threat, terrain, and the proximity to friendly troops will be considered when selecting a technique of fire. These delivery techniques are divided into three types—hover fire, running fire, and diving fire.

HOVER FIRE

2-68. Hover fire is any engagement conducted below effective translational lift. It may be either stationary or moving. When optimal cover and concealment, environmental conditions, and the mission variables dictate (e.g. low flight ceiling due to coordinating altitude or other ACM), RW elements may choose this technique.

RUNNING FIRE

2-69. Running fire is an engagement from a moving helicopter above effective translational lift. Forward airspeed adds stability to the helicopter and increases the delivery accuracy of non-guided munitions, particularly rockets. This dynamic technique maximizes survivability from small arms and rocket-propelled grenade fire, and enables direct and indirect fires from the aerial weapons platform.

DIVING FIRE

2-70. Diving fire is a direct-fire engagement from a helicopter in a diving flight profile in accordance with the aircrew training manual. The greater airspeed and altitude of the aircraft improve the accuracy of engagements, particularly for rockets, and enable a smaller beaten zone.

ATTACK METHODS

2-71. Aircrews employ varying attack methods to engage the enemy. These attack methods are low/level attack, bump attack, and high attack.

LOW–LEVEL ATTACK

2-72. Low-level attack is used when the aircraft is required to maintain terrain flight or nap-of-the-earth when engaging a target. An advantage of this technique is the aircrew's ability to maintain a lower profile that is masked by background terrain or vegetation making it difficult for the enemy to judge closure. A disadvantage is the aircrew may not be able to engage the target at maximum range of the weapons system due to targeting hindered by a level viewing angle. Additional disadvantages include limited line of sight (LOS), decreased accuracy due to increased dispersion resulting in decreased weapons effect and increased chances for fratricide and collateral damage. Disadvantages may be mitigated through the use of another remote designator. Figure 2-11 illustrates the low-level attack technique.

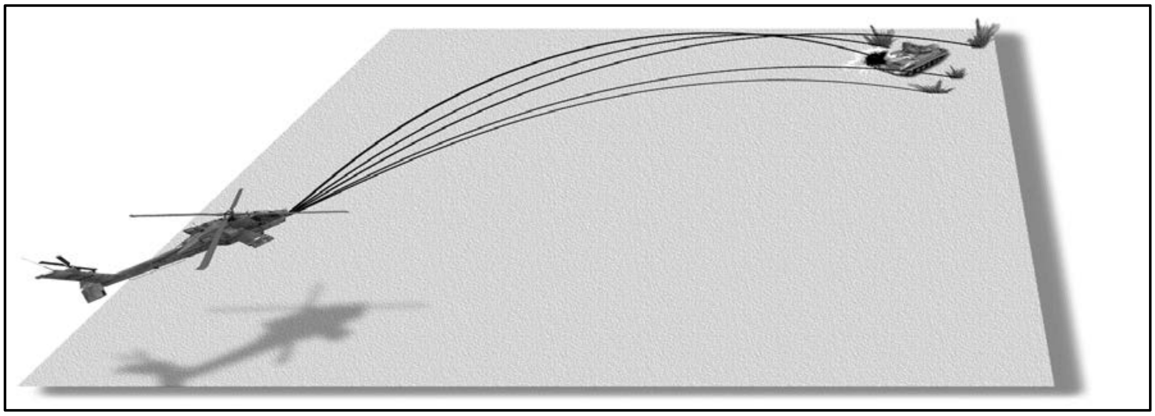


Figure 2-11. Low level attack

BUMP ATTACK

2-73. A *bump/bump-up* is a climb to acquire line-of-sight to the target or laser designation (ATP 1-02.1). The bump attack is used to take advantage of masking terrain while increasing the angle of attack or to improve target acquisition; normally used during running fire, transitioning to diving fire. Each aircrew bumps up prior to or during weapons engagement and then returns to terrain flight altitude.

2-74. Advantages of this technique are the aircrew's increased ability for longer distance engagements, dispersion of weapon's effects is decreased, lookdown angle is increased potentially making target identification easier, and aircraft momentum is maintained for maneuver. Disadvantages include silhouetting of aircraft on horizon during bump, and excessive bump reduces airspeed and energy for maneuver. Figure 2-12 illustrates the bump attack.

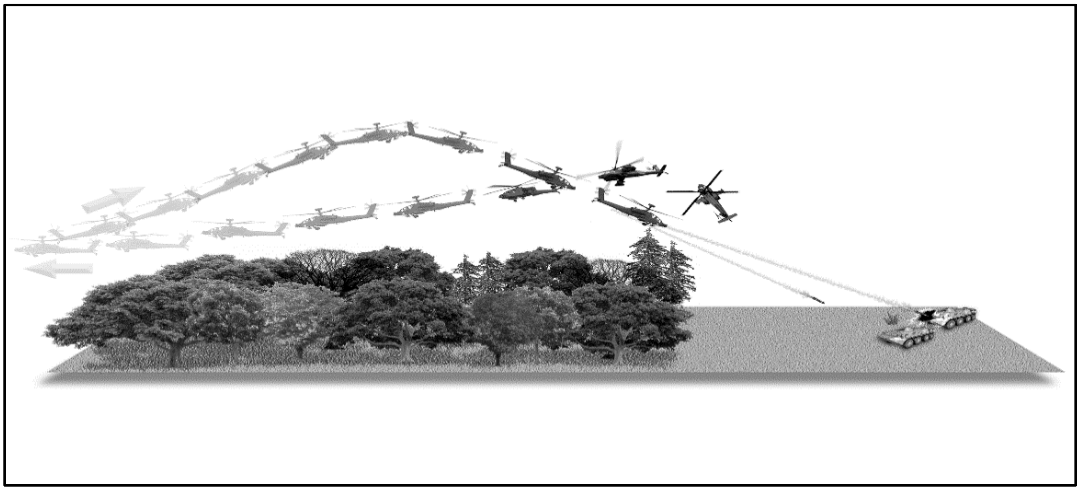


Figure 2-12. Bump attack

HIGH ATTACK

2-75. High attack is used during diving fire when aircraft are required to maintain higher altitudes, normally greater than 1,000 feet. This technique is especially useful for following targets through urban areas and allows for remote engagements. Other advantages include aircraft remain above small arms fire while retaining energy for maneuver, allows for greater target identification within urban areas or restrictive terrain, and minimizes weapon's effects dispersion and laser error. A disadvantage is the higher altitudes enable greater effectiveness of threat IR and RF missiles. Figure 2-13, page 2-15 illustrates high attack.

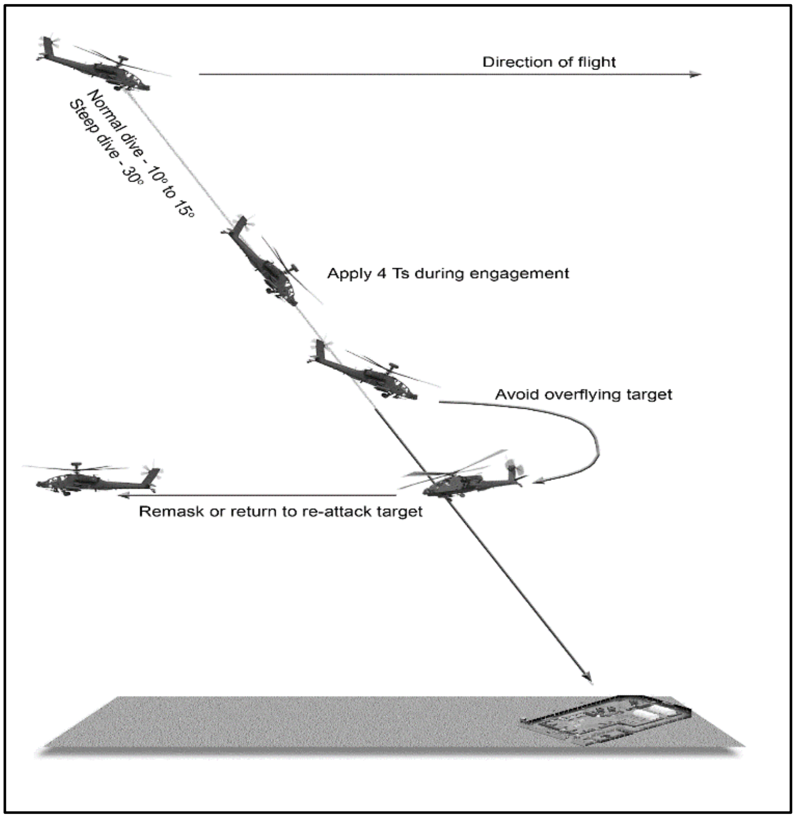


Figure 2-13. High attack

2-76. Combinations of the weapons delivery techniques listed may be performed. Variations may be required, but the basics remain the same. Careful consideration must be given to power available, station time, continuous attack or team attack, and ordinance to be delivered. Direction of attack should be based on the same factors used in firing position selection and METT-TC.

PATTERNS FOR ATTACK

2-77. Attacks are characterized by maneuver and fires. Aircraft are typically employed using attack patterns. Attack patterns are used when the enemy situation, weapons delivery, or environmental conditions require a dynamic profile. They are used to maintain aircraft within proximity of the target, improve weapons accuracy, and minimize risk associated with static fire. Combat maneuvering is executed based on METT-TC. Maneuvering flight communications require clear concise instructions using standardized terms as the most efficient method of communicating intent to the flight, such as “team one, mortar team, 11 o’clock, running fire, cloverleaf attack left turns, rocket and gun”.

2-78. Teams utilize attack patterns to maximize weapons effectiveness and minimize exposure to the threat. Factors affecting the selection of attack patterns include type/size of threat, ordnance to be fired, available attack lanes, weapons delivery technique, and location of friendly forces. Examples of attack patterns utilized by the air weapons team (AWT) are racetrack pattern, L attack, and cloverleaf attacks. Company/platoon attacks can be accomplished utilizing the following methods with multiple teams. These attack patterns are modified to the OE’s dynamic and are situational dependent. The AMC modifies the timing of the attack run to provide for a simultaneous or continuous attack (figure 2-14, page 2-16). This is accomplished by adjusting the spacing between lead and wingman or the timing of the attack runs between multiple teams.

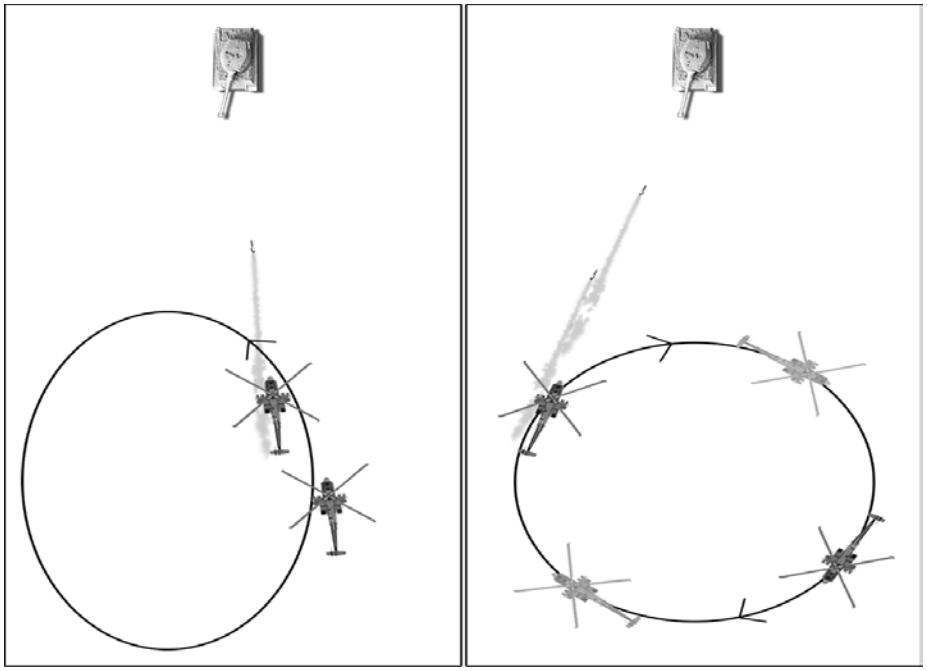


Figure 2-14. Example of simultaneous and continuous attacks

2-79. A simultaneous attack is executed from combat spread or combat cruise formation and is normally utilized when taking fire from the target area. Wingman's attack is timed to provide suppressive fire for lead's break-off of the target. Wingman may also fly roughly 45 degrees offset from lead on the side opposite lead's break. This permits suppression of the target area while lead is engaging and facilitates rapid disengagement from the attack run Wingman should maintain greater standoff during attack run because lead cannot provide coverage. Ideally, aircrews vary the direction of the attack after each turn.

2-80. A continuous attack separates the team's movement with only one aircraft inbound to the target area at a time. This technique is normally employed when the threat to the team is low or constant fire is desired on the target area. A continuous attack requires greater control and timing; the lead aircraft should maintain an established airspeed in order for the wingman to maintain proper spacing. Once this relationship is understood, modifications can be made to the break point, speed and delivery techniques. Simply stated, one aircraft is inbound while the other is outbound

RACETRACK PATTERN

2-81. The racetrack pattern is the basic attack pattern from which all others are derived and is used to coordinate actions by each team member. The racetrack pattern is divided into three circuits based on weapon system capabilities and average attack speed. Teams adjust distance to targets as necessary based upon METT-TC. The three circuits are full, outer, and inner (figure 2-15, page 2-17).

- **Full circuit**. Provides maximum standoff and is primarily used for missile engagements.
- **Outer circuit**. Outside enemy crew-served weapons range and allows gun, rocket, and missile delivery; accuracy is reduced for gun and rocket engagements.
- **Inner circuit**. Outside enemy small arms range and enables gun and rocket engagements with best accuracy.

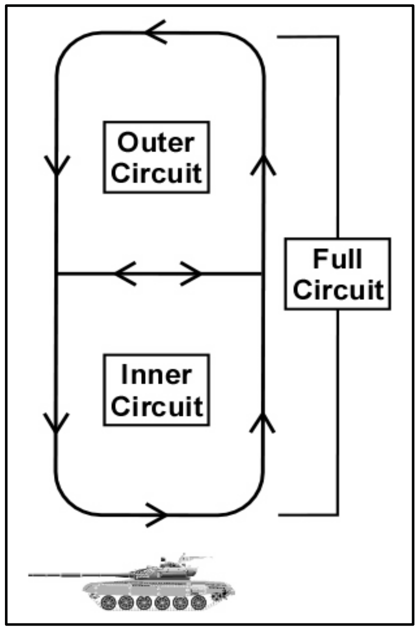


Figure 2-15. Example of a racetrack pattern

45–Degree Attack Pattern

2-82. The 45-degree attack pattern allows the wingman to place effect fire upon the target from a different angle and fire nearly simultaneously with the lead aircraft if required. The wingman displaces in azimuth and elevation to force the enemy to redirect and attenuate his defense. Figure 2-16, page 2-18 depicts a 45-degree attack pattern.

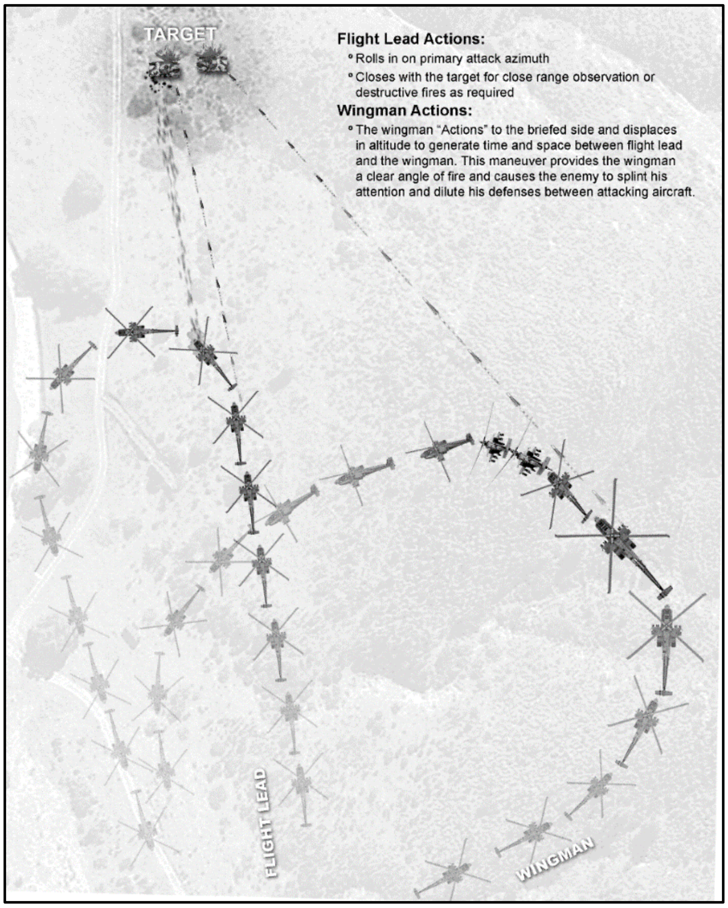


Figure 2-16. Example of a 45-degree simultaneous attack

CIRCULAR/WHEEL PATTERN

2-83. The wheel pattern is often utilized for reconnaissance of a point target or area of interest such as a suspected improvised explosive device (IED) site. It is suitable for observation, target designation and the use of off axis weapons. This technique allows constant observation of the target from multiple angles. It also allows the flight to engage the target from multiple directions simultaneously. One prerequisite of this pattern is vertical separation between aircraft in the pattern. This will help to mitigate the collision hazard as well as provide some de-confliction of fires. Figure 2-17, page 2-19 is an example of a circular pattern.

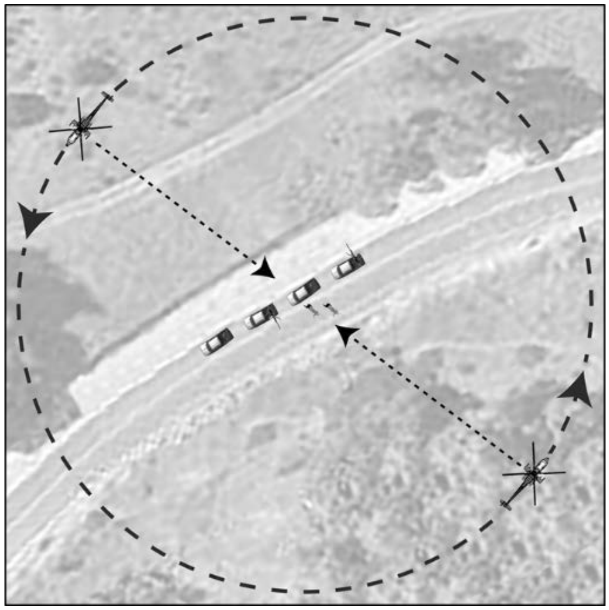


Figure 2-17. Example of a circular attack pattern

Cloverleaf Attack Pattern

2-84. The cloverleaf pattern is a basic variant to the racetrack pattern and eliminates the predictability caused by multiple attack runs from the same direction. Number of leaves flown, engagement range, and timing are all flexible. When utilized with multiple teams the enemy is confronted with a high volume of fire from constantly changing directions. Care must be taken to avoid firing into other teams or overflying the target(s). Figure 2-18 provides an example of a cloverleaf attack pattern.

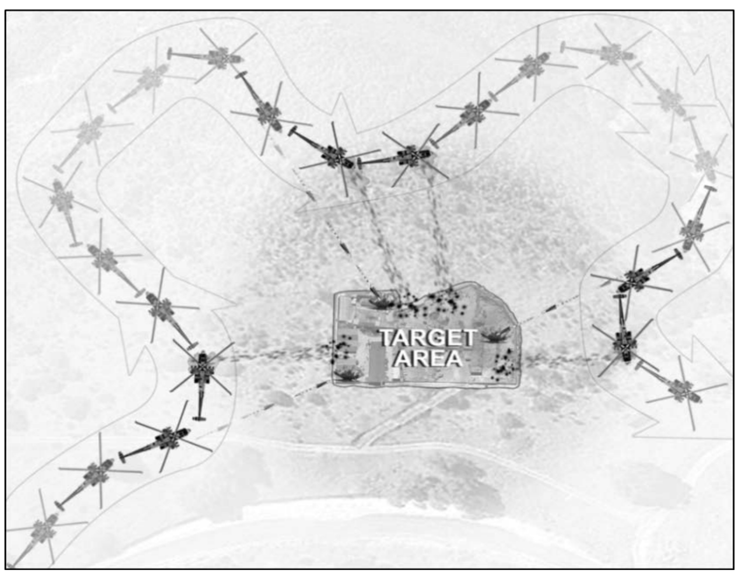


Figure 2-18. Example of a cloverleaf pattern

L-Attack Pattern

2-85. The L-attack pattern is used to attack a target requiring a large volume of fire for a short duration utilizing two AWTs. This pattern is capable of attacking linear targets masked by high terrain or obstacles on one side. Timing between teams is critical to provide simultaneous fire against the target. If a large volume of fire is not required both teams can establish racetrack patterns, and proper timing allows one helicopter at a time to provide neutralization fire. Figure 2-19 provides an example of an L-attack pattern.

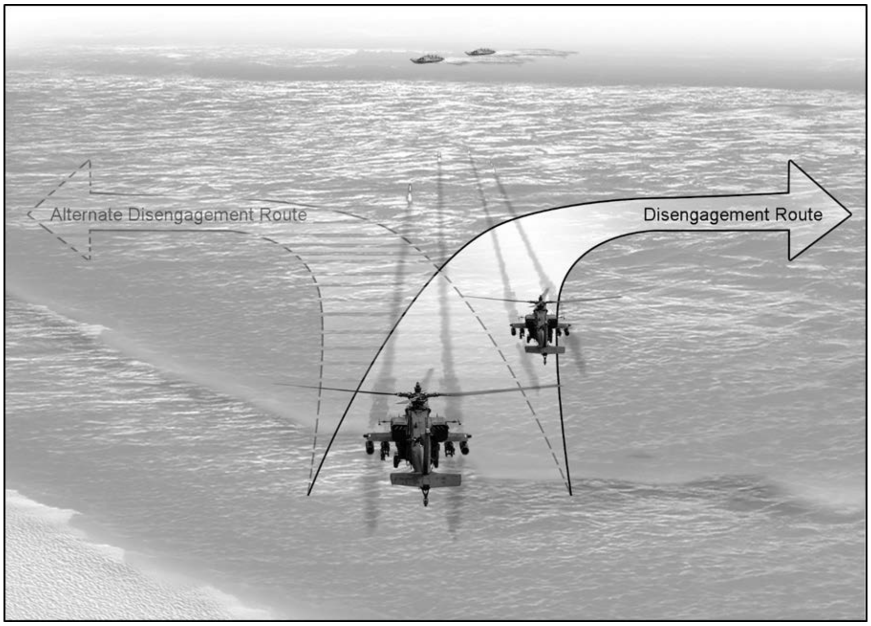


Figure 2-19. Example of an L-attack pattern

FIGURE 8 PATTERN

2-86. The Figure-8 pattern alternates the direction of attack and egress within a limited maneuver area (figure 2-20). Similar to a cloverleaf pattern, it is best suited for targets with natural or man-made obstacles limiting inbound attack directions.

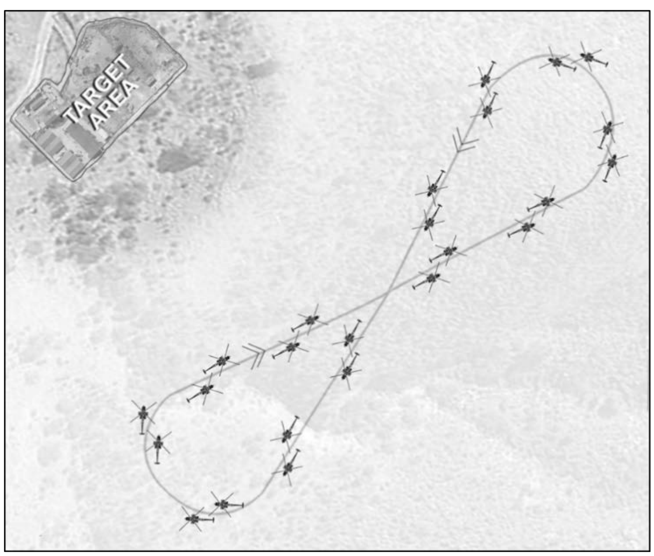


Figure 2-20. Example of a figure-8 pattern

WEAPONEERING

2-87. Munitions selected must be appropriate for the target and provide the most standoff capability. Accuracy and reliability must be considered when firing near friendly troops. Collateral damage could be another consideration in some areas of operation. Figure 2-21 lists the most common munitions found in Army aviation.

MUNITIONS AND EFFECTS	
Munition Designation	**Discription - Effect**
	Hellfire Missiles
AGM-114 A/B/C/F/K	Shaped charged warhead - Designed for use against armored vehicles.
AGM-114 F/A, K2A	Shaped charged warhead with fragmentation sleeve.
AGM-114 L	Shaped charged warhead - Radar guided.
AGM-114 M	Blast fragmentation warhead - Delay fuse only
AGM-114 N	Blast fragmentation warhead with metal augmented charge - Overpressure.
AGM-114 R	Multi-role. Programable fuse, Integrated Blast Fragmentation Sleeve
AGM-114 P+	Variants, capable of unmanned aerial system off-axis employment.
AGM-114 P4	Shaped charged warhead (K).
AGM-114 P-AA	Shaped charged warhead with fragmentation sleeve.
AGM-114 P2A	Shaped charged warhead with fragmentation sleeve (K2A).
AGM-114 PN4	Blast fragmentation warhead with metal augmented charge (N).
	Gun
30mm	High Explosive Dual Purpose shaped charge and fragmentation.
	Rockets
High Explosive	
M-151 (10-lb.)	High explosive. Point detonation or time delay fuse.
Small Guided Munition	Laser-guided rocket attachment for the M-151
M-229/146 (17-lb.)	High explosive. Point detonation or time delay fuse.
M-261	Multi-purpose submunition shaped charge/fragmentation submunition.
Illumination	
M-257	Overt illumination, one million candlepower, average 100 sec. burn.
M-278	Covert (near infrared) illumination (.7-1.1 microns) average 180 sec. burn.
Flechette	
M255A1	1,179 60 grain flechette.
Phosphorous	
M-156	White phosphorous. Used for target marking
M-264	Red Phosphorous. Smoke screening.

Figure 2-21. Munitions and Target Types

SECTION IV – SUPPORT REQUESTS, BRIEFS, AND CHECKLISTS

ATTACK AVIATION CALL FOR FIRE

2-88. The attack aviation call for fire is a combined arms attack TTP conducted by Army Aviation manned and unmanned aircraft maneuvering as a member of the combined arms team to enable friendly ground maneuver forces, in close enemy contact, to gain or maintain a position of relative advantage. The ground maneuver commander in contact controls the synchronization and integration of Army aviation maneuver and the distribution and coordination of Army aviation fires.

2-89. Effective planning, coordination, and training between ground units and armed aircraft maximize the capabilities of the combined arms team, while minimizing the risk of fratricide. The key to success for enhancing air-ground coordination and the subsequent execution of the tasks involved begins with standardizing techniques and procedures. This procedure is best suited for units maintaining a habitual combined arms relationship during training and war. However, attack aviation can provide call for fire to any unit regardless of training level.

CHARACTERISTICS

2-90. Characteristics of an attack aviation call for fire include—

- Conducting fire and maneuver in close support of ground forces.
- Providing complementary fires and maneuver while taking advantage of terrain, standoff, and ground forces for protection.
- Providing reinforcing fires.
- Continuing development of dynamic situation.
- Extending the tactical reach of maneuver forces, particularly in urban and other complex terrain.
- Presenting the enemy with multiple/simultaneous dilemmas from which it cannot escape.
- Establishing and control the operating tempo (OPTEMPO) of the fight.
- Providing extended acquisition range and lethality to the force after contact is made.
- Aviation OPCON to ground forces as situation dictates.

CRITICAL TASKS

2-91. Critical tasks accomplished during conduct of an attack aviation call for fire include— fragmentary order (FRAGORD), check-in-brief, 5-line, and technique, pattern, munition, and range (TPM-R) brief.

FRAGMENTARY ORDER

2-92. The FRAGORD is critical if the planning process is hasty. It is issued to the AMC either to update or change current mission. It contains all the information needed to complete the mission and paints a clear picture of the current friendly and enemy situation, assigns a clear task and purpose, and communicates the identification (friend or foe) signals utilized. The FRAGORD is issued as a no change or contains any changes occurring since the final conditions check. The FRAGORD includes—

- Situation.
  - Enemy.
  - Friendly.
- Mission.
  - Task.
  - Purpose.
- Coordinating instructions.
  - Friendly location.
  - Friendly marking.
  - Enemy location.
  - Enemy marking (how friendly units will mark the enemy).
  - Command and control net for confirmation/commands.
  - Clearance of fires approval authority on the ground (call sign, location, and frequency).

CHECK-IN BRIEF

2-93. The check-in brief gives the ground commander information on the air reconnaissance team's restrictions or limitations. It is used each time a new team arrives on station. It is especially useful when a new team arrives with a different task organization, ammunition configuration, station time, or optical capability than was previously briefed. The AMC should request a task and purpose from the ground maneuver commander upon completion of the check-in brief. Table 2-1, page 2-23 provides a sample Army Aviation check-in brief (ATP 3-09.32).

Table 2-1. Army aviation air-to-ground check-in brief

Aircraft: "_________________________, this is ___________________________." (ground unit) (aircraft call sign)
Aircraft Team: "____." (composition and location)
Munitions Available: "____." (rockets/guns/missiles)
Night Vision (if applicable): "____." (capability and type)
Station Time: "____." (minutes)

Attack Aviation Call For Fire (5-Line)

2-94. The 5-Line is used to initiate the Army aviation fires on the enemy. It involves communication between the ground commander and team conducting the attack. The 5-Line brief is a "friendly centric" brief that does not require a joint terminal attack controller (JTAC). The brief allows the ground maneuver forces to communicate and reconfirm to the attack reconnaissance teams the exact location of friendly and enemy forces. This brief should be initiated as soon as possible in order to give the AWT time to develop a plan of attack. Marking techniques vary from one ground unit to another. Common means of marking friendly units include VS-17 panels, meal, ready to eat (MRE) heaters, IR strobes, IR chemical lights, and glint tape; all work well depending on terrain, foliage, and relative location of the AWT teams to the ground forces. Table 2-2 provides a sample 5-Line format (ATP 3-09.32) which is initiated by the ground commander.

Table 2-2. Army attack aviation and special operations forces gunship call for fire format

Army Attack Aviation and Special Operations Forces Gunship Call for Fire Format
1. Observer and Warning Order **"_______________, this is___________________, fire mission, over"** (aircraft call sign) (observer call sign) 2. Friendly Location and Mark **"My position_________________, marked by___________________"** (TRP, grid, etc.) (strobe, beacon, IR strobe, etc.) 3. Target Location **"Target Location____."** (bearing (magnetic) and range (meters), TRP, grid, etc.) 4. Target Description and Mark **"______________________, marked by______________________."** (target description) (infrared pointer, tracer, etc.) 5. Remarks: "____, **over."** (threats, danger close clearance, restriction, at my command, etc.)
Notes: 1. Clearance. If airspace has been cleared between the employing aircraft and the target, transmission of this brief *is* clearance to fire unless "danger close" or "at my command" is stated." 2. Danger Close. For danger close fire, the observer or commander must accept responsibility for increased risk. State "cleared danger close" in line 5 and pass the initials of the on-scene ground commander. This clearance may be preplanned. 3. At My Command. For positive control of the aircraft, state "at my command" on line 5. The aircraft will call "ready to fire", when ready.

2-95. The AMC/pilot in command (PIC) and ground unit key leaders must consider the risk to friendly forces before weapon selection and engagement. If friendly forces are in the lethality zone, the ground leader must be precise in describing the target that aircraft are to engage and should warn aircrews of the proximity of those forces. The AMC/PIC must be aware of his aircrews' skills in delivering fires near friendly forces and visualize exactly where those friendly units are located.

2-96. Ordnance delivered inside the 0.1 percent probability of incapacitation (PI) distance taken from ATP 3-09.32 will be considered "danger close". Engagements at ranges of danger close or less require extremely close coordination and positive identification. ATP 3-09.32 depicts risk estimate distances for all munitions employed by Army Aviation aircraft. The 0.1 percent PI equates to a horizontal distance from the intended weapons point of impact and the closest friendly troops. At this distance, the supported commander accepts a 1 in 1,000 chance of a friendly casualty as a result of the supporting arms attack. Risk acceptance is confirmed when the supported commander passes his initials to the attacking aircraft signifying that he accepts the risk inherent in ordnance delivered inside the 0.1 percent PI distance.

Technique, Pattern, Munition, and Range (TPM-R) Brief

2-97. Once coordination between the ground unit and the attack reconnaissance element is complete, the AMC develops the attack plan for aircraft. Planning considerations include—

- Technique of weapons delivery.
  - Hovering.
  - Running.
  - Diving.
- Pattern/direction of attack.
  - Inbound heading of initial attack run.
  - Racetrack (turns/pull offs).
  - Cloverleaf (turns/pull offs).
  - L-attack (turns/pull offs).
  - 45-degree attack (turns/pull offs)
  - Figure eight (turns)
  - Circular (turns)
- Munitions.
  - Type of target.
  - Minimize collateral damage.
- Ranges.
  - Bump point.
  - Start fire point.
  - Break/stop fire point.

2-98. During engagement, open communication and continuous coordination with friendly ground elements are required to ensure the desired effect. Coordination of direct and indirect fires from all participants produces the most efficient results in the least amount of time with the least risk to all involved. This coordination includes CAS and any other joint fires that may be employed.

ARMY RAPID RESTRICTED OPERATIONS ZONE REQUEST

2-99. When munitions from a UAS are requested in support of the ground maneuver commander, the pre-launch procedures involved are different than that of a RW aircraft because of the high altitude in which the platform operates. The procedure is designed to rapidly deconflict airspace through the appropriate controlling agency by establishing a restricted operations zone (ROZ). The ROZ is mandatory in order to mitigate fratricide and is only required when munitions are employed above the coordinating altitude (CA).

2-100. Figure 2-22, page 2-25 depicts an Army unit requesting an Army Attack Aviation 5-Line to an AWT with Gray Eagle on station. In this scenario, the Gray Eagle has target acquisition and can covertly and safely engage the target without compromising the AWT.

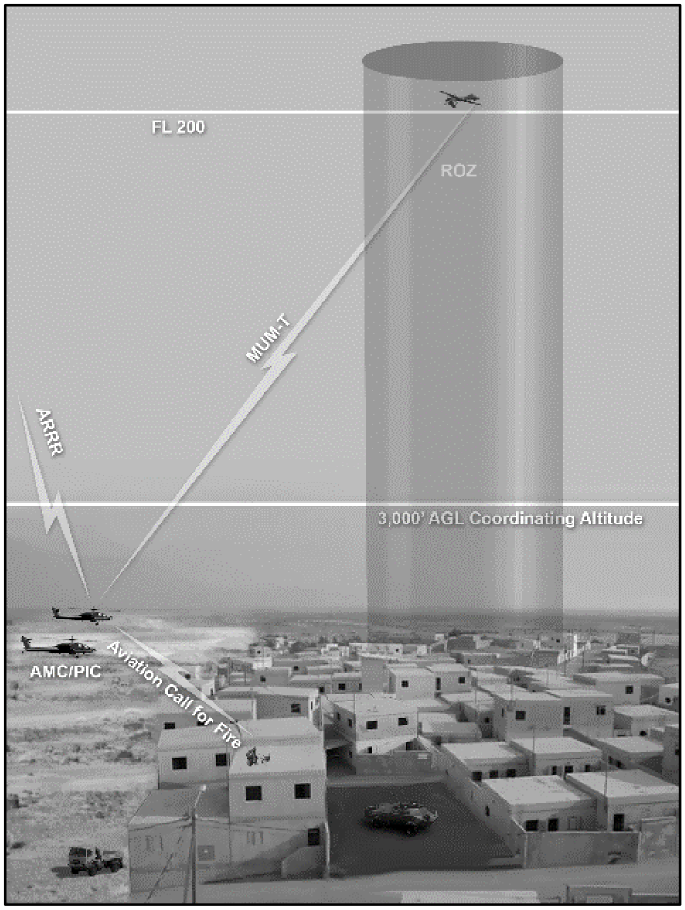


Figure 2-22. Example of a manned-unmanned teaming attack

2-101. The AMC/PIC of the AH-64D/E is able to monitor the video and control various sensors on the Gray Eagle depending on the level of interoperability. If it is deemed safer for the target to be destroyed from the Gray Eagle based on METT-TC; a ROZ must be established prior to weapons release. This ensures airspace is cleared and mitigate the risk of fratricide. The method to establish this ROZ is via voice or chat transmission (table 2-3, page 2-26). This request will typically be made through the airspace controlling agency, via the JAGIC or the BCT ADAM/BAE cell. The purpose for this request is to clear the airspace quickly by establishing a ROZ over the target area. The following table is the format which will be initiated by the ground commander or AMC.

Table 2-3. Army rapid restricted operations zone request

Army Rapid ROZ Request
1. Observer / Warning Order **"_______________ , this is_______________, Immediate restricted operations zone (ROZ), Over"** (ADAM/BAE Call Sign) (AMC/PIC Call Sign) 2. Target Location **"Target Location ____ "** (Grid) 3. Gray Eagle Altitude **" Gray Eagle FL_________________"** (Altitude) 4. Remarks **"Advise when ROZ is established and provide initials, Over**"
Note. Clearance: Transmission of the 4-Line ROZ request **IS NOT** clearance to fire. Clearance to fire is established when ROZ is in effect.

ARTILLERY/MORTAR CALL FOR FIRE

2-102. The observer transmits the call for fire digitally or by voice. The key factor is deciding which method will best provide immediate responsive and accurate fires in every circumstance. Another important factor is the inability of all interested parties to monitor the digital traffic. There are six elements of the call for fire, they are: observer identification, WARNORD, target location, target description, method of engagement, and method of fire and control. When voice transmission is used, the call for fire is sent in three distinct transmissions to the fire direction center (FDC). Table 2-4 below depicts the elements of a call for fire, for additional information reference ATPs 3-09.32 and 3-09.30.

Table 2-4. Call for fire

1st Transmission
(1) Observer identification (Call Sign) (2) Warning order
2nd Transmission
(3) Target location
3rd Transmission
(4) Target description (5) Method of engagement (6) Method of fire and control

JOINT CHECKLISTS

CLOSE AIR SUPPORT

2-103. Although the Army does not consider its aircraft a CAS system, they can conduct attacks employing CAS joint TTP when operating in support of other forces. The flow and prosecution of CAS targets normally begins with a Check-in Briefing, a Situation Update Briefing followed by a CAS 9-Line and ending with a BDA report. In accordance with JP 3-09.3, Terminal Attack Control is the authority to control the maneuver of and grant weapons release clearance to attacking aircraft. A certified and qualified JTAC or forward air controller (airborne) (FAC [A]) is recognized across the Department of Defense as capable and authorized to perform terminal attack control. There are three types of terminal attack control: Type 1, 2 and 3. The commander considers the situation and issues guidance to the JTAC/FAC (A) based on recommendations from his staff and associated risks identified in the tactical risk assessment. The intent is to offer the lowest- level supported commander, within the constraints established during risk assessment, the latitude to determine which type of terminal attack control best accomplishes the mission. The three types of control are not ordnance specific, but are based on the following factors:

- **Type 1 control** is used when the JTAC/FAC(A) requires control of individual attacks and the situation requires the JTAC/FAC(A) to visually acquire the attacking aircraft and visually acquire the target for each attack.
- **Type 2 control** is used when the JTAC/FAC(A) requires control of individual attacks and is unable to visually acquire the attacking aircraft
- **Type 3 control** is used when the FAC/FAC(A)/JTAC requires the ability to provide clearance for multiple attacks within a single engagement subject to specific attack restrictions, and any or all of the following conditions exist: JTAC is unable to visually acquire the attacking aircraft at weapons release; JTAC is unable to visually acquire the target; and/or the attacking aircraft is unable to acquire the mark/target prior to weapons release. The JTAC/FAC(A) requires the ability to provide clearance for multiple attacks within a single engagement subject to specific attack restrictions.

2-104. Aircrews providing CAS must be familiar with North Atlantic Treaty Organization (NATO) standard brevity and use the correct brevity during all communications. Table 2-5 depicts the communication brevity calls for the JTAC weapons release authority. Prior to CAS target engagement, supported commanders also delegate weapons release authority to JTACs/FAC(A)s for specific engagements. The authority and responsibility for the expenditure of any ordnance on the battlefield rests with the supported commander. Weapons release authority grants JTACs/FAC(A)s the authority to provide the following clearance calls to attacking aircraft:

Table 2-5. Joint terminal attack controller clearance calls

ABORT (abort code)	Abort the pass. Do not release ordnance. Abort code should be included with the ABORT transmission if operating with non-secure communications. Abort calls are not limited to joint terminal attack controller (JTAC).
CLEARED HOT	You are cleared to release ordnance on this pass.
CLEARED TO ENGAGE	Type 3 control clearance. Attack aircraft flight leaders may initiate attacks within the parameters imposed by the JTAC. Attack platforms will provide "Commencing Engagement and Engagement Complete."
CONTINUE	Authorized to proceed with the attack profile, but you may not release any ordnance yet. Used to acknowledge aircraft without providing clearance.
CONTINUE DRY	Continue present maneuver, ordnance release not authorized. Used to provide approval to aircraft to continue the pass without expending ordnance during Type 1, 2, or 3 controls. (JTAC must use "Type 3, Continue Dry" for dry Type 3 controls.)

WARNING

The words "CLEARED", "HOT" and "ENGAGE" will be used only by the JTAC and when ordnance is actually to be delivered. Use standard radio calls to the maximum extent possible. This will reduce the chance of dropping ordnance on dry passes and reduce the risk of fratricide. The attacking aircrew shall not repeat "Cleared Hot" or "Cleared to Engage."

THE GAME PLAN AND CAS 9-LINE

2-105. A game plan is a concise and situational awareness (SA) enhancing tool to inform all players of the flow of the following attack (table 2-6, page 2-28). At a minimum, the game plan will contain the type of control and method of attack. The method of attack and type of terminal attack control are separate and independent constructs. Method of attack conveys the JTAC's/FAC(A)'s intent for the aircraft prosecution of the target; either the aircraft will be required to acquire the target (BOT) or not (BOC). The method of attack is broken down into two categories, BOT and BOC. These two categories define how the aircraft will acquire the target or mark. Any type of control can be utilized with either method of attack and no type of control is attached to one particular method of attack.

Table 2-6. Game plan and 9-line close air support brief

Game Plan and 9-Line CAS Brief
Do not transmit the numbers. Units of measure are standard unless briefed. Lines 4, 6, and any restrictions are mandatory readbacks. The joint terminal attack controller (JTAC) may request an additional readback. JTAC: **"______________________, advise when ready for game plan."** JTAC: **"Type (1, 2, 3) control (method of attack, effects desired or ordnance, interval). Advise when ready for 9-line."**
1. Initial Point / Battle Position: **"______________________________"** 2. Heading: **"____"** (degrees magnetic, initial point or battle position-to-target) Offset: **"_______. "** (left or right, when requested) 3. Distance: **"____"** (initial point-to-target in nautical miles, battle position-to-target in meters) 4. Target elevation: **"_____________________________________"** (in feet, mean sea level) 5. Target description: **"___________________________________"** 6. Target location: **"______________________________________"** (latitude and longitude or grid coordinates, or offsets or visual) 7. Type mark / terminal guidance : **"___________________________"** (description of the mark, if laser handoff, call sign of lasing platform and code) 8. Location of friendlies: **"_________________________________"** (from target, cardinal direction and distance in meters) Position marked by: **"__"** 9. **"Egress____"**
Remarks / *restrictions: • Laser to target line (LTL) / pointer target line (PTL) • Desired type and number of ordnance or weapons effects (if not previously coordinated). • Surface-to-air threat, location, and type of suppression of enemy air defense (SEAD_. • Additional remarks (e.g., gun-to-target line, weather, hazards, friendly marks). • Additional calls requested. • *Final attack headings or attack direction. • *Airspace coordination areas (ACAs). • *Danger close and initials (if applicable). • *Time on target (TOT) / time to target (TTT). • *Post launch abort restrictions (if applicable).
Note: For off-axis weapons, the weapons final attack heading may differ from the aircraft heading at the time of release. The aircrew should inform JTAC when this occurs and ensure weapon final attack headings comply with given restrictions.

ROTARY WING CLOSE AIR SUPPORT 5-LINE

2-106. The primary attack brief for RW CAS is the 9-Line. In certain situations, Army attack reconnaissance aircraft conducting attacks using the CAS TTP, may have higher situational awareness due to lower operating altitude yielding similar perspective to the JTAC and may not lose sight of the target during prosecution of attack. In these instances, the 5-Line Rotary Wing CAS brief is available to the JTAC to expedite fires (table 2-7, page 2-29).

Table 2-7. Rotary wing close air support 5-line brief

<table>
<tr><th>Rotary-Wing CAS 5-Line Brief</th></tr>
<tr><td>1. Observer / Warning Order / Game Plan
“______________________,______________________, 5-line,
(aircraft call sign) (JTAC call sign)
Type (1, 2, or 3) control, MOA (BOC or BOT), (ordnance requested).”</td></tr>
<tr><td>2. Friendly location / mark
“My position______________, marked by__________________“
(TRP, grid, etc.) (VS-17, beacon, IR strobe, etc.)</td></tr>
<tr><td>3. Target location
“Target location,______________________________________“
(magnetic bearing and range in meters, target reference point, grid, etc.)</td></tr>
<tr><td>4. Target description / mark
“____________________, marked by____________________.”
(target description) (IR marker, tracer, etc.)</td></tr>
<tr><td>5. Remarks / *Restrictions:
*Final attack headings
*LTL or PTL Surface-to-air threat, location, and type of SEAD
*ACAs
*Danger close and initials Additional calls requested
Additional remarks GTL, weather, hazards, friendly mark
*TOT / TTT
*Post launch abort coordination and considerations</td></tr>
<tr><td>Note: The rotary-wing CAS 5-Line should be passed as one transmission. If the restrictions portion is lengthy, it may be a separate transmission.
Legend:
ACAs- airspace coordination areas
BOC—bomb on coordinate
BOT—bomb on target
GTL- gun target line
IR—infrared
JTAC- joint terminal attack controller
LTL- laser target line
MOA—method of attack
PTL- pointer target line
TOT-time on target
TTT- time to target
SEAD—suppression of enemy air defense</td></tr>
</table>

SECTION V – ATTACK PLANNING

ATTACK PLANNING PROCESS

2-107. The battalion develops its plan in parallel with both higher headquarters and subordinate companies. In addition to planning for the operational mission, battalion and companies ensure the myriad of details involving aviation operations are accomplished. Units plan, coordinate, and rehearse concurrently while the plan is in development to make best use of available time and resources. The attack planning process begins with EA development and is broken into the following five phases:

- EA Development
- Route Planning
- Sustainment
- Review and Refine
- Rehearsal

ENGAGEMENT AREA DEVELOPMENT

2-108. The basic fundamentals of EA development and direct fire planning are summarized below.

- Battalions plan EAs. Companies conduct direct fire planning.
- Standardized fire commands according to joint brevity must be established by unit SOP and practiced by all leaders and crews.
- All crews must understand basic maneuver patterns and each crew's responsibility for target engagement by SOP.
- A well-planned engagement requires minimum radio traffic during execution; trigger points, priority of engagements, and targets are established in advance.
- Leaders must plan engagements within the "useable range" of the sensors, not merely "maximum range".
- All crewmembers must understand the mission and commander's intent.
- Conduct joint fire operations.
- Destroy enemy command and control elements, air defense systems, long-range surface to surface missiles and artillery, and reinforcing ground forces.

2-109. The battalion or TF is responsible for planning EAs, whereas the company conducts direct fire planning. The EA development process is characterized by four steps.

- **Step 1.** Intelligence preparation of the battlefield.
- **Step 2.** Select the ground for the attack.
- **Step 3.** Integrate the EA.
- **Step 4.** Direct fire planning.

STEP 1—INTELLIGENCE PREPARATION OF THE BATTLEFIELD

2-110. Upon receipt of the mission, the battalion S-2 begins the IPB process (see ATP 2-01.3 for more information on the IPB process). This initial process includes the following:

- Define the operation environment
- Describe environmental effects
- Evaluate the threat
- Determine threat courses of action

2-111. This process will provide the commander with possible enemy COAs. The S-2 should list these courses (most probable through most dangerous) in descending probability and select named areas of interest (NAIs) or points along enemy mobility corridors that confirm or deny a particular enemy COA. Enemy activity or lack of activity in a named area of interest (NAI) helps the S-2 refine his estimate of the enemy COA.

2-112. The S-2, in coordination with the S-3, identifies NAIs or points along the enemy's mobility corridors where interdiction of enemy forces by friendly force maneuver, fires, or jamming will deprive the enemy of a particular capability.

2-113. Additional points, DPs, may be selected based on time and space where critical events are expected to occur which will necessitate a decision. For example, the commander may designate the enemy's crossing of DP1 as the event requiring a decision on whether or not to launch the attack.

2-114. The IPB process drives the formulation of plans. At a minimum, the S-2 should answer the following questions before the OPORD is presented to the companies:

- Where is the enemy currently located?
- Where is the enemy going?
- Where can we best engage the enemy?
- When will the enemy be there?
- What weapons systems do the enemy have that can affect our unit?

STEP 2—SELECT THE GROUND FOR THE ATTACK

2-115. Once the S-2 identifies the enemy's most probable COA, the battalion commander picks the point on the ground where the enemy will be attacked. This is the point where the commander intends to mass combat power. Figure 2-23 illustrates steps one and two.

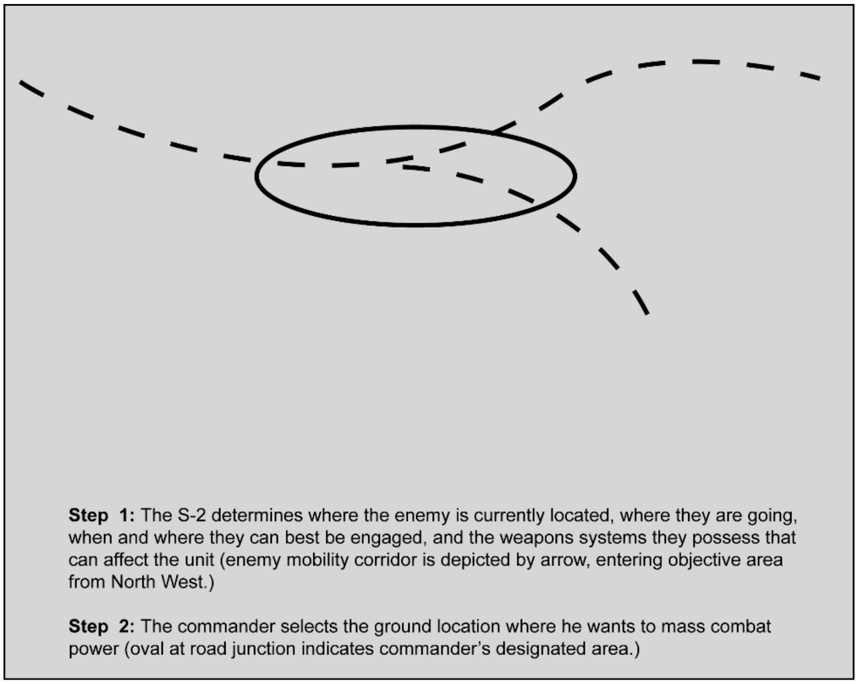


Figure 2-23. Engagement area development steps 1 and 2

2-116. During this step, the commander issues or reconfirms the nine elements of commander's guidance:

- **Guidance on enemy COA.** This element informs the staff which actions to focus on and which actions to dismiss.
- **Restated mission.** This element is the approved mission based on the essential task to accomplish, as determined by the commander.
- **Commander's intent.** This element is the purpose, key tasks, and endstate of the mission. It clearly states success criteria. End state is framed within the context of the relationship of friendly forces with respect to the terrain and enemy.
- **Concept of the operation.** This element features where, when, and how the commander is expecting to accomplish the mission.
- **Deception objective.** This element is the deception (if applicable) tied into the higher commander's plan. This may include deception suppression of enemy air defense (SEAD).
- **Priorities.** These elements are the commander's support and sustainment priorities. The staff focuses on the fueling, fixing, and rearming functions for the fight.
- **Time plan.** This element focuses the staff on the amount of time available to the battalion for EA planning, as well as the time available to the companies to direct fire planning.
- **Type of order to issue.** This element gives the staff guidance on the type of order to issue to the companies so they can complete their plan.
- **Type of rehearsal to conduct.** Based on time available, the commander determines the type of rehearsal—from full dress rehearsal to radio rehearsals.

Step 3—Integrate the Engagement Area

2-117. The EA is an area where the friendly force commander intends to trap and destroy an enemy force with the massed fires of all available weapons. EAs are control measures that focus fires and distribute those fires throughout the targeted area. This step is depicted in three parts with figures 2-24 (page 2-32), 2-25 (page 2-32), and 2-26 (page 2-33).

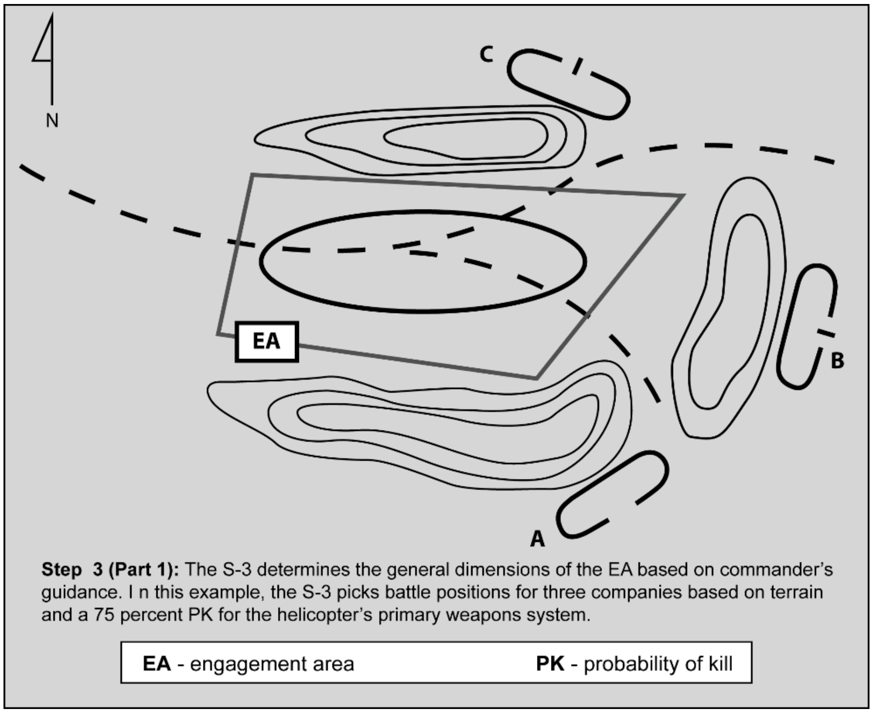


Figure 2-24. Engagement area development step 3 (part 1)

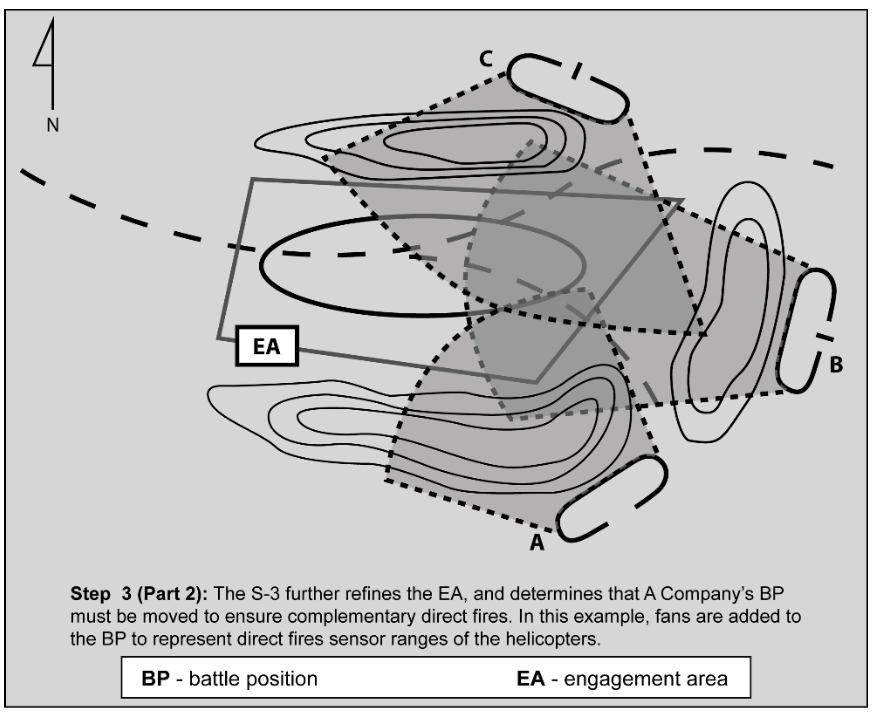


Figure 2-25. Engagement area development step 3 (part 2)

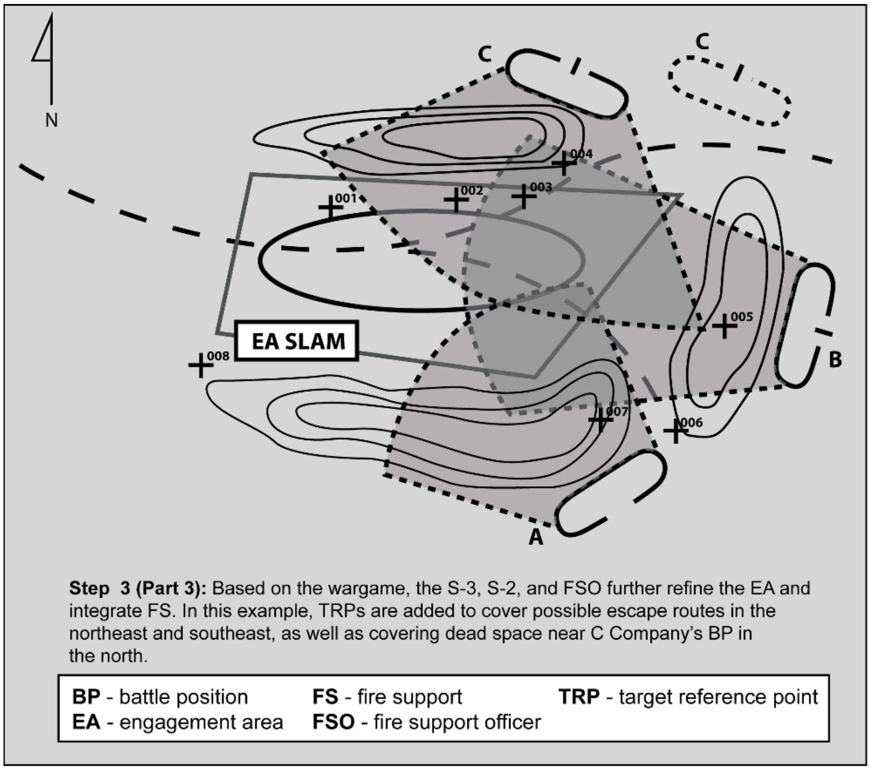


Figure 2-26. Engagement area development step 3 (part 3)

2-118. The staff identifies preliminary BPs for the EA based on the commander's guidance, terrain, and sensor range producing an adequate P for the helicopter's primary precision guided weapon. The staff supports the commander to determine the type and amount of munitions required to meet the commander's intent. The joint munitions effectiveness manual is used to determine the appropriate P_k for various target sets. Commanders should take into account crew proficiency and environmental factors which may also affect the probability of reaching the desired effect. Prior to integration of direct fire, the following points must be considered:

- Enemy avenues of approach.
- Enemy rate of advance.
- Key terrain that gives the advantage for specific avenues of approach.
- What formation the enemy will use, and at what point will they likely change formation?
- Expected range to engagement.
- Maximum effective range of friendly weapons systems (direct and indirect).
- When the enemy will begin counter-engagements?
- Maximum effective range of enemy weapons systems (direct and indirect).
- Where is the dead space in the EA, and how it will be covered?

2-119. Based on the outcome of the EA wargame, the FSO, S-3, and S-2 will integrate the use of artillery, CAS, UAS, and mortars to shape the OE for the direct fire fight. This integration of fires is based on the commander's intent for fires on the objective. The following questions must be answered prior to mission execution:

- What is the endstate of the direct fire plan?
- How much artillery, CAS, and mortars will be available for employment in the EA?
- Who will initiate the fires?
- How will the friendly unit shift fires?
- Who will clear fires once the direct fire fight starts?

2-120. An obstructed EA complicates actions on the objective. While the EA may be perfectly clear when the first rounds are fired, burning vehicles, munitions impacts, and/or environmental conditions can quickly obscure the view from the planned BPs. Consequently, it is important to consider the following during planning:

- **Prevailing/forecast winds.** During the planning process, forecasted winds in the EA that will obscure either the BP or the EA must be considered for engagement priorities and techniques. Smoke and/or dust may cause laser ranging and designation to be unreliable.
- **Nature of the target.** If the targets to be engaged have the propensity to burn after being hit, thought must be given to the engagement priorities. As an example, a brightly burning light skinned vehicle near a BP may obscure heavier, more dangerous vehicles in the EA.
- **Number of targets.** If the plan calls for destroying or killing a large number of targets with direct fire, consider engaging targets across the depth of the formation simultaneously. This technique will disorganize the formation quickly and allow for engagement throughout the EA with rockets and indirect fire.
- **Terrain.** It is important to cover dead space with indirect fires or rockets. Units should also be aware that smoke tends to cling in the low ground during hours of darkness. This may allow enemy vehicles to move undetected, making it difficult, if not impossible, to engage those vehicles with laser-guided weapons.
- **Planned obscurants.** Use of FLIR may be required during daylight operations for target engagement to see through obscurants. Aircrews must complete boresights and operational checks of all sights, whether or not the crew expects to use them during the actual mission. FCR is effective for identifying and engaging targets during limited visibility due to obscurants.
- **Effective engagement.** Planners understand for different missiles, cloud ceilings below certain elevations will inhibit effective engagement. Considering cloud cover in planning to ensure the use of the correct missile type and programmed trajectory for predominant weather in the engagement area. Because of sensor and laser limitations, missile engagements beyond 6 kilometers, may require a closer remote designator to permit a higher lock-on-after-launch P_k.

Step 4 – Direct Fire Planning

2-121. The direct fire plan is generated by battalion planners with input from company planner. The following principles should be taken into consideration:

- Mass fires.
- Leaders must control fires.
- Crews must understand fire plan.
- Focus fires.
- Distribute fires.
- Shift fires.
- Rehearse the fire plan.

2-122. The battalion commander assembles his aircrews and planners to obtain a final view of the battalion plan. Using the overlay and any additional information provided by the staff, the commander ensures that crews can identify the TRPs, obstacles, avenues of approach, prominent terrain features, and dead space present in the EA.

2-123. Using TRPs, primary fire zones, terrain features, or manmade obstacles, the commander sectors the EA by ensuring each crew has a well-defined and understood responsibility. An individual helicopter sector should be wide enough to allow some overlap with adjacent helicopters, but narrow enough to allow for target deconfliction. This action will reduce the scanning required by the crew and it also ensures the entire EA or sector is effectively covered by direct fire.

2-124. The company commander establishes control measures for the direct-fire fight and other actions time or space dependent. Most commonly, the battalion commander will establish a trigger line for initiation of the direct and indirect fire plan; however, a company commander initiates it. Further, on-scene visualization will help the commander decide which fire distribution method to employ. Fire distribution methods include closest TRPs, quadrants, fire patterns, target array, priority fire zones, and sectors. Figure 2-27 addresses fire distribution techniques.

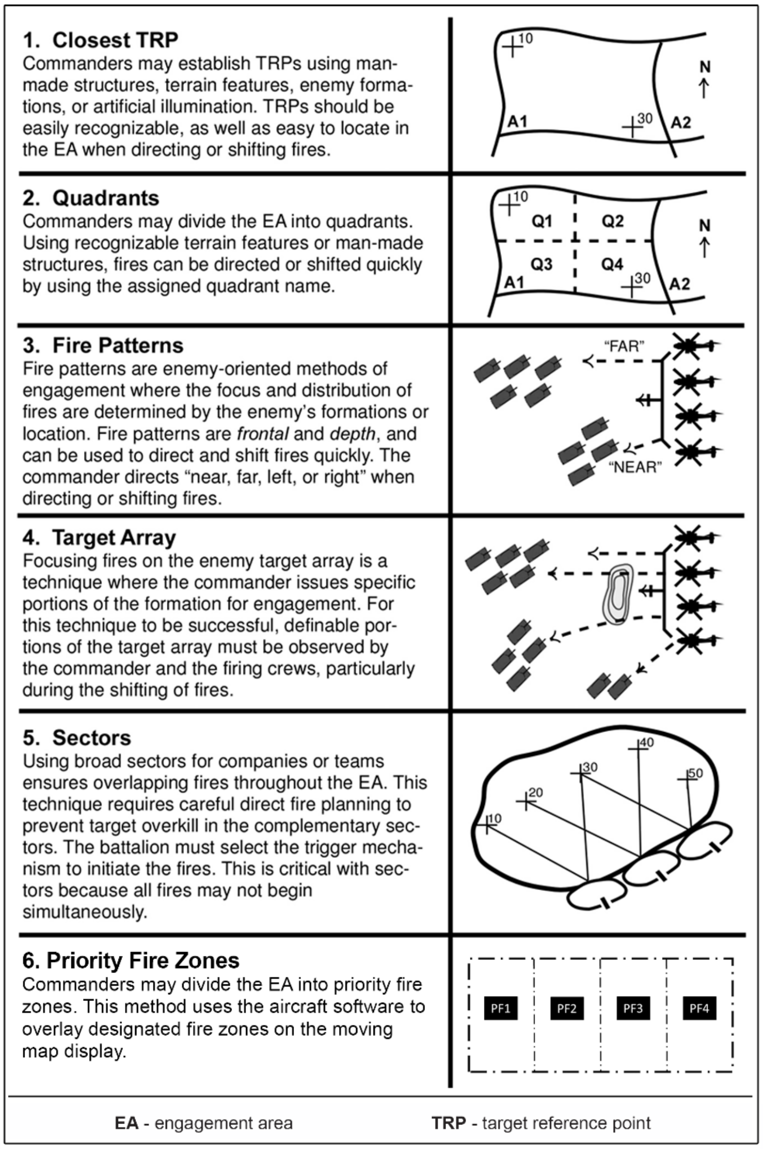


Figure 2-27. Techniques of fire distribution

2-125. The battalion commander assigns sectors of fire to each company, providing full mutual support between helicopters and integrating FS. This planning includes the following:

- Rear and flank security in the BPs. One to two helicopters may be designated for security during the engagement.
- The direct fire plan assigns responsibilities for long range direct fires. The commander also defines areas designated by engagement with rockets and cannon, and how those fires are initiated. During company level planning, "range fans" or arcs are drawn on the sector sketch to represent weapons ranges and time of employment. This type of planning helps crews select the proper weapon for the anticipated target at certain ranges.
- Crews must be ready to repel dismounted infantry and other vehicles in the BP; and they must know positions of friendly elements in the area.
- Ensures alternate BPs integrate the same level of planning and FS as the primary positions.

2-126. Lastly, the commander will devise criteria to determine when the mission has been accomplished. The commander's intent describes the destruction criteria and endstate. Commanders mass the effects of onboard weapons in the EA. They also use complementary systems, such as artillery, CAS, mortars, and other available systems as combat multipliers to overwhelm the enemy at the decisive place and time. There must always be a primary and alternate method of executing the fires.

2-127. Fires must be focused on the critical point at the critical time. The three key elements to successful massing of direct fires against any target are—

- Clearly communicating instructions to firing elements.
- Using recognizable control measures, whether friendly, enemy, or terrain based.
- Synchronization of fires.

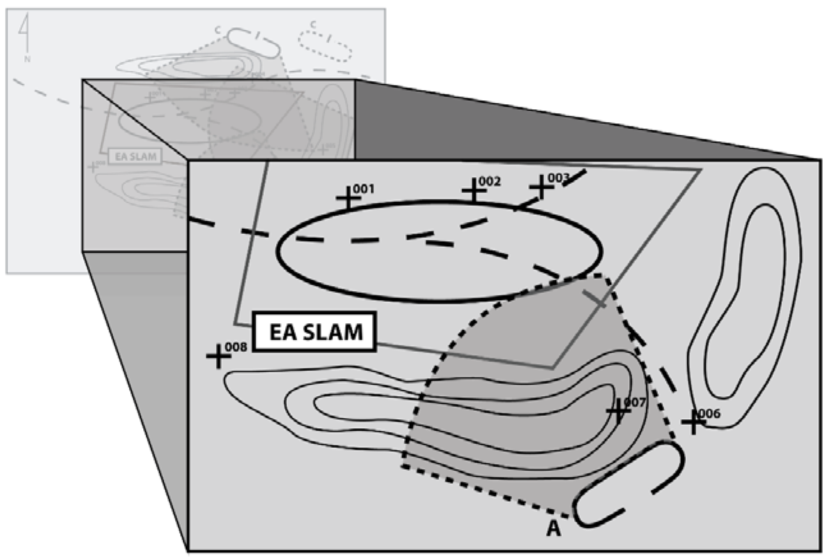
2-128. Principles for distributing fires are—

- Designation of which aircrew will engage which targets is decided during planning.
- Designation of which weapons will engage which targets is decided during planning.
- Critical targets are engaged first.
- Engagements are conducted laterally and in-depth simultaneously.

2-129. Fires must be controlled and shifted to react to enemy actions. Shifting of fires should be planned and rehearsed. When conducting hasty operations, fire distribution for the company must be kept simple. To maintain simplicity, adhere to the following general principal of fire distribution:

- Left shoots left, right shoots right, and rear and center shoots center zone.
- Priority fire zones (PFZs) are the primary method of distribution.
  - PFZs are established by the commander or the first aircraft with eyes on the sector.
  - PFZs are oriented with the movement of the enemy in a logical manner.
  - PFZs are based on mission, terrain, and number of aircraft.
- Teams are assigned a specific zone and utilize the general principle of fire distribution in each.

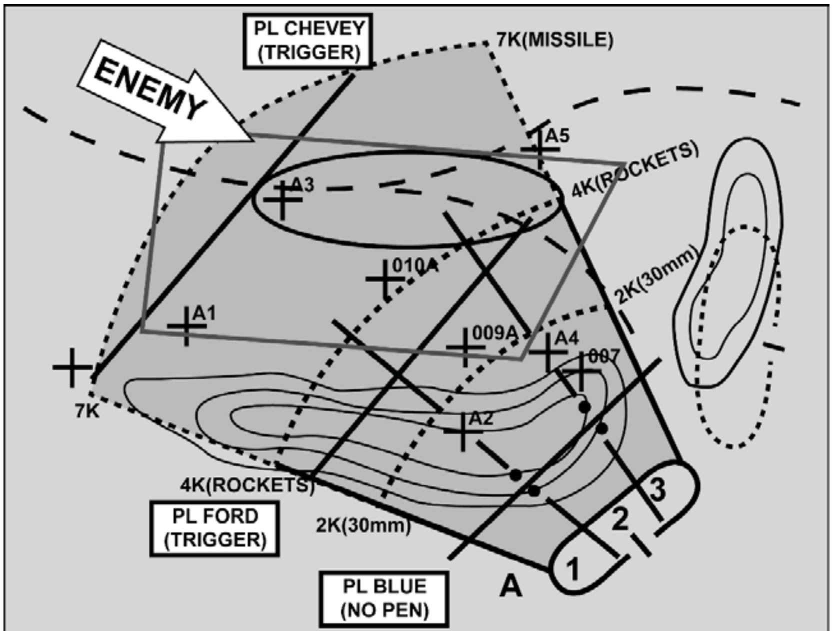
2-130. All crews must understand the fire plan. This includes a complete understanding of the mission and the commander's intent. The fire plan rehearsal allows every crewmember to understand it and point out any shortcoming in the plan prior to execution. Step 4 is depicted in figures 2-28 and 2-29, pages 2-37 and 2-38.



Step 4 (Part 1): The battalion planning staff examines the area and develops assigned terrain. This example shows A Company's assigned sector of the EA.

EA - engagement area

Figure 2-28. Engagement area development step 4 (part 1)



Step 4 (Part 2): In this example, the commander divides the EA into three team-size sectors (Team 1, 2, and 3). The battalion coordinates PL CHEVY and PL FORD as triggers for A Company to commence the direct fire fight. (The battalion S-2 predicts the enemy will move generally eastward through the EA. PLs CHEVY and FORD are designed so A Company has flank shots on the enemy. They also allow synchronization of fires with B and C Companies.) Company TRPs (A1 through A5) allow for rapid shifting fires. Two registered artillery TRPs (009A and 010A) allow for rapid adjustment of indirect fires (Team 2 is responsible for artillery calls.) PL BUD, a "no penetration" (NO PEN) line, is placed near the BP. If enemy elements cross PL BUD, crews are instructed to move to the alternate battle position.

BP - battle position	**K** - kilometer	**PL** - phase line
EA - engagement area	**mm** - millimeter	**TRP** - target reference point

Figure 2-29. Engagement area development step 4 (part 2)

Fire control

2-131. The company commander or AMC is in control of fires. The commander uses two processes to control fires—triggers and fire commands. The commander decides how to control fires based on the situation and time available to plan and prepare.

2-132. A trigger is an event, such as enemy crossing a terrain feature which would signal initiation of fires. Further fire commands may be required, but the object of the planning phase is to anticipate events and coordinate fires before the fight starts. A coordinated fire plan requires minimum radio traffic over the net during execution. Trigger points, priority of engagements, and targets are established in advance. This assures direct fires are placed on the enemy even if communications are interrupted or unit leadership is lost.

2-133. Standardized fire commands are established in the unit SOP and practiced in training. Using a standard format for a fire command ensures all essential information and control measures are given quickly and accurately. Brevity and clarity are essential. Abbreviated methods for identifying target locations must be familiar and understandable. A standard unit fire command may include as many as five elements in the following order:

- Alert.
- Weapon or ammunition.
- Target description.
- Orientation.
- Execution.

2-134. The nature of the target dictates the type of fire pattern used. During premission planning and/or rehearsal, each aircrew must completely understand how the threat will look within the EA, and what effects the engagement will have on that threat. Whether engaging massed armor formations on the move or fixed targets, the way each crew executes fires must be thoroughly understood.

2-135. The two basic fire patterns are frontal and depth. These two fire patterns cover most situations and promote rapid, effective fire distribution. Regardless of which fire pattern is employed, the objective is to engage far and flank targets first and then shift fires to near and center targets. Enemy targets should be engaged by most dangerous to least dangerous within the assigned sector. The commander may choose to modify this practice should a designated priority target come into view. Characteristics of these two fire patterns include—

- **Frontal pattern.** The frontal pattern is used when all engaging helicopters have unobstructed fields of fire to their front. Flank helicopters engage targets to the front and then shift their fires toward the center as the targets are destroyed. Frontal engagement calls for crews to engage targets near-to-far and flank-to-center. Supporting unmanned systems can also engage in depth or focus on priority targets that cannot be engaged by manned aircraft.
- **Depth fire pattern.** The depth fire pattern is used when targets are exposed in depth. An entire company may be required to fire on a column formation in depth, or individual aircraft engaging in their sector may have to fire in depth. Should the entire company be engaging the threat simultaneously, it may be possible for each aircraft to fire in depth on a portion of the enemy formation. In this type of situation the far left helicopter engages the far left target and shifts fire toward the center as targets are destroyed. The far right aircraft engages targets on the far right and shifts fires to the center as targets are destroyed. The commander always has the option to employ something other than simultaneous fire and will specify that order in the alert element of the fire command. Supporting unmanned systems can also engage in depth or focus on priority targets that cannot be engaged by manned aircraft.

Principles of Fire Control

2-136. In a target-rich environment, a unit may expend its ammunition and still not meet destruction criteria stated in the commander's intent. Each weapon system must be used effectively, a detailed IPB will help the commander decide which target should be serviced by which weapon. For example, if all Hellfire missiles have been expended against trucks and a tank battalion enters the EA, the company may not be able to accomplish the mission. The following principles of fire control should be taken into consideration:

- Ensure engagement priorities are fully understood. The targets posing the greatest threat to force must be destroyed first to expose the more lucrative targets.
- Concentrate on long-range targets. This principle will provide standoff and allow the commander time and maneuver space should the enemy decide to maneuver their forces toward the friendly force.
- Take the best shot and minimize exposure. This principle will increase the Pk, while protecting the aircraft as long as possible. High Pk will confuse the enemy in regard to friendly force size and disposition.

2-137. Prior to assignment of fire patterns, the commander remains focused on the effects fires have had based on the desired outcome of the pending engagement. The goal should be ensuring the enemy remains in the EA until its force strength has been degraded to the level that is outlined in the commander's intent. By ensuring that the EA is effectively covered, the enemy will not be able to leave the area prior to termination of engagement.

ROUTE PLANNING

2-138. Factors of METT-TC and PMESII-PT determine flight route selection. Higher headquarters may recommend general flight axes or designate flight corridors from which to plan exact flight routes. The staff develops primary and alternate flight routes while considering the following:

- Routes from the release point (RP) to the ABF/BP.
- S-2: (NAI, target area of interest, enemy air defense artillery (ADA), TGTs, WX, imagery etc.)

- UAS integration and ROZs.
- Battle handover procedures.
- Air corridor development.
- HA.
- Adherence to the airspace control order (ACO)/ATO/SPINS.
- Communications.
- Lighting configurations.
- Fuel requirements.
- Airborne assets: CAS, joint surveillance target attack radar system, AWACS, and EA6B.
- Identification of friend or foe (IFF) on/off line.
- FARP.
- Fat Cow, main or jump.
- SEAD planning and execution matrix.
- IIMC plan.
- Bump plan.
- Downed pilot recovery.
- Abort/by-pass criteria.

SUSTAINMENT

2-139. The objective of sustainment in offensive operations is to anticipate logistics requirements needed to support the plan. Commanders must act, rather than react, to support requirements. The following items should be considered:

- Weapons load.
- Class 3/5 considerations.
- Maintenance status/plan.
- Fighter management.
- Risk management.
- CBRN plan.
- Downed aircraft recovery team (DART) plan.
- MEDEVAC plan.

REVIEW AND REFINE

2-140. To ensure detailed and complete planning, the staff and aircrews should be able to answer the following questions:

- What is the mission and endstate?
- Where is the enemy, and how will it enter the AO?
- Where are the enemy's key weapons? What are its capabilities?
- Where will the enemy be killed?
- Where will the enemy be engaged? Are the ranges realistic? Are the positions too restrictive?
- What is the role of complimentary systems and joint fires?
- What are the environmental factors that may impact the mission – terrain and weather?
- What is the appropriate weapons load?
- What is the target priority?
- How will fires be initiated?
- What is the fire command? Which weapon systems will be fired first?
- What is the desired effect of fires from each system?
- How will fires be distributed?
- How will fires be massed? Does the unit have the required volume?

- Can the unit complete the mission with time and assets provided in the assigned space?
- Where are the commander and key leaders? Can they see the battlefield?
- How/when does the unit shift fires? What is the "key event" to cause shifting of fires?
- How does the unit deal with enemy reactions to fires?
- What is the plan for flank and rear area security in the BP?
- Does the plan follow the principles of direct fire?
- Do the aircrews have the appropriate kneeboard products?

REHEARSE

2-141. Once the battalion commander is comfortable with the concept of the operation, fire distribution plan, and crew's understanding of the plan, all crews are assembled for a rehearsal. Rehearsals start with actions on the objective area in case the rehearsal must be cut short. Time permitting; the rehearsal can then revert to the AA with communication checks and progresses through lineup for take-off, air routes, occupying BPs at the objective area, and egress. Critical questions are—

- Who is responsible for initiating the secure communications check?
- Who will call for indirect fires?
- Who will be assigned BP security?
- How will spot reports be collected and sent?
- How will the fires be initiated?
- Who is responsible for coordinating and communicating with joint enabling capabilities?
- Who will coordinate and communicate with the ground force commander?
- What radio calls are required during conduct of the operation?
- What are the actions on contact?
- What are the contingency plans?
- What is the success criterion and what will determine if that criterion has been met?

2-142. Rehearsing the plan is an ideal opportunity for identification of possible conflicts and resolving them prior to execution. However, the primary purpose of the rehearsal is ensuring all crews know and understand the commander's intent and how it will be executed.

JOINT AIR ATTACK TEAM

OVERVIEW

2-143. The JAAT includes a combination of attack and/or scout RW aircraft and fixed-wing (FW) CAS aircraft operating together to locate and attack high-payoff targets and other targets of opportunity. A JAAT normally operates as a coordinated effort supported by fire support, ADA, naval surface fire support (NSFS), intelligence, surveillance, and reconnaissance systems, electronic warfare (EW) systems, and ground maneuver forces against enemy forces. JTACs may perform duties as directed by the air mission commander in support of the ground commander's scheme of maneuver. JAAT planning, execution, and communications are discussed in ATP 3-09.32.

2-144. JAAT operations involve participation of different force components with varying operating procedures. JAAT operations are inherently complex and high-risk operations; therefore, execution procedures must be as simple as possible and lie within the capabilities and understanding of everyone involved. The JAAT commander, mission commander, and support personnel identify areas of consideration for preplanned or immediate JAAT execution per ATP 3-09.32 which contains procedures proven by exercise and combat experience that can reduce overall risk to the forces involved.

ASSETS

2-145. The commander/staff determines what assets are required and available to accomplish the joint air attack team. Assets considered include combat air patrols, tankers, unmanned aircraft systems, Airborne Warning and

Control System, airborne battlefield command and control system, FW aircraft, reconnaissance/collectors, rotary-wing assets, and electronic warfare assets.

Rotary-Wing Elements

2-146. Rotary-wing aircraft provide firepower, TA, designation, and mission coordination to the JAAT. The Army and the Marine Corps provides AH-64D/E and attack reconnaissance rotary-wing aircraft for JAAT operations. The Marine Corps could provide rotary-wing attack aircraft, specifically AH-1W Super Cobra or AH-1Z King Cobra. The Navy and Air Force do not have rotary-wing attack aircraft. At a minimum, Army helicopters operate in teams and are organic to company units. Companies usually provide continuous coverage for the JAAT, but may be employed as part of a battalion-sized flight totaling as many as 24 rotary-wing aircraft to achieve massed fires on the target. When compared to daytime operations, Army rotary-wing aircraft flying nap-of-the-earth are less vulnerable to enemy ADA requiring visible acquisition or aiming at night; therefore, operations are preferably conducted at night.

Fixed-Wing Elements

2-147. FW aircraft employ CAS procedures and tactics, described in ATP 3-09.32 during JAAT operations. In addition to exercising control of the aircraft, the JTAC/forward air controller-airborne (FAC-A) may also provide air reconnaissance, surveillance, target marking, and communications. For additional information regarding CAS procedures and tactics, see JP 3-09.3 and ATP 3-09.32.

2-148. Air Force CAS aircraft are capable of performing JAAT operations; however, only qualified crewmembers are authorized to participate in JAAT. Air Force members execute JAAT according to Air Force Instruction 11-214 following CAS procedures detailed in ATP 3-09.32.

2-149. All tactical FW Navy/USMC aircraft are capable of supporting JAAT operations. (AV-8B aircraft may be able to support JAAT operations with their specific mission roles.) All FA-18F squadrons have FAC-A qualified aircrews who routinely train in JAAT operations, including control and coordination of FW aircraft, rotary-wing aircraft, and indirect FS integration and deconfliction.

Indirect Fire Support

2-150. Indirect FS (artillery, mortars, and/or Naval Surface Fire Support (NSFS)) is planned to support and augment the firepower of JAAT operations. Normally, indirect FS provides SEAD and target marking. Additionally, indirect FS may provide close fires, fires in depth, and counterfire. JAAT indirect FS requirements generally use the same request, planning, coordination, control, and execution procedures as ground operations. The Army and Navy provide indirect FS. For more information on NSFS refer to ATP 3-09.32 and Navy Weapons Publication 3-20.32.

2-151. The forward support element (FSE) fires cell (FC) of the maneuver commander requesting or ordering the JAAT plans for, coordinates, and oversees the execution of FS. The mission commander contacts the FSE FC if the mission requires additional FS or other assistance. The FSE FC coordinates the requested support. If a maneuver commander requests or orders a JAAT to take place in another commander’s AO (division JAAT in brigade AO), then that commander’s FSE FC must coordinate with the FSE FC in whose AO the JAAT is to take place.

2-152. NSFS for Army units is coordinated through the Marine Corps air and naval gunfire liaison company (ANGLICO). The air and naval gunfire liaison company and division and brigade liaison teams are normally attached to the FSE of the supported division or brigade. These teams are responsible for planning, liaison, control, coordination, and employment of supporting arms. The ANGLICO's role is coordinating, synchronizing and deconflicting air strikes and artillery fires for the Joint, Allied or Coalition force operating in or adjacent to the Marine Air Ground Task Force (MAGTF) battlespace. ANGLICO liaise between the MAGTF commander and the commander of the unit they are attached to. In the case of the ANGLICO working within the Army chain of command, the ANGLICO commander situates his HQ in Division, with subordinate elements at the Brigade and, Battalion.

OPERATIONAL PLANNING

Command Responsibilities

2-153. Normally, the maneuver force commander, within an assigned operational area, is responsible for determining when a JAAT is necessary, but any commander (air, land, or sea) may request a JAAT. In this publication, the terms maneuver force commander and maneuver commander are representative of any commander (air, land, or sea) with overall command responsibilities within an AO. Designation of a mission commander occurs after coordination between the requesting commander and supporting commanders. The mission commander is responsible for orchestrating the planning, coordinating, and executing the JAAT. The mission commander has tactical control of JAAT assets to support the commander's battle plan.

Mission

2-154. The planning process begins during mission analysis when the requesting commander/staff determines employing JAAT will assist in accomplishing the mission. JAAT EA development and distribution of all fires must be included when developing the plan. Members of the JAAT retain their own C2 system; therefore, mission planning must be a coordinated effort. Constant coordination is desired between the requesting commander, mission commander, JTAC, FAC-A, FW and rotary-wing representative, TACP, FSE, and the air support operations center. As elements of the mission change, all members must be informed to adjust accordingly.

Intelligence Preparation Of The Battlefield

2-155. Continuous collection and appropriate dissemination of information is key to the success of the JAAT intelligence effort. The mission commander requires continuous information on the objective before, during, and after the mission. The assistant chief of staff, intelligence (G-2)/S-2 is responsible for the IPB. The G-2/S-2 identifies the target, target area, NAI, enemy defenses, enemy and friendly DPs, and time window when the target will be active in the EA. Timely JAAT employment is determined by identifying key enemy events that are target indicators of the enemy's COA and may act as the trigger for execution of a preplanned attack. The G-2/S-2 coordinates the collection effort, refines the information, and ensures the information is received by planning staffs and supporting units. The IPB process is continuous, occurring before, during, and after the JAAT to ensure the most up-to-date information on the enemy's activity is available during the planning and execution phases.

Airspace Coordination Area

2-156. The following four methods are used to establish an airspace coordination area (ACA) to deconflict attack helicopter and FW aircraft from indirect fires:

- Lateral/geographic separation (figure 2-30, page 2-44).
- Altitude separation (figure 2-31, page 2-44).
- Time separation (figure 2-32, page 2-45).
- Combination of the above.

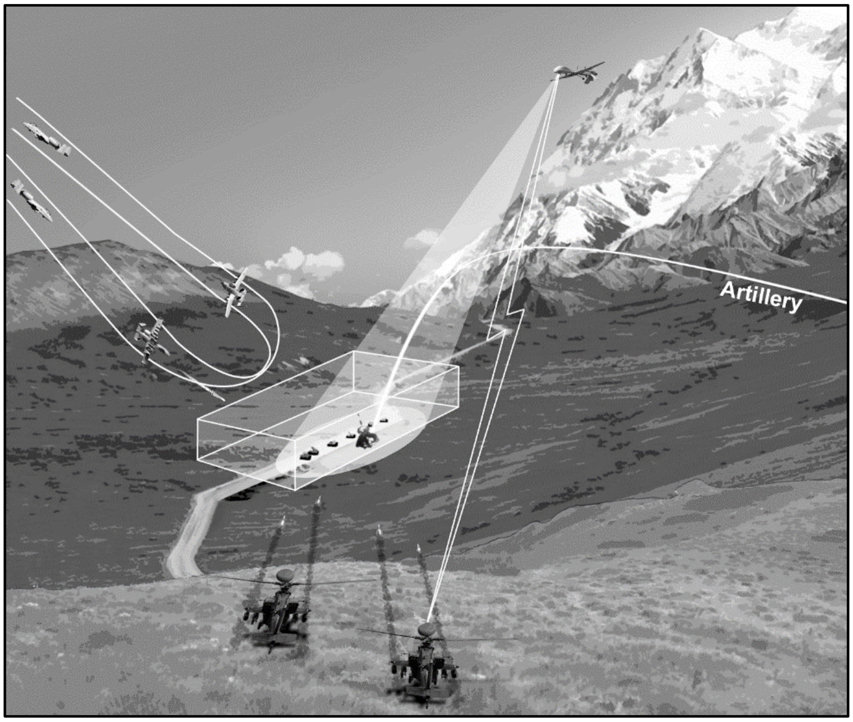


Figure 2-30. Lateral separation

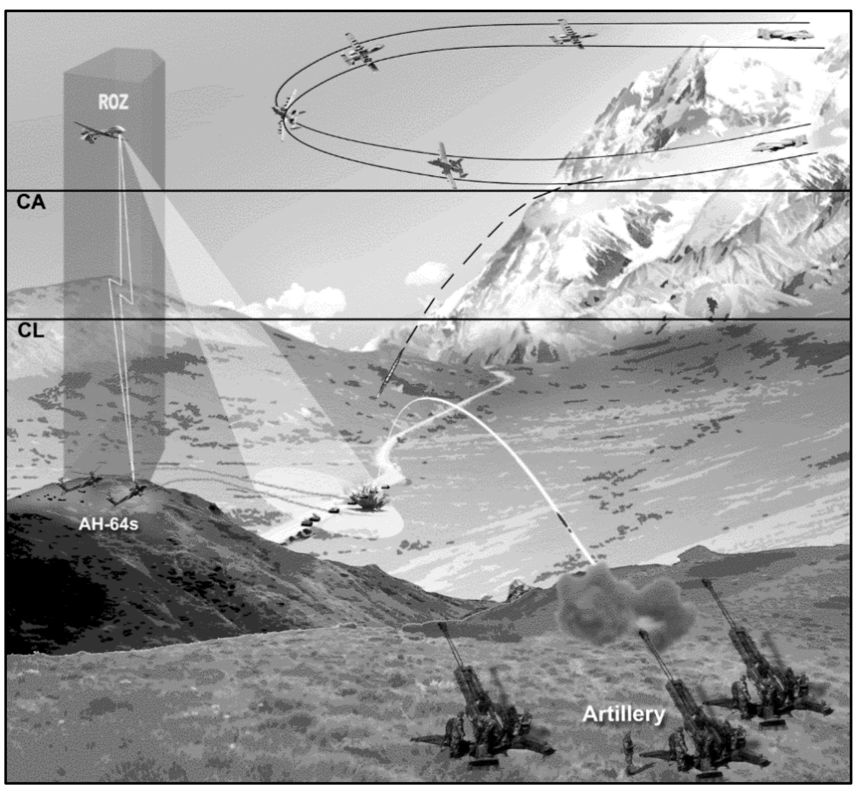


Figure 2-31. Altitude separation

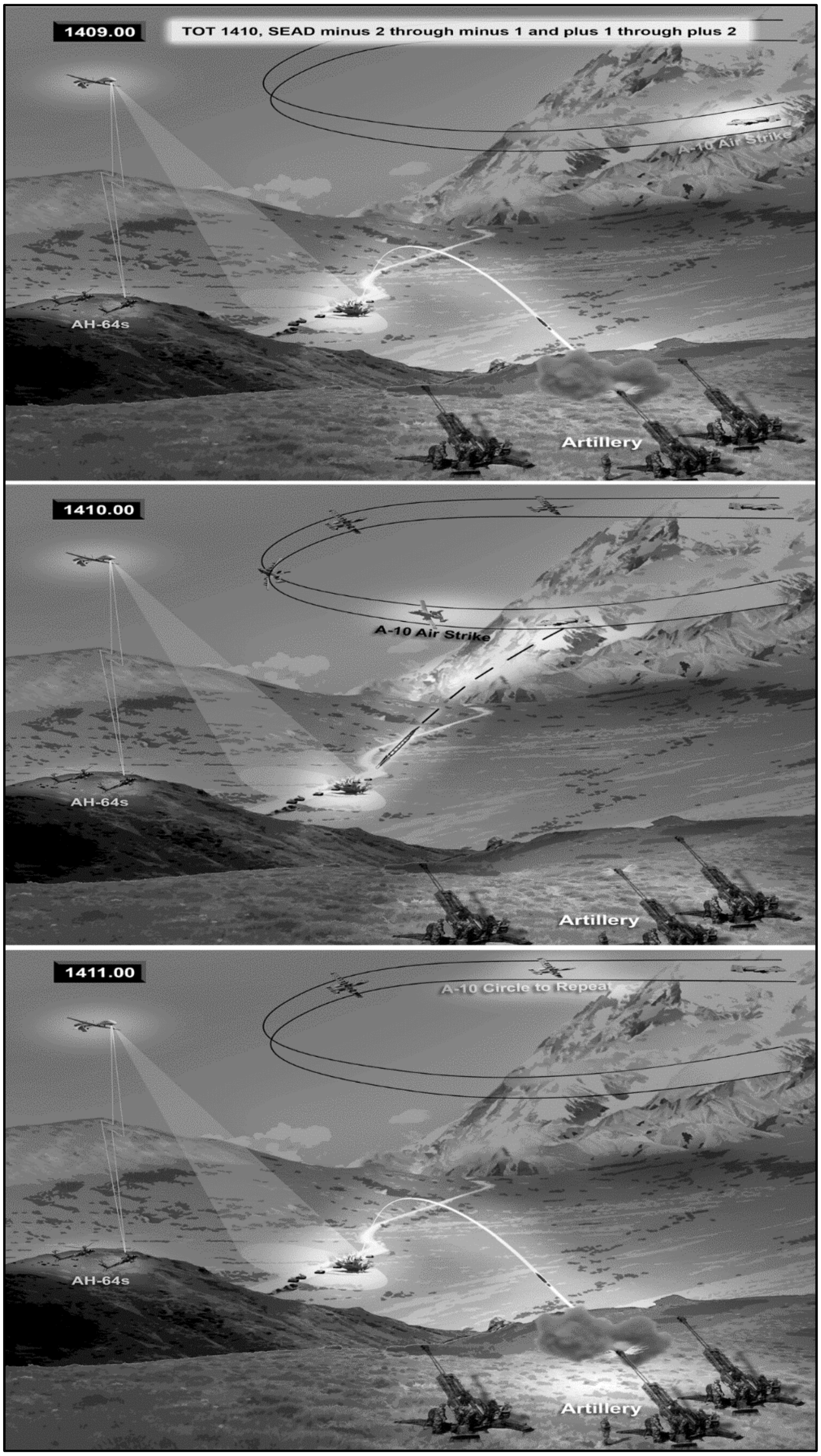


Figure 2-32. Time separation

2-157. The fire plan includes appropriate ACMs and coordinates the use of ACAs for JAAT operations. For more information on ACAs, see JP 3-52 and ATP 3-09.32. The mission commander is responsible for ensuring

ACMs are established and coordinated with all JAAT participants. Airspace management methods include ACAs, restrictive fire headings, maximum ordnance trajectory, minimum altitude, sectors, and timing separation. Detailed ACMs, disseminated via DD Form 1972 (Joint Tactical Air Strike Request), can be used during preplanned JAAT operations, while immediate missions may require simpler coordinating measures. All participants must understand established ACMs.

Threat Air Defense

2-158. The mission commander considers how various elements of the JAAT assist to neutralize or suppress the enemy AD.

Threat Analysis

2-159. Planners ensure the most effective use of terrain. Terrain analysis is conducted to identify EAs, ground and air avenues of approach, and gaps in threat AD due to terrain. Terrain analysis also aids in determining employment methods and selecting ingress and egress routes.

Weather

2-160. Weather conditions may limit capabilities of aircraft and weapons. High humidity, fog, and precipitation reduce visibility and effectiveness of IR devices and interfere with lasers. Low ceilings also affect safety of flight, and the range and employment of laser-guided Maverick and Hellfire missiles, since the trajectory may put the missile in the clouds. High temperature and pressure can limit the range and weapons payload of aircraft. High or gusting winds effect accuracy of indirect weapons employment and can limit the use of rotary-wing aircraft. If weather forces the cancellation of one or more JAAT components, a contingency plan is derived.

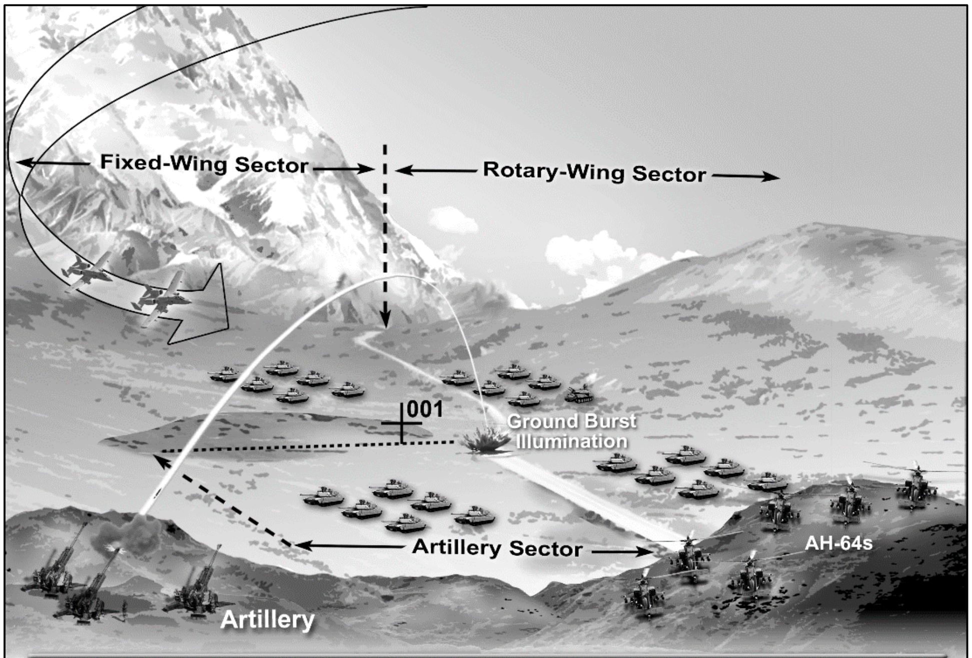
Night Considerations

2-161. Tactics procedures for night employment of the JAAT remain the same as for day operations; however, techniques required to accomplish night JAAT operations tactics involve a more deliberate tempo and strict adherence to these basic procedures to ensure all participants maintain SA. ATP 3-09.32 and unit/aircraft specific tactics manuals provide detailed information on conducting night operations.

2-162. Perspective and target resolution vary based on aircraft systems. The aviation mission commander must provide a detailed description of the objective area to ensure all participants, regardless of perspective or available sensors, have a clear picture of the objective area. Night sensor/NVG used by all participants greatly increase capability and effectiveness of the JAAT; however, certain limitations exist. A terrain feature visible by a NVG/FLIR equipped rotary-wing aircraft at 50 feet may not be visible or recognizable by an NVG-equipped pilot or for a FLIR equipped aircraft at 20,000 feet.

2-163. Night positive control is more difficult because controllers cannot observe both target and attacking aircraft. Friendly and threat SA is necessary during night operations. Aircraft lighting, thermal CID, ground unit identification, and location descriptions all aid in SA. IR illumination, offset illumination, IR pointers and illuminators, indirect fires, direct fires, laser, and grid coordinates are all techniques for marking targets. Consideration must be made for the marker effects on all participants. Figure 2-33, page 2-47 depicts a night JAAT and participants in controlling their fires. Other factors include—

- Attack heading.
- Weapons selection for pass.
- Ingress and release altitudes.
- Dive angle.
- Distance from target.



Example Fighter Release Parameters

1. Attack heading approximately 090.
2. Thirty-degree attack angle with gun.
3. Run in altitude is 15,000 feet.
4. Weapon release at 8,000 feet.
5. Egress to north.

Example Visual Description Passed To Fighters

Illumination marks center of engagement area. Engagement area is divided into four quadrants by road running north-south and line running east-west through target reference point, ridge line, and illumination. Attack all targets north of target reference point 001. Friendlies are artillery and helicopters south of the hill mass that is south of the engagement are. Rotary-wing will engage east of the road with Hellfire. infrared illumination in southwest quadrant marking for artillery impacting in that quadrant. Gun-target line is 005 degree.

Figure 2-33. Night joint air attack team and associated control measures

Laser considerations

2-164. Modern rotary-wing laser systems greatly enhance effectiveness of the JAAT by offering increased mobility, accuracy, and lethality. Airborne target lasing capabilities coupled with laser spot tracking equipment provide greater efficiency, integration, and distribution of weapons effects. Due to the variety of laser systems employed during a JAAT operation, laser techniques, procedures, and specific laser codes, all JAAT elements must coordinate their actions to ensure successful operations. JAAT procedures have been developed and successfully tested using Apache laser designators with the laser spot tracking equipment on AV-8 Harriers, F/A-18 Hornets, and A-10 Thunderbolt II. Delivery of laser-guided munitions is discussed in JP 3-09.3. The JTAC/FAC-A ensures the following events occur:

- Include laser code and laser target line (LTL) on line 7 of the 9-line brief.
- Aircraft avoid the 20-degree safety zone (ten degrees either side of the LTL for aircraft run-ins).
- Brief pilot, if possible.
- Plan early and prepare forward observer teams/FS teams ready for mission.
- Ensure code in laser target designator matches code pilot passed.
- Actual LTL is no more than 5 degrees off briefed LTL.
- Ensure simple and easily understandable communications are in place.
- Ensure appropriate safety zone is established around laser designators, and friendly units are not overflown during weapons employment.

Time available

2-165. The more complex the JAAT mission the more planning time required. A planning horizon of 72 hours usually allows time for a complete joint ATO cycle. Anything less can be planned but may not be in the joint ATO. ATO requirements are discussed in JP 3-30. Units include requests for fighter and reconnaissance aircraft early in the planning process. A staff with prior JAAT training and working SOPs can significantly reduce the amount of planning needed to conduct a successful operation, thus allowing an immediate or spontaneous JAAT be accomplished with minimum coordination. A time, location, and common frequency for all participants may suffice in an immediate or spontaneous JAAT situation.

Synchronization

2-166. A JAAT operation is synchronized at two levels. At the first level, the JAAT operation must be synchronized with the overall operation. The second level involves synchronization of various elements during execution of the JAAT operation. The requesting commander is responsible for ensuring synchronization at the first level and the mission commander is responsible for ensuring synchronization at the second level. Achieving both levels of synchronization requires an understanding of individual elements of the JAAT.

JAAT EXECUTION

2-167. Upon receipt of a JAAT mission, the JAAT mission commander must integrate the following five components of preplanned or immediate JAAT execution: check in and briefings, firepower timing options, attack methods, and disengagement. The JAAT mission commander must also consider risk management as it applies to identifying hazards and implementing controls during planning, preparation, and execution. Night employment of the JAAT is also an option with consideration for tactics requiring more deliberate tempo and strict adherence to basic procedures.

Check-in and briefing

2-168. JAAT participants check-in with the mission commander in accordance with the CAS check-in briefing (see ATP 3-09.32). The standard 9-line CAS brief is the most effective means of providing airspace control measure information and will be used whenever possible. For a detailed discussion, refer to JP 3-09.3. After initial contact between the flight lead and control has been established, the controller provides the standard 9-line CAS brief to the FW flight lead (table 2-6).

Firepower Timing Options

2-169. Firepower timing options integrate and synchronize fires. Timing options apply to any altitude option (low, medium, or high). The AMC coordinates altitudes for all JAAT participants. Table 2-8 provides additional information on coordinated attack types.

Table 2-8. Coordinated attack types

Type of attack	*Simultaneous*	*Sequential*	*Random*
Combined (Same avenue of attack)	Visual separation, time on target (TOT) or time to target (TTT)	Visual separation, TOT or TTT	Not normally used for low altitude
Sectored (Acknowledged sector)	Visual separation, TOT or TTT	Visual separation, TOT or TTT	*Free flow
*Must ensure strafe fan/bomb and missile fragmentation deconfliction.			

2-170. Simultaneous attacks occur when all elements attack at the same time. This allows elements to mass fires, maximize shock effect, complicate the enemy's ADA targeting scheme, in an unpredictable manner. However, it complicates the target array sorting and direct fire planning and simultaneous impacts can interfere with one another.

2-171. Sequential attacks require all elements to attack in a predetermined sequence. Some advantages to this technique are the target area is marked for subsequent attackers, there is continuous pressure on target over time, allows attackers to reposition while other attackers shoot, less weapons interference for subsequent shooters, and it ensures targets are not double-targeted. Some disadvantages to this timing option are air defenses have greater opportunity to target airborne participants, it takes longer, there is less shock effect, and it could provide opportunities to the enemy.

2-172. Random attack options allow elements to attack at will. This technique is easiest on pilots since no timing is required; it reduces C2 requirements and is unpredictable. However, this technique complicates deconfliction with no guarantee of effects. It could possibly put less pressure on the enemy, and can complicate the FS plan.

Attack methods

2-173. The attack methods describe control techniques for attacking targets within an objective area and are briefed during the 9-line CAS briefing. Methods may apply to the joint attack as a whole and again within each attacking flight or units' individual attack plan. The two attack methods are combined and sectored.

Combined method

2-174. The approach to the target is shared airspace. During this method of attack, all JAAT members fly in the same area. The AMC references the FW's 60-second call, visually acquires the FW, and directs the attack helicopters to engage. The intent is for all elements to attack simultaneously. FW flight is directed to attack the northern half of the specified target area. After attacking, the FW aircraft are directed to clear the target area. This may imply a follow-on artillery barrage or reflect the ground commander's scheme of maneuver (figure 2-34).

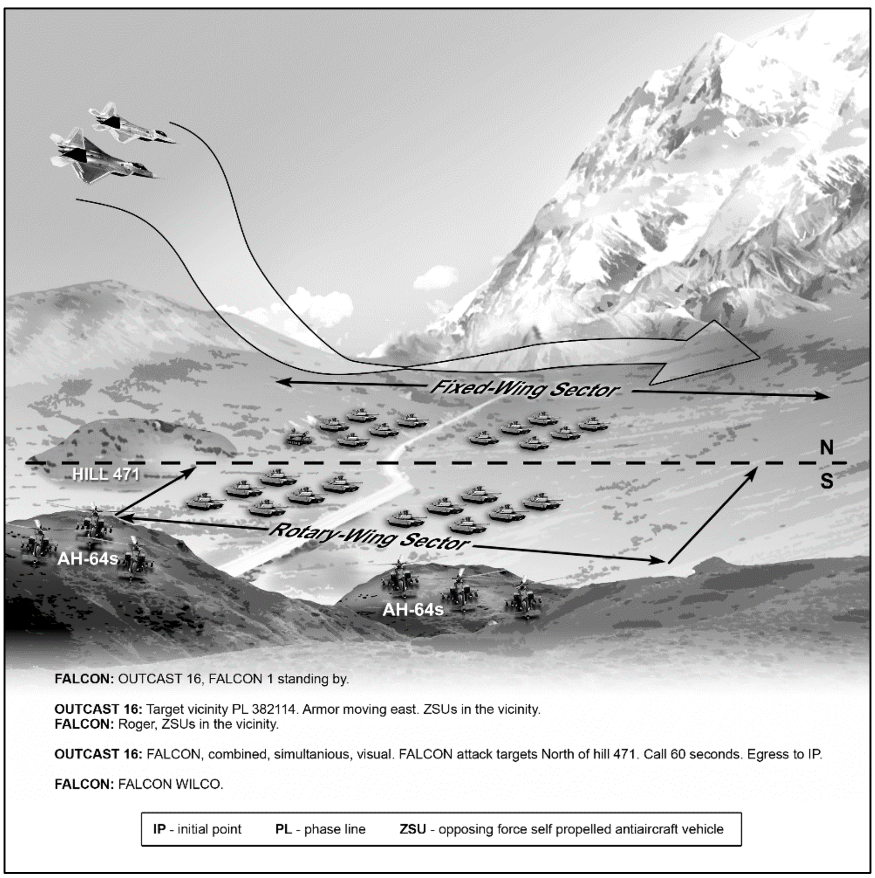


Figure 2-34. Example of the combined method

Sectored method

2-175. Using the sectored method, the avenue to the target is sectored (using acknowledged sectors). During this attack, the A-10 flight maneuvers exclusively west of a north/south line drawn through the target area (the road). The mission commander directs the A-10 flight to attack at a specified time on target (TOT). The timing coordination call (60 seconds in this example) is requested to update the attack timing plan. Pilots must deconflict weapons fans to preclude friendly casualties. While ensuring weapons or weapons effects, do not cross an established sector line; a rule of thumb commonly employed is never fire more than 30 degrees towards or into the other sector. Coordination between the type of attack and timing option is vital (figure 2-35).

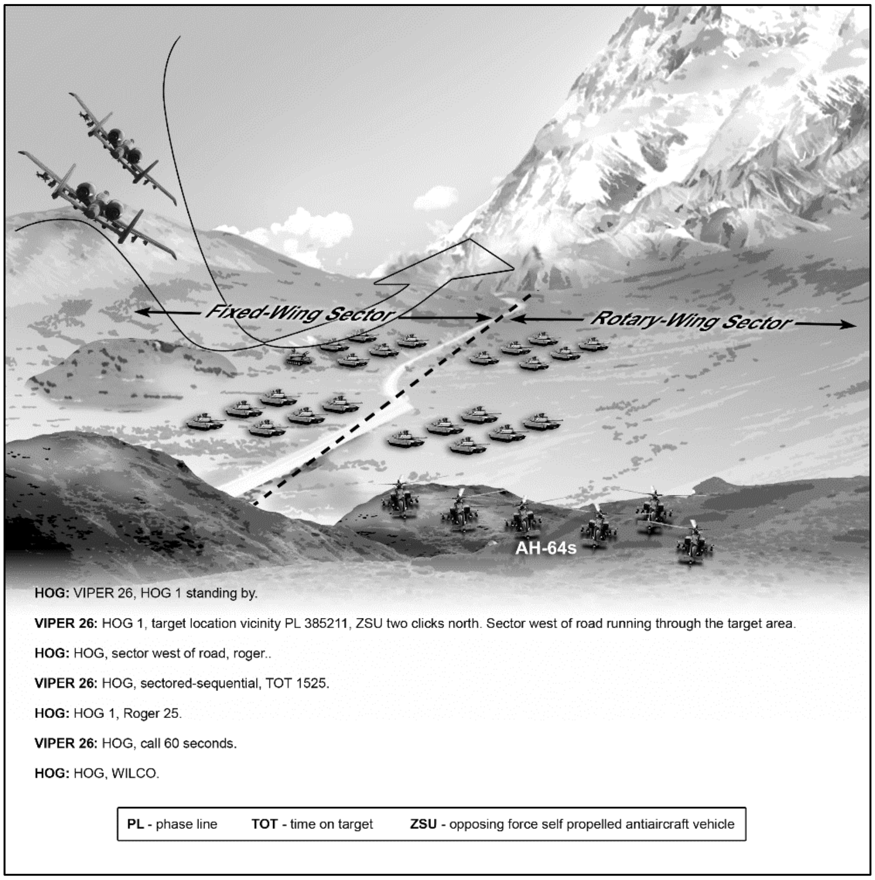


Figure 2-35. Example of a sectored attack

Disengagement

2-176. Crews must consider the disengagement phase of the operation. Considerations for disengagement include covering fires and route of egress. Fixed- and rotary-wing aircraft may provide suppressive fires and SEAD as other elements egress. Artillery (cannon, multiple launch rocket system, and Army Tactical Missile System, if authorized) can also provide suppressive and SEAD fires. EW assets also may provide SEAD with anti-radiation missiles or electronic attack. Due to the flexible nature of operations, planned egress routes may not be available to all JAAT participants. Consideration must be given to coordinating new egress routes. For example, FW aircraft might be tasked to provide reconnaissance of a hasty rotary-wing egress route.

Risk management

2-177. Risk management consists of identifying hazards and implementing controls during planning, preparation, and execution. During the execution phase, all participants in the JAAT focus primarily on implementation of controls. However, as additional hazards are identified during execution, participants must implement additional controls. Hazards to consider include—

- Enemy forces/threats.
- Weapons release parameters/dangers.
- Surface danger zones.
- Laser operations.
- Environmental factors.
- Friendly unit location/SU.
- Human factors.
- Battlefield obscuration/clutter.
- Terminology.

2-178. Control measures used to mitigate risk may include—

- ACMs.
- Flight techniques tactics.
- Use of personnel specifically trained and experienced in JAAT operations.
- Lethal and nonlethal SEAD.
- FSCM.
- Suppressive fires.
- Positive control.
- Reasonable assurance/indirect control.

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Chapter 3
Reconnaissance

Army Aviation reconnaissance forces conduct combined-arms reconnaissance operations to determine enemy composition and disposition as well as to gather combat information on terrain and populations. Reconnaissance tasks enable all units to seize, retain, and exploit the initiative across the range of military operations by identifying, creating, and capitalizing upon opportunities, providing them with information facilitating decision making, and the concentration of unified efforts against decisive points.

SECTION I – OVERVIEW

3-1. Army aviation conducts reconnaissance to support the commander's situational awareness and decision making processes by providing accurate and timely information about the enemy and the area of operations. The forms of reconnaissance include zone, area, and route reconnaissance, as well as reconnaissance in force (RIF). Through these efforts, Army aviation collects information on the enemy's disposition, composition, location, strengths and weaknesses, and direction of travel (if mobile). Additionally, detailed information on ground routes and mobility corridors, urban areas and infrastructure, man-made and natural obstacles, and the population's patterns of life is collected.

3-2. The Army executes reconnaissance through the operations and intelligence process and information collection. Army Aviation conducts reconnaissance in support of the ground maneuver commander. Information collection is an activity that synchronizes and integrates the planning and employment of sensors and assets as well as the PED of systems in direct support (DS) of current and future operations (FM 3-55). A successful information collection effort results in the timely collection and reporting of relevant and accurate information, which either supports the production of intelligence or is disseminated as combat information.

SECTION II – FUNDAMENTALS

3-3. Reconnaissance in all of its various forms is a continuous, aggressive, combined arms effort that enables the commander to make decisions to seize, retain and exploit the initiative. Reconnaissance is a component of troop leading procedures for every mission and it supports the entire range of unified land operations. Intelligence preparation of the battlefield helps focus the reconnaissance effort by providing a complete analysis of the battlefield to include terrain, enemy forces, meteorological factors, civil considerations, and drives the generation of the commander's CCIR.

3-4. A component of CCIR is priority intelligence requirement (PIR). A commander and staff must balance a seemingly infinite number of information requirement demands against a limited number of reconnaissance forces. This is critical if they are to answer those critical questions that remain unknown to the commander, or confirm or deny given assumptions. Army commanders and staffs will never have perfect knowledge of the OE and will have to make decisions with incomplete information. However, good planning, thorough IPB and effective management and employment of reconnaissance assets can increase situational understanding and aid in timely decision making.

3-5. PIRs identify information about the enemy and the OE that the commander considers most important to enable decision making. The identification of a PIR results from planning requirements and assessing collection. PIRs are broken down by the S-2 into indicators, positive or negative evidence which would point towards a specified enemy COA (figure 3-1, page 3-2). Indicators are further broken down into specific information requirements (SIRs). SIRs are tasked by the S-3 to the appropriate unit for collection. For further information see ATP 2-01.

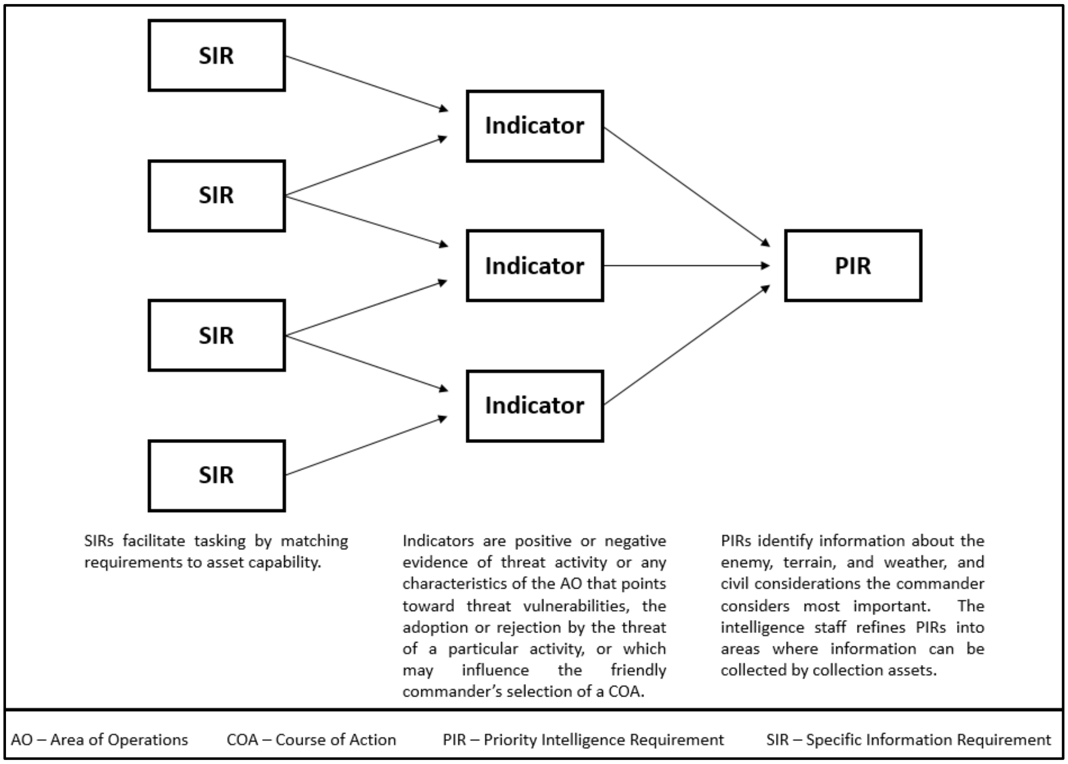

Figure 3-1. Relationship between intelligence requirements and indicators

3-6. Manned aircraft and UASs are highly capable reconnaissance platforms because of their ability to rapidly maneuver over wide areas and provide a perspective that can surmount terrain and obstacles. Manned and unmanned aircraft have the ability to allow multiple users to see near real time video of the NAI or reconnaissance objective through the use of an OSRVT in the CP or positioned forward with ground maneuver units. Based on the analysis of the S-2, with support of the AMSO, the S-3 will task aviation reconnaissance forces to collect against an SIR that supports the PIR. It is imperative for aviation planners, BAEs, and liaison officers to help the ground force commander shape and plan the employment aviation reconnaissance assets to maximize the inherent capabilities and offset limitations.

3-7. Units use geographical named areas of interest (NAIs) to capture indications of enemy courses of action or conditions of the AO. Activity or lack of activity within a NAI will help confirm or deny a particular enemy course of action. PIR are tied to either a NAI or target area of interest, through indicators and SIR. The information collected on a given NAI or target area of interest drives decision points. A decision point is a point in space and time when the commander anticipates making a key decision concerning a specific enemy course of action. The staff monitors the reconnaissance effort in time and space to inform the commander when adequate reconnaissance information is gained and conditions are met for decision.

3-8. Reconnaissance is an inherent task for all aviation assets. The maneuver capabilities of all Army aircraft make every aircrew capable of performing some reconnaissance tasks. With the proper understanding of commander's intent and the CCIR, every aircrew member and Soldier on the battlefield becomes a scout or sensor. For example, routine flights by utility and cargo helicopters across the battlefield can be tasked to conduct a reconnaissance of a low-threat NAI while performing the primary mission of troop and cargo movement. The use of an unmanned aircraft transiting from an airfield to the primary reconnaissance objective can answer the commander's questions concerning key terrain or lines of communication. It is critical, however, that the proper asset is tasked to accomplish a reconnaissance task within its capabilities.

3-9. There are seven fundamentals which govern reconnaissance forces in the execution of collecting information. It is essential for the commander, staff planners, and aircrews to understand these fundamentals to enable a focused, efficient and flexible reconnaissance effort. The fundamentals of reconnaissance include−

- Ensure continuous reconnaissance.

- Do not keep reconnaissance assets in reserve.
- Orient on the reconnaissance objective.
- Report all information rapidly and accurately.
- Retain the freedom of maneuver.
- Gain and maintain enemy contact.
- Develop the situation rapidly.

ENSURE CONTINUOUS RECONNAISSANCE

3-10. Due to the dynamic nature of the OE, commanders ensure that reconnaissance is conducted continuously throughout the duration of the mission. The use of UAS to provide persistent reconnaissance through the depth of the area of operations, teamed with AWTs/scout weapons teams (SWTs) conducting continuous relief on station, ensures the aviation reconnaissance force provides continuous coverage of the designated reconnaissance objectives. Continuous reconnaissance using MUM-T enables greater change detection in dynamic OEs, increased flexibility to maintain contact with acquired enemy forces, redundancy to enable detailed information collection to achieve the reconnaissance objectives, and greater flexibility to further develop the situation when required.

3-11. Effective reconnaissance is continuous and conducted before, during, and after all operations. Moreover, maintaining continuous reconnaissance is critical during transition operations. Before an operation, reconnaissance focuses on filling gaps in information about the threat and terrain. During an operation, aerial reconnaissance focuses on providing updated information verifying the enemy's composition, disposition, and intentions as the battle progresses. This allows the ground force commander to verify which COA is actually being adopted by the enemy and determine if the friendly force plan is still valid based on actual events in the AO. After an operation, aerial reconnaissance focuses on BDA, maintaining contact with the remaining enemy forces to determine their follow on actions, and collecting information necessary for planning subsequent operations.

3-12. Extended operations, both distance and duration, require commanders to develop fighter management, maintenance, relief on station and launch/recovery plans to maintain a continuous reconnaissance effort. To ensure the reconnaissance effort is focused at the decisive time and place, the commander must determine not only where, but also when, he will need his maximum reconnaissance effort to ensure adequate assets are available at critical times and places. This maximum effort is directly driven by the supported commander's information requirements, time information is needed and the reconnaissance focus. Detailed and disciplined planning is critical to ensure the continuity of the reconnaissance effort.

3-13. Unmanned systems provide greater capability to maintain continuous reconnaissance over wide areas and over increased distances. UAS operate as far forward as mission variables, endurance, and bandwidth allocation factors allow. Using MUM-T, UAS increase the depth of the reconnaissance effort, provide increased stealth in the reconnaissance objective, enable gaining enemy contact with the smallest maneuver element, and reduce the risk of manned aircraft becoming decisively engaged. UAS also enable the aerial reconnaissance force to maintain continuous contact as manned aircraft conduct relief on station.

DO NOT KEEP RECONNAISSANCE ASSETS IN RESERVE

3-14. Continuous and focused collection efforts require an efficient mix and redundancy of reconnaissance assets; however, this does not mean to employ all assets simultaneously. Commanders maximize employment of their reconnaissance assets to answer PIR. Commanders and planners task and position reconnaissance assets at the appropriate time, place, and in the right combination to maximize their capabilities, allow for timely analysis of information, and aide decision making at the appropriate echelon. To do this, planners must understand the capabilities and limitations of aviation reconnaissance assets. Station time of manned and unmanned systems, sensor capabilities, voice and digital communications ranges, airspace coordination measures, bandwidth availability, weather considerations, intervisibility on the reconnaissance objectives, maintenance requirements and crew availability are all factors that planners must consider to ensure aviation reconnaissance assets are employed to maximize the ability to answer the PIR.

ORIENT ON THE RECONNAISSANCE OBJECTIVE

3-15. 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.

3-16. The aviation reconnaissance force must always be focused on the key elements of information required by the commander. Whether the objective is an enemy force, civilian population or terrain feature, the reconnaissance force tailors the scheme of maneuver to focus on the reconnaissance objective without becoming decisively engaged, fixed, delayed or distracted.

REPORT ALL INFORMATION RAPIDLY AND ACCURATELY

3-17. Early and accurate reporting is critical to the successful execution of all reconnaissance operations and enables commanders to make timely decisions. When enemy contact is made, reconnaissance elements must render accurate contact reports quickly, then provide follow up reports to fully develop the information requirement. Attempting to fully develop the situation prior to reporting reduces early warning and may give the enemy a position of relative advantage before the supported commander can react. When enemy contact is not present in areas that it is anticipated, negative contact reports are just as important as contact reports. Accurate and timely reports must be clear and concise but with sufficient detail to answer the key elements necessary for analysis and decisions. Information requirements tied to decision points with a latest time information is of value (LTIOV) provide focus for units collecting information and ensure units report information to facilitate timely decisions.

3-18. Digital networking and communications provide aviation reconnaissance forces the ability to send preformatted text messages non-line of site, over greater distances and to multiple recipients simultaneously. However, digital messages may not provide the level of clarity and detail necessary to fulfill the reporting requirement. Voice reporting via radio communications can convey details and certain emphasis that may be lost via a digital message. Either format requires the same disciplines of brevity and protocol to ensure the efficient use of communications bandwidth and still ensure the message is received.

3-19. Full motion video from manned and unmanned systems sent via digital radio down-links enable commanders, in real time, to see what the reconnaissance asset is viewing. However, commanders and units receiving the FMV feed must be knowledgeable in aircraft sensor symbology, interpreting infrared imagery and aerial observations in order for the information to be useful. To ensure FMV is interpreted correctly may require aircrews or UAS operators to provide additional voice or digital reports during FMV transmission to provide context and clarity to the transmitted video.

RETAIN FREEDOM OF MANEUVER

3-20. 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.

GAIN AND MAINTAIN ENEMY CONTACT

3-21. Using visual or technical means, the aviation reconnaissance force locates the enemy and maintains 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 reconnaissance guidance, maintaining contact with the enemy force provides real-time combat information on the enemy's disposition, composition, strength, and actions to enable the commander to make timely and informed decisions. Once contact is gained with an enemy force that does not meet bypass criteria, the aviation reconnaissance force does not relinquish contact until directed, reconnaissance handover is complete, or the enemy force is destroyed based on engagement criteria.

3-22. Once the reconnaissance force makes contact with its objective it must maintain some form of contact unless instructed by the commander to do otherwise. Contact is any condition that reveals the reconnaissance objective to friendly forces. For aviation reconnaissance forces, contact is most often gained visually through the use of sensors or direct viewing. The use of sensors allows reconnaissance forces to maintain greater standoff outside enemy weapon engagement zones while providing greater fidelity for positive identification and target location. The use of MUM-T increases the likelihood of the reconnaissance force gaining and maintaining contact. Using MUM-T, UAS can enable the reconnaissance force to maintain visual enemy contact from a distance; attack the target if armed, laser designate, or cue the objective to another manned or unmanned aircraft at a decisive point. Continuous coverage by the UAS allows the manned aircraft the freedom of maneuver to rotate to and from the FARP while maintaining continuous situational awareness through shared video. Maintaining continuous contact with an enemy force allows the reconnaissance force to develop the situation and provides a commander with continuous and actionable information concerning an opposing force.

DEVELOP THE SITUATION RAPIDLY

3-23. 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 course of action. 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.

3-24. Passive development is when a reconnaissance element uses its observation, stand-off and maneuver capabilities to give the commander the most complete and up-to-date operational picture. It is typically associated with stealthy movement; however, a reconnaissance element could also make its presence overt to continue to develop the situation and cause a reaction to gauge the intent of an objective enemy force.

3-25. Active development involves forceful maneuver, fires, or both to develop the situation. Using reconnaissance by fire is a method to develop the situation, as it causes a reaction by the enemy. However, rules of engagement (ROE) and engagement criteria may limit or restrict the reconnaissance force from employing direct and indirect fires against other than positively identified enemy forces.

COMMANDER'S RECONNAISSANCE GUIDANCE

3-26. Commanders provide their intent to enable the reconnaissance force to accomplish the mission in a timely manner. The commander specifies reconnaissance guidance for each phase of an operation and makes adjustments when appropriate. The commander's guidance consists of four elements:

- Focus (Reconnaissance Objectives).
- Tempo of reconnaissance (Drives Latest Time Information is of Value).
- Engagement/disengagement/bypass criteria.
- Displacement/Battle Handover criteria.

Focus

3-27. The commander focuses the reconnaissance effort in terms of terrain, threat, civil considerations, and infrastructure. The focus describes the nature of the intended reconnaissance objective and emphasizes the type of information to be collected. Army Aviation units are capable of collecting information on the terrain, threat, civil considerations, and infrastructure within a named area of interest. For example, the commander may direct the aviation reconnaissance element to focus on the specific enemy formation templated to be in a particular area (e.g. a combat reconnaissance patrol in an NAI). Confirming or denying the presence of the enemy formation serves as an indicator that answers a specific information requirement and results in a PIR being answered.

Terrain

3-28. Detailed and accurate knowledge of the terrain, inclusive of weather effects, is a prerequisite to the operational and tactical success of any operation. Commanders must know the current condition of highways, roads, trails, streets, alleys, buildings, bridges, underpasses, and fording locations that may be used as avenues of approach or axes of advance. They must know the locations and types of physical and manmade obstacles along maneuver corridors, and the trafficability of the ground to support cross-country movement of dismounted and/or mounted forces. A focused aerial reconnaissance facilitates the commander’s ability to confirm or deny aspects of geospatial products. The reconnaissance element reconnoiters and analyzes terrain as it pertains to both friendly and enemy operations. Terrain-focused reconnaissance evaluates the military aspects of the terrain (observation and fields of fire, avenues of approach, key terrain, obstacles and movement, and cover and concealment [OAKOC]) and provides valuable feedback to the commander on the feasibility of his scheme of maneuver.

Threat

3-29. An enemy-focused reconnaissance determines the enemy’s size, strength, composition, location, and disposition. This information enables a commander to discern his opponent’s strengths, weaknesses, and vulnerabilities. From this determination, he can decide when, where, and how to most decisively apply the combat power of the combined arms team and any supporting joint/combined forces to accomplish the mission. The reconnaissance effort must not become decisively engaged and lose the freedom to maneuver.

Civil considerations

3-30. This type of reconnaissance focus is used to determine patterns of life of a populace in a given area, allowing the commander to understand variations as potential indicators that may require further analysis. It is critical that intelligence personnel convey to the aerial reconnaissance element the norms and tendencies of local inhabitants, as this information is important for identifying and observing activities that are outside of normal behavior. This focused reconnaissance effort increases a commander’s situational understanding, and enables future operations, and/or immediate actions to maintain support of a friendly populace, or neutralize or gain the support of hostile or neutral factions.

Infrastructure

3-31. The infrastructure is those systems that support the inhabitants and their economy and government. Destroying, controlling, or protecting vital parts of the infrastructure can isolate the enemy from potential sources of support. Because these systems are linked, destroying or disrupting any portion of an urban infrastructure can have cascading effects (either intentional or unintentional) on other elements of the infrastructure and the populace. The commander must gain a general understanding of these systems—how they fit into the community at large and how they relate to one another. Aerial reconnaissance missions focused on infrastructure consider–

- **Communications.** Wireless, telegraph, radio, and television.
- **Transportation and distribution.** Highways and railways (to include bridges, tunnels, ferries, and fords); cableways and tramways; ports, harbors, and inland waterways; airports, seaplane stations, and heliports; and mass transit.
- **Energy.** Systems providing power to the urban area and consisting of industries that produce, store, and distribute electricity, coal, oil, and natural gas. This area also encompasses alternate energy sources such as nuclear, solar, hydroelectric, and geothermal.

- **Commerce.** Includes business and financial centers (stores, shops, and restaurants), rural areas (strip malls, farms, food storage centers, and mills) as well as environmentally sensitive areas (mineral extraction areas and chemical/biological facilities).
- **Human services.** Includes hospitals, water supply systems, waste and hazardous material storage and processing, emergency services (police, fire, rescue, and emergency medical services), and governmental services (embassies, diplomatic organizations, and management of vital records, welfare systems, and the judicial system). The loss of any of these often has an immediate, destabilizing, and life-threatening impact on the inhabitants.

TEMPO

3-32. Timing and synchronization of the total reconnaissance effort is crucial for overall mission success. Launching reconnaissance elements too early is just as ineffectual as re-tasking a reconnaissance asset too late. Enemy actions or follow-on missions are two examples of factors driving *tempo*. A surge or phasing of the total number and capabilities of reconnaissance assets can affect the speed and timeliness of the collection efforts. Bypass criteria and a comprehensive collection matrix provide reconnaissance units with the tempo guidance. Without this guidance the reconnaissance unit cannot balance the amount of information required against the timeliness of the information being useful. Figure 3-2, page 3-8 depicts the relationships between tempo, manned and unmanned aircraft, and what TTPs are best suited for each form of reconnaissance tempo.

3-33. Tempo of reconnaissance refers to the level of detail and covertness required of the reconnaissance unit organization to best accomplish either reconnaissance or security tasks. Tempo is described by four terms−

- Rapid.
- Deliberate.
- Stealthy.
- Forceful.

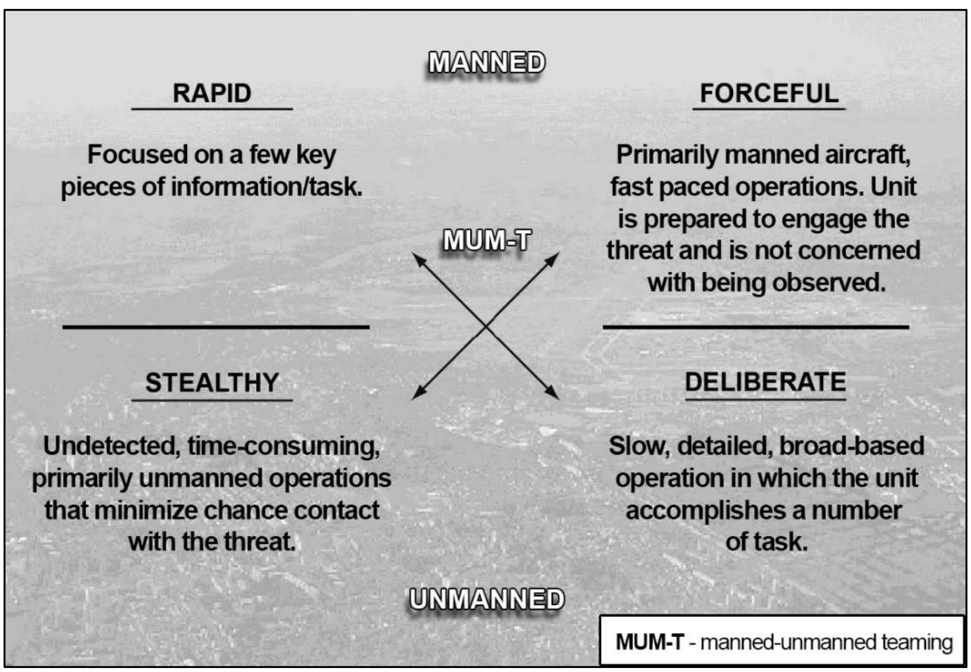

Figure 3-2. Reconnaissance tempo

3-34. Rapid and deliberate are levels of detail and are mutually exclusive in all cases, as one cannot be rapid and deliberate at the same time. However, reconnaissance units can shift between the two from phase to phase or even within sub-phases of an operation. Stealthy and forceful indicate mutually exclusive levels of covertness. Commanders choose the appropriate form of reconnaissance to accomplish the mission balanced based on mission variables. As a general rule, the faster the tempo the lower the detail and the higher the detail the more time or resources required to accomplish the mission. Both manned and unmanned platforms may accomplish rapid or deliberate reconnaissance but the persistence and station time inherent to unmanned systems makes them more aptly suited to perform deliberate reconnaissance.

3-35. Rapid tempo dictates that the level of detail for the reconnaissance operation is limited to a certain prescribed list of tasks or PIR. Rapid tempo is appropriate when time is of the essence. Commanders assume additional risk as tempo increases in relation to enemy activity.

3-36. Deliberate tempo dictates all reconnaissance tasks must be accomplished. Deliberate tempo allows the organization more time to answer all information requirements. Detailed and thorough reconnaissance tasks require time-intensive, comprehensive, and meticulous efforts to observe reconnaissance objectives and develop the situation. Integrating planners from the aviation reconnaissance unit and the supported maneuver unit enables commanders to synchronize their information collection plans both within their units and with higher and adjacent headquarters.

3-37. Stealthy tempo emphasizes avoiding detection, flight profiles, and restrictive engagement criteria. Stealthy reconnaissance typically takes more time than forceful reconnaissance and maximizes standoff, slant range, and concealment, to reduce visual and acoustic signatures. Stealthy reconnaissance is used when time is available, detailed reconnaissance is required, enemy forces are likely in a specific area, and danger areas are encountered.

3-38. Forceful tempo develops the situation through action by employing technical means, both direct and indirect fire systems, and moving rapidly to develop the situation. Forceful reconnaissance requires audacity, firepower, and the aggressive exploitation of enemy vulnerabilities during actions on contact. Forceful reconnaissance is appropriate when enemy information is more important than the terrain, time is limited, detailed reconnaissance is not required, or the terrain is open.

ENGAGEMENT/DISENGAGEMENT/BYPASS CRITERIA

3-39. The commander must define the size or type of enemy force he expects subordinate units to engage or avoid which drives planning for direct and indirect fires, as well as establishment of bypass criteria. All three criteria should describe an enemy force using clearly understood, precise and quantifiable terms. The staff and subordinate commanders refine that guidance into specific execution information.

3-40. Engagement criteria are defined in FM 3-90-1 as protocols that specify those circumstances for initiating engagement with an enemy force. They can be either restrictive or permissive. The commander visualizes engagement criteria through analysis of the mission variables (METT-TC) and the operational variables (PMESII-PT). Engagement criteria should be defined using precise doctrinal terms. The staff and subordinate commanders refine that guidance into specific execution information. Examples include:

- Engagement criteria.
- Guidance for actions on contact.
- Bypass criteria.
- Disengagement criteria.
- Reconnaissance handover criteria.
- Priority of fires.
- ROE.
- Fire support coordination measures.
- ACMs.
- Weapons control status.

DISPLACEMENT CRITERIA

3-41. Displacement criteria define triggers for planned withdrawal, passage of lines, or reconnaissance handover between units. The conditions and parameters set out in displacement criteria integrate the commander's intent with tactical feasibility. Conditions are either event driven (for example, associated PIR being met, enemy contact not expected in the area, and observed NAIs or avenues of approach denied to the enemy); time driven (for example, latest time information of value [LTIOV] time triggers are met); or threat driven (observation posts have been compromised). Failure to specifically dictate conditions of displacement, nested within the higher scheme of maneuver will likely result in ineffective reconnaissance tasks.

SECTION III – FORMS OF RECONNAISSANCE

3-42. Staffs identify gaps in current intelligence holdings. These gaps are translated into information requirements and priority intelligence requirements, which are answered through collection. All forms of reconnaissance, consistent with the fundamentals of reconnaissance, collect against priority intelligence requirements that assist the commander and staff to understand and visualize the environment, develop the situation, create options, and identify opportunities for the commander to seize, retain, and exploit the initiative. Army Aviation conducts four of the five forms of reconnaissance–

- Zone reconnaissance.
- Area reconnaissance.
- Route reconnaissance.
- Reconnaissance in force.

3-43. In most mission profiles, integration of ground forces and attack reconnaissance aircraft provides mutual reinforcement. For example, ground units may reinforce attack reconnaissance aircraft if the terrain offers concealment from aerial observation; however, close coordination and continuous communication between forces is critical to reduce the risk of fratricide. The distance the reconnaissance aircraft operates from the supported unit is influenced by the mission variables (METT-TC) but is generally forward enough to provide the ground commander time to maneuver before enemy fires can affect the unit.

3-44. Many factors affect selecting the appropriate aviation asset for a given mission; for example: range/distance, threat, time, logistics, and forces available, etc. The ground force commanders and staffs at all levels must familiarize themselves with the capabilities and limitations of aviation reconnaissance assets. Often a synergy can be achieved when teaming manned and unmanned aviation assets.

ZONE RECONNAISSANCE

3-45. The z*one reconnaissance* involves a directed effort to obtain detailed information on all routes, obstacles, terrain, and enemy forces within a zone defined by boundaries. The boundaries of a zone are restrictive, unlike those of an area reconnaissance, which are permissive. It is the most time-consuming of the reconnaissance missions, so the commander must allow for adequate time to plan and execute. The commander assigns a zone reconnaissance mission when the commander needs additional information on a zone before committing other forces. It is appropriate when the enemy situation is vague, existing knowledge of the terrain is limited, or combat operations have altered the terrain. A zone reconnaissance may include several route or area reconnaissance objectives assigned to subordinate units.

3-46. The purpose may be to find the enemy or suitable avenues of approach for the main body. Obstacles encountered during a zone reconnaissance may include man-made obstacles (both existing and reinforcing), terrain obstacles, bridges and fords, and denial threats created by chemical, biological, radiation and nuclear contamination. The reconnaissance element must reconnoiter every route within the zone, unless otherwise directed.

3-47. The aviation reconnaissance element performs a well-coordinated zone reconnaissance in conjunction with ground reconnaissance forces and reconnoiters terrain not accessible to the ground elements. If time is critical, the aviation element performs the reconnaissance alone with the understanding that the combat information obtained will not be as detailed. If the unit expects to find significant enemy forces within the zone, the unit must plan for dedicated fire support assets and be prepared to conduct a battle hand-over with ground forces, other aviation assets, or CAS.

3-48. Teaming UAS with manned aircraft for zone reconnaissance allows the manned aircraft to complete larger areas of reconnaissance that may require less detail. The UAS can concentrate on terrain that may be difficult for manned aircraft to reconnoiter or built-up areas that require detailed video footage or pose a risk to manned aircraft. Manned-unmanned teams may complete zone reconnaissance with increased tempo while still providing all required information.

3-49. The commander defines the zone reconnaissance by establishing control measures, such as lateral boundaries, a line of departure, and a limit of advance. The lateral boundaries, a LD, and a LOA define this AO. Within the AO, the force conducting the zone reconnaissance further divides the AO with sub boundaries to define subordinate unit AOs. Subordinate AOs are not necessarily the same size. Phase lines, observation points and check points, are used to control the movement of elements operating abreast. Checkpoints indicate critical terrain features and help to coordinate air-ground integration. The commander may use fire support coordination measures to control direct and indirect fires and use additional control measures as necessary. In addition, the commander assigning the zone reconnaissance mission must specify the route the reconnaissance unit uses to enter the AO. All control measures are on recognizable terrain when possible. Figure 3-3, page 3-11, depicts a zone reconnaissance with applicable control measures.

3-50. The reconnaissance commander should focus the unit on the tasks listed below. The tasks associated with zone reconnaissance are–

- Find and report all enemy forces.
- Based on engagement criteria, defeat all enemy forces within the capability of the unit conducting reconnaissance.
- Determine to the crew’s best ability the trafficability of all routes and terrain, including built-up areas.
- Locate and determine the extent of all contaminated areas.
- Identify and describe all bridges, overpasses, underpasses, and culverts.
- Locate fords or crossing sites.
- Locate all mines, obstacles, and barriers.
- Report the above information to the commander and provide imagery, full motion video, digital photos, sketch map, and/or overlay.

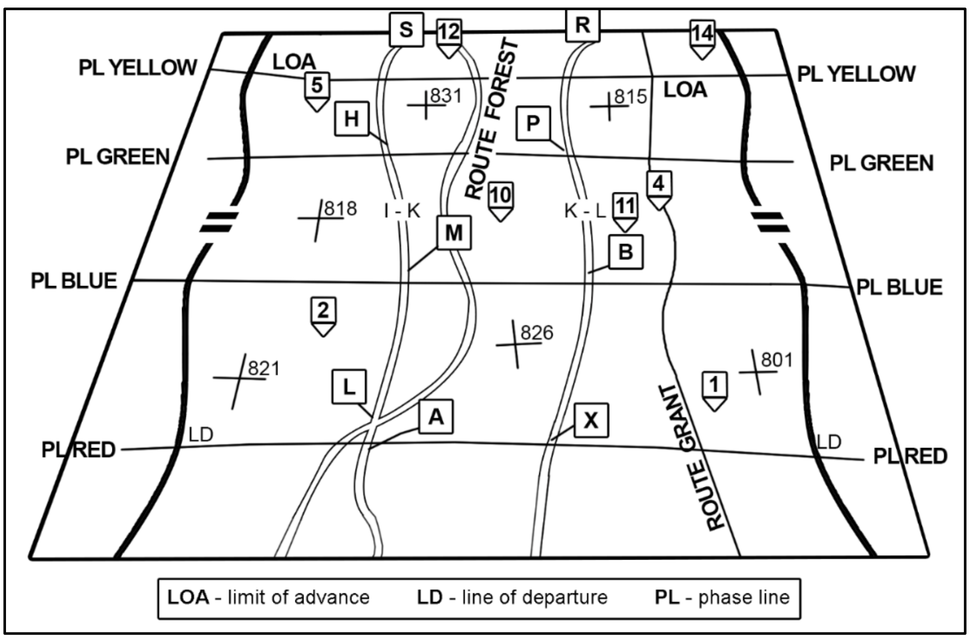

Figure 3-3. Example of a zone reconnaissance

AREA RECONNAISSANCE

3-51. *Area reconnaissance* is a form of reconnaissance that focuses on obtaining detailed information about the terrain or enemy activity within a prescribed area. This area may include a town, a ridgeline, woods, an airhead, or any other critical operational feature. The area may consist of a single point, such as a bridge or an installation. The primary difference between a zone and an area reconnaissance is the nature (restrictive versus permissive) of the boundaries. A zone reconnaissance has restrictive boundaries that define the company's mission area. Because of this, a zone reconnaissance does not have an implied task to reconnoiter dominating terrain outside of the zone. The boundaries of an area reconnaissance are permissive and allow the aerial reconnaissance team greater freedom in selecting their ingress and egress routes. The reconnaissance force may move to and reconnoiter one large area or several small, dispersed areas. An area reconnaissance may be performed in rear, close or deep areas. Emphasis is normally placed on reaching the objective area quickly. Areas are normally smaller than zones and are not usually contiguous to other friendly areas targeted for reconnaissance. Because the area is smaller, an area reconnaissance typically takes less time to complete than a zone reconnaissance.

3-52. Army Aviation's inherent maneuver capabilities allow the reconnaissance unit a tremendous amount of flexibility that must be tempered by staying focused on the reconnaissance objective. The usually smaller and more focused NAIs can translate into a more efficient and timely reconnaissance product. An area reconnaissance is frequently conducted within closer proximity to friendly ground forces than is a zone reconnaissance. Armed, manned aircraft are the most ideal platforms to execute an area reconnaissance; however, unmanned aircraft systems can execute this mission but will be hampered by narrow field of regard and stand-off distance. UAS may be better suited in a MUM-T role with focus of either the routes to and from the area or the area recon itself.

CONTROL MEASURES FOR AN AREA RECONNAISSANCE

3-53. The commander assigning an area reconnaissance specifies the area for reconnaissance with a single continuous line to enclose the area to reconnoiter. Commanders may designate the ingress and egress routes to the Area to be reconnoitered. Figure 3-4, page 3-12, depicts control measures and maneuver graphics for an area reconnaissance.

3-54. The reconnaissance commander should focus the unit on the tasks listed below. The tasks associated with area reconnaissance are−

- Reconnoiter specific terrain within the area and dominant terrain outside the specific area from which the enemy can influence friendly operations.
- Find and report all enemy within the area.
- Find suitable cover and concealed ground or air avenues of approach.
- Reconnoiter all terrain within the area and assist ground forces with built-up areas.
- Determine significant adverse weather.
- Locate a bypass around built-up areas, obstacles, and contaminated areas.
- Inspect and classify all bridges, overpasses, underpasses, and culverts within the area.
- Locate fords and crossing sites near all bridges in the area. Locate all mines, obstacles, and barriers in the area within its capability and overwatch ground units in their clearance.

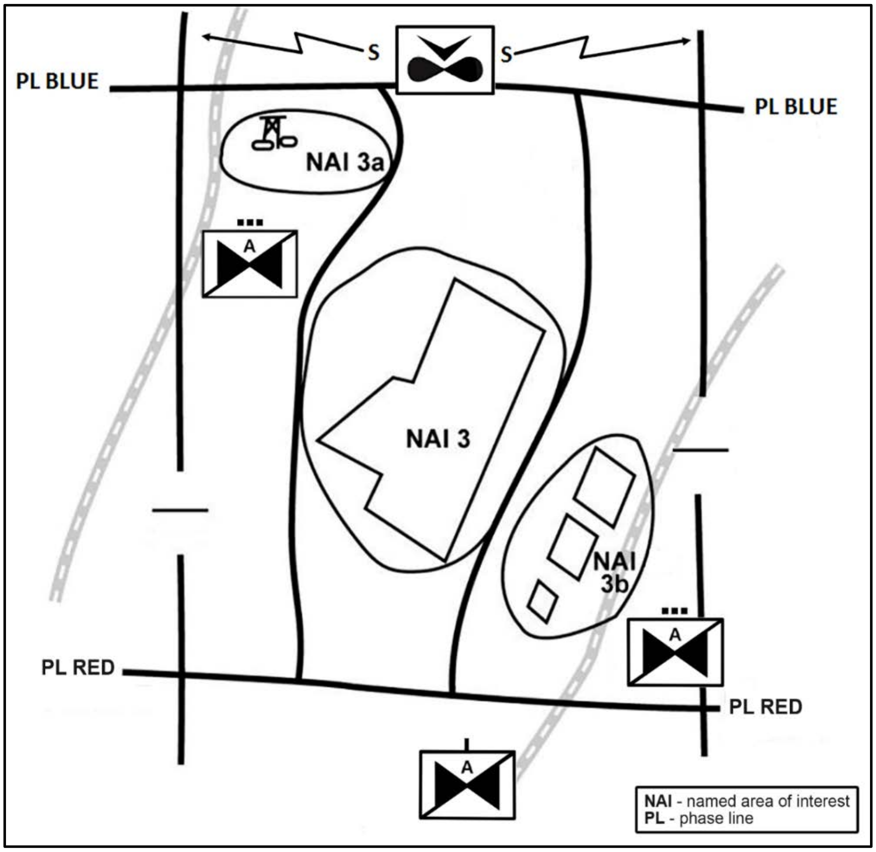

Figure 3-4. Example of an area reconnaissance

LANDING ZONE/PICKUP ZONE RECONNAISSANCE

3-55. The reconnaissance of pickup and landing zones (PZ/LZ) is an area reconnaissance. A UAS can provide a limited PZ/LZ reconnaissance (usually enemy focused) to an air assault force but the stand-off might limit detail. The reconnaissance of the PZ/LZ can be performed well in advance of a planned air assault or during mission execution. Current geospatial intelligence imagery assists aviation planning staff the ability to choose suitable PZ and LZ prior to execution, allowing reconnaissance elements to simply confirm or deny enemy presence and suitability. Pickup and Landing zone considerations are defined in chapter 5. Figure 3-5, page 3-13 depicts control measures and maneuver graphics for an LZ/PZ reconnaissance.

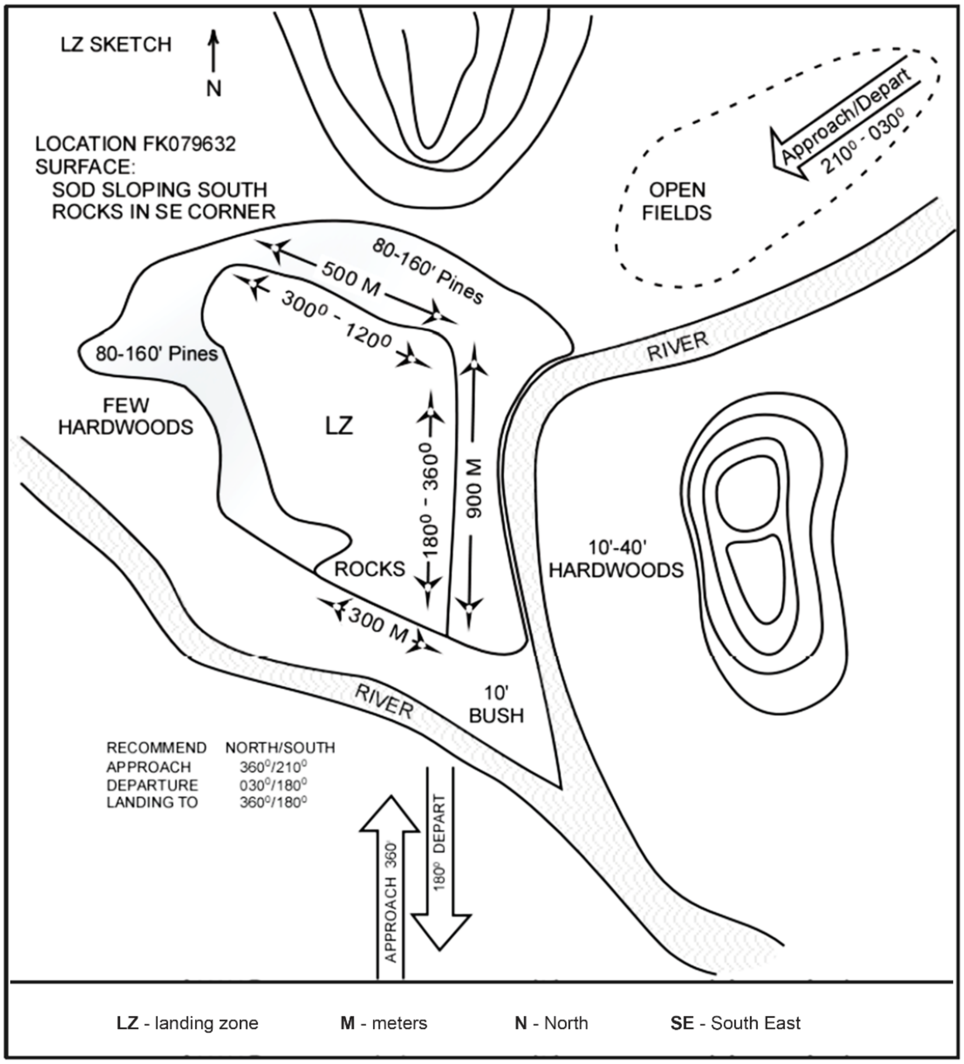

Figure 3-5. Example of landing zone sketch

3-56. The reconnaissance element evaluates and make recommendations of the following tactical considerations—

- Mission. Whether the LZ/PZ will facilitate the supported unit's ability to accomplish the mission.
- Location. Whether the LZ/PZ meets the commander's intent for distance from the objective.
- Security. The force required to provide security during the assault.

3-57. Technical characteristics of the LZ/PZ include—

- Landing formations.
- Obstacles and hazards in the landing area and vicinity.
- Number and type of aircraft the LZ/PZ can support.
- Ground slope of the landing area.
- Load suitability.
- Approach and departure directions.
- Size of the available landing area.
- Surface condition, including brown-out or white-out characteristics, of the landing area.
- Vulnerability.

3-58. If meteorological conditions observed during the reconnaissance are expected to be present during the air assault, reconnaissance elements assess the impact of—

- Ceiling and visibility.
- Density altitude.
- Winds.

ROUTE RECONNAISSANCE

3-59. *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. The reconnaissance may be oriented on a road, air route, railway, mobility corridor, or general direction of an advance or attack within the time available. It provides new or updated information on route conditions, such as obstacles (natural and/or man-made) and bridge classifications, and enemy and civilian activity along the route. The commander normally assigns this mission when wanting to use a specific route for friendly movement. The route reconnaissance may be performed as part of an area or zone reconnaissance, and is best accomplished as an air-ground operation.

3-60. The following are critical tasks for a route reconnaissance—

- Reconnoiter all terrain the enemy can use to dominate movement along the route.
- Assess trafficability of the route.
- Reconnoiter all defiles along the route for possible ambush sites and locate a bypass.
- Locate bypasses around built-up areas, mines, obstacles, barriers, and contaminated areas.
- Locate suitable landing zones and hazards to flight
- Find and report all threats that can influence movement along the route to include civilian activity.
- Identify suspicious items or personnel and equipment along the route (IEDs, VBIEDs, or ambush sites).
- Assess and classify, to the aircrews' best ability, all bridges, overpasses, underpasses, and culverts that might restrict access.
- Locate fords and crossing sites in proximity to the route.
- Reconnoiter all built-up areas along route.
- Report route information, to include providing a sketch map or a route overlay.

CONTROL MEASURES FOR A ROUTE RECONNAISSANCE

3-61. Control measures for a route reconnaissance regulate the area for the unit conducting the reconnaissance. The commander places lateral boundaries on both sides of the route, far enough out to allow reconnaissance of all terrain from which the enemy could dominate the route. The line of departure (LD) is drawn with reference to the forward line of troops or the location where enemy contact is possible. Generally this falls before and perpendicular to the route being reconnoitered, allowing adequate space for the aviation reconnaissance element conducting the reconnaissance to deploy into formation. The LD creates the rear boundary. The commander places a limit of advance (LOA) far enough beyond the route's RP, including any terrain from which the enemy could dominate the route. A start point (SP) and a RP define that section of the route where the unit collects detailed information. The commander may add phase lines (PLs) and checkpoints to coordinate reconnaissance, control movement, or designate critical points. Commanders place additional control measures on terrain features identifiable from both the ground and the air to coordinate indirect and direct fires and assist in air-to-ground coordination. Figure 3-6 depicts a route reconnaissance with the associated control measures.

GROUND ROUTE RECONNAISSANCE

3-62. Aviation reconnaissance elements can provide a rapid means to conduct a route reconnaissance for maneuver commanders. What is gained in speed is lost in the thorough detail that might be required by ground forces (especially motorized, mechanized and armored forces) in classifying a route. Aviation elements are limited in some capabilities and cannot ascertain some specific information such as classification of bridges, curves, load bearing capacities, poor weather ratings, fording sites and other data. Additionally, well-hidden hazards such as buried mines, camouflaged explosive devices, explosive charges set to create an obstacle can be difficult for an aviation element to detect at altitude or at a given airspeed. Photographic and video imagery can be used by the reconnaissance element to disseminate information regarding routes to engineers that can provide the detailed analysis of a given component of a route. For more information on ground route reconnaissance, see FM 3-90-2.

Ground Route Reconnaissance Minimum Planning Requirements

3-63. Figure 3-6 provides a sample of a route reconnaissance, which requires the following:

- Start point, release point and designation of the route.
- Mission start times and duration.
- Size and composition of friendly force utilizing the route.

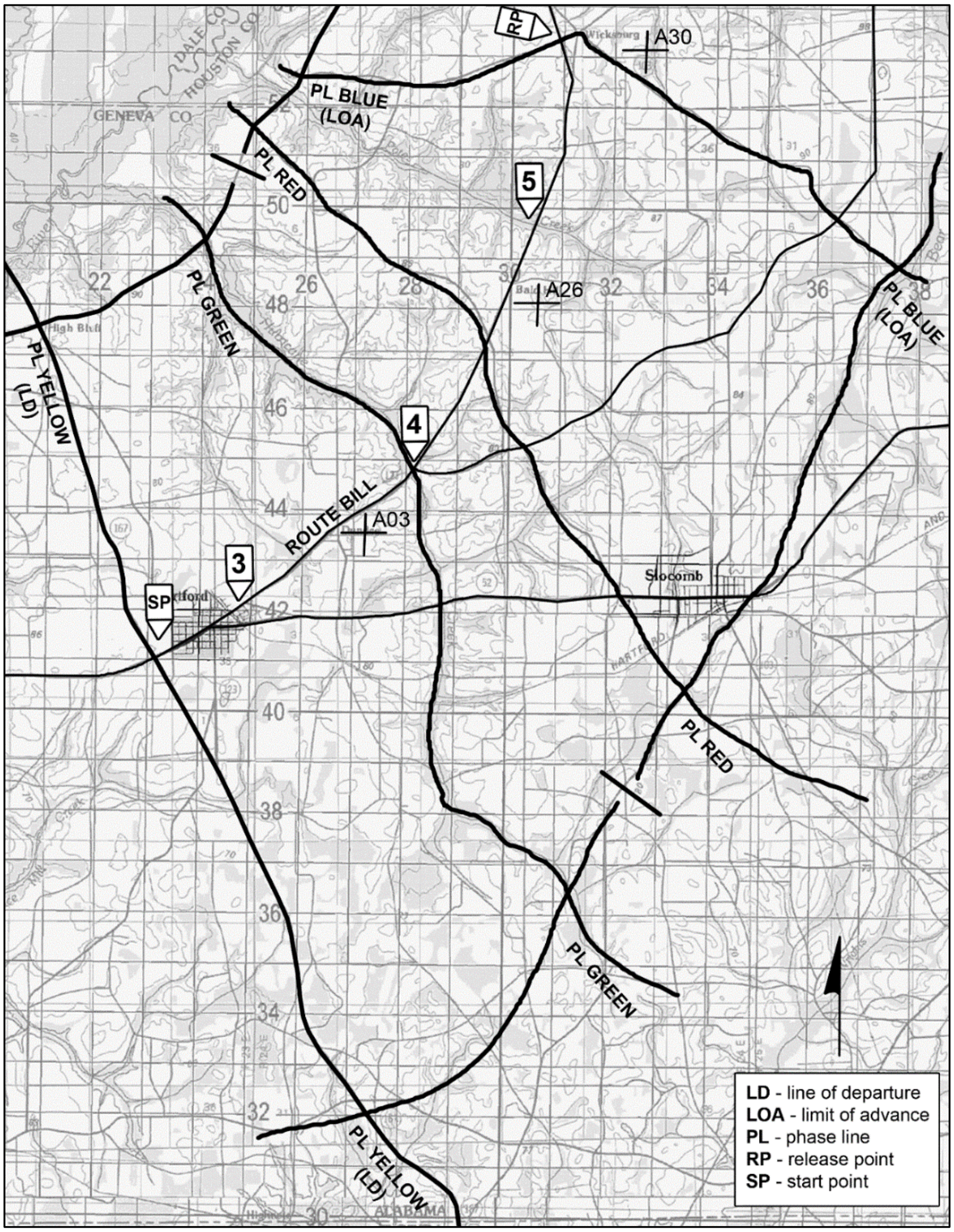

Figure 3-6. Example of a route reconnaissance

AIR ROUTE RECONNAISSANCE

3-64. Pre-mission planning tools, such as three-dimensional terrain visualization software, allow units to perform a route fly-through prior to mission execution. However, the amount of data in the three-dimensional database, resolution of imagery and the currency of the digital terrain elevation data can affect the need and the level of detail required for the air route reconnaissance. The UAS is capable of conducting an air route reconnaissance; however, the high altitude and narrow field of view, can limit the effectiveness of the reconnaissance.

RECONNAISSANCE IN FORCE

3-65. A RIF is conducted as an air-ground operation and is a deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information. Company/troop-sized reconnaissance forces or larger usually conduct a RIF. A commander assigns a RIF when the enemy is operating in an area and the commander cannot obtain adequate intelligence by any other means. A unit may also conduct a RIF in restrictive terrain where the enemy is likely to ambush smaller reconnaissance forces. A RIF is an aggressive reconnaissance similar to a movement to contact but with clearly stated reconnaissance objectives. It differs from other forms of reconnaissance because it is normally conducted only to gain information about the enemy and not the terrain.

SECTION IV – PLANNING CONSIDERATIONS

3-66. The commander's reconnaissance guidance, PIR, and other critical information maximize the effectiveness of reconnaissance. Planners must accurately convey to the reconnaissance element the friendly and enemy situations, mission and commander's intent, coordinating instructions, signal and service and support information.

3-67. Staffs must consider mission requirements and the benefits of manned-unmanned teaming. UAS slow airspeeds, high altitudes, extended station times, limited organic armament, and persistent observation capabilities provide early and accurate warning without increased risk to personnel. Employing the MUM-T TTP, mission tasks can be distributed between UAS and manned aircrews. For instance, UAS can focus on the route while manned aircraft focus on influencing terrain, high-speed avenues of approach, and other areas of interest not directly on the route. Manned aircrews can observe UAS FMV or communicate with the UAS unmanned aeroscouts throughout the mission to facilitate situational awareness. The manned-unmanned team enhances the execution of the reconnaissance mission.

3-68. The depth, duration, and intensity of the reconnaissance may require multiple, primary and alternate jump FARPs to include silent FARPs. Multiple teams and/or UAS may be required to ensure continuous reconnaissance during FARP rotations. Reconnaissance/Battle handovers are critical to the success of FARP rotations and the overall reconnaissance mission.

RECONNAISSANCE MANAGEMENT

3-69. The commander and staff manage reconnaissance assets through cued, mixed, and redundant employment. Reconnaissance management allows the unit to collect the most critical information with multiple perspectives at the appropriate time. Cueing, mixing, and redundancy are used to maximize collection efforts and allow primary focus on reconnaissance objectives likely to yield the most information.

- *Cueing* is the integration of one or more types of reconnaissance or surveillance systems to provide information that directs follow-on collecting of more detailed information by another system (FM 3-90-2). These systems may signal other ground or air reconnaissance elements to investigate specific areas to confirm, deny, or verify information. For example, a UAS may observe a NAI along avenue of approach while an AH-64 is conducting reconnaissance on another NAI. The UAS may cue the manned aircrew via voice or digital communication, or via laser designation to gain another perspective and provide clarity of the reconnaissance objective.
- *Mixing* is using two or more different assets to collect against the same intelligence requirement (FM 3-90-2). Mixing different systems is always desirable if the situation and available resources permit. This method exploits the unique capabilities of the different systems to compliment or reinforce each of the collection efforts. Mixing can help defeat deception attempts by highlighting differences in collected information and also provides depth to the reconnaissance. For example, one dismounted

scout observation post (OP) and one UAS focused on the same NAI from different locations with varying sensor capabilities.

- *Redundancy* is using two or more like assets to collect against the same intelligence requirement (FM 3-90-2). Redundancy improves the chances the reconnaissance element collects the required information and provides depth should one element become compromised or unable to observe the reconnaissance objective. For example, two SWTs focused on the same NAI.

RECONNAISSANCE TECHNIQUES

3-70. There are two reconnaissance techniques commanders employ to answer information requirements: reconnaissance push and reconnaissance pull. Commanders employ these techniques based on their level of understanding of the OE combined with the time available to refine their understanding. In selecting one technique over the other, the commander considers the following:

- Degree of the situational understanding of the enemy.
- Time available to collect the information.
- Leadership ability of subordinate commanders.
- Proficiency of subordinate units to plan and rapidly react for uncertain situations.

3-71. **Reconnaissance pull** is used when commanders are uncertain of the composition and disposition of enemy forces in their areas of operation, information concerning terrain is vague, and time is limited. In these cases, aviation reconnaissance elements initially work over a broad area to develop the enemy situation. As they gain an understanding of enemy weaknesses, they then 'pull' the main body to positions of tactical advantage. Reconnaissance pull knowingly emphasizes opportunity at the expense of a detailed, well-rehearsed plan, and unity of effort. Commanders base plans on several viable branches or courses of action triggered by decision points that aviation reconnaissance elements operate to answer associated CCIR. Leaders at all levels must understand and rehearse branches and sequels.

3-72. **Reconnaissance push** is used when commanders have a relatively thorough understanding of the OE. In these cases commanders 'push' aviation reconnaissance elements into specific portions of their areas of operation to confirm, deny, and validate planning assumptions impacting operations. Reconnaissance push emphasizes detailed, well-rehearsed planning and deliberate maneuver.

SECTION V – TACTICS

3-73. The execution of reconnaissance is a balance of art and science that takes the right mix of skill, experience, audacity, cunning, intuition, knowledge of friendly, enemy and civilian patterns and capabilities, attention to detail, aggressiveness, patience, curiosity, and anticipation. The commander and staff plan and task the reconnaissance mission but the execution falls on the aircrews tasked with collecting the information that will ultimately determine the outcome of the mission. The aircrew will determine the TTP required to accomplish the reconnaissance. This section discusses the TTPs units use to conduct reconnaissance.

EMPLOYMENT

3-74. Commanders normally array their aircraft into teams for tactical operations to gain increased flexibility of employment. Team-driven operations are the basic building block for many aviation combat operations conducted by companies and troops. Teams create the ability to conduct operations at the platoon and company/troop level, and are the smallest manned tactical formation employed by the ARS and ARB in combat. UAS operate autonomously or as members of a manned-unmanned team. Each team should be prepared to assume duties of other teams during missions. The type of flight mode and movement technique is based on the mission variables.

AIRCRAFT TEAMING

3-75. One of the most common tactics is to put two aircraft of the same type together. This is simple to plan and execute, as the aircraft and crews usually come from the same unit and are familiar with tactics and have trained together. A SWT is the terminology used for teaming attack reconnaissance aircraft together for the purpose of reconnaissance and security operations.

UNMANNED AIRCRAFT

3-76. The addition of an unmanned aircraft to a SWT can greatly increase the capabilities of that team. The UAS operators are critical members of the SWT and must be integrated throughout mission planning, rehearsals, and execution. For example, when teamed with an SWT for reconnaissance operations, UAS may launch prior to the manned team to reconnoiter the air route to the objective. The SWT aircrew may be able to monitor what the UAS is observing further enhancing the aircrew's situational understanding. This gives the team more flexibility in the conduct of the mission. Additionally, UAS teaming for a route reconnaissance provides many options to the ground or air commander. UAS can launch in front of the convoy to conduct an initial route reconnaissance while the SWT conducts convoy security. When the UAS establishes contact, it may conduct a reconnaissance handover with the SWT using digital or radio communications while providing situational awareness, maneuver space, and reaction time for the ground commander.

AIRCRAFT EMPLOYMENT TECHNIQUES

3-77. Units can employ a variety of techniques to accomplish the reconnaissance. The following techniques are not the only ways to accomplish reconnaissance but rather a collection of maneuvers to de-conflict airspace among aircraft in a team, while effectively collecting the required information. It also provides a common language used by SWT aircrews to efficiently coordinate and execute reconnaissance and security missions. These techniques may decrease vulnerability to enemy detection and engagement, but each must be evaluated to determine its impact on station time, effectiveness of the reconnaissance, and ability to maneuver.

CONCEALED

3-78. The *concealed* deployment of aircraft during a reconnaissance is a common method of executing the reconnaissance mission but may pose unique challenges. In a peer or near-peer conflict methods for increasing aircraft survivability include flying at nap of the earth levels to allow the terrain to mask aircraft signatures, remaining downwind from an objective to reduce noise at the target, approaching the objective with the rising or setting sun to the rear of the formation, or approaching the objective from a direction where the aircraft noise is masked by other noises.

OVERT

3-79. *Overt* reconnaissance collects required information without attempting to hide or mask the presence of the reconnaissance asset. The presence of aircraft can have an influence on the area of operations and shape perceptions of enemy or civilians. For example, the known presence of aircraft over an enemy area could prevent or delay a planned enemy operation and trigger communications that can be collected by electronic intelligence assets.

LEAD -TRAIL

3-80. The *lead-trail* technique divides specific duties between a two-aircraft team conducting a reconnaissance task. The lead aircraft focuses primarily on performing the reconnaissance mission and coordinating with the supported ground unit. The trail aircraft focuses on providing covering fire to the lead aircraft and assists with navigation, communications with the task force to which assigned, de-conflicts the airspace, and assists with performing the reconnaissance.

3-81. The team maneuvers as necessary to execute the reconnaissance while providing mutual support and security for the aircraft within the team. Such considerations include differing altitudes within the team to provide covering fire and different perspectives on the reconnaissance objectives and/or enemy force. For example, positioning the trail aircraft at a higher altitude better positions the trail aircraft provide covering fires for the lead aircraft whereas positioning the trail at a lower altitude may provide better visibility of the lead aircraft in urban environments.

ORBITS

3-82. The *orbit* technique is a simple method for achieving a complete 360 degree reconnaissance of a point or small area. The aircraft or team picks an altitude and distance suitable for the situation and sensor capability and flies in one direction around the objective. The benefit of this technique provides continuous sensor orientation on the objective.

3-83. The *opposing orbits* technique is when two aircraft fly opposite orbiting directions around an objective. A team of aircraft must fly opposing orbits at different altitudes or distances from the objective or combination of the two and then only if the threat is low enough to allow for the flight to separate slightly. The benefit of this technique is that it provides various perspectives of the objective.

3-84. Figure 3-7 depicts a single aircraft orbiting a reconnaissance objective as well as an SWT executing the opposing orbits technique.

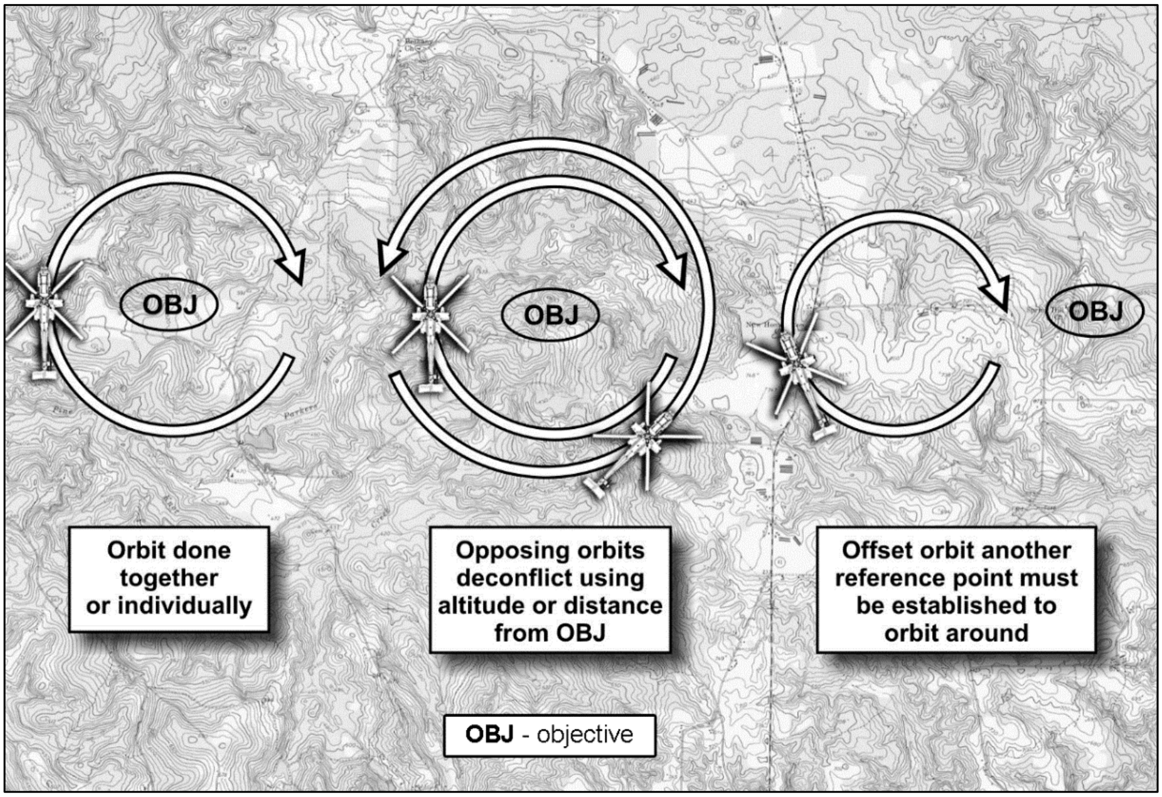

Figure 3-7. Examples of the orbit technique

FIGURE EIGHT

3-85. The *figure eight* is a technique for observing an objective or target with onboard sensors at altitude and offset on a general direction (e.g. stay to the east of NAI 2) (figure 3-8, page 3-20). The aircraft or team flies a track that resembles the number 8 in such a manner that the sensor operator is able to constantly observe the target without ever reaching a sensor azimuth or elevation limitation, while conserving station time. Typically, the long axis of the 8 will be perpendicular to the general angle of observation and because of winds and stand-off requirements may be flatter on one side or the other.

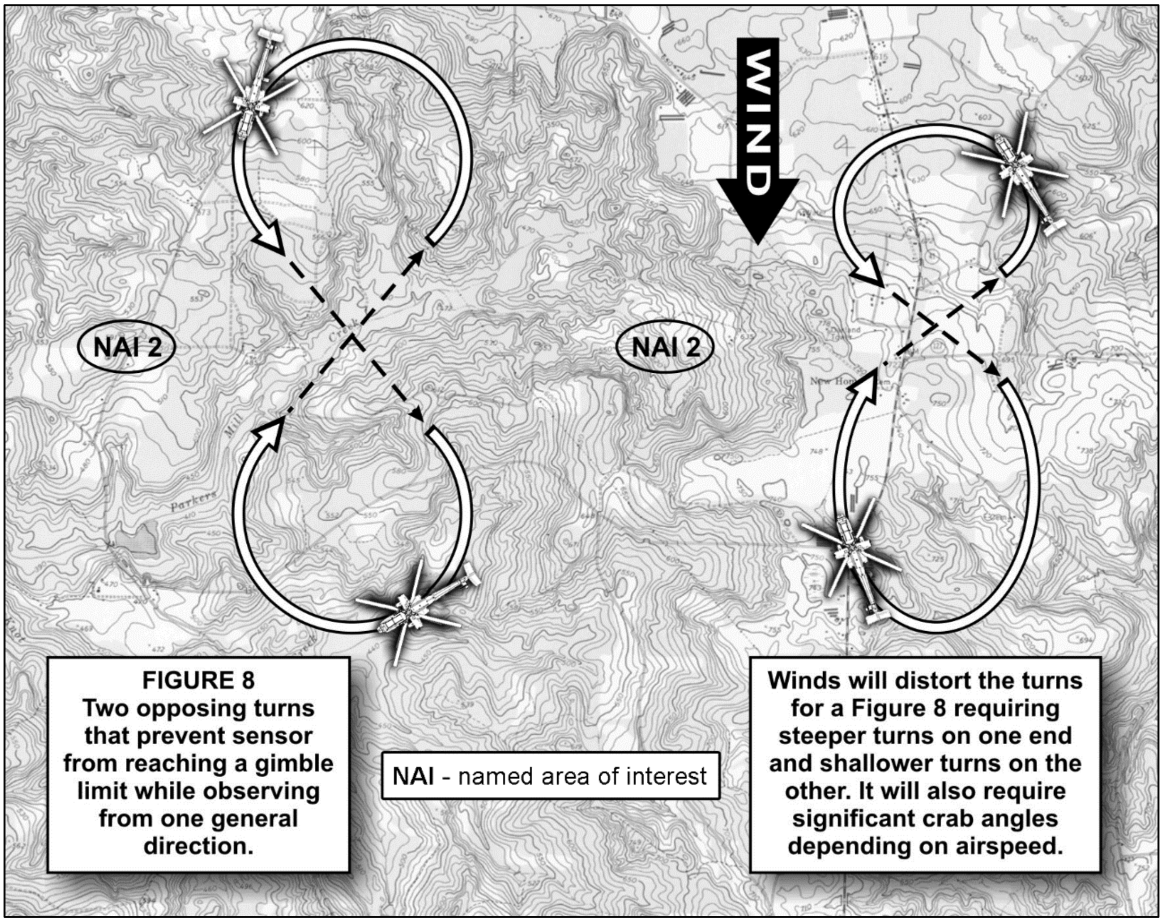

Figure 3-8. Examples of the figure eight technique

KEYHOLE

3-86. Keyhole is a technique for providing quick airspace reference around a point. It uses a cross formed by two intersecting lines that pass through an anchor point known as Point Echo, usually the target or objective, but can also be a grid or reference point. The legs of the Keyhole are oriented along magnetic north-south and magnetic east-west lines and the legs extend as needed from the center. Aircraft will then anchor off of Point Echo with direction, distance and altitude. Each cardinal direction is labeled with a letter: Alpha – North, Bravo – East, Charlie – South, Delta – West, and Echo center anchor point. This technique is often used by joint terminal attack controllers in the employment of CAS. Figure 3-9, page 3-21 depicts an SWT executing the keyhole technique on a reconnaissance objective.

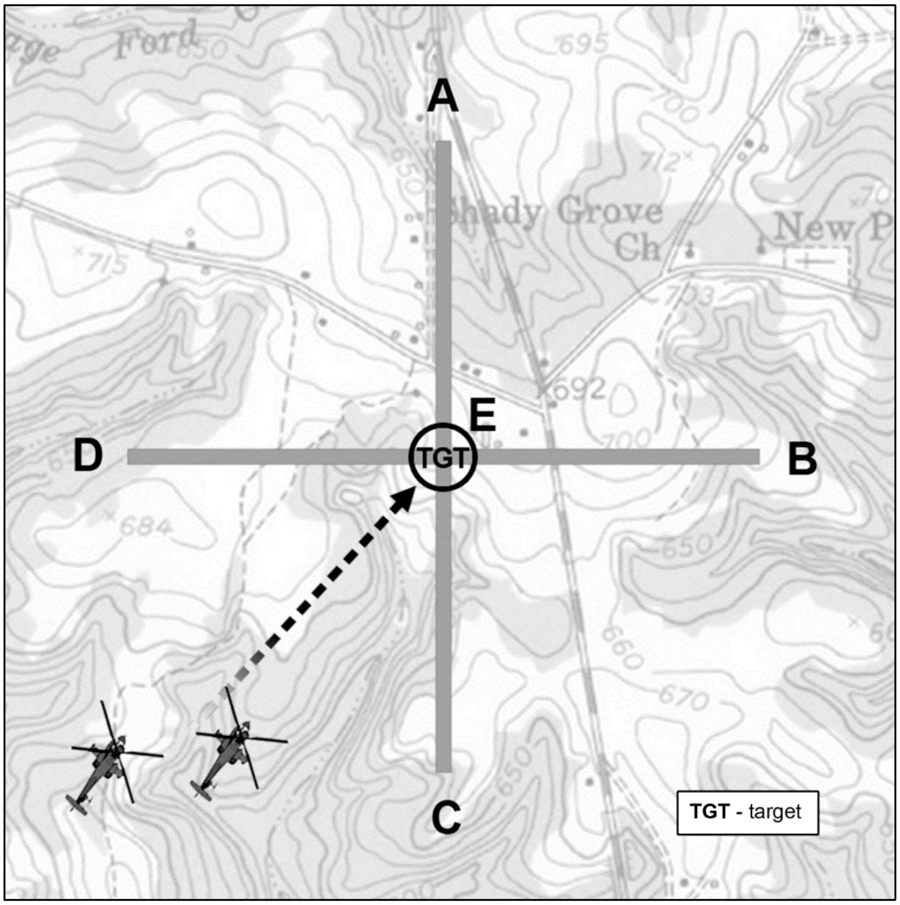

Figure 3-9. Example of the keyhole technique

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Chapter 4
Security Operations

Army Aviation security operations prevent the enemy from determining friendly locations, strengths, and weaknesses. A review of history repeatedly demonstrates that to preserve combat power and preclude unnecessary attrition or premature friendly force commitment, each tactical echelon requires a unit capable of executing security missions to preserve freedom of action for the main body. The ARS and ARB are the commander's primary aviation security forces in unified land operations. The security tasks performed by these formations, either autonomously, or as members of a combined arms team employing MUM-T, allow ground commanders to preserve combat power while preventing the enemy from gaining a position of relative advantage.

SECTION I – OVERVIEW

4-1. Army Aviation security operations are typically defensive in nature and 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. Security forces conduct area and local security and may screen as a separate security force or as a sub-element of a larger combined arms security force conducting a guard or cover. Employing MUM-T enables the security force to expand the breadth and depth of a screen to maintain continuous surveillance of avenues of approach, locate lead enemy elements, and maintain enemy contact to enhance early warning, reaction time, and maneuver space for the main body. This allows the smallest friendly element to develop the situation while preventing the premature commitment of friendly forces.

SECTION II – SECURITY OPERATIONS

FUNDAMENTALS

4-2. Security operations are those operations undertaken by a commander to provide early and accurate warning of enemy operations, to develop the situation, and to provide the force being protected with time and maneuver space. (ADRP 3-90). These measures are taken by a command to protect itself from surprise, provocation, espionage, sabotage or observation by the enemy. Security missions include screen, guard, cover, area, and local security and are normally conducted by large, conventional forces (usually company-level or above). These operations are defined by the degree of protection offered to the main body and the physical characteristics of each operation. The aviation element is capable of conducting and supporting all security missions; however, it normally participates in guard and covering force operations as part of a larger force. An attack reconnaissance unit or an aviation task force conducts security operations in support of the ground force.

4-3. Aviation security elements may be as small as a single UAS or SWT, or as robust as an entire attack reconnaissance squadron or battalion. These elements may operate autonomously or employ MUM-T based on the assigned mission. The security element commonly executes offensive and defensive tasks to provide security to higher headquarters and may conduct security operations to the front, flanks, rear, or between protected forces, support areas or along lines of communications. The main difference between security and reconnaissance operations is that security operations are defensive in nature and orient on the protected force, area, or facility; whereas reconnaissance operations orient on the enemy and/or the terrain.

4-4. The fundamentals of security, like the fundamentals of reconnaissance, provide a framework for security operations. The five fundamentals to plan and execute security operations are−

- **Provide early and accurate warning.** This fundamental provides the main body commander with time and information to seize the initiative and choose the time and place to engage the enemy. Early warning of enemy activity should include a description of size, current disposition, composition, location, direction of movement, rate of advance, and special equipment. The most common way to verbally or digitally communicate a report when conducting security is the size, activity, location, time, and what your actions are (SALT-W) report. Employing MUM-T extends the commander's operational reach with respect to providing early and accurate warning.

- **Provide reaction time and maneuver space.** The security element operates as far from the main body as possible, based on the mission variables (METT-TC) and operational variables (PMESSII-PT). It fights to ensure that the main body has adequate time and space to maneuver against the enemy or establish a defensive position and prepare for a counterattack. Based on the security purpose, the security element executes offensive or defensive tasks to fix, contain, delay, or disrupt enemy tempo and cohesion, providing reaction time and/or maneuver space to the protected force.
- **Orient on the protected force, area, or facility.** The security element operates at a specified distance between the protected main body, area, or facility and the known or suspected enemy positions and must be prepared to move as the main body maneuvers. By understanding the protected force commander's required actions and movement, the security force maneuvers to best provide reaction time and maneuver space.
- **Perform continuous reconnaissance.** The security element must conduct thorough, continuous reconnaissance to gain all possible information about the enemy and the terrain that could be useful to the protected commander.
- **Maintain enemy contact.** Once the security element gains contact, it does not break contact unless directed to do so by higher headquarters. This requires continuous contact with the ability to employ direct and indirect fires and available joint enablers. The integration of UAS into the security operation provides commanders with a persistent capability and continuous flow of information while minimizing risk to protected forces.

4-5. Army Aviation security elements can quickly transition from a security mission to an attack mission, providing reaction time, maneuver space, and protection for the protected force, area, or facility. The aviation security element gives the protected commander increased flexibility in conducting operations throughout his area of operations.

4-6. The security force commander and staff follows general planning principles in preparing for a security mission and determines the number of assets required to perform the mission. The commander's security guidance specifies the size, area, and time the security must be effectively established and what level or duration of protection is required. The depth of the area should provide enough distance for the main body to react. The security force must not establish its initial security too close to the main body, but within range of the main body's indirect fire capabilities. The initial screen also follows advantageous terrain for observation of avenues of approach. The commander and staff develop positions and control measures in depth such as passage points, phase lines, OPs, and battle positions to facilitate the security zone.

4-7. The security force commander, in conjunction with the protected force commander, must determine the width and depth of the security area and establish a rear boundary between the main body and the security element. The protected force may initially assume responsibility for the area between the main body and security element. The protected force may conduct a zone reconnaissance from the main body to the initial screen and then maintain surveillance between the security element and screen. The main body may be required to conduct patrols or establish OPs near their position. The security force should carefully plan and coordinate its subsequent rearward movement and passage of lines.

4-8. Limited visibility conditions and weather may affect the aviation unit's ability to cover a zone and/or sector. Conversely, there are times when ground units are limited by mobility, terrain, vegetation, or time, and the aviation unit is the only asset capable of conducting the mission. Effectively blending air and ground assets to perform security missions can nullify specific equipment limitations.

COMMANDER'S SECURITY GUIDANCE

4-9. As with reconnaissance guidance, commanders provide clear security guidance that enables disciplined initiative to ensure that attack reconnaissance elements accomplish stated objectives within the required timeframe. The commander's security guidance provides a clear understanding of the reconnaissance element's task and purpose. Commander's security guidance is similar to commander's reconnaissance guidance–

- Focus.
- Tempo of security.
- Engagement/disengagement criteria.
- Displacement criteria.

FOCUS

4-10. While executing security operations, the aviation security element focuses all of its actions on protecting the force, area, or facility to be secured. The commander directs the aviation security force to orient on specific enemy systems or organizations, terrain, or friendly forces.

TEMPO

4-11. Clearly articulating the tempo of security tasks allows the commander to establish associated time requirements that drive planning such as the duration for both manned and unmanned aircraft conducting security. This dictates how the aviation security force employs and arrays its forces to ensure necessary coverage and security task accomplishment.

ENGAGEMENT/DISENGAGEMENT CRITERIA

4-12. Engagement and disengagement criteria specifies the conditions in which the aviation security element can engage or break contact with the enemy to preserve combat power. For example, a SWT may be given engagement criteria that allows for the destruction of enemy reconnaissance assets within their capability.

DISPLACEMENT CRITERIA

4-13. The commander directs either time-based or event-based displacement criteria for the aviation security element. The displacement criteria is a set of conditions that must be met before the aviation security element assumes a follow-on mission.

SECTION III – FORMS OF SECURITY

4-14. Army Aviation performs various security missions to preserve the combat power of friendly forces and provide information about the enemy. The five forms of security operations are **screen, guard, cover, area, and local** security.

SCREEN OPERATIONS

4-15. A screen is a security task that primarily provides early warning to the protected force. (ADRP 3-90) Screen missions are appropriate when operations create extended flanks, gaps exist between major subordinate maneuver units, or when and where required to provide early warning over gaps not considered critical enough to require security in greater strength. This informs the commander of enemy activity to provide reaction time and maneuver space, to counter threats, and avoid decisive engagements. The aviation security element destroys, defeats, or disrupts all enemy reconnaissance elements, within its capabilities and according to engagement criteria, with organic and supporting fires without becoming decisively engaged. The screen provides the protected force with the least protection of any security mission.

4-16. Aviation screen missions are typically defensive in nature and are largely accomplished by occupying a series of OPs to ensure adequate observation of the assigned sector. Although primarily a defensive task, a screen is active in execution. Aviation screen missions may include elements as small as a single UAS or as large as an entire attack reconnaissance battalion or squadron, depending on the area and friendly force to be protected.

4-17. Execution considerations for an aviation element conducting a screen include:

- Allow no enemy ground or air element to pass through the screen undetected and unreported.
- Maintain continuous surveillance of all avenues of approach that affect the main body's mission.

- Conduct counter-reconnaissance to destroy, defeat, or disrupt all enemy reconnaissance elements, within capabilities and according to engagement criteria.
- When facing an echeloned enemy force, locate and identify the lead elements that indicate the enemy's main attack, as prescribed in the enemy's order of battle based upon IPB.
- Determine the direction of enemy movement, maintain contact and report threat activities, even while displacing.
- Impede and harass the enemy within capabilities without becoming decisively engaged and while displacing to provide the protected force commander with additional time and maneuver space.
- Detect and report all enemy elements attempting to pass through the screen, both ground and aerial to provide the protected force commander early warning of enemy activities.

Note. To enhance the effectiveness and depth of the screen, attack reconnaissance elements conduct reconnaissance handover or battle handover to pass contact from one element to another. In this way, the elements use the methods of reconnaissance management (cueing, mixing, and redundancy) to maintain enemy contact and protect the main body within the commander's intent.

4-18. As an example, an attack reconnaissance troop screens with one unmanned aircraft and two SWTs. A third team conducts a FARP rotation, and the fourth team is held in reserve. This gives the attack reconnaissance troop commander the flexibility to reinforce the screen with an additional team if necessary. With this force disposition and the optimum conditions of wide-open terrain and excellent visibility, the security element can observe a significant area. The security force also integrates indirect fire planning into the scheme of maneuver to help develop the situation. A screen is conducted within the range of the protected force artillery.

4-19. Stationary screens may be conducted around or between any force; moving screens are conducted everywhere except in advance of a moving force (figure 4-1). The security force in advance of a moving force is an advanced guard and is discussed in guard operations.

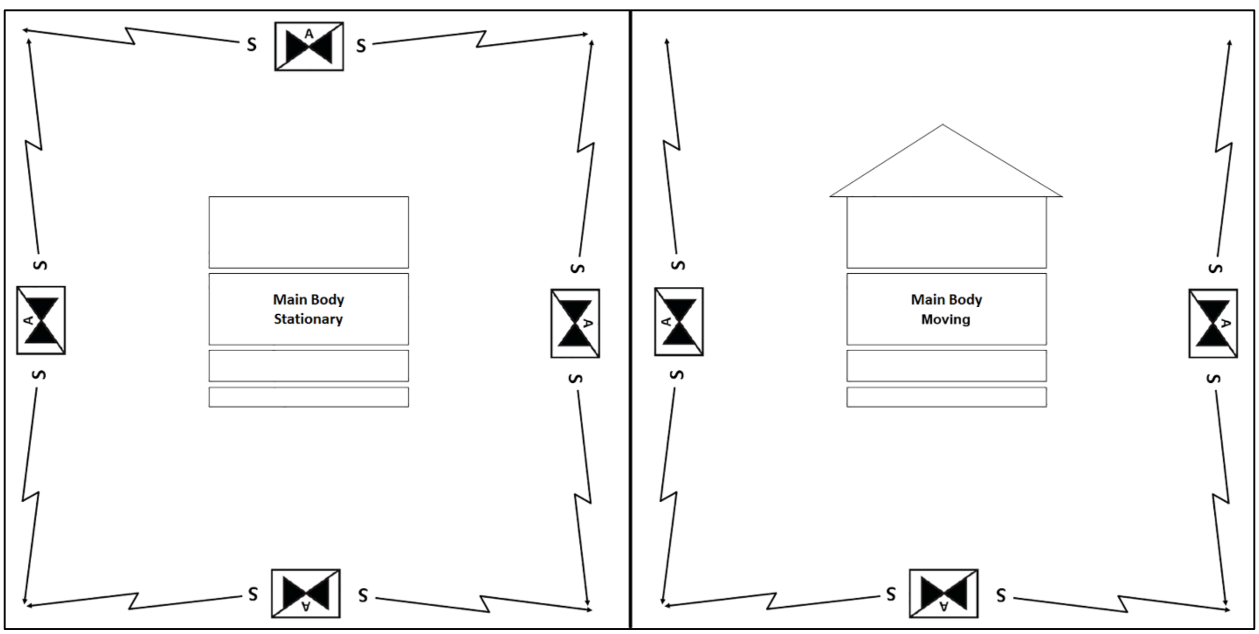

Figure 4-1. Screen locations for stationary and moving main bodies

INITIAL SCREEN

4-20. The most secure method of establishing an initial screen is by conducting an enemy focused zone reconnaissance to the initial screen. When the aviation security element reaches the screen, they reconnoiter and refine it. Positions are selected based on the military aspects of terrain (OAKOC). The screening element seeks to remain undetected while reporting enemy activity and engaging enemy forces with indirect fires at maximum range. When screening as a member of a combined arms team, a combination of obstacles and coordinated fires allows the team to impede enemy lead elements, maintain contact, and avoid decisive engagement. This gives the main body reaction time and maneuver space. The security force maintains the screen to identify enemy second echelon and follow-on forces. Upon contact, the aviation security element focuses efforts on the destruction of enemy reconnaissance elements by direct and indirect fires to prevent penetration of the initial screen.

4-21. Once the initial screen is established, the security force may modify the planned screening positions. The screen is not restrictive in nature; the aviation security element must maintain the latitude to adjust the plan in order to facilitate the commander's security guidance and intent.

STATIONARY SCREEN

4-22. The security force conducts a stationary screen for a static force when the protected force commander is preparing for future operations, before the actual movement begins, or during reconstitution. The security element will usually be deployed forward of a phase line, but within friendly artillery range. A stationary screen can be executed to the front, flanks and rear of the main body. Initial occupation of a unit battle position may also require screening activities.

4-23. The security force uses organic and supporting direct and indirect fires to destroy enemy reconnaissance and high priority targets, and disrupt movement of other forces based on threat analysis and engagement criteria. The security force engages at the maximum range with only indirect fires, while informing ground units to engage with direct fires. The aviation commander determines when to move to any successive screen.

4-24. Displacement to successive screens or observation posts is normally event driven, but the aviation leader may direct a displacement if the unit's security is threatened – even if the displacement criteria has not been met. Security elements displace using alternate or successive movement, but must maintain contact with the enemy unless conducting a battle hand-over with another unit. Figure 4-2 depicts an attack reconnaissance troop in a stationary screen forward of a protected ground cavalry squadron.

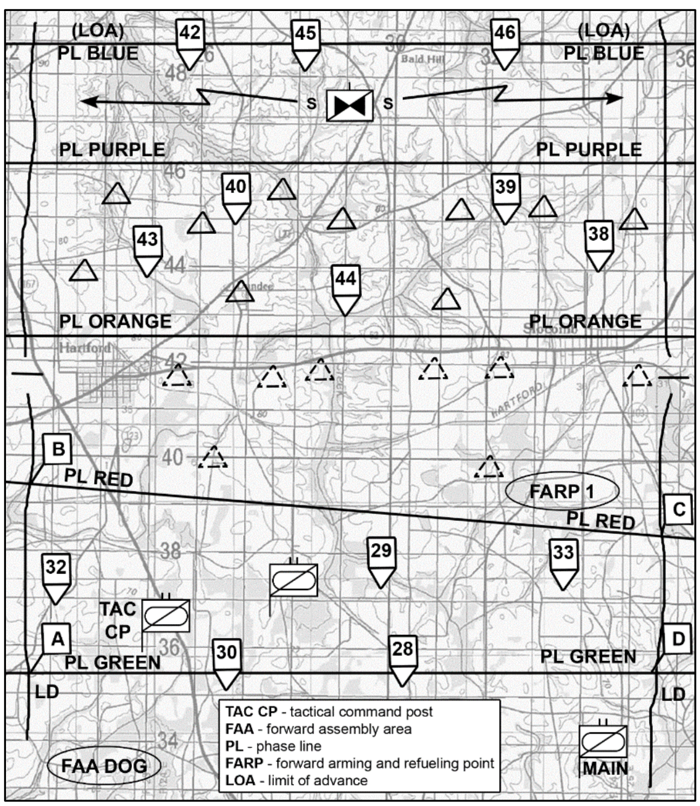

Figure 4-2. Example of a stationary screen

Successive Screen

4-25. Planning and conducting successive screens, one behind the other, add depth and provide the aviation security element with maneuver space. As enemy activity compromises the security of the screening element, or the movement of the main body dictates, the screening element reports and requests to reposition to a successive screen. Teams displace from a screen while maintaining contact with the enemy. The use of unmanned systems to maintain contact while manned systems displace is an effective way to maintain contact. Displacement is repeated as necessary to prevent the screening force from becoming decisively engaged or bypassed. The main body commander decides when the aviation security unit is no longer necessary as a screen force and allows it to conduct follow-on missions.

Moving Screen

4-26. When the main body is mobile, the security force conducts a moving screen along the flanks or rear of the main body and may conduct a movement to contact or a zone reconnaissance to the front of the force. The security element forward of a moving force may also conduct a guard or cover because a screen lacks the combat power to defeat or contain the lead elements of an enemy force.

4-27. The emphasis of a moving screen may, at times, be stationary due to the movement of the ground force. A moving rear screen is executed similar to a front stationary screen. As the protected force moves, the security element occupies a series of successive screens behind the protected force. The screening force may use alternating bounds, successive bounds or continuous movement to keep the screen moving with the main body. Table 4-1 compares the advantages and disadvantages of bounding methods.

Table 4-1. Bounding methods with advantages and disadvantages

Method	Characteristics	Advantages	Disadvantages
Successive Bounds	• Main body is moving slowly • Conducted by platoon or company. • Contact is possible. • Conducted simultaneously or in succession.	• Most secure method. • Maintains maximum surveillance. • Maintains unit integrity.	• Execution takes the most time. • Unit is less secure when all elements are moving simultaneously. • Simultaneous movement may leave temporary gaps.
Alternate Bounds	• Main body moves faster. • Conducted by platoon or company. • Contact is possible. • Conducted from rear to front.	• Maintains good surveillance over the security area. • Secure, but faster than successive.	• Execution takes time. • Disrupts unit integrity. • May leave temporary gaps in coverage.
Continuous	• Main body is moving relatively quickly. • Performed as a route reconnaissance. • Threat contact is not likely.	• Observation post displace quickly. • Maintains unit integrity.	• Least secure method.

Moving Flank Screen

4-28. The moving flank screen is the most difficult screening mission. Security forces move parallel to the movement axis of the main body. The protected commander defines the initial area to be screened, subsequent screens, and the rear boundary. The security force occupies a series of OPs on the screen. The forward team maintains contact on the near flank of the main body as the lead elements move along the axis of advance. The main body and security force must maintain contact at all times. A security force screening to the flank of a moving unit plans a line of OPs and prepares to occupy each, in turn, as the main body advances. The security force reconnoiters out to the maximum range of supporting fires. Except for these procedures, the mission is planned and conducted the same as a stationary screen. Figure 4-3 is an example of a moving flank screen.

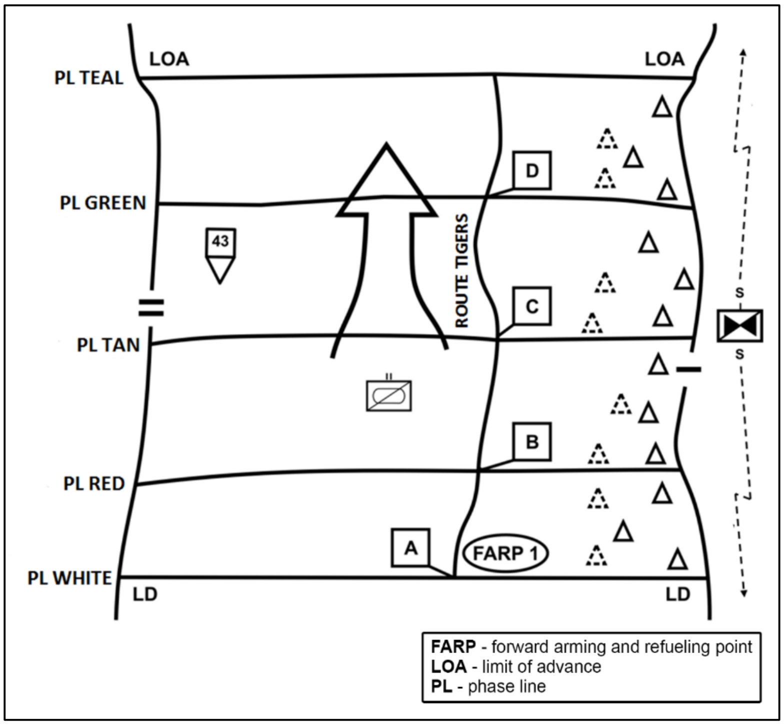

Figure 4-3. Example of a moving flank screen

MOVING REAR SCREEN

4-29. Screening the rear of a moving force is essentially the same as screening a stationary force (figure 4-4, page 4-8). As the protected force moves, the security force occupies a series of successive screens. Movement is regulated by the requirement to orient on the main body. Sectors and responsibilities are assigned as in the stationary screen. In a rear screen, a unit may move to subsequent screens as long as it remains within friendly indirect fires ranges and can effectively screen the rear.

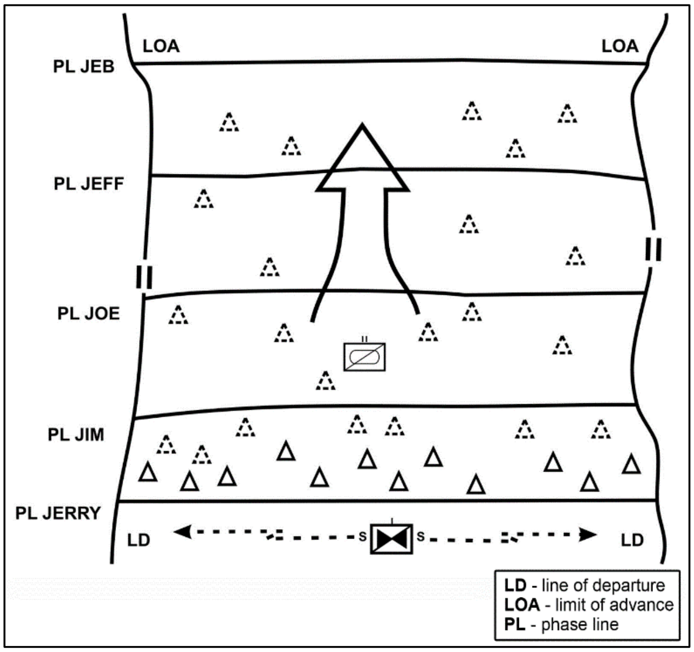

Figure 4-4. Example of a moving rear screen

GUARD OPERATIONS

4-30. A guard operation is a security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy observation and direct fire against the main body. Units conducting a guard cannot operate independently because they rely on fires and functional and multifunctional support assets of the main body (ADRP 3-90). A guard differs from a screen in that it is a more robust force with increased firepower 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. Guard operations protect the main body from observation, direct fire, and surprise attacks, while providing early warning, reaction time, maneuver space, and disruption of the threat's forced deployment and guides main body reaction forces for the counterattack. A guard operation may be stationary or moving depending on the force being guarded and performed to the front, flank or rear of the main body. The guard force reconnoiters, provides early warning, attacks, defends and delays as necessary to destroy enemy reconnaissance elements and disrupt the deployment of first-echelon threat forces. The guard force normally operates within the range of main body indirect-fire weapons or may be task organized with dedicated indirect fire assets. The ground force commander assigns aviation units to augment the guard mission as an added protective layer for the force. The guard mission accounts for operations which may have created extended flanks, fills security gaps which develop between ground commands, and provides early warning to protect an exposed flank.

4-31. The attack reconnaissance element cannot perform a guard mission independently without augmentation from ground forces. When supporting a guard force, the aviation security element conducts a range of missions, including: screen, movement to contact, zone and route reconnaissance and attacks. Attack reconnaissance units can serve as the guard force headquarters but must be augmented with ground maneuver forces and fires. Covering force missions are typically executed at the brigade and higher level.

4-32. When operating as an aviation security force in support of a guard force, the aviation security force may conduct numerous tasks in support of the guard. Army Aviation may support the guard by performing the following tasks:

- Performs reconnaissance along the main body's axis of advance.
- Performs reconnaissance between the main body and guard force battle positions.
- Maintains continuous surveillance of enemy avenues of approach larger than a designated size into the operational area.

- Maintains contact with the enemy, not allowing ground or air elements to pass through the operational area undetected and unreported.
- Maintains contact with the lead combat element of the main body.
- Destroys or repels enemy reconnaissance and security forces and impedes or disrupts enemy forces in accordance with guidance and capabilities.
- Defeats, repels, or fixes enemy ground forces before they engage the main body with direct fire.
- Locates and causes the enemy main body to deploy, determining its composition and direction of travel, if applicable.

STATIONARY GUARD

4-33. The security element conducts a stationary guard mission for a static force when the ground force commander is preparing for future tactical operations. During reconstitution activities or the planning and preparation phases, the commander may remain stationary. The security force will usually be deployed forward of a phase line, but within friendly indirect fires range.

ADVANCE GUARD

4-34. An advance guard for a stationary force deploys forward and defends. Once contact is made, the security force continues to defend in sector or delay consistent with the commander’s intent. An advance guard for a moving force is offensive in nature, finding and defeating the enemy along the axis of advance. The advance guard provides uninterrupted movement of the protected force and prevents surprise and premature deployment of the main body.

Stationary Force

4-35. Attack reconnaissance units typically execute a screen when supporting a stationary advance guard. If the attack reconnaissance unit of the advance guard encounters the enemy beyond its capability, it develops the situation and conducts a battle handover with the advance guard ground elements.

4-36. As units of the advance guard identify targets of opportunity, the aviation security element can expect to conduct hasty attacks. The rapid mobility of the aviation security element allows the advanced guard commander to quickly attack to destroy, disrupt, divert, or delay enemy forces; bypass enemy forces to look deeper; or to quickly develop the situation and await the arrival of the main body. The advance guard commander may task the aviation security element to reconnoiter forward of ground units or screen along exposed flanks.

4-37. When tasked with this mission, the aviation security element conducts the following reconnaissance tasks in addition to the critical tasks associated with a screen−

- Determines the trafficability of high-speed routes within the zone.
- Inspects bridges, culverts, overpasses and underpasses along routes.
- Identifies all bypasses and fords that may support the rapid movement of heavy equipment.
- Identifies obstacles, choke points and likely ambush areas, and determines possible bypass routes.
- Finds and reports all enemy forces within zone and determines size, composition and activity.
- Destroys enemy forces within capability and according to engagement criteria.

Moving Force

4-38. An advance guard for a moving force is offensive in nature. When serving as the advance guard for a moving force, the security force develops the situation to the front along specific routes or axes to prevent surprise or premature deployment of the main body. The main body is normally in a movement to contact. The security element must have artillery coverage. The security element develops the enemy situation by fighting to gain combat information. The security element is expected to plan its part of the mission the same way it would a zone reconnaissance. Primary emphasis is on early development of the enemy situation in the area of the main body’s route or axis of advance.

4-39. The protected force commander determines the interval maintained between the advance guard and the main body. The security force develops the situation and provides reconnaissance pull, enabling decisive operations to take advantage of emerging opportunities. The aviation security element gains contact by maneuvering as necessary to develop the situation and enable the guard force commander to make a decision whether to attack, defend, or delay based on the mission and operational variables.

4-40. The aviation security element typically conducts a movement to contact or zone reconnaissance forward of a moving advance guard and can expect to conduct attacks to defeat or destroy enemy forces. The security element may also attack to fix or disrupt an enemy force if such actions are within the protected force commander's intent and security guidance.

4-41. If the aviation security element encounters threat forces beyond its capabilities for attacks, it conducts a battle handover with the guard force and continues reconnaissance. The security element may also delay threat forces within the depth of its AO to avoid decisive engagement while still protecting the main body. The protected force commander may even visualize the delay as a shaping operation that protects the force, while enabling it to maneuver to an advantageous position.

FLANK GUARD

4-42. A flank guard protects an exposed flank of the main body. In performing this mission, the flank guard and its security force operates beyond the assigned zone or sector of the protected force. The flank guard of a stationary force typically spans the entire length of the protected force. A flank guard is similar to a flank screen except that battle positions, attack by fire positions, engagement areas, and ACMs are planned in depth.

Stationary Force

4-43. Security forces can be integrated as part of the guard force by screening between and in front of battle positions as they are established. The aviation security element may also be used to reconnoiter the area between the guard force and main body, maintaining contact with both elements.

4-44. A flank guard for a stationary force performs a zone reconnaissance when moving out to initial security line positions, allowing the guard force to clear the designated area and become familiar with the terrain they may subsequently defend. Upon reaching the initial positions, the guarding force establishes a defense. The commander plans the defense or delay in depth from the initial positions.

Moving Force

4-45. The security force performs the same tasks for a moving force as for a stationary force. A flank guard for a moving force deliberately advances to a series of BPs or OPs parallel to the main body's axis of advance and clears the area between its route and the main body as the main body advances. During a flank guard, the security element can be used to screen between the guard force and main body. It can also be used to screen forward of the guard force during the movement to BPs. In both situations, the security element uses a zone reconnaissance moving to successive screens forward of a moving force (figure 4-5, page 4-11).

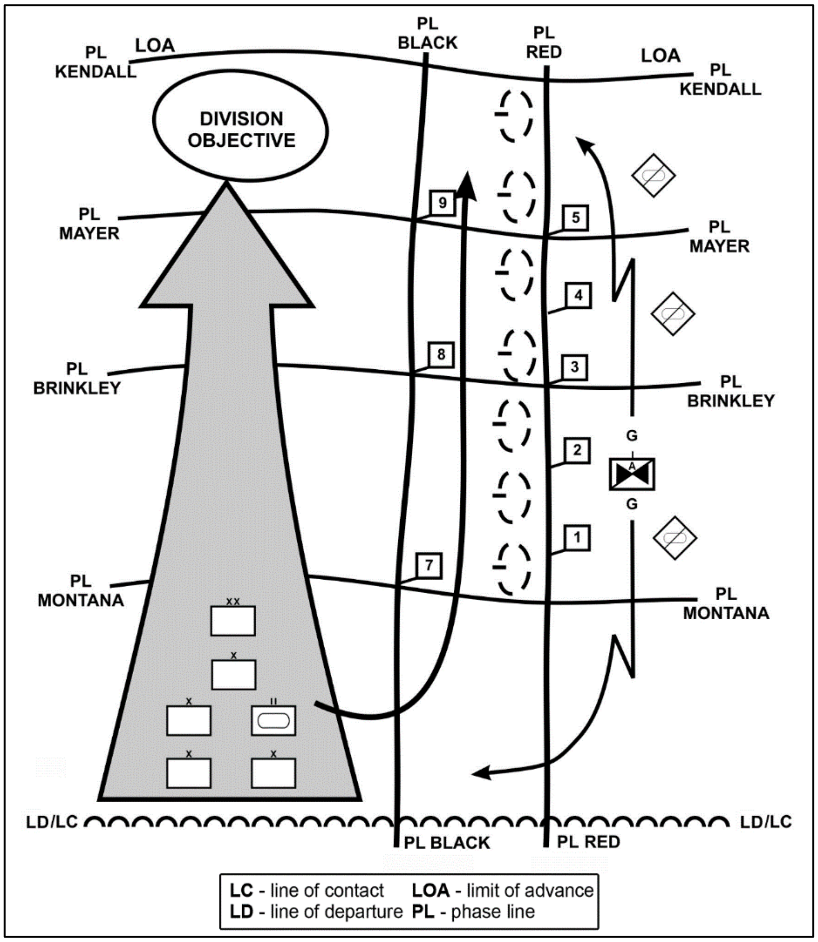

Figure 4-5. Example of a moving flank guard

REAR GUARD

4-46. A rear guard protects the exposed rear of a stationary main body. The tactical tasks listed for the stationary guard apply for rear guard. Establishing the rear guard during retrograde operations may be done in two ways. The security force may relieve other units in place along the forward line of own troops as they move to the rear; or the security element may establish a position in depth behind the main body and pass those forces through.

COVER OPERATIONS

4-47. A cover is a security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy observation and direct fire against the main body (ADRP 3-90). Unlike screening or guard force operations, a covering force is tactically self-contained and capable of operating independently of the main body. A covering force operates apart from the main body to develop the situation early and deceives, disorganizes, and destroys threat forces. The difference between a guard and covering force is a guard is a force that protects the main body from observation, direct fire, surprise attacks, and guides main body reaction forces for the counterattack, while a cover possesses significantly greater combat power and is responsible for a large area. Even when augmented, an aviation task force cannot serve as the covering force headquarters.

4-48. Since the aviation attack reconnaissance unit or aviation task force it is not capable of serving as the covering force headquarters, they are always task organized to support a ground force. The missions for the aviation attack reconnaissance unit, as part of a cover force, are similar to those conducted with a guard force, albeit on a much larger scale. An offensive covering force seizes the initiative early for the main body commander, allowing him to attack decisively. A defensive covering force prevents the enemy from attacking at the time, place, and combat strength of their choosing. Figure 4-6 is an example of a covering force.

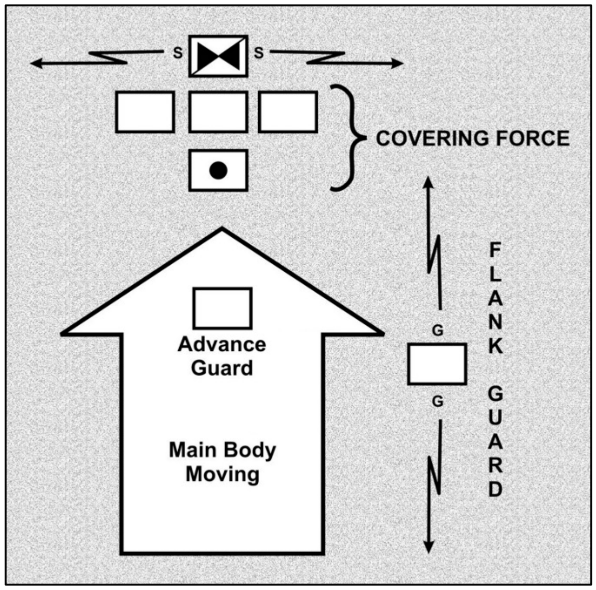

Figure 4-6. Example of a covering force

AREA SECURITY

4-49. Area security is a security task conducted to protect friendly forces, installations, routes, and actions within a specific area (ADRP 3-90). Area security operations include security of designated personnel, equipment, facilities and airfields, base camps, main supply routes, convoys and key terrain. The focus of area security is on preventing threats and protecting the force.

4-50. This mission occurs extensively in stability operations and in non-contiguous areas of operations. Area security is assigned around an airhead or a lodgment area following an airborne, air assault, or joint forced entry operation. It may also be used to provide early warning to an isolated force that cannot tie its flanks to a friendly unit.

4-51. As an area security force, an attack reconnaissance unit conducts reconnaissance, screens, and attacks to protect forces within a specified area. The headquarters assigning the security mission defines the area.

AERIAL SECURITY

4-52. Aerial security is a type of area security, flown to protect helicopters conducting assaults and air movement missions. Escorted formations may vary from a single aircraft to a large air assault formation. The purpose of this mission is for the attack reconnaissance element to protect the escorted formation by locating the enemy before they can affect the flight or deter any hostile fire. If the escorted aircraft are engaged, the attack reconnaissance element attacks to destroy or defeat the threat before effective fire can be directed against the flight. Upon reaching the objective area, the attack reconnaissance element immediately transitions to area security, reconnaissance, or attack operations. There are two aerial escort techniques, detached and attached, which can be combined as the mission dictates.

4-53. The attack reconnaissance element providing aerial security, may position itself forward, to the flanks, or to the rear of the protected formation. Known or templated enemy positions, coupled with the military aspects of terrain (OAKOC) dictates how the attack reconnaissance element will plan and maneuver to protect the flight. For example, in a low threat environment the attack reconnaissance element may position itself forward of the protected formation in order to scan the air route and any key terrain for enemy that could affect the flight. Deploying a UAS forward along the air route enables the manned attack reconnaissance element to position on the flank or rear of the protected formation, with the focus remaining on the military aspects of terrain (OAKOC) for protecting the flight.

Detached Aerial Security

4-54. Detached escort involves flying air route reconnaissance ahead of the escorted aircraft, with the intent of locating all threat forces along the route. For air assault security, the task of the attack reconnaissance element is to locate all threats that can influence the pick-up zone, the air route, the landing zone, and the objective area. Once located, the enemy position can be reported and bypassed, or engaged according to mission criteria. If the protected formation is already on the air route, the air mission commander must decide to hold along the route, continue on an alternate route, or return to base. This decision point is normally identified during contingency planning and courses of action are developed for the commander.

4-55. The advantage of the detached escort is the additional freedom of maneuver and time available for the AWT/SWT to locate the threat along the air route. The disadvantage of this technique is a lack of deterrence or ability to bring immediate firepower to bear against threats to the formation being protected. This technique may also compromise surprise. A lack of enemy contact reported by the attack reconnaissance element does not guarantee the absence of threats along the air route.

Attached Aerial Security

4-56. An attached escort involves flying with the protected formation as a single flight. The purpose is to deter enemy fire or conduct a hasty attack in reaction to enemy contact. The primary task of the attack reconnaissance element is to protect the flight rather than becoming decisively engaged.

4-57. The advantage of the attached escort is the combination of deterrence and ability to provide immediate fires. A disadvantage may be the reactive nature of a hasty attack. This is mitigated through established SOPs, training, and rehearsals of actions on contact. The attack reconnaissance element should make every effort to destroy the enemy force or relay target information for indirect fire or strike via joint enablers.

Convoy Security

4-58. Convoy security is a type of area security and a variation of route security that is performed when conducting security for the entire route is not feasible. The purpose of this mission is to safeguard convoys by locating enemy forces before they can attack the convoy. The attack reconnaissance element conducts reconnaissance along the route and attacks to destroy or defeat identified enemy, as required. The mere presence of an attack aircraft may prevent the enemy from attacking a convoy. The attack reconnaissance element determines the maximum lateral distance from the route to reconnoiter, based on mission variables and range of available direct and indirect fire systems. Similar to aerial security, the two methods for conducting convoy security are detached and attached.

Detached Convoy Security

4-59. The detached escort provides the protected convoy commander with real-time situational reaction time and maneuver space along the route. The attack reconnaissance element conducts reconnaissance ahead of the convoy and focuses on finding any enemy or threats that can influence the convoy route. The amount of time that the attack reconnaissance element precedes the convoy along the route is based on mission variables and the military aspects of terrain and leaves sufficient decision-making time for the protected commander.

4-60. The AWT/SWT conducts this mission much like a route reconnaissance. In the convoy security role, the AWT/SWT must not prioritize route reconnaissance critical task accomplishment over the need to provide security for the convoy. Remaining close enough to the convoy to prevent enemy forces from maneuvering to advantageous terrain and engaging the convoy and being able to rapidly provide suppressive fires in support of the convoy should all be considered. Reporting route conditions, identifying potential ambush sites, locating obstacles, to include possible improvised explosive devices, and potential bypasses, should be the top reconnaissance priorities along the route. In urban environments, traffic jams, road debris, and narrow streets should be treated as obstacles and suitable bypasses located. While the detached escort may provide early warning to the convoy commander, the disadvantages are the lack of deterrence and the inability to provide immediate firepower to the convoy.

Attached Convoy Security

4-61. The attached security escort deters enemy attacks and provides immediate attack support if the convoy is engaged. The AWT/SWT maintains freedom to maneuver but generally flies within line of sight of the convoy. The purpose of the operation is to provide early warning to the convoy commander of approaching threat forces or possible ambush sites and conduct attacks in support of the convoy commander. One technique is to have the lead aircraft of the AWT/SWT conduct a short-range, hasty route reconnaissance in front of the convoy and the trailing aircraft or team provide security for the convoy. The lead aircraft flies as far forward of the convoy as possible to provide early warning of threats and obstacles, while staying within immediate suppression range of his wingman.

4-62. An unmanned aircraft, such as the MQ-1C, can support the reconnaissance effort and Aviation 5 line attacks during convoy security. A technique is having the AWT/SWT remain with the convoy, and have the unmanned aircraft conduct reconnaissance forward of the friendly forces. This would allow both air and ground forces to increase their situational awareness while having the deterring force postured for and attack, if necessary.

4-63. A disadvantage of this technique is limited early warning unless a UAS is available to conduct reconnaissance well ahead of the convoy along the route. An advantage is the immediate suppressive fire that the attack reconnaissance element can provide to the convoy.

ROUTE SECURITY

4-64. Route security is a form of area security performed to prevent a threat from attacking, destroying, seizing, containing, impeding or harassing convoys or the traffic along a specified route (figure 4-7). The focus of a route security mission is to prevent enemy forces from interdicting traffic by emplacing obstacles on or destroying portions of the route. An AWT/SWT conducts route reconnaissance at irregular intervals to avoid developing a pattern the threat may exploit. The AWT/SWT reconnoiters the route to include any area reconnaissance required to either flank, or reconnoiters in advance of ground forces, or assists in screening the flanks. Planning factors and critical tasks remain the same as with a route reconnaissance.

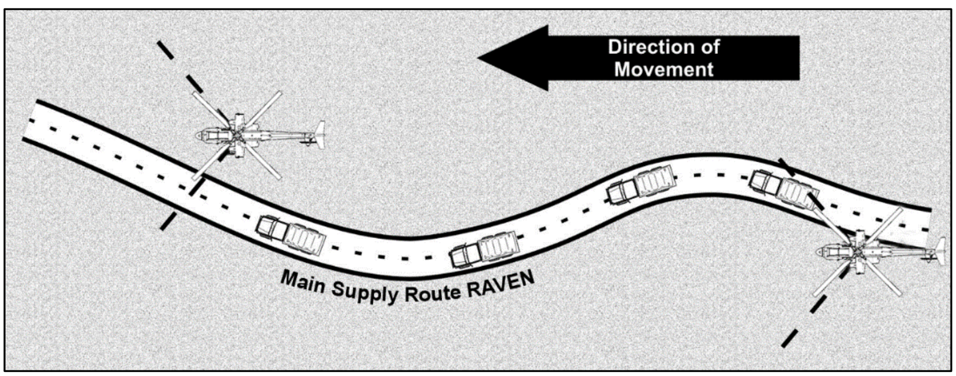

Figure 4-7. Example of convoy/route security

4-65. The butterfly pattern is a method for an AWT/SWT conducting route security and should be modified as necessary to provide maximum security and AWT/SWT survivability (figure 4-8, page 4-15). The lead aircraft flies ahead of the convoy to provide early warning of enemy or obstacles and then back to the convoy. The team trail aircraft flies over the convoy to provide security, facilitates mission command, and maintains overwatch of both lead and the convoy. Each aircraft's flight path is based on METT-TC (including convoy speed, terrain and expected threat).

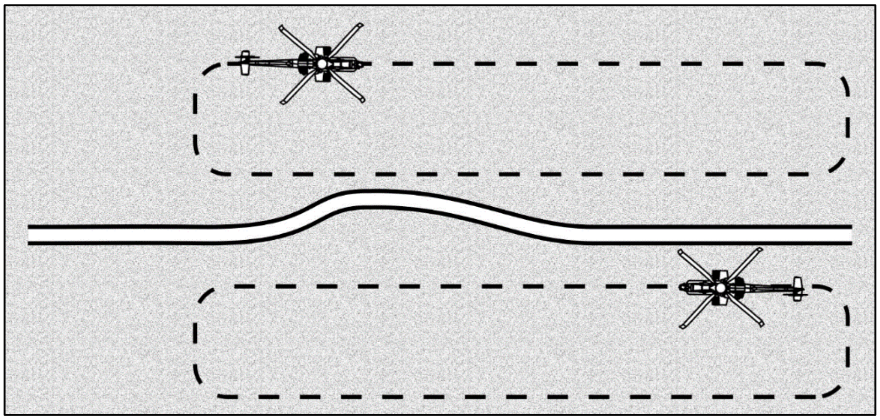

Figure 4-8. Example of the butterfly pattern for convoy/route security

4-66. When using this technique, each aircraft flies a continuous racetrack pattern on opposite sides of the route. The distance flown from the route and the convoy is METT-TC dependent. Patterns are flown so that the AWT/SWT maintains continuous line-of-sight with each other. This technique provides increased deterrence from enemy attack against the AWT/SWT in addition to the convoy. Primary disadvantages are increased disability and reduced freedom of maneuver.

LOCAL SECURITY

4-67. Local security prevents or interdicts enemy efforts to observe or attack friendly forces vicinity FARPs, assembly, staging, and holding areas. Local security is an enduring priority of work and prevents units from being surprised. Continuous reconnaissance and patrolling are active local security measures. The use of camouflage, noise and light discipline, reduction of electronic signatures, movement control, and the utilization of ground and air sensors are passive local security measures.

SECTION IV – PLANNING CONSIDERATIONS

4-68. Security missions require detailed planning which includes calculating the area a security element can screen or reconnoiter. The size of the area depends on METT-TC, mission duration, platform sensor capabilities, and aircraft/aircrew availability. While every mission and situation is different, this section discusses the general methods of calculating this area of coverage and screen planning.

4-69. ARB, ARS, and aviation task force commanders utilize teams within platoons and troops / companies to drive basic maneuver, create flexibility, and enhance survivability. Teams create the ability to conduct operations at the platoon and company / troop level, and are the smallest manned tactical formation employed by the ARS, ARB, or aviation task force in combat. UAS operate autonomously or as members of a manned-unmanned team. Each team should be prepared to assume duties of other teams during missions. The type of flight mode and movement technique is based on mission variables.

4-70. The area one aircrew can screen extends from a width of roughly 3 to 5 kilometers (what a single AWT or SWT can see from one OP) to a maximum of 30 kilometers, for an entire company. Under the optimum conditions of wide-open terrain, excellent visibility, and all available aircraft screening and rotating through the FARP, a company/troop can screen along approximately 30 kilometers for 7 to 8 hours. However, wide-open terrain and good visibility are not usually the norm. Additionally, lightly-armed attack reconnaissance aircraft often require the commitment of at least one team to serve as a hasty attack element to destroy or repel enemy reconnaissance teams. Multiple teams and/or UAS may be required to ensure continuous reconnaissance during the en route, refuel/rearm, and on station times associated with security operations.

4-71. Attack reconnaissance units execute security operations as independent operations or in a supporting role to the ground maneuver commander. The higher commander's intent and purpose for security, combined with the mission's duration determines the required augmentation. Requirements to conduct sustained operations, defeat or destroy threat forces, or accept decisive engagement may require task organization to include mechanized infantry, armor, reinforcing artillery, intelligence systems, UAS, electronic warfare assets, and communication nodes. Urban operations and other stability operations may require military police, military information support operations, and civil affairs augmentation.

4-72. There are a number of general considerations when planning security operations, these considerations include—

- Common security control measures – grid reference graphic or AMPS graphics are useful but the single most important factor is that both air and ground units are referencing the same graphic.
- The unit or force to be secured – name and composition. This will normally be known for deliberate operations and gone over in great detail; however, during hasty operations, a simple concept of the operation with all the appropriate information will meet this requirement.
- Location and orientation of the security area – size and intelligence preparation of the battlefield. The size of the area will dictate the number of aircraft required to meet the commander's intent, while knowledge of the enemy will aid the security force in ammunition selection, movement techniques, and overall situational understanding.
- Initial ground OP locations and types – what equipment is located at the OP. Information on communications, and weapons capabilities, or equipment on site at the OP that assist in observation/identification of key terrain or possible enemy avenues of approach.
- Time to establish the security force – duration. The security force must know the commander's security guidance and scheme of maneuver to successfully execute the security task. Time on station, when relief should be expected and end-state should be clear and understood by the security force.
- Criteria for ending the security mission – end state. The criteria for completing the security task could be based on time, contact, or negative contact with an enemy force. The security force should be aware of the commander's security guidance to avoid becoming decisively engaged.
- Augmentation of security forces – indirect fire, UAS, battle hand-over. Force multipliers allow smaller forces to accomplish the same task as a larger force due to the inherent capabilities of the force multiplier.
- Intelligence support to security operations – UAS, S-2 updates. Receiving full motion video from airborne platforms provides information on the composition, size, rate of march, and the types of equipment the enemy has – helps ensure the commander has the most up to date information.
- Indirect / Direct Fire planning – S-3, BAE, fires cell; including de-confliction of airspace with manned and unmanned aircraft.
- Integration of ground and air operations – the ground force commander, BAE or aviation liaison team, joint tactical air controller, forward air controller – all take part in the integration of ground and air operations.
- Planning the engineer effort – mobility, counter-mobility and survivability.
- Sustainment – logistics, FARP. Distance from the FARP to the OPs dictate time on station and impact the level of security that can be maintained over an extended period of time.
- Special requirements or constraints – terrain, weather. Extreme terrain may prohibit ground forces, or necessitate the need for special equipment in order to meet the commander's intent. Similarly, weather conditions may prohibit the launch or effectiveness of aviation assets.

4-73. Commanders must consider the time associated with movement to and establishment of the security operation as well as the time it takes to conduct refuel/rearm and battle handovers. Reflected in figure 4-9 (page 4-17), two teams are screening between OP 1 to OP 4. The open terrain allows excellent standoff and observation. The standoff area is about 3 kilometers and the observable area is about 5 kilometers along each avenue of approach. The distance between each OP is approximately 7 kilometers. The SWT teams rotate through the Ops and FARP. Team A moves to the area designated by OPs 1 and 2, while Team B moves to the area designated by OPs 3 and 4. The teams observe for 40 minutes until Team C relieves Team A, which then relieves Team B allowing Team B to return to the FARP for refuel. The observation time is dictated by the air mission commander, the mission variables and other issues such as fuel consumption or ammunition status. The rotation continues until the teams are relieved by another ground, air unit, or the mission is terminated.

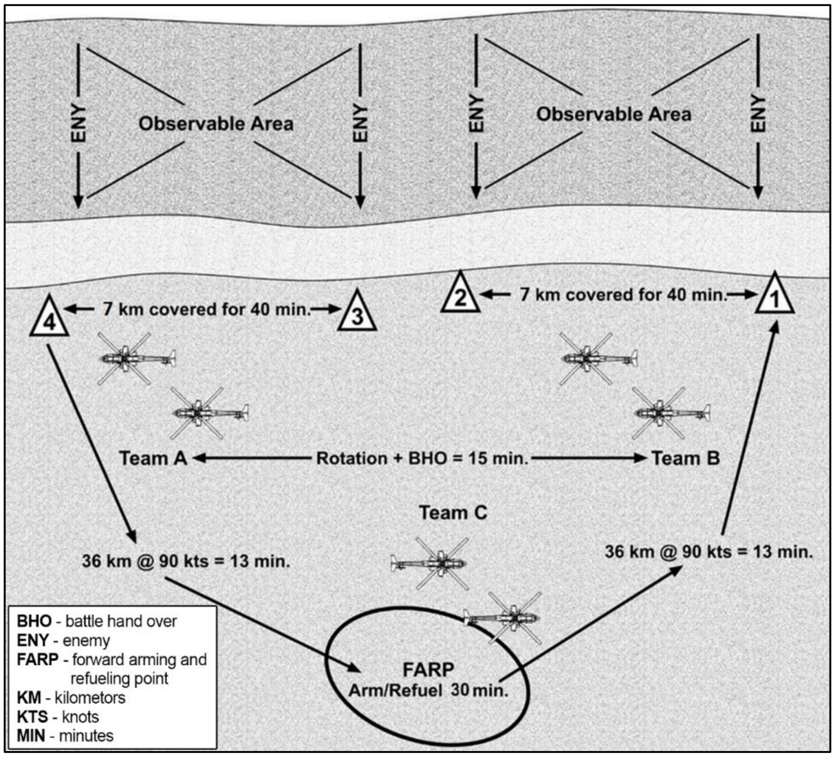

Figure 4-9. Example of scout weapons team screen rotation times

4-74. Commanders must also consider speeds and times associated with ground maneuver forces, both friendly and enemy, in order to more accurately plan for the security operation. To better understand the speed of a ground unit and the time it takes to move into an observable position, refer to figure 4-10.

To compute the time required for an enemy or friendly ground unit to pass through an observable area, use the following:

Observable area in km X 60 / units ground speed in km per hr = time in minutes for ground unit to pass.

Example: If the observable area is 5 km and the enemy unit's ground speed is observed at 20 km/hour, find how long, in minutes, it will take for the enemy unit's lead elements to pass through the observable area.

Observable area = 5 km, ground speed = 20 km hour.

$$\frac{5 \text{ X } 60}{20} = \frac{300}{20} = 15 \text{ minutes}$$

Figure 4-10. Time computations for moving ground forces

PLANNING FOR SCREEN MISSIONS

4-75. Security elements conduct screens within the range of the main body's artillery. The security elements ability to coordinate indirect fires with organic firepower, maximizes lethality and facilitates providing reaction time and maneuver space for the main body and allows the commander.

4-76. The primary purpose of a screen is to provide early warning to the main body through the communication of real-time combat information. This gives the protected force reaction time and maneuver space to orient to meet the threat. Therefore, when planning for a screen mission, the ground maneuver unit should provide the following information to the aviation screening force−

- Force being screened – size and equipment.
- Dimensions of the screen and time the screen must be established.
- Minimum reaction time required. This allows the aviation unit commander to determine if the depth of the screen is sufficient to accomplish the mission and determines how long the security force must delay before falling back to successive phase lines.
- Minimum sized threat force that must be detected. This allows the aviation unit commander to determine required density of the screen.
- Any special requirements the screening force must observe – such as target areas of interest or named areas of interest.

4-77. Using the commander's security guidance, commanders provide clear reconnaissance guidance that offers both freedom of action to develop the situation as well as adequate direction to ensure that the security force can accomplish the mission within the required timeframe. In addition to the commander's security guidance, the commander plans using the following critical considerations−

- Mission command − The attack reconnaissance unit commander chooses the best position to control the screen. Normally, this is at a vantage point from which he can move freely, maintain communications with both higher and subordinate elements, and best influence the operation.
- Aircraft rotation − The commander determines the method of rotating aircraft to sustain the aerial screen. The attack reconnaissance unit commander must consider all aspects of the mission–time required for the mission, aircraft availability, and expected relief on station.
- Organization − The commander organizes the screen based on higher commander's guidance, likelihood of threat contact, size of assigned sector, duration of the mission, and aircraft availability.
- Coordination − The attack reconnaissance unit commander ensures the location of the FARP, supporting fires, and the forward AA are known by all aircrews. The commander coordinates his concept closely with the higher commander. The commander must pay particular attention to OP locations, artillery positions, and the ground scheme of maneuver. Coordinating the air passage of lines when operating forward of ground units is essential.
- Concealment − The unit situates the screen to maximize the attack reconnaissance unit's ability to maintain concealment while observing the operational area. The teams work together, ensuring the fields of observation overlap and prevent the threat from passing undetected. The air routes to and from succeeding screens should provide adequate concealment during movement, teams ensure visual contact with the threat is continuously maintained.
- Observation post emplacement − OP selection should be based on fields of observation into the named areas of interest. Movement along the flank screen may be controlled using one of three methods—successive bounds, alternate bounds, or continuous travel. Utilizing the most secure technique, air crews move from the trail OP to the most forward OP. This works best when the main body is moving slowly. A less secure technique may be used when the main body is moving faster. It involves all the OPs moving forward simultaneously on command to the next OP. The screening force may also move continuously, but this is the least secure method. Hovering in an OP should only be for a limited amount of time.
- Enemy air threat − Part of the screen mission may be to alert friendly forces of approaching enemy aircraft, either manned or unmanned. The teams maintain surveillance of air avenues of approach the same way they maintain surveillance of ground avenues of approach. Reports of incoming aircraft alert all assets in the area to take appropriate action. Linking the aviation unit to the air defense warning system provides aircrews the situational understanding needed to maintain an effective aerial screen. An implied task for all screening forces in a conventional force-on-force engagement would be to destroy enemy UAS.

PLANNING FOR GUARD MISSIONS

4-78. The commander assigning the guard mission provides the mission statement, intent, and commander's security guidance. Additionally, further guidance may be specified such as information regarding the unit or units to be guarded, operations overlays, and control measures which include times and locations. While the aviation security force cannot perform a guard independently, the planning considerations in support of a guard are similar to that of a screen.

4-79. The commander assigning the guard mission must indicate the type and level of protection required, and the time the guard is to be established. Expected duration of the guard mission should also be given. Because guard forces are expected to force and disrupt enemy deployment, the attack reconnaissance unit operates on a narrower front than when conducting a screen. A commander directing a guard mission must consider the requirement to clear the area between the main body and the unit's guard-designated positions. The attack reconnaissance unit may need additional assets to clear the area while keeping adequate combat power forward to protect the main body. The attack reconnaissance unit may have priority for indirect fires. This assistance depends on artillery support available and type and level of protection required by the commander who assigns the guard mission. Normally, a guard unit occupies battle positions (BP) across the most likely avenues of approach. The units do not withdraw to successive positions without the permission of the main body commander. Elements within the guard force often have different missions that support the ground scheme of maneuver.

Planning for Cover Missions

4-80. Planning for covering force operations is similar to planning for guard operations. The ground maneuver commander must provide the following information to the covering force–

- Force being secured and the concept of the operation.
- Reinforcements for the covering force.
- Rear boundary of the covering force.
- The area of operations for the covering force.
- General trace of the cover and the time the covering force must be established.
- Any special requirements the covering force must observe.

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Chapter 5
Air Assault Operations

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.

SECTION I – OVERVIEW

5-1. 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). It is a deliberately planned, precisely synchronized, and vigorously executed combat operation intended to surprise the enemy by conducting a vertical envelopment at an unexpected time and place. An air assault allows friendly forces to maneuver over extended distances and complex terrain to attack the enemy when and where it is most vulnerable.

5-2. An air assault may involve the use of multiple enablers within a division. The composition of assets dedicated to the operation is dependent on the mission and operational variables. Effective integration and deliberate planning between Aviation and ground units is essential to conducting successful air assaults. The air assault task force (AATF) commander and the aviation commander determine the necessary air and ground assets required for the operation. Air Assault planners determine necessary reconnaissance, integrate direct and indirect fires, and incorporate manned and unmanned teaming to facilitate mission accomplishment and mitigate risk.

SECTION II – ROLES AND RESPONSIBILITIES

AIR ASSAULT TASK FORCE COMMANDER

5-3. The air assault task force commander (AATFC) is normally the maneuver brigade or battalion commander whose subordinate echelon constitutes the assault force. In some instances, a higher level commander may designate an aviation commander as the AATFC. The AATFC is the overall commander of AATFACA and ensures continuity of command throughout the operation. Based on mission variables, the AATFC may be airborne in a mission command helicopter during the air movement stage. The key tasks of the AATFC include—

- Resource and synchronize war fighting functions in support of the air assault.
- Approves, disapproves, or modifies all components of the assault plan.
- Plan and synchronize the air assault timeline.

GROUND TACTICAL COMMANDER

5-4. The AATFC assigns a ground tactical commander (GTC), who is generally the senior leader of the largest ground maneuver force and is usually one of the AATF subordinate maneuver commanders (such as a battalion or company commander). The GTC may fly on one of the first serials into the objective area, maintaining communication with the AATFC during both air movement and ground operations. The key tasks of the GTC include—

- Develop the ground tactical plan.
- Develop the loading plan.
- Develop the staging plan.

AIR ASSAULT TASK FORCE OPERATIONS STAFF OFFICER

5-5. The AATF S-3 assists the AATFC with mission command. The S-3 normally leads the TAC CP when the AATFC is commanding the fight away from the CP in a mission command aircraft or forward with the ground force. The key tasks of the AATF S-3 include—

- Responsible for air mission coordination meeting (AMCM) and air mission brief (AMB).
- Integrates air and ground products.
- Establishes the air assault rehearsal.

BRIGADE AVIATION OFFICER

5-6. Within the BCT, the brigade aviation officer (BAO) is assigned to advise the BCT commander and the AATFC on all matters relating to Army aviation. The BAO establishes the initial planning conference (IPC) and assists the AATF S-3 and staff with the planning and integration of aviation operations into the scheme of maneuver. The BAO serves as a liaison between the supported ground unit and the supporting aviation task force and any additional joint enablers. They develop the detailed plans necessary to support the air assault. During the execution phase, the BAO is available to assist the AATFC or AATF S-3 with coordinating the employment of aviation assets.

BRIGADE AVIATION ELEMENT

5-7. The BAE, led by the BAO, is a functional cell residing in the BCT main CP. The BAE integrates and synchronizes aviation operations with the ground commander‘s scheme of maneuver. The BAE’s key tasks include—

- Focusing on providing employment advice and initial planning for aviation missions, UAS, airspace planning and coordination, and synchronization with the ALO and fire support officer.
- Coordinates directly with the aviation brigade or the supporting aviation task force for detailed mission planning.
- Provide airspace control and air traffic services in support of the air assault.

FIRE SUPPORT OFFICER

5-8. The AATF FSO plans, coordinates, and synchronizes fires (including suppression of enemy air defense) during all phases of the air assault for the AATFC. The FSO deploys with the AATFC in a mission command helicopter, if available, to ensure the fires plan is executed as planned and coordinates any necessary changes.

AIR LIAISON OFFICER

5-9. The ALO is the U.S. Air Force officer who leads the TACP. The TACP is collocated with the BCT headquarters. The goal of the TACP is to advise the BCT commander and staff on joint air operations. The ALO leverages the expertise of the TACP with links to the higher headquarters TACP Air Operations Center to plan, coordinate, synchronize, and execute air support operations. The ALO maintains situational understanding awareness of the total air support and the resulting effects for the BCT commander. The responsibilities of the ALO include—

- Requesting additional assets to achieve AATFC desired effects.
- Coordinating and planning JSEAD.
- Coordinating and synchronizing immediate and planned CAS.

PICKUP ZONE CONTROL OFFICER

5-10. A pickup zone control officer (PZCO) is designated for each pick-up zone used during an air assault operation. The supported unit must provide the PZCO. For example, for a battalion level AASLT, the supported battalion operations sergeant major, or for a company AASLT, the first sergeant. The PZCO operates on the combat aviation network (CAN) and is prepared to assist in executing changes as needed. PZCO should be familiar with the air assault operation and be able to execute the bump plan.

AVIATION TASK FORCE COMMANDER

5-11. The aviation task force commander (ATFC) 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 and follow on ground tactical plan.

AVIATION LIAISON OFFICER

5-12. Although the BAE and the ADAM cell conducts many of the functions traditionally performed by liaison officers, the aviation LNO from the supporting aviation unit remains a critical part of the air assault planning process at all echelons. While the ADAM/BAE members work as permanent staff directly for the BCT commander, the aviation LNO represents the supporting aviation task force at a designated maneuver headquarters or higher headquarters only for or during a specific operation. The LNO can be the supporting aviation unit S-3, the aviation mission survivability officer, or another aviation subject matter expert designated by the supporting aviation unit commander. If collocated with the ADAM/BAE or higher headquarters planning element, the LNO or liaison team usually reports to the BAO or senior aviation planner as a functioning addition to the staff section. Often, the aviation LNO coordinates with the ADAM/BAE or higher headquarters and then relocates down to a supported ground maneuver battalion.

AIR MISSION COMMANDER

5-13. The AMC is the commander or the designated representative of the supporting aviation unit. The AMC receives the commander's intent, and executes all aviation operations with disciplined initiative. The AMC ensures continuity of command for all supporting aviation units and employs attack reconnaissance helicopters, unmanned aircraft systems (UAS), and artillery along the air route, fighting the battle from the PZ to helicopter landing zone (HLZ), while keeping the AATFC and ATFC informed.

AIR BATTLE COMMANDER

5-14. Depending upon the size and complexity of the air assault, the AMC may designate subordinate mission commanders for key elements for the aviation force. The ATFC may designate an air battle commander (ABC) to control attack reconnaissance employment. The air battle commander is responsible for coordinating, integrating and controlling all aviation related attack reconnaissance elements and the supporting fires (ground and air) requested. The air battle commander must understand the AATF fire support plan through all phases of the operation.

SERIAL COMMANDER

5-15. Serial commanders are responsible for all aircraft within a designated serial. Serial commanders should brief all flight crews within their serial that will execute the air assault mission and report to the AMC.

FLIGHT LEAD

5-16. The flight lead is responsible for assisting the planners in selecting flight routes (primary and alternate) within the axis of advance, developing timing for the routes, and submitting route card data to the aviation staff for production of route navigation cards. Flight leads also assist in selecting primary and alternate landing zones. During the mission, the flight lead navigates the flight routes and ensures air assault times are met according to the air movement table.

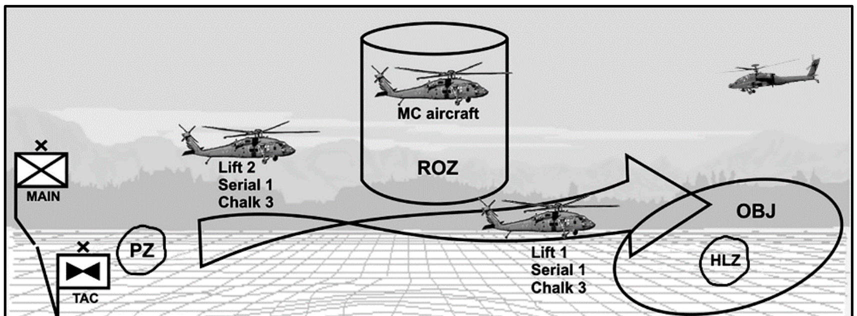
SECTION III – MISSION COMMAND

5-17. The AATF mission command is organized to effectively maintain command authority and control of the task force. Subordinate commanders should be given as much freedom of action as possible (consistent with tactical risk and mission accomplishment considerations) to ensure mission success.

5-18. The AATFC considers the complexity of the operation, mission variables, and the experience levels of subordinate commanders and staffs. In most situations, air assaults are centrally planned and well-rehearsed before execution. This ensures that each subordinate leader understands the commander's intent and is able to execute their assigned tasks with disciplined initiative. The AATFC, assisted by the AMC, addresses mission command requirements early in the assault planning phase. Controlling diverse and dispersed air and ground elements between the HLZ and PZ requires effective mission command networks functioning at low-level altitudes and over the horizon. Planning includes digital data transfer and preplanned voice brevity codes to minimize radio traffic.

5-19. Contingencies, branches, and sequels should be factored into the plan to allow for continuation of the mission in a dynamic environment. Tasks may be event, time-driven, or both, to maintain initiative.

5-20. Another factor to consider is the location of the AATF leadership and key staff. Key leaders should be positioned into discrete elements and dispersed throughout the lifts with provisions to ensure continuity of command. Figure 5-1 shows an example for positioning key leaders during an air assault. To enable mission command over extended ranges and complex terrain, manned aircraft or UAS may be used for communications relay.



Position	Location
Air Assault Task Force Commander	Mission Command aircraft
Alternate Air Assault Task Force Commander	Main Command Post
Air Assault Task Force S-3	Mission Command aircraft
Air Assault Task Force Executive Officer	Pickup Zone
Air Mission Commander	Mission Command aircraft
Serial Commander	Lift 1, Serial 1, Chalk 3
Combat Aviation Brigade Executive Officer	Combat Aviation Brigade Tactical Command Post
Ground Tactical Commander	Lift 1, Serial 1, Chalk 3
Alternate Ground Tactical Commander	Lift 2, Serial 1, Chalk 3
Air Battle Commander	Attack Reconnaissance Helicopter

Legend

HLZ - helicopter landing zone
OBJ - Objective
PZ - Pickup Zone
ROZ - restricted operations zone
TAC - Tactical

Figure 5-1. Example disposition of the AATF key leadership

SECTION IV – PLANNING

THE REVERSE PLANNING SEQUENCE

5-21. The five planning stages of an air assault are not developed independently. The AATF staff and supporting aviation unit coordinate, develop, and refine plans concurrently to make best use of available time and resources. The staff first develops the ground tactical plan, which serves as the basis to develop the other plans. Each plan may potentially affect the others. Changes in an aspect of one planning stage may require adjustments in the other planning stages. The AATFC must determine if such adjustments entail acceptable risk.

5-22. Air assault planning is based on careful analysis of the mission and operational variables and a detailed reverse planning sequence. The five basic planning stages of the reverse planning sequence (figure 5-2, page 5-5) are–

- Ground tactical plan.

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

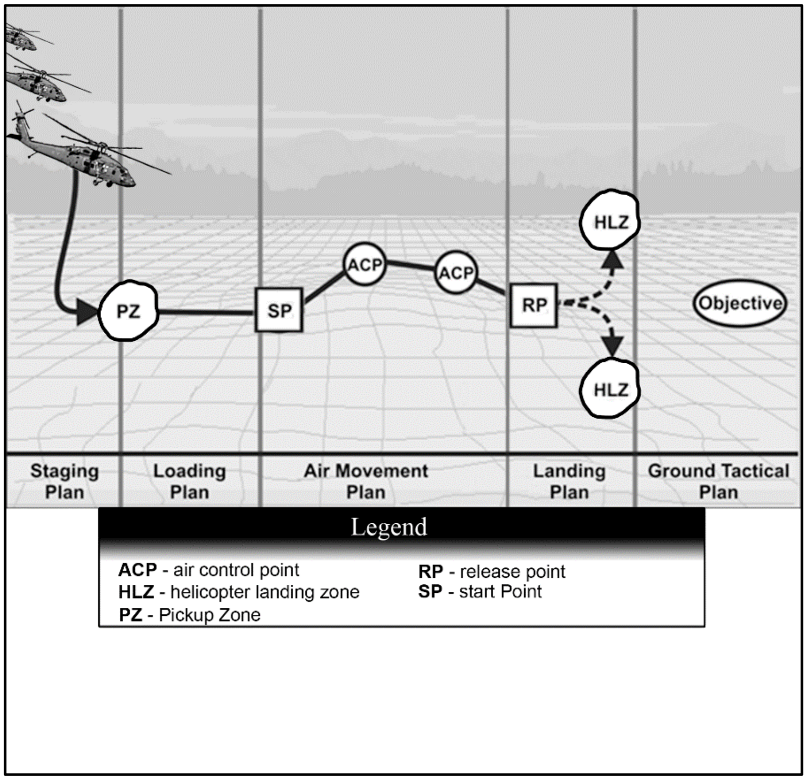


Figure 5-2. Air assault planning stages

GROUND TACTICAL PLAN

5-23. The ground tactical plan is the focal point of planning and foundational for a successful air assault. All other planning stages support this plan. It specifies actions in the objective area to accomplish the mission and sets the conditions for subsequent operations. It includes movement from the HLZ through actions on the objective. The ground tactical plan addresses the following factors—

- Task organization for combat. The number and type of maneuver, support, and sustainment elements essential to mission accomplishment.
- Fires. Systems available and within range to provide JSEAD and strike HLZs and objective, such as—
  - Field artillery assets.
  - Attack reconnaissance assets.
  - Close air support.
  - Electronic warfare assets.
- Scheme of maneuver. How the commander intends to maneuver the ground force from the HLZ to accomplish the mission, seize assigned objectives, and exfiltration if required.
- Commander's intent. The method of execution and end state that triggers subsequent plans including—
  - Location of the force (land on the objective or near it and maneuver to it).
  - The value of surprise versus SEAD/JSEAD and preparatory fires.
  - Supporting fires guidance.
  - Observation plan guidance.

- Use of attack reconnaissance assets including when and which units will transition from area security under AMC control to support the ground tactical plan under the AATFC/ground tactical commander.
- Laager sites in support of PZ operations during extraction.
- Medical and casualty evacuation.

Fire support plan

5-24. During an air assault with numerous aircraft operating in the vicinity of the PZ and HLZ locations, it is critical that procedures are in place to deconflict airspace between aircraft and indirect fires.

5-25. The AATF implements procedures that include—

- Ensure all units update firing unit locations and fire support coordination measures for inclusion in current ACO.
- Ensure all participating units are briefed daily on current ACO or ATO changes and updates that may affect air mission planning and execution.
- Aircrews (manned and unmanned) have the current and planned indirect fire positions (including mortars) supporting the mission.
- Plan for formal and informal ACMs, check firing procedures, and communications to ensure artillery and mortar fire from within the HLZ do not endanger aircraft landing, departing, or attack operations.
- Plan to control CAS through the use of a joint tactical air controller, TACP, and/or forward air controller (airborne). See ATP 3-09.32 for additional joint fire information.
- Ensure an aviation team element monitors the fire support net for situational understanding.
- Advising aviation units of any location changes of planned indirect fire units.
- Supporting direct or indirect fires are cleared on the HLZ by the GTC.

LANDING PLAN

5-26. The scheme of maneuver and ground tactical plan directly influence the selection of the HLZ, landing formations, and the amount of combat power entering the HLZ. The landing plan outlines the distribution, timing, and sequencing of aircraft into the HLZ.

5-27. Intelligence collection platforms and geospatial imagery analysis can greatly enhance information regarding proposed HLZ. This information can reduce the inherent risk to the HLZ landing plan. After coordinating with the AMC and LNO, the AATFC selects primary, alternate, contingency, emergency, , and false insertion HLZ (if applicable and dependent on mission variables) based on the following factors—

- Location. The HLZ may be on the objective, nearby, or some distance from the objective.
- Capacity. The HLZ must be suitable and accommodate all task force aircraft with and without loads.
- Enemy disposition and capabilities. The location of potential enemy reinforcements, air defense, and other weapon system locations and ranges influence HLZ location.
- Unit tactical integrity. Squads must land intact with platoons and companies in the same serial to ensure unit integrity.
- Supporting fires. The HLZ should be within range of supporting fires.
- Obstacles. Ideally, the HLZ should be generally free of large obstacles.
- Identifiable from the air. The HLZ should be identifiable by aircrews at night and from low altitude yet should be shielded from enemy direct fires and observation.
- Orientation. Prevailing winds, illumination, and sun/moon position effect approach and departure heading into and out of the HLZ.

5-28. The AATFC intent and ground tactical plan influence the decision to use single or multiple HLZ. Using a single HLZ— advantages include:

- Simplifies control.
- Requires less planning and rehearsal time.
- Centralizes resupply operations.

- Concentrates supporting fires on one location.
- Provides better security on subsequent lifts.
- Masses more combat power in a single location.
- Reduces fratricide risk.
- May make enemy detection more difficult due to confinement in a smaller area of the battlefield.

5-29. Using multiple HLZ include the following advantages—

- Reduces the risk of concentrating the entire assaulting force in one location the enemy could mine or target with fires.
- Forces the enemy to fight in multiple directions.
- Allows rapid dispersal of ground elements to accomplish tasks in separate areas.
- Makes it more difficult for the enemy to determine the size and main effort of the assault force.

5-30. During the landing phase, attack reconnaissance elements reconnoiter ingress / egress routes, provide aerial security, set the conditions for the HLZ, provide area security, employ direct and indirect fires, or screen to provide early and accurate warning for the AATFC and ground force commander. If available, joint assets may perform these tasks.

5-31. The plan must address door gunner fires to reduce the risk of fratricide. As Soldiers exit the aircraft, fires must shift or cease, and on subsequent lifts, door gunner fires are limited with controlled or restrictive fire lines. Single door exits away from a potential enemy position is a technique that allows the door gunner closest to the enemy position to continue firing while Soldiers exit from the other side of the aircraft. In this example, rucksacks or other equipment may obstruct rapid exit from the aircraft.

AIR MOVEMENT PLAN

5-32. The AATF staff develops the air movement plan and corresponding air movement table. This plan schedules the movement of troops, equipment, and supplies from the PZ to the HLZ. It also provides serial and lift ingress and egress routes, aircraft speeds, altitudes, en route formations, actions on enemy contact, and fire support.

5-33. Mission variables (METT-TC) determine flight route selection. The AATF staff and flight lead develop primary and alternate flight routes while considering the following—

- Airspace management. Coordinate flight corridors, axis of advance, and passage points with ground maneuver, artillery, AD, joint assets, UAS, aeromedical evacuation and other potential airspace users to reduce fratricide risks (a ground and/or aviation brigade usually coordinates airspace management).
- Higher headquarters may recommend a general axis of advance or designate flight corridors from which to plan exact flight routes
- Support of the landing plan. Develop flight routes and HLZ formations that conceal and facilitate rapid aircraft approach and departure into the HLZ and exact landing/take-off locations.
- Distance. Minimize flight route distance to decrease aircraft exposure time and increase speed of turnaround.

5-34. Although automated systems such as the AMPS) are normally used for route card planning, Table 5-1, page 5-8 provides an example of how to calculate (manually) en route time. Adding an additional minute to allow for RP to wheels down (approximately 3-5KM), and an additional minute for PZ to SP makes the estimated time en route from PZ to HLZ 28 minutes.

Table 5-1. Example of how to calculate (manually) en route time

Flight time computation			
(T = D X 60) (60 converts hr to min) / (S X 1.85((1.85 converts kt to km/hr) **Note.** Round up fractions of a minute to the next whole minute.			Aviation planners convert airspeed to groundspeed.
Example: Given 80 km distance from start point to RP at an average groundspeed of 100 kt.			
(T = 80 km X 60) / (100 kt X 1.85)	T =	$\frac{4800}{185}$	T = 25.9 (Round up to 26 minutes one-way from the start point to RP.)
Table Note. Sample groundspeeds in kts converted to rounded off km/hour and km/minute 80 kt = 148.2 km/hr = 2.5 km/min 110 kt = 203.7 km/hr = 3.4 km/min 90 kt = 166.7 km/hr = 2.8 km/min 120 kt = 222.2 km/hr = 3.7 km/min 100 kt = 185.2 km/hr = 3.1 km/min 130 kt = 240.8 km/hr = 4.0 km/min **Legend.** D- Distance KT - Knot HR - Hour T - Time in minutes KM - Kilometer S = Groundspeed in knots in kilometers RP- release point			

5-35. If the AATF employs JSEAD, preplanned fires, and/or CAS, the supporting aviation unit will utilize designated flight corridors for portions of the flight route. The aviation brigade or AATF staff coordinates the corridor through the theater air control system. A flight corridor has specific dimensions restricting flight within the corridor.

5-36. Air corridors may exist only within the vicinity of passage points and at en route locations deemed potentially dangerous. The AATF may designate the remainder of the planned route as a flight axis, giving the AMC and flight leads greater latitude in choosing a route.

Flight Routes

5-37. During the air movement, the AMC assumes OPCON of all aviation forces. The AMC controls all timings for the deconfliction of all en route fires, to include initiation, shifting and lifting of preparatory fires at the HLZ.

5-38. The location of start point from the PZ and the RP from the HLZ should allow adequate flying time for the execution of the en route tasks and procedures by aircrews. The distance from the PZ to the start point allows the aircraft to achieve the desired airspeed and altitude, and get into formation after liftoff. The distance from the RP to the HLZ allows the flight lead to reconfigure the flight for landing. The designated locations of the start point and RP should—

- Be easily identifiable by aircrews.
- Avoid obstacles and known enemy positions.
- Facilitate takeoff and landing based on winds and weather.

5-39. A route may have as many air control points (ACP) as necessary to control the air movement. ACP are placed at each point where the air route changes direction. They include readily identifiable topographic features or points marked by electronic navigational aids. The start point and RP are also air control points.

5-40. Once identified, air routes are designated for use by each unit. When large groups of aircraft are employed, dispersion is achieved by using multiple routes. However, with large serials, it is often necessary to use fewer routes to concentrate available supporting fires. The number of alternate and return routes may be limited. Air routes should assist in navigation (day or night), avoid major obstacles (if possible) and avoid turns in excess of 60 degrees to facilitate control of the aircraft formation when formation flying is required or if sling loads are involved.

Flight Route Considerations

5-41. The following are considerations for flight routes used during the execution of an air assault mission:

- Minimize interference with ground maneuver. Overflying ground elements may interfere with supporting fires. Air route placement must consider PAA locations and gun-target lines.
- Support of landing plan. To reduce vulnerability of the AATF, air routes facilitate the rapid approach, landing and departure from selected HLZ.
- Enemy weapon engagement zones. Air routes should maximize the use of terrain and concealment to minimize audio signature and visual exposure of aircraft to enemy observation, target acquisition and direct fire.
- Facilitate security. Air routes are selected to provide security for friendly forces en route.
- Weather conditions. Prevailing weather during the air assault operation significantly affects the selection of air routes. Wind direction, speed and gusts during the execution is a critical factor for the approach and departure. The position and the angle of the sun or moon should be considered as well.
- Terrain. Air routes use terrain to maximize the advantage of and reduce vulnerability of the aircraft formations, providing cover by placing terrain mass and vegetation between the enemy and the aircraft. Avoid built-up areas when possible
- Distance from PZ to HLZ. Air routes should be as short as is tactically feasible in accordance with mission variables to reduce flying time.

5-42. Additionally, flight routes must support both the primary and alternate HLZ locations. Each HLZ should lie within a 30-degree arc from the RP. Vulnerability of the air assault force will be reduced if the flight route facilitates a rapid approach, landing and departure from the HLZ.

5-43. Many factors dictate the formation used within the flight, such as terrain, enemy situation, visibility, weather, altitude, speed, type of aircraft mix, and the degree of control required. The AMC or flight lead selects the en route and landing formation based on the mission variables. Ideally, the aircraft land in the formation specified by the air movement table.

Air Movement Table

5-44. The AATF staff and aviation unit staff prepare the air movement table and it serves as the primary air movement document. The AATF S-3 and aviation LNO begin work on this document right after the initial planning conference. This gives them an idea early in the planning process of challenges involved in moving units to the HLZ. The table ensures that all personnel, equipment, and supplies are accounted for in the movement and that each aircraft is fully loaded, correctly positioned in the flight, and directed to the right HLZ. (Appendix B Table B-1 for an example of an air movement table.)

5-45. The air movement table—

- Contains aircraft allocations.
- Designates number and type of aircraft in each serial.
- Specifies departure point; route to and from loading area; and loading, liftoff, and landing times.
- Includes the refuel schedule for all lifts if required.

5-46. The air movement table regulates the sequence of flight operations from PZ to HLZ using the following line information:

- Line number. Quick reference with brevity codes numbered sequentially.
- Aviation unit. Aviation unit conducting the air movement. Depicted as unit designation over call sign to save space.
- Lifted unit. Unit being lifted or air assaulted. If more than one unit is in the load, use unit with most assets in the load. Depicted as units designation over call sign to save space.
- Lift number. Serials that make one complete turn out to and back from the area of operations. Numbered sequentially.
- Serial. Group of aircraft. The capacity of the smallest HLZ determines the number of aircraft in each serial.
- Chalk. Each aircraft equals one load. Number assault aircraft sequentially.
- PZ. Name of the PZ where chalks pick up the loads.

- PZ arrival and load time. Time the troops get on the aircraft or when the aircraft starts to hookup the load.
- Takeoff time. Time the aircraft lifts off the PZ.
- SP time. Time the aircraft hit the start point (Flight Lead-determined point usually 3 to 5 kilometers from the PZ).
- Release point time. The time that aircraft hit the RP. (Flight Lead-determined point usually 3 to 5 kilometers from the HLZ).
- HLZ. Landing zone name and location determined by the lifted unit's ground tactical plan.
- HLZ Time. Time the serial lands in the HLZ.
- HLZ heading Compass bearing on which the serial will land – converted to a magnetic heading for the aircraft.
- HLZ formation. Landing formation, METT-TC drives this.
- Routes. Primary ingress and egress routes for the mission.
- Load. Personnel and sling load configuration.
- Remarks. Additional remarks (such as scheduled delays, refuel, or other uncommon serial characteristics)

LOADING PLAN

5-47. The loading plan establishes PZ operations and air loading. The air loading table (Appendix B, Table B-1) designates the troops, equipment, and supply load for each aircraft in a manifest along with the priority of loads, frustrated load plan, bump plan, and cross-loading of equipment and personnel.

5-48. Although ultimate responsibility for aircraft loading rests with the flight crew and aviation unit, the unit SOP and loading plans must be coordinated between the aviation and supported unit. At a minimum, the SOP must address the following:

- PZ markings.
- Hand and arm signals.
- Hookup procedures.
- Troop entry/exit sequence and direction.
- Securing equipment.
- Assigned seating (if applicable).
- Individual to open/close the door (if applicable).
- Contingencies (hot PZ, lost communications, aircraft malfunction, broken loads).

5-49. The AATF staff, with the BAE, AMC and LNO, identifies the primary and alternate PZ. Units often designate multiple PZs to separate internal and external loads, troops and equipment, or UH-60 and CH-47 aircraft operations.

5-50. The loading plan and PZ selection should aim to maintain unit integrity once troops are on the ground at the PZ. Just as a squad should not be divided between chalks, a platoon should remain in one serial and a company should not be divided between different lifts or PZ locations.

5-51. The AATF staff uses the mission variables, the intent of the AATFC, the location of the assault force, and the suitability of available terrain when selecting the PZ. Each PZ should be—

- Large enough to accommodate all supporting aircraft at one time.
- Close to the troops being lifted so they do not have to travel a long distance.
- Accessible to vehicles supporting PZ operations but away from unrelated traffic.
- Generally free of excessive slope, blowing dust, sand, snow, rocks, mud, ice, brush, and other obstacles or hazards.
- Masked by terrain from enemy observation.
- Outside the range of enemy medium artillery.

5-52. The PZCO forms a PZ control party with troop control teams, rigging-support, air traffic service, and security personnel. PZ communications rely on using a secure control net. Units should minimize radio communications, use preplanned brevity codes, and have a primary, alternate, contingency and emergency (PACE) plan for communication.

5-53. To avoid confusion at night, the PZCO establishes marking and lighting controls. Table 5-2 provides recommended marking techniques for day and night pickup zones. The PZ control party may employ blue flashlight filters and night vision device compatible chemical lights to designate active ground staging. The PZCO directs the marking of the PZ to simplify night identification.

Table 5-2. Marking techniques for day and night pickup zones

Marking techniques for day and night pickup zones		
Position In PZ	***Daylight Marking***	***Night Marking***
PZ entry	Guide and sign	Guide with 2 blue chemical lights
PZ control	M998 and VS-17 panel	2 green chemical lights on antenna
Aid station	M997	Steiner device
Chalk stage points	PZ control party guides/signs	Guide/blue chemical light per chalk
Lead touchdown point	VS-17 panel, smoke	Inverted Y, IR flashlight
Chalk touchdown points	Soldier on knees with raised rifle	IR chemical light per aircraft
Obstacles	Notify pilots on radio	Red chemical light ring around obstacle
Loads to be picked up	Hookup team on loads	IR chemical light per load
IR – Infrared PZ – pickup zone	RP – release point SP – start point	

5-54. PZ sketches should incorporate digital pictures or other imagery if available to promote understanding of the loading plan. The PZCO or LNO must provide the flight lead with kneeboard PZ sketches at the rehearsal or ACB. There should be space on the sketch where aircrews can enter new information and changes. The landing formation corresponds to the PZ sketch to simplify chalk staging and expedite loading.

5-55. The AATF may have spare aircraft to offset mechanical problems or combat losses during the air assault. This “bump plan” indicates how spares join serials in the PZ. One technique is to employ all available aircraft during the first critical lift, and park one or two aircraft to serve as spares during less critical subsequent lifts. The bump plan also addresses the elements or cargo to be delayed or left behind due to aircraft availability.

STAGING PLAN

5-56. The staging plan prescribes arrival times and order of aircraft, ground personnel, and equipment movement to the PZ. Loads must be ready (inspected and certified) prior to aircraft arrival. The PZCO and PZ control party have primary roles in the efficient transition from the staging plan to loading plan.

5-57. During the staging phase, the aviation unit finalizes mission planning, completes rehearsals, and conducts pre combat checks and inspections to ensure mission times are met during the air assault. Other preparation includes—

- Coordination between supported unit and the AMC.
- Load preparation and inspection.
- Aircrew briefings, mission planning, and rehearsals.
- Aircraft preparation, reconfiguration, and spacing.
- Preflight inspections.
- Emplacement of the FARP to sustain the mission.
- Confirmation of communications card and frequency/communications security fill accuracy.

CONSIDERATIONS FOR AIR ASSAULT OPERATIONS WITH PATHFINDERS

5-58. The best way to establish a PZ or HLZ is to use pathfinder trained personnel. Their primary mission is to provide navigational assistance and control to Army aircraft in areas designated by the supported unit. Pathfinder tasks and support include—

- Reconnoiter areas selected by supported unit commanders.
- Select appropriate sites for the PZ, HLZ.
- Infiltrate areas of operation by ground, water, or air.
- Prepare the PZ and HLZ for aircraft arrival.
- Establish and operate visual and electronic navigation aids.
- Remove obstacles and debris which can interfere with aircraft.
- Use ground-to-air radio communications or signals to guide pilots and crews.
- Coordinate directly with fire support units and keep pilots informed about friendly indirect fires.
- Provide technical assistance in assembling supplies, equipment and troops at the PZ before loading the aircraft for deployment.
- Advise and provide limited physical assistance in preparing and positioning supplies, equipment and troops for air movement.
- Provide limited weather observations; including wind direction and speed, cloud cover and approximate cloud ceiling, and visibility.

PLANNING METHODOLOGY

5-59. Air assault planning begins immediately upon receipt of mission and utilizes the five stage reverse planning sequence. All personnel involved with air assault planning conduct continuous coordination under the AATF S-3 during COA development to ensure all considerations are factored into COA development. The BAE is critical to the AATF staff planning process during mission analysis and COA development.

5-60. The ADAM/BAE and the supporting aviation LNO from the CAB or aviation task force serve as the link between their respective staffs and the AATF staff and are critical to the air assault planning process. They enable the AATFC and ground tactical commander to concentrate on refining the ground tactical plan and follow-on missions. The ADAM/BAE anticipates requirements of the supported unit(s) and disseminate these requirements as soon as possible to the aviation LNO / supporting aviation unit.

5-61. At the earliest opportunity the AATF, supported unit(s) staffs, and supporting aviation unit staff should determine and share the minimum requirements to conduct the IPC and/or AMCM. These two meetings may occur sequentially or simultaneously, depending on available planning time. The concept of the ground tactical plan is critical to the conduct of the IPC or AMCM. Refer to appendix B figure B-1 for a sample AMCM checklist.

5-62. The collaboration between the AATF, supported unit staff, and supporting aviation unit staff results in the Air Assault Appendix to Annex C (Operations), of the OPORD and may include—

- Tentative lift and serial composition.
- List of suitable PZ and HLZ.
- Tentative air routes.
- HLZ imagery (if available).
- Any deviations from standard planning factors.

DELIBERATE PLANNING

5-63. Air assaults are deliberately planned due to their complex nature and requirement to provide the commander detailed intelligence concerning the enemy situation. The air assault planning process mirrors the steps in the MDMP and incorporates parallel actions necessary to provide the additional time and detailed planning required for successful mission execution. Figure 5-3, page 5-13 provides a comparison of the MDMP and the air assault planning process when maximum time is available for planning.

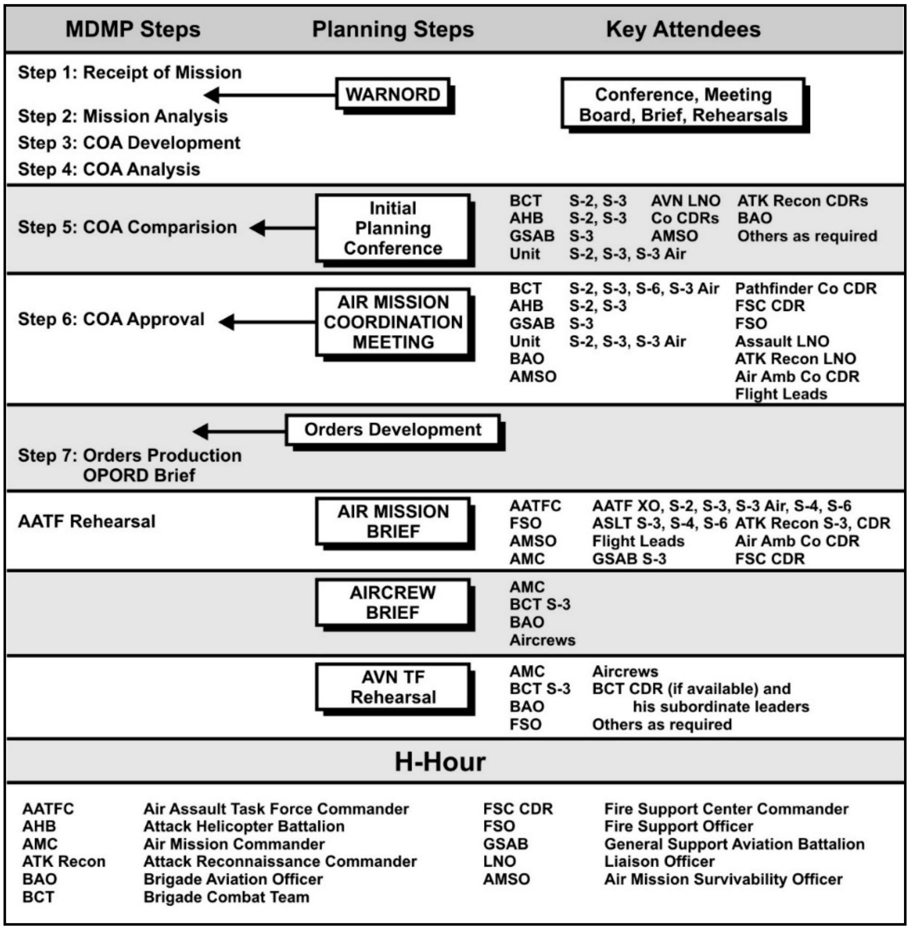


Figure 5-3. Military decision making process and air assault planning process

5-64. Due to their complexity, air assault operations are deliberate. Ideally, the Task force commander will receive 96 hours after the issuance of the order to complete planning for a BCT sized air assault. This is especially important for forced entry operations. When time is available, units should use the timeline below to develop the best plan possible. Figure 5-4, page 5-14 example of an air assault planning timeline.

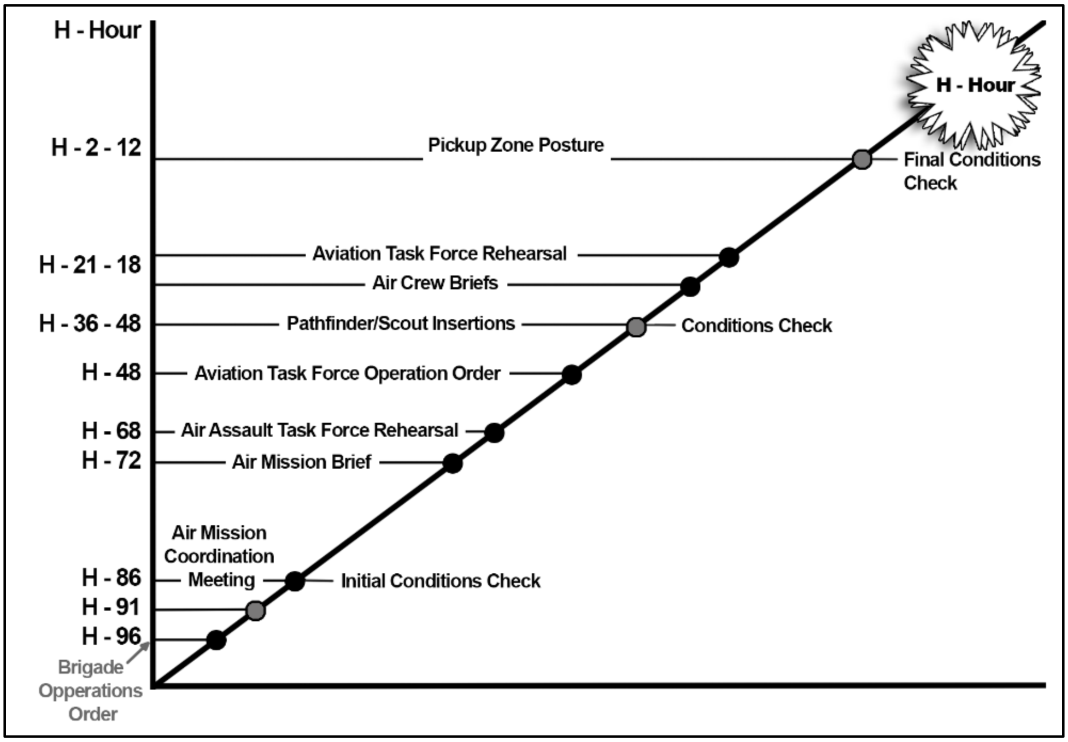


Figure 5-4. Air assault planning timeline

THE PLANNING PROCESS

5-65. Synchronization is the arrangement of action in time, space, and purpose, integration is combining actions into a unified whole. (Refer to ADRP 5-0 for more information.) Commanders and staffs use several integrating processes and continuing activities to synchronize operations.

WARNING ORDER

5-66. Air assault planning begins when the designated AATF receives a WARNORD from the higher headquarters for the upcoming air assault mission. The WARNORD identifies the AATFC and specifies task organization. This allows the aviation commander to dispatch an LNO to the AATFC's headquarters at the beginning of the planning phase. Other warning and fragmentary orders should follow as the AATF staff and commander work through the reverse planning sequence.

5-67. The following information is sent out with the WARNORD to provide units in the AATF the information needed for planning—

- Ground commander's concept for the scheme of maneuver.
- Initial estimate on requirements for attack reconnaissance aircraft and concept of fire support.
- Estimate of the size of the force to be air assaulted.
- Likely PZ and HLZ.
- AATFC intent on the number of lifts and general timeline.
- Initial reconnaissance plan.

SETTING CONDITIONS FOR THE AIR ASSAULT

5-68. The AATFC and the ATFC determine the minimum conditions that must be created and preserved and the acceptable risk to execute the air assault. The threat and the commander's ability to assess the impact of shaping operations will determine the tasks which must be accomplished to set the conditions for the air assault.

5-69. Shaping operations are not just limited to conducting ground and air reconnaissance, suppression of enemy air defenses, and preparatory fires. Air assaults may require additional enablers or joint assets from the higher headquarters.

5-70. Conducting shaping operations to create and preserve the proper conditions for air assault execution is an iterative process. Based on situational understanding, the AATFC decides what part of the situation must change to ensure the success of the air assault. The AATFC directs available reconnaissance and surveillance units to detect the location of enemy systems that could affect mission success. This allows lethal and nonlethal systems – such as artillery, jammers, joint fires or attack reconnaissance assets – to target and deliver the desired fires and effects against those enemy systems prior to H-hour.

5-71. As the AATF staff continues to plan and prepare for the air assault the AATFC considers employing service and joint fires, if available, to help set the conditions. The AATFC requests assistance from higher headquarters if sufficient organic assets and information are not available to accomplish the mission. The AATFC assesses the progress of the shaping operations and repeats the process until satisfied with the result or operational necessity forces an abort of the air assault.

5-72. Army Aviation UAS (Shadow and Gray Eagle) are ideally suited to provide commanders with additional combat information when setting the conditions for air assaults. The UAS transmit near real-time full motion video to aid in searching for targets and recognizing terrain, identifying pattern of life, and any significant and enable the operator to record all information for follow-on processing, exploitation, and dissemination.

INITIAL PLANNING CONFERENCE

5-73. The initial planning conference (IPC) is the first meeting between the AATF staff, fires, and supporting aviation unit. The AMC, LNO, aviation battalion/task force S-2 and S-3, flight lead(s), and select CAB staff personnel should represent the aviation unit. This initial meeting allows the supporting aviation unit planners to address any impacts that enemy, environmental factors (climate and weather, terrain and altitude), and aircraft availability that may impact mission accomplishment with the AATF planners, as early as possible in the planning process. The IPC is conducted at the AATF headquarters and generally chaired by the BAO.

5-74. The AATF staff, to include the BAE, hastily war-games the concept for the ground tactical plan before the IPC in order for assembled planners to discuss and determine HLZ, routes, and PZ. Following the IPC, the ground and aviation staffs should understand the distance and general time involved for each lift. The staffs should know which forces are planned to be in the first lift and in each serial of the first lift, and which first-lift serials are going to which proposed HLZ and by what route. Subsequent lifts and follow-on echelon lifts, while discussed at the IPC, can be planned in detail at a later AMCM. The output of the IPC results in the WARNORD for the aviation task force.

AIR MISSION COORDINATION MEETING

5-75. The AMCM is a meeting between the AATF and supporting aviation unit. It is an S-3-level meeting that follows the development of the ground tactical plan. The AMCM is executed by the BAE and chaired by the AATF S-3. The AMCM is scheduled to allow sufficient time for maneuver units to decide on a specific COA based on the WARNORD and the standard planning factors.

5-76. The AATFC approves the maneuver COA before the AMCM. At the AMCM, unit S-3s brief the concept of their ground tactical plans. Specifically, unit S-3s show the composition of combat power, by echelon, required at each HLZ.

5-77. The AATFC must approve changes after the AMCM and notify the supporting aviation unit. (See Table 5-3, page 5-16.) The end result of the AMCM is a finalized air movement and landing plans.

Table 5-3. Air mission coordination meeting agenda

Air mission coordination meeting agenda	
Roll call	Brigade aviation officer (BAO) / S-3
Intelligence update (aviation focused)	Brigade combat team (BCT) S-2
Weather (aviation focused)	Staff weather officer
Ground tactical plan and fire support (air assault specific)	BCT S-3
Air movement plan (routes)	Aviation liaison officer (LNO)
Attack reconnaissance aviation concept (en route and helicopter landing zone [HLZ])	Attack reconnaissance LNO
Fires (pickup zone, suppression of enemy fire defenses, HLZ prep)	Fire support officer
Mission command plan	BCT S-6
Medical evacuation and casualty evacuation plan	Health service support officer (HSSO)
Forward arming and refueling point plan	Assault LNO
Load plan (detailed)	BAO / S-3
Review decisions	BCT S-3
S-3 closing comments	BCT S-3
Initial conditions check	BCT S-3
This agenda depicts key participants in a BCT-level AASLT. Key participants will vary based on echelon.	
BAO – brigade aviation officer	HLZ – helicopter landing zone
BCT – brigade combat team	LNO – liaison officer
If Scout or Pathfinder insertions are conducted, also cover the following: emergency extraction plan/trigger, alternate communications plan and rehearsals, communications check, and final coordination.	
For an artillery raid, include the following: Laager time/location and trigger for extraction.	

AIR MISSION BRIEF

5-78. The AMB refers to both the written product and the actual briefing. The AMB is a coordinated staff effort during which the AATFC approves the air assault plan. The AMB is an adjunct to the AATF OPORD and is published as an appendix to annex C. (See Appendix B, Figure B-2)

5-79. The AMB highlights air assault requirements to the AATF and supporting aviation unit. This is not a working meeting; it is a confirmation brief to the AATFC.

AIR MISSION BRIEF PROCESS

5-80. Central to the AMB is the ground tactical plan. The AATF S-3 chairs the brief with an agenda that combines the five paragraphs of an OPORD with the five stages of the AASLT planning process (table 5-4, page 5-17). It should stress assault and attack concepts and sequence of events. The slightest change in serial separation, HLZ, or other elements of the mission can significantly affect the rest of the plan. The AATFC must approve changes to the mission after the AMB. It is difficult to resynchronize the warfighting functions in the short time that remains between the AMB and mission execution.

Table 5-4. Air mission briefing agenda

Agenda Item	*Individual Responsible*
Task organization and roll call	Air assault task force (AATF) S-3
Time hack (Global Positioning System Time)	AATF S-6
Enemy forces	AATF S-2
Friendly forces	AATF S-3
Task Force mission	AATF S-3
Brigade combat team / Battalion commander's intent	Air assault task force commander (AATFC)
Ground scheme of maneuver	AATF S-3
Scheme of fires (suppression of enemy air defenses and ground tactical)	AATF Fire Support Officer
Aviation mission	Aviation Task Force (ATF) S-3
Staging plan	Brigade combat team executive officer
Loading plan	ATF S-3
Air movement plan	ATF S-3/flight lead
Landing plan	ATF S-3/flight lead
Laager plan	ATF S-3/flight lead
Attack reconnaissance aviation mission/concept	ATK Recon S-3/commander
Tasks to subordinate units	AATF S-3
Coordinating instructions	AATF S-3
Service support forward arming and refuel point plan	ATF S-4
Medical evacuation / casualty evacuation plan	Medical Company (Air Ambulance) company commander
Command	AATF S-3
Signal	AATF S-6
Operational risk assessment	AATF S-3
AATFC comments	AATFC

This agenda depicts key participants in a BCT-level AASLT. Key participants will vary based on echelon.
ATF – Aviation task force

AATF – air assault task force   AATFC – air assault task force commander

AIR MISSION BRIEF DOCUMENTS

5-81. Documents required to conduct a comprehensive AMB include the air movement table, the communications card, the pick-up zone diagrams, the helicopter landing zone diagrams, the operations sketch, the route cards, fire support plan and the execution checklist.

- Air Movement Table. The air movement table regulates the sequence of flight operations from PZ to HLZ. The air movement table is used by commanders and staff to track the staging through the landing phases of an air assault (Appendix B Table B-1).
- Communications Card. The communications card includes a summary of all call signs and radio networks. (Appendix B Figure B-5).
- Pick-up Zone Diagrams. The diagram graphically depicts the layout and organization of the PZ. Units should prepare a separate diagram for each PZ (Appendix B Figure B-6).
- Helicopter Landing Zone Diagrams. The diagram graphically depicts the layout and organization of the landing zone. Units should prepare a separate diagram for each HLZ (Appendix B Figure B-7).
- Operations Sketch. Sketch provided by AATF S-3 describing the scheme of maneuver and given to the ATF S-3 at the BCT rehearsal. Each pilot carries an operations kneeboard sketch to provide situational awareness and to counter the potential for fratricide during attack operations. These sketches

are included as enclosures to the AMB. Additional documents to further depict the operations sketch include a grid reference graphics and concept of fires sketches (Appendix B Figure B-8).

- Route Cards. Depict ingress and egress routes to be used on the air assault (Appendix B Figure B-9).
- Execution Checklist. The air assault execution checklist permits brief, informative radio transmissions on crowded radio networks. Execution checklists will use brevity codes to represent critical points in the air and ground scheme of maneuver. The combined execution checklist, compiled and published by the AATF S-3 must be completed prior to the AMB. When possible ensure brevity codes are aligned with joint publications (ALSA's Multi-service Brevity Codes Manual) (Appendix B Figure B-10).

Air Assault Task Force Rehearsal

5-82. The AATF rehearsal, led by the AATF S-3, culminates the formal air assault planning process. It is a rehearsal of the entire air assault mission, beginning with condition setting and ending with the commander's expressed end state.

5-83. The rehearsal includes the key leaders and staff from the AATF and any supporting units. The emphasis is on synchronizing all units supporting and executing the air assault. The rehearsal includes a discussion and demonstration of likely ground and air contingencies, such as downed aircraft, alternate route or HLZ activation, delays in the PZ (bump plan, frustrated loads), alternate SEAD plan, and others suited to a particular mission.

5-84. It is mandatory that air assault security forces from attack reconnaissance units are represented at the rehearsal to confirm air route de-confliction, fire support control measures, and locations of expected attack-by-fire or battle positions.

5-85. The BCT medical officer and aeromedical evacuation aircrews should attend and have a clear understanding of the concept of medical support including MEDEVAC (air and ground) and casualty evacuation. They confirm procedures and know the location of key passback points, including casualty collection points and ambulance exchange points.

Aircrew Brief

5-86. In the aircrew brief, the aviation unit briefs all flight crews and support personnel executing the air assault mission to include the forward support company, aviation maintenance company, and air traffic services. The aircrew brief covers all essential flight crew actions and the ground support necessary to accomplish a successful mission. Flight crews must fully understand the mission to execute the air assault successfully.

5-87. The aircrew brief is conducted at the aviation battalion level, with the aircrews from each unit in attendance. The aircrew brief can be conducted at the aviation company level when mission variables do not allow the brief to be conducted at the battalion level.

Aviation Task Force Rehearsal

5-88. The aviation task force rehearsal is similar to the AATF rehearsal. However, its emphasis is the aviation scheme of maneuver and the contingencies associated with the movement of aircraft and how they apply to the mission. The purpose of the aviation task force rehearsal is to validate synchronization and should include supporting elements from within the aviation task force.

5-89. At a minimum, the rehearsal includes the air mission commander, flight leads, pilot-in-command of each aircraft, serial commanders, the aviation task force S-3, and the aviation task force commander. Additional requirements are set by the AMC or ATFC. Topics discussed should include, but are not limited to:

- Airspace and route de-confliction.
- Execution of the bump plan.
- FARP plan.
- Fire support plan.
- Execution matrix.
- Downed aircraft recovery procedures.
- Personnel recovery.

- Actions on contact.
- Procedures on the PZ and HLZ.
- Mission-specific contingencies.

CONDITIONS CHECK

5-90. The conditions for an air assault must be checked continuously. It is important to consider the latency of information when presenting it to the commander. Conditions checks are updates conducted by the AATF staff to update the AATFC on the status of ongoing shaping operations. These conditions are monitored constantly to ensure they exist for air assault execution. It is important to consider the latency of the information when presenting it to the commander for a decision.

5-91. The initial air assault conditions check is usually conducted in the AATF or ground tactical force main CP. All air assault staff principals are represented. BCT, higher, adjacent, and subordinate headquarters LNOs attend the condition check in person when possible or by video-teleconference or conference call when necessary. The final conditions check is conducted near the AATF PZ control CP. It includes a review of the latest friendly, terrain and weather, enemy situations, and status of enablers.

5-92. An air assault conditions checklist (Appendix B, Figure B-3) considers critical factors to evaluate and recommend the execution of an air assault. For example, air assaults planned for dawn and dusk periods are extremely dependent on weather and visibility. Air assaults planned for these periods increase the risks to aviation operations. The S-2 evaluates the weather and visibility conditions and recommends to the AATFC his assessment of those conditions in regards to executing the air assault.

ABORT CRITERIA

5-93. Abort criteria are important considerations when a change of one or more conditions in the objective area or HLZ seriously threatens mission success. As such, they are the friendly force information requirement relating to ongoing air assault operations and requiring command consideration regarding mission continuation. It is important that the AMB clearly defines abort criteria and that the AATFC monitors them throughout the operation.

Decision Process

5-94. If an abort criterion is met, a decision sequence is used before aborting the mission—

- Delay. If time is available, delay a mission to correct a circumstance that may abort a mission and set the conditions.
- Divert. If time is not available or a delay does not correct an abort criterion, the task force may execute a divert contingency.
- Abort. If an abort criterion exists and a delay or diversion to the mission does not correct it, the mission can be aborted by the AATFC. Apply the following:
  - A lift is aborted when it reaches an abort criterion. The mission itself is not aborted.
  - A mission is aborted when an abort criterion exists for the entire mission and the AATFC decides to abort.

5-95. Given the continued advantage of using the primary HLZ over alternates, delay while en route or at the PZ is preferable to diverting. The AATFC evaluates the risk of such a delay with respect to time, fuel, enemy, and other mission variables.

5-96. Planners establish proposed abort criteria to assist the commander in deciding when success of the operation is no longer probable. The AATFC retains authority for abort decisions. Six common factors that determine abort criteria for air assault missions include:

- Weather. Adverse weather conditions increase risk and degrade the effectiveness of organic weapon systems. The supporting CAB commander will set theater specific minimum weather conditions and establish the appropriate approval authorities for risk management.

- Available aircraft. The ground tactical plan for an air assault operation depends on the rapid massing of combat power at the critical place and time. The supporting aviation task force manages combat power to support the AATF and will keep the staff informed of any limitations.
- Time.
  - **Light and Darkness.** US armed forces gain a significant advantage over adversaries by operating at night. Night operations may increase aviation survivability, but may increase accidental risk in periods of low illumination.
  - **Planning Time.** In general, less planning time equates to increased risk. Time sensitive operations should be preplanned to the greatest extent possible and should rely on an established SOP, habitual relationships, and detailed rehearsals.
- Mission essential combat power. Air assault mission planners use mission variables to determine the minimum combat power – to include infantry, artillery, attack reconnaissance helicopters, UAS and FW aircraft – needed to ensure mission success. Use abort criteria to ensure friendly forces have the required combat ratio for the operation.
- Mission criticality. Future operations may depend on the success of the air assault mission. Therefore, some air assault operations may proceed despite the presence of circumstances that would normally abort the mission.
- Enemy. Enemy activity, especially along air routes or near HLZ or objectives, may trigger an abort decision for an air assault mission. Abort criteria usually is stated in terms of the size or type of an enemy unit, the type of enemy equipment (especially air defense).

TIME CONSTRAINED PLANNING

5-97. Units are often required to execute air assaults within short time constraints, sometimes a few hours from the time of receiving the WARNORD. Essential to the success of time constrained planning are unit SOPs, habitual relationships, combined training, familiarity with systems and the area of operations, and rehearsals.

5-98. Based on the time available, the AATF executive officer adjusts the timeline as required. It is critical for the commander to consider the availability of aviation assets. Through continuous liaison with the aviation task force, the BAE maintains a running estimate of aviation combat power that informs the AATFC's decision-making.

5-99. Successful execution of an air assault under time constrained planning requires parallel planning by all levels of command and units that are habitually aligned. Parallel planning begins as soon as the mission is received, with the supporting CAB or aviation task force providing LNOs or coordinating through the ADAM/BAE to the AATF if they are not already present.

5-100. Once the COA is approved, the BAO immediately begins the AMCM. To save time by reducing the number of meetings, specific portions of the AMB may be included in the AATF OPORD brief in lieu of doing a separate AMB. With the exception of the combined OPORD and AMB, phone, e-mail, video teleconferencing, or other mission command systems may be utilized to complete mission coordination and planning. Back-briefs, aircrew briefs, and rehearsals are still conducted. The specific portions of the AMB included in the OPORD brief are—

- Staging plan.
- Air movement plan.
- Landing plan.
- Attack reconnaissance and fire support plan.
- HLZ condition criteria.
- Weather decision.
- Risk assessment.

Note. Due to established SOPs and habitual relationships some of these elements may require little or no adjustment or additional coordination.

TIME CONSTRAINED PLANNING TECHNIQUES

5-101. Commanders dictate the planning timeline. The AATFC can compress the deliberate planning process by understanding the capabilities and limitations associated those units supporting the air assault. Utilizing standard operating procedures, the formation of habitual relationships, recurrent training events, and rehearsals is integral to the execution of time constrained air assaults

5-102. The aviation task force anticipates upcoming air assaults with their supported unit(s) by dedicating experienced aircrews and planners on cycles conducive to the air assault planning and execution timeline. When able, the aviation task force provides an aviation liaison officer to the supported unit in order to provide a subject matter expert to assist with planning and coordination with the aviation unit. Additionally, the aviation task force has a dedicated air assault planning cell in to assist company planning cells. The air assault planning cell may include an S-3 air assault planner, an S-2 threat and terrain analyst, and an AMSO. The company planning cell consists of aviators who will execute the mission, supported by off cycle crews.

5-103. Upon receipt of a WARNORD, planners convene the AMCM as soon as possible, ideally 36-24 hours prior to H-hour. The supported unit provides planning information and graphics to the aviation unit planning cell. The AMCM is optimally conducted face-to-face but can be conducted via phone or other information system with the supported unit. The following key aviation personnel participate in the AMCM: the aviation operations officer, the air assault planning cell, the air mission commander, and flight leads. Aviation planners ensure they leave the meeting with sufficient information to plan the air assault.

5-104. Aviation planners then parallel plan the air assault with the supported unit. Prior to the air mission brief, the supported unit planners and aviation planners ensure their combined plan meets the AATFC intent while mitigating both tactical and accidental risk.

5-105. The aviation unit combines the AMB with the aircrew brief (ACB) by involving all crewmembers and key ground support leaders involved in executing the air assault. The units conduct the combined AMB/ACB over collaborative systems with respect to crew cycles. The crewmembers possess all necessary graphics and kneeboard products prior to the meeting. The AMC briefs the aviation plan to the AATFC and includes enough information to ensure all crewmembers understand the concept of the operation and sequence of events. Upon completion of the AMB the AMC leads the ACB by covering all essential flight crew actions and ground support requirements. The ACB is the appropriate forum to ensure all crewmembers and support personnel understand actions to take due to contingencies.

5-106. After the combined brief, and the final conditions check the assault element and attack reconnaissance aircraft then travel to the PZ. At the PZ key personnel conduct the AATF rehearsal. Included in the rehearsal are likely ground and air contingencies, such as downed aircraft, alternate route or HLZ activation, delays in the PZ (bump plan and frustrated loads), alternate suppression of enemy air defense plan, and others suited to the mission.

TIME SENSITIVE TARGET AIR ASSAULT PLANNING

5-107. A time-sensitive target air assault is typically planned and executed based on specific triggers and intelligence-driven opportunities. The planning steps are executed on a condensed timeline set by the AATFC. The AATFC must also establish the minimum planning products and ultimately accept the mission risk.

5-108. Initial coordination may be through mission command systems; however it is essential that a face-to-face meeting addressing the contents of an AMB take place prior to mission execution. This meeting may occur on the PZ with aircraft shutdown. At a minimum one member from each aircraft, flight lead, AMC, chalk leaders, ground and air S-2s, and the ground tactical commander should be present.

5-109. Additionally, the aviation unit should have a habitual relationship of conducting air assaults with the supported unit. The aviation unit can embed a liaison officer with the supported ground unit in order to foster parallel planning. Mutual SOPs covering air assault planning and execution enable units to compress air assault planning timelines while mitigating risk. The mutual air assault SOP should include standard contingency battle drills, air assault meeting formats and timelines, standard tactical mission planning products, and planning cell responsibilities.

5-110. When planning a time sensitive target air assault, aviation units greatly benefit from supporting enablers, such as joint UAS, geospatial analysts, and staff weather office personnel. UAS can provide real-time imagery of proposed HLZ and objective areas to air assault planners. Geospatial analysts provide current and detailed imagery of proposed HLZ and objective areas. A weather officer provides wind, illumination, and ceiling data, and other environmental information that impacts the air assault operation.

SECTION V– EMPLOYMENT

5-111. Air assaults enable the ground maneuver commander to overcome the effects of terrain to rapidly mass combat power, achieve surprise, and destroy the enemy or seize key objectives. The effective integration and synchronization of aviation and ground units is paramount to the execution of air assaults. . When used in conjunction with ground forces, fires from attack reconnaissance helicopters, CAS and UAS provides overmatch to ground forces in contact. Controls must be established to minimize the potential for fratricide, collateral damage, and civilian casualties.

ATTACK RECONNAISSANCE AIRCRAFT AND UAS

5-112. Employing attack reconnaissance aviation with ground maneuver forces requires coordinated force-oriented control measures. Attack reconnaissance aircraft set the conditions for air assaults by providing security, reconnaissance, and fires en route and on the objective. If attack reconnaissance assets are available, they may precede the assault force to reconnoiter the flight route, HLZ, and objective areas. Attack reconnaissance aircraft and UAS may initiate preplanned fires according to the SEAD/JSEAD and fires support plan. Supported units should be familiar with the 5-line army attack aviation call for fire and marking techniques.

ASSAULT HELICOPTERS

5-113. The primary mission of Army assault helicopters in air assault operations is to move troops and equipment. With seats installed in the UH-60 helicopter, the allowable combat load is 11 combat-equipped Soldiers. Assault and GS helicopters perform a wide range of missions in support of air assaults, to include—

- Providing aerial mission command support systems for the air assault task force commander and staff.
- Supporting artillery raids.
- Transporting light vehicles and equipment to support the ground force.
- Providing air movement of supplies to sustain ground force operations, including FARP emplacement and support.
- Performing air casualty evacuation (CASEVAC).
- Performing DART operations.
- Personnel recovery operations.

HEAVY LIFT HELICOPTERS

5-114. The CH-47 helicopter can carry up to 33 seated combat-equipped troops. Additionally, the aircraft has extensive internal and external cargo carrying capability. Currently, the CH-47 is the only Army aircraft capable of transporting the 155-mm towed howitzer M777, and heavier high mobility multi-purpose wheeled vehicle variants. In an air CASEVAC profile, the CH-47 can carry up to 24 litter patients and two medics. The helicopter’s internal cargo handling system allows simplified internal loading and unloading of up to three 463L pallets or ten standard warehouse pallets. When configured in a fat cow profile, the aircraft can carry three 800-gallon fuel pods to support mobile FARP operations.

LIFTS, SERIALS AND CHALKS

5-115. Air assault elements are divided into lifts, serials and chalks. See figure 5-5, page 5-23 for a graphical depiction.

LIFTS

5-116. A lift is comprised of one or more serials, with each serial containing a number of aircraft (each referred to as a chalk). When all participating serials pick up Soldiers or equipment and deliver them to the HLZ a lift is completed. The next lift is completed when all serials have moved their loads from the PZ to the HLZ.

SERIALS

5-117. A serial is a tactical grouping of two or more aircraft under the control of a serial commander and separated from other tactical groupings within the lift by time or space. Multiple serials may be necessary when the capacity of available PZ or HLZ is limited by size or shape. For example, if the PZ or HLZ can only accommodate only 4 aircraft in a lift of 16 aircraft, it is best to organize into 4 serials of 4 aircraft each. The use of serials may be necessary to maintain effective control of aviation assets.

5-118. Multiple serials are employed to take advantage of available air routes. If several acceptable air routes are available, the commander may choose to employ serials to avoid concentrating the force along one air route. If the commander wants all forces to land simultaneously in a single HLZ, it is done by having the serials converge at a common release point before landing. With a lift of 16 aircraft and 4 available air routes, the commander can use 4 serials of 4 aircraft each, with each serial using a different air route. Each time there is a new lift, a new serial begins. For example, within lift 1, there are serials 1 through 4. For each lift thereafter, serials start again with the number 1.

CHALKS

5-119. A chalk is comprised of personnel and equipment designated for movement by a single specific aircraft. When planning the air movement, each aircraft within the lift is termed a chalk. For example, within a lift of 10 aircraft, there will be chalks 1 through 10. For each lift thereafter, the chalks will be re-numbered 1 through 10 again. Each aircraft is accounted for within each lift.

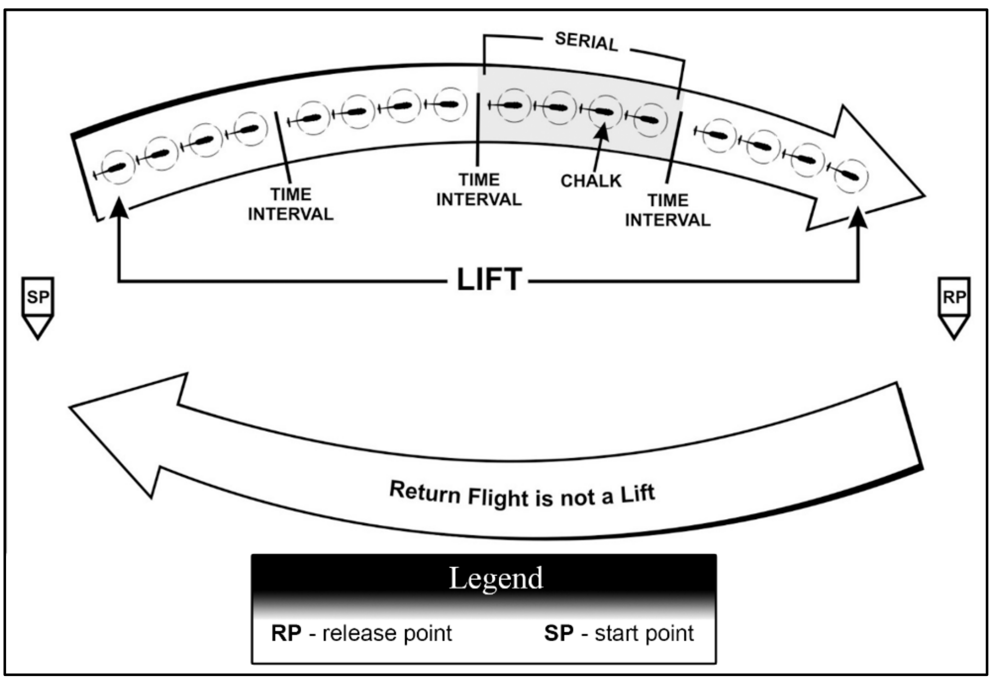


Figure 5-5. Lifts, serials, and chalks

5-120. All chalks must be designated within serials just as they are within lifts. Counting within the serials is continuous up to the total number of aircraft in the lift. For example, in a lift of 16 aircraft the numbering for lift 1, serial 1, will be chalks 1 through 4; then serial 2 will have chalks 5 through 8; serial 3 will be chalks 9 through 12, and finally serial 4 is chalks 13 to 16.

DISPOSITION OF LOAD ON THE PICKUP ZONE

5-121. Personnel and equipment are positioned on the PZ according to the PZ plan and diagram (figure 5-6, page 5-25). The PZCO manages all traffic in and out of a PZ, personnel marshalling and equipment placement, and is critical to successful mission execution. The pick-up zone diagrams depicting the location of chalks and sling loads in the PZ assist flight crews in loading troops and equipment quickly once the aircraft arrive in the pick-up zone. Flight crews must understand the loading plan and be prepared to accept Soldiers and equipment upon landing.

SLING LOAD OPERATIONS

5-122. The three phases of a sling load operation are—

- Preparation and rigging. Loads are prepared and rigged according to TM 4-48.09, TM 4-48.10, TM 4-48.11 or unit SOP.
- Inspection. A Pathfinder School graduate, Sling Load Inspector Certification Course graduate, or an Air Assault School graduate in the rank of specialist and above is qualified to inspect and certify each load. The individual who rigged the load cannot inspect the same load. The contents of the load are recorded on a DA Form 7382 (Sling Load Inspection Record).
- Execution. Trained ground crews hook up loads.

SLING LOAD UNITS

5-123. The three different elements involved in a sling load operation are the supported unit, the aviation unit, and the receiving unit. In an air assault, the supported unit and the receiving unit are the same. The responsibilities of each element are as described below.

- Supported unit is responsible for—
  - Selecting, preparing, and controlling the PZ.
  - Requisitioning all the equipment needed for sling load operations.
  - Inspecting and maintaining all sling load equipment.
  - Providing trained ground crews for rigging and inspecting, filing inspection forms, controlling aircraft, aircraft guides, hooking up loads, and clearing the aircraft for departure.
  - Providing load dispositions and instructions to the aviation unit for the sling load equipment.
  - Verifying the load weight (to include rigging equipment).
  - Removing or re-rigging frustrated loads.
- Aviation unit is responsible for—
  - Establishing coordination with the supported unit.
  - Advising the supported unit on load limitations.
  - Advising the supported units on the suitability of selected HLZ and PZ.
  - Providing assistance in the recovery and return of sling load equipment.
  - Establishing safety procedures and understanding of duties and responsibility between the flight crew and ground crew.
- Receiving unit is responsible for—
  - Selecting, preparing, and controlling the HLZ.
  - Providing trained ground crews to guide the aircraft and de-rig the loads.
  - Coordinating for the control and return of the sling load equipment.
  - Inspecting the rigging of back loads (sling load equipment returning to PZ).

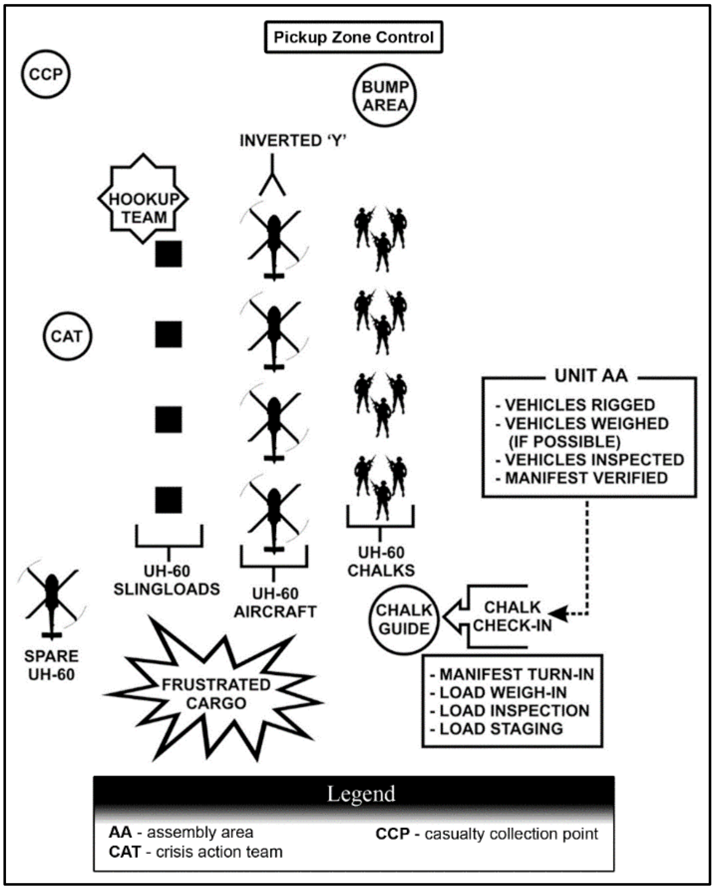


Figure 5-6. An example of pickup zone planning

THE BUMP PLAN

5-124. It is the supported unit's responsibility to ensure that the most essential personnel and equipment arrive on time at the objective area. The bump plan specifies personnel and equipment that may be bumped from an aircraft or serial and delivered later. Each aircraft load and serial has a bump plan sequence designated on the air movement table. (Appendix B Table 5-1 for an example of an air movement table with a bump plan.)

5-125. If all personnel within the chalk cannot be lifted, individuals must know who is to off-load the aircraft and in what sequence. This ensures that key personnel are not bumped arbitrarily. This also ensures that key aircraft chalks are not left in the PZ. When an aircraft within a serial or flight cannot lift off and key personnel are onboard, they off-load and board another designated aircraft that has priority.

5-126. Bumped personnel report to a PZ bump area specified by the PZCO to be accounted for, regrouped and rescheduled for later delivery to the appropriate HLZ. Sometimes, spare aircraft are held in reserve for bumped chalks in the event a primary mission aircraft is unable to fly due to maintenance or other reasons. These spare aircraft remain staged on the PZ to fly these and other high priority serials. The AMC develops the aircrew bump plan.

LOADING

AIR ASSAULT PASSENGER BRIEF

5-127. The pilot-in-command ensures passengers are briefed prior to flight in accordance with the aircraft checklist. Additional coordination, training and briefings are necessary due to the tactical necessity and the dynamic nature of air assault operations. Incorporating cold and hot load training prior to mission execution mitigates risk and preserves time.

5-128. The pilot-in-command will identify a chalk leader (CL) and an assistant chalk leader if exiting the aircraft is a both door exit (UH-60 specific). In flight, the CL will monitor the aircrew radios and will pass along updates to the Soldiers in the aircraft.

5-129. The pilot-in-command will brief the chalk and assistant chalk leader on exiting the aircraft. They in-turn will ensure all personnel remain seat belted until the aircraft is on the ground. The CL will sit according to unit SOP, which should dictate the seating positions to enable communication between the crew chief and the chalk leader.

5-130. The aircrew will-

- Brief the chalk on dust landings and go-arounds.
- Use HLZ diagrams to ensure the chalk understands location of objective in relationship to HLZ.
- Brief alternate HLZ and relationship to objective.
- Ensure the chalk understands a dust landing creates a great amount of dust and reduces visibility even after the aircraft has departed.
- Brief the chalk on the landing sequence and/or go-around as it may feel like the aircraft is on the ground and stopped when it is not, this is why it is important for the crew chief to announce the exit call.

5-131. The CL will provide a brief back to ensure the CL understands his responsibilities, the sequence of events, and the method of communication between the CL and the aircrew.

5-132. Passenger/troop carrying operations general considerations include—

- The safety levers of all smoke grenades/pyrotechnics will be wrapped with tape that overlaps by at least one inch; they will only be carried in closed compartments such as ammo pouches or rucksacks.
- Weapons will always be pointed downward while aboard the aircraft.
- During night operations, flashlights with filtered lenses will be used when approaching, loading, and unloading aircraft.
- Seat belts and shoulder harnesses will be used unless otherwise briefed and approved.
- The supported unit is responsible for maintaining passenger manifests during tactical flights. The AMC and pilot-in-command should have a copy of the manifest.

SEATS-OUT OPERATIONS

5-133. Conducting seats-out operations must be approved in accordance with Army Regulation (AR) 95-1. The commander of the troops riding without seats and/or seatbelts must do a thorough risk assessment and comply with the requirements of AR 95-1.

5-134. The objective of seats-out operations is to mass combat power at a decisive time and place. This is conducted by increasing the allowable combat load of UH-60 and CH-47 helicopters.

5-135. The allowable combat load can vary from 16 to 20 Soldiers for the UH-60 and 45 to 60 Soldiers on the CH-47. The combat load may be less when mortars or other equipment or ammunition are carried.

AIRCREW REQUIREMENTS AND UPDATE TO CHALK LEADER

5-136. The aircrew will ensure the chalk leader receives updates while in flight. The unit SOP dictates the required information and method to communicate information to the chalk leader. Below is an aircrew update to chalk leader example:

- Time when through the start point.
- Time when crossing air control points.
- Time when crossing the release point (workload permitting).
- Upon landing or on final approach, the aircrew will pass any changes to the landing plan from what was briefed at the AMB to include grid and landing heading.
- Updates on enemy situation.

- Time warnings and updates.

THE "HOT/COLD" HLZ UPDATE CALL

5-137. The *HOT/COLD* HLZ call is a final status update that enables the AATFC to make a decision prior to the release point. The criteria for a Hot/Cold HLZ status is developed during the air assault planning process. The element providing the call (i.e. attack reconnaissance aircraft, FW, UAS, pathfinders, or scouts) will be identified during planning and provides status updates as required to the AATFC.

5-138. If the HLZ is HOT, then the security or reconnaissance element provides a situation report consisting of the size of the enemy, the enemy activity, location of the enemy, time of the report, and what actions they are taking. Additionally, the report may include an estimation of how to achieve a COLD status, and/or recommendation for use of the alternate HLZ.

5-139. Considerations should be given to the communication capabilities of the supporting element providing the HOT/COLD HLZ status. The supporting element must account for the time it will take to relay the call to all parties.

HOT LANDING ZONE PROCEDURES

5-140. The presence of enemy activity may be unknown or unclear until the first serial of aircraft land in the HLZ. The enemy may employ one or a combination of actions to oppose landing operations. If this occurs, the AATFC may execute several options to continue the mission:

- Fight through the contact.
- Divert to an alternate HLZ.
- Abort remaining serials.
- Delay serials and execute direct and/or indirect fires.

5-141. The remaining serials may conduct orbits at a designated ACP or holding area until the threat on the objective is neutralized.

> ***Note.*** Contingencies regarding hot HLZ must be identified and addressed during the air assault task force rehearsal.

5-142. Normally, the lead unit into the HLZ has responsibility to clear enemy opposition in order to support follow-on lifts. This is accomplished using a number of different techniques. However, the most common is to assign assault objectives that require subordinate units to move through an area to clear enemy forces prior to reaching their assault objective or rally point. The technique used is entirely dependent upon the mission variables. The separation between serials and the number of serials that can fit into the HLZ at one time are critical planning considerations when determining the offloading techniques in either a cold or hot HLZ.

AIR ASSAULT SECURITY

5-143. Air assault security is a form of area security conducted throughout the air movement phase by attack reconnaissance aircraft and/or UAS (figure 5-7, page 5-28). The air assault security process can be conducted sequentially, simultaneously, or prior to the start of the air assault mission. This process is determined early in the mission analysis phase and is a direct result of the AATFC guidance and key tasks.

5-144. Upon mission receipt, attack reconnaissance elements may begin reconnaissance of the air routes, the HLZ and the objective area. The AATF ensures ground and aviation reconnaissance assets are coordinated. Patterns of life, suitability of HLZ, enemy activity, obstacle verification and other pertinent information are communicated to AATF leadership.

5-145. UAS are optimally suited to conduct reconnaissance and set the conditions along the air routes and HLZ. They provide situational awareness and early warning to the AATF to enable the decision support process. Employing manned-unmanned teaming also improves situational awareness of attack reconnaissance elements conducting air assault security.

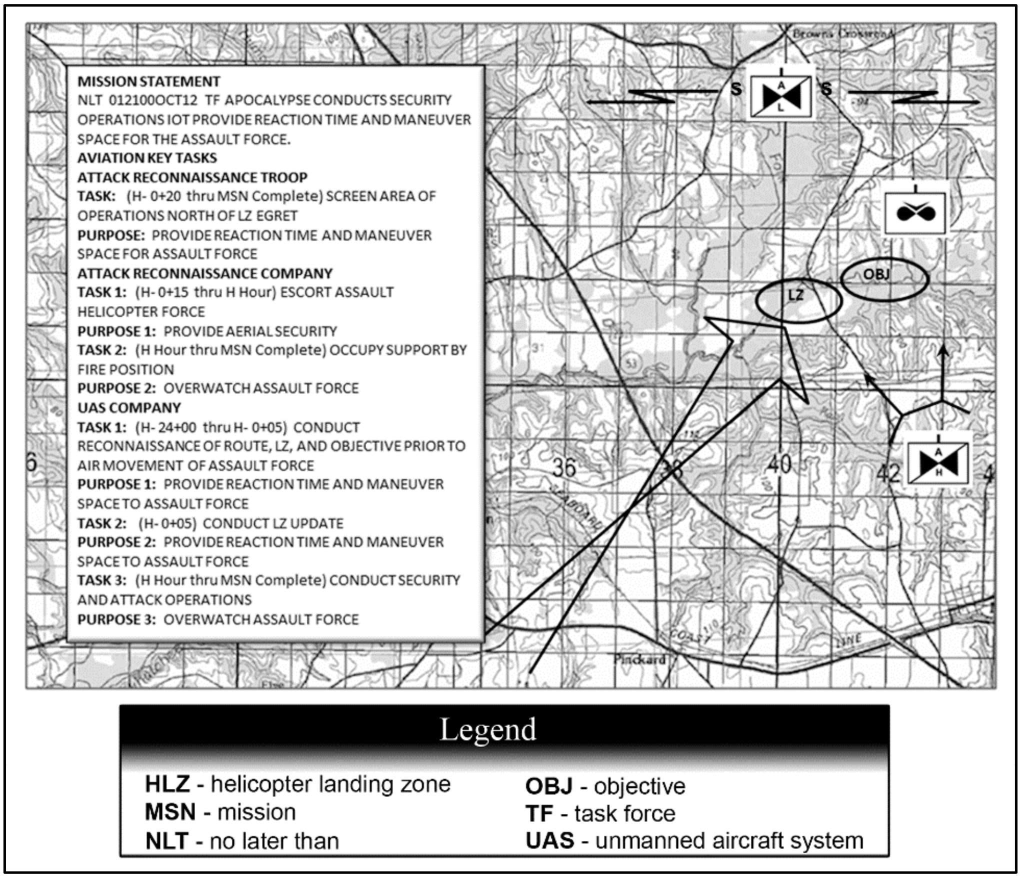


Figure 5-7. Air assault security diagram

MANNED-UNMANNED TEAMING AND THE AIR ASSAULT

5-146. The increased station time of UAS allows commanders to preserve attack reconnaissance aircraft combat power yet still mass at the decisive point and time. For example, a Gray Eagle launches six hours prior to an H-hour and provides real-time full motion video to the AATF CP. Fifteen minutes prior to launch, the attack reconnaissance aircrews monitor the situation from their cockpits, and receive updates via the combat aviation network. Alternately, attack reconnaissance aircrews manage organic and UAS sensors en route to the objective area to maintain observation of key avenues of approach, named areas of interest, or other locations as directed by the air battle commander.

AIR ROUTE FIRES

5-147. Fires along the air route are planned by the fire support officer to destroy, neutralize, or suppress known or suspected enemy positions. The integration of lethal and non-lethal fires must be synchronized to achieve the commander's desired effects while not interfering with en route aircraft. On-call fires are planned along the air route to ensure rapid target engagement. Fire support plans may cover the holding area, the air routes and the HLZ. The fire support plan includes the SEAD systems, non-lethal fires, and obscuration to protect formations from enemy detection.

5-148. All available fire support, to include CAS, artillery, attack helicopters and UAS, can be used to suppress or destroy enemy weapons. Support may consist of concealment or other countermeasures, such as electronic warfare, for suppressing or confusing enemy air defense systems. During night operations, the use of illumination fire requires detailed planning, as illumination can interfere with night vision goggles – causing unsafe conditions for aircrews.

LANDING

5-149. The ground tactical plan organizes the ground maneuver element to land ready to fight in the landing zone. Executing landing to the HLZ and the sequencing of forces into it is critical to any air assault. It is paramount that each serial must be ready to execute at either the primary or alternate landing zones. Leaders array the forces for loading at the PZ. Landing considerations include:

- Fly and land in the march order or order of assault.
- Each serial is able to fight as a team.
- Ensure appropriate separation of serials based on conditions.
- Land plus or minus 50 meters from the ground tactical plan intended landing point (as per AMB).
- Land plus or minus 30 seconds from the air movement table touchdown time.
- Land plus or minus 15 degrees from the planned landing heading (wind dependent).
- Ground forces exit one or both doors, or ramp of CH-47 (METT-TC dependent).
- Ground forces off-load aircraft within 30 seconds or less (1 minute or less for CH-47).
- Sling loads landed, crews offloaded within 2 minutes or less.

EXITING THE AIRCRAFT

5-150. The two methods for exiting a UH-60 aircraft are the one-side off-load and the two-side off-load. Soldiers exiting a CH-47 do so from the rear ramp. In each method, Soldiers must be careful to avoid sloping terrain, main and tail rotors of the aircraft they are exiting and the rotors of other aircraft in their serial, and door gunners' fields of fire.

5-151. As part of an air assault, the mission may require the application of the fast-rope insertion and extraction system (FRIES) for small units to infiltrate or insert into a confined area where a helicopter is unable to land. FRIES is the fastest method of deploying troops from a RW aircraft unable to land. Refer to FM 3-99 and ATP 3-18.10 for more information.

ONE-SIDE OFF-LOAD

5-152. In this method, Soldiers exit from either the right or left side of the aircraft (figure 5-8, page 5-30). Soldiers exiting the aircraft should step outward and take up a prone position, forming 180-degree security on that side of the aircraft yet remaining under the main rotor system, outside the landing gear of the aircraft, and aft of the door gunner's window. Soldiers should remain in the prone position until the aircraft lifts off, then the chalk leader directs his chalk to move to the nearest covered and concealed position according to the landing plan or unit SOP.

5-153. A unit plans to execute a one-side off-load on the side away from known or potential enemy positions but may be forced to exit the aircraft on the opposite side due to the enemy or other mission variables upon landing.

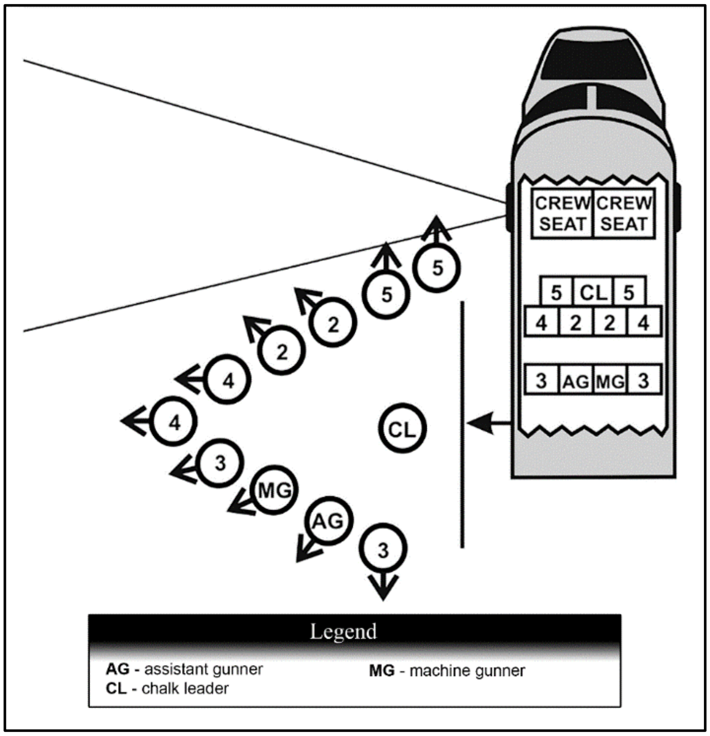


Figure 5-8. One side off-load (UH-60)

Advantages

5-154. The one-side off-load simplifies control. It allows the door gunners on the opposite side of the aircraft to engage enemy positions during off-loading. The door gunner on the same side of the dismounted Soldiers can provide suppressive fires, but his field of fire is restricted to forward of the dismounted troops.

Disadvantages

5-155. The one-side off-load is the slowest of the off-loading methods. The Soldiers and aircraft are exposed for a longer amount of time while exiting the aircraft, making them vulnerable to direct and indirect fire.

TWO-SIDE OFF-LOAD

5-156. In this method, Soldiers exit from both sides of the aircraft (figure 5-9, page 5-31). Soldiers exiting the aircraft should step outward and take up a prone position, forming 180-degree security on that side of the aircraft yet remaining under the main rotor system, outside the landing gear, and aft of the door gunner's window. Soldiers should remain in the prone position until the aircraft lifts off before departing the HLZ. The squad leader directs his squad to move directly to the nearest covered and concealed position according to the landing plan or SOP.

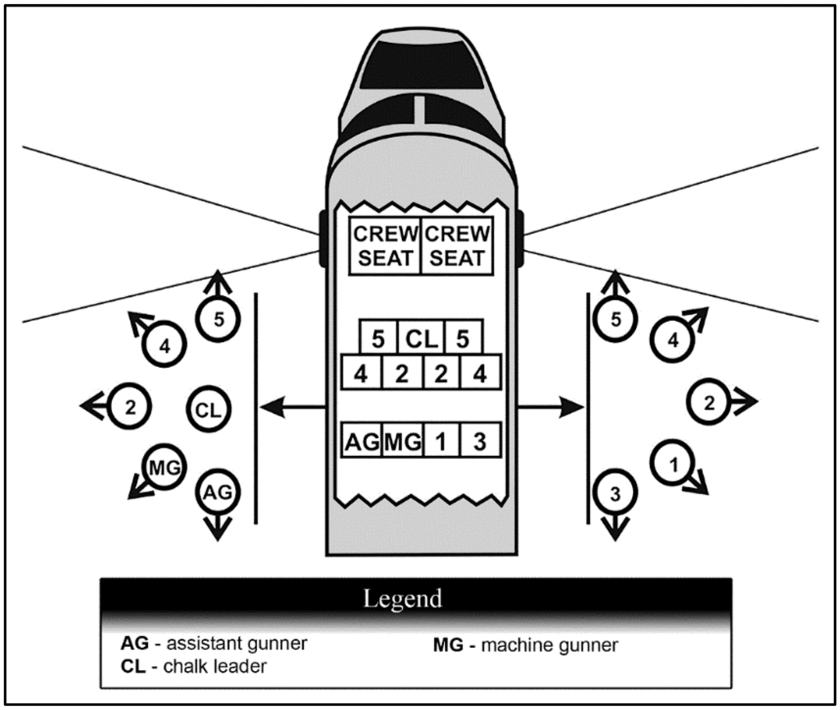


Figure 5-9. Two-side off-load (UH-60)

Advantages

5-157. The two-sided off-load is the quickest method for exiting the aircraft. It simplifies the establishment of zones of responsibility on the HLZ.

Disadvantages

5-158. The two-sided off-load restricts both door gunner fires to forward of the dismounting Soldiers while Soldiers exit the aircraft, which increases vulnerability to enemy direct fire.

REAR RAMP OFF-LOAD

5-159. In this method, Soldiers exit from the rear ramp of a CH-47 or other rear exiting aircraft. Soldiers move out from the aircraft and drop to a prone fighting position, establishing 180-degree security until the aircraft lifts to depart the HLZ. (See Figure 5-10, page 5-32.)

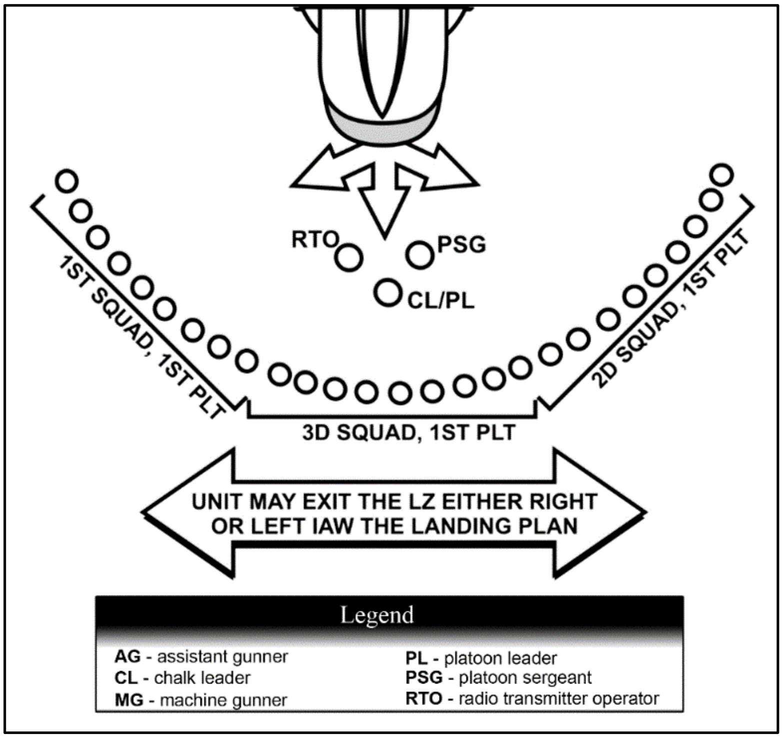


Figure 5-10. Rear ramp off-load exit (CH-47)

SECTION VI – ARTILLERY RAID OPERATIONS

5-160. An artillery raid consists of air assaulting a firing element forward to fire a specific mission, and then extracting the element via helicopter after the mission is completed. This is usually done as a mission separate from a maneuver air assault. The artillery raid is used when a stationary, high payoff target requires attack by indirect fires, the fires are needed for a short time only, and adequate observation of the target is provided. Quick and timely execution ("in and out") is the main objective. Target analysis determines the number of howitzers and the amount of ammunition required for the raid.

5-161. The air assault artillery raid is a high-risk, short duration operation used to attack high payoff targets located beyond the range of friendly artillery positioned behind the FLOT and / or targets tactically "out of reach" of other available fire support or maneuver systems. Detailed planning, accurate fires of sufficient volume and speed in execution are key to its success. Artillery raids are economy of force missions, but may be as robust as required by the commander's intent. Like all air assault operations, the ground tactical plan drives the mission planning.

SECTION VII – INSERTION AND EXTRACTION OPERATIONS

5-162. Insertion/extraction missions can be conducted at any time during tactical operations. These operations usually occur prior to offensive operations such as air assaults or movements to contact. They may consist of long-range surveillance detachment (LRSD) troops, special operations forces (SOF), scouts, or retransmission elements. These elements may be inserted by rappelling, fast-rope, single-point, helicopter cast and recovery, or landing to an HLZ.

5-163. Assault and GS helicopter units perform insertions and extractions of long-range surveillance detachment troops, special operations forces, infantry patrols, forward observers, scouts, or retransmission elements. Missions may also require special patrol infiltration and exfiltration system (SPIES), FRIES equipment, rappelling ropes, hoists, and auxiliary fuel tanks.

5-164. The need to gather intelligence, confirm or deny enemy courses of action, or other information requirements drives insertion planning timelines. A major mission may involve multiple insertions/extractions. For example, the mission may require insertion of—

- Long-range surveillance detachment and/or pathfinders 96 to 72 hours prior to H-hour.
- Scouts 48 hours before H-hour.
- Advance elements and forward observers and combat observation and lasing teams several hours or less before H-hour.

5-165. Aviation elements should expect the inserted element to choose insertion/extraction points five to ten kilometers or more from planned mission objectives. They should also plan multiple ingress/egress routes. Insertion mission orders must include—

- Planned extraction points.
- Emergency extraction rally points.
- Lost communications extraction points.

5-166. Planned extraction points and emergency extraction rally points require communications to verify the preplanned pickup time or coordinate an emergency pickup time window. The lost communications extraction point involves ground elements moving to the emergency extraction point after two consecutive missed communication windows and waiting up to 24 hours for pickup.

PLANNING CONSIDERATIONS

5-167. Although insertions and extractions follow the same five-stage planning process, the primary difference between air assaults and small element insertions is that a formal AATF may not exist. A command structure must be established to plan, organize, and execute the operation. Assault, GS, and attack reconnaissance units may internally task-organize for habitual insertion/extraction missions. Alternatively, the task force may be temporarily OPCON or under tactical control of the AATFC for these missions. Other planning considerations include—

- Coordinating with the supported unit and verifying mission requirements with higher headquarters (battalion/brigade staff). Normally, the order is sent from the higher headquarters to the company, platoon, or section conducting the insertion/extraction.
- Planning and rehearsing with the team members to be inserted prior to the mission if possible. If armed escort accompanies the operation, the assault or GS aviation unit will ensure the attack reconnaissance aircrews are included in the planning and rehearsal.
- Leaders gathering as much information as possible (such as enemy situation) in preparation for the mission and ensuring SEAD/ joint suppression of enemy air defenses coordination as appropriate.
- Ensuring mission fuel requirements can be met and coordinating for refuel at the FARP.
- Unit SOP should outline an abbreviated planning process for these missions.

SPECIAL PATROL INFILTRATION AND EXFILTRATION SYSTEM

5-168. The SPIES was designed for inserting and extracting patrol personnel where a helicopter landing is impractical. The system provides a means of exfiltrating up to 14 Soldiers over short distances. It is not recommended for infiltration as team members are exposed the entire time. Due to the nature of SPIES operations, a thorough briefing is required for all participants before the operation. Careful coordination is crucial when additional assets (attack reconnaissance helicopters, UAS, or artillery support) are employed with the extraction helicopter. For more information on SPIES operations, see ATP 3-18.10.

FAST-ROPE INSERTION AND EXTRACTION SYSTEM

5-169. Small units use the FRIES for rapid infiltration and exfiltration using rotary-wing aircraft in confined areas. Using this system, up to a team-sized element can infiltrate directly onto the objective or into an area where a helicopter cannot land. This method is the fastest way of deploying troops from a helicopter unable to land, but the troops have a limited amount of equipment and supplies with which they can deploy.

5-170. Aviation commanders and staffs tasked with supporting FRIES ensure aircrews tasked are current, qualified and properly equipped to conduct the aircrew training module task. The supported ground maneuver element must be in compliance with Army regulations and ATP 3-18.10. FRIES is not approved for Army-wide use by ground commanders and the commanding general of the U.S. Army Special Operations Command is the executive agent for FRIES doctrine. For more information on FRIES operations see ATP 3-18.10.

HELICOPTER CAST AND RECOVERY OPERATIONS

5-171. A helicopter cast and recovery (HELOCAST) operation involves inserting/extracting troops and/or equipment from a helicopter overwater. HELOCAST is a very effective means of inserting and/or extracting combat swimmers, combat divers, LRS teams, SOF, snipers, and combat rubber raiding crafts. A HELOCAST operation is planned and conducted much the same as an air movement operation, except the HLZ is in the water. Refer to the following publications for detailed information on HELOCAST operations:

- ATP 3-18.10 for SOF.
- FM 3-55.93 for LRS units.

Chapter 6

Air Movement Operations

Army aviation conducts air movement operations to enable the ground force commander to sustain the tempo of operations, extend tactical reach, overcome complex terrain and sustain operations to maintain a position of relative advantage over the enemy.

SECTION I – OVERVIEW

6-1. *Air movement* is the air transport of units, personnel, supplies, and equipment including airdrops and air landings (JP 3-17). Army air movements are operations involving the use of utility and cargo rotary-wing aircraft and operational support FW assets for other than air assaults. Air movements are conducted to move Soldiers and equipment; emplace systems; and transport ammunition, fuel, and other high-value supplies.

6-2. Generally, utility and heavy lift helicopters, and FW aircraft conduct air movements in a DS or GS role. Air movements are especially effective in moving forces and equipment when ground routes are nonexistent, limited, congested, damaged or blocked by enemy activity or obstacles; the supported unit does not have adequate available vehicles; and time is critical due to distances involved. Loads can be configured internally or externally depending on mission variables, and type of aircraft available to conduct the air movement operation.

6-3. Air movements require planning and mission command similar to air assaults. Most air movements are smaller operations and tend to be decentralized. On a typical mission, aircraft may operate at distances that are beyond maintenance support and line of site radio communications ranges. Decentralized air movement considerations include —

- Aircraft maintenance or recovery support from other units.
- Alternate communication means, such as satellite communications, or aerial retransmission, or use of high frequency radios, or message relay by the supported unit.
- Threat data along the route and an alternate means for obtaining intelligence updates.
- Pickup zones and landing zones communications and support.
- Points of contact at supported and supporting units.

TYPES OF AIR MOVEMENTS

6-4. There are two types of air movement operations, non-tactical (administrative) and tactical (combat). These operations may include both airdrops of supplies and equipment or deliberate landings at designated landing zones.

NON-TACTICAL

6-5. A non-tactical movement is an administrative movement of troops and equipment that is organized, loaded and transported to expedite movement and conserve time and resources without the threat of enemy forces. It emphasizes economical use of the aircraft cabin space and the maximum use of the allowable cabin load. The allowable cabin load is the amount of cargo and passengers (as determined by weight, cubic displacement and distance to be flown) that may be transported by a specific type of aircraft. Unit integrity or off-loading sequence is second in priority to load efficiency when planning a non-tactical movement.

TACTICAL

6-6. A tactical movement is a movement of troops and equipment that is organized, loaded and transported to facilitate accomplishment of a tactical mission with the potential threat of enemy forces. The arrangement of personnel, equipment, and supplies is designed to conform to the anticipated tactical operation of the unit.

Advantages

6-7. Army Aviation may overcome many challenges or obstacles that prevent or disrupt other modes of transportation from completing a ground movement mission. The advantages of air movement are—

- Rapidly moving personnel or equipment directly to their destination without regard to complex terrain.
- Diversifying flight routes to enhance survivability.
- A HLZ can be rapidly relocated to avoid detection and provide greater on-ground security.

Limitations

6-8. The limitations of air movements are—

- Any restrictions that apply to an aircraft in general also applies here. The size and weight of the cargo may exceed the design limits of the aircraft.
- Aviation assets are high demand and may be limited by maintenance or prioritization.
- Weather conditions may adversely affect air operations.
- Larger HLZs may be required when operations are planned during darkness or under reduced visibility. The HLZ terrain can present natural obstacles to aircraft that become particularly critical factors during internal load missions.

SECTION II – RESUPPLY ROUTES

6-9. Resupply routes are used to service forward operating bases and combat outposts with troops and cargo. During contingency operations, there may be several resupply routes, each delivering cargo and personnel to multiple forward outposts. Aviation units may use one or both of the methods known as a *hub and spoke* or a *point-to-point* route.

HUB-AND-SPOKE ROUTES

6-10. The hub-and-spoke method is a system of connections arranged like a wheel, in which all traffic moves along spokes connected to a hub or a number of hubs at the center. Hub-and-spoke operations allow planners to maximize the capabilities of each aircraft type and they provide a safe location for transloading operations.

ADVANTAGES

- The small number of routes generally leads to more efficient use of transportation resources. For example, aircraft are more likely to fly at full capacity, and can often fly routes more than once a day.
- Complex operations, such as package sorting and accounting, can be carried out at the hub, rather than at every node.
- Spokes are simple, and new ones can be created easily.

DISADVANTAGES

- Day-to-day operations may be relatively inflexible since the model is centralized. Changes at the hub, or even in a single route, could have unexpected consequences throughout the network. It may be difficult or impossible to handle occasional periods of high demand between two spokes.
- Route scheduling is complicated for the network operator. Scarce resources must be carefully managed. Careful traffic analysis and precise timing are required to keep the hub operating efficiently.
- The hub constitutes a bottleneck or a single point of failure in the network. Total cargo capacity of the network is limited by the hub's capacity. Delays at the hub or delays at a spoke can result in delays throughout the network. As an example, bad weather conditions or mechanical problems with an aircraft can cause delays at a spoke, multiple spokes along the route, or the hub itself.
- Cargo must pass through the hub before reaching its destination, requiring longer journeys than direct point-to-point trips. This trade-off may be desirable for freight, which can benefit from sorting and consolidating operations at the hub, but not for time-critical cargo and passengers.

- Two trips are required to reach most of the destinations. Arriving at the hub and spending some time there increases the duration of the journey. Missing the connecting flight is possible and may be more troublesome than just a delay.

POINT-TO-POINT METHOD

6-11. The point-to-point transit method refers to a transportation system in which aircraft travel directly to a destination, rather than going through a central hub. This differs from the hub-and-spoke method in which the aircraft fly to a central location and passengers and cargo change to other aircraft to reach their intended destinations.

ADVANTAGES

- Eliminates the need for connections.
- Considerably reduces travel time.
- Without the need to satisfy connections for passengers and cargo, flights in a point-to-point system are less interdependent, though the operational constraints of needing to have sufficient equipment and personnel in each location at the right time to satisfy the timetable remain. This mitigates the risk of second and third-order effects, wherein the delayed arrival of one flight into a location leads to delayed departure of the other passenger and cargo connections, cascading delays through the network. Therefore a point-to-point system is less prone to delays.

DISADVANTAGES

- If a desired origin-to-destination pair is not served, passengers and cargo will have to make a connection as in the hub and spoke model or travel by another mode of transportation.
- The frequency of trips may be reduced due to the number of origin-to-destination pairs exceeding the amount of aircraft and crews available to support the flights.

SECTION III – PLANNING

GENERAL

6-12. A primary challenge when planning air movement operations is to determine the number and types of aircraft required to support the movement mission. An important part of the mission is prior planning – along with coordinating plans with the aviation liaison officer. During the planning phase, the entire mission is reviewed and limitations and potential complications are minimized through effective contingency planning.

6-13. Depending on the nature of the mission, it may restrict the type of aircraft allocated for the air movement. The next step is to determine what will move by air, the type of aircraft, the commander's guidance, the movement priority of the request, and the priority of movement within the unit for personnel and equipment. Based on this information, the planner can determine and request the number of sorties by type of aircraft required to complete the mission. For tactical movements, security of the aircraft, passengers, and cargo is paramount. For non-tactical movements, the aircraft should be employed to maximize efficiency.

6-14. To ensure accurate movement planning figures, measure and weigh the equipment planned for each load. Two methods of determining aircraft requirements are the *weight* and *type load* methods, which are described as follows—

- Use the *weight* method to calculate requirements to transport large amounts of vehicles, general cargo, and personnel. This method is based on the assumption that total weight, not volume, is the determining factor.
- Use the *type load* method to calculate individual requirements for like loads. In most unit air movements, a number of the aircraft loads can contain the same items of equipment and number of personnel. Preparing identical type loads greatly simplifies planning and makes manifesting easier. This method is normally used by unit level planners.

6-15. There are several general rules which apply to planning cargo operations and the use of aircraft; these include—

- Base cargo loading on mission requirements.
- Plan to move general bulk cargo, such as boxes or crates, on 463L pallets inside or underneath heavy lift aircraft
- When loading 463L pallets, use forklifts rated at a lifting capacity equal to or greater than the pallet weight. Normally, all terrain and/or rough terrain forklifts capable of lifting 10,000 pounds are used.
- Identify in advance any additional required loading aids and personnel to ensure availability at the equipment load time. Examples are shoring, aircraft winch, and materials handling equipment. Aircraft ground time is minimized when the unit is prepared to load and unload.
- Use shoring to prevent damage to the aircraft floor or airfield pavement.
- Do not use the book weight of items for weight and balance purposes when the actual airlift occurs. Use the actual scale weight.
- Do not exceed aircraft limitations.

SAFETY

6-16. Safety is an important consideration in any air movement to prevent injury to personnel and damage to the aircraft or the transported materials. Leaders at all levels are responsible for evaluating the risks associated with each phase of an air movement mission.

6-17. To safely conduct internal cargo loading operations, the aircrew and support personnel must be aware of the safety hazards, such as static electricity, turning rotor blades, rotor wash, and other operations within close proximity to the aircraft.

- Static Electricity. When aircraft engines are running and a helicopter is hovering above the ground, the aircraft generates and stores static electrical charges that can cause injury and spark fires. When the helicopter lands, this charge is discharged to the ground through the helicopter landing or grounding systems.
- Rotor Wash. Helicopters and FW aircraft generate high velocity air movement from rotor blades and propellers. Large helicopters, such as the CH-47, can generate rotor wash in excess of 120 knots. This strong wind may cause ground crew personnel difficulty in walking or standing and its force can move unsecured items and material. The greatest rotor wash velocity occurs between 20 to 60 feet outside the rotor disc.
- Forklift Operations. When conducting forklift operation in and around the vicinity of aircraft use extreme caution. For example, when loading 463L pallets with the forklift tines (forks) ensure a ground guide is utilized to prevent damage the aircraft.

AIR TERMINALS

6-18. At both military and civilian airfields, the senior aviation commander or the senior civilian operator is responsible for air terminal operations. The Army will provide an arrival/departure airfield control group (A/DACG) to control Army activities at the terminal. The A/DACG is a provisional organization designed to assist the air mobility command and the deploying unit in receiving, processing, and loading or unloading personnel and equipment (JP 3-17).

6-19. The U.S. Air Force's Tactical Airlift Control Element supervises Air Force operations at an air terminal. The A/DACG and the tactical airlift control element should coordinate support responsibilities prior to the start of operations. The A/DACG may also be responsible for loading and unloading aircraft and cargo at these facilities. Deploying units coordinate with the A/DACG for their responsibilities in processing through the terminal.

AIR MOVEMENT RESPONSIBILITIES

6-20. Three different units are normally involved in an air movement operation: the supported unit that requested the mission, the aviation unit that transports the cargo, and the receiving unit that is having the cargo delivered.

THE SUPPORTED UNIT

6-21. At the PZ, the sending unit provides rigging equipment and completes the sling-load inspection checklist according to *TM 4-48.09*. It is the duty of the aviation task force to verify the supported unit is aware of the sending unit's duties in this area. If the sending unit desires backhaul of slings and rigging equipment, this should be pre-coordinated. The sending unit also prepares loads for air movement that includes marking, prioritizing, rigging, inspecting, weighing, and tracking loads. The sending unit is also responsible for PZ marking and operations, including ground guides and radio communication. For external loads, the ground unit performs the static discharge from the helicopter prior to hooking the load to the aircraft. The supported unit also—

- Selects and controls the PZ. Pathfinder and Air Assault qualified Soldiers can help in the tasks of PZ site selection and aircraft control.
- Prepares and provides passenger manifest.
- Ensures advanced coordination with the transporting unit.
- Ensures all loading, tie-down and unloading procedures, and pertinent photographs, tie-down diagrams and tie-down data tables are carefully reviewed before beginning preparation of equipment.
- Prepares supplies and equipment for air transport with technical supervision and assistance as required from appropriate field support units.
- Ensures that if vehicles are loaded with cargo, the cargo is restrained and all other loose equipment in the vehicles is secured.
- Loads and ties down, the vehicle and cargo on the helicopter, subject to the approval of the pilot in command, flight engineer, or crew chief.
- Ensures that loads are properly prepared and do not exceed any weight or size limitations imposed by the transporting helicopter.
- Provides appropriate safety equipment to all unit personnel who will be around the loading operations.
- Clears the PZ of hazards and debris.

6-22. Typical external loads include bulk supplies, fuel or water drums, vehicles, trailers, materiel handling equipment, towed artillery and other weapons systems, and ribbon bridges. The supported unit is responsible for preparing, weighing, and rigging external loads.

6-23. Supported units must avoid loading 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. This could involve partial derigging, re-rigging, and re-inspection delays. These unexpected delays could cause the ground unit to lose aviation support if the aircraft are scheduled for other missions.

THE AVIATION UNIT

6-24. The aviation unit makes the final determination of the load's worthiness to fly and determines in advance what portion of the load to carry internally or externally. The aviation unit also transports the loads and notifies the receiving unit of any changes it makes in the pre-coordinated plan. The aviation unit also —

- Coordinates with the supported and receiving units and appoints a liaison officer if able who is familiar with the capabilities and limitations of the unit's assigned aircraft.
- Advises the supported unit on size and weight limitations of the loads that may be hauled.
- Advises the supported unit and the receiving unit on the suitability of the selected PZ and HLZ, including lighting restrictions for night-vision-aided operations.
- Becomes familiar with the security, safety, and technical peculiarities of the loads that may adversely affect air transport.
- Provides all components of the 5,000 and 10,000-pound tie-down assemblies used for securing internal cargo for transport in the aircraft.
- Arranges for the aircraft to be at the PZ on schedule.
- Establishes safety procedures that will ensure uniformity and understanding of duties and responsibilities between the ground crew and flight crew.

The Receiving Unit

6-25. The receiving unit is responsible for HLZ operations including ground guides, radio communications and markings. The receiving unit prepares the HLZ, guides the aircraft to the desired point for landing or external load release, unrigs the load, and if coordinated, loads rigging materiel for backhaul for subsequent lifts. The receiving unit also—

- Coordinates with the supporting unit for return of rigging items back to the unit.
- Prepares, coordinates and inspects back loads and ensures readiness for loading on arriving aircraft.
- Unloads the vehicle and cargo on the helicopter with proper equipment (e.g. forklift), subject to the approval of the pilot-in-command, flight engineer, or crew chief

Aviation Staff Responsibilities

6-26. The S-2 section identifies threats to tactical air movement operations and disseminates reports. CH-47 aircraft are particularly at risk due to their large signatures, especially when transporting external loads. The S-2 section provides assessments of the safest routes if the mission is cross-FLOT or noncontiguous.

6-27. The S-3 section provides mission, PZ, route, and HLZ information including grid locations, frequency, call signs, markings, and landing direction. The S-3 provides critical mission times and a supported unit point of contact (POC). The S-3 section specifies the means of flight following and periodic situation reporting of activities and locations by pre-coordinating modes of communication. The S-3 section ensures compliance with the ACMs and advises aircrews of other potential airspace users along projected flight routes. If a threat is anticipated, the S-3 coordinates for preplanned or on-call fires available to support operations. The S-3 will also coordinate for attack reconnaissance elements as needed. The S-3 section ensures aircrews are aware of downed aircraft procedures. A detailed mission brief can suffice instead of an OPORD for most air movement operations.

6-28. The S-4 section arranges logistics support for extended distance missions. When in DS of a particularly large air movement mission, the S-4 section may plan throughput of fuel supplies directly to the supported unit's trains where class III sections can link up their forward arming and refuel point equipment with supplies.

Ground Crews

6-29. Personnel selected to work as ground crews should be trained and qualified to act as guides, drive vehicles, load, tie down and unload cargo to be transported by air. They should have a thorough knowledge of their equipment (the crew of the aircraft is responsible for directing the loading of the aircraft). They should be able to operate the equipment, position it in the aircraft cargo compartment, set hand brakes, and when applicable, leave gears engaged for parking.

6-30. The number of ground personnel needed by a unit depends on how the commander plans to fulfill the mission. Personnel selected from all unit members can be trained as ground crew members as an additional duty. The number of crews needed depends on how much of the unit's equipment will be transported by internal means, the number of aircraft, and the frequency of flights.

6-31. Planning includes a complete inventory of all unit equipment for air transport and how it will be loaded internally in the aircraft. Small items or items that cannot be individually loaded may be placed on a pallet or in a cargo net. Determine how many pallets or cargo nets are needed based on the complete inventory of equipment by platoons, sections and crews. Once it is determined how items will be loaded, the unit can requisition a number of pallets and cargo nets through logistical channels. The unit standard operating procedures should contain loading plans to assist the ground crew, supervised by the aircrew, and prevent confusion at a time when speed and control are needed.

Site Selection

6-32. Proper PZ or HLZ selection is important to the execution of air movement operations. As a general rule the shape of a PZ or a HLZ is circular and from 50 to 100 meters in diameter (figure 6-1, page 6-7). It should be free of obstructions, such as trees, stumps, bushes or man-made objects, which could cause damage to the helicopter. Mark hidden obstructions or warn the supporting aviation unit of their presence.

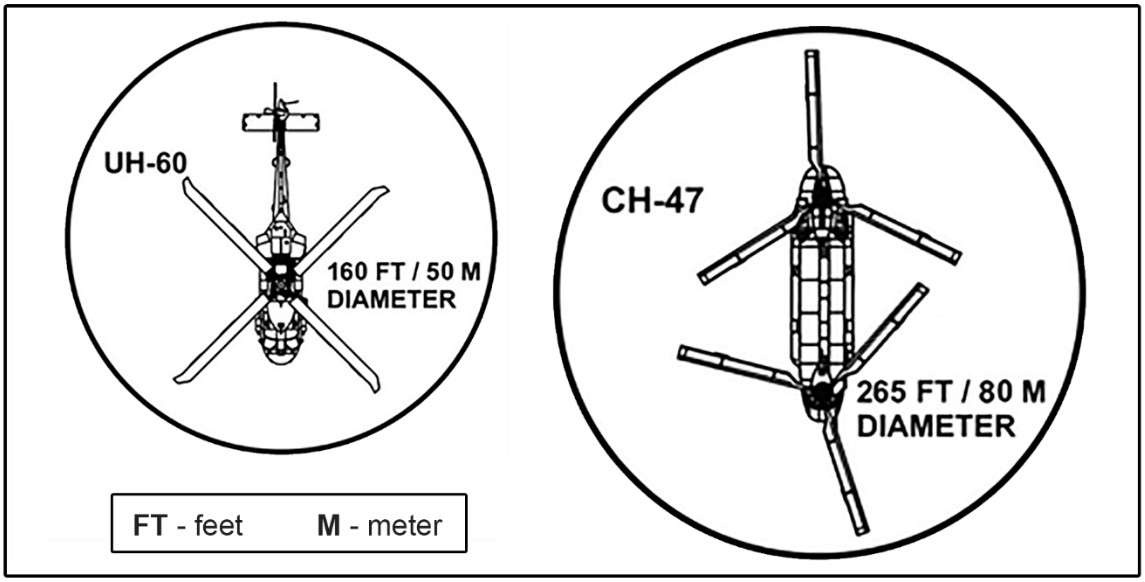


Figure 6-1. Minimum required clearances (without external loads)

6-33. Consider the number of aircraft that will be using the site at one time along with its use after dark. If night resupply is scheduled, a larger area is normally required.

6-34. The surface condition should be solid enough to prevent a helicopter or load from bogging down. Blowing dust, sand, pea gravel, or loose debris can cause damage to personnel as well as equipment or aircraft. The final decision on PZ or HLZ acceptance will be made by the pilot in command of the helicopter.

ENVIRONMENTAL CONSIDERATIONS

6-35. High altitudes and temperatures degrade aircraft performance, reducing the weight they can carry and/or the amount of fuel onboard, and may increase PZ and HLZ landing requirements. Reduced fuel restricts the distance items can be carried and causes more frequent refueling during missions with multiple lifts. Ground units operating in hot weather and performing missions with PZs, HLZs, or flight routes in areas of high elevation must consider these factors when planning for heavier loads. Available aircraft power is higher during the cooler night, early morning, and late afternoon hours.

UTILITY HELICOPTERS

6-36. The UH-60 Black Hawk is a twin-engine, dual-seat, utility helicopter. The primary missions of the Black Hawk are air assault, air movement, mission command support, and as required, CASEVAC. It is designed to carry 11 combat-loaded air assault troops (seats installed), 6 litter, 6 ambulatory or any combination thereof. The cargo compartment dimensions are 72-inches wide, 54-inches high, and 150 inches long with a maximum floor weight load limit of 300 pounds per square foot. The aircraft is capable of externally lifting a 105-millimeter howitzer and 30 rounds of ammunition. (See FM 3-04, Chapter 4 for the basic description and characteristics of the UH-60L/M).

6-37. When operating the UH-60 helicopter at maximum gross weights, use the exact weight of each occupant plus equipment. If weighing facilities are not available or if the tactical situation dictates otherwise, compute personnel loads as follows:

- Combat-equipped troops: 330 pounds per individual.
- Combat-equipped paratroopers: 350 pounds per individual.
- Crew and passengers with no equipment: compute weight according to each individual's estimate.

HEAVY LIFT HELICOPTERS

6-38. The 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 helicopter has a much larger capacity for carrying loads than the utility helicopter and can lift heavy, oversized loads – such as artillery and ammunition, vehicles and large containers. The versatility of the CH-47 enables rapid repositioning of maneuver forces across the breadth and throughout the depth of an AO. (See FM 3-04 Chapter 4 for the basic description and characteristics of the CH-47).

6-39. The CH-47 has a power operated aft ramp which provides a means of quickly loading and unloading troops and cargo. The ramp has two auxiliary hinged loading ramps that permit straight-in rear loading. When the auxiliary ramps are rotated and lowered, it provides flush contact between the aft ramp and the ground. These ramps may be positioned to accommodate various vehicle wheel bases or butted together for easier loading of bulk cargo.

6-40. The CH-47 is fitted with a hydraulic winch for use in cargo loading and rescue operations. A 3,000-pound capacity winch with 150 feet of cable is mounted on the floor of the right-hand forward bulkhead. The winch can pull up to 12,000 pounds of cargo with the aid of snatch blocks. In addition, an internal cargo-handling system with rollers can be installed in the cargo compartment.

6-41. The cargo compartment floor rests on rubber vibration isolators and has a maximum load limit of 300 pounds per square foot. The tread way aft of station 160 will withstand a wheel load of 2,500 pounds, while the remaining area forward will withstand a load of 1,000 pounds. The ramp can also support portions of a load that exceed the longitudinal dimensions of the cargo floor. When the ramp is used for additional cargo space, it should be positioned level with the floor and the load should not exceed 3,000 pounds or 300 pounds per square foot. All CH-47 models have the same cargo compartment dimensions: 90 inches wide, 78 inches high and 366 inches long. The ramp opening is 90 inches wide and 78 inches high with a ramp incline of 6.7 degrees. The forward right crew door is 36 inches wide and 66 inches high.

6-42. The cargo floor has 83 equally spaced tie-down fittings in five rows 20-inches apart longitudinally. There are four fitting in a rectangular pattern on the aft ramp. Each tie-down fitting swivels freely, has a 5,000-pound capacity and can resist a single maximum load of 5,000 pounds exerted along any radius. The fittings are hinged so that they can be seated in floor recesses when not in use. In addition, there are eight 10,000-pound capacity tie-down fittings on the cargo floor, with four fittings interposed along both outboard rows of 5,000-pound capacity fittings, spaced at intervals of 80 inches from station 240 to station 480. These fittings are installed only when necessary, since they may be in the way due to infrequent use. When used, these tie-down fittings should be screwed into the threaded receptacles to full depth to achieve their rated capacity. When not being used, threaded plugs are screwed into the receptacles to protect the threads and keep out foreign debris.

6-43. The cargo compartment can hold up to 33 combat-equipped troops, 24 litter patients, or a combination of both. When operating the helicopter at maximum gross weights, use the exact weight of each occupant plus equipment. If weighing facilities are not available or if the tactical situation dictates otherwise, compute personnel loads as follows:

- Combat-equipped troops: 330 pounds per individual.
- Combat-equipped paratroopers: 350 pounds per individual.
- Crew and passengers with no equipment: compute weight according to each individual's estimate.

FIXED-WING

6-44. Army FW aviation units are organized and equipped to support Army and unified action partner operations. These units conduct support and sustainment missions across the range of military operations. During wartime, Army FW assets become part of the unified combatant command structure and support combatant commander directed operations across the range of military operations, as well as force generation missions in the continental United States (CONUS) during periods of mobilization.

SECTION IV – AIR MISSION REQUESTS

6-45. Ground units at the battalion or squadron level and above will designate a staff officer or a non-commissioned officer within the S-3 to process and manage all unit air mission requests (AMR). The AMR will be routed through the respective staff of the next higher unit – normally associated with a BCT. The BAE of the BCT will manage and process all AMRs submitted from subordinate units within the BCT area of operations. The BAE will process the AMR up through the aviation element of the next higher command – which could be the division staff for operations and planning (G3) aviation element or other senior designated headquarters. The AMRs are passed down to the CAB or the aviation task force for approval and execution.

6-46. In certain OEs, aviation units may conduct scheduled intra-theater passenger and equipment movements commonly known as resupply routes. These operations require extensive coordination between the CAB and supported units. The aviation unit must balance tactical risk and efficiency in conducting scheduled operations of this type.

CONTINGENCY OPERATIONS REQUEST PROCEDURES

6-47. During contingency operations and combat, the AMR will be submitted as early as possible, depending on the type of mission request and the location. A regular AMR will be submitted by the BAE to higher headquarters not later than 96 hours prior to mission execution.

6-48. The AMR are tasked to the CAB or aviation task forces by higher headquarters using the 96 hour planning cycle. The normal processing time is a minimum of 96 hours prior to the desired date of movement. If the mission is considered to be short notice (less than 96 hours), it is designated as a priority air mission request. After the 96 hour submission cut-off, special approval will be required from higher headquarters for the AMR.

MISSION REQUEST REVIEW PROCESS

6-49. When an AMR is submitted, a quality control check is conducted to ensure that the request sheet is completed in accordance with standard operating procedures. The BAE, or the aviation element at the higher headquarters, is the filter for all air movements. The staff will prioritize all the AMRs that come through in order to best facilitate unit operations and to maximize the use of available aircraft assets and space/lift capabilities.

6-50. If a *Resupply Route* with an established schedule is being used in the AO, aviation planners will attempt to stay with Resupply Route schedule as much as possible. Most contingency operations will default to a resupply route schedule in order to support multiple agencies and units with the available limited aircraft assets in the AO.

6-51. Air travel requiring the crossing of other AO boundaries is difficult to do on short notice when needing to quickly transport materials. It may require multiple days to make the trip when traveling from one area to another. Confer with higher authority prior to submitting the request to find the best options to support the requirement.

6-52. If aircraft assets are needed for the movement of a very important person(s) (VIP) or the mission is designated as a high priority on relatively short notice – the request may require expedited handling in the AMR channels.

6-53. Once the quality control review is complete; the BAE or aviation element will process the AMR through operational channels. A mission confirmation number is assigned to the request and provided to the requester for use in the AMR tracker system.

CENTRALIZED CONTROL OF MISSION REQUESTS

6-54. The senior ground commander who is responsible for a given area of operation, should establish AMR submission and approval procedures through the command’s BAE or other aviation element. This method prevents the higher from being inundated with multiple requests and provides visibility on all air mission requests and prioritizes the requests in the AO.

6-55. A technique is to have a group email account for subordinate units to submit the AMR. As an example, the email account name could be “AMR-account@” or “TF Apocalypse-AMR-Submission@.” This allows all AMR to be submitted into one account for ease of management. The BAE or aviation element staff can then designate a person on each shift to process the requests.

AIR MOVEMENT TABLE AND FLIGHT SCHEDULE

6-56. The higher headquarters will publish a daily *air movement table* (AMT) by a predetermined time (typically not later than 1800 hours) the night prior to the next mission day. If an AMR number is not on the AMT, the requesting unit will need to contact their BAE or aviation element at higher headquarters to find the disposition of their request. Shifting routes, pickup, and landing times should be considered in order to prevent predictability and targeting by the enemy.

6-57. During the course of ongoing operations, the AMR process can improve and be streamlined resulting in the reduction of timeline requirements for submission and changes to the AMR. While certain operating environments may necessitate 96 hours for an AMR submission with a 12 hour publishing expectation, the timeline can shift based on the operational tempo, availability of assets, the enemy situation, and prioritization of competing missions. Commanders and staffs must work in conjunction with ground planners at all levels to maintain communications on the status of their AMR and the aviation assets supporting the request. Direct liaison between a supported ground force and the supporting aviation staff, via the BAE, can alleviate problems that might arise during the planning process.

6-58. Once the AMT is posted; the BAE will then produce the mission schedule for the next day and send out the information on the AMR numbers being supported to the subordinate units and requesters.

6-59. The mission schedule provides the AMR number, units being supported, the aviation unit supporting the mission, a brief description of the mission, the pickup locations, the names of passengers, the amount of cargo and weight, the time to report at the airfield or to pick-up zone, arrival time of the aircraft, and the estimated time of arrival at destination. The mission schedule also informs subordinate units and personnel about the opportunity for *Space Available* on a flight for other passengers and additional cargo to be carried aboard that are not on a current AMR.

SUBMISSION OF THE PRIORITY AIR MISSION REQUEST

6-60. A priority air mission request (PAMR) is submitted within the prescribed period; however it does not meet the criteria and timeline outlined by the higher headquarters for the normal AMR process. A PAMR 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.

6-61. It is important to note that most times a priority air mission request will cancel other existing scheduled flights. Sometimes it is possible to support a priority air mission request with an existing movement or flight.

6-62. Justifications for submitting a PAMR may include, but are not limited to:

- Movement of high value detainees.
- Mission critical supply movements for force protection.
- An emergency sustainment resupply mission to troops.
- Transport of senior command personnel.
- Transport of an incident investigating officer.
- Red Cross message and emergency leave transport.
- VIP transport.

FIXED-WING REQUEST PROCESS AND SERVICE RESPONSIBILITIES

6-63. Military personnel and DOD civilian employees, with official business travel requirements, may request operational support airlift (OSA) transport. Requests for OSA support must be submitted through the appropriate authorizing official to the service validator in accordance with service-directed procedures. The requesting official or office shall maintain requests for a minimum of two years. The DODI 4515.13-R provides guidance for travel eligibility. Priority cargo and logistics movement requirements are also submitted through the appropriate authorizing official to the service validator. In addition to the information supplied on this form, the requestor shall be responsible for coordinating all ground-support, customer requirements, protocol, ground transportation, lodging, baggage and baggage handling.

Approval Authority

6-64. In accordance with DOD Directive 4500.56, the authorizing official will review and approve DOD senior official – flag officer and equivalent civilian grades – aircraft support requests to ensure the proper method of transportation is used. The authorizing official shall be senior to the traveler, unless otherwise designated, and is normally the chief of staff of a major command and cannot be delegated below that level.

Validator

6-65. The validator receives OSA mission requests and assigns the appropriate priority urgency justification category, based upon information provided by the requester and unit authorizing official. This function is critical; the scheduling of OSA assets is based upon this category. In aviation units, validators may be found at battalion, brigade, or division. A unit may contact OSA to schedule a soldier in the joint air logistics system known as JALIS in order to establish their own validator at the unit level.

Joint Operational Support Airlift Center

6-66. This element will schedule all available continental United States OSAA to support requests received through Joint Air Logistics Information System. In scheduling requests, the Joint Operational Support Airlift Center (JOSAC) will consider priority codes assigned by the service validator, the most efficient asset available to conduct the mission, cost effectiveness, and any unique requirements associated with the request. The JOSAC is the scheduling authority for all continental United States operational support airlift missions. Strict adherence to OSA post-mission reporting procedures ensures operational support airlift aircraft utilization is documented for OSA annual reports to the Department of Defense and Congress. The JOSAC program analysis and system management team is responsible for development, retrieval and preparation of reports verifying the use of these DOD assets.

Aviation Unit

6-67. The aviation unit providing assets and support to the OSA mission is ultimately responsible for the safe conduct of the OSA flight. The unit communicates and resolves any safety concerns prior to executing the OSA mission. The aviation unit is responsible for directly coordinating with the point of contact on the request prior to flying the mission.

Mission Assignment

6-68. Mission planning and coordination is initiated when the designated units receive a mission request. The aviation commander, a liaison or a staff officer may be sent to the supported unit headquarters to assist in planning. The FW unit may reconfigure or reposition in support of the upcoming operation.

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Chapter 7

Aeromedical Evacuation and Casualty Evacuation

Army air ambulance units conduct aeromedical evacuation of wounded, injured or ill personnel in support of the ground maneuver commander's tactical plan and Theater medical support plan. Assault and heavy lift aircraft conduct casualty evacuation to meet medical mission requirements in the event that evacuation demands exceed MEDEVAC capabilities. Included in the sixth core competency of Army Aviation, evacuating wounded personnel enables commanders to maintain OPTEMPO while ensuring continuity of care from the point of injury or wounding to (and between) medical treatment facilities on the battlefield.

SECTION I – OVERVIEW

7-1. MEDEVAC is the timely, efficient movement and en route care by medical personnel of wounded, injured or ill persons from the battlefield and/or other locations to and between medical treatment facilities (MTF). The Army MEDEVAC system is comprised of dedicated air and ground evacuation ambulances. These ambulances have been designed, staffed and equipped to provide en route medical care to patients being evacuated and are used exclusively to the support the medical mission, in accordance with the Law of Armed Conflict (LOAC) and the Geneva Conventions. The focus of the MEDEVAC mission coupled with the dedicated ambulances permit a rapid response to calls for support.

7-2. The term medical evacuation is the process of moving any person who is wounded, injured, or ill to or between medical treatment facilities while providing en route medical care and applies to both air and ground, while aeromedical evacuation (AE) is defined as the movement of patients under medical supervision to and between medical treatment facilities by air transport. Within the Department of Defense, both the Army and the Air Force perform vital roles in the overall AE mission, but the Army remains the only service with dedicated air ambulances. Army air ambulances provides support to all forces, including unified action partners as directed by the theater combatant commander. Air ambulance units are responsible for tasks relative to the continuum of health care in support of the Army and the Military Health System.

SECTION II –FUNDAMENTALS

MISSON

7-3. The single most important factor in the execution of the MEDEVAC mission is patient care. The effort to save human life warrants accepting additional risk when there is a reasonable expectation of success. The AE standard of a 60 minute mission completion time for URGENT and URGENT-SURG MEDEVAC missions requires clear Army guidance that defines senior leader expectations and objectives as outlined here and in Army Regulation 95-1. Conversely, the commander must not be overly focused on meeting the 60 minute standard as patient needs may dictate longer flight legs to reach the necessary care required for patient survival and recovery.

EN ROUTE CARE

7-4. The provision of en route care on medically equipped aircraft enhances the patient’s potential for survival and recovery, and may also reduce long-term disability, by maintaining and/or stabilizing the patient’s medical condition. Extended distances from the point of injury to the treatment facility make the patient’s en route medical care more critical. Highly proficient flight medics (Critical Care trained Nationally Registered Paramedics) are essential for patient stabilization, sustainment and survival of wounded, injured and/or sick patients during evacuation. The patient’s status may require additional medical professionals to ensure the appropriate level of care is provided (en route critical care nurse [ECCN]). Figure 7-1 illustrates the en route medical care capability between various platforms and how each compare to the U.S. Emergency Medical Services standards of care. Commanders and staffs should understand the varying medical capabilities for patient movement when planning and conducting operations.

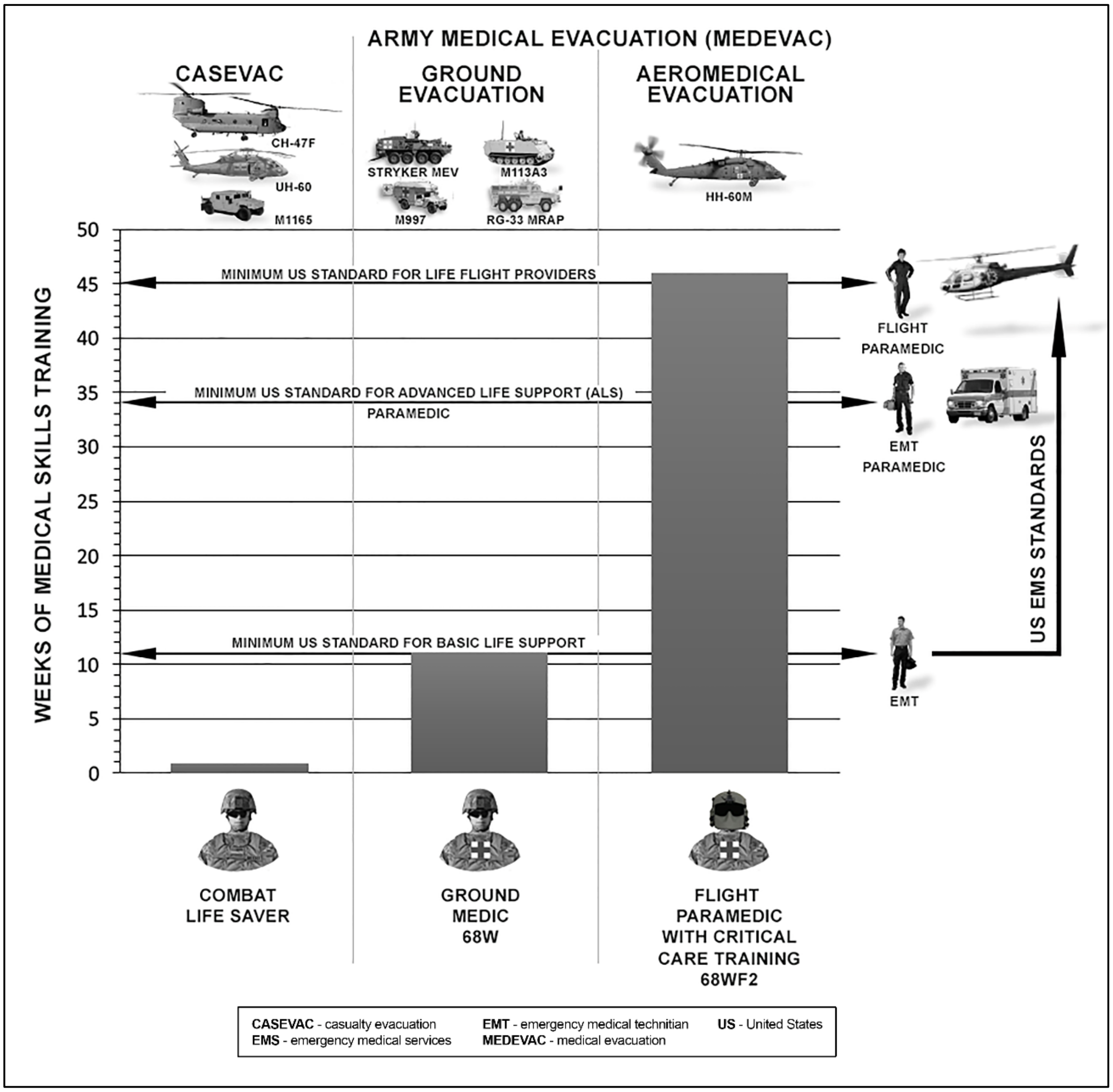

Figure 7-1. Medical skill level comparison

7-5. Army aeromedical evacuation transcends tactical, operational, and strategic objectives in support of a geographic combatant commander's (GCC) mission. Although the most recognized mission of Army medical evacuation assets is the evacuation and provision of en route medical care to battlefield wounded, the essential and vital functions of medical evacuation resources encompass many additional missions and tasks. The following list provides an overview of tasks assigned to the medical company (air ambulance):

- AE support to all unified action partners (which includes support to humans and military working dogs).
- AE support to government employees and contractors.
- AE support to Host Nation and other non-combatant casualties (when directed).
- AE support to enemy prisoner of war casualties.
- Patient transfers to and between Medical Treatment Facilities within the JOA.

- Patient transfers from MTFs to United States Air Force (USAF) Contingency Aeromedical Staging Facilities (CASFs) or Aeromedical Staging Facilities (ASFs).
- Emergency movement of Class VIII, blood/blood products, and biologicals.
- Emergency movement of medical personnel and equipment.
- Shore-to-Ship and Ship-to-Shore evacuations and patient transfers.
- AE support to air crash-rescue.

PERSONNEL

7-6. Healthcare Specialist (Ground Medic) – 68W: The health care specialist is primarily responsible for providing emergency medical treatment, limited primary care, and health protection and evacuation from a point of injury or illness. Required training includes first aid, cardiopulmonary resuscitation, and Emergency Medical skills training. 68W's are certified with the US National Registry at the Emergency Medical Technician (EMT) level. Job duties of the 68W include: administering emergency medical treatment to battlefield casualties; assisting with outpatient and inpatient care and treatment; preparing blood samples for laboratory analysis; and preparing patients, operating rooms, equipment and supplies for surgery.

7-7. Flight Paramedic with Critical Care Training – 68WF2: The flight paramedic with critical care training (68WF2) is an advanced emergency medical specialist who is required to function a magnitude higher than ground medics due to their routine contact with high acuity patients in austere and independent environments. Flight paramedics are primarily responsible for diagnosing and providing on-site emergency medical treatment to patients suffering from severe injury, trauma, or sickness; evacuation (including rescue and extraction) from a point of injury or illness and advanced en route care on an air ambulance helicopter. Required training includes all the requirements of the basic 68W plus the following: Nationally registered emergency medical technician – paramedic (NRP) training and certification; pre-hospital trauma life support training; advanced cardiac life support training; critical care training; pediatric life support training, which includes advanced airways, shock therapy, cardiac emergencies, and multi-trauma treatments; and the AMEDD Aviation Crewmembers course.

STRUCTURE

7-8. Active component GSABs and Reserve component theater GSABs each have one organic medical company (air ambulance) with 15 HH-60 aircraft, capable of supporting 24-hour operations. The Reserve component ECAB GSABs each have two organic medical companies (air ambulance). These companies consist of a company headquarters and an area support MEDEVAC platoon (ASMP) equipped with three aircraft, and four forward support MEDEVAC platoons (FSMP) with three aircraft each. The company can operate either from one location or from multiple sites, depending on the supported population at risk, the size of the area of operations, the location of medical facilities, and the capability of supporting elements. An aviation task force is typically task organized with one FSMP, consisting of three HH-60s and 21 personnel. Figure 7-2, page 7-4, represents the necessary organizational structure to provide continuous aeromedical evacuation support to four BCTs (METT-TC dependent).

AEROMEDICAL EVACUATION SUPPORT TO DEFENSE SUPPORT TO CIVIL AUTHORITIES

7-9. The medical company (air ambulance) provides support to Defense Support of Civil Authorities (DSCA) during natural disaster efforts, areas struck by acts of terrorism, Homeland Security operations, and Humanitarian Relief efforts abroad. Medical evacuation support plans to augment civil authorities may be necessary for a variety of contingencies. During DSCA, command of military forces remains within military channels, but missions begin as requests for assistance from the supported civil authorities. AE assets may be deployed as part of a larger military task force. In this capacity services similar to what they provide when supporting unified land operations are required. Considerations include communications compatibility, terminology usage, and legal constraints and how they may affect the mission. They must also determine who their counterparts are and who they will be reacting with on the local, state, and federal levels. For a more in depth description of the medical evacuation mission in support of DSCA, refer to ATP 4-02.2.

SECTION III – PLANNING

RECEIPT OF THE EVACUATION PLAN FROM HIGHER

7-10. The evacuation plan integrates AE to support the MEDCOM Commander's regionally-focused Army Health System (AHS) plan. The MEDCOM AHS plan supports the geographic combatant commander (and Army Service Component Command's (ASCC) theater engagement plan. All service components medical assets, NATO and multi-national medical assets, as well as Host Nation medical assets are assessed in the development of the MEDCOM AHS plan for a given operation. Depending on the requirements of this AHS plan, Army AE assets may be required to provide support to other services and/or provide GS on an area support basis to most effectively support AHS operations. To establish evacuation procedures, each level of command issues an evacuation plan through the orders process developed by evacuation planners at each level of command. See figure 7-2, page 7-4 for a description of the evacuation orders process. On receipt of the higher headquarters AHS plan, the AE support plan must be synchronized with Army aviation planners. The evacuation order assigns—

- The GS mission responsibilities for patient transfers, blood and medical resupply. For example: a medical company (air ambulance) collocated with a CAB supporting a division in reserve may be assigned a greater portion of the patient transfer missions due to lower expected casualties within its supported division.
- Joint and multinational force support responsibilities. For example: a medical company (air ambulance) tasked to provide AE support to a Marine Expeditionary Force (MEF).
- Any DS or GS requirements that take an air ambulance asset away from their higher headquarters. For example, a FSMP could be tasked to support a humanitarian mission occurring in a specific region of a combat zone that is outside the boundaries of their parent command.

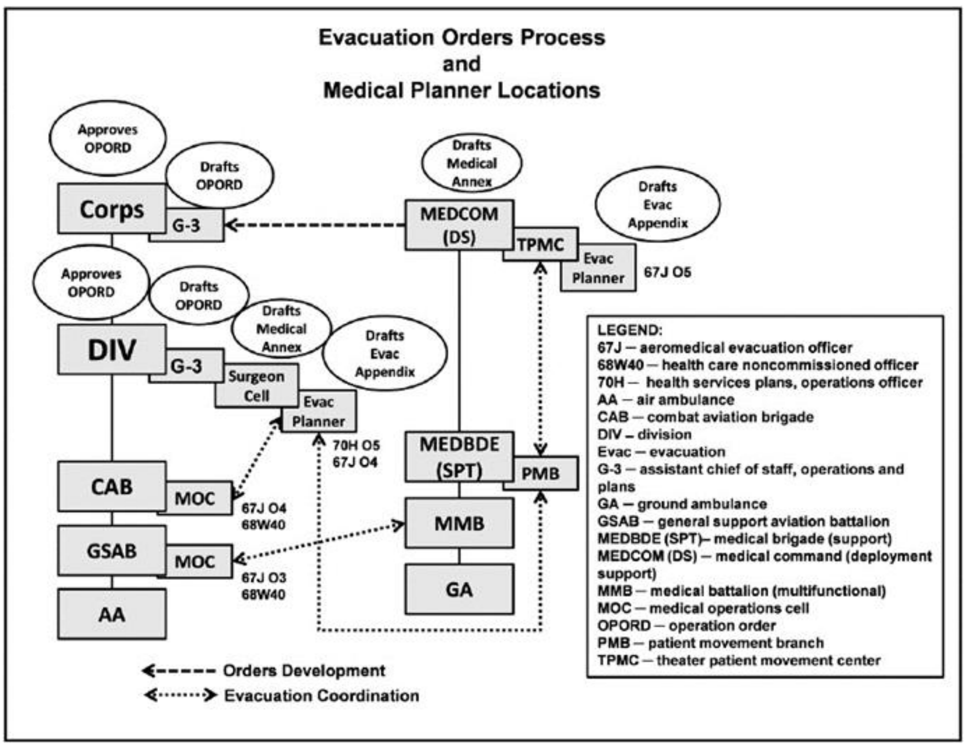

Figure 7-2. Medical evacuation orders process and medical planner locations

CONSIDERATIONS

7-11. The evacuation plan for a given AO will require adjustment and change during different phases of an operation. For example, transitioning from offensive and defensive tasks to operations dominated by stability tasks will generally dictate a significant change in evacuation coverage priorities. Planning considerations for AE operations often require unique and specific plans to support continuous and often decentralized operations. Such planning considerations include—

- Receipt and synchronization with the MEDEVAC plan from higher headquarters.
- DS and GS as required.
- Mission variables.
- Support for up to four locations during split-based operations by one air ambulance company.
- Battle rhythm and communications flow for a MEDEVAC mission request.
- Medical operations cell (MOC) coordination with all medical units for collecting medical information to develop and maintain situational awareness of the MTF and patient regulating requirements.

Note. In a Multi-National or Coalition operation, a Patient Evacuation Coordination Cell may be utilized in lieu of the MOC.

- Fighter management plan to support 24-hour continuous operations at each MEDEVAC location.
- Rapid communications plan with risk approval authorities identified to ensure appropriate approval prior to mission launch (re-brief if required).
- Coordination requirements for security support from escort aircraft and/or gunship support when required.
- Identify and coordinate CASEVAC support when necessary.

DIRECT SUPPORT AND GENERAL SUPPORT MISSIONS

7-12. The medical company (air ambulance), in conjunction with medical planners, must devise an allocation plan that can support all of the evacuation coverage areas and the missions the evacuation order assigns to the higher headquarters. Important considerations include—

- Air ambulances are a critical asset. Care must be taken on how to employ an air ambulance asset as effectively and efficiently as possible. This can be with troops most often engaged in combat, or in high population density areas, or in areas of famine or disease with high civilian casualties, or with refugee areas, or in a geographically centralized location.
- In addition to performing point of injury missions, the FSMP evacuates patients from ambulance exchange points based on the ground scheme of maneuver, and performs patient transfer missions that develop between the MTF and other intra-theater movement locations. The headquarters section and the area support MEDEVAC platoon may also be responsible for point of injury missions within their immediate vicinity.

MISSION VARIABLE CONSIDERATIONS

7-13. Although the organizational design of the medical company (Air Ambulance) can support a division area of operations in certain situations, the effects of the mission variables can dramatically affect the necessary air ambulance requirement for a given AO. Figure 7-3, page 7-6 provides an example of how mission variables effects can exceed organizational design capability and require additional air ambulance assets in order to provide the necessary support within a given AO. Noteworthy elements of METT-TC affecting this particular scenario include:

- Noncontiguous AO.
- Areas of concentrated populations at risk who may require medical evacuation.
- Effects of mountainous terrain and weather patterns that affect air ambulance asset capability to evacuate Urgent casualties within 1-hour to the appropriate MTF.
- Effects of mountainous and austere terrain that limit or prohibit the use and effectiveness of ground medical evacuation support.
- Locations of MTFs within the AO.
- Friendly force locations to support air ambulance operations.
- Locations of non-divisional friendly forces operating within the AO who may require medical evacuation.

- Main supply routes within the AO that require appropriate medical evacuation coverage.

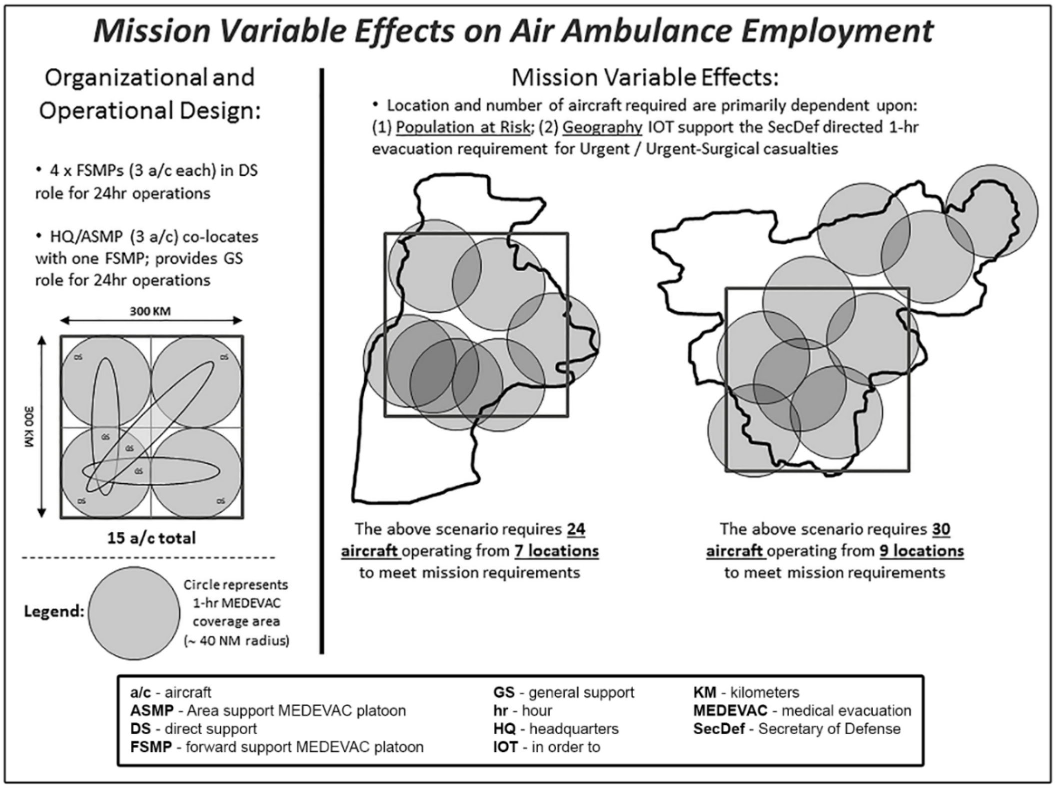

Figure 7-3. Example evacuation zones in a noncontiguous area of operations

SPLIT-BASED OPERATIONS PLANNING

7-14. Split-based operations can occur for a short duration or for a prolonged period during an extensive operation. The CAB or task force commander and the GSAB commander must consider the effects of this action and provide the necessary support with personnel, communication and other equipment, vehicles, maintenance and a bench stock of several categories of supply.

7-15. The medical company (air ambulance) or portions of the company may be operating and collocated with the GSAB; or be task-organized to support an aviation task force, Marine expeditionary force, BCT, multinational task force, or other organization such as a federal or state government civilian disaster relief operations center. When a medical company (air ambulance) or a subordinate platoon (FSMP) operates apart from the GSAB, mission command may become difficult and a break in contact, short or long term, should be included in the planning. For any temporary lapse in communications during split-based operations, the reliance on unit standard operating procedures, leadership skills and command guidance is necessary to compensate for communications shortfalls in order to accomplish the mission.

AEROMEDICAL MISSION SEQUENCE

7-16. Although the medical company (air ambulance) is part of the Army Aviation organizational structure and mission command, the mission remains a medical mission performed with dedicated air ambulances. The aviation structural alignment, mission command, airspace control, logistical support, weather support, fuel support, and security support are examples of advantages the medical company (air ambulance) gains by being organizationally aligned under Army Aviation that directly benefit the safe execution of this mission.

7-17. Since time is a crucial factor and is of importance during AE missions, the crew duty cycles are generally executed differently than typical aviation duty cycles.

7-18. In contrast to a typical aviation mission cycle, continuous AE coverage results in extended operational duty periods, which often exceed 24-hours in length. AE units must plan and develop a detailed battle rhythm that addresses aircrew resource management, the mission execution processes and the tactics, techniques and procedures unique to 24-hour continuous evacuation operations.

7-19. An AE aircrew duty cycle begins with mission planning; however, critical mission planning elements like the mission location and/or time of execution are unknown. With the information that is known, the aircrews complete pre-mission planning and aircraft run-up prior to posturing themselves for rapid response when the mission request is received. During this time, the aircrews must manage fighter management cycles while maintaining battlefield situational awareness to ensure appropriate mission execution when receiving a MEDEVAC request. Units must establish unique fighter management cycles and briefing procedures for remote and/or split-based operations.

7-20. The MEDEVAC crew must mitigate risks just as other aircrews, but must do so without specific advance information. By using the three W method – who, what and why – a MEDEVAC aircrew can pre-position their assets for success. The aircrew then maintains situational awareness throughout their area of operations and once a 9-line MEDEVAC mission request is received, and all critical data is provided in order to complete the necessary information required to complete planning and respond.

MEDICAL EVACUATION REQUESTS

7-21. Specific procedures, frequencies, and security requirements for transmittal of medical evacuation requests are delineated through the orders process and are made a part of the unit/command SOP. Each sector based on the mission variables may be designated with a different method of evacuation as the primary means to effect evacuation. Sectors which have a high ground-to-air or air-to-air threat may rely on ground evacuation assets to move the majority of patients. In other sectors where the ground threat is high and comprised of small arms, improvised explosive devices, and bombs, medical evacuation operations may be more efficiently and effectively executed by air ambulances. An additional consideration in planning medical evacuation operations is to determine whether armed escorts are required for either the ground or air ambulance mission. Those missions that require armed escort must be thoroughly coordinated and synchronized between the medical assets and force protection assets that will accompany them. It may take a combination of both air and ground working in concert to mitigate the risk to perform the evacuation.

7-22. It is critical that all commanders with mission command of AE assets understand the categories of casualty precedence. Soldiers are evacuated by the most expeditious means possible dependent on their medical condition and assigned evacuation precedence. Anyone can request a MEDEVAC, however, assignment precedence is paramount. Table 7-1 provides medical evacuation categories and their order of precedence.

Table 7-1. Medical evacuation mission categories and order of precedence

Priority I	URGENT	Is assigned to emergency cases that should be evacuated as soon as possible and within a maximum of 60 min in order to save life, limb, or eyesight, and to prevent complications of serious illness, or to avoid permanent disability
Priority IA	URGENT SURGICAL	Is assigned to patients who must receive far-forward stabilizing surgical intervention to save life and stabilize for further evacuation.
Priority II	PRIORITY	Is assigned to sick and wounded personnel requiring prompt medical care. This precedence is used when the individual should be evacuated within 4 hours or his medical condition could deteriorate to such a degree that he will become an URGENT precedence, or whose requirements for special treatment are not available locally, or who will suffer unnecessary pain or disability.
Priority III	ROUTINE	Is assigned to sick and wounded personnel requiring evacuation but whose condition is not expected to deteriorate significantly. The sick and wounded in this category should be evacuated within 24 hours.
Priority IV	CONVENIENCE	Is assigned to patients for whom evacuation by medical vehicle is a matter of medical convenience rather than a necessity.
The NATO STANAG 3204 has deleted the category of Priority IV—CONVENIENCE; however, it will still be included in the U.S. Army evacuation precedence as there is a requirement for it in an operational environment.		

7-23. In most cases, the senior medical person present requests medical evacuation and assigns the appropriate medical precedence. In the absence of any medical personnel the senior military person will make the request. The precedence assists the supporting medical unit and controlling headquarters in determining priorities for committing evacuation assets. For this reason, correct assignment of precedence cannot be overemphasized; an over classification can lead to a degradation of available evacuation assets for follow-on missions. Patients are evacuated as soon as possible, consistent with available resources, patient status and precedence, and mission sequencing.

7-24. Figure 7-4 depicts a scenario-based request for MEDEVAC support for a point-of-injury casualty in an armor brigade. The scenario shows the request being sent from forward armor elements to their BCT CP who execute the first MEDEVAC mission by organic ground ambulances. The BCT CP then calls for air ambulance support to the FSMP in DS to their brigade. Once the FSMP evacuates the casualty from the ambulance exchange point (AXP) to the forward surgical team (FST), they return to their site to prepare for the next mission. Once the casualty receives treatment at the FST, the FST submits a request to the GSAB/Air Ambulance CP to evacuate the casualty to the combat support hospital (CSH). In a similar situation where ground evacuation may not be readily available or the tactical situation precludes its use, the requesting unit could transmit their medical evacuation request directly to a supporting FSMP as a primary means for medical evacuation from the point-of-injury or casualty collection point.

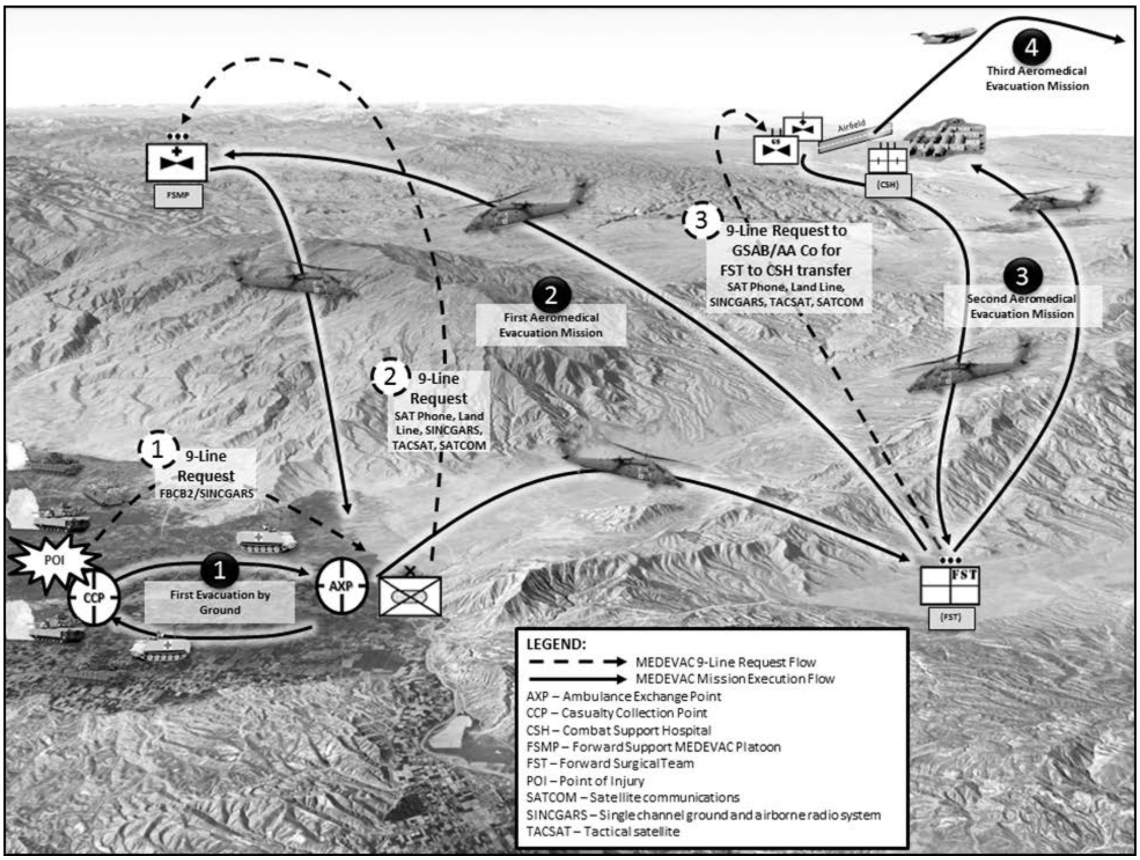

Figure 7-4. Example medical evacuation mission request and execution

7-25. Procedures for requesting medical evacuation support must be institutionalized down to the lowest level. The 9-line medical evacuation request provides a standardized message format that helps expedite the medical evacuation process. The same format is used for both air and ground medical evacuation requests.

7-26. In all circumstances, along with the patient's condition, the operational situation, terrain, weather conditions, enemy threat and availability of assets are considered when determining whether to send a ground or air ambulance.

7-27. It is important that the 9-line (table 7-2) medical evacuation request be sent by secure means, but more importantly that the request is transmitted, even if it is by unsecure communications.

Table 7-2. 9-Line medical evacuation request

1.	Location of pickup site.
2.	Radio frequency, call sign, and suffix.
3.	Number of patients by precedence. • A – Urgent • B – Urgent-Surg • C – Priority • D – Routine • E – Convenience
4.	Special equipment required. • A – None • B – Hoist • C – Extraction equipment • D – Ventilator
5.	Number of patients by type. • L – Litter • A – Ambulatory
6.	Security of pickup site (wartime). • N – No enemy troops in area • P – Possible enemy in area; approach with caution • E – Enemy troops in area; approach with caution • X – Enemy troops in area; armed escort required
6.	Number and type of wounded (peacetime).
7.	Method of marking pickup site. • A – Panels • B – Pyrotechnic signal • C – Smoke • D – None • E – Other
8.	Patient nationality and status. • A – U.S. Military • B – U.S. Civilian • C – Non-U.S. Military • D – Non-U.S. Civilian • E – Enemy prisoner of war
9.	CBRN contamination (wartime). • C – Chemical • B – Biological • R – Radiological • N – Nuclear
9.	Terrain description (peacetime).

7-28. Some multinational partners may require or request additional information on the medical evacuation request. This additional information may be included into medical evacuation requests to U.S. medical evacuation units. An example of this information would be the incorporation of the MIST report into the medical evacuation request. The pneumonic “MIST” stands for—

- M: mechanism of injury.
- I: injury or illness sustained.
- S: signs and symptoms.
- T: treatment given.

7-29. The MIST information is additional information and is sent as soon as possible after the 9-line medical evacuation request has been sent. Medical evacuation mission should not be delayed while waiting for the MIST information.

AIR AMBULANCE LAUNCH AUTHORITIES AND APPROVAL

7-30. When approving an air ambulance to launch for any given mission the single most important consideration is the casualty status and/or urgency of the medical mission prior to launch approval. Details can differ between theaters and commands, therefore, planners should refer to their command's launch authority policy and the theater evacuation order for specific guidance.

APPROVAL AUTHORIZATION

7-31. The use of Army aeromedical evacuation elements for missions requires two authorizations – a medical mission approval authority and a launch authority – as specified by the senior commander.

7-32. 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 Army aeromedical evacuation missions, the medical approval authority is accomplished by verifying the details of the 9-line MEDEVAC request with the policy contained in the theater evacuation policy or medical rules of eligibility. Once confirmed that the mission request falls within the established theater guidance, the request becomes an approved medical mission. The validation of the medical necessity to generate a requirement can include—

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

URGENT and URGENT-SURG MEDEVAC Mission Requests

7-33. 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 MTF.

Launch Authority

7-34. 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 includes, but are not limited to the following—

- Patient care requirement. (most important factor)
- The threat or enemy actions.
- ROE.
- Weather.
- Fighter management.
- Escort requirements.
- Crew mix and experience.

7-35. The commander should establish and enforce procedures in accordance with AR 95-1, which authorizes pre-briefed and pre-approved MEDEVAC missions to launch immediately upon request without re-briefing and re-approval. This requires decentralized medical and aviation processes that place the execution decision at the lowest practical level.

7-36. The commander should incorporate MEDEVAC procedures according to the AR 95-1 that authorize single-ship MEDEVAC aircraft missions, as well as en route linkup with escort or security aircraft, when acceptance of this risk is tactically feasible.

7-37. The brigade commander is authorized to delegate high risk approval authority to battalion commanders and moderate risk approval authority to field-grade rank MEDEVAC company commanders for urgent and urgent surgical missions according to AR 95-1. This delegation of authority is reasonable, appropriate, and necessary to provide maximum flexibility to brigade commanders and facilitate rapid response. This authority may not be further delegated.

COORDINATION WITH HIGHER ECHELONS OF MEDICAL AUTHORITY

7-38. The MOC, consisting of staff medical planners from the GSAB and CAB or task force, are the conduit for communications between higher echelons of medical mission command and the aviation command. The MOC will—

- Establish flight procedures specific to AE missions within the CAB. This could include special routes or corridors, as well as procedures for escort aircraft link-up.
- Ensure the lines of communication to the supported units and higher echelons of medical command are available. The MOC also ensures supported units understand AE procedures and capabilities.
- Facilitate the AE briefing and launch procedures. Ensure there is 24-hour access to the approval authority able to launch high and extreme high-risk missions.
- Maintain understanding of the tactical and medical situation. Coordinate with the medical regulating officer at higher echelons to efficiently support the medical mission.
- Assist the medical company (air ambulance) and GSAB or CAB to conduct the AEs.
- Coordinate the mission with the supported command surgeons and staff. To ensure coordination of the evacuation efforts, the staff should keep command surgeons updated on all AE missions performed in their AO.

ARMY AEROMEDICAL EVACUATION AIRCRAFT CAPABILITIES

7-39. Army aviation aeromedical evacuation is a multifaceted mission accomplished by air evacuation platforms synchronized to provide DS, GS, and area support within the joint operations area. Army aeromedical evacuation aircraft include the HH-60M, UH-60, and UH-72.

HH-60M

7-40. The HH-60M is a twin-engine, dual-seat, air ambulance helicopter. The primary mission of the HH-60M is aeromedical evacuation. Secondary missions include emergency movement of medical personnel, medical supplies and equipment, and blood or blood products. It is designed with a Medical Equipment Package (MEP) and without provisions for weaponry (i.e., gunner windows). The MEP includes (but is not limited to): a nose mounted FLIR for locating patients, an external rescue hoist for extracting casualties, a patient handling system with accommodations for up to six litter patients or six ambulatory patients (seated), or a combination thereof. The unique design also includes oxygen distribution and suction systems, airway management capability, and provisions for stowing intravenous solutions. The interior also features the following capabilities–

- Oxygen-generating systems.
- Night vision device compatible lighting.
- Environmental (temperature) control system.
- Medical equipment.
- Patient monitoring equipment.
- Medical attendant seats.

UH-60

7-41. For AE, the UH-60 utility helicopter can be equipped with a medical mission equipment package capable of holding four to six litter patients or six ambulatory patients, or a combination thereof. Other medical equipment can be carried aboard and can be switched out as required to complete the mission. It also includes provisions for a rescue hoist and Multi-Mission Sensor (MMS) thermal image sensor.

> ***Note.*** Some aircraft remain equipped with the legacy "carousel" six patient litter system, but these systems are being replaced by the interim four patient litter system.

UH-72

7-42. The UH-72 is a commercial light utility helicopter designed to conduct GS tasks in a permissive, non-combat environment. The aeromedical evacuation versions of this aircraft have a medical mission equipment package installed which includes a rescue hoist. The UH-72 can accommodate a limited number of litters and ambulatory casualties and depending upon the aircraft's configuration; it can accommodate a maximum of two litters or a maximum of six ambulatory passengers, or a combination of one litter and 3 ambulatory patients.

SECTION IV – AIR CASUALTY EVACUATION

7-43. Army helicopters provide a flexible asset on the battlefield for use in air CASEVAC. The difference between a CASEVAC and a MEDEVAC is that a MEDEVAC uses a dedicated air ambulance aircraft with medical personnel and equipment to provide en route care. When casualty transport requirements exceed the capability of available MEDEVAC assets, or other situational requirements dictate, a CASEVAC mission may be flown to transport at risk casualties using non-medical utility and cargo aircraft without en route care. A CASEVAC mission can also include the transport of patients that are stable and do not require en route care.

WARNING

Casualties transported via CASEVAC may not receive proper en route medical care or be transported to the appropriate MTF to address the patient's medical condition. If the casualty's medical condition deteriorates during transport, or the casualty is not transported to the appropriate MTF, an adverse impact on his prognosis and long-term disability or death may result.

7-44. Proactive planning and rehearsals are a critical step to reducing risk when executing CASEVAC operations. All crewmembers should be familiar with the location and capabilities of medical treatment facilities located within the area of operations. See ATP 4-25-13 for additional information on casualty and medical evacuations, and JP 4-02 for joint CASEVAC.

CASUALTY EVACUATION CLASSIFICATIONS

7-45. There are three general classifications of CASEVAC assets:

- **Dedicated**. Dedicated aircrews and equipment are identified and reserved exclusively for the CASEVAC mission. This tasking may be for a period of hours or months. Similar to an AE crew, they will not be called on to perform another mission. This is the highest level of classification for air casualty evacuation.
- **Designated**. Designated aircrews and equipment are tasked to perform the CASEVAC mission on request. These crews may have a variety of priorities, CASEVAC not necessarily being the highest.
- **Lift of opportunity**. The aircrew and equipment performing a CASEVAC lift of opportunity has no specific prior designation as an air casualty evacuation platform. This does not indicate a lack of CASEVAC planning, but does not ensure CASEVAC resources will be available at any given time.

7-46. The above classifications are not associated with any certain level of medical care. In any configuration, it is highly desirable to have medically trained personnel onboard to administer treatment – without them further harm may come to the patients. Therefore, when executing a CASEVAC it is advisable that the least severely injured are evacuated using CASEVAC assets and most severely injured using MEDEVAC assets. Any available medical personnel at the pickup site can assist in determining priority for evacuation.

7-47. During the planning process for CASEVAC, the same availability methodology used to assist CASEVAC aircrews must be used for en route medical care personnel. Onboard medical personnel can serve in a dedicated, designated or lift-of-opportunity capacity. Due to the coordination necessary between the parent aviation CASEVAC unit and the medical unit providing personnel for en route care, prior planning and training is especially critical.

CASUALTY EVACUATION AIRCRAFT CAPABILITIES

7-48. When planning for the use of any standard configured aircraft to support CASEVAC, significant preparations may be required to accommodate litter patients and medical attendants with medical equipment. Well-planned CASEVAC operations should be rehearsed in order to minimize the additional time required for aircraft configuration.

7-49. The aircrews conducting the CASEVAC mission should have medical situational awareness. It is important to ensure aircrews understand the severity of casualties onboard and the location and status of the MTF and their basic capabilities to help prevent further harm. This information is critical to ensure patients are evacuated to the correct facility that can provide proper treatment and care.

7-50. The CASEVAC crew should include at least one Soldier trained as a Combat Life Saver. The Combat Life Saver is a bridge between the self-aid/buddy-aid (first aid) training given to all Soldiers during basic training and the medical training given to the combat medic. The Combat Life Saver is a nonmedical Soldier who provides lifesaving measures as a secondary mission as his/her primary (combat) mission allows. The Combat Life Saver may also assist the combat medic in providing care and preparing casualties for evacuation when the Combat Life Saver has no other combat duties to perform.

UH-60

7-51. The UH-60 utility helicopter is a multi-mission, medium-lift aircraft with a primary mission to transport troops, cargo and equipment over the battlefield during the day or night and under all flight conditions. UH-60s can provide CASEVAC support to the brigade and division. This tactical transport helicopter provides support to conduct air assault, GS, MEDEVAC and CASEVAC, mission command and special operations.

7-52. In the CASEVAC role, the UH-60 is capable of transporting both ambulatory and litter casualties. The numbers of both vary with the aircraft's configuration. The standard configuration is 3 or 4 litters and 1 ambulatory while the maximum is 6 litters and 1 ambulatory or 7 ambulatory. Litters are safely secured on the floor of the UH-60 and other aircraft using the universal litter tie-down strap (NSN: 6530-01-530-3860) to the appropriate cargo attachment points. There is also the CASEVAC conversion kit (NSN: 6545-01-536-9315) which provides a means to secure a litter with patient to the floor of the aircraft. These kits are available through the military supply system or from commercial vendors. The kit aids in the ability to quickly transfer the casualty to an air or ground ambulance for movement to an MTF.

CH-47

7-53. The CH-47 cargo helicopter is a multi-mission, heavy-lift aircraft with a primary mission to transport cargo, troops and equipment over the battlefield during the day or night under all flight conditions. Among its multi-mission profiles is the movement of casualties and patients along with medical personnel. The aircraft has a maximum capacity of 24 litter patients or 31 ambulatory patients (table 7-3, page 7-14). The 31 ambulatory patients are seated in the ten three-man seats and the one-man seat shown in figure 7-5, page 7-14. The two one-man seats may be used by crew members.

7-54. The CH-47 litter support kit consists of poles and supports only. Litters and tie-down straps must be provided by the supported unit. The litters are provided by medical unit or MTF requesting the CASEVAC mission. The litter support kit does not meet crashworthiness standard and patients will be at greater risk in the event of a crash or hard landing. With the litter support kit installed, the seats are replaced with six tiers of four high litters for a total of 24 litters. The two one-man seats in the rear section should remain in place for aircrew members. The one-man seat at the left front may also be left in place for a medical attendant or other personnel. All passengers and cargo loading will be at the direction of the aircrew.

Table 7-3. Litter and ambulatory patient transport capabilities of the CH-47 helicopter

Ambulatory patients	*Litter patients*
31	0
25	4
19	8
16	12
10	16
4	20
1	24

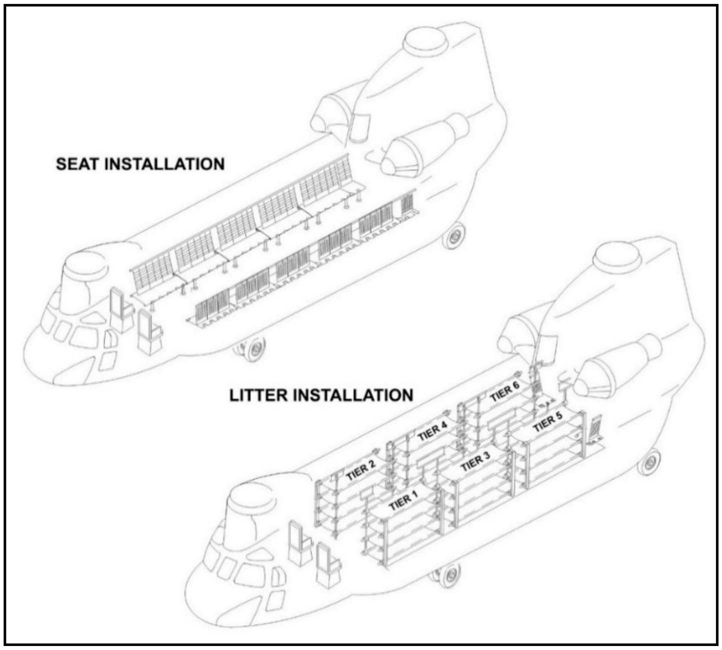

Figure 7-5. Interior view of the CH-47 helicopter with the installation of seats and litters

UH-72

7-55. The UH-72 helicopter in the utility version is designed to conduct GS tasks in permissive, non-combat environments. These tasks include civil search and rescue, personnel recovery, evacuation, counterdrug, and limited civil mission command in the conduct of Homeland Security operations. The UH-72 can be used as a CASEVAC helicopter and accommodate a limited number of litters and ambulatory casualties. These numbers depend on the aircraft's configuration; it will accommodate a maximum of two litters or a maximum of six ambulatory passengers, or a combination of one litter and three ambulatory patients. The standard UH-72 floor is not designed to support litter feet and placing them directly on the floor could result in damage to the aircraft. The use of shoring materials or padding will be required to protect the floor when using litters.

Chapter 8

Personnel Recovery Operations

Army Aviation provides the capability to transport ground security and extraction forces tasked to recover designated isolated personnel. Habitual relationships, standard operating procedures, and rigorous training improves the ground commander's personnel recovery (PR) posture. The mobility, speed, and lethality that Army Aviation brings to personnel recovery operations give ground commanders an asymmetric advantage.

SECTION I – OVERVIEW

8-1. *Army personnel recovery* is the military efforts taken to prepare for and execute the recovery and reintegration of isolated personnel (FM 3-50). Not all isolated personnel can be recovered immediately due to mission constraints. Isolation refers to persons being separated from their unit or in a situation where they must survive, evade, resist, or escape.

8-2. Army Aviation's ability to quickly move across wide areas and over complex terrain provides commanders a rapid response capability that could result in immediate recovery. FM 3-50 states that successful personnel recovery operations often depend on timely decisions and rapid execution. The time available to conduct a recovery may be short, and the tactical situation may change rapidly. On the other hand, this ability has the potential to stretch the PR architecture beyond its true capabilities. Armed with this knowledge, commanders must implement, train and apply PR doctrine and incorporate PR into all facets of operational plans.

8-3. Army Aviation is not resourced to have dedicated units in support of PR operations, however, may be designated as the recovery force or to assist in recovery efforts. Careful planning is therefore required in order to ensure the rapid transition from ongoing missions to PR operations. For deliberate ground maneuver operations support, this may require assets allocated to a dedicated PR function.

8-4. AMSOs are designated as unit personnel recovery officers (PROs). Each staff section provides DS to the PR program. AMSOs will assist and advise staff sections on developing and implementing their roles in the process. Commanders must ensure their PR plans incorporate both aviation and assigned aviation ground support personnel.

8-5. PROs should ensure there is a PR plan and architecture established by theater command levels and that it is active prior to entry into theater. PROs validate all assigned personnel PR plans and requirements before each mission.

SECTION II – STRUCTURE

8-6. The PR organizational structure at brigade and above is outlined in FM 3-50, chapter 1. PR architecture for Marines, Navy, and Air Force organizations are discussed in the same chapter. Army personnel recovery (ARPR) support for Army Aviation is a critical task associated with the aviation mission survivability (AMS) program.

8-7. Command and staff responsibilities are detailed in FM 3-50. The responsibilities listed below are unique to Army Aviation units when performing PR missions.

8-8. Every member of the aviation staff has a role during personnel recovery operations. To ensure that these roles are properly executed, the staff must undergo training to hone these skills. The duties and responsibilities of each staff member during an isolating event will be documented in the unit's personnel recovery SOP.

PERSONNEL RECOVERY OFFICER

8-9. All echelons of command above battalion have trained PR specialists. Army Aviation units down to company level whose modified table of organization and equipment supports an AMSO position, shall assign the AMSO as the unit PRO. Army aviation units (e.g. HHC, D Company) whose MTO&E does not support an AMSO position shall assign a PRO. The AMSO serves as the PR program manager and integrates separate staff functions at the battalion and brigade levels, ensuring all PR tasks are planned, coordinated, and completed. The AMSO serves as a point of contact and fusion point for PR matters at their respective commands. The PRO has several key roles and responsibilities to perform, including–

- Advisor to the commander.
- PR briefer and trainer.
- Staff coordinator for PR activities.

COMPANY-LEVEL

8-10. Although personnel recovery is more visible at higher echelons, the Company PRO still plays a significant role. Army Aviation units are at increased risk of having an isolation incident. PROs at these echelons assist the commander in managing and/or mitigating isolation risk accordingly. When an isolation incident occurs, individuals and small units often have the best opportunity to make a quick assessment and react or recover from the isolating situation. The preferred method during aviation operations is immediate extraction unless mission requirements or threats preclude the recovery. Pilots in command (PICs)/AMCs must fully understand the commander's intent and be prepared to rapidly assess the threat risk associated with an isolating event. At the Company level, the PRO manages the personnel recovery program and conducts training on isolated personnel (IP) responsibilities, and ensures unit personnel are proficient and prepared for deployment.

8-11. Additional considerations and responsibilities for the company-level PRO include–

- Identify requirements for potential PR operations.
- Manage ISOPREP through the use of personnel recovery mission software.
- Evaluate mission contingencies and make recommendations for refining the plan.
- Assess the unit's ability to conduct PR tasks.
- Advise the commander on external support required to address shortfalls in unit PR capabilities.
- Generate search and rescue incident reports and situation summary reports.

BRIGADE AND BATTALION-LEVEL

8-12. Brigade and Battalion PROs perform similar tasks at each level. At the brigade level and lower, the PRO acts as a fusion point to gather ARPR-related information for their respective unit and integrates guidance from higher command into plans and unit SOPs (specified details of recovery plans must be handled at the appropriate classification to protect both the recovery force and the isolated personnel). Additionally, the PRO conducts horizontal and vertical coordination with the Personnel Recovery Coordination Cell or Section, adjacent, and subordinate units during an ARPR incident. The PRO is accountable for the following—

- Collect and process information developed by the Joint Personnel Recovery Center (JPRC) or PRCC/PRCSs.
- Coordinate unit ARPR pre-mission requirements.
- Ensure ARPR is integrated into the unit training plan and SOP.
- Identify unit ARPR resource shortfalls to higher headquarters.
- Manage isolated personnel reports through the use of personnel recovery mission software (PRMS).
- Ensure sufficient ARPR equipment is available to the unit.
- Research, develop, coordinate, and publish ARPR Annex in all OPORDs and OPLANs.
- Ensure PR program complies with all Army and Joint regulations and requirements.
- Synchronize and integrate all required assets for PR activities.
- Assist subordinate staffs and commanders in the development of their PR program.
- Support joint PR operations, as directed.

- Provide PR training to all assigned, attached, and external supporting personnel.

BATTLE CAPTAIN/BATTLE NONCOMMISSIONED OFFICER

8-13. The battle captain or battle NCO manages the CP. The CP is the central hub of information management during current operations. While the PR program is established and managed by the AMSO or PRO, the battle captain directs the CP during an isolating event. If the AMSO or PRO is available they will advise the battle captain as necessary. During an isolating event the battle captain is responsible for initiating the PR battle drill. Common steps include–

- Alert the CP.
- Inform the chain of command.
- Ensure submission of search and rescue incident and summary situation reports (SARIR/SARSIT).
- Alert recovery force and coordinate for additional support, as required.
- Alert ground owning unit for available assets.
- Brief recovery element.
- Task aviation assets to support.

S-2 SECTION

8-14. The S-2 section is staffed for 24-hour operations and are leveraged heavily during a PR event. They provide an assessment on the enemy's most likely and most dangerous course of action with respect to the isolating event, including–

- Provide geospatial analysis of the event location and potential helicopter landing zones.
- Determine available information collection assets.
- Provide intelligence report of the area's past significant activity.

FLIGHT OPERATIONS/BATTLE STAFF

8-15. The Flight operations section provides critical support to the effectiveness of the unit PR program. Flight operations personnel have access to classified systems making them ideal to assist as managers of ISOPREP from personnel recovery mission software (PRMS). At least one S-3 member per shift must be trained as a manager in the PRMS. During the pre-mission and through launch, flight operations personnel support aircrews by processing and providing the ATO, ACO, and SPINS information which are critical to the conduct of aviation operations in an area of responsibility.

8-16. Flight operations personnel are present in both the brigade/battalion CP and battalion flight operations sections. Flight operations personnel are responsible for tracking proposed return times for aircraft. When an aircraft is overdue, flight operations personnel initiate overdue aircraft procedures. Within a theater of operations, it is critical that flight operations personnel are knowledgeable about Army and theater PR architecture in order to make the appropriate contacts in search of overdue aircraft. Timely notification is essential to reducing the exposure of isolated personnel in a downed aircraft event. During a isolating event, flight operations responsibilities include–

- Transmission of ISOPREP and evasion plan of action (EPA) to recovery force.
- Plotting grids on mission command information systems.
- Monitor radios and assist the CP with developing the situation.

BRIGADE SURGEON/BATTALION SURGEON

8-17. The Brigade or Battalion Surgeon should be present in the CP during isolating events. Any communications with IP should include physical condition of personnel and any injuries suffered. The surgeon identifies potentially life threatening injuries and assists in determining PR mission execution timelines. During an isolating event the medical operations team is responsible for–

- Coordinating medical needs with Brigade/Higher headquarters.

- Preparing medical treatment facility for recovery support.
- Determine level of care required.
- Phase 1 reintegration.

STAFF WEATHER OFFICER

8-18. During an isolating event the SWO section must quickly begin analyzing weather along potential flight routes and at the PR site. During an isolating event the SWO is responsible for–

- Provide weather and space considerations and illumination data.
- Monitor and brief changes that could affect the mission.
- Provide weather impacts on collection assets.

FIRES CELL

8-19. During isolating events the fires cell is the primary coordinating staff section to synchronize and integrate lethal and non-lethal fires while minimizing the risk of fratricide and collateral damage. During an isolating event the fires cell is responsible for–

- Coordinate fire support coordination measures.
- Integrate airspace coordination measures.
- Coordinate suppression of enemy air defense along potential flight routes.

ON-SCENE COMMANDER

8-20. The first aircraft on the scene of an isolating event will assume duties as the on-scene commander (OSC) until relieved. Aircrews must understand OSC duties and how to perform them during an isolating event. For an example OSC checklist refer to appendix B figure B-4. During an isolating event OSC is responsibilities include–

- Communication with all on-scene assets and higher headquarters.
- Communication with the isolated personnel in accordance with evasion plan of action/SPINS.
- Remaining in a position that will ensure SA, but not compromise the position of the isolated personnel.
- Coordinating and controlling all fires and airspace during the isolating event.
- Providing authentication of isolated personnel, as required.
- Coordinating the extraction sequence.

RECOVERY TEAM

8-21. The recovery team is the crew responsible for recovering the IP, and may include assault, heavy lift, or MEDEVAC aircraft. The recovery team's responsibilities include–

- Maintain continuous communications with the OSC aircraft.
- Transport ground security forces to the helicopter landing zone and extract them once link-up with IP is complete.
- Maintain a position that will ensure situational awareness, but not compromise the position of the IP.

ESCORT TEAM

8-22. The PR escort team typically consists of attack reconnaissance aircraft or unmanned aerial vehicles that provide security for the recovery team en route to the objective area and while recovery forces are on the ground. Escort team responsibilities include–

- Maintain continuous communications with the OSC aircraft.
- Maintain a posture that ensures security but does not compromise the position of the IP.
- Perform continuous reconnaissance of the immediate area surrounding the isolated personnel.
- Provide immediate lethal fires to defend IP and recovery forces.

SECTION III – PERSONNEL RECOVERY PLANNING

8-23. Aviation operations inherently elevate the risk of isolation. This risk can be mitigated through PR planning and by developing personnel recovery guidance. Personnel recovery guidance is used to communicate how organizations or individuals should act during an isolation event. It should be based on the most current PR sources, like those found in SPINS, PR Appendices of orders, and PR related briefs. PROs are responsible for researching, developing, and publishing overall unit personnel recovery guidance. Commanders, AMCs, and PIC are responsible for ensuring assigned Soldiers understand the personnel recovery guidance.

8-24. Commanders and staffs use the MDMP when developing the plan for immediate, deliberate, and externally supported personnel recovery missions. FM 3-50, chapter 3 details MDMP considerations related to PR operations.

8-25. Commanders, AMCs, flight leads, and AMSOs must plan for PR events by analyzing the OE in terms of the operational variables and mission variables. Clearly understanding the OE, mission requirements, and the commander's intent, will simplify the PR planning and decision making process.

TYPES OF RECOVERY OPERATION PLANNING

8-26. Immediate recovery should always be emphasized, but it cannot become the default answer to forego PR planning. PR plans such as, "if chalk 1 goes down chalk, chalk 2 will land and recover them" are limited and do not take into account the OE. When a lift aircraft is teamed with an attack aircraft, there is generally enough room for lift aircraft to extract the attack aircrew. However, if it is the lift aircraft which is forced to land, the attack aircraft will be incapable of extracting the lift aircrew and passengers, if present. At this point, attack reconnaissance aircraft are best suited to establish an immediate aerial security posture and coordinate additional assets for continued support through recovery phases.

8-27. Deliberate recovery planning considerations are similar to the planning and execution of air assault operations. Habitual relationships, coordinated training, and SOPs significantly enhance the effectiveness of the combined arms team when executing personnel recovery operations. An additional consideration in the five step reverse planning sequence is the aircraft loiter/lagger time. This may occur in the air or on the ground near the area of the personnel recovery operation, or at a FARP or other forward staging area to minimize response time for recovery. Due to the nature of PR mission execution timeline requirements, commanders and staffs may abbreviate the five step reverse planning process or conduct rapid decision support planning.

8-28. Unassisted recovery is accomplished by the IP through their own means (self-recovery). Mission and operational variables may prevent other recovery methods and IP need to be prepared to recover themselves. IP often have the best knowledge of the situation and their individual skills to evade the enemy, awaiting the right time to return to friendly control. Aviation units may be tasked to support both unassisted recovery and non-assisted recovery of special operations personnel or regionally-aligned forces within a particular theater of operations.

8-29. External supported recovery involves the same planning as air assault or deliberate PR missions with non-organic joint enablers involved. External supported recovery can be broken into three distinct types–

- If mission parameters exceed the organic capabilities of the brigade/battalion element, external support assets may be requested. As an example, a high altitude rescue may be conducted with organic lift aircraft, however, the altitude may exceed the capabilities of organic escort platforms. In this case, other joint assets can requested and tasked to fill the gap.
- Army Aviation supports other units' PR operations when the PR mission requirements exceed those unit's capabilities.
- When Army Aviation assets are unavailable and other friendly forces can provide an essential immediate recovery capability. Air Force, Marine, or Navy RW or tilt-rotor assets could be used to support the recovery of Army isolated personnel due to the unavailability of Army Aviation assets.

REHEARSALS

8-30. PR events are very dynamic, occur with minimal notice, and rarely with enough planning time to complete mission rehearsals. When time is limited, staff rehearsals and battle drills should be conducted for the most likely threats. For deliberate PR operations, the recovery force AMC will determine the level of rehearsal events with available time. The same mission rehearsals found in air assault mission execution will apply to PR events.

PERSONNEL RECOVERY TRAINING AND PREPARATION

8-31. Personnel recovery training is essential to ensure that all personnel understand their role during an isolating event. Proper training will allow for a swift and efficient recovery of the isolated personnel. There are multiple levels of personnel recovery training. The remainder of this chapter focuses on training for aircrews,

8-32. The first area of personnel recovery training includes the basic knowledge needed by all personnel. These range from the basic tenants of personal recovery to the survival skills needed to survive through recovery. This training covers from pre-mission planning to recovery techniques.

CODE OF CONDUCT

8-33. The Army's Code of Conduct training includes instruction on the meaning of the six articles of the Code of Conduct and the behavior and obligations expected of Soldiers during combat and captivity. This training can be found in online training modules.

SURVIVAL, EVASION, RESISTANCE, AND ESCAPE TRAINING

8-34. Survival, evasion, resistance, and escape (SERE) training is for Soldiers, Army Civilians, and Army contractors whose jobs, specialties, missions, or assignments place them at risk of isolation and exploitation. It incorporates individual preparation and planning for isolation, survival, evasion, resistance and escape tactics, techniques, and procedures, and responsibilities during recovery and post-isolation reintegration. There are three levels of SERE training. SERE level A. This is the basic level of SERE training taught in a classroom environment. All Soldiers, Army Civilians and Army Contractors will receive SERE Level A training prior to travel outside the U.S. SERE Level B training is tailored for selected capability areas and includes tasks as determined by the Army Personnel Recovery Proponent.

8-35. SERE Level C training is required for Soldiers, Army Civilians, and Army contractors whose military jobs, specialties, or assignments entail a significant or high risk of isolation, capture and exploitation. These three-week courses are conducted at approved military schools. SERE Level C training is available to those individuals whose deployment duties will likely require them to operate outside of secure operating bases with limited security.

8-36. All officers who have branched Aviation are required to graduate from an approved U.S. Army level C SERE School prior to attending flight school unless they have previously attended another level C SERE school. Commanders are highly encouraged to ensure all flight personnel remain current and qualified.

THEATER ENTRY REQUIREMENTS

8-37. Prior to deploying to a theater, Army Aviation personnel will be required to complete and review isolated personnel reports in PRMS. Each specific theater of operations may have additional training requirements. Check with the corresponding combatant command (COCOM) for these requirements.

PR SPECIAL INSTRUCTIONS

8-38. The SPINS is a theater level document that includes special PR guidance and instructions needed during an isolating event. Training on the understanding and use of this information is important to all aircrew members. This document includes techniques and procedures that must be used when isolated. This information is important to all aircrew members and designated aviation personnel who have a high risk of becoming isolated.

EVASION PLAN OF ACTION

8-39. The EPA's purpose is to improve the probability of recovering isolated persons by giving recovery forces information about the isolated persons' mission and intentions in case of isolation. Aircrews must understand how to fill out the EPA and why the information is important. In the event that an aircraft goes down, the EPA documents whether the aircrew will remain with the aircraft or move to a different location. This decision will be made dependent on the mission variables and SPINS. Staff and recovery forces must be able to understand the information provided on the EPA to allow for an effective recovery. EPAs contain the primary, alternate, contingency and emergency (PACE) communication plans, and the short and long term plans of action for personnel. This information will allow the recovery force to plan for a recovery and assist in locating the isolated aircrew. Other information that will be included on the EPA–

- Version number of the SPINS used to create the EPA.
- Survival radio number.
- Weapons.
- Night vision goggles.
- Aviation life support equipment.
- Go bag contents.
- Food/water.
- Cold weather gear.
- Medical information (Blood type, Allergies).
- Any other additional equipment.

EQUIPMENT TRAINING

8-40. Basic survival gear is carried by all aircrew members. Understanding how to operate this equipment is paramount to survival during an isolating event. Aircrew members must instinctively know where individual equipment is located on their gear. Equipment may need to be accessed while inverted and/or in the dark, or with limited mobility. This will allow the individual to find and use the equipment in a potentially confusing and stressful environment. Since each piece of equipment serves an important role training must be conducted on each to ensure understanding of its use. The survival radio is the aircrew member's primary link to a successful recovery. Understanding how to load, preflight, and operate in all modes is a critical skill. All aircrew members will be trained on the survival radio in all its modes of operation.

SELF-RECOVERY

8-41. Some situations may require an immediate recovery by other aircraft in the flight or nearby. This requires training for all aircrew members to understand all aircraft configurations to assist in a recovery. Topics should include aircrew extraction procedures on how to remove aircrew members from their seats, emergency engine shutdown, and hookup locations for a self-extraction.

STAFF TRAINING

8-42. Every member of the aviation staff has a role during personnel recovery operations. To ensure that these roles are properly executed, the staff must undergo training to perfect these skills. The duties and responsibilities of each staff member during an isolating event will be documented in the unit's personnel recovery SOP.

BATTLE DRILL REFINEMENT AND TRAINING

8-43. Some of the most important functions of the staff during the isolating event is communication and synchronization of operations and the execution of the personnel recovery battle drill. This CP function will allow for a rapid recovery of isolated personnel. CP battle drills must be rehearsed as often as possible to ensure rapid execution to standard.

GROUND SECURITY TRAINING

8-44. A ground security element's role is to provide security and recovery of isolated personnel. These personnel may be a specially trained unit or may be designated personnel within the unit. The training must include–

- Basic combat movement.
- Security operations.
- Aircraft familiarization- all aircraft types: extraction, fuel/engine shutoff, danger areas.
- Recovery TTPs in accordance with the SPINS/EPA.
- Recovery equipment training.

ISOLATED PERSONNEL EXERCISE

8-45. Isolated personnel exercises are scenario driven training events that allow aviation commanders the ability to train their personnel on unit PR SOPs and isolated soldier guidance. This training should be conducted primarily in a field environment. The main focus should be on training aircrew members on the skills they will need while on the ground during an isolated event, while simultaneously working staff battle drills and recovery procedures. The five PR proficiencies should guide the training and its development–

- Architecture and doctrine should give the Soldier the understanding of how the Army PR architecture is used to report, locate support, recover and reintegrate IP.
- Communication, in addition to radios, should include signaling methods, personnel locator beacons, and authentication techniques.
- Navigation is emphasizing the lifesaving basic map and compass skills required by all Soldiers.
- Preserving life includes survival, first aid, and sustaining critical aspects of health such as hydration.
- Ensuring hardship includes physical and psychological hardships related to evasion and captivity and how the code of conduct applies in those situations.

Note. AR 350-1 prohibits any form of training that incorporates SERE academic role-playing laboratories or SERE training laboratories at home station without first having the course validated by the Army Personnel Recovery Proponent Office.

SECTION IV – EXECUTION

8-46. Aviation PR mission execution has essentially the same principles of execution as air assault operations. Commanders will modify the air assault execution requirements as required to complete a PR mission.

8-47. Recovery operations are usually triggered by initial notification to the main CP and consist of personnel recovery and/or downed aircraft recovery. While PR is the priority, these operations may be conducted individually or simultaneously. Recovery operations may be initiated at the aircraft site and evolve into a dedicated aviation brigade-level mission.

8-48. The initial on-scene aircraft will perform security and on-scene commander duties until relieved. Due to the nature of controlling fires, OSC duties should be assigned to attack platforms with sensors available to detect and defend against encroaching enemy forces when possible. The aviation task force chain of command may assign an OSC when communication is possible. When communication is not possible, the AMC, serial commander, or flight lead will assign the duty. The assigned OSC should be in the security aircraft and integrate arriving aircraft.

8-49. When recovery assets arrive, they will be in-briefed and controlled by the OSC. The OSC coordinates with the attack reconnaissance elements to set the conditions that support effective recovery, and manages assault or lift elements as required. Any relief on station will include a complete battle handover brief.

8-50. The OSC conducts an authentication of isolated personnel per ISOPREP information. Once authenticated answers are received and confirmed, and the tactical situation permits, the recovery will be executed.

8-51. If a suitable helicopter landing zone exists, the OSC begins coordination for extraction. If a suitable HLZ does not exist, the OSC may consider giving the isolated personnel vectors to a suitable location or coordinate an alternate extraction.

EXTRACTION OPERATIONS

8-52. The primary means of extraction is to have one recovery aircraft land s while attack reconnaissance aircraft provide security. The OSC will ensure airspace/ fires de-confliction measures are in place prior to extraction.

8-53. Security aircraft will maintain positions as required and continue surveillance and security of the area while maintaining situational awareness and providing fires as directed or required.

8-54. Door gunners will assist in locating isolated personnel and provide coverage in their sectors of fire. Strict adherence to briefed weapons control procedures is critical to the prevention of fratricide.

8-55. The recovery/security team will assist in loading personnel, or assist with extraction devices and procedures. Door gunners will remain at crew station with weapon ready.

8-56. If no HLZ exists, the recovery/security team will insert based on the mission variables. As an alternate solution and when IP condition allows, recovery platforms may use hoist extraction while aircraft hover. This increased exposure time will warrant additional security considerations. When inserted, the recovery team will prepare personnel for extraction and improve extraction site. The ground recovery team will remain in constant communication with the OSC.

EQUIPMENT

8-57. Units must be proactive during the receipt of mission and planning phase of an impending deployment or mission. The following items must be requisitioned early in the planning stages in order to ensure they are available for operational use.

- Evasion Charts (EVCs).
- Pointee-talkee printout.
- Blood chits.
- Global positioning systems.

8-58. It is recommended that units identify additional equipment requirements in the unit’s SOP. These lists must be re-evaluated and adjusted when specific mission details are obtained. Commanders may determine special equipment requirements based on the environmental conditions where their personnel will be operating (such as arctic or jungle).

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Chapter 9

Aviation Ground Support Operations

This chapter provides logistics principals, techniques, and procedures to facilitate the planning and execution of convoy, AA, distribution, and aircraft recovery operations inherent to aviation sustainment functions. A firm understanding of logistics is paramount to sustaining and creating aviation combat power. Chapter 9 was derived from ATP 4-01.45, ATP 3-04.94, FM 3-04.513, and TC 3-04.7.

SECTION I – CONVOY OPERATIONS

OVERVIEW

9-1. Every ground movement is a tactical operation that is planned, briefed, and rehearsed. Contact with the enemy can be mitigated through detailed planning, the incorporation of additional security, and the synchronization of enablers to produce overwhelming combat power when required. Training, SOPs, and experience facilitate timely preparation and execution. See ATP 4-01.45 for more information on tactical convoy operations.

ROLES AND RESPONSIBILITIES

9-2. Every individual participating in a convoy will have a dedicated role or function to perform. The following list of personnel are typically assigned a role or responsibility in a convoy. At a minimum, personnel will be responsible as a security element ensuring the overall safety of the convoy. The following functions remain the same regardless of the size of the convoy.

CONVOY COMMANDER

9-3. The Convoy Commander (CC), has overall responsibility for all mission coordination, preparation, equipment, safety, fire control, and accountability. The CC should occupy the best possible location within the convoy to facilitate mission command. The CC also–

- Approves task organization, convoy configuration, and assigns personnel/vehicle responsibilities.
- Conducts the convoy OPORD brief and debrief.
- Maintains internal and external communications.
- Reviews the latest intelligence and briefs the convoy personnel on all pertinent items.
- Conducts rehearsals and precombat inspections (PCI).

ASSISTANT CONVOY COMMANDER

9-4. The Assistant Convoy Commander is second in command and assumes the duties of the CC as necessary. The Assistant Convoy Commander should–

- Normally be near the rear of the convoy and not collocated with the CC.
- Supervise the rehearsal of convoy procedures and drills.
- Perform duties as assigned per unit SOP.

SECURITY ELEMENT COMMANDER

9-5. The security element commander is subordinate to the CC, regardless of rank. He or she is responsible for all actions, movement and control of the security element in order to provide security for the convoy. The security element commander may be the commander of the convoy escort unit. The security element commander–

- Places security units in positions where they can observe and engage the enemy during convoy operations and halts.
- Maintains dedicated internal communications.

NAVIGATOR

9-6. The navigator (or pace setter) is responsible for pre-mission route planning to include identifying checkpoints, choke points, alternate routes and LZs. In order to best set the pace of the convoy, the navigator is typically located near the front of the convoy. The use of a global positioning system (GPS) and maps to plot these specific points along the route will aid in planning and identification during the movement. The navigator also–

- Ensures the convoy is on the correct route and maintains the rate of march needed to meet the mission schedule.
- Communicates checkpoints, turns, and danger areas to CC.
- Provides strip maps to each vehicle commander.

VEHICLE COMMANDER

9-7. Vehicle commanders (VC) are responsible for all personnel, cargo and equipment in the assigned vehicle, and the overall maintenance condition of the vehicle. The VC task organizes all personnel based on the vehicle type, equipment, weapons systems and the tactical employment of the vehicle. The VC also—

- Conducts precombat checks (PCC) and PCI of all individuals and equipment assigned to his vehicle.
- Ensures any installed counter radio controlled improvised explosive device electronic warfare (CREW) devices are operational and employed during movement.
- Supervises the vehicle and its personnel during rehearsals.
- Maintains communications with the CC and other VC.
- Provides supervision and guidance to driver as required.
- Controls and accounts for the removal or destruction of all sensitive items in the vehicle.
- Ensures all personnel assigned to the vehicle have been briefed and understand the ROE and the escalation of forces or continuum of force procedures.

DRIVER

9-8. Drivers are responsible for the personnel, safety, cargo, fueling and maintenance of the vehicle. The driver's primary duty is to operate the vehicle. The driver also–

- Scans his assigned sector of observation.
- Is prepared to return fire in extreme situations.
- Maintains proper interval between vehicles.

GUNNER

9-9. The gunner is responsible for the maintenance, operation and employment of the assigned on-vehicle weapons system and maintains proficient knowledge of current escalation of force or the continuum of force and ROE along the route.

MEDICAL TEAM

9-10. The medical team is comprised of personnel who are medics, corpsmen, or trained combat lifesavers. The team should be dispersed throughout the convoy and are responsible for all assigned medical equipment and are assisted by designated litter teams. They also–

- Provide and supervise medical treatment.
- Perform triage, initial resuscitation/stabilization, and preparation for evacuation of sick, injured, or wounded personnel.
- Supervise evacuation of casualties.

- Coordinate the actions of aid and litter teams.
- Coordinate with LZ Team for aeromedical evacuation.

VEHICLE RECOVERY TEAM

9-11. The recovery team is designated to assist with maintenance and recovery of convoy assets along the route. They are normally positioned at or near the rear of the convoy and are involved in the planning and execution of the vehicle recovery plan.

OTHER CONVOY PERSONNEL

9-12. Other personnel should be formed into tactical teams and rehearse as needed. Tasks may include–

- Marksman.
- Enemy Prisoner of War Team (2 trained personnel, EPW kit).
- Landing Zone Team (LZ marking kit).
- Signal and direct civilian traffic as required by the CC.

PLANNING

TROOP LEADING PROCEDURES

9-13. Small unit leaders use the troop leading procedures (TLP) to analyze a mission, develop a plan, brief, and prepare for execution. A lack of a formal staff places the responsibility for planning primarily on company-level and smaller unit leaders. This procedure enables leaders to maximize available planning time and prepare personnel for convoy operations.

9-14. Standardized TLP is covered in detail in FM 6-0 and ADRP 5-0 and provides a thorough framework for planning that can be applied to ensure successful convoy operations. Additionally, the multi-service ATP 4-01.45 includes a modified TLP as a doctrinal planning template for convoy operations that can be used for unit movement of equipment, personnel, and supplies. In addition to the mission variables, the CC should also consider the following during the convoy planning process–

- Security and weapons configurations.
- Fire support.
- OPSEC, vehicle markings, communications, or configurations.
- Vehicle recovery plan (wrecker and tow bar locations).
- Counter-IED plan.
- Casualty planning, to include establishing phase lines to delineate air or ground evacuation.
- Medical evacuation plan (ground and air).
- Rest or rotation plans for drivers.
- Requests for air support, including UAS, for reconnaissance and escort security.
- Air guard plan to counter threat UAS and aircraft.

9-15. Checklists are leadership aids that provide a quick reference to ensure consistency and completeness of preparation. Figure E-1, page E-1, in appendix E, is an example of a leader checklist and covers essential items inspected prior to mission execution. Additional checklists are found in ATP 4-01.45 and include–

- Time Schedule.
- Individual.
- Landing Zone Kit.
- Vehicle Operator.
- Combat Lifesaver Kit.
- Enemy Prisoner of War Kit.
- Other checklists that cover post combat inspections, post-mission after action reviews (AARs), and post-mission debriefs.

Route Selection

9-16. Higher headquarters may specify the route or allow the CC to select the route. The CC is responsible for ensuring that the route is de-conflicted with other units and cleared. Route characteristics, intelligence and other key information may be requested through higher headquarters and adjacent units if available. The CC should request information in advance to allow for sufficient planning time. It is essential that the CC commander ensures the convoy meets the designated route times to prevent conflicts with other scheduled ground movements.

9-17. Primary and alternate routes will be identified and will have a start point, check points along the route, terrain features, planned halt points, possible danger areas, pre-planned landing zones, and release point.

9-18. The CC should coordinate with the unit AMSO and the cyber electromagnetic activities (CEMA) officer on high priority radio-controlled improvised explosive device threats and spectrum management to de-conflict friendly force communications. In addition, the AMSO or the CEMA officer configures the assigned counter radio-controlled improvised explosive device electronic warfare equipment.

Route Selection Characteristics

9-19. In general, convoy routes are selected by identifying, evaluating and comparing those factors that tend to facilitate convoy movement and control, and are based on the mission variables. Considerations related to route selection characteristics include–

- Road surface and bridge capacity.
- Grades and steepness of inclines and descents.
- Height, weight, widths and turning radius limitations.
- Route classification.
- Trafficability.
- Rural versus urban areas.
- Estimated operating speeds over various sections of the route.
- Probable traffic conditions.
- Probable effect of adverse weather on trafficability.
- Friendly locations along the route.
- Choke points and potential ambush sites.

Route Information Collection

9-20. The CC or designated representative should conduct a map reconnaissance of both the primary and alternate routes, as well as a physical reconnaissance if circumstances permit. When conducting a map reconnaissance, the CC should use information from geospatial, topographic, movement control, and military police or security force units. Information from civilians supporting the military (i.e. security contractors and vehicle operators) and aerial imagery from UAS feeds should be used, if available. Since route conditions are subject to change based on enemy action or weather, a physical reconnaissance by ground or air is highly beneficial if time and the security situation permit. The reconnaissance team should include the supporting engineer element when gap crossings or route construction may be required.

Convoy Strip Map Standards

9-21. A strip map is a valuable tool for all personnel in a convoy. It provides an easily used navigational aid, route control and battle tracking information, adjacent units operating in vicinity of the route, operational and logistical support points, major terrain features, key built up areas, highway infrastructure, and danger areas. Although a strip map may be generated at a higher command level, units should improve these products with information obtained locally to maximize their utility. This is particularly important for depicting current enemy situation along the route. The unit is responsible for coordinating with appropriate agencies and organizations to obtain current information and reproduce enough strip maps so that one is issued to each vehicle in the convoy.

CONVOY CONFIGURATION AND ORDER OF MARCH

9-22. The tactical convoy is generally organized into three sections: the lead (or head), the main body, and trail (or rear). The lead section consists of a pace vehicle and a convoy security element – not to be confused with the forward security element that may precede the convoy. The pace vehicle should be the heaviest vehicle in the convoy with the slowest rate of march. The main body contains the majority of the convoy vehicles. The CC is located within the section that best facilitates mission command throughout the duration of the convoy. Petroleum or ammunition vehicles should be dispersed throughout the main body. The heavier and slower vehicles should be forward in the main body to assist in gauging and maintaining convoy speeds. The trail section consists of the assistant CC, any recovery vehicles, medical personnel, the aid and litter teams, the LZ team, and the rear convoy security element. The convoy configuration should take into account electronic warfare equipment, and systems available. For large convoys (20 or more vehicles), multiple medical, aid and litter, LZ teams, recovery teams, and additional security elements should be dispersed throughout the various sections. Figure 9-1 illustrates an example of convoy configuration.

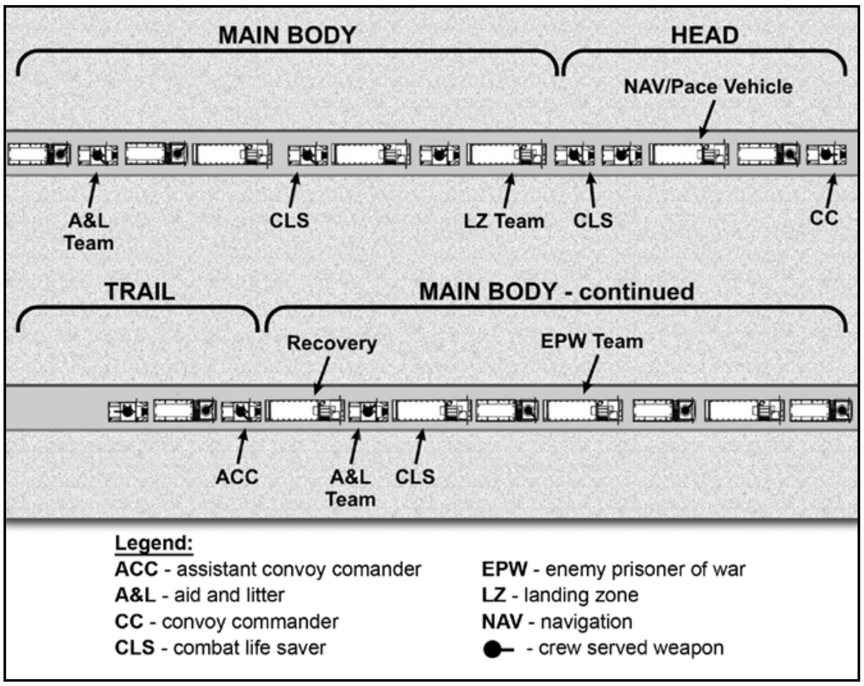


Figure 9-1. Sample convoy configuration

INTERNAL SECURITY ELEMENTS

9-23. The security elements are dispersed throughout the convoy and comprised of gun trucks and dismounts carried in transport vehicles. Gun trucks can be any vehicle type with mounted crew-served weapons with a 360-degree firing radius and armor protection for the gunner and crew. The gun trucks are employed to maximize mutually supporting fires. Communications equipment should permit the crews to monitor multiple radio nets, but the driver and gunner should be able to communicate with each other, the other gun trucks, the convoy commander, and with dismounted members. The gun trucks should also be capable of off road operation to shield dismounted members or aid in evacuating casualties. In cases where available assets are limited, ensure that security elements are not overextended and remain attached to the main body. Normally, tactical convoys do not proceed without an escort or internal security. If able, both the lead and trail vehicles should be able to observe the entire convoy from front to rear for any approaching threats. Personnel manning these vehicles should be armed with automatic weapons.

SECTORS OF OBSERVATION AND FIRE

9-24. The sectors of observation are comprised of the entire area visible to the crew member. Not all observable areas can be affected by direct fire. Observers should scan in depth and width without focusing excessively on any object, activity, or person. Their eyes do not depart from their sector of observation regardless of what others within their vehicle are doing–

- The driver sector of observation is from 9 o'clock to 1 o'clock.
- The vehicle commander sector of observation is from 11 o'clock to 3 o'clock.
- The sectors of observation for rear-seat occupants are from 3 o'clock to 7 o'clock and from 9 o'clock to 5 o'clock, respectively.

9-25. If there is a threat of enemy air attacks, crew members are assigned as air guards throughout the convoy and assigned specific search areas to guard. If the road march lasts more than an hour, these personnel should take shifts at air guard duty. Scanning for a long period dulls the ability to spot aircraft. Seeing the enemy first gives the advantage to the convoy to react.

9-26. The sector of fire is the area that can be covered with direct fires by a specific individual or a crew-served weapon. The sectors of fire should interlock to ensure complete coverage. However, sectors of fire from a vehicle are dependent on its up-armoring and overall configuration. In a completely up-armored vehicle, it may be impossible to fire from any position except the gunner's turret. Regardless of whether crewmen can fire from their seats in the vehicle, sectors of fire should be assigned and applied for when the crew dismounts. Drivers do not normally fire while operating the vehicle, but should be assigned a sector of fire when halted and/or dismounted. If the windows of a vehicle can be opened–

- The driver sector of fire is from 9 o'clock to 1 o'clock.
- The vehicle commander sector of fire is from 11 o'clock to 3 o'clock.
- The sectors of fire for rear-seat occupants are from 3 o'clock to 7 o'clock and from 9 o'clock to 5 o'clock, respectively. The rear seat occupant's sectors of fire may be modified to cover part of the driver's sector.

VEHICLE SPEED AND INTERVAL

9-27. During the convoy briefing, the CC establishes the normal convoy speeds and catch-up speed. The vehicle interval is determined by the mission variables according to terrain, threats and available assets. The factors used to determine speeds include–

- Fatigue levels and experience of the vehicle drivers.
- Types of convoy vehicles and their mechanical condition.
- Speed of the slowest vehicle based on capability, type, or weight of the load.
- Degree of urgency the convoy requires.
- Condition of the roads (dust, mud, snow and ice).
- Physical characteristics of the roadway along the route (grades, sharp turns and congestion).
- Weather conditions.
- Presence of civilian vehicles on roads.

9-28. Interval distances may vary throughout the convoy route. The normal recommendation is 75 to 100 meters between vehicles on open rural roads. The interval distance may close or tighten in urban areas, but a sufficient interval needs to be maintained to preserve maneuverability. The optimal distance should–

- Mitigate enemy effectiveness.
- Maximize mutually supportive overlapping fires.
- Allow for a safe stopping distance between vehicles.

VEHICLE CONFIGURATION

9-29. Do not assume that factory-hardened vehicles will not require additional protection. Vehicles can be hardened by using Kevlar blankets, armor plating, ballistic glass, and other protective devices such as sand bags. The hardening of a vehicle can–

- Make certain vehicle components less vulnerable.
- Significantly protect occupants from injury or death in the case of attack.
- Alter the vehicle's center of gravity and responsiveness.
- Increase braking distance.
- Increase fuel consumption and maintenance requirements.

9-30. Another consideration for safety is to use protective screens over gunner turrets and open areas on the vehicle to prevent objects from being thrown into vehicle. There are drawbacks to the use of this technique. It could prevent alternate gunners and medical personnel from easily accessing the turret in the event of an injury to the gunner or limit egress for the gunner.

9-31. The use of camouflage provides concealment, and deception. Techniques for camouflaging vehicles include–

- Shiny surfaces should be camouflaged or covered.
- At halts, terrain should be used to break up the outline of the vehicle.
- Camouflage netting can help break up the outline of the gunner.
- Remove placards so that vehicles carrying hazardous cargo are not easily identified.

9-32. Vehicle system components, including antennae and wires, should not be removed or altered. Antenna obstructions will also degrade system capability.

SUPPORT CONSIDERATIONS

9-33. Convoy commanders and leaders have a wide range of support considerations available to utilize, which will allow for an efficient convoy operation. Considerations such as aviation support, indirect fire support, and mobile security force and rapid reaction force.

INDIRECT FIRE SUPPORT

9-34. Higher headquarters provides indirect fire support assets to the CC for planning when they are available and within range of the convoy route. Targets such as choke points, suspected ambush sites, danger areas, and easily identified terrain features should be coordinated prior to the convoy departure. Fires can be shifted from these pre-coordinated target reference points or simply called in with exact grid coordinates of the target. As with air support, the ground observer should be able to stop any unsafe situation that develops. Indirect fire should always be controlled with "eyes on the target" in order to ensure achieving the desired effects.

MOBILE SECURITY FORCE AND RAPID REACTION FORCE

9-35. The CC should know if mobile security and rapid reaction forces are available. These forces will be coordinated beforehand for possible support and the CC will ensure the convoy briefing includes standard call signs and frequencies for any dedicated ground units that are available to support their convoy along the route.

AVIATION SUPPORT

9-36. The convoy route can be reconnoitered by manned aircraft or an unmanned aircraft systems. Most FW aircraft carry sensor pods (infrared, low-light, and visual sensors) that enable them to reconnoiter the route both day and night, ahead of the convoy's departure. Aviation units supporting the convoy will need to know the following information–

- Convoy mission route overview and objective.
- Enemy situation. Identify the locations of probable contact and the enemy's most probable COA, friendly COA on contact, and most dangerous COA.
- Friendly situation. Identify known friendly convoys and patrols in the AO. Identify the convoy frequency, call sign, as well as day and night markings. Consider marking the roofs of vehicles with call signs and frequencies; (the tactical situation and operational security may prohibit this TTP).
- Convoy composition. Identify the number and type of vehicles in the convoy, order of march, the limits of dispersion, and the locations of the CC and Assistant Convoy Commander.

9-37. The CC has the responsibility for coordinating the use of aviation assets for reconnaissance, security, attacks, CAS, aeromedical evacuation, and CASEVAC along the convoy route into the mission planning with the operations staff. Communications should be pre-planned and coordinated when air support is available. The CC will have the emergency frequencies for fires and air support requests, and for calling in aeromedical evacuation or CASEVAC requests. This information is provided during the convoy mission OPORD briefing. The dedicated support aircraft will be given information on number of convoy vehicles, specific vehicle markings, radio frequencies and call signs, route confirmation, mission timeline, and desired types of support.

9-38. The CC is responsible for integrating aviation assets to support convoy operations. The physical presence of aircraft can dissuade an attack or cause the enemy to break contact. Aviation support to convoys may include attacks (using the 5 line Army Attack Aviation Call for Fire), convoy security and route reconnaissance operations, and aeromedical evacuation or CASEVAC. When DS aviation response time is critical, coordinate the request procedures early in the planning process to help expedite mission response when needed.

9-39. Effective employment of CAS normally requires a JTAC or a forward air controller-airborne (FAC(A)) to ensure proper coordination between air and ground forces. The standard procedures for CAS are outlined in the ATP 3-09.32 and JP 3-09.3. JP 3-09.3 also provides danger close distances for specific munitions. The convoy personnel who have been designated as the primary/alternate CAS control personnel shall be knowledgeable on the procedures in the publications.

9-40. Other aviation assets can be used to support the following missions–

- Aeromedical evacuation and CASEVAC requests.
- Electronic attack. The CC works to de-conflict the convoy electronic warfare systems from prescheduled air missions.
- Air assets may extend the range of line-of sight radio systems with communications relay (retransmission).

REHEARSALS

9-41. Rehearsals instill confidence and ensure all convoy participants are fully prepared to execute the plan. They allow Soldiers to become familiar with key actions of the mission and translate abstract ideas of the written plan into concrete actions. Refer to FM 6-0, Chapter 12 for rehearsal basics, types, methods, responsibilities, and details.

9-42. Time is a factor when conducting rehearsals and will determine the type and depth to which they are conducted. Leaders conduct rehearsals to–

- Practice essential tasks.
- Identify weaknesses or problems in the plan.
- Coordinate subordinate element actions.
- Improve Soldier understanding of the concept of operations.
- Foster confidence among Soldiers.

9-43. When time is limited, concentrate on battle drill reactions for the most likely threats. Conduct drills covering the following areas–

- Routes – conduct sand table exercise or route walkthrough.
- Immediate action drills and battle drills.
- MEDEVAC and CASEVAC.
- Personnel recovery drills.
- Communications to include audio, visual, and radio communication rehearsals. There should be redundancy of long and short range communications. Avoid non-secure communications.
- Escorts - ensure roles and responsibilities are understood.
- Vehicle recovery operations (internal and external to unit).

CONVOY EXECUTION

9-44. Although the requirements may vary based on the specific operation area, the CC is required to conduct a certain set of procedures to depart friendly lines. Recommended actions that a CC can employ to meet the specific requirements from the staging area to the start point include:

PRE-STAGING

9-45. Prior to reporting to the staging area, each vehicle commander conducts the PCC. The convoy chain of command validates PCCs with precombat inspections.

STAGING AREA

9-46. The CC or assistant CC will inspect or spot check selected equipment during the PCI or PCC. Actions at the staging area include–

- Place vehicles in convoy order.
- Confirm manifest (personnel, equipment and sensitive items per vehicle).
- Conduct final checks on the electronic warfare systems and communications systems.
- Inform personnel of last minute changes to movement plan.
- Update strip maps.
- Update intelligence.
- Synchronize watches.
- Test fire weapons in accordance with local standing operating procedures (SOP).

ACTIONS AT START POINT

9-47. The start point should be located at a sufficient distance from the staging area to facilitate establishing the convoy interval. Ground-based electronic warfare checks should be conducted prior to the start point. The electronic warfare checks are not conducted in the staging area unless there is adequate separation between vehicles. Limit unnecessary communications once units reach the start point. Each element leader with radio communication should contact the CC and report when crossing the start point. The CC begins to monitor and control vehicle dispersion, convoy speed, element leader actions, and available aviation. The CC should also have the following information available (in accordance with established or local SOP).

- Number of vehicles.
- Number of personnel.
- Convoy call sign.
- Convoy destination.

COMMUNICATIONS

9-48. The communications methods employed by convoys may vary according to their composition, equipment authorizations, tactical situation, and assets available. Each crewmember in an assigned vehicle, regardless of military occupational specialty, should be proficient at operating onboard communications systems. Convoy commanders should consider a primary, alternate, contingency, and emergency (PACE) communication plan for at least four types of communication:

- Convoy internal.
- Higher HQ and movement control elements.
- Adjacent units.
- Ground-to-air.

ACTIONS ON CONTACT

9-49. Utilize the unit SOP to conduct the appropriate battle drill when reacting to enemy fire or contact en route. The primary concern is survivability of convoy personnel and equipment. Upon egress of an engagement area or breaking contact with the enemy the convoy rallies, establishes security, assess casualties and/or damage, and determines follow on courses of action based on the tactical situation. Refer to ATP 4-01.45 for more detailed information convoy actions on contact.

9-50. **React to Attack (Moving)**. Place suppressive fire on the enemy using weapon engagement techniques and proceed through the contact zone increasing speed and interval. Drivers should indicate direction of contact and report contact on internal communications, identifying vehicle number, type of contact, and clock direction. Gun trucks to suppress the enemy while the convoy breaks contact and submits a SALT-W report to higher headquarters.

9-51. **React to Attack (Stationary)**. If vehicles in the convoy are forced to stop and continue to engage the enemy, the convoy commander may direct personnel to dismount vehicles on the non-contact side and provide additional bases of fire. The CC assesses the situation and positions vehicles and personnel to best suppress the enemy while maintaining standoff.

OTHER CONSIDERATIONS

9-52. CREW systems may interfere with communications or GPS equipment. Proper checks and preventative maintenance checks and services (PMCS) should be completed in the convoy staging area in order to de-conflict. If problems persist, contact the AMSO or staff CEMA officer or other qualified personnel to resolve the conflict.

9-53. It is important to never turn the CREW system off at possible or known IED locations until directed by on-scene EOD personnel or higher headquarters. If the situation permits, all personnel should remount vehicles or seek frontal and overhead protection before the any CREW systems are turned on or off.

9-54. Actions involving disabled vehicles are completed using rehearsed battle drills and unit SOPs. The convoy commander decides how to continue the mission based on the mission variables and commander’s intent. Any vehicles involved in accidents that result in an immobilized vehicle should be treated the same as disabled vehicles with one exception – all injured soldiers will be rendered aid and transported with the convoy.

POST MISSION OPERATIONS

9-55. Post mission operations allow a convoy team to quickly reconstitute for the next mission while providing invaluable information to other personnel conducting tactical movement operations and providing higher headquarters with an overall threat picture in their area of operations.

9-56. Post mission operations include responsibilities for convoy individuals, crews, and leadership, as well as higher unit level leadership. Individual and crew post mission responsibilities closely resemble the duties during convoy preparation to include equipment accountability, inspections, and PMCS on vehicles and equipment. Convoy leadership responsibilities focus on conducting the AAR, while higher unit-level responsibilities focus on sharing debrief information from the unit’s operations and intelligence sections.

POST MISSION RESPONSIBILITIES

9-57. Individual responsibilities include:

- Maintain weapons.
- Maintain night vision goggles.
- Clean and service equipment and personal gear.

9-58. Vehicle crew responsibilities:

- Refuel vehicle.
- Account for and inspect equipment.
- Ensure proper shut down procedures for all communications and CREW systems.
- Conduct vehicle PMCS.
- Verify vehicle load plan – restock and organize as necessary.
- Secure and clean all weapons systems.
- Check serviceability and completeness of combat life saver bag.

9-59. Convoy leadership responsibilities:
- Conduct AAR (internal and higher headquarters).
- Conduct post mission debrief with higher headquarters.
- Submit closure report to higher headquarters.
- Review and update radio communications security.
- Inventory sensitive items.
- Download and update CREW systems.
- Validate crew selection for vehicles (per unit standing operating procedures).
- Post operations equipment inspections.
- Verify work and rest cycles.

9-60. Higher unit-level responsibilities:
- Complete the requested reports used by the intelligence and operations staffs (the route validation and intelligence review).
- Validate the serious or critical incident reports (if necessary).

SECTION II – ASSEMBLY AREA OPERATIONS

9-61. An AA is an area in which a command is assembled to prepare for future operations (ADRP 1-02). The unit receives and issues orders, conducts services and repairs on aircraft, vehicles, and equipment, receives and issues supplies, and prepares to execute operations. Designation and occupation of an AA may be directed by a higher headquarters or the unit commander.

PLANNING CONSIDERATIONS

9-62. A tactical AA is an area that is generally out of the reach of enemy artillery and the location where units make final preparations (precombat checks and inspections) and rest, prior to mission execution. Selection criteria for an aviation AA are based on the mission variables and the military aspects of terrain. Planning considerations may include–
- Map/photo recon of proposed AAs.
- Predominant environmental effects on the area.
- Identify a suitable tactical aircraft parking plan.
- Concealment from air and ground observation.
- Use of terrain to mask audio, visual, and electromagnetic signatures.
- Priority, consumption rate, and frequency of resupply for Class I, III, IV, V, VIII, IX (ground and air).
- Running estimates across all staff sections for sustainment, maintenance, and operation of the AA.
- Sufficient area for unit dispersion of subunits and their vehicles, consistent with the degree and type of rear area or enemy air threat.
- If available buildings for maintenance, billeting, mess, and headquarters. Optimally, buildings have light, heat, and wire communications.
- Suitable entrances, exits, and internal routes. Ideally, unit personnel can easily secure entrances and exits.
- Terrain allowing the observation of ground and air avenues of approach into the AA.
- Good drainage and soil conditions that support unit vehicle movement and field sanitation.

9-63. Figure 9-2, page 9-12 is an example of an aviation task force AA.

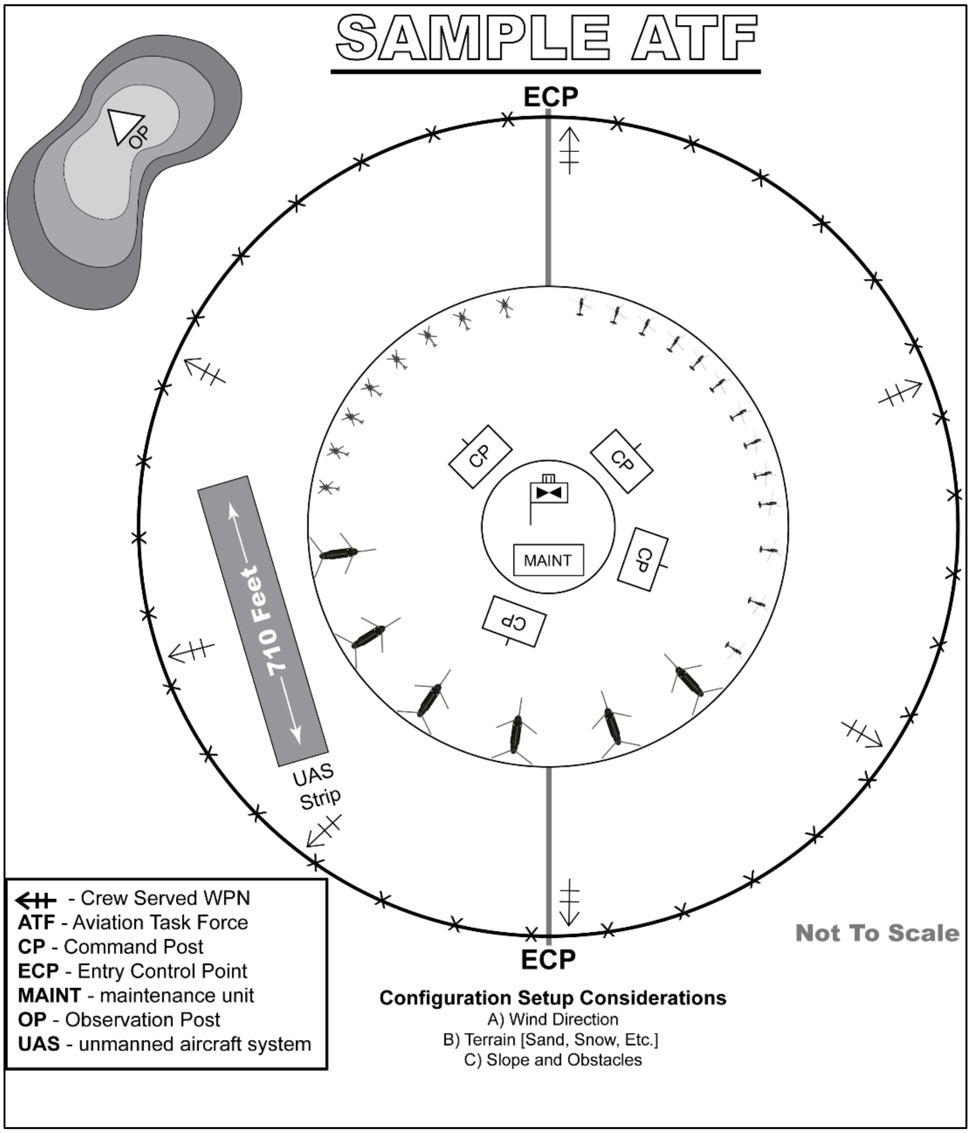


Figure 9-2. Example aviation task force assembly area

9-64. In addition to analyzing and identifying suitable areas for aircraft parking, aviation task forces with organic or attached UAS must also incorporate a launch/recovery site into their TAA planning considerations. The main differences between launch/recovery sites for the MQ-1C and RQ-7B are length and condition of surface, with the Gray Eagle requiring a significantly longer, improved runway for operations.

9-65. The RQ-7B Shadow requires a minimum 710ft by 50ft improved/unimproved runway surface for launch and recovery in accordance with the Shadow operator's manual, TM 1-1550-689-10-1. The site should also allow for sufficient obstacle clearance by the air vehicle on both takeoff and landing (700m away from a 100ft obstacle).

9-66. The MQ-1C Gray Eagle requires a 4,500ft by 100ft improved runway with a 250ft threshold at either end. This surface adheres to strict requirements in accordance with the Gray Eagle operator's manual, TM 1-1550-696-10-1. Due to these launch/recovery requirements, and the mission and operational variables, the Gray Eagle Company or platoon may be geographically separated from a CAB or aviation task force, and may require more robust communication and logistics support to fully integrate into CAB / task force operations.

OCCUPATION

9-67. The designated quartering party personnel will typically be responsible for conducting the reconnaissance, establishing security at the AA, and determining CBRN conditions. Observation posts should be placed along the most likely avenues of enemy approach, and the quartering party should be used for any immediate security within the interim perimeter prior to arrival of the main body.

9-68. The advanced party has the role of ensuring the main body is able to begin combat and support operations as quickly as possible. The advanced party will be responsible for augmenting the security efforts within the proposed site once reconnaissance and initial occupation is complete. The advanced party assists in establishing communications within the CP, determines the locations of the company areas, and the FARP.

9-69. As the main body arrives at its new location, the quartering party representative guides them through the AA to their designated locations and vehicle positions. Organization of the area is based upon the unit order of march, and prevents congestion at the release point. Once in position, units and vehicles make adjustments. Unit and equipment positioning considerations include–

- Locations selected to afford dispersion and hide positions.
- Terrain suitable to launch and recovery SUAS.
- Vehicles oriented and positioned to facilitate defense.
- CPs and supply containers centrally located for security, ease of support, and road access.
- Communications by digital means, established within companies and with the task force.
- Antennas are remoted and masked to provide maximum stand off from CPs to reduce vulnerability to enemy direction finding.

9-70. After the occupation of the AA, the unit prepares for future operations by using the military decision making process and conducting priorities of work according to the battalion OPORD. These preparations include—

- Establish and maintain security (at the appropriate readiness level).
- Refine the tactical AA security plan.
- Accounting for personnel and equipment.
- Employ identified personnel for security teams to conduct dismounted security patrols to clear dead space and restrictive terrain.
- Conduct precombat checks and precombat inspections.
- Perform maintenance on aircraft and AGSE equipment.
- Engineer support to improve positions for forward arming and refueling points, UAS landing strips, and fighting positions.
- Establish priorities for the distribution and replenishment of all classes of supply.
- Coordinate for supply transportation and distribution.
- Conduct refuel and rearm operations.
- Conduct rehearsals and other training for upcoming operations.
- Adjusting task organization, as necessary.
- Reestablish vehicle load plans, as needed.

SECURITY

9-71. Aviation forces inside an AA must continuously evaluate their security posture based on their distance from the line of contact, known and potential enemy activity in the local area and by the presence of other units between them and the enemy. If the AA is well forward, organic local security is augmented by proximity to other combat or support units. Aviation commanders must balance the generation of combat power with AA security. Mission support requirements typically reduce the amount of Soldiers available to provide security of the AA and may require external support from higher or adjacent ground units.

9-72. In keeping with their mission and the tactical situation, units in AA employ active security measures. These measures include reconnaissance and patrolling, visual and electronic surveillance of ground and air avenues of approach.

9-73. An AA is not designated as a defensive position, but the battalion or company organizes it so that a ground attack threat can be detected and defeated. Security against air attack is best provided by passive measures designed to conceal the unit from detection. Additional security considerations include—

- Establishment of entry control points.
- Observation posts cover key terrain features and likely avenues of approach.
- Patrols, sensors, and surveillance devices augment security.
- Local area security by task force aircraft synchronized with the collection plan.
- Movement is confined to roads, precluding needless surface disruption that could leave a visible aerial indicator.
- Restrict unnecessary vehicle movement.
- Understand the ROE.
- Defined weapons status based on anticipated threat. Noise, light, and electromagnetic discipline is strictly enforced.
- The readiness condition level is established and adjusted based on the mission variables.
- Camouflage and concealment is maximized to reduce vulnerability to air and ground observation.

Range Card and Sector Sketches

9-74. The success of a defense depends on the positioning of Soldiers and weapons. To position their weapons effectively, Soldiers should know the characteristics, capabilities, and limitations of their weapons, the effects of terrain, and the enemy. Leaders also consider applicable ROE and potential threats to the AA when assigning weapons status and making force protection decisions. Senior NCOs, first sergeants, or a commander's representative should ensure that each weapon can effectively engage the enemy, and the sum of the weapons can effectively mass coordinated direct fires on the enemy.

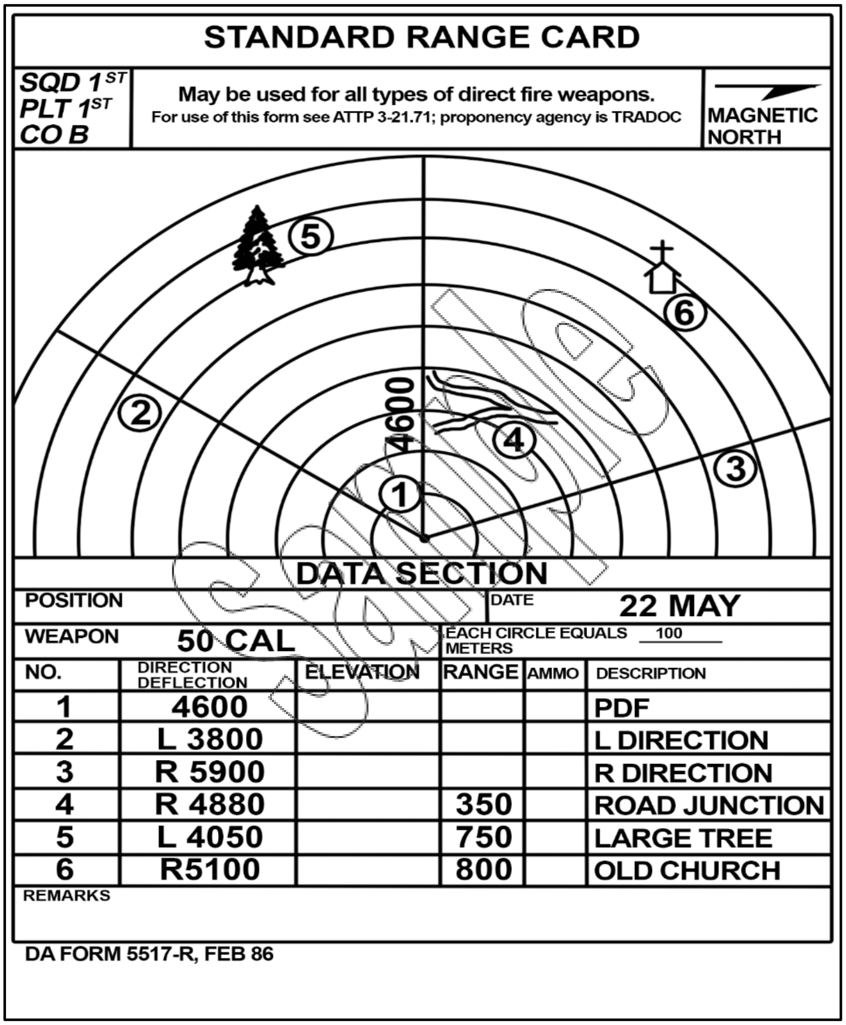
Coordination with Adjacent Units

9-75. Coordination with adjacent units will achieve effective force protection plans, interlocking fields of fire, and assist in the prevention of fratricide. Each unit should coordinate with any adjacent unit within the aviation TAA. This will ensure that all elements are able to mutually integrate the effects of weapon systems, obstacle plan, and scheme of maneuver to achieve the greatest effect on the enemy force. The first sergeant or commander's representative should ensure that this coordination takes place. Contact points are established to ensure friendly forces meet at some specific point on the ground to tie in their flanks. In many cases, the exchange of sector sketches will accomplish most of the coordination necessary for tying in the flank positions.

Range Cards

9-76. A range card is a sketch of the assigned sector that a direct fire weapon system is intended to cover. A range card aids in planning and controlling fires and aids the crews and squad gunners in acquiring targets during limited visibility. It is also an aid for replacement personnel or platoons or squads to move into the position and orient on their sector. The individual soldier or gunner should make the range card so that he becomes more familiar with the terrain in his sector. He or she should continually assess the sector and, if necessary, update his range card. To prepare a range card, the gunner should know the following information. See figure 9-3, page 9-15 for an example of a range card using DA Form 5517-R, Standard Range Card.

- Sectors of fire.
- Target reference points, target groups, or point targets.
- Dead space.
- Maximum engagement line (MEL).
- Weapons or gunners reference point.
- Weapons symbol, left and right limits, and north seeking arrow.



STANDARD RANGE CARD

SQD 1ST PLT 1ST CO B	May be used for all types of direct fire weapons. For use of this form see ATTP 3-21.71; proponency agency is TRADOC	MAGNETIC NORTH

DATA SECTION

POSITION		DATE	22 MAY
WEAPON	50 CAL	EACH CIRCLE EQUALS 100 METERS	

NO.	DIRECTION DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1	4600				PDF
2	L 3800				L DIRECTION
3	R 5900				R DIRECTION
4	R 4880		350		ROAD JUNCTION
5	L 4050		750		LARGE TREE
6	R5100		800		OLD CHURCH

REMARKS

DA FORM 5517-R, FEB 86

Figure 9-3. Standard range card with .50 caliber machinegun data

Note. For more information on range cards, see FM 3-21.8.

Sector Sketches

9-77. Individual soldiers, crew-served weapon teams in the squads, and vehicle gunners prepare range cards for the TAA. The platoon leader reviews the squads' and sections' sector sketches and ensures the sketches meet the mission intent. Should any gaps or other flaws be found, the platoon leader adjusts weapons locations or sectors. Once the platoon leader approves the squad and section sector sketches, a consolidated report for the company commander is prepared and incorporates this into a consolidated platoon sector sketch. The platoon leader or platoon sergeant physically combines all sector sketches (and any separate range cards) to prepare the platoon sector sketch. The sector sketch can be on acetate taped to a map or it can be a hand drawn sketch.

9-78. Once the sector sketches are drawn as accurately as possible, a copy should remain at the position and another sent to the squad or platoon leader for higher dissemination. Figure 9-4, page 9-16 is an example of a sector sketch. The following information at a minimum, should be listed within the sketches. Further information on sector sketches can be found in FM 3-21.8.

- Main terrain features in the sector and the range to each.
- Each primary position.
- Engagement area or primary and secondary sectors of fire covering each position.
- All weapon type final protective line (FPL) or primary direction of fire (PDF).

- Type of weapon in each position.
- Reference points and target reference points in the sector.
- Observation post locations.
- Dead space.
- Obstacles.
- Maximum engagement line (MEL) for all weapon systems.
- Indirect fire targets.

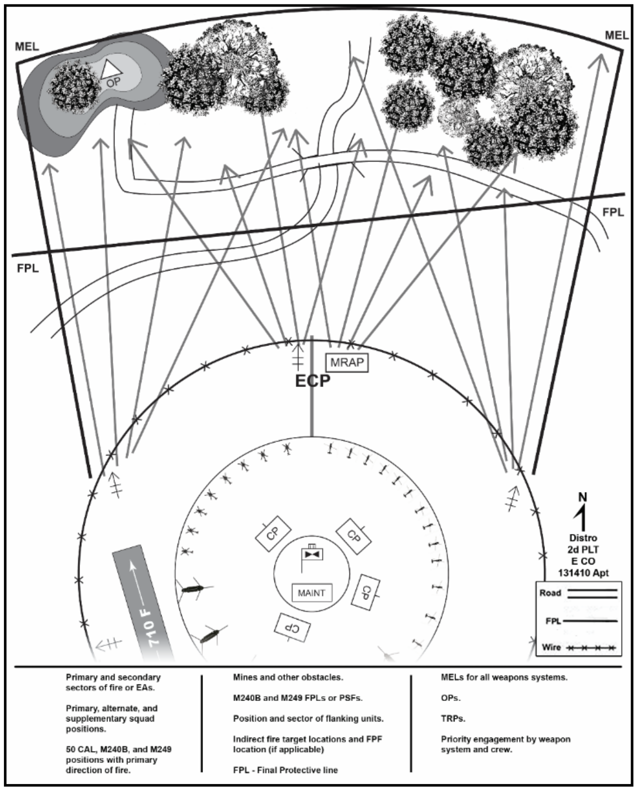


Figure 9-4. Platoon sector sketch

ACTIONS IN THE ASSEMBLY AREA

9-79. The aviation task force focuses all actions in the AA on preparing for future operations. This includes but is not limited to the following actions–

- Planning and preparation for future operations concurrently with maintenance and administrative activities.
- Concentrate on scheduled and unscheduled aircraft maintenance. The unit pays special attention to those maintenance tasks that may be too time-consuming or difficult to perform during combat operations.
- Resupply and refuel operations in the AA. Replenish items used in previous operations, to assemble stocks for future operations, and to replace damaged and contaminated supplies as required.
- The unit may require training if issued new or modified equipment while in the AA. Small unit training may be necessary if large numbers of replacement personnel are introduced into the unit, especially if significant numbers of key leaders are replaced.

9-80. Within the TAA, aviation units safeguard critical OPSEC information that would be beneficial for adversaries. This is achieved through the utilization of digital mission planning systems that minimize those potential threat exposures of mission critical information. Aircrews generally limit the amount of information carried during mission execution to only the required information to accomplish the specific mission. Safeguarding critical OPSEC information includes but is not limited to the following–

- Flight routes.
- Altitudes.
- Mission plans.
- Pre-positioning of aviation units.
- Communication security.
- AMPS.

SURVIVABILITY OPERATIONS

9-81. Survivability operations are those military activities that alter the physical environment to provide or improve cover, concealment, and camouflage. Survivability covers all aspects of protecting personnel, weapons, and supplies while simultaneously deceiving adversaries.

9-82. Commanders determine how much of their logistical support assets are focused on sustainment operations versus security. The larger the number of aviation support Soldiers committed to operations other than sustainment the less effective sustainment maintenance operations are. The commander must weigh the threat against the desired level of support and determine the acceptable level of risk. In some cases, ground forces may be available or required to augment security. Being able to protect support functions from destruction or degradation equates to survivability. Robust and redundant security contributes to survivability but may deter economy of force operations. (TC 3-04.7)

9-83. Aviation AA sites are extremely valuable targets composed of aviation platforms, CPs, maintenance facilities, FARPs, and sleeping areas. Survivability considerations include the following–

- Protect aircraft parking areas, UAS launch sites, FARPs, runways, maintenance facilities and CPs.
- Store and safeguard logistic sites for aircraft and vehicle specific parts needed for scheduled and unscheduled maintenance in MILVANs, tents, or in the open.
- Utilize protection measures for Soldiers, personnel, and equipment such as berms, revetments, and overhead cover.
- Aircraft, vehicle, and personnel emergency displacement procedures (scatter plan).
- Co-locate and integrate with adjacent units for increased security and synergistic logistics functions (Brigade support battalion).

SECTION III - FORWARD ARMING AND REFUELING POINT OPERATIONS

OVERVIEW

9-84. A FARP is a sustainment capability that increases the operational reach of aviation units. A FARP's primary purpose is to provide fuel and ammunition within the area of operations as needed and is a key planning and employment consideration vital to mission accomplishment. Additionally, an aviation commander can further enhance FARP capabilities through task organization in order to provide communications, maintenance support and security that may become critical for returning aircraft and equipment to an acceptable mission capable condition. Refer to ATP 3-04.94 for additional FARP information.

PURPOSE

9-85. FARPs provide commanders with increased flexibility, mobility, and lethality by extending the range and duration of aircraft support in an area of operations. A FARP is a temporary facility that is organized, equipped, and deployed as far forward, or widely dispersed as tactically feasible to provide fuel and ammunition. A FARP may be task organized to support single or continuous operations, provide maintenance support, or air traffic services as well. FARPs are employed in support of aviation operations when the distance covered or endurance requirements exceed normal capabilities of the aircraft. FARPs may also be employed during rapid advances, when field trains are unable to keep pace.

FORWARD ARMING AND REFUELING POINT PLANNING

9-86. Commanders must understand the types of FARPs and rapid refuel points (RRP) that can be utilized to accomplish aircraft fuel distribution. RRPs are established for large scale missions that require a high volume of aircraft to rapidly refuel, such as air assaults. The bulk fuel storage and distribution capability of the RRP minimizes ground time and enhances the rapid buildup of combat power by allowing the air assault task force to refuel a complete light and/or heavy serial simultaneously. RRP setup requires longer duration operations that is time consuming to establish and difficult to move.

9-87. Commanders and their staffs establish priorities, estimate consumption rates, and frequency of resupply when planning FARP operations. Supply officers and sustainment personnel ensure the synchronized distribution and transportation of the fuel, ammunition, and equipment essential to FARP operations. The ability to sustain FARPs directly impacts the ability to sustain aviation operations across wide areas and complex terrain, and ultimately increases the operational reach of Army Aviation.

9-88. The FARP is divided into three sections: Class III section, Class V section, and an armament section. Each section is responsible for specific tasks; however, the distribution platoon leader maintains centralized control. When planning the necessary number of rearm and refuel points for a FARP, the leaders and staffs should always consider the following–

- The number of operational FARP points and FARP manning.
- The number and type of operational aircraft.
- How aircraft are controlled in and around the FARP (ATS requirements).
- A dedicated aircraft maintenance plan that includes a pad to ensure maintenance problems do not hinder a refueling and rearming pad or degrade the FARP operation.
- Proper maintenance equipment to maintain each weapon system. Some examples are oils and materials for cleaning weapons, and a multimeter for conducting stray current checks.

9-89. Knowing the critical elements during the planning, preparation, and execution phases of a FARP is essential. Refer to figure E-3 in appendix E for the appropriate information to include into an SOP or use as a guide.

9-90. The FARP should have enough organic security to defend against anticipated threats. Too much security equipment will hinder the movement of the FARP; however, inadequate security will limit the FARPs ability to protect itself long enough to move. The aviation unit must coordinate with the ground unit responsible for the AO in which the FARP is to be located for air defense and ground security support. Normally, the FARP will be integrated into the brigade's air defense umbrella.

9-91. If the FARP is attacked, personnel must be able to execute a defensive posture and execute an aircraft scatter plan. Unit SOPs should contain all security procedures necessary to protect the FARP element.

9-92. Fighting and extinguishing petroleum fires effectively requires a well-organized and rehearsed plan. Every Class III supply point operation should have a fire prevention and firefighting plan, with battle drills to train personnel for contingency events.

FORWARD ARMING AND REFUELING POINT TYPES

9-93. There are three primary types of FARPs that can be employed to support and sustain aviation operations: active, silent, and jump. Each FARP is normally established by battalions or aviation task forces, which are manned and equipped to refuel and rearm aircraft under combat conditions. The site selection, type of FARP, total number of points, and other planning considerations are based on the mission variables

ACTIVE

9-94. An active FARP provides refuel and rearm support in the aviation unit’s main area of operations. This FARP provides the fuel and ammunition necessary for daily operations. The main function of an active FARP is to provide rapid simultaneous refueling and rearming of combat aircraft to facilitate continuous aviation operations to support the ground maneuver commander.

SILENT

9-95. Units may deploy multiple FARPs for long duration missions. Certain FARPs will serve as active while the rest remain silent until activated. Activation occurs at predetermined times or decision points. Any silent FARP will have the same equipment and personnel necessary to assume the role of the active FARP. Silent FARPs may require additional planning considerations to reduce the probability of detection prior to going active.

JUMP

9-96. For missions when scope, assets, and time are limited, a jump FARP can be used. The jump FARP allows the commander flexibility and provides rapid refuel/rearm capability when normal FARP operations are not tactically sound. A jump FARP may be composed of any number of systems and configurations to provide expeditionary refueling capabilities and ammunition (when mission dictates). Existing refueling systems include the Advanced Aviation Forward Area Refueling System (AAFARS), M978 HEMTT aviation refueling system (HTARS), M969 semi-trailer, forward area refueling system (FARE-2), fat cow, or other joint enablers. The jump FARP can be transported by ground or air assets as dictated by time or geographical constraints and the type of configuration used. See ATP 4-43, *Petroleum Supply Operations*, for further information on configurations and ATP 3.04-94, *Army Techniques for Forward Arming and Refueling Points* for information on FARP operations.

EMPLOYMENT

9-97. The ASB and forward support company/troop (FSC/FST), each have different areas of employment that help create a successful functioning FARP. This section will discuss what the ASB and FSC/FST provide for employment.

AVIATION SUPPORT BATTALION

9-98. The distribution company within the ASB provides support for the aviation brigade and receives, temporarily stores and issues Class III Bulk. The distribution company also establishes and operates Class III Aviation Fuel and Class V Ammunition transload sites in the brigade sustainment area to resupply brigade operations. Utilizing the brigade and battalion assets, the distribution company provides fuel to all brigade aircraft within the AA to include FARPS.

FORWARD SUPPORT COMPANY/TROOP

9-99. Aviation battalions are assigned an organic FSC/FST which is responsible for accomplishing FARP operations within the battalion. The distribution platoon within the FSC/FST assigns Class III petroleum-and Class V ammunition personnel to the FARP. FSC/FSTs in an attack reconnaissance battalion receive armament maintenance personnel from the component repair platoon of the aviation maintenance company for FARP operations. The distribution platoon provides aircraft refuel capability, ammunition specialists, water, and transportation. FSC/FSTs can be augmented by the ASB personnel and equipment when mission dictates.

EQUIPMENT AND OPERATIONS

9-100. AAFARS is used to simultaneously refuel four helicopters in tactical locations. AAFARS setup is a four-point refuel system separated by 100 feet, capable of providing a minimum of 55 GPM simultaneously to all points by center point refueling (D-1 nozzle), closed circuit refueling (CCR), and open-port nozzles. Ground vehicles such as HMMWVs can be beneficial as an AAFARS platform to emplace the FARP that creates increased mobility, maneuverability, and ease of concealment. However, additional support is required to complete this FARP package.

9-101. The 2500-gallon HEMTT tanker aviation refueling system kit expands the HEMTT tankers capability to hot refuel up to four helicopters simultaneously using the on-board fuel-servicing pump. The equipment is lightweight, transported in the storage box of the HEMTT, and can be used in forward areas. There are various HEMTT models that can be utilized for different FARP capabilities of fuel and ammunition distribution such as the M977 cargo, M978 tanker, and M989 trailer.

9-102. Modular fuel system (MFS) provides a rapid fuel distribution and storage capability without bulk fuel storage or engineer support. The MFS employs a flatrack on the truck and one on the trailer, capable of transloading 5000 gallons of bulk petroleum per trip. The MFS increases mobility, capacity, and speed in fuel distribution, while decreasing deployment and recovery time. It is compatible with the HEMTT, load handling system, palletized load system truck and trailer, and can be used at any location without the availability of construction and materials handling equipment (MHE).

9-103. Aerial emplacement FARPs are employed by two methods, Fat Cow/Wet Cow and Fat Hawk/Wet Hawk. Each method offers improved battlefield mobility, broadens the FARP site selection, and minimizes threat potential in forward areas. The major disadvantages are support aircraft needed, dedicated aircraft to move Class III/V products and MHE, heavy aircraft traffic within the FARP, and security of this high value capability.

9-104. The CH-47's extended range fuel system (ERFS) II, is a modular interconnectable system that can be configured with up to three 800-gallon tanks. ERFS II supplies up to 2,400 gallons of fuel to two refueling points 200 feet from the helicopter and is known as Wet Cow. When the aircraft transports fuel and ammunition it is called Fat Cow. The system provides a safe and convenient method of increasing the range and endurance of the CH-47, to include worldwide self-deployment capability, and transporting fuel for forward area refueling operations.

9-105. The UH-60 has a similar refueling method using the ERFS that is carried inside the aircraft while fuel is extracted from the external or internal fuel tanks. A Fat Hawk is a UH-60 helicopter providing fuel and ammunition, and a Wet Hawk provides fuel only. The crashworthy external fuel system (CEFS) allows the UH-60 to carry either 230- or 450-gallon external fuel tanks. Accordingly, fuel available will be based off the aircraft configuration. Based on weight, the configuration will also affect the amount of ammunition the aircraft can carry.

AMMUNITION SAFETY

9-106. The ready ammunition storage area (RASA) contains the required ammunition amount to support the mission beyond the minimum for one load. The RASA requires separate areas for the assembling and disassembling of rockets, aircraft flares, and malfunctioned ammunition. The RASA is limited to 2,000 pounds of net explosive weight (NEW) per cubicle, when computing NEW calculations refer to TM 9-1340-222-20.

9-107. The basic load storage area (BLSA) is a separate area from the RASA which contains the specific quantity of ammunition authorized to be on hand at the unit to support three days of combat. In addition to aircraft specific ammunition, the BLSA stores small arms, grenades, and mines.

9-108. All ammunition should be stored properly, shaded, and protected from the weather. In base camps or semi-permanent training facilities, units should build barricades around the RASA or BLSA, and rearm pads a minimum of three feet thick to reduce hazards from a fire or explosion. Rockets are always pointed toward berms, barricades, and open spaces away from aircraft, personnel, and built-up area.

SECTION IV – AIRCRAFT RECOVERY

OVERVIEW

9-109. Aviation mission planning is not complete without a detailed plan for aircraft recovery. Recovery operations are supported by the unit's SOP and use internal unit resources to the greatest extent possible as the primary means of returning aircraft back to home station or to the nearest location to facilitate repair. However, recovery may require additional coordination with the aviation support company (ASC) or adjacent support units for situations that are beyond the capabilities of the aviation company or troop.

9-110. Aircraft recovery is time sensitive within the tactical situation and the ground force commander's intent. An efficient response requires properly trained and resourced maintenance and operations personnel. Coordination is a vital component to success because of the complex nature of aircraft repairs. Initial information must be accurate and detailed in order to ensure recovery teams know as much as possible about the aircraft damage so that assembled maintenance teams can select required resources based on the following elements: problem, plan, people, parts, time, tools, training (P4T3).

9-111. Aircraft recovery and maintenance evacuations are closely related. However, maintenance evacuation is the physical act of moving an aircraft from one maintenance location to another. Aircraft recovery missions include the assessment, repair, and retrieval, if possible, of aircraft forced down due to component malfunction, accident, or combat-related damage that prevents the continued safe flight or operation of the aircraft.

9-112. This section provides an overview of army aircraft recovery operations. Detailed structure, responsibilities, training, and planning considerations are addressed in TC 3-04.7 and FM 3-04.513.

RESPONSIBILITY

9-113. Aircraft recovery operations requires all commanders, leaders, and Soldiers understand their levels of responsibility. The following section will break down the levels of responsibility within the aviation brigade CP, aviation battalion/squadron, task force, AMC/AMT, and ASC.

AVIATION BRIGADE COMMAND POST

9-114. During combined arms maneuver, the aviation brigade CP provides overall mission command during recovery operations within the area of coverage. However, more decentralized aviation operations may require coordination with adjacent and higher-level logistics formations in unified land operations. Based on resources, communications, and situational awareness, the brigade CP assigns the most comprehensive organization to facilitate a successful recovery operation. Once the initial METT-TC analysis is achieved with the required representatives from each unit or area of expertise, the brigade CP may assign mission command to another organization. This action may be influenced by factors such as aircraft assessment, local threat, and required mission time. A successful recovery operation requires shared understanding and coordinating efforts involving the aviation brigade CP, AMC/AMT, ASC/AST, ASB, supporting units, and any ground element involved in the operation.

9-115. The BAMO will monitor and provide continuous maintenance and logistics related information to the commander and staff as it pertains to the operation. The BAMO participates in the recovery planning process and risk management throughout the recovery operation. In addition, the BAMO provides the commander with current and future capabilities based on maintenance and operational needs.

AVIATION BATTALION/SQUADRON OR TASK FORCE

9-116. The owning downed aircraft battalion or squadron is responsible for immediately notifying the aviation brigade CP, and coordinating the initial planning process for recovery with the battalion/squadron AMC/AMT. The AMC/AMT is typically responsible for conducting recovery operations within its capabilities. Should the recovery operation exceed unit capabilities, support is coordinated by the aviation brigade CP to the ASB's ASC or squadron's AST.

9-117. The battalion/squadron commander retains initial responsibility for aircraft recovery. Aircraft recovery operations are weighed according to complexity and urgency of the mission, force size, and density of recovery assets at the commander's discretion. The production control officer (PC Officer) will monitor and provide continuous maintenance and logistics related information to the commander and staff as it pertains to the operation. They participate in the recovery planning process and risk management throughout the recovery operation. In addition, the PC Officer provides the commander with current and future capabilities based on maintenance and operational needs. DART and BDAR procedures will be conducted per TC 3-04.7, FM 3-04.513, and each specific MDS maintenance technical manual. The commander authorizes the use of BDAR, cannibalization procedures, and ensures any aircraft destruction considerations are discussed and approved at the appropriate command level.

AVIATION MAINTENANCE COMPANY/TROOP

9-118. The preferred method of aircraft recovery within the AMC/AMT is self-recovery and BDAR. Dedicated aircraft recovery serves as a contingency operation. Aerial or ground recovery is typically conducted by the aviation support company in order to preserve the AMC/AMT OPTEMPO and flexibility, but the AMC/AMT can perform internal air and ground DART when properly resourced. The AMC/AMT will conduct standard repairs or, when authorized by the commander, conduct combat maintenance and BDAR to self-recover the aircraft onsite. The AMC commander ensures the DART is properly resourced, trained, and rehearsed to facilitate a shared understanding of the operation.

AVIATION SUPPORT COMPANY

9-119. The ASC is staffed and equipped to conduct ground recovery operations of CAB airframes. The ASC is generally responsible for both air and ground dedicated recovery missions. Additionally, the ASC can perform self-recovery and conduct BDAR procedures as part of a DART mission. If necessary, personnel and equipment may be provided to augment the AMC/AMT.

9-120. The ASC commander is responsible for forming a proficient DART with rapid response times and robust capabilities expanding beyond the AMC/AMT, with the primary purpose of conducting aerial and ground dedicated recovery missions. Aircraft in the aviation brigade area of coverage not assigned to the brigade may be supported by the ASC.

TASK ORGANIZATION

9-121. Task organization results in a blended maintenance structure that will contain elements of various AMCs augmented with personnel and equipment from an ASC. In these cases it is important to delineate DART responsibilities and address requirements for a responsive effort.

AIRCRAFT RECOVERY TYPES

9-122. Aircraft recovery is the actions taken to extricate damaged or disabled aircraft for return to friendly control or repair at another location. Recovery is a specialized operation of retrieving an immobile, inoperative, or abandoned aircraft from its current location and returning it to a mission capable status or maintenance repair site for assessment and possible retrograde. Recovery can be accomplished by on-site repair or through an accepted level of capability that will allow for limited flight. Aircraft that cannot be flown within an acceptable timeframe will be recovered by dedicated means that requires an extensive amount of coordination and equipment for air or ground extraction methods.

SELF RECOVERY

9-123. Self-recovery is the action required for the aircraft to fly from the current position under its own power to rejoin the mission or to a maintenance repair facility for additional repairs or inspections. This is the preferred aircraft recovery method because it requires the least amount of dedicated resources to accomplish. Self-recovery begins at the location of aircraft inoperability and ends with the completion of standard maintenance and/or battle damage assessment and repair (BDAR) procedures to safely fly to a secure area or rejoin the mission. A DART from the aviation maintenance company/troop (AMC/AMT) may be sent to the aircraft site with the specific repair parts, equipment, and materials identified to make necessary repairs.

IMMEDIATE RECOVERY

9-124. Immediate recovery is performed by organic assets within the flight mission. These assets may include the aircraft's crew requiring recovery, other aircrews participating in the mission, or DART personnel accompanying and supporting the flight.

9-125. Immediate recovery of aircraft is possible when aircraft at the scene of the forced landing can be assessed, fixed, and returned to service, or prepared for a one-time evacuation mission to a maintenance site in a minimal amount of time. The time required to repair the aircraft at the scene depends on the tactical situation and condition of aircraft, which may result in a delayed recovery operation.

DELAYED RECOVERY

9-126. Delayed recovery is performed by a DART not in the flight. Delayed recoveries are categorized as deliberate and hasty. A deliberate DART uses personnel and assets that remain on standby at a predetermined location for the duration of the mission. A hasty DART uses personnel and assets that remain on-call and readily available while awaiting notification of a mission requirement during normal operations.

DEDICATED RECOVERY

9-127. Dedicated recovery is the extraction of an aircraft by means of an aerial or surface recovery vehicle to a maintenance facility for repairs or inspections. Dedicated recovery begins when the aircraft is determined to be unable to self-recover and ends upon safe arrival to a maintenance repair facility through means of aerial or ground movement.

9-128. Aerial dedicated recovery involves attaching the aircraft to suitable airlift recovery equipment to facilitate a sling load flight to the maintenance collection point or maintenance facility. All downed aircraft must be rigged according to applicable TMs. Planning considerations include a detailed analysis of the recovery site, onsite recovery challenges to include obstacles and visibility conditions, any associated threat, and power required versus power available reduction for high altitudes.

9-129. Ground dedicated recovery uses a crane, or similar capable pieces of equipment to perform the lift, instead of a helicopter. Aircraft rigging and disassembly of components due to aircraft crash damage, road obstacles, or size of transport vehicle are performed using appropriate aircraft TMs. The emphasis of ground recovery is to minimize further aircraft damage and ensure ground crew safety during the procedure. Planning considerations include route security assets needed, estimated time to conduct the recovery, equipment and transportation requirements needed, and route reconnaissance to include terrain type and accessibility.

DOWNED AIRCRAFT RECOVERY TEAM

9-130. The DART is initially formed from aviation brigade or aviation task force assets and is comprised of preselected ASC and/or AMC/AMT personnel. CAB and task force headquarters must coordinate with the AMC/ASC and SPO to conduct battle drills within the BN and BDE staff elements to establish unit SOPs and identify shortcomings. Unit commanders at every level play a critical role in leading DART operations.

9-131. The DART may respond to an aircraft recovery mission from within the unit, a supported adjacent unit, or an aircraft platform within the operational area. Normally, the DART is transported with their equipment by air to the downed aircraft site. Upon mission completion, they are then extracted by air. See Figure 9-5, page 9-25.

9-132. Upon notification of a downed aircraft, commanders must immediately send a quick reaction force (QRF) to the aircraft location to secure the area, assist downed aircrew/passengers, provide medical support, and conduct an initial evaluation of the aircraft condition. The minimum personnel within the QRF should be the ground security element and at least one member of the DART. This will ensure protection of the crash/accident site and an accurate determination of the required follow-on actions by medical personnel, DART, maintenance, and/or ground forces.

9-133. The DART must train together to be proficient with every aspect of downed aircraft mission requirements, including BDAR, and recovery tactics, techniques and procedures. Team composition should be tailored to the mission with capabilities that will address damage evaluation, repair procedures, armament and ordnance safety, and sterilization of the aircraft if needed.

9-134. Members of the DART include the following aviation Soldiers:

- Officer-in-Charge (OIC) (Maintenance Test Pilot).
- RL 1 aviator (in appropriate MDS for self-recovery).
- NCOIC (QC Shop technical inspector).
- Mechanics to repair aircraft and/or prepare for recovery.
- 15B/G/D component repair experts to troubleshoot damage, isolate faults, and/or repair aircraft.
- 15H mechanics and 15F/N avionics repairers (situation dependent).
- 15Y armament specialists to download munitions, safe aircraft, troubleshoot, or repair damaged weapons and avionics systems.
- 5E/W Unmanned Aircraft Systems Repairer/Operator (situation dependent).
- Joint combat assessment team personnel (as required).
- Security element.

9-135. The DART OIC is trusted with the responsibility of a successful aircraft recovery mission and performs onsite mission command of the operation. Due to the inherent complexity involved in a DART mission, the OIC should be knowledgeable about air ground operations. The OIC is responsible for training, coordinating, organizing, assembling, and assigning the appropriate DART package to affect aircraft recovery. The OIC may control any combination of security requirements, tactical vehicle operations, and aircraft operations. The AMC/AMT OIC will coordinate with the ASC/AST if recovery is beyond the capability of the AMC/AMT. If assigned to the ASC/AST, the OIC will coordinate with the AMC/AMT to effect recovery of the downed aircraft.

9-136. The DART NCOIC is responsible for training and preparing the team for recovery mission execution. The NCOIC conducts precombat checks and precombat inspection, directs repair and rigging operations, and provides oversight during all phases of the DART.

9-137. DART members include specially trained non-aviation Soldiers proficient in other areas which enable commanders to tailor the DART to meet unforeseen challenges. The following non-aviation Soldiers may include:

- Communications Specialist from S6 trained to assist with radios, communications security fills, and provide SATCOM communications.
- Petroleum Specialists trained to defuel an aircraft, if weight must be reduced to facilitate a sling load or ground crane recovery.
- Safety Officer/NCO to document aircraft condition, protect the crash site, and conduct initial investigation of the incident/crash.
- Soldiers from any non-aviation specialty tasked with security of the downed aircraft location.
- Medics from BN Aid Stations are trained to support combat operations or potential injuries encountered while conducting aircraft recoveries.
- Maintenance personnel and recovery vehicle from the FSC/FST maintenance platoon for DART ground movements.

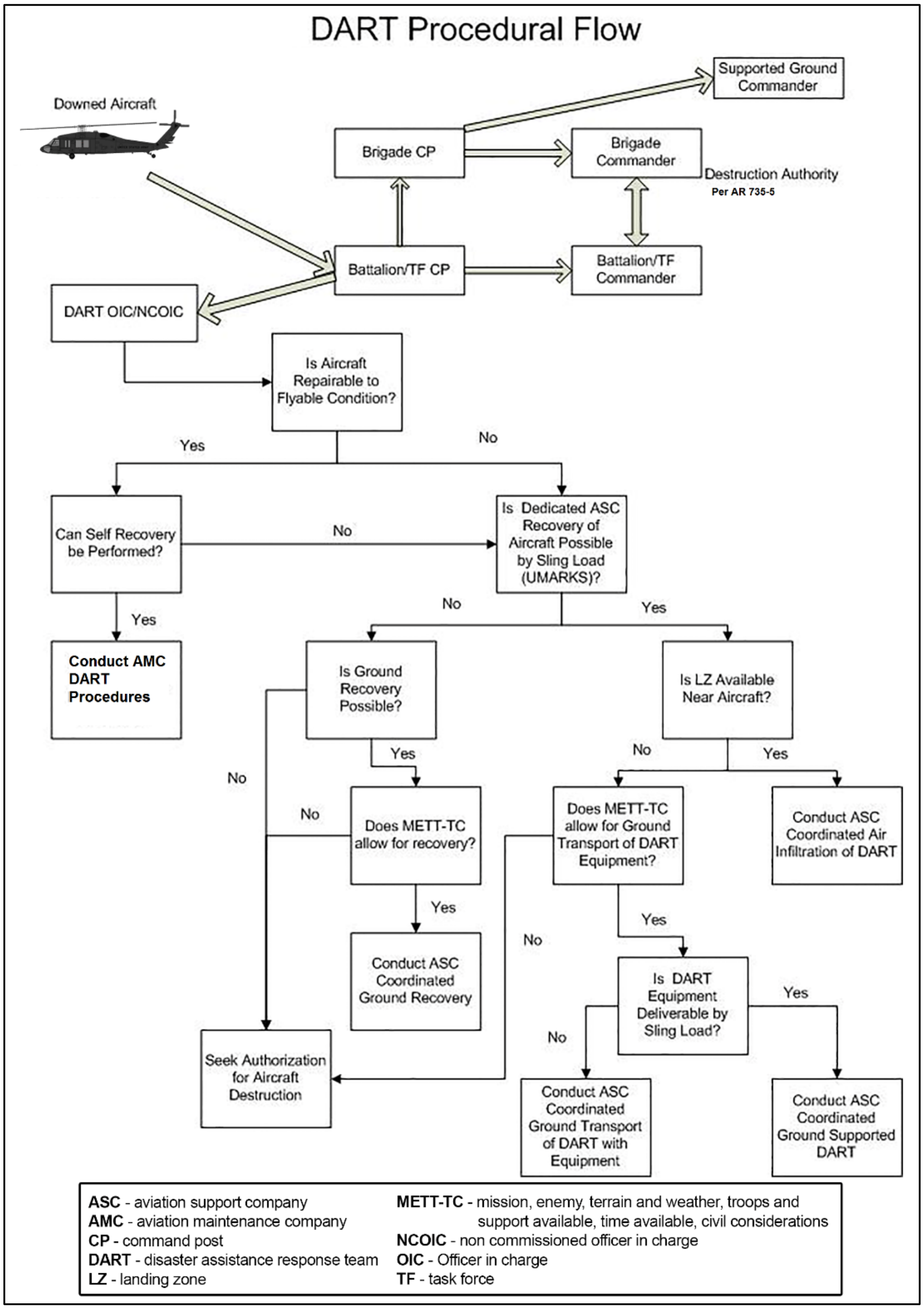


Figure 9-5. Typical downed aircraft recovery team flow

TRAINING

9-138. The execution of an aircraft recovery mission requires coordination across the battalion, the brigade, and may include supported ground elements. Training for aircraft recovery is complex and involves a large portion of unit personnel in order to be an effective capability for the unit.

9-139. Aircrews should understand the basics of aircraft systems and maintenance procedures as they will, in many cases, perform an initial assessment and documentation to determine if self-recovery is possible without the need to deploy an entire DART. Aircrews must have an acceptable level of systems knowledge to adequately convey symptoms and faults for maintenance personnel that are not at the site to assess possibilities and make a determination to allow a self-recovery.

9-140. Crews on missions may only have time to transmit maintenance problems to a CP or other personnel that are not familiar with aircraft components or systems. It is important that all personnel are familiar with or are provided a documentation format for aircraft that are reporting maintenance issues. Problems and/or symptoms experienced by aircrews must be accurately reported to maintenance personnel in case aircrew contact is lost. The maintenance company must be trained to assemble, perform P4T3, and determine the best mode of transportation to the recovery site. The DART must also consider security and CBRN requirements as well as other threats to themselves and equipment.

9-141. Training should include supported ground elements when possible in order to address security concerns and to enhance capability. This planning consideration increases the potential for successful aircraft recovery.

9-142. Training opportunities should include unit capabilities for the recovery of aircraft that cannot be repaired on-site. Unit Maintenance Aerial Recovery Kits (UMARK) allow for aircraft rigging to facilitate sling-load operations or for ground recovery, and is a major training event because of the resources required and the limits associated with training on unit aircraft.

9-143. Aviation battalions, squadrons and task forces must have a highly trained DART element for recovery under day, night, and NVG environments. Training exercises should be made available on a monthly basis to ensure proficiency and cohesiveness. A sample DART checklist is in Appendix E.

Battle Damage Assessment and Repair

9-144. BDAR is 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. It is a technique that can be used to facilitate a DART mission. BDAR restores the minimum essential capabilities necessary to support a specific combat mission or to enable equipment self-recovery.

9-145. Maintainers must be trained to perform BDA and to apply standard and non-standard methods of repair in order to either return the aircraft to a mission capable status, or to allow the aircraft to be flown on a one-time evacuation mission to the nearest repair facility.

Collective Training

9-146. Progressive collective training events increase recovery efficiency and reduces response times. The use of proponent approved Combined Arms Training Strategies (CATS), and the task selections associated with sustainment issues will aid the commander in the development of a training plan and management of aircraft recovery training.

Appendix A

Task Organization, Staff Considerations, Battle Drills, and Personnel Management

This appendix provides considerations for aviation formations to operate as organic units or as task forces when training and conducting decisive action. Please note, it is not all inclusive; products are used as a guide and do not supersede unit SOPs.

SECTION I – ESTABLISH THE TASK ORGANIZATION

PERSONNEL CONSIDERATIONS

A-1. Much of the initial phase of planning aviation support to unified land operations will be consumed with the division and reassignment of personnel to best support the mission and operations likely to be conducted. As a general rule, if a task force is determined to be the most suitable formation to conduct a mission, task organizing as early as possible facilities training and teambuilding. The early task organization aids in unit personnel adjustment and benefits training standardization and familiarity across the task force. Some additional personnel related task force considerations are:

- Requirements to cross-level experienced staff and leadership to support task force mission requirements.
- Identifying critical personnel shortages and low density MOSs to fill individual mission requirements.
- Family Readiness considerations.
- Flight surgeon and aid station support for split-based elements and small task forces.
- Standardization officer and instructor pilot considerations for all airframes inbound to the task force.
- Aviation Mission Survivability Officers to support specific mission requirements anticipated for task force.
- Aviation Master Gunners, who are trained and certified for each airframe, to support mission requirements for task force.
- Aviation life support equipment trained maintainers and managers.
- Pathfinders, air traffic services, public affairs and other unique personnel from higher and adjacent headquarters who might be required for augmentation.
- Changes in rating schemes that can be delayed by a sudden influx of new personnel or departure of rated individuals, as well as raters, intermediate raters and senior raters.

MAINTENANCE CONSIDERATIONS

A-2. Planning for the task organization and support relationships of maintenance personnel and equipment is critical, specifically in the realignment of the processes and procedures that ensure a smooth and uninterrupted flow of parts and supplies to the correct locations. The earlier this is accomplished during task organization, the less likely it will be for a unit to experience disruption in parts flow while deployed. Splitting an aviation support battalion four ways is one of the most significant considerations when building task forces in an aviation brigade. Additional maintenance considerations for a task force can include–

- Maintenance personnel representation for each type of airframe within the task force.
- Aviation support company augmentation requirements.
- Production control and quality control office augmentation, based on amount, type and nature of the task force.
- Sets, kits and outfits for reassigned aircraft must be cross-leveled to ensure continuity of maintenance.

A-3. Aircraft specific considerations include—

- Aviation life support equipment.
- Sets, kits, and outfits.
- Communications and satellite equipment.

MULTI-COMPONENT CONSIDERATIONS

A-4. Multi-component organizations frequently deploy together. Aligning forces as early as possible is critical to the establishment of relationships, training plans, and SOPs when units from different components are task organized together. Additional considerations for effective multi-component integration include:

- Collective training and aerial gunnery prior to deployment.
- Integration of staff personnel into CP exercises and training at home station.
- Prior arrangement of aircrews to conduct familiarization training during annual training exercises or mobilization training.
- Family readiness coverage gaps for families not collocated with the battalion rear detachment headquarters at home station.

ASSEMBLY AREA OPERATIONS

A-5. Army Aviation units may operate from AAs within a division or BCT area, or other joint or multinational headquarters area of operations when conducting combined arms maneuver or wide area security. These AAs should be outside of the range of enemy artillery, and provide the aviation unit the ability to project and sustain combat power. Specific considerations for AA operations are included in Chapter 9.

FIXED BASE OPERATIONS

A-6. Deploying aviation units initially seek operating locations which best provide mission requirement facilities and capabilities. The purpose of this initial staging base is to establish and maintain a secure area to build combat power upon theater entry. If available, aviation units occupy areas in and around an already established airfield or improved surface to facilitate sustainment operations in preparation for combat. Desired facilities include an operational tower, navigational aids, hanger facilities, helicopter parking areas, and barracks. As the unit moves forward, this base may be used to conduct aircraft sustainment-level maintenance and repairs. Other considerations include the launch and recovery of UAS.

SPLIT-BASED OPERATIONS

A-7. The CAB can conduct split-based operations, defined as the division of logistics, staff, management, and command functions over two or more areas of operation. Through task organization, the CAB can produce four ABTF/ASTF, and can receive up to two additional ABTF/ASTF or battalions/squadrons without staff augmentation and continue to conduct its mission tasks.

OPERATIONAL OVERVIEW

A-8. The ABTF/ASTF is deployed to an AO and employed by the unit to which it is assigned, attached or under OPCON, and may conduct DS and GS missions within the AO based on the higher headquarters mission and intent. It may be deployed without a senior aviation headquarters or as part of a larger aviation force. The ABTF/ASTF or its higher aviation headquarters normally operates within the AO of a supported BCT, division, corps, or joint task force. Elements of the ABTF/ASTF may operate in multiple locations within that AO.

COMMAND AND SUPPORT RELATIONSHIPS IN THEATER

A-9. All aspects of planned command relationships must be considered to ensure necessary mission command, liaison and support personnel and equipment are provided to the ABTF/ASTF organization. The following are examples of ABTF/ASTF command relationship options. This list is not all inclusive; some of the relationships reflect emerging doctrine. All command relationships have inherited challenges, but leaders set the tone for success or failure. The ABTF/ASTF can be in a command or support relationship that is—

- DS or GS to the joint task force headquarters.
- Further assigned, attached or placed OPCON or tactical control (TACON) to any of the components above.
- DS or GS to a corps, division, or BCT.
- Reinforcing or GS reinforcing to other ABTF/ASTF within the AO.
- Assigned, attached, or OPCON to a CAB or ECAB.

SECTION II – IN THEATER OPERATIONAL CONSIDERATIONS

A-10. During expeditionary operations, Army Aviation maintains the ability to task organize to meet mission requirements within the commander's intent. In decisive action, this may include organizing for defense support to civil authorities missions or for stability operations in a permissive environment. Army Aviation's ability to task organize into a flexible, tailorable, and scalable task force or to operate organically as an essential part of a combined arms team gives commander's a significant advantage.

A-11. An ABTF/ASTF can be formed after units have deployed and are established in theater. The ABTF/ASTF may be established for a specific period of time or operation. If an ABTF/ASTF is formed in the middle of a campaign, additional operational factors must be considered. These considerations include support relationships, unit status, operational updates, and aircraft specific considerations.

ACTIONS UPON NOTIFICATION

A-12. Upon notification that an additional aviation unit will be under the control of the ABTF/ASTF, the main CP requires the following information from that unit:

- Current chain of command.
- A liaison officer to assist in operational planning and ensure proper mission employment.
- Number of aircraft to be attached, OPCON or TACON.
- Call signs and frequencies of elements.
- Tactical standard operating procedure of incoming element.
- Current operations being conducted, if any.
- Initial coordination should provide the following additional information:
  - Current location.
  - Location in the next 24 to 48 hours.
  - Attachments and detachments.
  - Mission configured aircraft (such as Fat Hawk/Fat Cow).
  - Available aircraft number, type and model.
  - Planning allowable cabin load per aircraft, if different due to environmental factors.
  - Number of day and night crews available.
  - Experience level of crews.
  - Logistics requirements.

A-13. The ABTF/ASTF S-4, maintenance officer, aviation maintenance officer, and company/troop commanders require the following information to ensure adequate support for the new unit:

- Current aircraft availability and bank time status.
- Current mission equipment status.
- Expected aircraft and major system status in the next 24 to 48 hours.
- Current fuel and ammunition status.
- Parts status and parts location.
- The portion of organic maintenance elements accompanying them.
- Any additional personnel by type, status, and number accompanying the element.
- For long term operations, the phase maintenance or progressive phase maintenance interval for the aircraft.

- Location of current aviation intermediate field maintenance support unit.

Special Considerations

A-14. Each unit has unique challenges. Specific considerations include—

- Whether the element is to be collocated within the ABTF/ASTF AA.
- The unit's ability to secure its portion of the perimeter.
- Aircraft parking and separation requirements (substantially greater for CH-47s than with other aircraft).
- Hot refuel requirements (CH-47s require a minimum of 30 minutes at refuel point).
- Other factors such as rotor wash from hovering CH-47s pose a significant risk to other aircraft and temporary structures without proper separation.

Operational Requirements

A-15. Units attached or placed under OPCON or TACON also require up-to-date operational information. Often elements coming from higher levels do not have access to tactical information at division level and below.

Operational Reference Material

A-16. Current operational documents and products essential for smooth operations include—

- ABTF/ASTF tactical standard operating procedures.
- AO general information.
- Aviation procedures guide.
- Helicopter landing sites.
- Kneeboard products.
- ROE.
- Special Instructions.
- ACOs and ATOs.
- Current imagery, if applicable.
- Communications and security information for the ABTF/ASTF.
- Intelligence.

A-17. Products of the current ABTF/ASTF intelligence preparation of the battlefield necessary to gain situational understanding include—

- Threat situation.
- Known threat locations.
- Threat actions in the vicinity of the aviation unit's AA (past 24 to 48 hours).
- Expected threat contacts in the AO.
- Probable course of action.
- Weather forecasts for anticipated mission times.
- Weather constraints affecting the mission.
- Additional processing, exploitation, and dissemination products

Current Operations

A-18. Current operational information should include the following:

- ABTF/ASTF main CP and TAC CP locations (current and future).
- Subordinate unit locations.
- Forward arming and refuel point locations (current and future).
- ACMs in the AO.
- Operational coordination (from the ABTF/ASTF).

A-19. A clear understanding in regard to current operations must be achieved between all elements of the ABTF/ASTF. Basics requirements include—

- Readiness condition status.
- Launch decision points.
- Planning time lines.
- Overall current mission (two levels up).
- Command relationships.
- Initial planning graphics.
- Call signs and frequencies.

Area of Operations General Information

A-20. General information on the AO should include—

- Electronic warfare support.
- Decontamination sites.
- Medical support.
- Boundaries.
- Special Operations in the area.
- ROE.

Upcoming Missions

A-21. If missions are being prepared for execution with ground elements, incoming elements require additional detailed information on their planned roles. This information should include—

- Ground commander's mission and concept of the operation.
- Ground commander's intent for integrating Army Aviation as a maneuver element.
- Operation order and graphics.
- Special equipment requirements.
- Locations of friendly TAC CP, brigade support areas (BSA) and battalion/task force combat trains.
- Front line trace of friendly units.
- Target lists from the fires cell.
- Location of friendly artillery current and preplanned firing positions.
- Location of friendly air defense assets.
- Frequencies and call signs.
- Challenge and password.

SECTION III – TASK ORGANIZATION CONSIDERATIONS

SYNCHRONIZATION OF ASSETS

A-22. Task force elements often come from different organizations and locations. These organizations may be active Army, National Guard, or Reserve Components. Locations may be in the continental United States or outside the continental United States. Task force elements have varying degrees of mission proficiency and may have different procedures for tactical and administrative tasks. Thus, the ABTF/ASTF commander and staff, and subordinate commanders and leaders must synchronize task force assets.

STANDARDIZATION OF PROCEDURES

A-23. The immediate challenge facing commanders and their staffs is the requirement to organize and train the ABTF/ASTF as quickly and thoroughly as possible. Because the ABTF/ASTF must function as a unit or be further task organized, it is essential to operate from a common standard operating procedure. Standard operating procedures are tailored to the unit's mission essential task list, theater procedures and expected OEs.

Standardization of the ABTF/ASTF safety procedures are critical. The ability to measure and mitigate both tactical and accidental risk are essential. Additional considerations include establishing multi-mission design series briefers, define and establish mission tier levels and criteria, and command risk management process.

CHARACTERISTICS

A-24. The ABTF/ASTF is not a standing unit with a published table of organization and equipment; its organizational structure must be tailored to meet mission requirements placed upon it.

A-25. The ABTF/ASTF should be structured to provide the commander with capabilities that meet current and anticipated mission requirements with consideration to adjacent organizations' capabilities, and may include—

- A balanced mix of attack reconnaissance and assault company-sized units and appropriate portions of the GSAB providing the ABTF/ASTF commander with a full range of aviation capabilities, based on mission requirements.
- The capability to create aviation teams of mixed aircraft at platoon and company level capitalizing on the synergy and enhanced capabilities of the various types of Army Aviation aircraft.
- Mission command support to ABTF/ASTF higher headquarters (additional UH-60s in the assault company).
- Air traffic services to meet the ABTF/ASTF's own requirements.
- An aeromedical evacuation capability. If multiple ABTF/ASTF are deployed in theater, only one ABTF/ASTF may require air ambulance aircraft as part of the task force.
- The capability to accept further aviation attachments in any form (United States or allied attack/ reconnaissance, utility, cargo, FW, or UAS).
- The capability to accept attachment, OPCON, or TACON of ground units.
- An augmented aviation maintenance company capable of supporting all aircraft in the ABTF/ASTF. In most cases, allied aircraft and UAS will come with their own maintenance structure; however, all aspects of support must be determined before the maintenance structure can be completed.
- Management of aviation maintenance requirements exceeding its organic capabilities. It is often necessary to reach back to the major command supporting the overall operation, and Army organizations and vendors in the United States. This capability is necessary to ensure critical parts, specialized skills, and timely support are available as required.
- FSC/FST capability augmentation which enables support to different airframes with requirements such as fuel, ammunition, and support equipment maintenance.

SECTION IV – TRAIN THE TASK FORCE

A-26. Training a task force for operations can pose unique problems in the initial stages of task organization, especially while in home station. For an aviation task force, there are two distinct types of training that can be impacted by the sudden shift in organizations and structure, flight training and ground training. Units have had the most success with a training schedule that integrates ground and air training starting at six to nine months from their intended departure date. Company commanders should always plan to be able to sustain individual and crew training and certifications in preparation for immediate separation from their parent battalion, without relying wholly upon the battalion staff to resource training opportunities for their companies, such as rifle or pistol ranges, chemical, radiological, biological and nuclear chamber training, drown-proofing, or convoy drills. This attention to potential contingencies prevents additional stress upon a gaining task force to find resources and training time for a newly accepted company. Available time, resources, and mission priorities will drive what training occurs.

A-27. Flight-specific training or requirements may include—

- Risk mitigation considerations for specific mission sets, approval authorities, and briefing authority considerations specific to each individual airframe challenge.
- Certifying and validating unit standard operating procedures and battle drills specific to both organic company and battalion task force operations.
- Training and certification of non-rated crew members.

- Cooperative collective training amongst the various airframes to include UAS operations.
- Requiring a master gunner for, to train and certify aircrews and non-rated crewmembers.
- Aviation life support equipment training and certification.
- Self-extraction and buddy-extraction familiarization for each airframe in the task force for all personnel.
- Cross-familiarization of all task force personnel with all task force aviation mission sets and limitations.
- Airfield management and senior airfield authority training, as required.
- Fast-rope insertion extraction system and special patrol infiltration/ex-filtration system information for staff and planners unfamiliar with limitation or use of mission sets in combat environment.
- Gunnery and munitions information for staff and planners unfamiliar with aerial munitions considerations or attack specific mission sets.
- All aerial gunnery tables current and completed, for all airframes.
- Aeromedical evacuation and CASEVAC considerations regarding launch approval and security requirements.

A-28. Ground tactical training considerations:

- Forward arming and refueling considerations for personnel unfamiliar with new airframe or mission requirements in the new task organization.
- Convoy operations.
- CP battle drills.
- Vehicle recovery operations.
- DART operations.

SECTION V – EMPLOY THE TASK FORCE

A-29. Employment of forces to conduct a tactical mission has unique considerations when forces are task organized away from their organic headquarters, where staff and planning personnel are intrinsically aware of aircraft and aircrew limitations and capabilities. All aviation planners must be familiar with the missions and ways that each airframe can be employed to best support to the ground force commander. If staff elements are cross-leveled prior to deployment, this aids in the process, but is not the only factor that can affect mission success. Other key considerations to employing a task force to a mission can include—

- Access, placement and training of forward arming and refueling personnel to remote locations or jump FARP during significant operations where attack reconnaissance and lift assets will both require services.
- Transport and movement of limited density sets, kits and outfits around the brigade's over all AO, which can include sister task forces separated by distance or terrain.
- Arrival and use of Air Force weather teams to varying locations on the battlefield, where distance or terrain can change significantly between different task force headquarters locations
- Senior Airfield Authority challenges and airfield management capabilities and knowledge.

A-30. The task force S-3 section is critical to the success of task force operations. The currents operations and air mission request cells will need to be familiar with all potential mission requirements for varying airframes and the limitations that can impact the ground force's operations. Expectation management is critical for air mission request cell personnel, communicating to various ground maneuver planning staffs, as well a good working relationship with the higher and adjacent aviation elements (e.g. BAE, division G-3 Aviation Element, division joint air-ground integration cell). Each airframe should have a representative in the future operations cell of the S-3 shop that assists in the coordination for assets and planning of specific missions. Another important consideration for an S-3 section is to have a battle captain team that is familiar with each type airframe, mission, and methods of employment for each.

SECTION VI – COMMAND POST BATTLE DRILLS

A-31. The development of critical battle drills specific to the aviation battalion or brigade CP aids the staff in managing time, resources and mission accomplishment. Based on resources available, missions on going, and the approval methods established for risk identification and mitigation, battle drills can be honed for the AO to which a particular aviation task force is assigned.

A-32. The following battle drills are common to Army Aviation—

- Quick reaction force launch.
- Hasty time-sensitive target operations.
- Indirect fire reaction and prevention
- Degraded network operations

A-33. QRF is the launch of any attack, reconnaissance, cargo or assault assets, or combination thereof, that are used to respond to an event, as requested by ground forces. Quick reaction force launch criteria are established by the ground and air commander based on the ground tactical plan, the aviation assets available, mission constraints, personnel limitations, and the operating environment. Typically, QRF is an attack reconnaissance mission, but any platform can be established in the QRF role, with a detailed mission, constraints, and commander's intent for execution. When attack reconnaissance aircraft are used in the QRF role, it is typically to provide air to surface fires in support of ground forces, using the attack call for fire request. In performing QRF missions, attack reconnaissance aircraft must have a detailed situational understanding of the ground force in order to provide adequate support, while limiting fratricide and civilian casualties. This requires constant communication with the ground forces throughout the mission planning cycle.

STAFF CONSIDERATIONS

A-34. In planning for situations where QRF may be needed, the most critical stage is establishing a responsive communication link between the aviation CP and the ground force CP, whether through the use of digital, voice, or liaison-runner systems, or a combination of all functions. Second to establishing positive communication is the requirement for the aviation battle captain and noncommissioned officer to closely monitor the missions that may be on-going in their AO. This is impacted by the size of the area, the number of units supported, and use of a general or DS relationship between an aviation task force and the ground commander. During current operations, constant communication about the status of specific ground force missions, enemy situation, and aviation-specific factors (such as weather), will enable a staff to support the expedited launch of QRF to a requesting unit.

A-35. Typically, QRF requests flow from the unit in contact, through their battalion and BCT, to an approval authority at the headquarters assigned with resourcing of aviation missions based on whether the aviation force is Direct Support or General Support to the ground force commander. In the event of DS to a BCT, the request can be typically submitted through a BAE to the aviation battle captain. In the event of GS relationships, the request for support may come from the division G-3-Aviation element.

A-36. Upon receipt of the request, the aviation battle captain and the established and briefed aircrews filling the request must have, at minimum, a valid grid, call sign, and frequency for the unit or element in contact. Additional information that can aid in the development of situational understanding for the aircrews while en route includes–

- Enemy disposition or situation.
- Any potential enemy air defense considerations.
- Disposition of potential civilians in the area of operations.
- Adjacent friendly units that may be impacted by the use of aerial munitions.
- Fire support considerations (to include aviation CAS and artillery or mortar support).
- Weather updates along the intended route of travel that could impact flight or munitions use.

A-37. Most importantly, once a QRF mission is assigned to an aviation task force and aircrew, a QRF mission is not considered complete until the friendly ground force commander in contact releases the aviation element from their requested mission. The air mission commander can provide situational awareness to the aviation battle captain to enable future planning for additional missions.

HASTY/TIME SENSITIVE OPERATIONS

A-38. The launch of an air assault for a time-sensitive target uses the same planning considerations as a hasty air assault. These missions are typically small unit oriented with a limited amount of time available for planning and execution, normally four or fewer hours. These missions tend to be reconnaissance or enemy-activity driven, and have been planned in advance based on specific key indicators for launch. In order to prepare for these missions, much like planning for a QRF, detailed coordination and communication must be established between the supported ground force and the supporting aviation force. Standard operating procedures, habitual relationships, training, and familiarity with an area of operations all enable the success of hasty or time sensitive operations.

Staff Considerations

A-39. In planning for situations where a time-sensitive target could be conducted, the most critical stage is establishing a responsive communication link between the aviation CP and the time-sensitive target unit. This can impact the missions of other units being supported, specifically when aviation assets are limited and the time-sensitive target operations take priority over other combat missions that have been planned and coordinated for. Constant communication about the status of other concurrent operations, the enemy situation, and aviation-specific factors (such as weather), will enable a staff to support the expedited launch of time-sensitive target assets to a requesting unit.

A-40. A time-sensitive target request will flow from the requesting unit, through their battalion and BCT, to an approval authority at the headquarters assigned with resourcing aviation assets. From there, the supported ground force is typically placed in contact with the aviation planners at the aviation task force level for planning. The staff plans and briefs the concept and constraints for the mission to the staff in the CP, placing the aviation elements in stand-by to execute the mission, based on meeting the launch criteria for the time-sensitive target force. The BAE may also provide additional planning support, if available and the time-sensitive target executing unit is part of a BCT. This enables the BAE to also share information and changes to mission with the aviation planner or battle captain as required. In the event of GS relationships, changes to mission and updates may come to the aviation battle captain from the division G-3 aviation element or joint air-ground integration cell.

A-41. Once the launch criteria are met the aviation battle captain updates and launches aircrews. Minimum requirements include a valid grid, call sign and frequency for the unit or element in contact. Additional information that can aid in the development of situational understanding for the aircrews en route include– :

- Enemy disposition or situation.
- Any potential enemy air defense considerations.
- Disposition of potential civilians in the area of operations.
- Adjacent friendly units that may be impacted by the use of aerial munitions.
- Fire support considerations (to include aviation CAS and artillery or mortar support).
- Weather updates along the intended route of travel that could impact flight or use of munitions.

INDIRECT FIRE RESPONSE AND REACTION

A-42. A typical response to receiving indirect fires on a contingency base or AA is the launch of any attack reconnaissance assets that are used to find, fix, and destroy enemy rocket or mortar teams or indirect fire elements. The launch criteria and considerations for conducting local area security are established by the ground and aviation commander based on the aviation assets available, mission constraints, limitations of personnel, and the environment around the base. This is an attack reconnaissance mission, but any platform can be established in local area security role, provided a detailed mission, constraints, and commander's intent is provided to them. Launching an attack or SWT in response to indirect fire has much of the same launch considerations as launching a QRF mission, but the unique demands of airspace deconfliction with counterfire elements can be difficult if not properly planned. When attack reconnaissance aircraft are tasked to conduct local area security, it is typically to provide air to surface fires as part of a deterrent against further occupation of an enemy firing position near the base or AA. Attack reconnaissance aircraft must have a detailed situational understanding of the local area and ground force operations in order to provide adequate support, while minimizing collateral damage.

STAFF CONSIDERATIONS

A-43. In planning for local area security during counterfire, the most critical stage is establishing a responsive communication link between the aviation element and the base defense operations center. Including the call signs and frequencies for the active counterfire elements on the base or in the area decreases the risk of fratricide and improves tactical response by both air and ground elements. When launching air assets in response to an enemy indirect fire attack, the request will typically come from the ground force unit which has responsibility for the security of the base, AA, or area of operations.

A-44. Once the request for launch arrives to the aviation battle captain, the established and briefed aircrews filling the request must have a valid grid for the potential point of origin, call sign and frequency for the unit or element in contact. Additional information that can improve situational understanding for the aircrews en route to the point of origin include–

- Enemy disposition or situation in areas close to the base or AA.
- Any potential enemy air defense considerations.
- Disposition of potential civilians on the battlefield.
- Adjacent friendly units that may be impacted by the use of aerial munitions.
- Fire support considerations (to include aviation CAS and artillery or mortar support).
- Weather that could impact flight or munitions use.
- Other airspace considerations (unmanned aircraft systems, FW, or stationary reconnaissance balloons).

DEGRADED NETWORK OPERATIONS

A-45. The proliferation of digital information networks, such as CPOF, internet relay chat and blue force tracking system enables the seamless and timely flow of information between ground and air operations and planners. This has also increased the ability for the staff to communicate with multiple planning sources, both higher and lower in the echelons, to provide more current planning information for aircrews prior to launch. These systems have also become a method of operations, through passive monitoring of reports and requests from units to the left and right of their own task force. For aviation, these networks enable battle tracking that can place aircrews at critical points along the battlefield to enable operations. It also aids in the flow of requests for support, such as medical evacuation, air movements, and QRF requests.

A-46. When these systems fail, a staff that can quickly diagnose and repair the failure, or adapt to operations without computerized systems, will succeed. Units that cannot adapt and/or overcome operations in the degraded network will add to confusion on the battlefield and fail to maintain consistent situational understanding on their own friendly forces. This failure can result in loss of momentum during operations or even fratricide in support of attacking forces. Circumstances that can lead to degraded network operations may include–

- Electrical or power failures and disruptions.
- Electromagnetic attack.
- Environmental or severe weather impacts.
- System node failure at higher echelons.

A-47. In planning for degraded network operations, several critical factors must be met:

- The staff must immediately transition to analog tracking and communication.
- The analog backup system must be redundantly linked and updated to the primary functioning system to ensure that information and situational understanding are not lost during the transition.
- Transitions between a functioning primary and analog degraded network must be rehearsed and trained.

A-48. More importantly, once the transition to a degraded or analog network is made, the staff must be trained and proficient at all CP battle drills on the degraded network. Launching quick reaction force, reacting to indirect fires, and other scenarios must be trained in both the functioning and degraded format to ensure that Army Aviation CPs continue to provide adequate coverage for all forces being supported and all concurrent operations.

SECTION VII – MANAGEMENT OF COMMAND POST PERSONNEL

BATTLE ROSTERS

A-49. Each section within the CP must maintain a battle roster listing the section operators assigned to each BAS. At a minimum, sections should plan for three operators per system. Two Soldiers man a 12-hour shift each plus one Soldier serves as a backup and provides periodic relief. The roster should list the following—

- Personnel name and rank.
- Assigned system
- Assigned shift.
- Date of most recent training on system.
- Software version of most recent training.
- Estimated date of departure from unit.

A-50. Operators are managed in a manner similar to unit vehicle drivers according to the following principles:

- Depth: Have more trained operators than needed to ensure coverage even when unanticipated losses occur.
- Anticipate: Know when personnel are scheduled to depart the unit, and train their replacements well in advance.
- Leaders: Section leaders should be prepared to function as operators; in addition to providing additional capability, this ability enables section leaders to better supervise and employ the system(s) they oversee.
- Currency: Operators must be trained on the most current software carried on their system.

SHIFT MANAGEMENT

A-51. Paramount to seamless operations between shifts, shift changes are usually scheduled at 8 to 12-hour intervals. Commanders consider offsetting shift changes at mid-shift for key personnel. Staggering personnel in this manner maintains a constant interface of new and old shift personnel. This practice ensures at least one individual knows what happened during the previous shift.

A-52. Soldiers must conduct a one-on-one exchange of information with the person they are relieving. This exchange must be followed by section wide debriefs to ensure continuity in information flow and handoff of ongoing staff actions.

A-53. Following the individual brief, section-level products and actions are reviewed. Each staff section accomplishes the following actions:

- Review journal for the past 8-12 hours.
- Review and update any commander's CCIR.
- Review current approved overlays.
- Review current COP products.
- Check files to ensure standard naming conventions are used.
- Review the unit task order.
- Check section web products for updating and ensure they are properly posted.
- Review / verify missions for the next 8-12 hours.

A-54. A collective information exchange, in the form of a shift change brief, must be conducted so incoming personnel receive a positive change of control. Personnel from different staff sections will have access to key information produced by other sections and CP. Handover briefings focus much less on the rote exchange of information. Rather, these briefing sessions can function to focus personnel on available information, evaluation of information, status of current operations, and tasks supporting future operations.

A-55. Critical digital considerations are briefed collectively within the CP. Table A-1, page A-12 provides an example of what this brief may look like. There is presently no doctrinal guidance on this process. Units should develop SOP to address this requirement.

Table A-1. Example of a command post shift change brief

Staff Position	Sample Briefing Items
S-3 Battle Captain	Current higher and brigade changes to task organization. Disposition /status of units. Current and future missions. Current operations and timelines. LNO updates. Combat power status. Projected operations over next 12 hours.
S-3/Air	Brief current and future airspace control order (ACO) and plan for airspace control in division assigned airspace. Provide airspace control status in conjunction with air defense office, fire support officer, and air liaison officer.
S-2/Weather	Priority intelligence report/commander's critical information requirement (CCIR). Provide situational understanding and location/status of all Intelligence assets (national to division/brigade). Request for information to higher (ARFOR or national). Weather-next 12 hours impact/effects on friendly and enemy systems. High-value target (HVT) /high-payoff target (HPT). Battle damage assessment (BDA). Significant activities during past 12 hours.
Fires Cell	Organization for combat. Unit/position area of artillery locations and status. Priority of fires. HPT/attack guidance matrix. Fire support coordination measures. Significant activities.
Air Liaison Officer (CAB and above)	Preplanned request status. Immediate request status. In-flight reports.
Air Defense (CAB and above)	Organization for combat. Current air defense warning and control status. Aircraft engagements. Location and status of air defense units.
Engineer (CAB and above)	Operations since last update. Status of equipment and Class IV/V. Future engineer operations. Recommendations for the commander.
Chemical	Chemical, biological, radiological, and nuclear (CBRN) condition. Current and recommended mission-oriented protective posture (MOPP). Enemy CBRN activity. Chemical unit locations and status.
S-1/S-4/Surgeon	Equipment status. Class VIII status. Priority of support. Personnel status/health service status.

BATTLE RHYTHM

A-56. Battle rhythm is a deliberate daily cycle of command, staff, and unit activities intended to synchronize current and future operations (JP 3-33). Successful continuous operations require a tactical SOP allowing rest, especially for critical personnel. While regularly addressed at battalion level, battalions must plan and schedule missions that allow companies similar opportunities.

A-57. The cycle of recurring events within a CP focuses staff members on meeting information and action requirements. These recurring events include—

- Operations synchronizations meetings.
- Targeting meetings.
- Intelligence, surveillance, and reconnaissance synchronization meetings.
- Reports to higher and adjacent units.
- Receipt of reporting requirements from subordinate units.
- Battle updates without the commander.
- Battle update briefings.
- Commanders' collaborative sessions.
- Battle captain collaborative sessions.
- Meetings or working groups at higher and adjacent levels.
- Shift changes.

A-58. A well-established battle rhythm aids the commander and staff with CP organization, information management and display, decision making, and conducting operations from the CP and via satellite mission command systems. Battle rhythm demands careful planning and design. Numerous competing demands for time and personnel must be de-conflicted. Even subordinate units affect a higher echelon's battle rhythm based on their needs and unit procedures. Two key considerations when establishing SOP for battle rhythm are scheduled updates (both with higher and subordinate units) and network bandwidth. Mission command systems compete for bandwidth with the commander's digital updates or video teleconference capability primarily if data passes over communications links between CPs. The MDMP can have one of the most dramatic effects on battle rhythm. The process is lengthy and detailed and must be closely coordinated with other ongoing actions.

A-59. Command discipline is required to enforce sleep cycles and create an environment where sound sleep can be achieved. Battle rhythm and associated planning is proactive, not reactive.

Operational Tempo and Battle Rhythm

A-60. The ABTF/ASTF should be staffed for 24-hour operations; however, mission cycles may vary by duration and intensity of planning and operational efforts. SOP establish methods of ensuring the right personnel are available. Rehearsing and practice during exercises is essential to determine the strengths and weaknesses of each shift. Such knowledge allows leaders to focus on critical areas requiring additional training.

A-61. In planning, the ABTF/ASTF staff must consider battle rhythm requirements of subordinate companies. Depending on the situation, the ABTF/ASTF may schedule missions that allow company or platoon rotations to maintain their battle rhythm.

Absence of Battle Rhythm

A-62. Without procedures establishing battle rhythm, leaders and units reach a point of diminished returns. This typically occurs between 72 and 96 hours of operations. As leader fatigue sets in, information flow, the planning process, execution and o suffer—often greatly. Symptoms of diminished battle rhythm include the following—

- Leader fatigue.
- Leaders who are not fully aware of critical decision points.
- Leaders who are not available at critical decision points.
- Disjointed timelines between various levels of command.

Presence of Battle Rhythm

A-63. Battle rhythm allows units and leaders to function at a sustained level of efficiency for extended periods. Effective battle rhythm optimizes the use of personnel and permits an acceptable level of leadership at all times while retaining capability to focus leadership at critical points or key times. Procedures and processes facilitating efficient decision making and parallel planning are critical in achieving battle rhythm. Every component of battle rhythm makes unique contributions to sustained operations.

BATTLE RHYTHM ELEMENTS

A-64. Battle rhythm is a multifaceted concept that includes the following elements:

- Company parallel planning.
- Established processes and SOP.
- Trained second and third-tier leadership in CP.
- Synchronized multi-echelon timelines (rehearsals, fighter management).
- Sleep/rest plans.

CONTINUOUS OPERATIONS AND TIMELINE SYNCHRONIZATION

A-65. Timelines for the operation at hand must allow for not only the next operation, but also extended continuous operations. Synchronized, multi-echelon timelines assist units in achieving battle rhythm. If units do not address critical events at least one level up and down, disruption results. An example of an unsynchronized timeline is an aviation battalion task force (ABTF/ASTF) rehearsal conflicting with company inspections or other events in their internal timeline. Lower echelon units seldom recover from a poor timeline directed by a higher headquarters. Development of SOP that include planning, rehearsal and execution timelines two levels below ABTF/ASTF prevents these conflicts.

Rest Plans

A-66. Units must develop detailed rest plans and enforce them. Leaders have to rest to maintain their effectiveness; however, some leaders attempt to get involved in every aspect of planning and execution. This phenomenon is also linked to trust and confidence building. The attitude that it is easier to do something yourself than it is to train someone else to do it can unhinge any rest plan. An integral part of the planning process is to determine when senior leader presence is required. It is just as important to identify when a leader's presence is not required. The planning process should include the following supporting techniques:

- Include a sleep plan in the METT-TC analysis.
- Ensure leaders have confidence in second and third echelons of leadership and their ability to make routine decisions.
- Instill trust and confidence in officers, junior NCO and specialists by effective training and SOP.
- Consider contingencies and establish criteria for waking senior leaders.
- Post sleep plans in CP.
- Synchronize sleep plans with higher and subordinate headquarters.

STANDARD OPERATING PROCEDURE UTILIZATION

A-67. Standard operating procedures (SOP) must be practiced and reviewed during professional development and sergeants' time. The existence of a SOP will not resolve troop-leading challenges unless the SOP is practiced often and internalized by unit members. Checklists are critical, as many leaders will often find themselves rushed, physically fatigued, distracted and deprived of sleep. Checklists ensure each step is considered even when leaders are exhausted.

BATTLE UPDATE BRIEFING

A-68. The battle update briefing provides the commander with analyzed information essential to decision making and to synchronize the staff's actions. COP use expedites the battle update and makes it more current. The more information used from the COP, the more time the staff has to analyze and evaluate the information. The battle update briefing itself centers on the COP displayed in the CIC. The staff must be selective as to what other information is presented given the wealth of data and availability at each BAS. Unit SOP, command guidance, and operational requirements guide what information is briefed. Facts and capabilities may be presented in staff estimates for the commander to review before the briefing. This allows the battle update briefing to focus on by-exception information and specific commander issues. Methods to update the commander depend on the commander’s location, connectivity, and information he requires. Table A-2 compares delivery methods.

Table A-2. Update delivery comparison

Commander in an aviation CP	Commander in another CP
Verbal.	Voice (radio, phone).
Over the shoulder of an operator.	Force XXI Battle Command, Brigade-and-Below.
Commander’s update page and pull-up information.	Maneuver control system or access to another battlefield-automated system (BAS) at this location.
Links to staff section pages and pull-up information.	
Collaboration session.	Collaboration session.
Large screen display (LSD).	

A-69. Battle update briefs should maximize the use of information from BAS to aid in understanding the COP. Cutting and pasting information to non-MCS briefing slides focus on fact finding and less on analysis. The traditional form also consumes considerable time–more than one hour to build/transmit slides, one hour to present (at brigade level), and one additional hour to present (at the division level). When slides are briefed, their information is outdated and inconsistent with the more current COP.

STORY BOARDS

A-70. CPs often use story boards as a fast and efficient means of information dissemination and situational understanding. They are useful in austere environments or where degraded bandwidth prevents exchange of large amounts of data. Story Boards are generally PowerPoint slides with a combination of text, data, photographs, map data, and MCS screen-shots that quickly provide the “5W” of an incident-Who, What, Where, When, Why. A story board generally contains—

- The unit designation, operation name/designation or incident title.
- Date Time Group and location.
- A chronological narrative of the event or incident.
- A map screen shot (CPOF, BFT) illustrating scheme of maneuver.
- Photographs or video, if available/required.
- An intelligence assessment as required.
- An operational assessment as required.

Appendix B

Air Assault Example Checklists and Briefing Documents

This appendix provides example checklists and briefing formats for air assault operations and for operations as the on-scene commander during personnel recovery. It also includes a sample air mission request form. Please note, it is not all inclusive; products are used as a guide and do not supersede unit SOPs.

SECTION I – AIR ASSAULT CHECKLISTS

B-1. Figure B-1 provides an example of an air mission coordination meeting checklist. The information included in the checklist may serve as a guide for developing a unit's standard operating procedures.

SAMPLE AMCM CHECKLIST

TASK	Sub Task
☐ Roll Call	
☐ Supported / Supporting Unit	
☐ Weather	
☐ Mission / Key Task / End State	
☐ Concept (with Marco Concept Sketch)	
☐ Number / Type of Aircraft	
☐ H-Hour	
☐ Pickup Zone Operations	**a**) Location/Grid/Marking, **b**) Call Sign/Frequency, **c**) Pickup Time, **d**) Landing Heading/Formation, **e**) Door/Ramp Entry, **f**) Number of Troops/Type of Cargo Load, **g**) Takeoff Direction/Formation
☐ False Infiltration helicopter landing zone (HLZ) grid / Concept - HLZ card with up dated digital photo or imagery	
☐ Route / Time of Flight	
☐ HLZ Operations	**a**) Tadpole, **b**) HLZ Sketches [HLZ card with updated digital photo or imagery], **c**) HLZ Marking / Security / Call sign / Frequency, **d**) Landing Heading / Formation, **e**) Weapons Status, **f**) Door exit, **g**) Number of turns required, **h**) Takeoff Direction / Formation
☐ Laager Plan (Location / Recon level)	
☐ Attack / Scout Aviation Plan	**a**) Coverage Times, **b**) Task and Purpose, **c**) Grid Reference Graphic, **d**) Ammo Load [i.e. illumi-nation during low light conditions for lift aircraft]
☐ Airspace Control for Rotary Wing, close air support (CAS), intelligence, surveillance, and reconnaissance (ISR)	
☐ Service Support	**a**) Forward arming and refueling plan / location, **b**) Resupply Plan [Speedballs, low cost low altitude, Airdrop], **c**) medical evacuation (MEDEVAC)/casualty evacuation
☐ Detainee Transport Plan	
☐ Cherry / Ice Criteria (Platform making call / Frequency)	
☐ Abort Criteria (Weather, Minimum Aircraft, Minimum Force, other)	
☐ Weather Call	
☐ Fires Plan (Pre-assault fires / HLZ prep fires)	
☐ Deception Plan	
☐ Bump Plan	
☐ MEDEVAC Aircraft location	
☐ Quick reaction force (Air or Ground)	
☐ Communication	**a**) combined arms network, **b**) Internal Frequencies, **c**) Fire, **d**) satellite communication, **e**) ground tactical commander (GTC)/radio telephone operator call signs, **f**) Aircraft call signs
☐ Command GTC, air assault task force commander, aviation task force commander, air mission commander)	
☐ ISR Requested / Approved	
☐ CAS Requested / Approved	
☐ Proposed Timeline (Approval brief, concept of operations to division, air mission brief, combined air rehearsals)	

Legend

CAS - close air support
GTC - ground tactical commander
HLZ - helicopter landing zone
ISR - intelligence, surveillance, and reconnaissance
MEDEVAC - medical evacuation

Figure B-1. Example of an air mission coordination meeting checklist

B-2. Figure B-2 depicts a sample air mission brief checklist. The air mission brief typically occurs after the air mission coordination meeting. The personnel listed in the sample are recommended attendees and briefers.

Roll Call	Time Zone	Time Hack	Packet Check
References			

Task Organization - (Brigade Combat Team/Task Force S-3)

1. Situation.

a. Enemy forces - (Brigade Combat Team [BCT] / Task Force [TF] S-2)
(1) Air intelligence preparation of the battlefield (IPB).
(2) Enemy air capability.
(3) Enemy air defense artillery (ADA) capability.
(a) Type/location.
(b) Night capability/range.
(c) Weather/Notice to Airmen.
Sunrise: ________, Sunset: _______, Moonrise: ________, Moonset:________
Max % Illumination: ______
Illumination range during air assault (ex. 0-45%): ______
NVG window: _________, Ceiling/visibility: ________
Max temperature: __________, MAX density altitude/pressure altitude: _____
End evening nautical twilight:________
Begin morning nautical twilight:________

b. Friendly forces - (BCT / TF S-3).
(1) Mission and Intent of BCT / TF / Higher headquarters
(2) BCT / TF Concept.
(a) BCT/TF Mission
(b) AATFC Intent
(c) BCT/TF Scheme of Maneuver
(d) Conditions required for AASLT
(e) Mission Risk Assessment

2. Mission. - (Aviation [AVN] TF S-3)

3. Execution.

a. AVN TF commander's intent - (Air mission commander [AMC])

b. Concept of the AVN operation. - (AVN TF S-3)

c. AVN TF tasks to subordinate units. - (AVN TF S-3)
(1) Assault Battalion / Companies
(a) Pathfinder Company

(2) General Support AVN Battalion
(a) Command AVN Company
(b) Heavy Lift Company
(c) Medical Evacuation Company

(3) Attack Reconnaissance Battalion (ARB)

(4) Attack Reconnaissance Squadron (ARS)

d. Fires. - (BCT / AVN TF Fire support officer)

(1) Field Artillery
(a) Purpose of supporting fires.
(b) Firing Unit / location.
(c) Priority of fires.
(b) Suppression of enemy air defenses / Joint suppression of enemy air defenses information / targets.
(c) Helicopter landing zone (HLZ) preparation.

Figure B-2. Example air mission brief checklist

3. Execution. (Continued)

(2) Close air support. - (Air liaison officer.)
(a) Purpose/mission.
(b) Coordinating altitude. (Rotary / Fix Wing)
(c) Number, type, and time of sorties available.
(d) Call signs and frequencies.

(3) Attack aviation. - (ARB or ARS S-3)
(a) Mission.
(b) Concept of Operations (routes, forward arming and refueling point (FARP) rotations, etc…)
(c) Attack battle positions / attack by fire sectors / routes in and out.

(4) Unmanned Aeirial Systems. - (Brigade Aviation Element)
(a) Purpose.
(b) Type and coverage time
(c) Controller, Frequency, and Call Sign.

e. Staging plan. (Pickup zone [PZ] diagram) - (Air assault task force (AATF) S-3)

(1) Name / number.
(2) Location Coordinates.
(3) Load time.
(4) Takeoff time.
(5) Markings.
(6) Control.
(7) Call signs / frequencies.
(8) Landing formation.
(9) Heading.
(10) Hazards / go arounds.
(11 Emergency touchdown points.
(12) Supported unit bump plan.
(13) PZ arrival times.
(14) Update Brief / Face-to-Face (time and location)

f. Air movement plan. - (ATF S-3 / Flight lead)

(1) Routes/corridors. (Route Card)
(a) Ingress primary / alternate.
(b) Egress primary / alternate.
(c) Other

(2) En route hazards.
(3) Abort criteria.
(a) Weather.
(b) Aircraft available.
(c) Time.
(d) Mission essential combat power.
(e) Mission criticality.
(f) Enemy.

(4) En route formation / rotor separation / angle / airspeeds (as per crew brief).
(5) Deception measures/false insertions.
(6) Air movement table.
(7) Cargo doors.
(8) External lighting. (Standard operating procedures [SOP])
(9) Restricted operation zone locations.
(10) Medical evacuation (MEDEVAC) / Casualty evacuation (CASEVAC) aircraft plan.
(11) Aircraft decontamination plan.

Figure B-2. Example air mission brief checklist (continued)

3. Execution. (Continued)

g. Landing plan. (HLZ diagram), (ATF S-3 / Flight lead)

(1) Name / number.
(2) Location Coordinates.
(3) Landing times (as per air movement table).
(4) Markings.
(5) Control.
(6) Call signs/frequencies.
(7) Landing formation/direction.
(8) HLZ abort criteria. (based on ground tactical commander's guidance)
(9) Go arounds. (flight / single ship, as per crew brief)
(10) Departure. (as per crew brief)

h. Laager plan. (ATF S-3 / Flight lead)
(1) Name / locations.
(2) Times / Readiness condition status.
(3) Security plan.
(4) Scatter plan.
(5) Call forward plan.

i. Extraction plan. (ATF S-3 / Flight lead)

j. Coordinating instructions. (ATF S-3)
(1) Mission-oriented protective posture level / chemical, biological, radiological, and nuclear warning status.
(2) Aircraft Door Gunner control status.
(3) ADA status.
(4) Identification friend or foe procedures / times.
(5) Common missile warning employment
(6) Night Vision Goggle (NVG) - specific procedures. (SOP)
(7) Vertical helicopter instrument recovery procedure / Inadvertent instrument meteorological conditions (as per crew brief)
(8) Mission contingencies. (SOP)
(a) Downed aircraft Pilot Pickup (DAPP) / Search and rescue / personnel recovery
(b) Downed aircraft / Survival evasion resistance and escape / Downed Aircraft Recovery Team (DART) (detailed plan with planning priorities assigned to the units expected to respond and ajacent units)
(c) Battle damage assessment report.
(d) BUMP Plan.
(e) Detainee Transport Plan.
(f) Refuel Plan
.
(9) Spare aircraft procedures.
(10) Special aircraft equipment/preparation.
(11) Performance planning card.
(12) Mission brief sheet.
(13) Risk assessment form (completed / signed).
(14) Safety considerations / hazards.
(15) Operations security considerations (signal operating instructions, kneeboard sheets, maps).
(16) Weather decision plan/times.
(17) Debrief location/time.

k. Coordinating instructions. - (AATF S-3)

Figure B-2. Example air mission brief checklist (continued)

4. Service Support.

a. Class I (1 case meals, meals ready-to-eat / 5 gallons water / survival kits) (TF S-4)

b. Class III/V. - (III/V platoon leader)
(1) Minimum fuel.
(2) Basic load.
(3) FARP/Rapid Refuel Point
* FARP Operations require a separate deliberate plan and will briefed in the five paragraph format. The FARP plan can be briefed either at this point in the air mission brief (AMB) or as a separate operation at the end of the AMB. FARP operations will be briefed during the AMB to ensure all leaders have situational awareness of adjacent unit operations.

c. Class VIII (Combat Health Support Officer [CHSO])
(1) Casualty collection point.
(2) Evacuation plan/hospital location.

d. MEDEVAC / CASEVAC plan. - (CHSO)

5. Command and Signal. (AVN TF S-3).

a. Command.
(1) Airspace command and control. (as per airspace coordination order, this AMB, and established tactical flight procedures)
(2) AATFC / location.
(3) ATFC and AMC/location.
(4) Air battle commander / location
(5) Aviation Succession of Command.

b. Signal. (ATF S-6)
(1) Commo card day:_____
(2) Execution matrix:_____
(3) Code words.

Mission Brief Back

Final Questions

Commander's Comments

Legend

AATFC – air assault task force commander
ADA – air defense artillery
AMB – air mission brief
AMC – air mission commander
ATF - aviation task force
ATFC - aviation task force commander
AVN - aviation
BCT – brigade combat team
CASEVAC – casualty evacuation
DART – downed aircraft recovery team
FARP – forward arming and refueling point
HLZ – helicopter landing zone
IPB – intelligence preparation of the battlefield
MEDEVAC – medical evacuation
NVG – night vision goggle
PZ – pickup zone
SOP – standard operating procedures
TF – task force

Figure B-2. Example air mission brief checklist (continued)

B-3. Figure B-3, page B-6 is a sample conditions check. Continuously assessing conditions and triggers for an air assault increases commander situational understanding and informs tactical and operational decisions.

Air Assault Conditions Checklist

1. Weather

2. Warfighting Functions Check (Detailed Checklist Below)

a. Intelligence
b. Movement and Maneuver
c. Fires
d. Protection
e. Sustainment
f. Mission Command

Legend (to mark indicated status in circles throughout checklist)	
Green	Planned, In progress, or Low Risk
Yellow	Delayed, Degraded, or Moderate Risk
Red	Not Identified or High Risk
Black	Extremely High Risk
White	Not Applicable

3. Air Assault Task Force Commander Recommendation: (GO, No Go, Delay)

○ **Intelligence: (G2/S2)**

- ○ Current weather and light data for air assault / close air support (CAS)
- ○ Post Air Assault weather
- ○ Suitability of helicopter landing zones (HLZ)
- ○ Enemy command and control warfare (C2W) capabilities identified
- ○ Enemy indirect fire in range of Primary & Alternate HLZs
- ○ Enemy direct fire in range of Primary & Alternate HLZs
- ○ Enemy Wheel, Mechanized, or Armor force able to influence primary or alternate HLZs
- ○ Battle damage assessment Confidence Level (focus on air defense artillery and other key weapons)
- ○ Eyes on key named areas of interests with communications to sensor
- ○ Division priority of higher collection effort

○ **Movement & Maneuver: (G3/S3, G3 Aviation/Brigade aviation officer, Division/Brigade Engineers)**

- ○ Assault Aircraft and crews ready
- ○ Attack Aviation (AVN) ready
- ○ Sufficient lifts available for minimum force requirements
- ○ C2W operations coordinated (operation security, psychological operations, military deception, and electronic warfare) within rules of engagement limits
- ○ Pickup zones (PZ) ready and secure
- ○ Units in PZ posture
- ○ Personnel recovery and/or combat search and rescue in place
- ○ Primary and Alternate HLZs designated/rehearsed
- ○ Higher and adjacent units notified of plan/assets available to reinforce/support operations
- ○ Anti-fratricide measures in place
- ○ Plan for civilians on the battlefield
- ○ HLZ obstacle clearing teams ready
- ○ Flight landing strip (FLS) clearing team ready
- ○ FLS layout confirmed
- ○ Light Airfield Repair Package

Figure B-3. Example air assault conditions checklist

Air Assault Conditions Checklist (Details Continued)

- ○ Counter-mobility assets in place to support
- ○ Ground Assault planned/in progress

◯ **Fires: (Fire Support Cell)**

- ○ Joint suppression of enemy air defense & intelligence and electronic warfare coordination complete
- ○ fire support coordination measures coordinated
- ○ Firing units in position
- ○ suppression of enemy air defense fires planned on suspected locations / fire plans forwarded to subordinate units
- ○ CAS coordinated / available
- ○ Appropriate communications established
- ○ Conventional forces radar coverage in place/planned
- ○ Tactical air control party task organized
- ○ Fire plan rehearsed
- ○ AASLT / Mobile Strike on air tasking order (ATO)
- ○ Non-lethal SEAD covers critical portions of operation
- ○ Enemy C2W suppression plan
- ○ Known fire support assets within range of primary and alternate HLZs destroyed/ suppressed; SEAD fires planned on suspected locations
- ○ Passage points covered by indirect fire

◯ **Protection: (G3 Aviation/Brigade Aviation Officer, Division/Brigade Engineers, Chemical, biological, radiological, and nuclear section, Air defense/Airspace management cell)**

- ○ Routes, restricted operations zones and mission on airspace control order and ATO
- ○ Coordinated friendly & cross boundary ADA locations and coverage
- ○ Early Warning coverage for Artillery Raid HLZs
- ○ Joint Tactical Information Distribution System located with assault
- ○ High-to-low-medium-altitude air defense coverage of critical nodes (PZ, AVN assembly area, forward arming and refueling point [FARP])
- ○ Theater missile defense coverage of critical nodes (PZ, AVN assembly area, FARP)
- ○ Weapons control status – hold along air routes
- ○ Airborne Warning and Control System coordination / linkup
- ○ Route clearance and survivability assets confirmed
- ○ HLZs not contaminated
- ○ Obstacles / Barrier plan in place for EA shaping
- ○ Decontamination assets available and coordinated

◯ **Sustainment: (G3 AVN/BAO, G4/S4)**

- ○ Rapid refuel point (RRP) / FARP(s) ready to support mission
  - ○ Tactical assembly area FARP
  - ○ Jump FARP
- ○ Resupply Plan
  - ○ Speedballs (Water, Class I, Class V, Class VIII)
  - ○ Low cost low altitude
  - ○ Airdrop
  - ○ Sling load
- ○ Sufficient supplies ready
  - ○ Class I/Water
  - ○ Class III

Figure B-3. Example air assault conditions checklist (continued)

Air Assault Conditions Checklist (Details Continued)

- ○ Class IV
- ○ Class V
- ○ Class VIII
- ○ Availability of Alternate RRP / FARP
- ○ Medical evacuation / casualty evacuation planned and ready
- ○ Downed aircraft recovery team/Maintenance plan/assets ready
- ○ Essential transportation plan/assets ready

○ **Mission Command: (G3/S3, G6/S6)**

- ○ Seats out risk management completed and approved
- ○ Appropriate tactical command post in PZ posture
- ○ Coordination complete for external communication assets
- ○ Primary Alternate Contingency Emergency plan for critical mission command networks for each phase
- ○ Final Communications card published
- ○ Oeration Schedule complete and distributed
- ○ Liaison Officer teams to higher and adjacent in place and aware of plan
- ○ Division media plan in place
- ○ Rehearsals complete
- ○ Communication exercise Complete

Legend

AASLT- air assault
ADAM - air defense airspace management
AVN - aviation
BAO - brigade aviation officer
BDA - battle damage assessment
BDE - brigade
C2W - command and control warfare
CAS - close air support
CBRN - chemical, biological, radiological, and nuclear
DART - downed aircraft recovery team
DIV - division
ENG - engineers
FARP - forward arming and refueling point
FLS - flight landing strip
HLZ - helicopter landing zone
NAI - named are of intrest
NET - network
PZ - pickup zone
RRP - rapid refuel point
TMD - theater missile defense

Figure B-3. Example air assault conditions checklist (continued)

B-4. Figure B-4, page B-9 is a sample on-scene commander checklist. This example may be used in the event of a downed aircraft or personnel recovery operation.

On Scene Commander (OSC) Checklist
(Pilot not on controls)

- ○ **Transmit Fallen Angel to flight on designated frequency or guard.**
- ○ **Assume Command and assign duties within your crew and flight.**
- ○ **Immediately monitor all briefed recovery frequencies.**
- ○ **Begin to consolidate information.**
  - ○ Fallen Angel call sign
  - ○ Location
  - ○ Cause
  - ○ Crew status
  - ○ Enemy, friendly, and civilian situation
  - ○ Station time, equipment available, personnel available and your intentions
  - ○ Crew direction of movement
- ○ **Alert and report.**
  - ○ Alert friendly forces in area
  - ○ Alert parent battalion
  - ○ Alert ground owner
- ○ **Contact your wingman on the ground.**
  - ○ First attempt should be team internal frequency (if crew is still in ACFT)
  - ○ Second attempt should be on UHF (if crew is still in ACFT)
  - ○ If UHF is being jammed then push to VHF guard
  - ○ Attempt on SAR A
  - ○ If SAR A fails, then SAR B
  - ○ Guide crew to extract location by flashing landing/search light over direction of desired movement.
  - ○ Determine number of survivors and physical condition
- ○ **Prepare MEDEVAC 9-line as required.**
- ○ **Manage assets.**
  - ○ Determine assets available and required
  - ○ Note C/S, position, station time, and equipment of assets as they check-in
  - ○ Assign duties
  - ○ Deconflict as required
- ○ **Conduct detailed battle handover to recovery assets or when passing off OSC duties.**

Example Downed Personnel Procedures
(NOTE - EPA takes priority)

- ○ **Contact wingman from within aircraft.**
  - ○ Contact via team internal
  - ○ Contact via UHF or VHF guard
- ○ **Exit the Aircraft, assess crew member status.**
  - ○ Provide security and first aid as necessary
  - ○ Remain near the aircraft unless the situation is not tenable (aircraft fire, enemy forces)
- ○ **Contact wingman via CSEL.**
  - ○ Immediately tune to SAR A. If SAR A fails, then SAR B, then UHF or VHF guard. If jamming is occurring on UHF, then push to VHF guard. If no wingman then broadcast Fallen Angel on 243.0.
- ○ **Send MEDEVAC 9-Line as required.**
- ○ **If necessary, zeroize aircraft.**
- ○ **If necessary, prepare for wingman extraction.**
- ○ **If necessary, execute EPA and employ CSEL per SPINS.**

Legend

ACFT - Aircraft
CSEL - Combat survivor evader locator
EPA - Evasion plan of action
MEDEVAC - Medical evacuation
OSC - On Scene Commander
SAR - Search and rescue
SPINS - Special instructions
UHF/VHF - Ultra/Very high frequency

Figure B-4. Example of an on scene commander checklist

SECTION II – AIR MISSION BRIEF DOCUMENTS

B-5. Table B-1 depicts a sample air movement table. These tables help commanders and staffs visualize where personnel and equipment are located during the staging and loading phases of an air assault.

Table B-1. Example of an air movement/loading table

Air Movement/Loading Table																			
Line #	Avn Unit	Lifted Unit	Lift #	Serial	Chalk	PZ	PZ Arr/ Load Time	T/O Time	SP Time	RP Time	HLZ	HLZ Time	HLZ Hdg	HLZ Form	Route		Load		Remarks
															Ingress	Egress	PAX	Sling	
1	4-379	SCT/1-603 IN				As per coord	As per coord				Raven	H-36+00:00	As per PIC	As per PIC	As per PIC	As per PIC	16		Bump 4
2	4-354	SCT/2-603 IN				As per coord	As per coord				Oriole	H-35+59:00	As per PIC	As per PIC	As per PIC	As per PIC	16		
3	3-354	2/C/6-4 CAV(-)				As per coord	As per coord				Pelican	H-35+58:00	As per PIC	As per PIC	As per PIC	As per PIC	20		Bump 12
4	3-354	2/C/6-4 CAV(-)				As per coord	As per coord				Dove	H-35+57:00	As per PIC	As per PIC	As per PIC	As per PIC	8		TAC CP

Table Note.
ARR – arrival
AVN – aviation
CAV – cavalry
COORD – coordination
TAC CP – tactical command post
FORM – formation
HDG – heading
HLZ – helicopter landing zone
T/O - takeoff
IN - infantry
PAX – passenger
PIC – pilot in command
RP – release point
SP – start point
PZ – pickup zone

B-6. Figure B-5, page B-11 depicts a sample communications card. This card will contain communications information for the operation, to include contingency and emergency information.

CAB MISSION COMMO CARD	MODE 1	11	12	TOMORROW	13	15	8 - Apr - 13				
SERIAL	MODE 1	PIC	PI	MODE 2/3	URN / LASER						
1	ATO C/S	NRCM'S			F1	U	V	F2	B	X	
1 * 1	UH-60	ABBOT, A	ELLIOT, E	3001							
	01-23456	KENT, K	PINKNEY, P	-	A 3-4 01				-		
1 * 2	UH-60	BENTLEY, B	FOLEY, F	3002							
	01-23457	LEON, L	OSCAR, O	-	A 3-4 02				-		
1 * 3	UH-60	CALVIN, C	DENTON, D	3003							
	01-23458	MARTINEZ, M	NELSON, N	-	A 3-4 03				-		
	CH-47	GRANT, G	ISAAC, I	2001							
	01-34567	QUAGMIRE, Q	VALDEZ, V	TORRES, T	B 2-4 01				-		
1 * 5											
					B 2-4 02				-		
1 * 6											

CHALK DUTIES /		NOTES	EVENT	TIME
1	ATC, NAV		GO NO GO	1800
2	A2A		COMMO	2000
3	TOC, AMC		LINE UP	2010
4	ROZ, WX		TAKE OFF	2015
5			H HOUR	2045
6			DE-BREF	

SPINS DATA

COM		35,000	329,000	125,000	34,500	
ROLL						
	A	B	C	D	E	F
FM1	TF HQ 38,500	CAN 40,500	FIRES 41,500			
UHF	TOWER 330,000	ABN 335,000	ABN 335,000			
VHF	TOWER 123,000	MES CNTRL 128,000	CTAF 127,500			
FM2	INTERNAL 34,500	INTERNAL 34,500	INTERNAL 34,500			

PUSH	UNIT/AGENCY	CALL SIGN	FM1	UHF	VHF	FM2	SAT / BFT
1	TF HQ	MUSTANG MIKE	38,500			38,500	
2	COMBAT AVIATION NET	ASSASSIN 6	40,500			40,500	
3	FIRES	ASSASSIN FIRES	41,500			41,500	
4	AIR BATTLE NET			335,000	126,000		
5	MES TOWER	MES TOWER	39,950	330,000	123,000		
6	INTERNAL		35,000	329,000	125,000	34,500	
7	COALITION TRAFFIC			345,000	127,000		
8	MES CONTROL	MES CONTROL		333,000	128,000		
9							
10							
11							
12							

Legend

ABN - air battle net
BFT - blue force tracker
CAN -combined arms net
CTAF -ccommon traffic advisory frequency
HQ - headquarters
SAT - satellite
TF - task force
UHF - ultra high frequency
VHF - very high frequency

Figure B-5. Example of a communications card

B-7. Figure B-6, page B-12 depicts a sample pickup zone diagram. The information on this card informs aircrews and personnel on the PZ about staging/loading locations, frequencies, and marking of personnel and equipment.

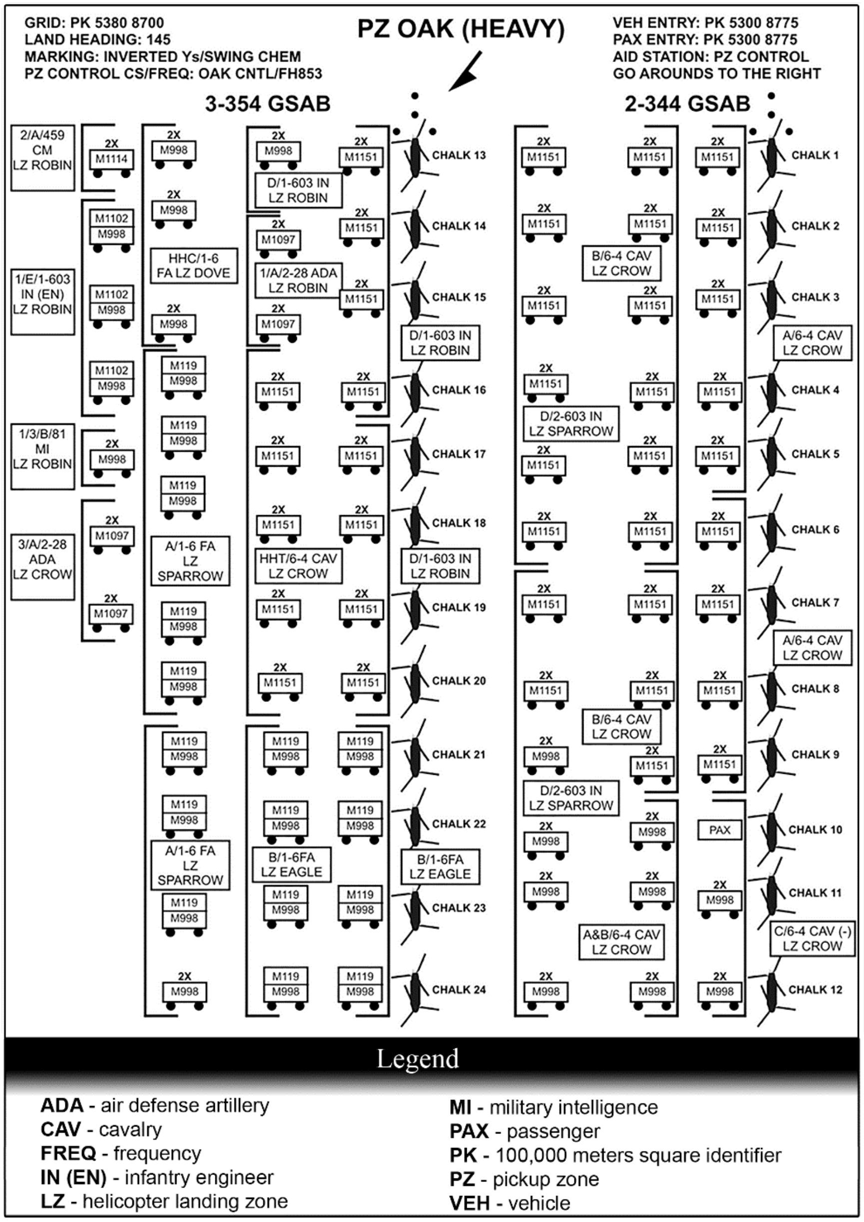
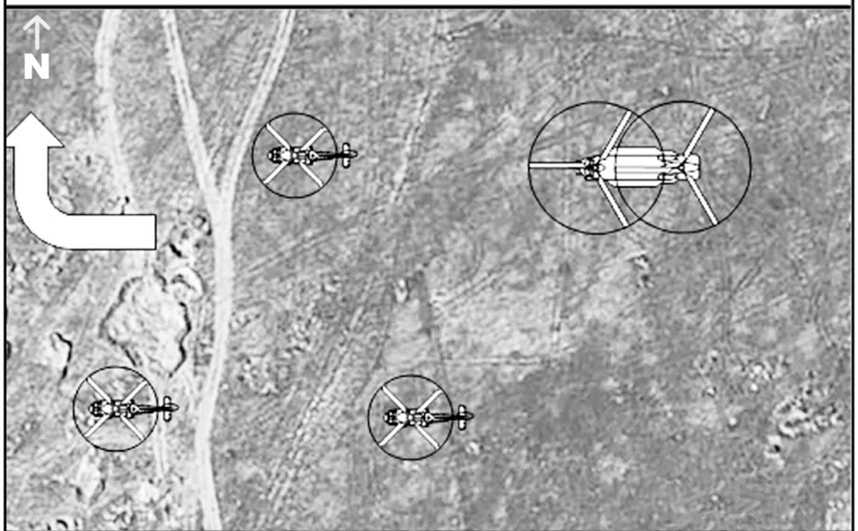


Figure B-6. Example of a pick-up zone diagram

B-8. Figure B-7, page B-13 depicts a sample landing zone diagram. This sketch provides critical information to aircrews on the hazards associated with a landing zone, communications with ground units, landing/departure directions, and go-around information.

HLZ EAGLE



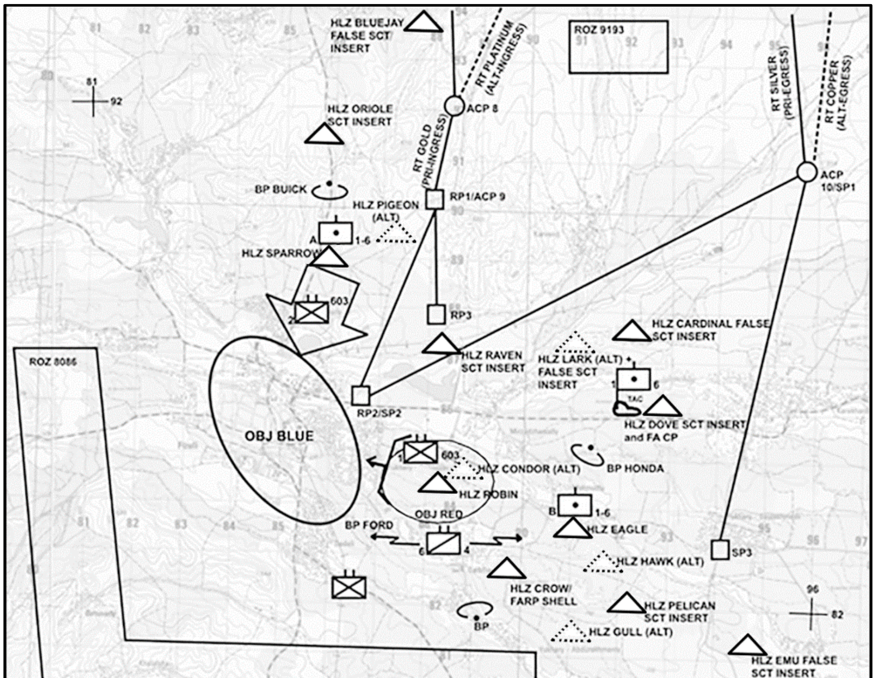
NAME	GRID	ELEVATION
HLZ EAGLE	MQ 1234 5678	3123’
FORMATION	FREQ/CS	DOORS EXIT
STAG RIGHT	40.500/ASSASSIN 6	TWO SIDE/REAR
DIRECTION	GO AROUND	ALTERNATE
270	RIGHT	CONDOR
MARKINGS	HAZARDS	WEAPONS
NONE	DUST	TIGHT
LOAD	FUEL	REMARKS
N/A	N/A	

Legend

FREQ - frequency
HLZ - helicopter landing zone
PZ - pickup zone

Figure B-7. Example of a helicopter landing zone diagram

B-9. Figure B-8, page B-14 is a sample operations sketch. This sketch broadly depicts the operation and highlights key friendly locations, template enemy locations and weapons systems, and objectives.



Legend

ALT - alternate	**PZ** - pickup zone
BP - battle position	**ROZ** - restricted operations zone
FA CP - field artillery command post	**RP** - release point
FREQ - frequency	**RT** - route
HLZ - helicopter landing zone	**SCT** - scout
OBJ - objective	**SP** - start point

Figure B-8. Example of an operations sketch

B-10. Figure B-9, page B-15 depicts a sample route card. This card contains the navigation information necessary for aircrews to fly to and from key locations during the air assault mission.

Route Card	Primary Ingress					
Route	GOLD (HLZ ROBIN)					
ACP	Grid	Magnetic (MAG) Heading	ETA/ Elapsed	Distance (km)	A/S (knots)	Remarks
PZ	PK 5455 8700					Adjacent to Airfield
SP1	PK 5720 7855	166	04:19 04:19	8.0	60	Base of ridge/beginning of road crossing stream
1	PK 6080 6755	159	04:51 09:10	12.0	80	Major road junction
2	PK 7180 4575	150	09:43 18:53	24.0	80	Major road junction
3	PK 8250 3000	146	08:30 27:23	21.0	80	Road crossing river
4	PK 8770 2150	144	04:03 31:26	9.9	80	Two roads bending towards each other
5	PK 8890 1655	163	02:13 33:39	5.5	80	Road intersection
6	PK 8790 0650	183	04:27 38:06	11.0	80	Saddle
7	PK 8870 0010	171	02:37 40:43	6.5	80	Western slope of hill
8	PJ 8870 9225	175	03:11 43:53	7.9	80	Road junction
9	PJ 8845 9040	188	00:48 44:41	2.0	80	Bend in road
RP2	PJ 8710 8665	196	01:37 46:18	4.0	80	Western edge of lake
HLZ Robin	PJ 8850 8510	112	01:20 47:38	2.5	60	North side of airfield
ALT LZ Condor	*PJ 8930 8545*	*118*	*01:20*	*2.5*	*60*	Open area north of airfield

Legend

ALT - alternate
A/S - air speed
ETA - estimated time of arival
HLZ - helicopter landing zone
km - kilometer
LZ - landing zone
PZ - pickup zone
RP - release point
SP - start point

Figure B-9. Example of a route card

B-11. Figure B-10, page B-16 depicts a sample air assault mission execution checklist. This checklist is used for mission tracking and enables situational awareness throughout the duration of the operation.

Line #	Time H/Local	Event	M/X	NET	From	To	Code Word
10	H–8+00.00	INITIAL WEATHER CALL	M	BDE CMD	BDE TOC	ALL	
15	H-4+00:00	INTEL UPDATE/ FINAL WEATHER CALL (INTEL TENT)					
20	H-3+20:00	MC AIRCRAFT ARRIVES AT PZ	M	CAN2	PHANTOM	WINGS BAE	ADKINSVILLE
25	H-3+00:00	1-78 ATK ON STATION	M	CAN1	BEAST 6	ROCK 6	ALBANY
30	H-3+00:00	5-78 ATK ON STATION	M	CAN1	VARSITY 6	ROCK 6	ABILIENE
35	H-3+00:00	UH-60 ARRIVES PZ MAPLE	M	CAN1	QUICK FIX	WINGS 6	ALLENTOWN
40	H-3+00:00	PZ POSTURE OAK					
45	H-2+55:00	MEDEVAC ARRIVES AT PZ MAPLE	M	CAN1	DUST-OFF 44	WINGS 6	ARLINGTON
50	H-2+53:00	CDR's COMMUNICATIONS CHECK	M	BDE CMD, CAN1 ABN, OF 1	ROCK 6	GUIDONS	SEE COMMO CARD
55	H-2+40:00	UH-60S ON STATION ROZ 9889	M	ABN/C AN1	QUICKFIX 6	WINGS 6/ ROCK 6	ALBION
60	H-2+44:00	UAS ON STATION ROZ 8086	M	ABN/C AN1	NIGHTHAWK 6	WINGS 6/ ROCK 6	ASHVILLE
65	H-2+25:00	5-78 ATK CONDITIONS CALL ON HLZ CROW	M	CAN1	VARSITY 6	ROCK 6	CHERRY/ICE CROW
70	H-2+20:00	5-78 ATK CONDITIONS CALL ON HLZ EAGLE	M	CAN1	VARSITY 6	ROCK 6	CHERRY/ICE EAGLE
75	H-2+15:00	1-78 ATK CONDITIONS CALL ON HLZ ROBIN	M	CAN1	BEAST 6	ROCK 6	CHERRY/ICE ROBIN
80	H-2+10:00	1-78 ATK CONDITIONS CALL ON HLZ SPARROW	M	CAN1	BEAST 6	ROCK 6	CHERRY/ICE SPARROW
83	H-2+05:00	5-78 ATK CONDITIONS CALL ON HLZ DOVE	M	CAN1	VARSITY 6	ROCK 6	CHERRY/ICE DOVE
85	H-2+00:00	PZ POSTURE MAPLE					
90	H-50:00	MEDEVAC IN ROZ 9193 (1 X UH60V)	M	ABN/C AN1	DUST-OFF 44 / WINGS 6	WINGS 6/ ROCK 6	ATLANTA
95	H-44:21	LIFT 1 SER 1 AT SP FOR HLZ CROW (A/6-4CAV) (5 X CH47)	M	ABN/C AN1	PHANTOM 16	WINGS 6/ ROCK 6	AUGUSTA
100	H-43:21	LIFT 1 SER 2 AT SP FOR HLZ CROW (A/6-4CAV) (4 X CH47)	M	ABN/C AN1	PHANTOM 26	WINGS 6/ ROCK 6	BALTIMORE
105	H-42:21	LIFT 1 SER 3 AT SP FOR HLZ CROW [C/6-4CAV (-)] (3 X CH47)	M	ABN/C AN1	PHANTOM 36	WINGS 6/ ROCK 6	BANGOR
110	**H-40:21**	**LIFT 2, SER 1 AT SP FOR HLZ ROBIN (A/1-603 IN) (5 X UH-60)**	**M**	**ABN/ CAN1**	**COMANCHERO 16**	**WINGS 6/ ROCK 6**	**BOSTON**
115	**H-39:21**	**LIFT 2, SER 2 AT SP FOR HLZ ROBIN (A/1-603 IN & HHC/1-603) (4 X UH-60)**	**M**	**ABN/ CAN1**	**COMANCHERO 26**	**WINGS 6/ ROCK 6**	**BIRMINGHAM**

Legend

ABN - air battle net
ALT - alternate
BAE - brigade aviation element
BDE - brigade
BP - battle position
CAN - combined arms net
CDR - commander
FREQ - frequency
HLZ - helicopter landing zone
MEDEVAC - medical evacuation
OBJ - objective
PZ - pickup zone

Figure B-10. Example of an execution checklist

Appendix C

Attack/Reconnaissance Example Checklists and Briefing Documents

This appendix provides example checklists and briefing formats used by aviation units executing attacks and/or reconnaissance during training or combat. Please note, it is not all inclusive; products are used as a guide and do not supersede unit SOPs.

SECTION I – BATTALION/SQUADRON/TASK FORCE ORDERS PROCESS

OPORD DEVELOPMENT

C-1. Time Sequence is as follows:

- Receipt of mission
- Establish time schedule
- Mission analysis
- Compute engagement area calculus
- Receipt of commander's guidance
- Issue WARNORD
- Orders planning group plans operations order (primary staff / battle captains led by executive officer)
  - Make tentative plan
  - Initiate movement
  - Initial recon instructions issued
  - Liaison officer(s) out
  - IPB conducted
  - RFI's submitted to higher and supported units
  - Products developed, refined, and finalized
- Issue OPORD / formal back briefs to commander
- Reduced force rehearsal
- Company/troop rehearsals
- Full force rehearsal
- Mission execution

RECEIPT OF MISSION

C-2. When possible, the orders group attends the supported unit OPORD brief. Attendees: CDR, CSM, S-3, LNO, FSO, S-2, and S-4. Once the unit receives the mission, key staff meet in the Main CP to begin mission analysis.

ESTABLISH TIME SCHEDULE

C-3. XO/S-3 allocates time for the planning process based on the designated H-Hour, time on target, and METT-TC and posts the time schedule. Table C-1, page C-2 is a guide for staff planning.

Table C-1. Time schedule for mission planning

Mission Time Schedule	*Mission Planning Time*
RECEIVE THE MISSION/ WARNO 1	1.0 Hours
MISSION ANALYSIS	1.5 Hours
COA DEVELOPMENT	1.5 Hours
COA SELECTION	1.0 Hours
WARGAME PREP	1.5 Hours
WARGAME	2.0 Hours
ORDERS PRODUCTION	3.0 Hours
ISSUE ORDER	0.5 Hours

MISSION ANALYSIS

C-4. Begins upon receipt of the mission. Organized by XO or S-3. Primary staff and battle captains participate. At the conclusion of the mission analysis, RFIs are submitted to the supported unit.

BATTLEFIELD CALCULUS

C-5. Battlefield calculus is computed as follows:

- Number of vehicles / targets in the engagement area by type.
- Mission objective percentage.
- Current probability of kill for HELLFIRE model being used.
- Number of AH-64s available for mission.
- Time in ABF for AH-64s based on fuel considerations.
- Number of suitable ABFs available.

RECEIPT OF COMMANDER'S GUIDANCE

C-6. Occurs upon completion of the EA calculations. Initial guidance includes intent (purpose, key tasks and endstate) and time he/she expects the OPORD to be briefed and may include:

- Specific planning considerations to consider.
- Special command and control considerations.
- Sustainment considerations.

ISSUE WARNING ORDER (S-3)

C-7. Issue the WARNORD 30 minutes from receipt of supported unit WARNORD.

MISSION PLANNING

C-8. Perform the following:

- Threat analysis and IPB (S-2)
- Select routes (S-3)
- Determine EA calculus (S-2/ S-3)
- Select EA/ABFs (S-2/ S-3)
- Fire Support / SEAD plan / CAS (FSE/ ALO)
- Airspace control (SIP/ ASO/ AMSO)
- RFIs (S-3)
- Overlays (FS NCO/ Chem NCO)
- EA sketch (S-2)
- Operational sketch (S-3)
- Synchronization matrix (S-3 / FSO)
- WARNORD/FRAGORD (S-3)

- Current / next AA sketch (S-3)
- Imagery (S-2)
- FARP sketch (Distribution PLT LDR)
- AMPS (AMSO)
- PIM card programmed
- FALCONVIEW/ AMPS analysis
- Fighter management
- Risk assessment
- GPS approach to TAA (SIP)

PRINCIPLES OF DIRECT FIRE

C-9. The following are the principles of direct fire:

- Mass fires
- Leaders must control fires
- Crews must understand fire plan
- Focus fires
- Distribute fires
- Shift fires
- Rehearse the fire plan

ATTACK BY FIRE CRITICAL QUESTIONS

C-10. The following are critical questions for attack by fire position selection:

- Where to engage the enemy?
- Where to kill the enemy?
- How to initiate fires?
- Which enemy systems to engage first?
- Which system to engage with first?
- What is the desired effect of fires (kill lead vehicle or divert enemy into a kill zone?)
- How to distribute fires?
- Is there the necessary volume of fires?
- Does the plan avoid overkill?
- Are we concentrating on long range fires?
- Does the plan allow us to engage targets with the highest probability hit/kill?
- What are the best shots?
- Does the plan minimize risk by killing the most dangerous threats first?
- Are we maximizing the use of all available weapon systems?

ATTACK BY FIRE (ABF) DEVELOPMENT

C-11. Employ the following items to the fullest extent possible:

- Background - will aid in concealment.
- Range - take advantage of maximum standoff ranges, avoid enemy ranges when possible. Engage targets at the maximum range that permits a high P_K. Planning should concentrate on sensor ranges, not weapon maximum standoff ranges.
- Altitude - engagement altitude should be at or above the enemy targets.
- Sun or Moon- should be to the rear of the ABF to aid in concealment and visibility.
- Shadows - will aid in concealment.
- Concealment - use ABF's that offer areas of concealment.

- Rotor Wash - ABF's located over leaves, dust etc. may compromise position.
- Area to Maneuver - use ABF's large enough to allow all elements freedom to reposition if necessary.
- Fields of Fire - Must be large enough to allow elements to engage both stationary and moving targets within their sector. ABFs should provide an unobstructed view of the target in the EA. Use FalconView / AMPS to determine LOS from ABF to target area.

C-12. Consider and/or employ the following:

- ABF reconnaissance - conduct an ABF recon and FCR scan before committing assets.
- Avenues of approach - where will the enemy enter the anticipated EA.
- Fall back ABF's - where will we go if we are compromised or overrun.
- Secondary ABF's - where will we go if the enemy is discovered in a different area.
- Electro-optical forecast - will provide predicted FLIR capabilities.

BATTALION/SQUADRON/TASK FORCE OPERATIONS ORDER ISSUE

C-13. Operations order packet (at a minimum):

- OPORD
- Operations sketch
- FARP sketch
- Communications card
- AMPS load
- Copy of graphics

C-14. Attendees: CO, XO, S-1, S-2, S-3, S-4, CSM, FSO, SIGO, AMSO Officer, EWO, UH/CH/HH Crew (as applicable), UAS MC/AC, Commander's pilot, Company/Troop Commanders, ASO, SWO if available.

C-15. OPORD briefing sequence:

- XO: Introduction.
- S-3: Time Hack, Map Orientation, Task Organization.
- S-2: Enemy Situation, Terrain and Weather.
- S-3: Friendly Situation, Higher Mission/ Intent.
- S-3: Mission.
- Commander: CDRs Intent.
- S-3: Concept of Operation, Scheme of Maneuver.
- FSO: Fire Support.
- AMSO: Coordinating Instructions.
- S-4: Logistics.
- S-1: CASEVAC, personnel replacements.
- S-3: Command and Signal.
- ASO: Safety.
- S-3: Questions/ Time Hack.
- Commander: Comments.

SECTION II – COMPANY/TROOP PLANNING CELL CHECKLISTS

COMMANDER CELL (WARNORD)

TASK ORGANIZATION

Aircraft CDR (UAS)	Pilot-In-Command	Pilot / Seat	Call sign	Subscriber ID

PLANNING CELL ASSIGNMENTS

CELL	PRIMARY ACTION OFFICER	SECONDARY ACTION OFFICER / CHECKER
ENEMY / WEATHER		
FRIENDLY		
MANEUVER		
-FLIGHT COORDINATION		
-GRAPHICS AND CONTROL MEASURES		
-COORDINATING INSTRUCTIONS/ CONTINGENCIES		
FIRE SUPPORT		
SERVICE SUPPORT		
COMMAND AND SIGNAL		

CHAIN OF COMMAND:
ATTACHMENTS/DETACHMENTS:
ABORT CRITERIA:
MISSION STATEMENT:
INITIAL CONCEPT OF THE OPERATION:
COMMANDER'S INTENT:
PURPOSE:
KEY TASKS:
ENDSTATE:
SUCCESS CRITERIA:

TIMELINE

EVENT	TIME	EVENT	TIME
		REHEARSAL	
WARNORD		REHEARSAL	
CELLS TO CDR			
		BORESIGHT/LINE UP	
FLIGHT PACK REVIEW			
CO/TRP BRIEF		TAKE OFF	
REHEARSAL		TIME ON TARGET / LINE OF DEPARTURE	

ENEMY SITUATION (COORDINATE WITH MANEUVER AND FIRE SUPPORT CELLS)
TERRAIN & WEATHER: WHO DOES IT FAVOR? US or THE ENEMY
TERRAIN ANALYSIS (CONDUCT DETAILED ANALYSIS OF ALL ROUTES, ABFs, BPs, SBFs, OBJ AREA; UTILIZE NORMA, BRASSCRAFF; TIME PERMITTING USE FALCONVIEW
OBSTACLES:
COVER AND CONCEALMENT:

OBSCURATION / FIELDS OF FIRE:
KEY TERRAIN:
AVENUES OF APPROACH:
ENEMY ACTIONS (PAST ACTIONS THAT ARE RELEVANT TO THE OPERATIONS):
ENEMY ACTIONS (LAST 24 HOURS):
ENEMY ACITONS (CURRENT):
ENEMY LOCATION (INCLUDE FRONT LINE ENEMY TRACE):
ENEMY COMPOSITION (EQUIPMENT TYPES, UNIQUE CAPABILITIES (EW/IW, ADA, CBRN, ETC.))
ENEMY DISPOSITION (HOW ARE THEY ARRANGED?):
ENEMY STRENGTH (HOW MUCH EQUIPMENT DO THEY HAVE?):
ENEMY ACTIONS ON CONTACT:
COURSE OF ACTION #1 (MOST LIKELY):
COURSE OF ACTION #2 (MOST DANGEROUS):
WHERE IS THE ENEMY GOING?
WHEN WILL THEY BE THERE?
IDENTIFY ADA THREAT BY TYPE AND ARRAY (ROUTE AND OBJECTIVE):
BRIEF TTPs for RELATED ADA:
DIRECT FIRE WEAPONS AND RANGES:
ASE SETTINGS AND INDICATIONS TO DEFEAT/MINIMIZE ENEMY ADA SYSTEMS:
- FIRE CONTROL RADAR:
  - PRIORITY SCHEME:
  - TERRAIN SENSITIVITY:
  - RFI:
  - APR-39(EID&OFP):
  - CMWS:

CCIR:
RISK ASSESSMENT (IDENTIFY TACTICAL RISKS FOR THE MISSION AND MITIGATIONS):

PRODUCTS / TASKS:
ENEMY GRAPHICS POSTED (LOCATIONS, ADA, RANGE FANS, FIRE SUPPORT RANGE FANS)
EQUIPMENT PICTURES POSTED?
ASE SET PROPERLY ON ALL MISSION AIRCRAFT?
DEPICTED ON TERRAIN MODEL?
FALCONVIEW ANALYSIS OF ROUTES / TACTICAL POSITIONS / OBJECTIVE AREA COMPLETE?
AMPS LOAD AND CARDS LOADED?

WEATHER

CURRENT CONDITIONS:
- CEILING:
- VISIBILITY:
- WINDS:
- ALTIMETER:
- TEMPERATURE:
- PRESSURE ALTITUDE:
- DENSITY ALTITUDE:

LIGHT DATA:
- BMNT:
- SUNRISE:
- SUNSET:
- EENT:
  - EO:
  - MOON
    - RISE
    - SET
- % ILLUM:
- IR CROSSOVER:

FORECAST WEATHER:
- MAX PA:
- MAX TEMP:
- MAX DA:
- DEW POINT:
- SIGMETS:

WEATHER EFFECTS ON A/C SYSTEMS:

EN ROUTE WEATHER:
CEILING:
VISIBILITY:
WINDS:

HAZARDS TO FLIGHT:
TOWERS:
WIRES:

EA / OBJ WEATHER:
CEILING:
VISIBILITY:
WINDS:

PRODUCTS / TASKS:
GRAPHICS POSTED?
PLANNING WX POSTED?

RETURN WEATHER:
CEILING:
VISIBILITY:
WINDS:

FRIENDLY SITUATION:
1 LEVEL HIGHER MISSION:

1 LEVEL HIGHER CDR'S INTENT:

MISSION:

CDR'S INTENT:

GROUND TACTICAL CDR'S PLAN:

ADJACENT UNITSDURING OUR MISSION (AIR & GROUND TACTICAL PLANS) AT T/O:
LOCATION:

MISSION AND MOVEMENT:

ENROUTE: LOCATION:

MISSION AND MOVEMENT:

AT ABF: LOCATION:

MISSION AND MOVEMENT:

PRODUCTS / TASKS:

FRIENDLY OBSTACLE PLAN POSTED? (LOCATION AND PURPOSE):
FRIENDLY GRAPHICS POSTED?
FRIENDLY ID GRAPHICS AVAILABLE (PHOTOS)?
FRIENDLY ROUTES OF MOVEMENT IN SECTOR POSTED?
FRIENDLY ARTILLERY PLOTTED?
FRIENDLY ADA PLOTTED?

MANUVER:
(PLANNING CELLS COORDINATOR ENFORCES TIME LINE)

Co/Trp MISSION:

CDR'S INTENT:
PURPOSE:

KEY TASKS:

ENDSTATE:

SUCCESS CRITERIA:

CONCEPT OF THE OPERATION:

MANUVER:

TASKS TO SUBORDINATE UNITS:
TEAM/PLATOON
ONE:
TWO:
THREE:
FOUR:

PRODUCTS / TASKS:
SPECIFIED TASKS FRO TEAMS POSTED: YES / NO

FLIGHT COORDINATION
TAA: A/C PLAN:
RADIO CALLS:
SECURITY (NAIs TO OBSERVE):

AIR CORRIDORS (INGRESS from TAA to FARP or HA):
PRIMARY:
ALTITUDES:
AIRSPEEDS:

LIGHTING:
MODE OF FLIGHT / MOVEMENT TECHNIQUES
FORMATIONS:
PASSAGE POINTS/COORDINATION:
OBSTACLES:
ACTIONS ON CONTACT:
ALTERNATE ROUTE:

HA's LOCATION(S):
OCCUPATION CONFIGURATION/SECURITY:
RECON LEVEL IN HA:
AIR CORRIDORS (INGRESS from FARP / HA / TAA to RP):
PRIMARY:
ALTITUDES:
AIRSPEEDS:
LIGHTING:
MODE OF FLIGHT / MOVEMENT TECHNIQUES:
FORMATIONS:
PASSAGE POINTS/COORDINATION:
OBSTACLES:
ACTIONS ON CONTACT:
ALTERNATE ROUTE:
AIR ROUTES (INGRESS RP to ABF / BP / ZONE / AREA)
PRIMARY:
ALTITUDES:
AIRSPEEDS:

LIGHTING:
MODE OF FLIGHT/MOVEMENT TECHNIQUES:
FORMATIONS:
ACTIONS ON CONTACT:
ALTERNATE ROUTE:

ABF's: Brief this information off of the ABF/BP Cell Sheets

AIR ROUTES (EGRESS to SP)
PRIMARY:
ALTITUDES:
AIRSPEEDS:
LIGHTING:
MODE OF FLIGHT/MOVMENT TECHINIQUES:
FORMATIONS:
ACTIONS ON CONTACT:
ALTERNATE ROUTE:

AIR CORRIDORS (EGRESS SP to FARP or TAA):
PRIMARY:
ALTITUDES:
AIRSPEEDS:
LIGHTING:
MODE OF FLIGHT/MOVEMNT TECHINIQUES:
FORMATIONS:
ACTIONS ON CONTACT:
ALTERNATE ROUTE:
POSSIBLE RE-ATTACK CORRIDORS:

POSSIBLE RE-ATTACK ABF/BPs:

FUEL REQUIERMENTS:

TAKE-OFF:	LBS FROM (LOCATION)
JOKER:	LBS FROM (LOCATION)
BINGO:	LBS FROM (LOCATION)

ACO/ATO REQUIREMENTS:

AMPS LOAD COMPLETE:
VERIFY ELECTRONIC DATA COINCIDES WITH WRITTEN ORDER FROM HHQ
PREPARE TERRAIN INTERVISIBLITY PLOTS
COORDINATE WITH S-2 TO DETERMINE ENEMY LOCATIONS AND EFFECTIVE RANGES
BUILD COMMO LOAD (COMMO NES AND SUBSCRIBER TABLES FOR DIGITAL NETS)
COORDINATE ASE AND WEAPONS SETTINGS

PRODUCTS / TASKS:
DIAGRAMS POSTED (TAA / HA / AC PLAN):
AMPS LOAD COMPLETE?
AMPS PRODUCTS COMPLETE:
PC CARD UPLOAD C OMPLETE (INCLUDING BACK UP):
TDH COMPLETE AND IN FLIGHT PACK (IF DESIRED):
WAYPOINT LIST IN AMPS AND FLIGHT PACK (IF DESIRED)?
TERRAIN ANALYSIS COMPLETE (IN CONJUNCTION WITH S-2)?
STICK MAP DEVELOPED AND POSTED IN FLIGHT PACK?
FUEL INFO POSTED ON FLIGHT PACK?
CO/TRP GRAPHICS FORWARDED TO HHQ?

ABF/BP/EA OPERATIONS
(COORIDINATES WITH INTEL AND FLT COORDINATION CELLS)
PRIMARY ABF's
ALTERNATE ABF's
OCCUPATION OF ABF's (RP to ABF)
ABF SECURITY PLAN:
ACTIONS ON CONTACT:

MANEUVER PLAN IF ENEMY IS NOT IN EA:

TYPE OF ATTACK: PHASED / CONTINOUS / MAXIMUM DESTRUCTION

DIRECT FIRE PLANNING:

DEVELOP PLAN TO MASS FIRES IN EA
(DIRECT FIRES / ARTILLERY / CAS / MORTARS etc. DEVELOP AND POST TRPs IN EA's)

LEADERS CONTROL FIRES (DETERMINE PRIMARY AND ALTERNATE METHODS OF EXECUTING FIRES VOICE / DIGITAL / TIME etc. DEVELOP TRIGGERS AND LIST (PRIMARY AND ALTERNATE))

OVERAL PLAN:
TEAM:
TEAM:
TEAM:

FOCUS FIRES (CLEARLY CONVEY INSTRUCTIONS TO TEAMS; USE RECOGNIZABLE CONTROL MEASURES; CONDUCT DETAILED PLANNING FOR THE ENGAGMENT' DETERMINE REFERENCE POINTS FOR THE TADS AND FCR PREPOINTING IN EA BY TEAM):

DISTRIBUTE FIRES:
TARGETS PRIORITIES (ENGAGE WHAT FIRST):
DEVELOP ENGAGEMENT PLAN (FOR BOTH LATTERAL AND INDEPTH TARGETS):
WHICH WEAPONS WILL ENGAGE WHICH TARGETS?
DETERMINE TECHNIQUES OF FIRE DISTRIBUTION & CONTROL TO USE (CLOSEST TRP, QUADRANTS, FIRE PATTERNS, TARGET ARRAY, SECTORS,
PFZ (DEPICT ON TRP GRAPHICS):

SHIFT FIRES (DEVELOP THE PLAN FOR SHIFTING FIRES IN THE EA; i.e. LASER SPOT)

FIRE PLAN (DESCRIBE HOW THE FIRE PLAN SUPPORTS THE MISSION AND INTENT OF THE COMMANDER)

REHEARSE THE FIRE PLAN (INCORPORATE THE DIRECT FIRE PLANNING INTO THE REHEARSAL. ENSURE ALL TEAMS UNDERSTAND
HOW FIRES ARE INITIATED, SHIFTED, WHAT AND HOW TARGETS ARE ENGAGED etc.)

CONTROL MEASURES (DESCRIBE MEASURES AND POST ADDITIONS AND CHANGES TO TRP GRAPHICS):

CONTROL MEASURES (DESCRIBE MEASURES AND POST ADDITIONS AND CHANGES TO TRP GRAPHICS):

PRODUCTS TASKS:
DIRECT FIRE PLAN POSTED ON FLIGHT PACK?

EA/BP SKETCH POSTED ON FLIGHT PACK?
ALL CONTROL MEASURES IN AMPS (TGTS / ABFS / BPS ETC)?

TERRAIN ANALYSIS/FALCON VIEW COMPLETE FOR EACH ABF (COORDINATE W/ ENEMY SITUATION): YES / NO
EA SKETCH (Drawn and/or AMPS):

COORDINATING INSTRUCTIONS
TIMELINE

EVENT	TIME	EVENT	TIME

POSTED ON FLIGHT PACK?
CCIR

PIR

FFIR

AMMO CONFIGUREATIONS REQUIRED FOR MISSION:
LOAD:
HELLFIRE:
2.75” ROCKETS:
AUX TANK:
Robi TANK:

CBRN THREATCON:
MOPP LEVEL:
ADA WEAPONS CONTROL STATUS:
ADA WEAPONS WARNING STATUS:
MINIMUM WEATHER FOR MISSION:
ABORT CRITERIA:
AUTO ACKNOWLEDGE AND AUTOREPLY SETTINGS:

RELIEF ON STATION/BATTLE HANDOVER PROCEDURES:

RELIEF ON STATION/BATTLE HANDOVER PROCEDURES:

NOTAMS/SPINS:

FIGHTER MANAGEMENT PLAN:

MAINTENANCE STATUS / PLAN:

OPERATIONAL SAFETY CONSIDERATIONS:

RISK REDUCTION CONTROL MEASURES:

PRODUCTS / TASKS:

FLIGHT PLAN/STRIP COMPLTE?
SAFETY RAM COMPLETE?
PPC COMPLETE AND POSTED?
ALL FLIGHT COORDINATION INFO POSTED ON GRAPHICS AND FLIGHT PACK?

CONTINGENCIES

IIMC (Develop for each phase or segment of the mission/route):
BASE ALTITUDE:
HEADING CHANGES:
RECOVERY LOCATIONS:
NAVAIDS:
TACTICAL BEACONS:
AIRFIELD PROCEDURES:
APPROACHES AVAILABLE:
FREQUENCIES:

BUMP PLAN (TO INCLUDE CUT OFF TIME)

DEGRADED WEAPONS PLAN:

DPP/ATO PROCEDURES:

CSAR INFO (FROM ATO):
WORD/NUMBER/LETTER OF DAY:
CHANNEL A/ CHANNEL B:
BEACON:
BULLSEYE:
LEAD CHANGES:

EMERGENCY EGRESS FROM ABFs:

RALLY POINTS/PROCEDURES:

LOST COMMO:

AIRCRAFT DESTRUCTION AUTHORITY:
PRODUCTS / TASKS:
IIMC PLAN POSTED (IN FLIGHT PACK)? CSAR INFO POSTED?

FIRE SUPPORT
(COORDINATES WITH INTEL, MANEUVER, ABF CELLS)

FA ORGANIZATION FOR COMBAT

ARTILLERY UNIT	TYPE	LOCATION	CS/FREQs

PRIORITY TARGETS

PRIORITY TGT IDENTIFIERS	LOCATION

CONCEPT OF FIRES (BN Fires Cell):

MOVEMENT OF ARTY DURING OUR MISSION:

PRIORITY OF FIRES:
TYPE OF MUNITIONS AVAILABLE:
SEAD PLAN: WHEN:
WHERE:
TYPE ORD:
TRIGGER:
ABORT PROCEDURES:
LOCATION OF Q36/Q37 RADARS (Displays as ZSU on APR-39):

JAAT / CAS:
CDRS INTENT FOR CAS:
PRIORITY OF CAS:
IP:
CALL SIGN:
FREQ:
LASER CODE:
AFAC CALL SIGN:
FREQ:

FRIENDLY ADA

UNIT				
LOCATION				
TYPE				
WEAPON STATUS				

PRODUCTS / TASKS
FIRE SUPPORT COORDINATION MEASURES POSTED?
(Include all NFA, CFZ, RFA, CFL, RFL, Etc.)
FIRE SUPPORT RANGE FANS POSTED ON MAP?

FARPS: LOCATION(S):
LANDING DIRECTION:
LIGHTING:
TRAFFIC:
SECURITY SWEEP:
FARP CONTROL:
POINTS:
QUANTITY OF FUEL AVAIL:
QUANTITY AND TYPE AMMO AVAIL:
DIAGRAM POSTED:
DIAGRAM INCLUDED IN FLIGHT PACK?
MARKINGS OF THE FARP AND PERSONNEL (IF DIFFERENT THAN SOP):

MEDICAL PERSONEL:
LOCATION OF FIELD HOSPITAL:
LOCATION OF HHQ AID STATION:
FREQUENCIES:
MEDEVAC PROCEDURES:
RATION CYCLE AND TIMES:
CONTACT TEAMS (DART, BDAR):
LOCATION FOR LINK UP WITH DART PERSONNEL:
MOS INCLUDED:
RELEASE AUTHORITY:
PROCEDURES AT THE DOWNED ACFT SITE:

CHAIN OF COMMAND ON DART / BDAR PACKAGE (INCLUDE ALL DART PERSONNEL AND SECURITY ELEMENTS)

AIRCRAFT DECON SITE AND PROCEDURES:

CBRN/CASUALTY PLAN:

PRODUCTS / TASKS:
CBRN DECON INFORMATION POSTED ON GRAPHICS AND KNEEBOARD SKETCH?
AIRCRAFT STATUS (UPDATED COMBAT POWER BOARD?)
FARP DIAGRAM COMPLETE?
CURRENT ACFT WEAPONS CONFIG:
CURRENT ACFT FUEL STATUS:
TAIL NUMBERS FOR MISSION POSTED?
REHEARSAL SITE PREPARATION COMPLETE (SAND TABLE)?

COMMAND AND SIGNAL

HAVEQUICK WODS/ TIME CHANGE CONSIDERATIONS:
CHALLENGE/PASSWORD:
TIME PERIOD: JULIAN DATE:
MODE 4/IFF SET IN ACFT?
RADIO NET UTILIZATION IN ABF:
Co/Trp INTERNAL:
TEAM ONE INTERNAL:
TEAM TWO INTERNAL:
TEAM THREE INTERNAL:
TEAM FOUR INTERNAL:
UAS TEAM:

UAS UPLINK/DOWNLINK:
CHAIN OF COMMAND:
LOCATION OF HIGHER:
CP: HHQ CP:
TAC CP: HHQ TAC CP:
CDR:
ASSEMBLY AREA:
(CURRENT)
(FUTURE)

LASER CODES:

AIRCRAFT	CODE

RETRANS LOCATIONS:
RETRANS CHANGEOVER LOCATIONS FOR AIRCRAFT (LINE OF SIGHT ANALYSIS):
C/SEL FREQUENCY/LOADING COMPLETE?
(Coordinate with Contingencies Cell for Frequencies)
FLIGHT PACKET PREPARATION COMPLETE?

REHEARSAL TIME AND PLACE:
TIME HACK
QUESTIONS?

PRODUCTS / TASKS:

COMMO CARD COMPLETE AND POSTED ON FLIGHT PACK: YES / NO
SKL LOADED WITH CURRENT FILLS?
AIRCRAFT FILLED WITH CURRENT FILLS?
CODE WORDS POSTED ON FLIGHT PACK?
MODE 4/IFF SET IN ACFT?
MODE 1, MODE 2 POSTED?
COMMO SETS (COMMO CARD) DEVELOPED AND POSTED?
VERIFY LOS RECEPTION USING FALCON VIEW AND BRIEF RESULTS.

SECTION III – COMPANY/TROOP AIR MISSION BRIEF OUTLINE

TIME HACK
DATE/TIME
GRP: ______________________________ OPORD NUMBER: ____________ MAP REFERENCES: ___

TASK ORGANIZATION:

1. SITUATION

a. Enemy Forces.

(1) Weather vicinity of engagement area:

(2) Terrain:

(3) Light Data. (BMNT, % Moon Illum):

(4) NOTAMS:

(5) Enemy Forces:

(a) Strength (Ground/Air/ADA):

(b) Composition:

(c) Disposition:

(d) Location:

(e) Previous actions:

(f) Probable courses of action:

b. Friendly Forces.

(1) Higher (mission, location and intent: air and ground):

(2) Adjacent (air and ground):

(3) Ground unit(s) over which operations will be conducted:

(4) Supported unit(s) and location:

(5) Other aviation elements in the area of operations (incl flight routes):

c. Attachments and Detachments:

d. Weather:

(1) Current weather and light data for present location:

(2) Forecast weather for present location:

(3) Special environmental considerations or hazards. (IR Crossover / Time):

(4) Published weather minimums for operations:

e. Terrain:

2. MISSION (Who, What, When, Where, Why, & How) READ TWICE.

3. EXECUTION (Commander's Intent)

a. Concept of the Operation. (Overlay, give special attention to engagement area analysis).

(1) Scheme of maneuver:

(2) Fire Support/CAS/ADA:

(3) EW plan:

(4) Obstacles that support our plan:

(5) Deception plan:

(6) Suppression of enemy air defenses:

b. Specific Instructions to Subordinate Units.

(1) Team____:

(2) Team____:

(3) Team____:

(4) HHC/T:

(5) D Co/Trp:

(6) FSC/Trp:

(7) Attachments/detachments:

a. Fire Support.

(8) Field Artillery. (Location / Priority):

(9) JAAT/CAS. (# of Sorties? Who controls?):

(10) ADA. (Current control status / Control measures):

(11) Target Priorities. (FA priorities / BN/SQDN internal priorities):

(12) Fire Support Coordination Measures. (Permissive / Restrictive):

b. Coordinating Instructions.

(13) Success Criteria:

(14) PIR:

(15) Actions on Contact:

(16) Engagement Area / Target Priority:

(17) Time schedule.
(a) Preflight time:

(b) Comm checks:

(c) Lineup:

(d) Takeoff:

(e) Passage Point time(s):

(f) On station:

(g) Inspections and rehearsals (Location / Times):

(18) Ammunition configuration by aircraft and type ammunition:

(19) Bump Plan:

(20) Abort Criteria (# of aircraft):
(Point of no return):

(21) Mopp Level:

(22) Flight coordination.
(a) Air routes/corridors, ACPs, SPs, route names, rally points, "WAS" Lines, ASE turn-on points:

(b) Traffic patterns: (FARPs, AAs, other):

(c) Holding area, FAAs, FARPs, firing positions, and kill zones:

(d) Mode of flight, airspeed, and altitude for each leg of flight:

(e) Movement technique and formation for occupation of holding areas and battle positions:

(f) Direction into HA/ ABF and scheme of maneuver:

(g) Coordinating altitude and other ACMs:

(h) Aircraft lighting:

(I) IMC breakup procedures:
Base Altitude:

(j) Aircraft in-flight emergency procedures to recovery:

(k) Flight following:

(23) Crew endurance:

(24) ECCM. (Electronic counter-countermeasures):

(25) CBRN/MOPP condition for the mission:

(26) Plan for using degraded weapons, systems, NVD (if applicable):

(27) Special requirements en route to ABFs:

(28) Downed-pilot procedures (Pickup points, times, and signals):

4. SERVICE SUPPORT

a. Supply.

(1) Class I. (Subsistence ration cycle):

(2) Emergency Class III and Class V resupply points:

(3) Location of FARPs:

(4) Class IX. (Repair parts):

(5) Other Classes of supply:

(6) Water point and trash point:

b. Services and Transportation.

(1) Location of D Troop:

(2) Location of Contact Teams and MOM (Maintenance on the Move):

(3) Downed aircraft recovery procedures and pilot pickup procedures:

(4) Road march, ground movement, and convoy procedures:

c. Medical and Personnel Services.

(1) Location of SQDN/BDE aid station:

(2) Air-ground medical evacuation procedures:

(3) Field sanitation:

(4) Decontamination site:

d. Special mission-equipment and mission-essential equipment.

5. COMMAND AND SIGNAL

a. Command.

(1) Succession of command:

(2) Location: Main Tac Rear

(3) Proposed Assembly Area locations:

(4) Location of the CP, Ground CP/TAC CP, AirTac.

(5) Command group locations (BN/SQDN/TF, BDE, DIV, etc.):

b. Signal.

(1) SOI (Signal operation instructions) in effect: Time period:_______

(2) Secure radio codes and HAVE QUICK instructions:

(3) IFF. Turn-on and turn-off lines:
(a) Mode 3A:
(b) Mode 4:

(4) Laser codes.(Other than SOP):

(5) Challenge and password / Brevity words / Other non-standard signals used:

(6) TAC AIR and JAAT FREQs:

(7) Tactical beacons and other NAVAIDS:

TIME HACK:
REHEARSAL(S): TIME, PLACE, LOCATION

Appendix D

Aeromedical Evacuation Planning and Execution Considerations

This appendix provides considerations for the planning and execution of aeromedical evacuation operations. Please note, it is not all inclusive; products are used as a guide and do not superseded unit SOPs.

SECTION I – MEDICAL EVACUATION DUTY

DUTY OVERVIEW

D-1. A crew duty cycle is generally a 24 hour period where the crew has been identified to be on duty for 24 hours with planning and consideration given to Urgent/Urgent Surgical POI missions during crew swap. FSMP will manage crew duty day and rest within this cycle. During the 24-hour period, a typical duty day is 16 hours, with the maximum amount of flight hours prescribed by unit SOP. The cycle and number of cycles on duty will vary by remote site due to OPTEMPO, available crews and supporting assets available. Crews generally can remain on duty for 14 days continuously prior to requiring an extension.

D-2. Extensions to duty day / flight hours, reduction in rest, and/or extension of total duty cycles will be approved through the BN TF commander to the appropriate level required.

MEDICAL EVACUATION DUTY ASSUMPTION

D-3. The following duty assumption tasks must be accomplished at a minimum and order of some tasks may vary per FSMP site. Certain tasks are addressed which must be done in order. The oncoming crew must conduct a hasty assumption brief prior to assuming the mission if necessary that will include S-2, CUOPs, SPINS, and AMC brief.

D-4. Assigned crew(s) will report for duty at the scheduled time and location to receive a duty assumption brief. The duty assumption brief will include the following at a minimum:

- Overview of assigned operational area.
- S-2 brief including friendly/enemy significant activity and threat outlook.
- Weather outlook (briefed by Staff Weather Officer)
- S-3 (battle captain) brief of TF mission, review of operations leading up to and forecasted from the brief time for both air and ground, daily SPINS / ACO / ATO, and review and verification of duty risk assessment worksheet.
- Review of duty crew EPAs.
- AMC briefing per MEDEVAC SOP.

D-5. The oncoming Pilot-in-command (PC) of each crew will:

- Verify accuracy of risk assessment worksheet. The risk assessment worksheet should be prepared and submitted at least 24 hours prior to assumption, but ideally 48 hours prior.
- Verify accuracy of EPA and review the data and procedures with the crew.
- Verify crew is reading card file current.
- Review NOTAMs with crew.
- Verify mission equipment is fully operational and medic has conducted PCC/PCI of all medical gear.

D-6. The oncoming Air Mission Commander will:

- Conduct final verification of risk assessment worksheet.

- Conduct AMC brief:
- Ensure mission readiness is maintained throughout duty cycle.

D-7. Following the assumption brief, the crew(s) will report to the aircraft to preflight, set up aircraft to established mission ready standard, conduct a crew brief, run up, and conduct an engine health indication test (HIT) check. An APU start with communications check will suffice for run up if the aircraft has been run-up / HIT within 24 hours or if maintenance determines an every other day schedule. An alternate schedule requires FSMP leadership and Company Command approval.

D-8. The FSMP will determine a clear and methodical handover signal that communicates to the entire team when the new duty crew(s) have taken over coverage. This is meant to ensure no confusion or delay in the event an Urgent/Urgent Surgical POI MEDEVAC drops during crew change.

MEDICAL EQUIPMENT

D-9. The assigned flight paramedic and en route critical care nurse (if applicable) are responsible for maintenance and set up of medical equipment. The PIC will be briefed by all medical crewmembers prior to assumption as to the readiness of the medical equipment.

D-10. FSMP leadership must determine medical equipment / supplies necessary for the mission. Teams will maintain 100% readiness for all possible contingencies with limitations briefed to company leadership. The aircraft / MO should be medically equipped for a minimum of two turns to POI / MTF based on mission analysis with no expired equipment or medication.

D-11. FSMPs will develop a standard medical equipment layout / set up. This standard will be detailed in the site SOP with a checklist for inspection and diagram for layout. This ensures any crewmember can move between aircraft with clear understanding of the standard set up. Deviations based on individual preference will be approved by FSMP leadership.

SECTION II – FIGHTER MANAGEMENT

D-12. Crews typically operate on a 16 hour duty day. Duty day starts at mission brief, and includes pre-flight and run-up checks. Upon completion of duty assumption, the crew goes into a mission ready posture to ensure the crew is rested and ready to perform flight duties.

D-13. MEDEVAC Rest Period: Crews will maintain a constant state of crew rest with the goal of acquiring 8 continuous hours of rest. A duty day is reset upon reaching 8 hours. A reduction from 8 hour rest must be requested through the FSMP leadership and higher headquarters to the appropriate level.

D-14. FSMP leadership is responsible for scheduling and monitoring crew duty days / rest. PICs will understand crew posture prior to duty assumption and monitor duty day / rest while on duty. PICs will alert higher when crew duty day/minimum rest may be exceeded IOT adjust as necessary to maintain MEDEVAC coverage.

D-15. MEDEVAC AND MEDEVAC Chase crews should have no obligatory task(s) for 24 hours after a 14-day continuous duty cycle. This period allows crews to “reset” and resume a new duty cycle. Extensions will be approved through FSMP leadership and TF Commander.

D-16. MEDEVAC crews include any crews assigned to provide primary MEDEVAC coverage and dedicated chase. MEDEVAC crews will abide by the higher headquarters’ fighter management policies.

SECTION III – MEDICAL EVACUATION OPERATIONS

MEDICAL EVACUATION PLANNING AND STANDARDS

Note. If the MEDEVAC Company is deployed away from the GSAB, the minimum number of necessary BN enlisted support personnel to be assigned with them is: 1x15B, 2x15D, 2x15F, 3x15G, 1x15H, 4x15N, 1x15NTI, 1x15P, 11x15TTI, 1x91B, and the entire FSC Class III Section Air Ambulance. These numbers/MOSs are determined by Manpower Requirements Criteria (MARC) formulas to support 15xHH-60s and may be increased as necessary.

D-17. Company leadership conducts mission analysis and assists FSMPs in planning for assigned operational area. FSMPs will understand and execute theater / local area MEDEVAC SOPs if applicable (e.g., Afghanistan MEDEVAC SOP). It is important to ensure the most up to date SOPs and doctrine are utilized for planning and execution. FSMPs should be positioned to provide 1-hour coverage of all US / Coalition forces.

D-18. MEDEVAC timelines will be in accordance with theater / local orders and standard operating procedures, if applicable. When evacuation timelines have not been determined, the air ambulance company assists in planning and positioning FSMPs to provide optimal coverage and makes recommendations for point of injury / Role 1 and patient transfer timelines based on the mission variables. Air ambulance company leadership and FSMPs will ensure all units involved in planning and executing MEDEVAC operations understand the timelines and procedures specific to the area of operations. Figure D-1 depicts an example MEDEVAC coverage area based on a one hour total mission time (alert to arrival at medical treatment facility).

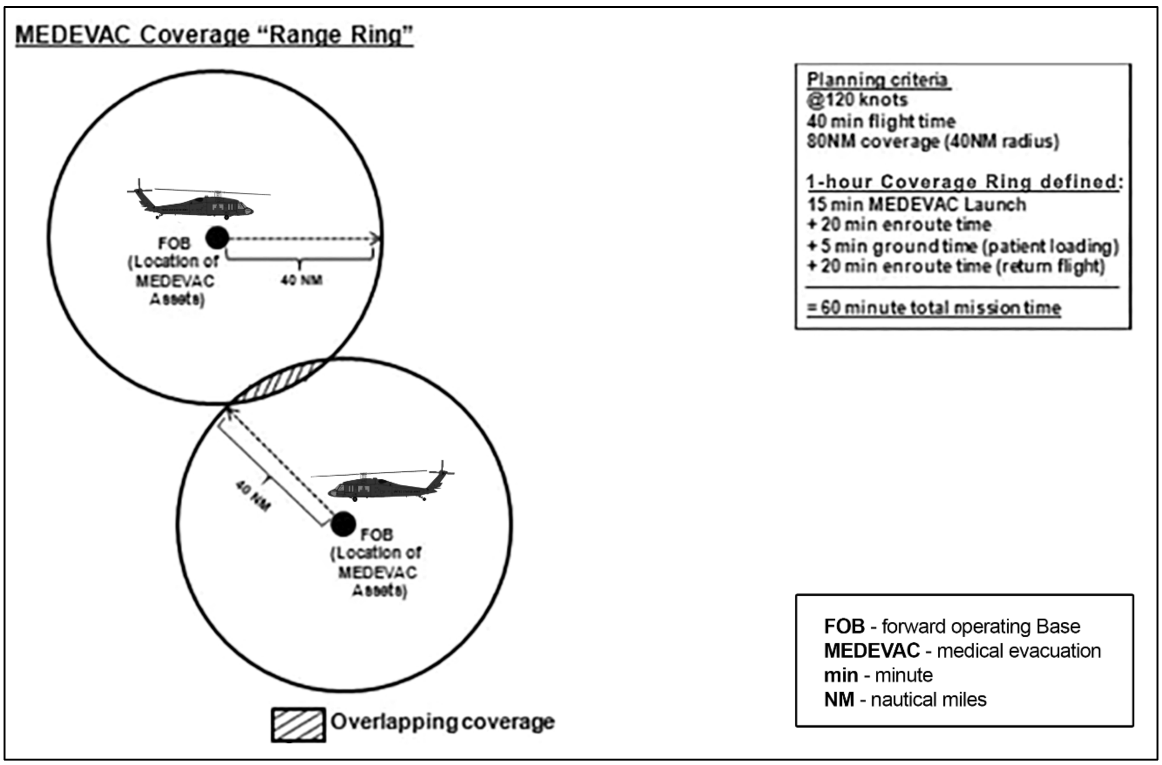


Figure D-1. Sample Aeromedical Evacuation coverage "range ring"

D-19. FSMPs will monitor operations at the lowest level possible. FSMPs will understand the task organization of the supported AO including all supported units and their daily mission sets. FSMP leaders will communicate with all MEDOs in the supported AO and continually develop the health service support plan (HSSP) with the ground force and aviation TF. Understanding the tactical situation on the ground is imperative to mission success and the timely / efficient evacuation of patients.

D-20. FSMP CPs will monitor operations on BFT, all digital chat room tracking methods (e.g., transverse, internet relay chat, adobe rooms), SATCOM, 2 FM radios with FH/SC capability, SIPR phone, NIPR phone, and any other tracking means assigned to the unit or acquired / directed for mission success.

D-21. FSMP leaders will make recommendations for chase assets as needed based on MA of supported AO and mission. TF assets available may not allow dedicated chase assets therefore a plan and constant communication between the aviation TF battle captain and FSMP leader is important to maintain optimal coverage.

D-22. Figure D-2 depicts recommended coverage plans by crew availability using organic and non-organic assets. This diagram is meant to stimulate planning considerations. The FSMP leader must be continuously evaluating the plan for crew rotations and coverage based on METT-TC.

AVAILABLE MEDEVAC CREWS-COVERAGE PLAN (RECOMMENDED)

	1 MED CREW	2 MED CREWS	3 MED CREWS	4 MED CREWS	5 MED CREWS	6 MED CREWS
COA 1	CREWS ON DUTY: 2 ORGANIC: 1 TF ASSETS: 1 DEDICATED UH-60 CHASE	CREWS ON DUTY: 2 ORGANIC: 2 TF ASSETS: 1 DEDICATED UH-60 CHASE	CREWS ON DUTY: 4 ORGANIC: 3 TF ASSETS: 1 DEDICATED UH-60 CHASE	CREWS ON DUTY: 4 ORGANIC: 4 TF ASSETS: ROTATION TO RELIEVE CREW PERIODICALLY	CREWS ON DUTY: 4 ORGANIC: 4 TF ASSETS: NONE	CREWS ON DUTY: 5 ORGANIC: 5 TF ASSETS: DYNAMIC RETASK FOR 3RD UP CHASE (1ST, 2ND, 3RD UP WHILE LEAVING 1 MED CREW DOWN FOR RESET)
COA 2	CREWS ON DUTY: 1 ORGANIC: 1 TF ASSETS: DYNAMIC RETASK OF UH-60 CHASE	CREWS ON DUTY: 2 ORGANIC: 2 FOR 12 HRS/1 FOR 12 HRS TF ASSETS: 1 DEDICATED UH-60 CHASE 12 HOUR SHIFT AT A TIME	CREWS ON DUTY: 3 ORGANIC: 3 TF ASSETS: DYNAMIC RETASK FOR 3RD CREW CHASE (2ND UP CAPABILITY)	CREWS ON DUTY: 4 ORGANIC: 3 TF ASSETS: DEDICATED UH-60 CHASE/DYNAMIC RETASK PROVIDING 2ND UP CAPABILITY	CREWS ON DUTY: 4 ORGANIC: 3 TF ASSETS: DEDICATED UH-60 CHASE (ALLOWS ERF OF 1ST UP, 2ND MOVES TO 1ST AND ACTIVATE 2 OFF CREWS FOR NEW 2ND UP CAPABILITY)	CREWS ON DUTY: 4 ORGANIC: 4 TF ASSETS: NONE
COA 3	CREWS ON DUTY: 1 ORGANIC: 1 TF ASSETS: DYMANIC RETASK OF AH-64	CREWS ON DUTY: 1 ORGANIC: 1 TF ASSETS: DYMANIC RETASK OF AH-64 TO PROVDE CHASE (OPTIONAL 2ND UP CAPABILITY)	CREWS ON DUTY: 2 ORGANIC: 2 FOR 12 HRS/1 FOR 12 HRS TF ASSETS: 1 DEDICATED UH-60 CHASE 12 HOUR SHIFT AT A TIME	CREWS ON DUTY: 2 ORGANIC: 2 TF ASSETS: NONE	CREWS ON DUTY: 2 ORGANIC: 2 TF ASSETS: NONE (ACTIVAVE 2ND UP WHEN 1ST IS NEAR ERF OR DUTY DAY WHILE LEAVING A 5TH CREW DOWN FOR RESET)	CREWS ON DUTY: 3 ORGANIC: 3 TF ASSETS: DEDICATED UH-60 CHASE/DYNAMIC RETASK FOR 2ND UP CAPABILTY WITH FRESH CREWS ALWAYS AVAILABLE FOR TOTAL REPLACEMENT)

1ST UP ONLY CAPABILITY	
2ND UP WITH DYNAMIC RETASK	
2ND UP WITH DEDICATED CHASE	
≥2ND UP WITH ORGANIC MEDEVAC	

COA - course of action	MED - medical
ERF - extended range fuel	MEDEVAC - medical evacuation
HRS - hours	TF - task force

Figure D-2. Available medical evacuation crews-coverage plan (example)

MEDICAL EVACUATION MISSION APPROVAL

D-23. MEDEVAC mission numbers are assigned to missions by a medical operations (MEDOPS) cell. The MEDOPs cell that assigns mission numbers is generally the highest level of MEDOPS in a designated AO. This mission number enables efficient tracking of the patients and mission historical data. The FSMP will develop a tracking system using these mission numbers. When referring to a mission, always use the mission number to eliminate confusion.

D-24. The MEDOPS cell will determine medical eligibility / validity of the MEDEVAC request then assign the mission to the CAB or TF depending on task organization within the AO.

D-25. FSMPs will maintain an analog and digital tracking system for missions with the following data displayed at a minimum at all times:

- Mission number.

- Time mission is first received (i.e., first time 9-line MEDEVAC request is spotted / relayed).
- Time mission number is assigned.
- Time mission is assigned to the FSMP.
- REDCON 1 time.
- WU time.
- WD POI/MTF time.
- WU POI/MTF time.
- WD MTF (mission complete).
- Crew Zulu for flight time.
- Time crew begins reset.
- Time crew will be reset.

MEDEVAC Mission Planning

D-26. The goal is to ensure that all Urgent missions will launch NLT 15 minutes after receiving the 9-line request. Priority missions will be launched in sufficient time to have the patient at the medical treatment facility within 4 hours of receipt of a 9-line. Mission planning factors and considerations listed below may delay the launch sequence:

- Security / Intelligence information.
- 9-line received.
- Mission authority.
- Aviation weather.
- Security aircraft available, if required.
- Launch authority granted (table D-1).

Table D-1. Example Mission Launch Criteria

LAUNCH APPROVAL	WEATHER	POI SECURE	POI UNSECURE (AWT REQ'D)	HIGH THREAT AREA
SENIOR MEDEVAC COMMANDER	DAY ≥ 700' & 2 NIGHT ≥ 1000' & 3	YES	NO	NO
BN/SQDN/TF COMMANDER	DAY ≥ 500' & 1 NIGHT ≥ 700' & 2	YES	YES	YES
BRIGADE COMMANDER	DAY < 500' & 1 NIGHT < 700' & 2	YES	YES	YES

MEDEVAC Mission Sequence

D-27. Specific mission sequence is dependent on initial triage category. The category of the patient determines the amount of time allowed to get the patient to a medical treatment facility (table D-2). The urgent mission considerations are outline in table D-3, page D-6.

Table D-2. Medical evacuation patient category times

	TIME ALLOWED
URGENT/URGENT SURGICAL	< 1 Hour
PRIORITY	< 4 Hours
ROUTINE	< 24 Hours
CONVENIENCE	WHEN ABLE

Table D-3. Urgent mission considerations

PC	PI	CE	MO
Lead PC: Receives mission & confirms grid / frequency. **Chase PC**: Updates weather and ROZ information. **Both PCs**: Confirm grid routes, airspeeds, altitudes, RPs, and destination medical facility.	Goes to aircraft. Performs final walk around and FOD check. Establishes communication with other aircraft and TOC. If time permits sets up radio and GPS with frequencies and grids.	Goes to aircraft. Performs walk around ensuring all cowlings are closed and no maintenance has been done since last mission and a FOD check. Prepares the aircraft for mission.	Receives mission and patient information. If time permits establishes communication with requesting unit for further patient information. Lead medic will determine on which aircraft patients will be loaded.
Legend: CE – crew chief FOD – foreign object debris GPS – global positioning system	PC – pilot in command PI - pilot TOC – tactical operations center		

Priority Missions

D-28. All of the above listed items will be completed within four hours of receipt of mission. However, all crewmembers will participate in each task. If possible, the entire priority mission will be accomplished solely in Day or NVG conditions.

Routine/Convenience

D-29. A routine mission must be accomplished within 24 hours of receipt of 9-line. If possible, routine missions will be placed on the current AMR aircraft. If the routines are conducted by MEDEVAC aircraft, the preferred mode of flight is NVGs. Routine missions will include a deliberate planning cell and a team brief per the 2-4 Battalion SOP.

Follow-on Missions

D-30. Due to the extended 24 or 48 hour duty cycle specific exceptions are authorized. If a MEDEVAC team is on a mission, a routine or priority mission can be accepted. Follow-on missions can be received via radio communications with the TOC or medical treatment facility. Previous launch authority does not automatically authorize the follow-on mission. AMC must get confirmation that the mission has been approved prior to accepting any follow-on mission.

FLIGHT FORMATIONS

D-31. Formation flight should not limit the ability of a flight or an individual aircraft to maneuver. Unless the mission requires restrictive controls, specific formations will not be dictated. In general, the MEDEVAC team will maneuver in combat cruise and loose formation. Aircrews will need to plan and brief anticipated profiles prior to departure.

D-32. When AWTs provide chase or security, they will normally maintain extended separation.

EN ROUTE OPERATIONS

D-33. Due to the unpredictable nature of the mission, predetermined aircraft responsibilities are necessary (table D-4, page D-7).

Table D-4. En route responsibilities

LEAD	CHASE
ATC, Primary NAV, PZ, Flight Following / CTAF, and medical treatment facility	Secondary NAV, OPS, ROZ, and AWT
Legend: ATC – air traffic control AWT – air weapons team CTAF – common traffic advisory frequency	 NAV - navigation OPS - operations ROZ – restricted operating zone

MEDEVAC HELICOPTER LANDING

D-34. The following HLZ criteria should be considered for roadside MEDEVAC:

- Level area clear of debris and obstacles, especially power lines, within a 50 meter radius; free of excessive loose dirt and dust.
- If the HLZ is on a road, ensure traffic from both directions is cordoned from entry into HLZ, even if the HLZ is on only one section of a divided highway or on a one-way road.
- Checked, swept, and clear of IEDs.
- Markings:
  - Day: VS-17 panel; add smoke once directed by MEDEVAC aircrew.
  - Night: IR Strobe; “buzz-saw” or inverted “Y” with IR or RED chem-lights only.
  - (Aviation NVGs will not detect blue or green chem-lights).
- Keep signalmen clear of HLZ and aircraft until directed otherwise by the MEDEVAC crew.

POINT OF INJURY OPERATIONS (POI)/ROADSIDE

D-35. Specific techniques and procedures must be utilized to safely perform POI MEDEVAC operations. However, with the vast possibilities for LZs, threat, landing environment, and number of patients, a specific technique is not always usable. AWTs should be utilized if available, if the LZ is secure and no enemy contact, AWTs are not required. Prior to closing within 5 KM of the LZ, far recognition must be established with the ground unit and communications established with the AWT. Prior to landing, a low recon must be accomplished, 360 degree security must be established, and the number of aircraft required in the LZ must be determined.

D-36. After the linkup, the AWT AMC is the on-scene commander. The AWT will determine loiter locations for the MEDEVAC aircraft, if required. Once the AWT has determined that the LZ is “ICE” the MEDEVAC AMC becomes the on-scene commander. The on-scene commander will de-conflict aircraft by distance and altitude and ensure all aircraft are familiar with infill, go around, and ex-fil routes.

AIRCRAFT DECONTAMINATION

D-37. Proper decontamination of the airframe, while protecting oneself per OSHA and CDC standards and recommendations, is extremely important. Diseases can be found in a number of bodily fluids to include blood, vomit, saliva, and feces. Refer to FM 3-11.5, chapter VIII for aircraft decontamination procedures.

TAIL TO TAIL OPERATIONS

D-38. Tail to tail operations is a patient transfer from one area of MEDEVAC coverage to another. This is done to facilitate patient movement and to preserve combat power.

MASS CASUALTY PROCEDURES

D-39. A mass casualty is defined as any event during which primary MEDEVAC duty assets are not sufficient to care for the number or type of patients. The FSMP determines internal mass casualty criteria to launch 1st and 2nd UP crews if applicable. The FSMP will also determine mass casualty criteria that require TF assets.

D-40. Forward support medical platoons will coordinate a battle drill with the aviation TF or other BCT assets identifying aid station medical personnel to board CASEVAC assets if necessary.

D-41. The AMC must control the scene in coordination with the flight medics and on scene commander or medic conducting triage. If more than one flight of aircraft are landing at the scene, the departing AMC shall conduct a battle handover with the incoming AMC.

FLIGHT PROCEDURES

D-42. Departure / En route: The MEDEVAC aircraft and chase aircraft will depart as a flight if possible. Altitudes during all phases of the mission will be determined based on threat, terrain and weather.

D-43. The route is chosen by the lead aircraft and is normally as direct as possible (dependent on METT-TC and weather). Airspeed may be adjusted at the discretion of the aircrews based on the urgency of the mission, available aircraft power, aircraft configuration, and environmental conditions.

D-44. The flight formation will be set by chalk two. The trail aircraft will advise flight lead of the formation and of any subsequent changes to the formation. At all times the trail aircraft will ensure flight lead has sufficient room to maneuver in the event of threat avoidance or emergencies. If chase is a UH-60 with door guns, the crew will be positioned to provide maximum fields of fire for its Door Gunners. Door Gunners must maintain muzzle awareness and ensure they do not place the other aircraft in danger if firing door guns becomes necessary. Flight lead will advise chalk two of any deviations to the flight route or airspeed and will avoid unannounced or abrupt maneuvering (other than as a reaction to threats or emergencies).

ACTIONS AT THE PZ

D-45. The lead aircraft should attempt to gain communication with the ground force (line 2 of 9-line MEDEVAC request) as soon as possible. The first call will be an ETA for MEDEVAC and request of LZ/patient status. The LZ status should be a hot/cold (cherry/ice) call with distance, direction and time of last enemy contact. The patient status is a hasty update of stable or crashing. These two factors will help the AMC develop the tactical situation and determine whether to land immediately or wait for attack assets in compliance with TF guidance. The AMC will determine single or dual ship landing in the LZ based on communications, threat, size of LZ and number of patients. Aircraft directed to hold will coordinate lateral and vertical separation with other aircraft on site while maintaining radio/visual contact with sister ship.

D-46. When an escort is required (i.e., AWT) due to threat, the MEDEVAC aircraft will link-up with escort on the approved primary alternate contingence and emergency communications plan per the CAB Commander’s Combat Imperatives. Based on the armed escort's report of the security of the PZ, chase will remain with MEDEVAC or loiter away from the area for traffic de-confliction.

D-47. Both escort and MEDEVAC aircraft will remain on ground frequency and will take directions from the ground force commander (GFC) (i.e. their preference for having MEDEVAC land first or receive fire support from escort). If communication cannot be made with the ground element, the on-scene commander will be the aircraft (MEDEVAC or armed escort) that arrived to the site first and has developed the situation. The MEDEVAC AMC must consider the patients status and LZ status when sequencing aircraft into the LZ.

EN ROUTE TO THE MEDICAL TREATMENT FACILITY

D-48. During this phase of the mission, the chase aircraft will typically fly a staggered right formation so the MEDEVAC CE can maintain visual contact with the chase aircraft while the MO provides medical care to the patient(s).

Airspeeds from the PZ to the MTF will be determined by the patient’s status and power available.

D-49. The flight must maintain visual and radio contact at all times to be considered a flight.

D-50. The medic will determine the patients’ needs and make a recommendation to the AMC if bypassing a role of care is necessary. The AMC will consider the tactical situation to make the decision and relay the information to the aviation TF.

AFTER ACTION REVIEW

D-51. Upon completion of a mission or duty cycle an AAR is recommended. Since the ultimate goal of an AAR is to improve performance, determining what worked well and what did not will enhance safe mission performance.

D-52. The first up crew will ensure an S-2 debrief is completed following the completion of any mission in order to better provide situational awareness for coalition forces.

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Appendix E

Aviation Ground Support Operations Checklists

This appendix provides sample convoy precombat checks and inspections, FARP planning and safety inspection, and downed aircraft recovery team precombat checks and inspections. For additional information on convoy operations see ATP 4-01.45, for FARP operations see ATP 3-04.94, and for aircraft recovery see FM 3-04.513. Please note, it is not all inclusive; products are used as a guide and do not superseded unit SOPs.

SECTION I – CONVOY PRECOMBAT CHECKS AND INSPECTION

E-1. Figure E-1 provides a sample convoy PCC/PCI checklist. Leaders may use this as a tool when training and conducting convoys.

Convoy PCC/PCI Checklist		
Item	**Inspection**	**Remarks**
Binoculars	Cleaned, serviceable.	
Global Positioning System, Movement Tracking System, Blue Force Tracker	Cleaned, serviceable, checked.	
Convoy brief, operational order, smart cards	Complete the convoy brief that includes an intelligence and support plan, and medical and casualty evacuation plans.	
Strip map, execution matrix	Extra copies.	
Leader book and writing device	Per standard operating procedure	
Mission coordination checklist	Updated with all phases of the mission.	
Map (area of operation)	Current graphics (units and intelligence).	
Units and frequencies	Updated with all phases of mission.	
Current intelligence brief	Updated; focus on the first phase of the mission.	
Risk analysis	Reviewed and approved by higher headquarters (HHQ).	
Signal operating instructions and automated net control device	Current and checked.	
Communication check	Internal headquarters, HHQ and air support.	
Rules of engagement (ROE)	Does everyone have and understand the current ROE card?	
Combat lifesavers (CLS)	Aid bags identified and CLS personnel certified for the convoy.	
Unexploded ordinance marking kit	Kit complete and checked.	
Weapons test fire and function check	Weapons serviceable.	
Conduct rehearsals	Complete rehearsals of all battle drills.	

CLS - combat life savers **PCC** - pre-combat checks **ROE** - Rules of engagement
HHQ - higher headquarters **PCI** - pre-combat inspections

Figure E-1. Sample convoy precombat checks/precombat inspections

SECTION II – FORWARD ARMING AND REFUELING POINT PLANNING AND SAFETY CONSIDERATIONS

E-2. Figures E-2 and E-3, pages E-2 and E-3, depict sample considerations for planning FARPs. Leaders may use this in both planning and execution of FARP operations.

Emplacement plan
Air and ground.
Resupply route clearance.
Movement plan
Major supply route clearance.
Advance and/or quartering parties.
Movement of assets (separate serials).
Convoy briefing.
Security plan
ADA.
CBRN (M8 alarms).
Perimeter.
Site layout
Sketch or diagram.
Availability of FARP site layout to personnel before the mission begins.
Pilots' brief.
Traffic pattern, HAs, airspace control measures (ACM), fire support coordination measures, and pad locations.
Number of points and type of nozzles at each point.
Duration of the mission (number of turns).
Class III/V estimate versus amount on hand.
Simultaneous rearming and refueling.
Resupply.
Certification and safety of FARP plan.
Designated maintenance area.
Enemy.
Threat briefing from the S-2.
Threat weapon system ranges (artillery).
CBRN threat.
Command, control, and communication
Radios (primary and alternate frequencies).
Lost communications procedures.

ADA - air defense artillery	**CBRN** - chemical, biological, radiological, and nuclear
ACM - airspace control measures	**FARP** - forward arming and refueling point

SAMPLE

Figure E-2. Sample forward arming and refueling point planning considerations

Command, control, and communication
Lighting.
CBRN decontamination (dirty FARP plan).
Location (on graphics).
Pilot decontamination team awareness.
Signals (emergency, hand, and arm).
Extraction and displacement plan.
Event-driven (decision point based on enemy situation).
Communications (decision authority for the FARP moves).
Subsequent location.
Preparation
Troop leading procedures (warning order, pre-combat inspection, and rehearsal).
Site preparation (FOD and police call).
Personnel (qualified and trained, technical inspectors, and combat lifesavers).
Equipment
Equipment is working and available.
Boresighting of the aircraft.
Loading of Class V onto the aircraft.
Platoon briefing
Mission.
Friendly situation.
Enemy situation.
Graphics on maps.
Compliance with SOPs.
Pilot briefing
Layout.
FARP location(s).
Procedures/traffic pattern.
ATS support (METT-TC dependent?).
Operation time.
Frequencies (primary/alternate).
Ammo availability.
ACM/fire support coordination measures in affect.
Execution
Plan versus reacting.
Enforce FARP turnaround times.
Gather and compile Class III/V pre- and post-mission statistics.
Ensure safe operations.
Supply
Coordinate resupply activities to take place during darkness or limited visibility conditions.
Coordinate with the S-4 for transportation of all classes of supply.

SAMPLE

FOD - foreign object damage
FARP - forward arming and refueling point
MTT-TC - mission, enemy, terrain and weather, troops and support available, time available, civil considerations
SOP - standing operating procedure

Figure E-3. Sample forward arming and refueling point planning considerations

E-3. Figure E-4, page E-4; Figure E-5, page E-5; and Figure E-6, page E-6, depict a sample FARP safety checklist for use prior to executing live refueling operations.

FARP:	
1	Are daily logs being kept on Aqua-Glo testing?
2	Is the unit conducting monthly fuel filter effective tests and keeping a log?
3	Date of last fuel sample taken? Is it current?
4	Are the berm liners the correct size for the bags being used?
5	Are the berm liners securely fasted at the top of all berms?
6	Are the berm liners free of tears and worn spots?
7	Does the bag have the date of its inspection stenciled on it?
8	Is the date stenciled on the side of the last filter separator filter changed (for each bag)?
Safety equipment	
9	Are the fire extinguishers present for each pump assembly and one for each nozzle? (Minimum size is 20 lbs).
10	Is sufficient water available to wet fuel soaked clothes before removal?
11	Are spark proof flashlights (chemical lights) available for night operations?
12	Are all applicable signs (no smoking, danger, restricted area, emergency shut off) posted in the appropriate areas per ATP 4-43 ?
13	Are grounding rods emplaced at the filter separators and fuel dispensing ports?
14	Do grounding rods emplaced conform to specifications in ATP 4-43?
Nozzles and hoses	
15	Does the nozzle have proper bonding device for operations?
16	Are both CCR and open-port nozzles available for use?
17	Are dust cover serviceable and being used for the nozzles?
18	Has the system been turned on and tested at normal operating pressure with the nozzle closed?
19	Does the site layout ensure proper space between aircraft refueling points IAW FM 10-67-1? Minimum distance rotor hub-to-rotor hub: • CH-47: side by side 180 ft nose to tail 140 ft. • UH-60, AH-64: 100 ft. • AH-64 and all other light aircraft: side by side 150 ft.
20	Are the dispensing hoses configured in a curved pattern?
21	Do the hoses show signs of blistering, saturation, nicks, or cuts?
22	Are the hoses and nozzles clean and free of dirt?

ATP - Army training publication
CCR - closed circuit refueling
CBRN - chemical, biological, radiological, and nuclear
FARP - forward arming and refueling point
FM - field manual
ft - feet
IAW - in accordance with
lbs - pounds

Figure E-4. Sample forward arming and refueling point safety inspection (part 1)

23	Are the 100-mesh nozzle screens clean?
Aircraft control and equipment	
24	Is the parking area for the fuel dispensing point clearly marked?
25	Is an air traffic controller or pathfinder at each FOB?
26	Does the FARP have two-way radio communication before and after refueling operations with aircraft and the control tower?
27	Is the FARP set up for night operations (light sets or chemical lights) and are supplies on hand?
Site preparation	
28	Has the area (fuel system supply point, FARP) been cleared or debris?
29	Does the layout ensure proper spacing between aircraft?
30	Are vehicles combat parked, allowing for a timely exit?
31	Does the FARP take advantage if buildings and existing structures?
Before refuel operations	
32	Are drip pans placed at each dispensing point?
33	Are sufficient personnel assigned to the equipment?
34	Has the complete system been checked for proper operation, pressure, and leaks?
Site operations	
35	Is there an established communication means to control traffic at the refueling site?
36	Are passengers disembarked and escorted to a marshalling area while aircraft refuels?
37	Are ground guides being used for the aircraft when appropriate?
38	Are aircraft either pointed in a safe direction during refueling or is armament turned off and set on safe?
39	Are the aircraft properly grounded before they are refueled?
40	Are the nozzles bonded to the aircraft before the refueling cap is opened?
41	Are the dust caps replaced after each refueling and then hung on the stand afterwards?
42	Are grounding cables attached to the ground rods when not in use?
43	Are tank vehicle operations done correctly IAW appropriate TMs?
44	Are personnel familiar with emergency fire and rescue procedures? Date pre-accident plan was tested:
45	Are refueling personnel familiar with procedures for fuel spills? Is there a contingency plan and equipment?
46	Are spill kits at each refueling point and by all pumps?
47	Is a copy of the SOP available and POL personnel familiar with its contents (including a plan for emptying the berms in the event of precipitation or spill)?
48	Are measures in place to facilitate reconstitution and recovery of FARP assets in the event of damage?
49	Are personnel using proper PPE (gloves, goggles, hearing protection) while handing fuel and refueling aircraft?
50	Are material data sheets on site? • 50k bags • 20k bags • 10k bags • Elbows • T-valves

SAMPLE

FARP - forward arming and refueling point
FOB - forward operating base
IAW - in accordance with
k - kilometer
POL - petrolium, oils and lubricants
PPE - personal protection equipment
SOP - standing operating procedure
TM - training manual

Figure E-5. Sample forward arming and refueling point safety inspection (part 2)

	• Tri-Max fire extinguisher • 20 lb fire extinguisher • 4-in by 10-ft hoses • 4-in by 35-ft hoses • 4-in by 50-ft hoses • CCR nozzles • D1 nozzles
350-GPM pump (NSN 4320-01-259-5956)	
	• Wheel mounted • Skit mounted
51	Are operators licensed to operate the 350-GPM pump?
52	Is the appropriate TM present?
53*	Is the operator preventative maintenance checks and services being conducted daily and are deficiencies being annotated on DA Form 5988-E (Equipment Inspection Maintenance Worksheet) or DA Form 2404 (Equipment Inspection and Maintenance Worksheet)?
54*	Does the FARP noncommissioned officer in charge (NCOIC) maintain at the minimum one copy of the DA Form 5988-E or 2404 for each piece of equipment?
55*	Does the maintenance support unit track 350-GPM pump by The Army Maintenance Management System?
56*	Does the NCOIC have point of contact information for their maintenance support unit (point of contact for breakdowns)?
57*	Is unit level maintenance being conducted?
58*	Are service packets being maintained?
Parts	
59*	Are the quick supply store (QSS) parts (service parts and repair parts) on hand?
60*	Are the authorized stockage list parts stocked and well organized?
61*	Are the QSS parts for the 350-GPM pump easy to locate?
62*	Are repair and service parts being ordered during the services and properly tracked?
63*	Are hard to find parts being fabricated or procured through logistics personnel?
64*	Are parts received being installed in a timely manner?
65*	Are needed serviced parts on hand for 20-level maintenance (oil and fuel filters)?
66*	Are the needed repair parts or QSS being maintained at supporting maintenance units?
Operations	
67*	Are there any replacement or backup 350-GPM pumps available if the primary pumps fail?
68	Is the equipment properly grounded?
*These items will be checked against DA Form 5988-E or DA Form 2404. Items wil not keep the FARP from becoming operational.	

CCR - closed circuit refueling
DA - Department of the Army
ft - feet
GPM - gallons per minute
FARP - forward arming and refueling point
IAW - in accordance with
in - inch
lb - pound
NCOIC - noncommissioned officer in charge
QSS - quick supply store
TM - training manual

Figure E-6. Sample forward arming and refueling point safety inspection (part 3)

SECTION III – DOWNED AIRCRAFT RECOVERY TEAM PRECOMBAT CHECK AND INSPECTION

E-4. Figures E-7 and E-8, pages E-7 and E-8, depict a sample DART/BDAR pre-execution checklist. The DART leader or BDAR NCOIC may use this checklist as a guide prior to executing DART/BDAR training and operations.

DART/BDAR PRE-EXECUTION CHECKLIST *(To be completed by DART/BDAR NCOIC)*			
	YES	*NO*	*N/A*
Personnel:			
All present			
Fighter management/risk management			
Manifest completed			
Personal Equipment:			
Identification (ID) tags and ID cards			
License for all equipment to be operated			
Proper uniform for mission with overnight bag			
Required TA-50 for mission on hand			
Individual body armor, advanced combat helmet, and ear plugs			
Canteen/camel-back full			
Flashlight (extra batteries)and chemical lights			
Rules of engagement card, MEDEVAC communications card			
Blood chit			
Weapon functional checks completed			
Sensitive Items and COMSEC:			
Weapon serial numbers confirmed			
Basic ammunition load			
Pyrotechnics, grenades and explosives			
COMSEC			
Special instructions briefed			
Personnel recovery information on file and reviewed			
NVG with spare batteries			
Intelligence:			
Mission briefed (S-2)			
All personnel have maps, grids, and protractors			
All personnel know sign and counter sign			
All personnel know current threat situation			
CBRN Equipment:			
MOPP suit			
Protective mask with inserts			

SAMPLE

BDAR - battle damage assessment and repair
CBRN - chemical, biological, radiological, and nuclear
COMSEC - communications security
DART - downed aircraft recovery team
ID - identification
MEDEVAC - medical evacuation
MOPP - mission oriented protective posture
NVG - night vision goggles

Figure E-7. Sample downed aircraft recovery team precombat checks/precombat inspections

DART/BDAR PRE-EXECUTION CHECKLIST (To be completed by DART/BDAR NCOIC)			
	YES	NO	N/A
M256, M258 kits, and M9 paper			
Communications:			
All personnel have frequencies/net IDs, communications card			
Manpack radio keyed with extra batteries			
All personnel have assigned call signs			
All COMSEC loaded if required			
All antennas up or tied per mission required			
Vehicle and Equipment:			
Vehicle properly dispatched			
Load plans in logbook			
Basic Issue Item serviceable and loaded			
PMCS completed IAW applicable TMs			
Fuel topped off and fuel cans full, vehicle packaged POL on-hand			
Water cans full and loaded			
Camouflage netting serviceable and loaded			
Air lines and safety chains properly connected to trailer			
Weapons and mounts on and operational			
Miscellaneous:			
Meals-ready to eat			
Additional ammunition issued if required			
Required tools on hand and inventoried			
Special tools on hand			
All keys on hand			
All required safety briefs completed			
All required TMs, FMs, and pubs (on laptop)			
Generator with light set (when required)			
Medical bags			
GPS (with spare batteries), map with compass/protractor			
Parts/petroleum, oils, and lubricants needed for suspected problem			
Long range comms (Cell, Satellite, Beyond line of sight)			
Environmental protection items (rain, heat, sun, snow protection)			
Mine markers			
Powered saw with spare blades, oil, and gas			
Individual survival kits (as required)			
Comments:			

SAMPLE

BDAR - battle damage assessment and repair
COMSEC - communications security
DART - downed aircraft recovery team
FM - field manual
GPS - global positioning system
IAW - in accordance with
ID - identification
NCOIC - noncommissioned officer in charge
PMCS - preventative maintenance checks and services
POL - petrolium, oils and lubricants
TM - training manual

Figure E-8. Sample downed aircraft recovery team precombat checks/precombat inspections continued

Appendix F
Aviation Survivability

This appendix provides planning considerations and products to assist commanders and units in incorporating tactical mission survivability. A thorough understanding of the following concepts is critical to optimizing aircrew and aircraft survivability in training and combat. The following references define the OE, the threat, and solutions–

- TC 3-04.9 Commander's Aviation Mission Survivability Program.
- Army Aircraft Combat Survivability Manual (Classified).
- AFTTP 3-1 Threat Guide (Classified).
- Standing Rules of Engagement in accordance with CJCSI 3121.01B or the Theater specific ROE (Classified).
- ATP 1-02.1 Multi-service Tactics, Techniques, and Procedures for Multi-Service Brevity Codes.

SECTION I – INTRODUCTION

F-1. The OE is complex and constantly changing. The threat to Army Aviation encompasses a wide range of actors, entities, and a combination of regular, irregular, terrorist, and/or criminal forces that employ traditional, unconventional, and hybrid tactics. Threats to Army aircraft may include small arms, heavy machine guns, unguided rockets, AAA, MANPADS, SAMs, anti-helicopter mines, IEDs, and more. Due to weapons proliferation and the availability of relatively low cost emerging technologies, the threat continues to adapt and change.

F-2. Survivability is the capability of an aircraft to avoid or survive in all threat environments. Survivability includes both the susceptibility and the vulnerability of the aircraft. Susceptibility refers to the number, location, and capabilities of the enemy, the design of the aircraft, aircraft survivability equipment (ASE), other self-defense weapons, and the tactics aircrews can use to defeat enemy threat systems. An aircraft's vulnerability refers to the ability of the aircraft to withstand damage following an engagement. Vulnerability is influenced by the type/number of projectiles impacting the aircraft, the design of the aircraft, and aircraft survivability features such as ballistic protection enhancements or redundant flight control systems. Survivability of the aircraft increases as susceptibility and vulnerability decrease.

F-3. During conduct of the mission, it is important for aircrews to be familiar with the ASE situational awareness displays and the anticipated threat indications. Some actions must be performed instinctively and without delay. Aircrews must see, correlate, and react correctly to the visual indications of a gun or missile that is fired at the aircraft, or ASE indications of radar track or launch.

SECTION II – PRINCIPLES OF AIRCRAFT SURVIVABILITY

F-4. There are three principles of aircraft survivability—

- Tactics.
- Countermeasures.
- ASE electronic countermeasures.

F-5. Tactics begins with proper pre-engagement planning to reduce exposure times and predictability to adversary weapon systems. Effective mission planning limits LOS exposure and places the aircraft's radar, infrared, and optical signature in a cluttered environment. Varying tactical flight procedures (altitudes, airspeeds, and routes) combined with ASE protection and standoff ranges enable mission accomplishment. Evasive maneuvering actions must be instinctive and executed immediately. When required, air combat maneuvering varies according to the threat, aircraft platform, and METT-TC.

F-6. Countermeasures include expendables that are employed to impair threat effectiveness. Devices and techniques used for aircraft countermeasures include tailorable infrared (flares) and radio frequency (chaff) expendables. These munitions may be pre-emptively or reactively deployed and are capable of defeating or decoying threat fire control systems, or weapon guidance systems.

F-7. Aircraft Survivability Equipment is tailored to meet mission requirements and capable of being equipped on Army aircraft. A suite of ASE is designed to protect the aircraft based on regional threats. Several systems are capable of detecting, jamming, defeating, or decoying threat fire control systems, or weapon guidance systems if properly configured. All ASE mission data sets and configuration settings are located on the Army Reprogramming Analysis Team (ARAT's) classified site.

SECTION III – ELECTROMAGNETIC ENVIRONMENT

F-8. Operations in the electromagnetic spectrum depend on maintaining freedom of action across all domains by manned and unmanned systems. Electronic Warfare (EW) considerations significantly affect aircraft survivability and consist of three functions: electronic attack, electronic protection (EP), and electronic support (ES). Each of these functions serve to decrease the susceptibility and vulnerability of the aircraft.

ELECTRONIC ATTACK

F-9. Electronic attack is the use of electromagnetic or directed energy to attack personnel, facilities, and equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. Electronic attack includes actions taken to prevent or reduce the enemy's effective use of the electromagnetic spectrum through jamming, destruction, and electromagnetic deception. Electronic attack also includes the employment of weapons using sources of electromagnetic energy as the primary means of terminal weapons guidance for the purpose of damaging or destroying personnel, facilities, or equipment.

ELECTRONIC PROTECTION

F-10. EP involves actions taken to protect personnel, facilities, and equipment from effects of friendly or enemy EW actions that may degrade, disrupt, delay, neutralize, or destroy friendly combat capability. To minimize their vulnerability to electronic attack, EP should be considered for all combat systems deriving operational capabilities through the use of the electromagnetic spectrum. Included are optical, electronic, IR, and radar target acquisition, as well as smart weapons systems' sensors, fuses, guidance, and control components.

F-11. Electronic emissions from position, navigation, and timing aviation systems should be evaluated for adversary exploitation. Employing low probability of intercept/low probability of detection systems and emissions control (EMCON) procedures should be incorporated based on mission analysis. Signature management/reduction alone greatly increases survivability. Without signature discipline, ASE effectiveness is degraded and, in some cases, erased.

ELECTRONIC SUPPORT

F-12. ES involves actions tasked by, or under the direct control of, an operational commander. The purpose of this division is to search for, intercept, identify, and locate sources of radiated electromagnetic energy for immediate threat recognition in support of EW operations and other tactical actions such as threat avoidance, homing, and targeting.

F-13. The purpose of ES is to ensure electronic attack and EP applications receive the input needed to operate effectively. Examples of ES actions are battlefield systems that execute direction-finding operations, detect and identify enemy emissions or other electromagnetically measured signatures for immediate exploitation, locate high value targets for electronic attack, and provide threat avoidance information.

SECTION IV –THREAT CONSIDERATIONS

F-14. This section is not designed to be system specific. It provides general information about threat systems that can be applied to specific threats based on intelligence preparation of the battlefield and mission analysis.

F-15. Current and emerging threat systems to Army Aviation include–

- **Unguided projectile weapons:** Weapon systems that follow an unguided ballistic trajectory to include small arms, rocket-propelled grenades, and heavy machine gun (12.7 to 14.5 millimeters [mm]).
- **ADA:** ADA encompass unguided exploding rounds of 23mm or greater which use visual, electro-optical (EO)/infrared (IR), or RF for acquisition. Stationary emplacements, non-standard vehicles, and ships have been utilized for base platforms for employment of ADA.
- **Anti-aircraft missiles / MANPADS:** Anti-aircraft missiles and MANPADS are IR/ultra-violet (UV) seeking munitions employed from ground vehicles, manned and unmanned aircraft, and maritime platforms.
- **Surface to air missiles (SAMs)**: SAMs are normally short- to long-range air defense systems with a capability to engage the full range of aviation assets and precision guided munitions.
- **Anti-radiation missile**: This missile is designed to detect and seek an enemy radio emission source. Typically, these are designed for use against enemy radar, although jammers and even radios used for communication can also be targeted.
- **Low-light acquisition systems:** These systems include night vision systems, IR systems, and low-light cameras. These systems provide a passive detection capability, often utilizing commercial off the shelf equipment that are readily available and inexpensive.
- **Meaconing, intrusion, jamming, and interference (MIJI):** Proliferation of jamming systems that negatively impact voice communications and position navigation and timing systems.
- **Enemy aviation:** Hybrid threats may have access to FW, rotary-wing, and UAS capabilities that could locate and /or target Army Aviation assets.
- **Cyber threats:** Cyber threats may also seek to affect aircraft software and hardware, mission planning systems, and aviation support systems.

THREAT ENGAGEMENT SEQUENCE

- All weapon systems must complete a series of events, called an engagement sequence, to actually have effect on the target (aircraft). Any step in the engagement sequence that is missed forces the threat to start over. To successfully engage, threat weapon systems must detect, acquire, track, and launch and guide (or fire ballistics).

F-16. Tactics, air combat maneuvering, signature management/reduction, audible warning, jamming, defeating, and countermeasures are the tools available to aircrews to mitigate a successful threat engagement. Considerations to defeat the threat's engagement sequence include–

- **Threat Suppression:** involves mission planning, tactics, FW or RW escort, SEAD, Off-board electronic attack, and self-defense weapons.
- **Detection Avoidance:** involves threat warning, night and all-weather capabilities, situational awareness, off-board EA, signature reduction, terrain masking, and off-board expendables.
- **Engagement Avoidance:** involves off-board EA, speed and altitudes, expendables, and avoidance of the weapons engagement zone.
- **Threat or Hit Avoidance:** involves on-board EP, speed and altitudes, expendables, maneuverability, agility, and TTP.
- **Threat or Hit Tolerance:** involves armor/ballistic protection system, rugged structures, fire/explosion protection, redundant/separated hydraulics, multiple and separated engines, and non-flammable hydraulic fluid.

ACQUISITION VERSUS TRACK

F-17. The difference between detection and acquisition versus tracking is very important. In detection and acquisition, the threat weapon system does not have refined data to fire at a target. The threat weapon system must track the aircraft long enough to determine range, azimuth, elevation, and velocity to predict when and where to fire to hit its target. Indications of search or acquisition activity indicate to the aircrew that it is time to increase their vigilance (e.g., change mode of flight, actively search for masking terrain features). Tracking indications alert the aircrew to an immediate action requirement (mask the aircraft, or when terrain is not readily available, deploy ASE decoys and conduct evasive maneuvers).

ENGAGEMENT ENVELOPE

F-18. All threat systems have an effective weapon engagement zone. These areas are computed against a cooperative engagement (non-maneuvering aircraft, blue sky background, flat terrain, and steady velocity, if any). That is, at the maximum (or minimum) effective range (or altitude), the weapon system is able to hit the target one out of two times. As the target gets further into the threat's envelope, the probability of a first shot kill increases. As the target gets further outside the threat envelope, the probability decreases until the target is outside the threat's maximum range (or altitude).

FIRE CONTROL SOLUTION

F-19. Five elements required to compute a fire control solution are range, azimuth, elevation, velocity, and time of flight. If one of the fire control elements is incorrect, the probability of hit decreases.

DECREASING THE PROBABILITY OF HIT

F-20. Aircrew actions can make threat weapons engagements more difficult. For example, a stationary target acquired by an anti-aircraft artillery system, allows the threat to adjust each shot off the last until it hits the aircraft. Aircrews increase survivability and decrease the probability of hit by threat weapons systems by varying airspeed, altitude, and direction of travel. This type of maneuvering makes prediction difficult because three factors are changing at differing rates.

SECTION V –THREAT WEAPON SENSORS

F-21. There are generally four major types of threat weapon sensors: radar, IR, laser and directed-energy weapons (DEW), and optical and/or EO. These may be man portable or transported by land, sea, or aerial platforms. During IPB and mission analysis, it is important to determine the actual sensor type and guidance package for each threat and understand their inherent capabilities and limitations. For in-depth information concerning particular threat systems, see the AFTTP 3-1 Threat Guide.

RADAR

F-22. Radars may be active or passive systems. Legacy threat radar weapons require LOS to hit the target. Modern radars are designed to exploit aircraft signatures in various modes of flight without LOS. Direct threat radar weapons are either fire controlled AAA, or for missile systems command, semi active radar homing, active radar homing, track-via-missile, or ground aided seeker.

F-23. Radar weapons must detect, acquire, track, launch and guide (or fire a ballistic solution). Radar systems have trouble with ground clutter. To pick out targets from ground clutter, radar systems can detect movement though the use of moving target indicator, continuous wave, or pulse Doppler. Modern radar systems are able to detect and acquire smaller radar cross-section signatures than legacy systems without LOS.

INFRARED

F-24. IR direct threat weapons generally require LOS prior to launch, and the in-flight missile must maintain LOS with the target until impact (or detonation of the proximity fuse). IR missiles require the operator to visually detect the target and energize the seeker before the sensor acquires the target. The operator tracks the target until the seeker is tracking the target. The IR sensor is affected by atmospheric conditions (haze, humidity), the signature of the aircraft and its background, countermeasures, and jamming. Generally IR systems are–

- Difficult to detect prior to launch (passive sensor)
- Difficult to predict where they may be located (portability)
- Difficult to respond to (short time of flight after launched)

LASER AND DIRECT ENERGY WEAPONS

F-25. Laser and/or DEW weapons fit in two distinct categories-laser guided or aided weapons and pure laser and/or DEW weapons. Laser guided or aided weapons are those who use the laser to perform ranging, tracking, or guiding functions for conventional explosive missiles or projectiles. Pure laser and/or DEW weapons use laser and other forms of DEW to inflict damage to the aircraft or its sensors. Pure laser and/or DEW weapons are not required to burn a hole in the target to destroy it, although these weapons are reaching that capability. Simply igniting fuel vapor near vents or burning through fuel lines is effective as well as lazing the cockpit glass so the aircrew cannot see is also effective. Laser and/or DEW weapons are short duration, hard to detect, extremely hard to decoy or jam, and hard to kill. They must rely upon LOS, optimal atmospheric conditions, and have relatively short ranges.

OPTICAL AND ELECTRO-OPTICAL

F-26. Optical and/or EO sensors are used as either the primary or the secondary sensor for all threat weapon systems. They are limited by the human eye, atmospheric conditions, distance, and in many cases by darkness. The optical and/or EO sensors are difficult to detect, seldom can be decoyed, and can be suppressed with obscurants.

SECTION VI – TENETS OF SURVIVABILITY

F-27. Aircrew survivability can be categorized into five tenets of survival when engaged by threat systems—

- Observation and detection.
- Threat evaluation.
- Attack warning.
- Avoid detection.
- Tactics / air combat maneuvering.

OBSERVATION AND DETECTION

F-28. The key to survival is seeing the enemy first. Aircrews must have overlapping sectors of observation that provide 360 degrees of coverage horizontally as well as above and below the aircraft. The ability to detect a threat will depend not only on the method of observation and detection, but atmospheric conditions, aspect angle, background, and movement. Indications can vary from bright flashes of light from a SAM launch, the visible signature of a missile in-flight, alerts from either onboard ASE, or another aircraft in the flight. Knowledge and use of ASE decreases the chance of threat detection and increases survivability.

THREAT EVALUATION

F-29. Accurate evaluation of a threat depends on the aircrew's training, knowledge, and threat intelligence briefs. If engaged, reaction time will be minimal and will require immediate evasive action. Time available to react will depend on the type of system and the range from the engaged aircraft. Aircraft survivability equipment assists the aircrew by providing information that will increase situational awareness for immediate actions.

ATTACK WARNING

F-30. When a flight is engaged, decisive action must be taken to avoid a hit. A successful evasion depends on clear, concise, and accurate warnings. Effective aircrew ICS and in-flight communications are critical for survivability. Threat warning transmissions can include–

- Aircrew ICS- Threat assessment, threat type, threat location, threat distance. "Ineffective AAA, two o'clock, one nautical mile."
- In-flight- Aircraft call sign, immediate action, countermeasure utilized, threat location or mode. "Razor 22, breaking left, Chaff, Chaff."...Break... "SAM five o'clock."

Note. A magnetic azimuth may be utilized when operating in flights with attached escorts, as all aircraft may not be oriented on the same axis. The non-engaged aircraft should notify their security element, armed FW platforms, or other supporting assets to assist in defeating the threat engagement sequence. Post-engagement actions must include a SALT-W report for situational awareness and follow-on action.

AVOID DETECTION

F-31. Reducing predictability and denying the enemy observation of common fight patterns will also reduce visual and electronic targeting. Planners analyze the mission variables and utilize the military aspects of terrain when coordinating missions where surprise and avoiding detection are deemed more important than speed or massing of forces. Some techniques aircrews use to minimize the probability of detection include– varying airspeeds, altitudes, routing, avoiding silhouettes, and limiting erratic and rapid changes to reduce aural or visual signatures.

TACTICS/ AIR COMBAT MANEUVERING

F-32. The primary defensive measure is avoiding the threat. There are three distinct parts of reacting to threat engagements: indication (determine immediate actions), evasive maneuver (when masking terrain is not readily available), and actions on contact (decision to continue or abort mission).

F-33. Proper utilization of organic or joint enabler electronic countermeasure capabilities, on-call fires, mutual flight support, and/or aircraft countermeasures can provide valuable reaction time to disrupt the threat engagement sequence. Refer to the Aviation Combat Survivability Guide for specific defensive TTPs for use against radar, IR, laser, air to air, unguided systems, small arms, and AAA. Ensure the Aircraft operator's manual is reviewed for performance, maneuvering capabilities, and limitations against possible threat systems.

F-34. Formations and spacing intervals should be selected that provide all aircraft maneuver space to evade hostile fire and included in unit SOPs. Aircrew briefings and rehearsals should include evasive formation break up procedures and rejoining the formation after defeating the engagement sequence. Communicating ASE indications to other aircraft in the formation is important since not all members of the flight may receive the signals due to terrain, a narrow radar beam, altitude, or aircraft maintenance issues.

SECTION VII – MISSION PLANNING

F-35. Aircraft survivability is a continuous consideration for mission planning, rehearsal, execution, and recovery operations. ASE and EW must be considered in all phases of mission planning, and requires close coordination with intelligence personnel. The ASE annex to an operations order is the product of the detailed mission analysis and running estimate of the AMSO and S-2 section. See TC 3-04.9, Appendix D for a sample aviation combat survivability annex.

SITUATION

ENEMY CONSIDERATIONS

F-36. Provide an estimate of the enemy's communications, non-communications, and EW Systems capabilities, limitations, and vulnerabilities including the ability to interfere with execution of the mission. Determine the ability to detect radar altimeter, Doppler, line of sight communications, and the ability to interrogate transponder for modes 1, 2, 3A, C, 4, S and 5. Determine the integrated air defense system (IADS) capabilities and analyze parameters (i.e. RF Parametrics for use in threat analysis).

FRIENDLY CONSIDERATIONS

F-37. Provide list of friendly EW systems available for the mission (i.e. communication, non-communications, navigation, sensors, countermeasures, EO system). Include friendly EW assets that can exploit and disrupt the enemy usage of the electromagnetic spectrum.

MISSION

F-38. State the mission to be accomplished by survivability and ASE/EW operation for support of the mission in the basic plan. List go/no go criteria for targeting/ EW operation(s) and the effects of failure of the ASE/EW systems on the mission.

EXECUTION

CONCEPT OF OPERATIONS CONSIDERATIONS

F-39. Summarize the scope of the EW operation and the methods and resources to be used. Include TTPs for the threat that may be encountered. Specify support units to provide collection/targeting/EW service support. Include verification of threat parameters.

TASK CONSIDERATIONS

F-40. Assign individual tasks to aircrews, including instructions and references. Assign ASE settings and expendables that are configured for the anticipated threat.

SERVICE SUPPORT

F-41. Discuss emplacement and displacement plans and survivability considerations for FARPS and UAS launch and recovery sites.

COMMAND AND SIGNAL

F-42. Provide information on IFF mode settings and mode activation/deactivation times, line of sight and non-line of sight radio settings, airspace control frequencies, Airborne Warning and Control System Source (AWACS) contact points, and brevity codes.

MISSION BRIEFING

F-43. The aviation mission survivability briefing disseminates information and instructions to the aircrews prior to execution. The briefing alerts aircrews to the risks associated with the threats, the optimum ASE settings, and a review of the tactics specific to the mission. These tactics include evasive maneuvers, actions on contact, multi-ship breakup and reformation procedures, and the ROE for countermeasures weapons employment. A sample aviation mission survivability briefing is contained in TC 3-04.9. ASE mission briefs should include—

- Overall risk.
- Caused by: mission profile, ASE capabilities or limitations, or threat.
- ASE and IFF configuration settings.
- Threat ASE can detect.
- Threat ASE cannot jam/ mitigate.
- Primary threats: IR, RF, EO, Laser, DEW.
- Risk reduction measures.
- Changes to standard TTPs.

SECTION VIII – ASE CONSIDERATIONS IN RISK ASSESSMENT

IDENTIFY THE RISK

F-44. Detailed information about threat system operating procedures, tactics, system capabilities, and locations must be analyzed to determine the enemy's advantages or disadvantages in the use of EW. The capabilities and limitations of friendly ASE must be compared to threat systems to assess the level of risk associated with the mission. The AMSO will complete a tactical risk assessment, identifying the following:

- Operating frequencies of radar threats.
- RF threats that can or cannot be detected.
- RF threats radar jamming equipment will affect.
- RF threats that can be decoyed.
- IR threats that may be encountered.
- IR threats that can be detected.
- IR threats that can be jammed or decoyed.
- LASER and/or DEW threats that can or cannot be detected.
- Optical and/or EO threats.

ASSESS THE RISK

F-45. The AMSO, assisted by the S-2, will prioritize the threat systems and optimize ASE settings for the highest priority threats. ASE configuration is based on the threat for each individual mission. The level of risk is based on the threat's capabilities and limitations versus the equipped ASE. The mission risk level will be determined by conducting a survivability risk analysis which takes into consideration number and type of aircraft, mission profile, and types of threat versus countermeasure effectiveness. An overall risk level can be determined using this information. If the overall risk is evaluated at a higher level than the commander is willing to accept consideration should be given to changing the mission profile, ASE settings, and/or flight routes to lower the estimated risk.

MAKE DECISIONS AND DEVELOP CONTROLS

F-46. The AMSO determines the optimum ASE configuration settings for each aircraft type and the threats in the mission area, a makes a recommendation to the commander. Threats that are highly lethal and not countered by ASE are identified, and PIR can be developed and submitted by the S-2 to the higher headquarters.

F-47. Risk reduction techniques can be applied to minimize the risk and enhance the probability of survival. Risk reduction measures may include –

- Plan mission time earlier or later to take advantage of night operations.
- Request escort aircraft to suppress threats.
- Plan SEAD at critical points to reduce vulnerability.
- Develop Holding Areas and Attack Routes that provide terrain masking and stand off from threats.
- Prepare the Landing/Pick-up zones (LZ/PZ) with indirect fires.
- Alter flight routes to avoid known Air defense (AD) areas.
- Develop deception plan to include false insertions.
- Reduce electronic signature by emissions control (EMCON).
- Reduce formation and/or flight size.

Note. For further information about Survivability and the development of an Aviation Mission Survivability Program, please refer to TC 3-04.9.

Appendix G
Manned-Unmanned Teaming

MUM-T is the integrated maneuver of Army Aviation RW and unmanned aircraft systems (UAS) to conduct movement to contact, attack, reconnaissance, and security tasks (FM 3-04). MUM-T enables commanders to increase the depth and breadth of aviation reconnaissance and maneuver, facilitates longer persistence over the reconnaissance objective, increases the ability to gain and maintain enemy contact, and improves survivability. The tactics, techniques, and procedures of manned-unmanned teaming enhance the commander's ability to develop the situation and achieve overmatch through the operational and technical synergy of manned platforms/systems and UAS. Please note, this appendix is not all-inclusive; products may be used as a guide and do not supersede unit SOPs.

SECTION I–OVERVIEW

G-1. The objective of MUM-T is to leverage the combined capabilities of manned and unmanned aircraft while minimizing their individual limitations to create an asymmetric advantage. MUM-T provides the RW aviator the ability to employ UAS sensors to identify specific targets from much greater ranges, to determine the safest way in and out of the weapons engagement zone, and to assist in engaging the target, either autonomously or via a cooperative engagement. The AH-64 Apache accomplishes this through reception of sensor data directly from an unmanned aircraft system. MUM-T also gives Soldiers and leaders multiple sensor or payload capabilities that facilitate reconnaissance, security, and attacks. The integration of MUM-T provides–

- Reliable and timely combat information collection.
- Extended range for mission command.
- Enhanced situational awareness.
- Persistent presence in an area of operations.
- Increased survivability of manned platforms.
- Target engagements at longer ranges.

SECTION II–OPERATIONS

OVERVIEW

G-2. Army Aviation UAS conduct reconnaissance, security, and attack missions in support of AGO autonomously or with manned attack reconnaissance aircraft using MUM-T. During mission planning, commanders and staffs must fully integrate and synchronize UAS capabilities into the scheme of maneuver of the combined arms team.

G-3. UAS tasks in support of the Warfighting Functions include—

- Movement and maneuver. Provides commanders with the ability to influence actions at the time and place of his choosing.
- Intelligence. UAS conduct information collection and BDAs. They are flexible and responsive reconnaissance platforms equipped with a variety of mission payloads to support the commander's intelligence gathering requirements.
- Fires. UAS support all aspects of the targeting cycle. UAS can significantly shorten the sensor-to-shooter response time by enhancing the positive identification (PID) and location of the enemy.

- Protection. UAS provide the ability to maintain a consistent security presence and quick response to emerging threats during operations in support of the protected force or facility. UAS can also serve in an economy of force role by extending the depth of the security zone to provide reaction time and maneuver space to the protected force.
- Mission Command. UAS employed with communications relay packages extend terrestrial mission command nodes and reduce vulnerabilities associated with the emplacement of ground retransmission sites over extended distances.

PLANNING CONSIDERATIONS

G-4. UAS have unique planning considerations. Frequency management, launch/recovery location, mission command, and airspace management must be coordinated in advance. Commanders and staffs should integrate 150U unmanned aircraft systems warrant officers and senior 15W unmanned aeroscouts throughout the operations process.

MISSION VARIABLES

G-5. Commanders and staffs constantly analyze the mission variables (METT-TC) when planning and conducting operations. This section includes planning considerations for employing UAS and the MUM-T TTP based on the mission variables.

Mission

G-6. Adequate planning, synchronization, and coordination of UAS operations reduces the amount of unplanned, dynamic re-taskings and results in more effective utilization of the UAS. Deliberately planned UAS operations are included in the ATO and ACO cycle. Operations are also integrated and synchronized through the information collection plan and targeting process. Essential mission planning information requirements for UAS operations include–

- Mission statement
- Commander's intent and reconnaissance/security guidance.
- Priority intelligence requirements, indicators, and specific information requirements.
- Timeline.
- Task organization.
- Fire support coordination measures.
- Graphic control measures.
- Frequencies, call signs, and communications plan.
- ACMs.
- Laser codes.
- Weapons release authority.

Enemy

G-7. The proliferation of common and current threat technology compounds the complexity and diversity of threats to Army Aviation. In order to succeed and win in a complex operating environment, Army Aviation leaders must understand current and emerging hybrid threats and threat systems. As new military technologies are more easily acquired or stolen, additional threats could affect Army Aviation capabilities and limit the ground maneuver unit's freedom to maneuver.

G-8. Current and emerging threat systems to UAS include the following—

- Integrated ADA.
- Surface to air missiles.
- Man-portable air defense systems (MANPADS).
- Anti-radiation missiles.
- Low-light acquisition systems.

- Unguided projectile weapons (small arms, rocket-propelled grenades, and heavy machine guns).
- Threat aviation (manned and unmanned).
- Electronic Warfare - Meaconing, intrusion, jamming, and interference.
- Cyber threats.

Terrain and Weather

G-9. Both natural and manmade features may limit sensor effectiveness and mission command. Flat terrain eases LOS issues while mountainous terrain may reduce unmanned aircraft (UA) range, laser and weapon capabilities, or require employment of a second UA using data relay capability or SATCOM.

G-10. AR 95-23, equipment technical manuals, and unit SOPs establish minimum weather conditions with regards to ceiling, visibility, winds, and additional environmental limitations for UAS operations. Weather conditions must be at or above these minimums throughout the duration of the mission, unless the appropriate approval authority accepts the elevated risk associated with a specific operation. Table G-1 provides planners a quick reference for UAS environmental planning factors.

Table G-1. Unmanned aircraft systems environmental planning factors

Weather	***UAS***	
	Gray Eagle	***Shadow***
Icing	De-icing capability for Light icing (1 hr in light icing conditions when set to auto	No de-ice capability
Takeoff and Land: Wind Limits	Headwind: 30 kts Crosswind: 26 kts Tailwind: 8 kts Max for taxi 36 kts Gust spread to 10kts for all	Headwind: 20 kts Crosswind: 20 kts (Gust spread to 25kts) Tailwind: 5 kts
Rain	.2 inches or less/hour (moderate rain)	.2 inches or less/hour (UA and TALS)
Lightning	No operations within 25nm from the aircraft	No operations within 25nm from the aircraft or GCS
Ceiling/visibility ***Takeoff/en route***	VFR minimums and Local established procedures	VFR minimums and Local established procedures
Min/Max operating altitudes	2000’ AGL/25k MSL	2000’AGL/15k’ MSL
Minimum Runway length required: Takeoff/Land	4500’/4500’	Land – 710’
Legend: GCS – ground control station KTS – knots MSL – means sea level TALS – takeoff and landing system	UA – unmanned aircraft UAS – unmanned aerial system VFR – visual flight rules	

Troops and Support Available

G-11. Timely and detailed UAS employment planning is critical to mission success. To ensure effective employment of UAS, commanders must thoroughly understand UAS readiness, including maintenance, training, capabilities and limitations, and logistics status. While Shadows are capable of operating in an austere environment, Gray Eagles require additional support personnel and ground support equipment as well as a larger, improved site for launch and recovery.

Time Available

G-12. When planning UAS operations, commanders should consider the additional time required for launch/recovery site emplacement and forward GSC site emplacement. Army UAS are listed on the ATO for 24-hour operations, but still require additional coordination with the airspace control authority for hasty or time-sensitive missions.

Civil Considerations

G-13. Civilian air traffic, host nation airspace and regulations, and environmental concerns are planning considerations. Launch and recovery sites, both improved and unimproved, may require additional coordination and security if UAS units are not co-located with their higher headquarters.

Teaming of Manned and Unmanned Aircraft

G-14. UAS personnel must be a part of planning from receipt of mission through mission brief, rehearsal, and execution. The systems organic to the CAB that will conduct manned-unmanned teaming are the RQ-7B Shadow, MQ-1C Gray Eagle, AH-64 Apache, and remote video terminal (RVT). When properly executing MUM-T, the combined arms team increases their ability to gain and maintain contact throughout the depth and breadth of the area of operations.

G-15. Aviation units are capable of employing UAS in multiple configurations–

- **Autonomous:** Advantages of autonomous UAS missions include endurance and a persistent surveillance capability ideal for continuous observation of an area of operations. Autonomous operations also reduce the exposure of manned platforms and enables commanders to mass aviation combat power at a time and place of choice. Disadvantages include the limited field of view (FOV) of the UAS sensor and limited organic firepower of the Gray Eagle.
- **MUM-T (Integrated with attack reconnaissance aircraft):** Manned-unmanned teams perform their tasks in support of a common objective, but are not necessarily required to operate in close proximity of each other. Pairing UAS with attack reconnaissance aircraft provides a wide range of sensor and weapon capabilities that complement each other while allowing rapid cueing to targets and areas of interest.
- **MUM-T (Integrated with Assault/MEDEVAC Aircraft):** UAS can operate in support of assault or MEDEVAC missions. UAS conduct air route and area reconnaissance and security ahead of the manned aircraft or air assault to set the conditions for the operation. This method of teaming provides an elevated level of survivability and security to manned aircraft.
- **Unmanned Teaming or Multiple UAS:** Multiple UAS can operate together as a pure UAS team. An unmanned team employed on the same objective provides redundant, persistent coverage with multiple sensors and additional weapons payload. It also provides an enhanced lethality when combining the targeting and fires capabilities of both aircraft.

G-16. The key to successful MUM-T is communication between unmanned aeroscouts, the air mission commander, and the supported ground maneuver unit. To increase responsiveness and agility, the UAS crew must have direct communications and shared video with both manned aircraft, and supported ground maneuver units.

Communications

G-17. Army UAS leverage several technologies to ensure uninterrupted communications further enabling the ground maneuver commander. The encrypted tactical common data link (TCDL) facilitates enhanced throughput of full motion video.

Note. The load sets and keys for communication security of TCDL are required for all operations and may be coordinated through the unit S-6.

FREQUENCY MANAGEMENT CONSIDERATIONS

G-18. Frequency management is a critical component of UAS operations and includes frequency de-confliction and bandwidth availability. Due to limited UAS frequency availability (uplink, downlink, and video frequency), coordination with the spectrum manager is important to ensure unimpeded flight operations. The spectrum manager coordinates frequency allocations for all platforms using C-band, tactical common data link (TCDL), Ku-band, and SATCOM. The spectrum manager also assists the electronic warfare officer in issuing guidance to the units regarding de-confliction and interference resolution between electronic warfare (EW) systems and other friendly systems.

SECTION III - EMPLOYMENT CONSIDERATIONS

OVERVIEW

G-19. MUM-T employment includes the level of interoperability and the time and length of teaming to meet the commander's intent. During mission execution, a dynamic re-tasking of a UA or manned aircraft for MUM-T is possible. Detailed planning, habitual relationships, training, rehearsals, and a thorough knowledge of an area of operations improve a unit's capability to employ both manned and unmanned aircraft using MUM-T for reconnaissance, security, and attack missions.

ENGAGEMENT OPERATIONS

G-20. Both the Gray Eagle and Shadow UAS are capable of laser designating for all Hellfire II AGM 114 missiles; however, only the Gray Eagle is capable of carrying and firing missiles. The AH-64 employs the AGM-114 series missile and is capable of engaging autonomously or remotely. Autonomous engagement is the engagement of targets using onboard weapon systems and self-designation by a single platform. Remote engagement is the engagement of targets using two platforms, where one designates the target with laser, and the other engages with the Hellfire missile. All models of Hellfire II missiles are compatible with the laser designators employed on the Gray Eagle and Shadow. Figure G-1 depicts a remote engagement with a Gray Eagle designating for a missile from an Apache.

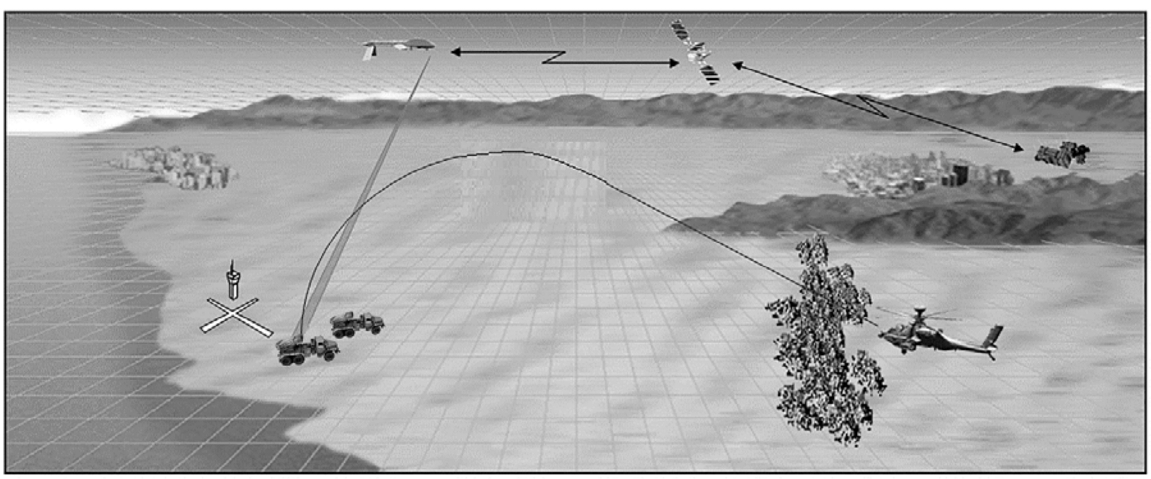

Figure G-1. Example remote Hellfire engagement

LEVEL OF INTEROPERABILITY OPERATIONS

G-21. Levels of interoperability (LOI) define how UAS and manned aircraft interface and integrate when operating autonomously, in mutual support, or in support of a combined arms team. Deliberate MUM-T employment relies on detailed planning and rehearsal of appropriate LOIs based on the mission variables and commander's intent. Habitual relationships and standard operating procedures enhance the effectiveness of teaming and LOI when conducting hasty operations.

LOI 1

G-22. LOI 1 (figure G-2) is the receipt and display of UAS-derived imagery or data without direct interaction with the UA. Imagery and data is received through established communications channels, most often from the ground control station (GCS) controlling the UA. Users receive near real time video via the tactical network from the GCS. Example - Dissemination of video from the GCS through a tactical network to end-user CPs. The GCS receives video or ground moving target indicator imagery. The information is distributed to the CP through a network for PED.

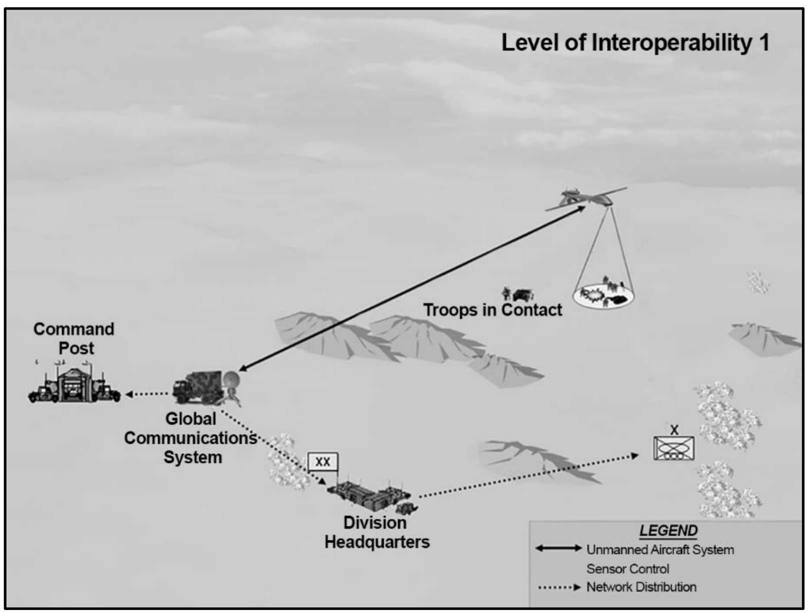

Figure G-2. Level of interoperability 1

LOI 2

G-23. LOI 2 (figure G-3) is the receipt and display of imagery and data received directly from the MUM-T capable platform to the supported element. A communications system, such as the communications relay package, enables the supported unit to communicate sensor movement and adjustment requirements to the GCS operator during operations. LOI 2 requires that a system (GCS or RVT) directly receive video or other data from the UA for use by the supported unit. At a minimum, LOI 2 operations require a UA-specific data link and compatible LOS antenna to receive imagery and telemetry directly from the UA.

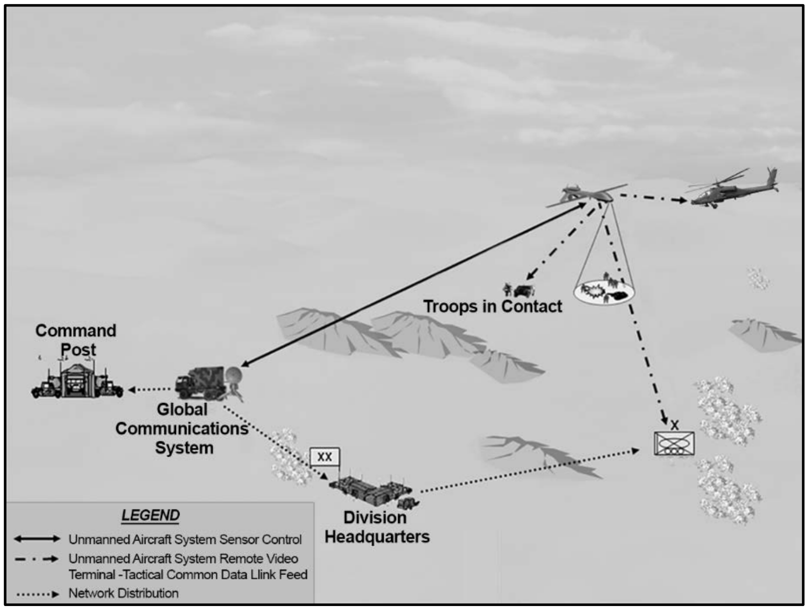

Figure G-3. Levels of interoperability 2

LOI 3

G-24. LOI 3 is the direct electronic control and monitoring of the UA payload by an AH-64. LOI 3 (figure G-4) involves control of the payload separate from the UA. In LOI 3 operations, the payload is controlled from somewhere other than the GCS (bi-directional RVT). The supported element's RVT enables command of the UA sensor directly influencing current operations. LOI 3 requires personnel trained in UAS operations and RVT operators on payload control operations. It requires detailed and standardized integration procedures between the unmanned Aeroscout, attack reconnaissance aircrew, and the supported element's RVT operators.

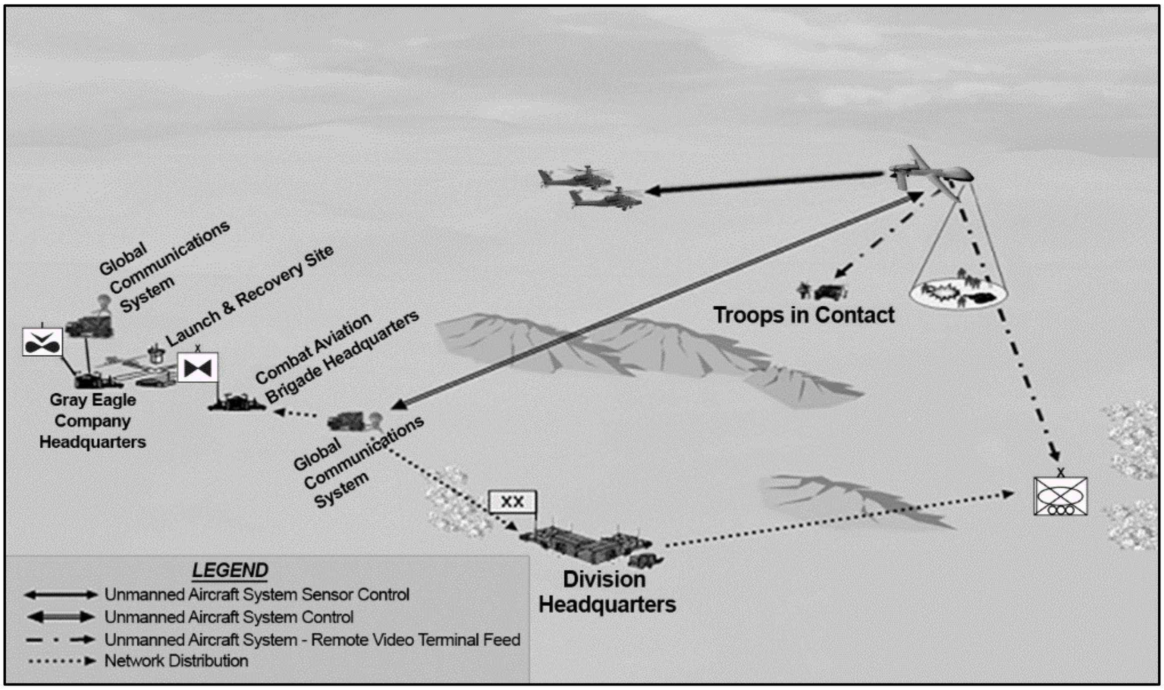

Figure G-4. Levels of interoperability 3

LOI 4

G-25. LOI 4 (figure G-5) is the direct electronic control of a UA, less launch/recovery operations, by an AH-64 or RVT other than the UA GCS. LOI 4 operations have the same hardware requirements as LOI 3, but with UA control software. During this LOI the GCS maintains supervisory control and the unmanned aircraft commander retains the ability to resume control of the UA.

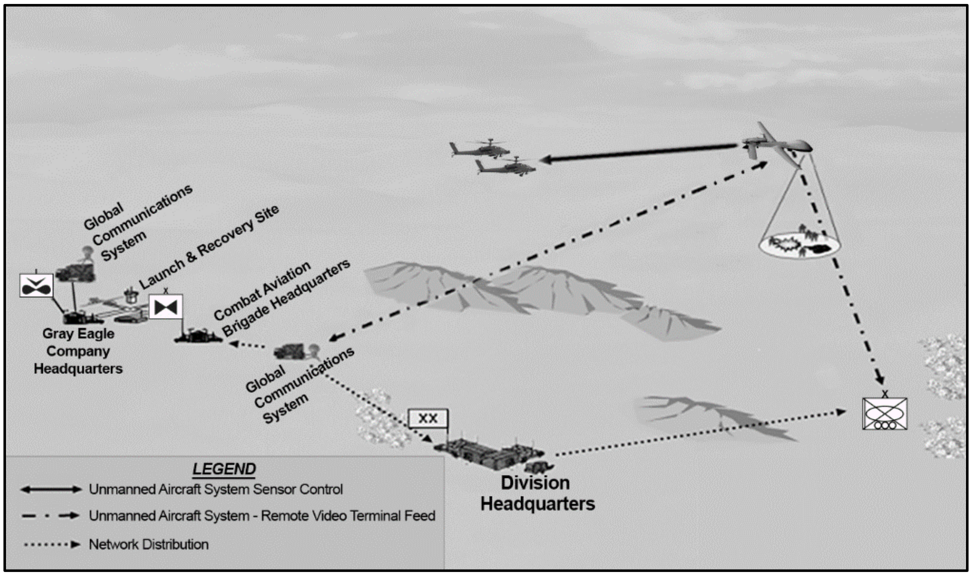

Figure G-5. Levels of interoperability 4

LOI 5

G-26. Although not currently supported for MUM-T, LOI 5 is the direct electronic control and monitoring of the UA to include launch/recovery. LOI 5 operations have the same hardware requirement as LOI 4, with the addition of launch/recovery unique software and equipment. LOI 5 provides an additional platform with the capability to recover and land the UA safely in the event the UA loses its link with the GCS. LOI 5 operations require the supported element operator training in-flight operations for the specific UA. Supported element operators must be trained, qualified, proficient, and current in accordance with AR 95-23.

MANNED-UNMANNED TEAMING CHECK IN

G-27. Attack reconnaissance aircrews and unmanned aeroscouts use standardized check-in brief to establish digital communications and employ MUM-T. The check-in brief in table G-2, page G-10, provides users with key and essential information that applies for both deliberately planned and hasty MUM-T operations. Either crew (manned or unmanned) initiates the check-in.

Table G–2. Manned-unmanned teaming check-in

Manned-Unmanned Teaming Check-In Brief
1. Warning Order " _BENDER 20_, this is__TIGERSHARK 11__, Say when ready for MUM-T check in." (UAS Call-Sign) (AH-64 Call-Sign) "_TIGERSHARK 20_, BENDER 11 is ready, check in follows. 2. Uplink/Downlink Frequencies and Laser Code "TIGERSHARK 20, BENDER 11, my current position is 41R PR 1234 5678." (select a point 30-45 seconds ahead of current location if in flight) Altitude, FL _160_ Uplink Frequency 36.36 Downlink Frequency 63.63 Down Rate 10.71A (10.71N in the AH-64) Port Number Code _5555_ Laser Code 1234 3. LOI Request and Approval "BENDER 11, TIGERSHARK 20, CUCS ID 27.0.0.0 requesting LOI-2 or 3" "TIGERSHARK 20 will call complete when LOI-2 and "LOI-3 HANDSHAKE" when LOI-3 operations are approved.
Legend CUCS – Core UAS Control System LOI – Level of Interoperability MUM-T – Manned Unmanned Teaming UAS – Unmanned Aerial System NOTE: Class C Operations are synonymous with MUM-T Operations.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

A2C2S	Army airborne command and control system
AA	assembly area
AAR	after action review
AATF	air assault task force
AATFC	air assault task force commander
AAFARS	advanced aviation forward area refueling system
ACA	airspace coordination area
ACM	airspace coordinating measure
ACO	airspace control order
ACP	air control point
ADA	air defense artillery
ADAM	air defense and airspace management
AE	aeromedical evacuation
AFATDS	advanced field artillery tactical data system
AGO	air-ground operation
ALO	air liaison officer
AMB	air mission brief
AMC	air mission commander
AMCM	air mission coordination meeting
AMO	aviation material officer
AMPS	aviation mission planning system
AMR	air mission request
AMSO	aviation mission survivability officer
AO	area of operation
ARB	attack reconnaissance battalion
ASB	aviation support battalion
ASE	aircraft survivability equipment
ASO	aviation safety officer
AWT	air weapons team
BAE	brigade aviation element
BAMO	brigade aviation material officer
BAO	brigade aviation officer
BCT	brigade combat team
BLSA	basic load storage area
CAB	combat aviation brigade
CAS	close air support
CASEVAC	casualty evacuation
CBRN	chemical, biological, radiological, and nuclear

CC	convoy commander
CCIR	commander's critical information requirement
CEMA	cyber electromagnetic activity
COA	course of action
COP	common operational picture
CP	command post
CPOF	command post of the future
CREW	counter radio controlled improvised explosive devise electronic warfare
DART	downed aircraft recovery team
DS	direct support
DSCA	defense support civil authorities
EA	engagement area
ECAB	expeditionary combat aviation brigade
EO	electro-optical
EPA	evasion plan of action
ERFS	extended range fuel system
FARP	forward arming and refueling point
FLIR	forward looking infrared
FLOT	forward line of troops
FRAGORD	fragmentary order
FRIES	fast rope insertion and extraction system
FSCM	fire support coordination measure
FSE	forward support element
FSMP	forward support medical evacuation platoon
FSO	fire support officer
FW	fixed-wing
GCS	ground control station
GS	general support
GSAB	general support aviation battalion
GTC	ground tactical commander
HA	holding area
HELOCAST	helicopter cast and recovery
HLZ	helicopter landing zone
IBCT	infantry brigade combat team
IED	improvised explosive device
IPB	intelligence preparation of the battlefield
ISOPREP	isolated personnel report
JAAT	joint air attack team
JOSAC	joint operational support airlift center
JSEAD	joint suppression of enemy air defense
JTAC	joint terminal attack controller
LNO	liaison officer

LOI	levels of interoperability
LOS	line of sight
LTL	laser target line
LZ	landing zone
MDMP	military decision making process
MEDEVAC	medical evacuation
MCS	mission command system
MOC	medical operations cell
MTF	medical treatment facilities
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, civil considerations
***MUM-T**	manned unmanned-teaming
NAI	named area of interest
NATO	north Atlantic treaty organization
OE	operational environment
OP	observation post
OPCON	operational control
OPORD	operations order
OPSEC	operations security
OPTEMPO	operating tempo
OSA	operational support airlift
OSC	on-scene commander
OSRVT	one system remote viewing terminal
PAMR	priority air mission request
PCC	precombat checks
PCI	pre-combat inspections
PED	processing, exploitation, dissemination
PIC	pilot in command
PIR	priority intelligence requirement
Pk	probability of kill
PMCS	preventative maintenance checks and services
PMESII-PT	political, military, economic, social, information, infrastructure, physical environment, and time
PR	personnel recovery
PRO	personnel recovery officer
PZ	pickup zone
PZCO	pickup zone control officer
QRF	quick reaction force
RASA	ready ammunition storage area
RIF	reconnaissance in force
ROE	rules of engagement
ROZ	restricted operations zone

RP	release point
RRP	rapid refuel point
RW	rotary-wing
S-1	personnel staff officer
S-2	intelligence staff officer
S-3	operations staff officer
S-4	logistics staff officer
SA	situational awareness
SATCOM	satellite communications
SEAD	suppression of enemy air defense
SERE	survival, evasion, resistance, and escape
SP	start point
SPIES	special patrol infiltration and extraction system
SPINS	special instructions
SPO	support operations officer
SWO	staff weather officer
SWT	scout weapons team
TAA	tactical assembly area
TAC CP	tactical command post
TACON	tactical control
TACP	tactical air control party
TF	task force
TLP	troop leading procedures
TOCNET	tactical operations center network
TOT	time on target
TRP	target reference point
TTP	tactics, techniques, and procedures
TTT	time to target
UAS	unmanned aircraft systems
WARNORD	warning order

SECTION II – TERMS

airspace control authority

The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. Also called ACA. See also airspace control; airspace control area; airspace control system; control; operation. (JP 3-52)

airspace control order

An order implementing the airspace control plan that provides the details of the approved requests for airspace coordinating measures. Also called ACO. (JP 3-52)

air tasking order

A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. (JP 3-30)

manned unmanned teaming

The integrated maneuver of Army Aviation rotary wing and unmanned aircraft system to conduct movement to contact, attack, reconnaissance, and security tasks. Also called MUM-T. (FM 3-04)

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