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UEx AVIATION BRIGADE ORGANIZATION, TRAINING, AND OPERATIONS

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UEx Aviation Brigade Organization, Training, and Operations

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Preface

The purpose of this field manual interim (FMI) is to provide interim doctrine on the structure, training, tactical employment and operations of the multi-function aviation brigade. Multifunctional aviation brigades (AVN BDEs) are those at the UEx level. They consist of attack reconnaissance, assault helicopter, general support, and aviation support battalions. This FMI specifically addresses operations for the multi-functional AVN BDE organized under the Army modular concept that governs the development of equipment, training, and structure for former divisional and corps aviation brigades.

The focus throughout this manual is how to fight and sustain the UEx level AVN BDE. This manual provides basic doctrine in tactics, techniques of employment, training, organization, exercise of command and control (C2), and tactical operations appropriate to the UEx AVN BDE.

This manual is intended for all AVN BDE commanders, staffs, and any U.S. military personnel expecting to conduct operations with AVN BDE units. This manual applies to the active component (AC), reserve component (RC), and Army civilians. It will also assist Army branch schools in teaching aviation operations. The procedures described herein are intended as a guide and are not to be considered inflexible. Each situation in combat must be resolved by an intelligent interpretation and application of the doctrine set forth herein.

This FMI applies to the transformation force across the full range of military operations—peacetime military engagements (PME), smaller-scale contingencies (SSC), and major combat operations (MCO). The manual reflects and supports the Army operations doctrine as stated in FM 3-0, *Operations*. This is not intended as a stand-alone reference for UEx AVN BDE operations; rather, it is intended to be used in conjunction with existing doctrine. Doctrinal information readily available to the reader in other publications will not generally be repeated here.

Chapter 1 focuses on the UEx AVN BDE organization, missions, training and fundamentals. Chapter 2 gives an overview of UEx aviation brigade training fundamentals. Chapter 3 gives an overview of battlespace dynamics and framework. Chapter 4 discusses the aspects of battle command, as well as the duties of brigade leaders and staff. Chapter 5 discusses common operational procedures. Chapter 6 discusses employment of UEx aviation brigades. Chapter 7 covers employment of combat support and other combat enablers. Chapters 8 discuss UEx AVN BDE logistics.

Finally, FM 3-04.101 furnishes a foundation for subordinate doctrine, force design, materiel acquisition, professional education, and individual and unit training.

The approving authority for this publication is the Commander, US Army Combined Arms Center and Fort Leavenworth. The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC). Send comments and recommended changes to Commander, United States Army Aviation Center (USAAVNC), ATTN: ATZQ-TD-D, Fort Rucker, AL 36362; email the Directorate of Training and Doctrine (DOTD) at av.doctrine@us.army.mil. Find other doctrinal information on the internet at Army Knowledge Online or call DSN: 558-3011 or Commercial: (334) 255-3011.

Unless this publication states otherwise, masculine nouns or pronouns do not refer exclusively to men.

Introduction

SECTION I – PURPOSE

INTERIM FIELD MANUALS

An interim field manual (FMI) is a Department of the Army publication that provides expedited delivery of urgently needed doctrine. This FMI is being prepared to meet the doctrinal requirements of the transformation force aviation brigade (AVN BDE). This FMI applies to Army transformational forces across the full spectrum of military operations: peacetime military engagement (PME), small scale contingencies (SSC), and major combat operations (MCO).

The doctrine contained in this FMI is approved for immediate use in training and operations. Operational concepts described in this manual are based on decisions by the Army Chief of Staff to reorganize the Army to a brigade-based force, and to quickly implement “good enough” designs that will be refined over time. The material provided in this FMI is considered “good enough” to satisfy the requirements of the Army’s transforming organizations.

This FMI applies to the active component (AC), reserve component (RC), and Army civilians. It builds on the collective knowledge and experience gained through recent operations, numerous exercises, and the deliberate process of informed reasoning. It is rooted in time-tested principles and fundamentals, while accommodating new technologies and diverse threats to national security.

This FMI will expire after 2 years from its approved publication date. Throughout its life, proponents should collect feedback to refine the emerging doctrine that will be incorporated into new or revised field manuals.

THE FOCUS OF THIS MANUAL IS THE UEX AVN BDE

The focus throughout this manual is how to fight and sustain the UEx level AVN BDE. This FMI describes how the UEx AVN BDE optimizes organizational effectiveness while balancing lethality, mobility, and survivability against requirements for rapid strategic deployability.

The intended audience for this publication is leaders and staff sections within transforming units. These leaders include those in combined arms chains of command, field and company grade officers, middle-grade and senior noncommissioned officers, and battalion and squadron command groups and staffs. This manual provides guidance for unit of employment (UEx) leaders and staffs for training and employment of the AVN BDE to conduct close combat in offensive and defensive operations. This publication may also be used by other Army organizations to assist in their planning for support to AVN BDEs.

The ensuing chapters provide basic doctrine in tactics, techniques of employment, training, organization, exercise of command and control (C2), and tactical operations appropriate to the UEx AVN BDE. This manual also provides the tactics and techniques to exploit the AVN BDEs range of capabilities, and ensure the AVN BDE's versatility across the full range of potential requirements. Army branch schools may also use it to assist in teaching aviation operations.

SECTION II – TRANSFORMING TO MEET OPERATIONAL REQUIREMENTS

WE ARE A NATION AT WAR

In the opening decade of the 21st Century, regional instability, proliferation of weapons of mass destruction (WMD), transnational threats from groups using terrorism to achieve political objectives, the spiraling information revolution and ongoing globalization have created a prolonged period of conflict for the United States with great uncertainty about the nature and location of that conflict. The multi-polar world created by the break up of the Soviet Union has presented the U.S. Army with both opportunities and challenges.

Current and future enemies may look different from the Soviet Union, but American interests remain the same. Today while peace exists between the great powers, a state of permanent white water can be found in much of the world.

In this environment, war is the norm, and peace is the exception. Our adversaries seek adaptive advantage through asymmetry. America has near peer competitors in niche areas, and conventional force on force conflicts are still possible. There is an enormous pool of potential combatants armed with irreconcilable ideas, and our homeland has become part of the battlespace.

Historically, conventional terrorism and threats directed at US citizens and property were conducted outside of US borders. The events of 9/11 demonstrated that the threat to the US homeland from transnational organizations and groups with regional agendas is very real.

The Army must be able to defuse crises and/or defeat aggression early to prevent escalation and limit damage. To meet the requirements of the current operational environment, we need flexible, rapidly deployable forces and sufficient depth and strength to sustain multiple, simultaneous operations.

The Army must adapt to these challenges NOW. We are generating more versatile combat power because:

- We have extended worldwide commitments.
- We will remain at war for the foreseeable future.
- We must be more responsive to regional combatant commanders (RCC) needs.
- We must execute offensive, defensive, stability and support operations as part of an integrated joint force.

DELIVERING THE RIGHT ARMY FORCES

To better meet current and future operational requirements, the United States Army is undertaking a total organizational redesign of its combat and associated support units, while in the midst of the global war on terrorism (GWOT). In terms of scope, the efforts to transform the Army rivals the changes wrought in the Army by Secretary of War, Elihu Root a century ago, in 1903. This effort involves changing how the Army conducts operations, and how it is organized to accomplish assigned missions. The organization and doctrine of the Army that appears as the result of transformation will not resemble that with which our nation fought the major conflicts of the last century. (See Figure Intro-1.)

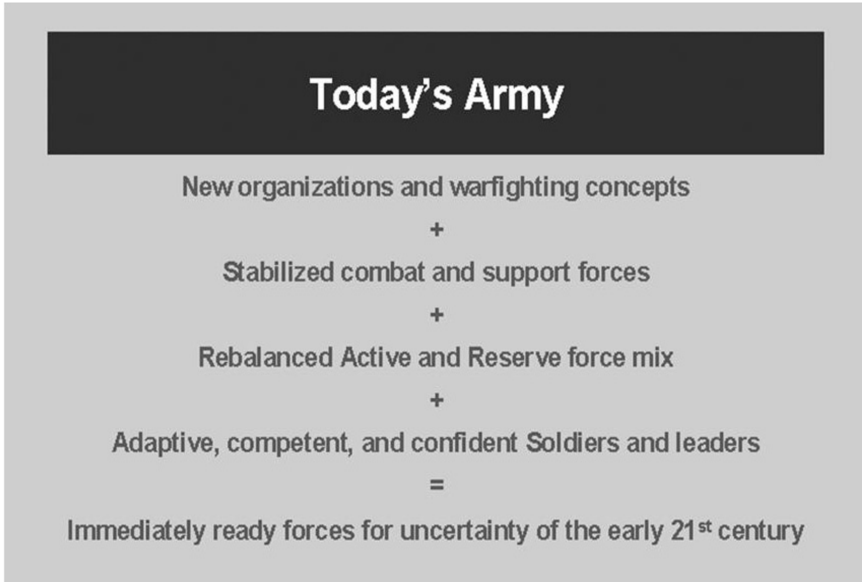

Figure Intro-1. Today's Army

We are seeking a campaign-quality Army with a joint and expeditionary mindset. This new expeditionary mindset recognizes we are an Army in contact, engaged in ongoing operations and ready to respond to the next crisis as it evolves. Transformation is an attitude and spirit—infused across the entire force—that embraces a forward-leaning, modular, joint interdependent and capabilities based Army led by aggressive, intelligent, and empowered soldiers. This team of teams will transform to an Army that will ultimately win the war on terror and provide long-term security for the Nation.

Army transformation is a comprehensive effort intended to reinvent the Army at strategic, operational, and tactical levels. Formations will be redesigned to provide modular, capabilities-based organizations, increasing their relevance and responsiveness to regional combatant commanders (RCC).

Changing the organizational structure of units must be logically consistent with future force concepts but tempered by the technological and the current force capabilities that are reasonably available within the near term. This force will be strategically responsive, networked, and fight with a precision capabilities-based maneuver force that is dominant across the range of military operations envisioned for the future global security environment.

Delivering the right Army forces at the right place and time is vital to the joint force commander's ability to defeat any enemy. As the Army repositions and reconfigures its forces, the ability to rapidly deploy, employ, and sustain forces throughout the global battlespace will be expanded. Keeping the Army relevant and ready is about anticipation, and not about preparing for yesterday's challenges. The world is changing and the Army is responding to these changes and positioning itself for the challenges of the future strategic environment with forces that will be more effective in combat missions, more capable of stability operations and far better at interacting with other service tactical elements of the joint force.

SECTION III – A TOTAL ORGANIZATIONAL REDESIGN

MODULARITY

Modularity is the foundation for building a Campaign Quality Army with joint and expeditionary capabilities. Often times, commanders require a function to be performed that does not warrant the deployment of an entire unit. However, deploying portions of units can render the remaining elements of the parent organization incapable of performing their mission due to a lack of key personnel and equipment

Modularity provides a force design methodology that aids in solving these dilemmas. It enhances the Army's ability to rapidly respond to a wide range of global contingencies with a force possessing needed functions and capabilities, while deploying a minimum of troops and equipment. It is a methodology that puts the right amount of the needed capabilities at the right place at the right time. At the same time, it also leaves behind the remainder of an organization which can be deployed later or can provide mission capable support elsewhere if needed.

Modularity is about packaging units into flexible configurations, creating more cohesive and capable units, and adjusting the types and mix of AC and RC units (See Figure Intro-2). Modular units are rapidly deployable, responsive, agile, tailorable and discrete packages of land force combat power.

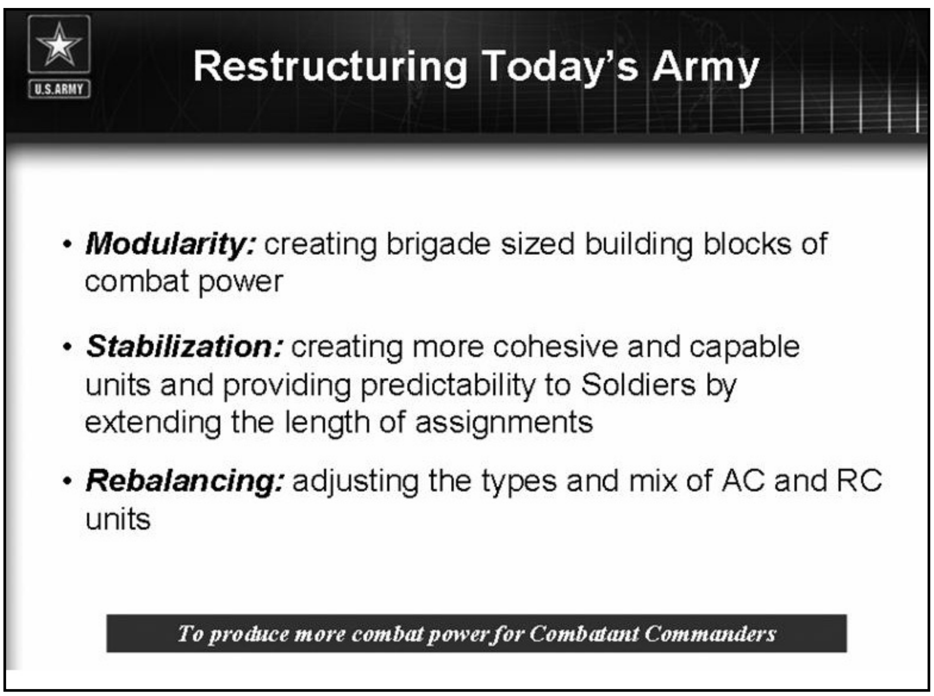

Figure Intro-2. Restructuring Today's Army

The object of modularity is to provide superior tactical units that are more responsive and provide greater mission potency for the joint force commander.

Modularity provides the methodology for the Army to achieve a force structure that will optimize rapid assembly of mission-oriented contingency forces that are effective and efficient; while providing a means of rapidly identifying, mobilizing, and deploying doctrinally sound, sustainable, and fully mission capable elements/organizations capable of operating in a joint and combined environment (See Figure Intro-3.)

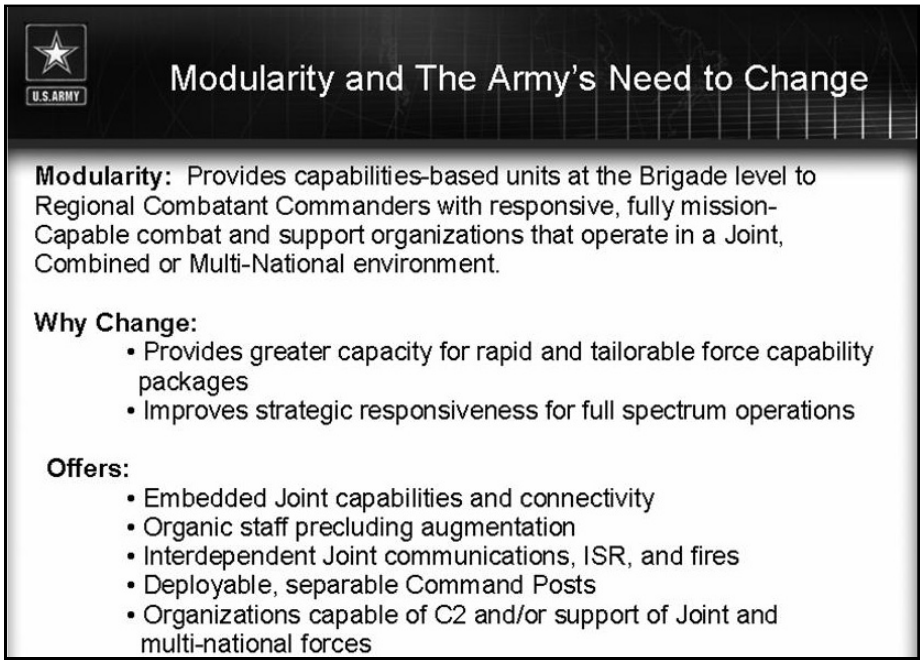

Figure Intro-3. Modularity and the Army's Need to Change

Modularity will apply to force elements, to include command and control (C2) headquarters, performing missions across the range of military operations (peacetime, conflict, and war), and to force elements participating in joint, combined, multi-national, and interagency operations.

MODULAR HEADQUARTERS

Since 1999, the US military has undergone a sweeping evolution driven by operational experience and new capabilities. In the past, the conduct of operations was divided into loosely linked major land, sea, and air operations, often conducted with different objectives. Today, joint operations form an integrated joint fabric and increasingly operations are integrated at the tactical level. The nature of modern land operations has changed in terms of geography and time. In general, operations have become more distributed in space and more simultaneous in time. At tactical and operational levels, subordinate units operate in noncontiguous areas of operations and conduct nonlinear operations as a matter of routine. This change is the result of smaller and more agile forces, significant improvements in C2, and continuing integration of joint capabilities at lower echelons. Army forces continue to increase their lethality. The integration of advanced information technologies multiplies the effectiveness of the individual weapons systems by many times. All these factors support Army forces executing offensive land operations early in the campaign, by introducing forces capable of maneuvering to operational depths as part of an integrated joint force.

The operational environment requires Army forces that are much more responsive and tailored to the needs of the combatant commanders. Army forces must be capable of executing a full range of military operations from theater war through smaller contingencies to humanitarian assistance. To meet joint requirements, the Army is reorganizing its echelons above brigade.

Between now and 2010, two higher headquarters will replace the existing structure of divisions, corps, and echelons above corps. These new headquarters are currently designated Units of Employment (UE), specifically a UEx (primary warfighting), and a UEy (theater operational land force and joint support) echelon (See Figure Intro-4). While the tendency is to think of these echelons as linear improvements to the division and corps, they are not. Both higher echelons will be complementary, modular entities designed to employ tailored forces within integrated joint campaigns.

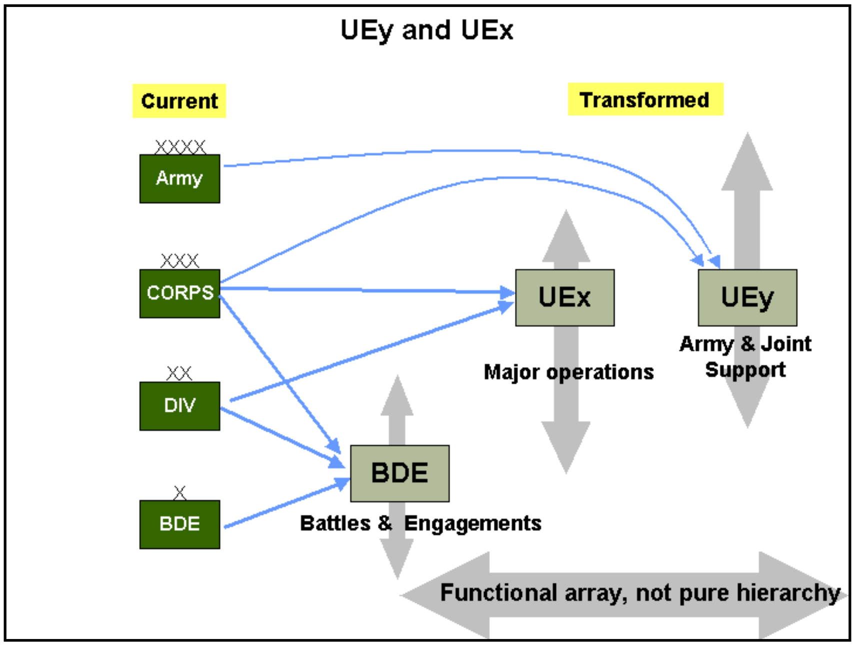

Figure Intro-4. UEx and UEy

Units of employment execute offensive, defensive, stability, and support operations on land as part of an integrated joint force. The UEx will become the principle war fighting headquarters of the Army, exercising operational control over brigades employed in tactical engagements. The UEy will focus primarily on the Army component responsibilities, supporting the entire theater and the operational forces (joint, interagency, and multinational) as required by the combatant commander.

THE BRIGADE BASED FORCE

The Army will transform to a brigade-based modular Army to achieve more balance in the force, with the ability to operate decisively in an uncertain environment against an unpredictable threat that will make every attempt to avoid our strengths (See Figure Intro-5). This redesign effort, as well as associated restructuring and stabilization initiatives, are important as they are intended to sustain both the active and reserve component Army through a potentially long term, manpower and resource intensive war on terrorism.

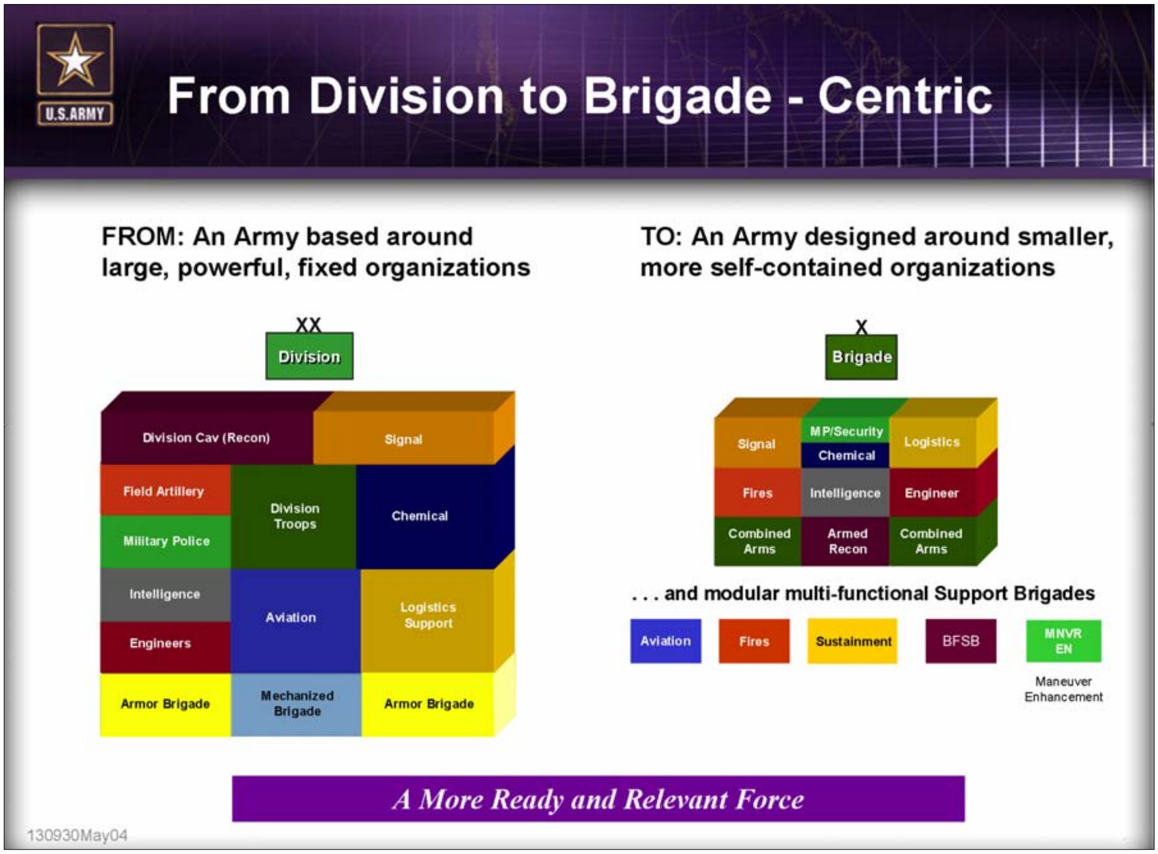

Figure Intro-5. From Divisions to Brigades

The new brigade designs achieve three goals set by the Army's Chief of Staff. This new design will:

- Increase the number of combat brigades available to the Army while maintaining combat effectiveness that is equal to or better than that of current divisional brigade combat teams.
- Create smaller standardized modules to meet the varied demands of RCCs (Regional Combatant Commanders) and reduce joint planning and execution complexities.
- Redesign brigades to perform as an integral part of the joint team. This makes them more capable in their basic ground close combat role, able to benefit from other service support and to contribute more to other service partners.

The fundamental transforming idea behind the Army's reorganization is to organize soldiers into powerful and modular brigade combat beams (BCTs) with dramatically improved C2 systems. This pairing of better combat potential with superior C2 will give the brigades the ability to gather more information faster and more reliably and to fight as a networked team of teams internally and with teammates in the other services. This will give the new maneuver brigades significantly greater combat power than that of contemporary ones.

The principal tactical unit of the modular Army will be the BCTs, which will be made up of battalion-sized and company sized subunits. Brigade based, modular units are rapidly deployable, lethal, responsive, agile, tailorable and discrete packages of land force combat power.

With the fielding of BCTs, the Army will shift from a division-based stance to a brigade-based posture. The Army shifts from generating and employing divisions in decisive land operations to providing the joint commander the right mix of BCTs and appropriate C2 as part of an integrated joint operation. Rather than providing some derivative of a division, as the Army does now, the Army will provide a mix of capabilities, controlling headquarters, and an appropriate commander to meet the requirements of the joint force commander, which will be driven by the threat and mission requirements.

Despite their organizational similarity to present maneuver brigades, the transformed modular BCTs are organized to maintain combined arms teamwork more effectively under intense stress. Advanced C2 tools, increased reconnaissance capabilities with improved sensors, and better precision weapons add significantly to the effectiveness of the new brigade combat teams.

These BCTs will magnify the effects of all the elements of combat power—maneuver, firepower, protection, leadership, and information—in new ways. As their fighting systems improve over the next decade, combat units will generate significant increases in combat power and significant advances in the focus, discrimination, and precision of combat effects.

Lethality in combat is determined less by the total number of shooters in an organization than by the number it can bring to bear and the accuracy with which they fire. While the shooters in the brigades' direct and indirect fire systems are familiar (120mm and 25mm cannons; small arms, machine guns, grenade launchers, and anti-tank/anti-material/anti-air missiles; 60mm, 81mm, and 120mm mortars; and 105mm or 155mm howitzers), their effectiveness has been substantially improved through better situational understanding and fire control tools.

To support the new heavy infantry and Stryker BCTs, five types of supporting brigades will be organized to provide supporting aviation, artillery fires, sustainment, intelligence, surveillance and reconnaissance (ISR), and protection. These supporting brigades are organized to perform specific combined arms support functions.

The supporting brigades are flexibly organized to meet mission demands. Each brigade includes a mix of organic and assigned battalions. Each can be tailored for the specific set of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) conditions of a major operation or contingency, and can be task organized in size from a brigade-sized element down to platoon-sized or section-sized elements. These supporting brigades provide the means to weight the decisive operation or to tailor BCTs for specific missions.

The Army National Guard will have the same common brigade combat team design as the active Army but will retain a separate Scout group in addition to its heavy, infantry, and Stryker BCTs. The Army Reserve will provide an array of supporting units.

SECTION IV – THE NEW ARMY FORCES

UEY

The UEy is the Army theater-level headquarters that directly supports the RCC. The UEy consolidates most of the supporting functions currently executed by Army corps and Army service component commands (theater Army) into a single operational command echelon. The UEy will be the primary vehicle for support to the entire region as well as Army, joint, and multinational forces deployed to a joint operational area (JOA). There will be one UEy for each RCC, and any sub-unified command designated by the Secretary of Defense.

The UEy commander performs the service unique functions and tasks of the Army service component commander (ASCC) for that RCC. In major combat operations, the UEy may become the joint force land component commander (JFLCC) and exercise operational control over tactical forces. It can also provide the headquarters for a joint task force (JTF) in smaller scale contingencies. The UEy requires some joint augmentation to function as the JFLCC or joint task force The specific organization of each UEy will be based on the unique requirements of the joint force commander/RCC and the conditions of the theater. Figure Intro-6 shows a general regionally focused UEy command and control headquarters.

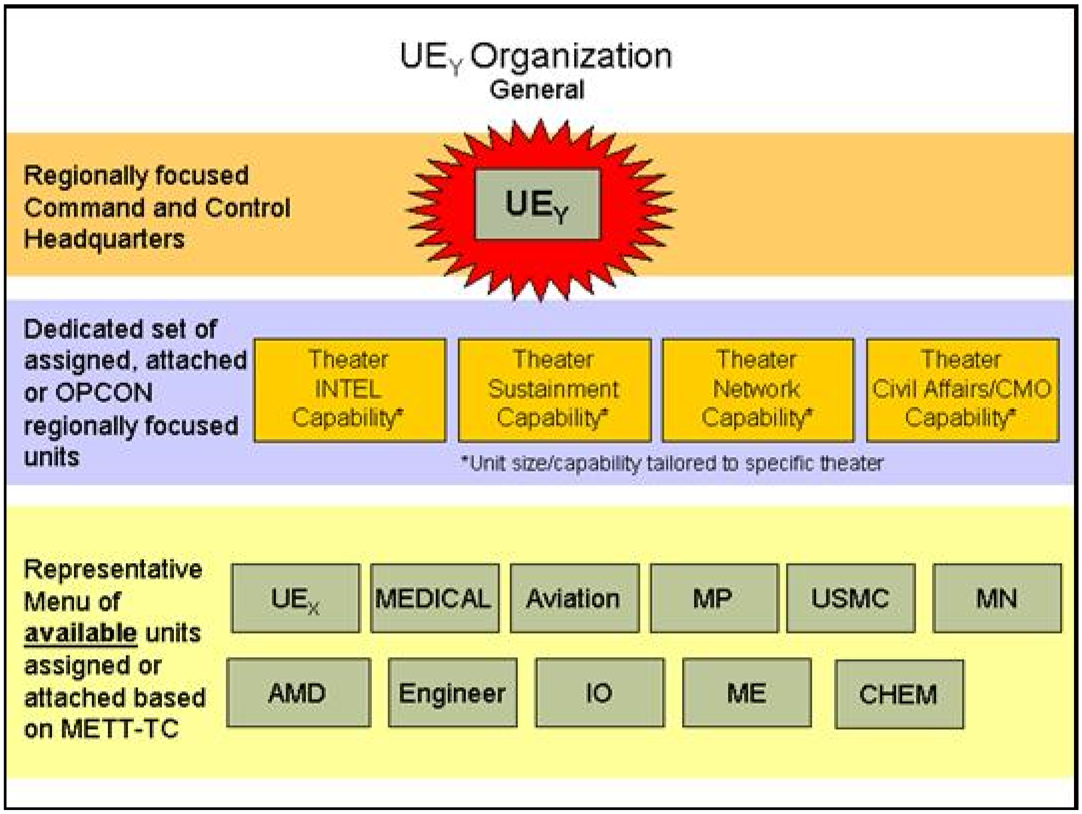

Figure Intro-6. UEy Organization, General

Four regionally focused commands or brigades will provide a theater base to each UEy and allow it to support the operations of the UEx and other joint and multinational forces in the combatant command. These supporting commands and brigades supporting each theater include a theater sustainment command (TSC), a theater network command (TNC), a theater intelligence brigade (TIB), and a civil affairs brigade. The situation in each theater will dictate the size of the commands, and theater-level brigades that support Army forces in theater.

The UEy receives other commands and brigades as required for execution of campaigns. Typically, these include a medical command, air and missile defense command, theater aviation brigade, engineer brigade(s), military police brigade(s), and one or more tailored UEx. From these forces and based on the assigned mission, the UEy may allocate additional maneuver; fires; aviation; reconnaissance, surveillance and target acquisition (BFSB); maneuver enhancement; sustainment and other functional brigades to the UEx during the conduct of operations.

UEX

The primary tactical war fighting headquarters will be the UEx. The UEx will combine the functions of today's division with the tactical responsibilities of the corps. The primary task of the UEx will be to direct the operations of the subordinate brigades and battalions. In marked contrast to the division, the UEx will not be a fixed formation. The UEx will not have any organic forces beyond the elements that make up the headquarters and its special troop battalion that includes life support and maintenance, a security company, a signal company, and a mobile command group section. Figure Intro-7 depicts a UEx organization.

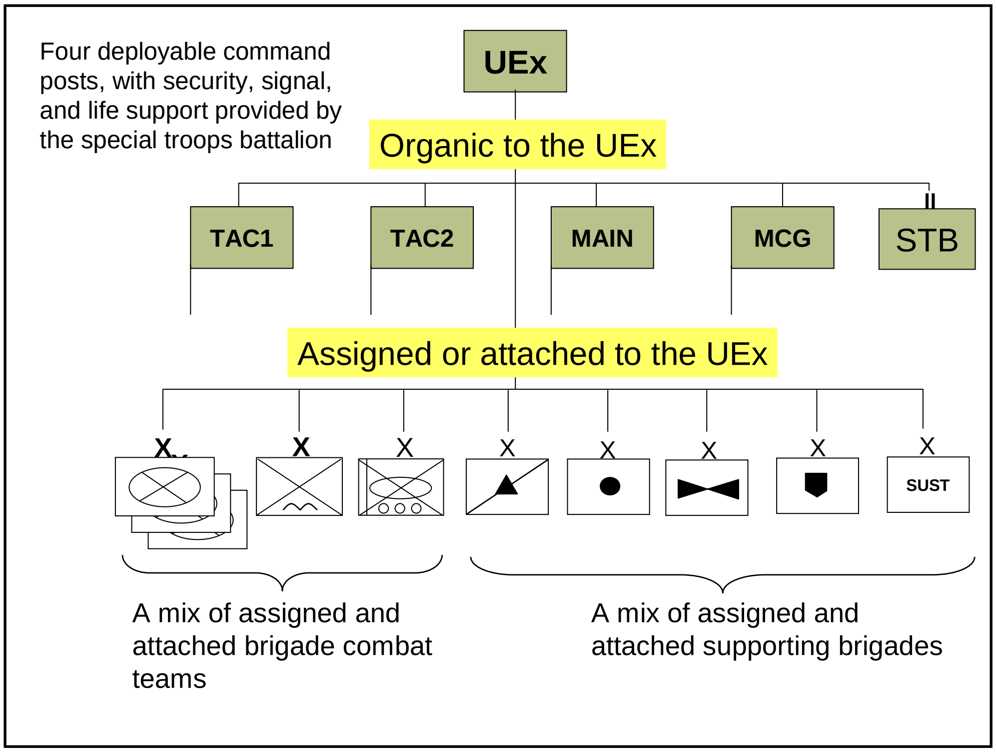

Figure Intro-7. UEx Organization

The UEx will be a completely modular C2 entity designed to exercise C2 over assigned brigades. Fully modular, the UEx headquarters is self-contained and built for today's expeditionary warfare. This contrasts sharply with the current division, which is the largest fixed organization in the Army.

The modular design envisions that the UEx can control a mix of the six basic types of brigade formations—the BCT, the aviation brigade, the BFSB brigade, the maneuver enhancement brigade (ME), the fires brigade, and the sustainment brigade. Since the UEx has no fixed structure beyond the UEx headquarters, not all of these brigades may be present in an operation. In some operations, the UEx may control more than one of a particular type of brigade. The UEx may also control functional groups, battalions, or even companies, but normally these will be task organized to one of the brigades.

The UEx conducts decisive, shaping, and sustaining operations that translate operational directives into tactical action. The UEx is organized, manned, trained, and equipped to accomplish the following:

- Controls up to six BCTs in major combat operations, but may control more in prolonged stability operations. However, the span of command may decrease to one or two BCTs during forcible entry operations.
- Controls a tailored mix of other warfighting capabilities organized under the five multi-functional supporting brigades. The UEy may also attach or operational control (OPCON) functional brigades to the control of the UEx commander.

- Organizes and distributes C2 assets based on METT-TC. The UEx commander may alternate command posts (CP) between planning and execution, assign them to geographically dispersed operations, or allocate them to divergent types of operations occurring simultaneously (for example offensive and stability operations). The commander may also organize C2 according to major functions such as, Army forces (ARFOR), land component, tactical controlling headquarters, etc., or purpose (decisive, sustaining, and shaping).
- Functions as an ARFOR or JTF/JFLCC headquarters for smaller scale contingencies without additional Army augmentation. The UEx may serve as both the ARFOR and JFLCC simultaneously, although augmentation may be required for extended operations.
- Directs mobile strike and precision strike operations through mission orders to the aviation and fires brigades, respectively.
- Normally operates independently along a line of operation or in an AO during offensive operations.

Each UEx is unique not only for a particular campaign, but for different phases of the campaign. The higher headquarters continually tailors the UEx according to the factors of METT-TC.

While current divisions are concerned solely with tactics, the UEx can function at the operational level of war with little or no augmentation. It can perform as the Army force headquarters (ARFOR) for a small joint task force (JTF) and can function as the combined or joint force land component command (C/JFLCC) with USMC or multinational augmentation. With other service augmentation and special training the UEx may even serve as a joint task force (JTF) headquarters.

In garrison, the UEx coordinating staff is organized into a general staff that includes G1, personnel; G2, intelligence; G3, operations; G4 logistics; G5, plans; G6, command, control, communications and computer operations (C4OPS); and G7, information operations. The UEx headquarters also includes special staff and personal staff for the commander. In contrast to current division/corps headquarters organization, all of the special staff is organic to the UEx headquarters. The headquarters has organic liaison teams. The UEx does not depend on any subordinate brigade to provide elements of the special staff, and it has a security company that can provide security platoons to its mobile elements.

Brigade Combat Team Description

Brigade combat teams (BCTs) are the modular Army's means of maneuvering against, closing with, and destroying the enemy. BCTs make permanent the otherwise temporary effects of other joint capabilities by seizing and occupying decisive terrain, by exerting constant pressure, and by breaking the enemy's will in face-to-face encounters. They will be the principal tactical unit of the modular Army.

Today's varying types of divisional and non-divisional BCTs will be reduced to three variants. Two standard BCT designs will replace the task-organized combinations formed inside today's divisions. One variant is a heavy brigade combat team (HBCT), and the other is an infantry BCT. Selected infantry BCTs will be organized along the standard design, but retain the ability to conduct forced entry operations by vertical envelopment (air assault and airborne). Stryker brigade combat teams (SBCT) are the third type of maneuver brigade combat team available to the UEx commander.

These BCTs will be standing combined arms formations, and will include organic battalion-sized maneuver, fires, reconnaissance, and logistics subunits. In contrast to current divisional brigades, the modular force BCTs will be fixed-base table of organization and equipment (TOE) units.

BCTs contain the maneuver combat power of the modular Army. Every BCT will be assigned to a UEx for training and readiness. While each BCT will be assigned to a parent UEx, the BCT may or may not conduct operations under the control of the assigned UEx headquarters. The UEy headquarters will tailor Army forces for the campaign based on multiple factors, only one of which will be habitual association. BCTs may execute missions under command of a different UEx, a Marine headquarters, directly under the command of the UEy, or under the operational control of a multinational headquarters. BCTs can carry out full spectrum operations with their organic units and command and control, but for most operations the BCT will be task organized with additional capabilities attached or OPCON from the UEx.

BCTs are designed to maneuver against and destroy enemy forces using combined arms and supported by all available joint capabilities. Although the primary purpose is offensive, HBCTs and IBCTs also are the primary forces for the execution of defensive and stability operations. BCTs will conduct support missions incident to offense, defense, or stability operations, or in the case of domestic operations, as the primary task. BCTs execute offensive, defensive, stability and support operations as required in contiguous and noncontiguous areas of operation (AOs). Within their individual AOs, BCT commanders are the supported commander, unless otherwise specified by the UEx or higher headquarters.

Figure Intro-8 reflects the most likely requirements to face Army forces, based on assessments of the current evolving operational environment. It also shows the requirements for which each BCT type is best suited. Each mission environment is distinctive enough to call for a mix of BCTs, but none is so specialized that it requires only a single type of BCT.

The three BCT types complement each other in all mission environments, and all BCTs can execute full spectrum operations. The shaded bars on the bottom of the chart indicate the “band of tactical excellence,” although all three BCT types can perform in the different environments.

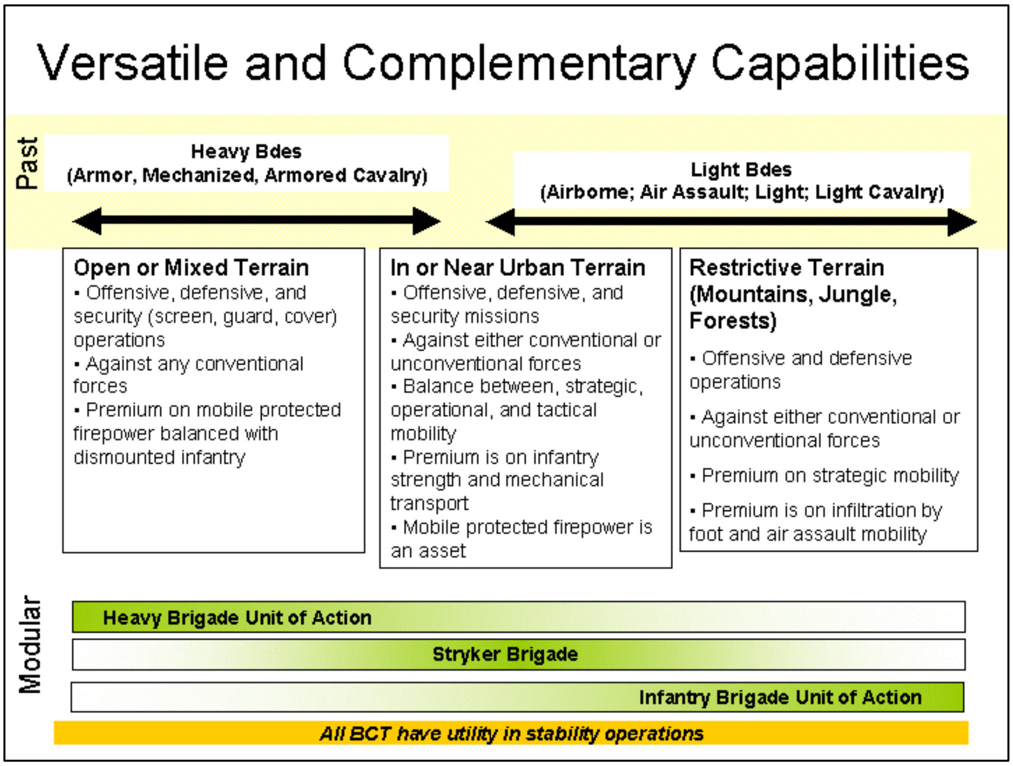

Figure Intro-8. Heavy BCT

The Supporting Brigades

There are five new brigades that support the BCTs and execute shaping and sustaining operations throughout the UEx AO. These brigades include aviation, fires, survelliance, maneuver enhancement, and sustainment.

These five brigades perform the following supporting functions across the UEx AO.

- Each brigade can be tailored for the specific set of METT-TC conditions of a major operation or contingency.
- Each can join or detach themselves from any higher headquarters easily and effectively.
- Each is self-contained and does not provide staff augmentation to the supported headquarters.
- Each has substantial network connectivity and liaison officer (LNO) capability to support another headquarters whether it is army, joint or multinational.
- Each can access and use joint enablers to accomplish its functions.
- Each has the means to reinforce the BCTs for specific missions.

The UEx commander may also determine that a ground maneuver unit or other Joint capability should be placed under the operational control of supporting brigade units of action. This decision would be based on the type of operation (offense, defense, stability, or support) as well as METT-TC considerations.

FIRES BRIGADE

The organization of the fires brigade differs from currently fielded corps and division field artillery brigades in its staff design, capacity to employ electronic warfare (EW) units, and unmanned aerial vehicles (UAV). The brigade commander performs the duties of the force field artillery commander for the unit to which the fires brigade is assigned (UEy or UEx), providing advice on all aspects of fires and effects employment.

Each fires brigade has an organic missile battalion. Depending on METT-TC, fires brigades are task organized with additional long-range precision missiles, cannon artillery, and counterfire radars. Figure Intro -9 provides the fires brigade mission, shows how it is organized with organic forces, and how it could be task organized with other assigned forces. The fires brigade may receive OPCON of EW assets selected for their ability to engage enemy C2 systems. The fires brigade provides fires on a planned or immediate basis at the direction of the UEx.

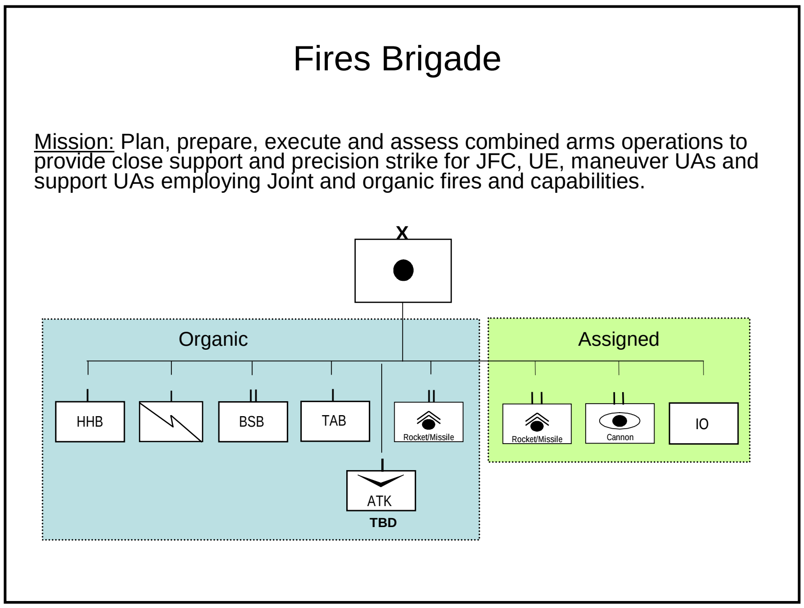

Figure Intro-9. Fires Brigade

The primary task of the fires brigade is to plan, coordinate, and execute precision strike operations within the UEx AO. The conduct of strike operations is predicated on the ability of the strike headquarters to control and synchronize all elements of the strike operation with all available lethal and non-lethal fires to deliver concentrated effects on the target. The C2 capabilities of the fires brigade allow it to plan, prepare, execute, and assess precision strike with operational control of additional ISR and EW capabilities from the other brigades. The UEx sends mission orders to the fires brigade specifying intended effects, additional capabilities under the operational control of the fires brigade, and joint capabilities available for the mission.

The secondary task for the fires brigade is to provide reinforcing fires within the brigade AO. When directed by the UEx, the fires brigade provides additional cannon or missile artillery to support the brigade combat team, or delivers precision fires into the BCT AO as requested by the supported BCT commander.

The fires brigade also provides reactive and proactive counterstrike operations in support of the UEx and BCTs.

AVIATION BRIGADE

The aviation brigade supports the operations of the entire UEx with task organized aviation capabilities. The bulk of Army aviation combat power resides in the multi-functional aviation brigade organized to support the UEx and the combined arms maneuver brigade combat teams. The organization of the aviation brigade combines a variety of battalions—attack, assault, lift, and support—under one command.

The UEx aviation brigade is expansible and tailorable to the mission, and can support multiple brigade combat teams (See Figure Intro-10). Based on METT-TC, the aviation brigade commander task organizes available aviation resources into mission packages that are either controlled by a supported brigade combat team or the aviation brigade.

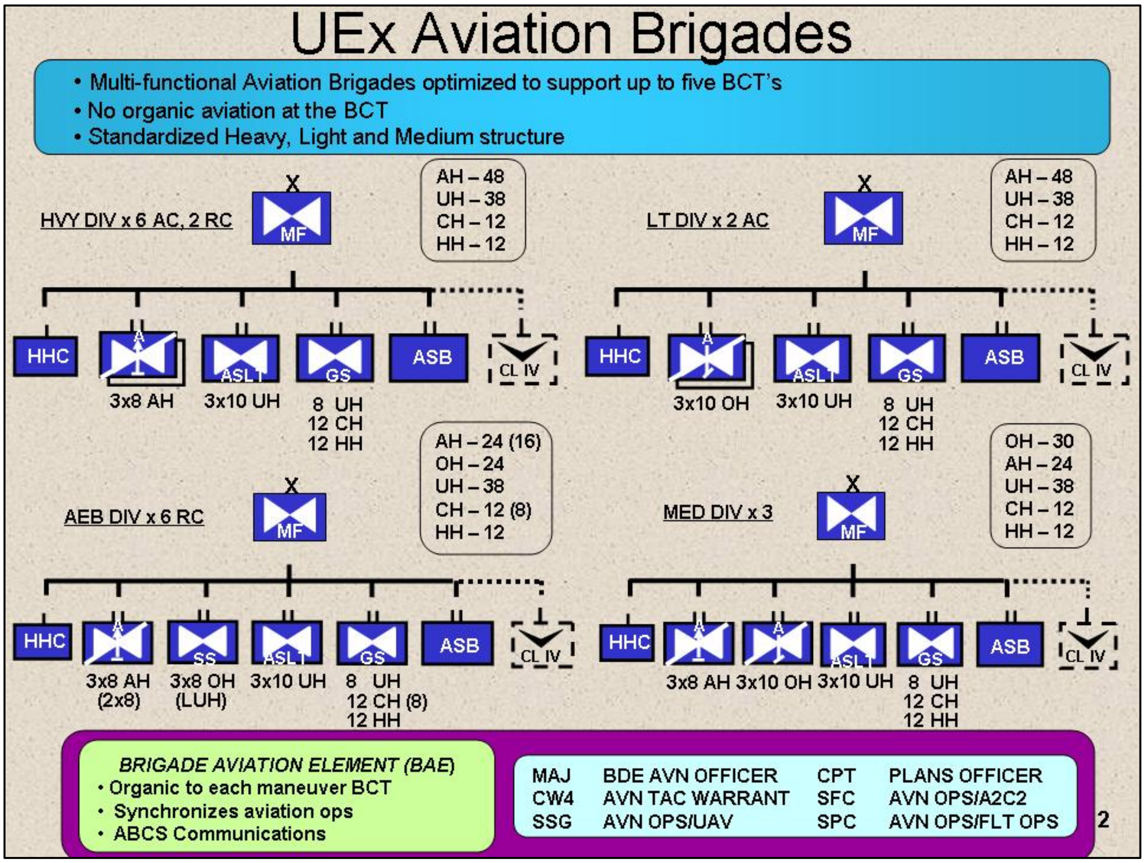

Figure Intro-10. UEx Aviation Brigade

The aviation brigade receives priorities and mission orders from the UEx to conduct and support reconnaissance, security, mobile strike, vertical maneuver, attack aviation support to close combat, aerial sustainment, and C2 operations.

The aviation brigade plans and conducts mobile strike operations. Mobile strike operations are extended combat operations that capitalize on the ability of attack aviation to maneuver to the full depth of the UEx AO, deliver massed direct fire, and employ precision munitions in support. The UEx executes mobile strikes outside of the BCT areas against targets that are capable of maneuvering to avoid precision strikes.

The aviation brigade executes screening missions for the UEx. The aviation brigade may receive the OPCON of ground maneuver and joint assets and capabilities to carry out these missions. It supports other security operations; including BCTs assigned a screen, guard or cover mission with aviation forces. For guard and cover missions, the aviation brigade provides reconnaissance, attack, and lift assets under the OPCON of BCTs. The aviation brigade also supports area and route security operations conducted by the maneuver enhancement brigade.

BATTLEFIELD SURVEILLANCE BRIGADE (BFSB)

The organization of the BFSB consists of an organic military intelligence battalion, brigade troops battalion, and a long-range surveillance detachment (See Figure Intro-11). Other surveillance and reconnaissance units are attached to the BFSB, tailored to specific operations. The tactical function of the BFSB is to develop situational understanding (SU) over unassigned portions of the UEx area of operations and support UEx-level decision processes. The BFSB directs its capabilities to the areas external to the brigade areas. Since the BFSB will inevitably lack sufficient assets to maintain visibility over the entire AO, the brigade commander will develop a BFSB plan for organic and attached assets based on the ISR plan developed by the G3 and G2 of the UEx.

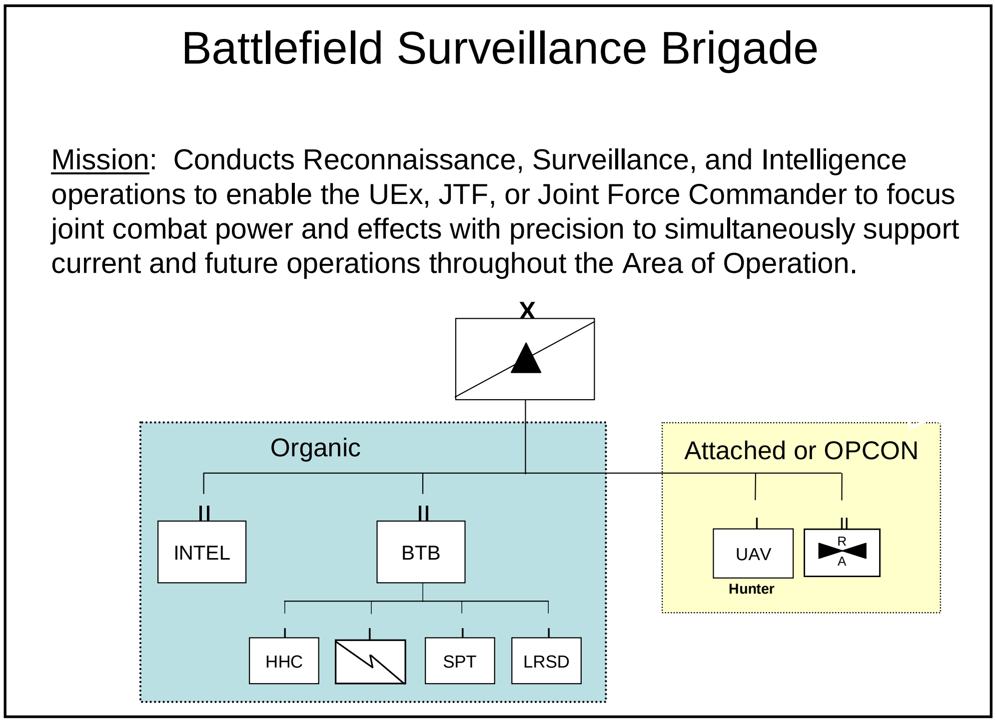

Figure Intro-11. BFSB Brigade

The BFSB is organized to assist the G2 in satisfying the commander's critical information requirements (CCIR), which include priority intelligence requirements (PIR). It becomes the eyes and ears of the UEx within its AO. The UEx commander describes the operation and identifies the PIR. The commander's intent and PIR become mission orders for the BFSB commander. The BFSB commander controls all UEx level surveillance and reconnaissance assets not task organized or organic to another brigade.

The BFSB commander needs wide latitude in order to develop the situation across the UEx AO. The size and scope of the operation will often require the UEx to complement and reinforce the BFSB with additional assets. The UEx also focuses the BFSB through the allocation of brigade AOs. The BFSB has the capability to reinforce the BCTs collection capabilities. When circumstances and orders from the UEx dictate, the BFSB will reinforce brigade intelligence capabilities with additional assets.

MANEUVER ENHANCEMENT BRIGADE

The maneuver enhancement brigade (See Figure Intro-12) is designed as a multi-functional headquarters only—it has no organic units beyond a brigade base of headquarters and support units. However, the brigade headquarters includes air and missile defense (AMD), military police (MP), engineer, and chemical, biological, radiological and nuclear (CBRN) functional operations/planning cells. One of its uses is to create a modular, tailorable, scalable protection force for the UEx commander.

Each maneuver enhancement brigade is uniquely tailored for its mission. Typically, the maneuver enhancement brigade includes a mix of construction engineer, CBRN defense, civil affairs, AMD, and MP together with a tactical combat force (TCF).

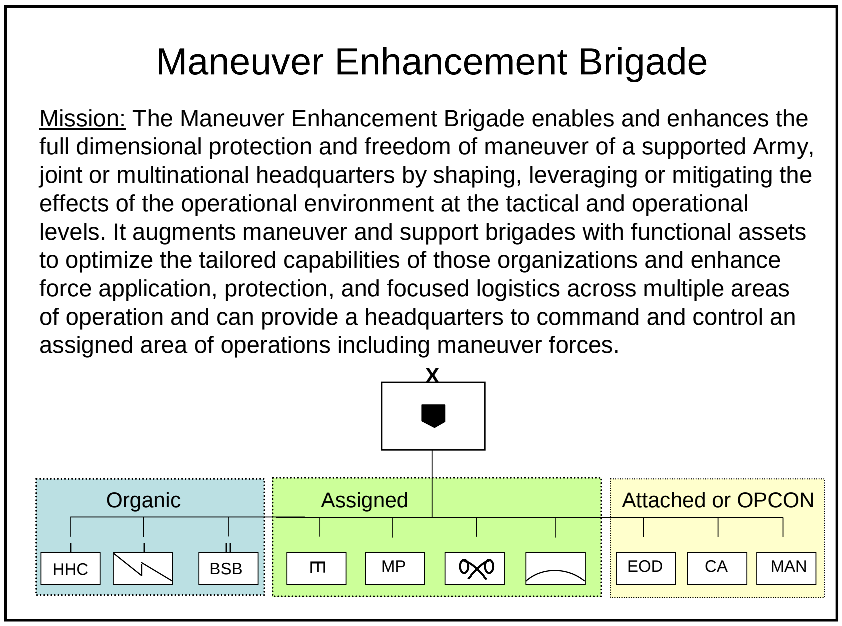

Figure Intro-12. Maneuver Enhancement Brigade

The maneuver enhancement brigade is responsible for protection outside of maneuver brigade combat team AOs. Tailored with MP, ADA, combat engineer and combined arms battalions, it preserves tactical or operational freedom of action within the UEx area of operations by performing limited offensive, defensive, and stability missions on assigned routes or in a designated rear area. It also plans, prepares, executes and assesses protection missions for other joint, service, and functional and multinational headquarters when required.

The maneuver enhancement brigade does not supplant unit self defense responsibilities. Units are still responsible for self-protection against Level I and some Level II threats. The maneuver enhancement brigade complements self defense by focusing on protection across the UEx as a war fighting function, not a piecemeal activity.

The maneuver enhancement brigade may provide tactical combat response forces within an AO, improve and secure lines of communications (LOC), and it may be tasked to organize base security and defense for several base clusters. It is organized and trained to execute selected security missions including route security and key asset or point security. It normally requires augmentation to perform area security operations. It is not organized, trained, or equipped to do screen, guard and cover operations.

SUSTAINMENT BRIGADE

The organization of the sustainment brigade is tailored with multi-functional support battalions, each of which includes a mix of logistical capabilities (See Figure Intro-13). Specialized support units of varying size are task organized based on METT-TC.

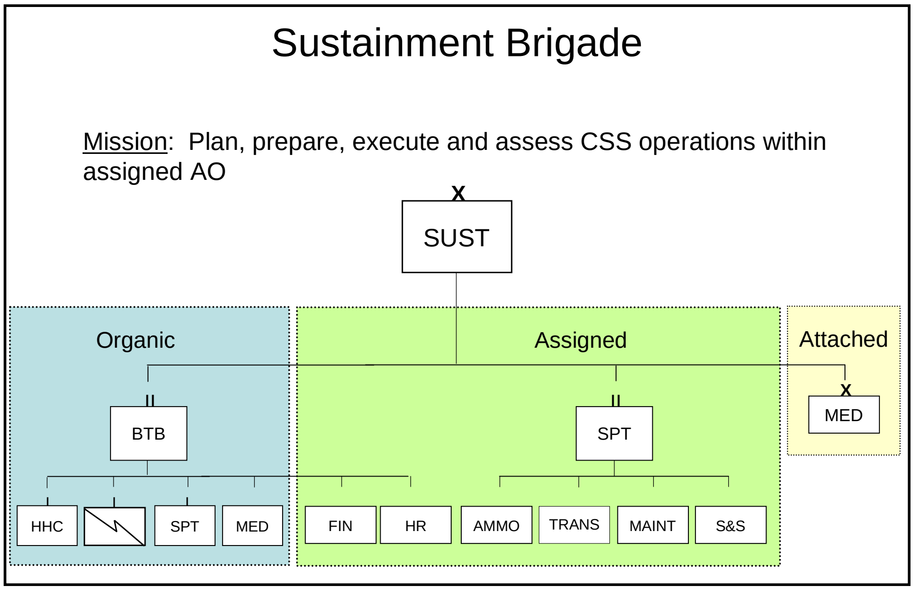

Figure Intro-13. Sustainment Brigade

One or more tactical sustainment brigades move with and support the UEx. If more than one sustainment brigade supports the UEx, the UEx staff coordinates their operations.

The sustainment brigade of the UEx provides distribution-based replenishment to the BCTs task organized under the UEx, and area support to any other unit located within the UEx AO. The sustainment brigade establishes temporary bases within the UEx AO to conduct mission-staging operations (MSO) and to provide replenishment to the BCTs of the UEx.

Chapter 1

UEx Aviation Brigade Organization, Missions, and Fundamentals

Army Aviation's greatest contribution to the battlefield is providing the ground maneuver commander the ability to apply decisive combat power at critical times virtually anywhere on the battlefield. This combat power may be in the form of direct fire support from aviation maneuver units, the insertion of overwhelming infantry forces, or artillery fires delivered via air assault. This versatility gives the maneuver commander a decisive advantage on the battlefield. Ground maneuver commanders synchronize aviation maneuver with ground maneuver to enhance offensive and defensive operations. This synchronization allows the ground maneuver commander to shape the battlefield and to influence events throughout his AO.

Aviation conducts missions across the full spectrum of operations from stability operations and support operations to major combat operations (MCO), and provides the force missions of attack (Mobile Strike and Close Combat Attack); reconnaissance and security; air assault/air movement; airborne C2; support to command, control, communications, computers, intelligence, surveillance, and reconnaissance; Army Airspace Command and Control A2C2; Personnel Recovery; MEDEVAC; and maneuver sustainment support.

SECTION I – AVIATION BRIGADE OVERVIEW

1-1. Army Aviation is an extension of ground maneuver providing an aerial dimension to the combined arms team. Aircrews talk and digitally transmit and receive on the same types of radios and communications systems, use a common language, and practice field craft similar to their ground comrades in arms. Army aviation is a maneuver force. Although ground and aviation planning times are similar, aviation moves much faster; with greater ability to bypass obstacles and threats, and to maneuver to a point of advantage that complements ground maneuver and fires.

1-2. The modular AVN BDE is organized and equipped to support both joint and army operations, with continuous combat, combat support (CS), and combat service support (CSS) operations throughout the depth and breadth of the battlefield. AVN BDEs are found in both the AC and RC and at every echelon from UEx to UEy command. Time-tested fundamentals common to all brigades are critical to battlefield success and are discussed in this manual.

1-3. Aviation forces normally operate as part of the combined arms team integrated from the BCT level to the UEy level. The aviation brigade supports the operations of the entire UEx with task organized aviation capabilities. Based on METT-TC, the aviation brigade commander task organizes available aviation resources into mission packages that are either controlled by a supported BCT, a supporting unit of action (SUA) or the aviation brigade.

1-4. The aviation brigade can employ other combined arms elements conducting ground operations, and can operate semi-independently, or as a part of a joint force.

SECTION II – ARMY AVIATION ORGANIZATIONS

AVIATION ORGANIZATIONS - GENERAL

1-5. Multifunctional brigades at the UEx level are able to perform all aviation missions with little or no external augmentation. They contain a variety of different airframes and battalions to perform these missions. Brigades assigned to echelons above the UEx are considered functional AVN BDEs.

1-6. Functional Aviation Brigades at the UEy level are more specialized with limited battalions and airframes to focus on specific aviation support missions. Each brigade differs in both form and function with different capabilities and subordinate units. They do not contain attack reconnaissance battalions (ARB) or attack reconnaissance squadrons (ARS).

1-7. The intent is for UEx AVN BDEs to be modular, scalable, and tailorable so they can task organize as required to conduct reconnaissance, security, air-assault, close combat attack (CCA), mobile strike, and maneuver sustainment support.

1-8. The numbers and types of subordinate battalions are based on the brigade's mission. Separate companies may be assigned, attached, or under OPCON to brigades, but they present challenges for C2 as the brigade staff must also prepare plans and orders on the level of detail normally found at the battalion level.

AVIATION BRIGADES TYPES AND ORGANIZATIONS

GENERAL

1-9. The transformation force consists of eight distinct types of Aviation Brigades. The UEx, BCTs and SUAs will work most often with the three Aviation Brigades marked by asterisk below. Aviation Brigades may work directly with the supported maneuver units or form Aviation Task Forces to support them for specific missions for specific periods of time.

- Heavy AVN BDE. *
- Light AVN BDE. *
- Forced Entry AVN BDE. *
- Aviation Support Brigade (SAB).
- Theater Support Aviation Brigade (TSAB).
- Aviation Expeditionary Brigade (AEB - National Guard/Homeland Defense).
- Heavy AVN BDE. (National Guard Division).
- Army Special Operations Aviation Regiment. (ARSOAR).

1-10. Subordinate battalions found in UEx AVN BDEs are:

- Light Attack Reconnaissance Squadron (ARS) with 30 OH-58D.
- Heavy Attack Reconnaissance Battalion (ARB) with 24 AH-64D.
- Assault helicopter battalion (AHB) with 30 UH-60L (FM 1-113).
- General Aviation Support Battalion (GSAB) with 8 UH-60L, 12 CH-47, and 12 HH-60.
- Aviation Support Battalion (ASB).

1-11. The following paragraphs describe the three types of Aviation Brigades which are most likely to support the UEx, Brigade Combat Team or SUA operations or form Aviation Battalion Task Forces to support their operations. The other five organizations will be described in detail when FM 3-04.111 (Aviation Brigades) is published.

1-12. It should also be noted that the AEB's mission is to provide planning, coordination, synchronization, integration and execution of all aviation functions to the UEx and supported BCTs, across the spectrum of conflict from major combat operations (MCO) to stability operations.

1-13. However, the AEB is designed to focus primarily on homeland security operations, to include counter-drug missions, stability operations, humanitarian assistance, disaster relief, civil disturbance, counterterrorism and domestic support. The AEB's role in support of MCO will be determined over time, but it is organized to facilitate reinforcement as required.

1-14. The AEB is organized identical to its active duty heavy AVN BDE counterpart except for a security and support squadron currently equipped with OH-58s and when fielded, the light utility helicopter (LUH).

HEAVY AVIATION BRIGADE

Mission

1-15. The heavy AVN BDE's mission is to find, fix, and destroy enemy forces using maneuver to concentrate and sustain combat power at the critical time and place, as an integrated member of the combined arms team. This brigade (Figure 1-1) destroys enemy forces using fire, maneuver, and shock effect. It conducts reconnaissance and security (R&S) operations and provides C2 support. It conducts air movement operations, aerial delivery of mines, and aeromedical support.

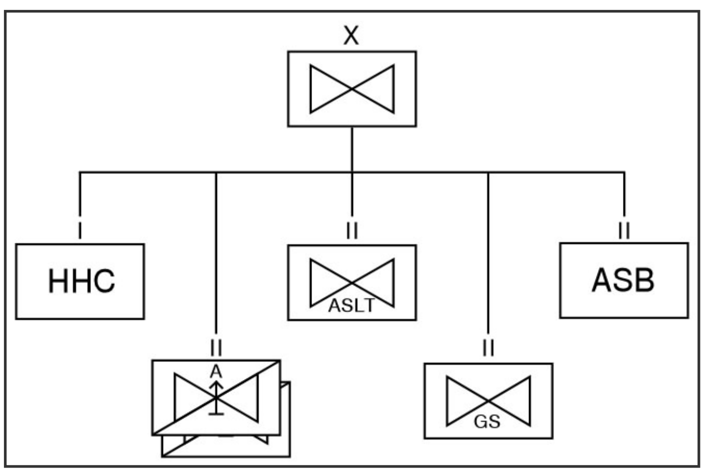

Figure 1-1. Heavy AVN BDE

Organization

1-16. The heavy AVN BDE has an HHC, two heavy ARBs, an AHB, a GSAB, and an ASB.

Fundamentals

1-17. A heavy AVN BDE does not have any organic ground combat forces. The brigade can perform screen operations, guard operations when augmented, and participate in cover missions.

1-18. The heavy AVN BDE supports the UEx scheme of maneuver by facilitating ground maneuver through aviation operations. Utility and heavy helicopters allow the brigade to move forces and materiel quickly throughout the battlespace. Attack reconnaissance aircraft focus on providing quick reaction fire support through Close Combat Attack (CCA) to friendly maneuver forces in contact and mobile strikes against high-value targets (HVT).

LIGHT AVIATION BRIGADE

Mission

1-19. The light AVN BDE's TOE mission is to find, fix, and destroy enemy forces using maneuver to concentrate and sustain combat power at the critical time and place, as an integrated member of the combined arms team. This brigade (Figure 1-2) destroys enemy forces using fire, maneuver, and shock effect. It conducts R&S operations, air assault and air movement operations, and aerial delivery of mines. It also provides C2 and aeromedical support.

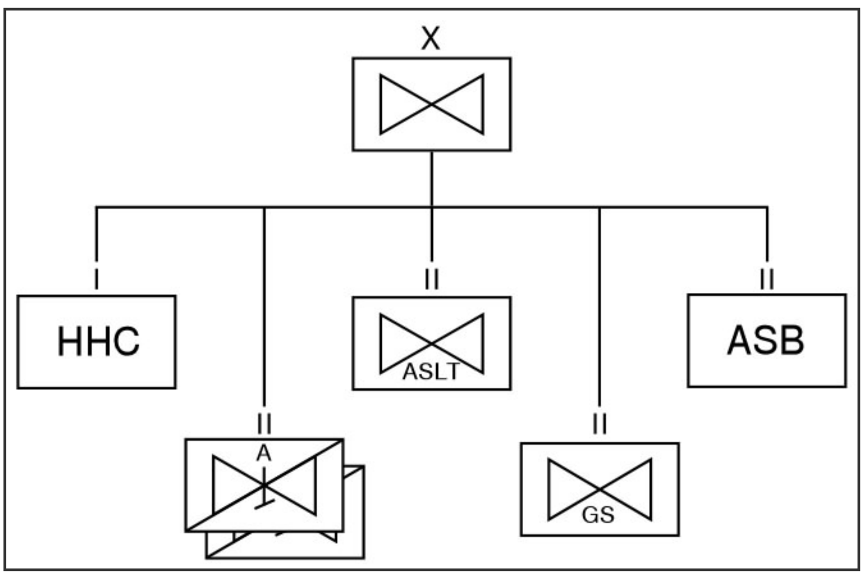

Figure 1-2. Light AVN BDE

Organization

1-20. The light AVN BDE has an HHC, two ARSs, an AHB, a GSAB, and an ASB.

Fundamentals

1-21. A light AVN BDE can perform screen operations, guard operations when augmented, and participate in cover missions.

1-22. The light AVN BDE supports the UEx scheme of maneuver by facilitating ground maneuver through aviation operations. Utility and heavy helicopters allow the brigade to move forces and materiel quickly throughout the battlespace. Attack reconnaissance aircraft focus on reconnaissance and security missions to protect maneuvering forces, and quick reaction fire support through CCA once enemy contact is established.

FORCED ENTRY AVIATION BRIGADE

Mission

1-23. The forced entry AVN BDE's TOE mission is to find, fix, and destroy enemy forces using fire and maneuver to concentrate and sustain combat power to support UEx operations. This brigade (Figure 1-3) destroys threat forces using fire, maneuver, and shock effect. It conducts R&S operations and provides C2 support. It conducts air assault and air movement operations, aerial delivery of mines, and aeromedical support.

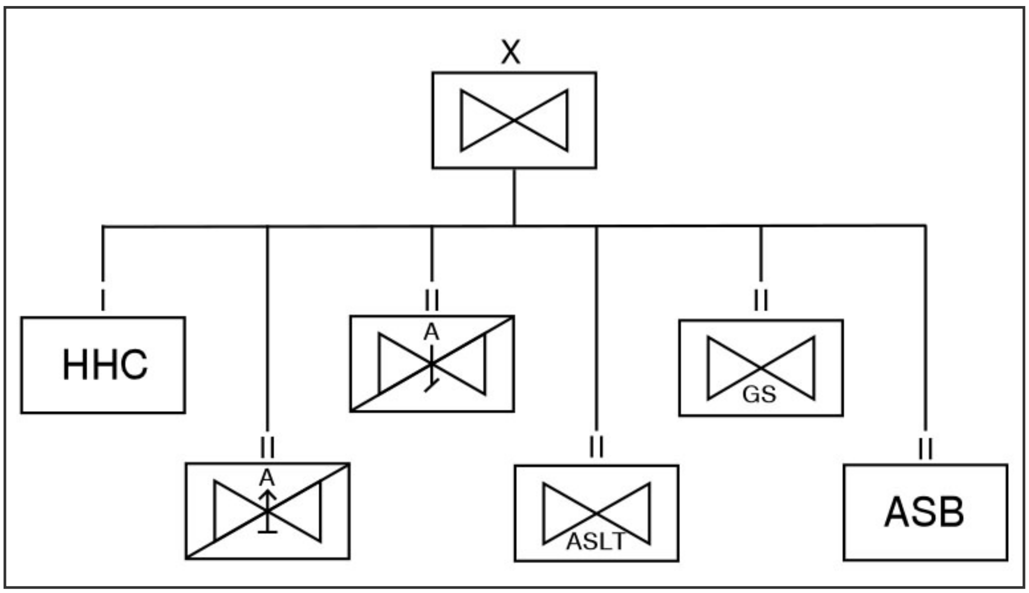

Figure 1-3. Forced Entry AVN BDE

Organization

1-24. The forced entry AVN BDE has an HHC, one ARB, one ARS, an AHB, a GSAB, and an ASB.

Fundamentals

1-25. The forced entry AVN BDE's primary role is to deploy quickly into a point of entry and provide aviation combat, CS, and CSS in support of decisive, shaping, and sustainment operations. The brigade may deploy into multiple, unimproved points of entry using force to overwhelm hostile anti-access capabilities.

AVIATION BATTALIONS AND SQUADRONS

1-26. Aviation battalions and squadrons plan, coordinate, and execute operations. They create opportunities for commanders to disrupt the enemy's decision-making process, forcing him to make decisions that disrupt initial plans. The battalion or squadron – through coordination, liaison, command and control (C2), and situational understanding (SU) – helps set the conditions for the force's success.

ATTACK RECONNAISSANCE BATTALIONS AND SQUADRONS

1-27. There are two distinct types of attack reconnaissance battalions or squadrons in a UEx Aviation Brigade.

- Heavy Attack Reconnaissance Battalion (ARB).
- Light Attack Reconnaissance Squadron (ARS).

1-28. The distinction between the ARB and the ARS is that an ARB consists of 24 AH-64s and an ARS consists of 30 OH-58Ds.

1-29. Each ARB/ARS consists of an HHC/HHT, a forward support company/troop (FSC/T), three attack reconnaissance companies/troops (ARC/T), and an Aviation Maintenance Company/Troop (AMC/T).

1-30. The primary missions of the UEx Aviation BDE ARB and ARS are reconnaissance, security, and the destruction of enemy forces through CCA and mobile strike. The ARB and the ARS perform the following missions.

- Conduct reconnaissance operations in order to find/fix the threat, to assist in building and sharing the common operating picture (COP), and to focus combat power at the decisive point at the right time.
- Conduct security operations to provide reaction time, maneuver space, and protection to air-ground maneuver.
- Destroy enemy forces through the use of aerial firepower, mobility, and shock effect.

ASSAULT HELICOPTER BATTALION

1-31. The fundamentals, mission, and organization of the AHB are relatively the same whether it is part of a heavy, light, or forced entry AVN BDE. The AHB's primary role is to plan, execute, and logistically support operations. The two basic fundamental tasks common to each AHB include air assault and sustainment. In the sustainment role, the AHB provides support to air assault operations first, then to the UEx. The AHB can also provide aircraft for general support (GS) missions when available.

1-32. UEx AVN BDEs have one AHB. The AHB at all echelons consists of an HHC, a forward support company (FSC), three assault companies, and an Aviation Maintenance Company (AMC).

1-33. The primary mission of the AHB is to move the combat elements of a combined arms battalion (CAB) or an infantry battalion, augmented as necessary by CH-47 aircraft from the GSAB and to extend tactical reach of the maneuver commander, negate effects of terrain, seize key nodes, achieve surprise, and isolate or dislocate enemy forces.

GENERAL SUPPORT AVIATION BATTALION

1-34. The fundamentals, mission, and organization of the GSAB are relatively the same whether it is part of a Heavy, Light, or Forced Entry AVN BDE.

1-35. Each UEx AVN BDE has one GSAB. Each GSAB consists of an HHC, an FSC, a general support aviation company (GSAC), a heavy helicopter company (HvyHC), an aeromedical evacuation company (MEDEVAC), an Air Traffic Services Company (ATS), and an (AMC).

1-36. The mission of the GSAB is to conduct general aviation support, to provide airborne C2; to provide air transport of personnel, equipment, and supplies; to conduct aerial sustainment operations; to support air assault operations as required; and to provide MEDEVAC support throughout the applicable area of responsibility (AOR).

AVIATION SUPPORT BATTALION

1-37. The fundamentals, mission, and organization of the Aviation Support Battalion are relatively the same whether it is part of a heavy, light, or forced entry AVN BDE.

1-38. Each UEx AVN BDE has one ASB. The ASB consists of four companies; the Headquarters and Support Company (HSC), the Distribution Company, the Aviation Maintenance Support Company (AMSC), and the Network Signal Company. It provides aviation and ground field maintenance, resupply, and medical support to the UEx AVN BDE.

1-39. The ASB has been optimized to support the UEx AVN BDE's Forward Support Companies (FSCs), AMC/Ts and Brigade HHC. The ASB has been resourced to support simultaneously from two locations.

1-40. The distribution company functions as a supply support activity and distributes supplies to subordinate units of the aviation brigade. The HSC provides medical support and conducts field-ground maintenance and recovery. The AMSC supports on-aircraft and critical off-aircraft field level maintenance for assigned aircraft, conducts battle damage assessment and repairs (BDAR), and provides backup support to the AMC/Ts. The Signal company provides network and signal support to the aviation brigade headquarters.

1-41. In addition to the standard battalion staff, the ASB now has an organic Combat Service Support Automation Management Office (CSSAMO) and a well staffed (25 personnel) Support Operations Section (SPO). The CSSAMO capability will provide support to the entire brigade's automation, including the ULLS-A systems.

1-42. The SPO Section is organized to coordinate logistics support and provide distribution management to the Aviation Brigade. The SPO Section is also manned to accomplish contracting, medical and medical logistics, petroleum, ammunition, movement control, transportation, and mortuary affairs functions.

SECTION III – BRIGADE AVIATION ELEMENT AND AVIATION LIASON TEAMS

BRIGADE AVIATION ELEMENT

1-43. As a part of Army transformation, each BCT will have a Brigade Aviation Element (BAE). The genesis of the BAE concept is found in the history and practice of the air assault division. For years, the air assault division has had an aviation-planning cell dedicated to each of three ground maneuver brigades. The close bond formed by this special group of aviators and their infantry counterparts has resulted in aviation being fully integrated into every operation.

1-44. The BAE is a planning and coordination cell 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, unmanned aerial vehicle (UAV) operations, airspace planning and coordination, synchronization with the air liaison officer (ALO) and the fire support officer (FSO). The BAE also coordinates directly with the AVN BDE or the supporting aviation task force (TF) for detailed mission planning.

1-45. 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 AVN BDE or the supporting aviation TF leadership with BCT mission information. It is critical that aviation commanders and S3s participate and lead aviation mission planning in support of the BCT.

1-46. The BAE is organized and equipped to support the BCT, and consists of a sufficient number of personnel for 24-hour operations. It uses the Army Battle Command System (ABCS), which can network with the joint planning and communications architecture. As of this writing, the BAE is composed of a major, a captain, a senior warrant officer and three enlisted men.

1-47. The BAE is involved in the mission from receipt of the warning order (WARNO) from higher through planning; movement to the port of embarkation (POE); deployment; reception, staging, onward movement, integration into the force (RSOI), the military decision-making process (MDMP), combat operations, redeployment, reintegration, reconstitution and retraining (R4).

1-48. The BAE provides:

- Integration and synchronization of aviation into the BCT commander's scheme of maneuver.
- Focus on incorporating aviation into the commander's plan.
- Coordinates directly with aviation brigade(s).
- Close integration/synchronization with the air liaison officer (ALO) and fire support officer (FSO).
- Employment advice and planning for the reconnaissance and attack elements, assault helicopters, airborne command and control assets, heavy helicopters, medical evacuation (MEDEVAC) helicopters, and unmanned aerial vehicles (UAVs).
- Army airspace command and control (A2C2) planning, coordination, and airspace deconfliction for combined arms, joint, interagency and multi-national (JIM) operations.

AVIATION LIAISON TEAMS

ROLES

1-49. Although the BAE will conduct many of the functions traditionally performed by liaison officers (LNO), aviation LNO teams will remain a critical part of the process and thus must be staffed appropriately.

1-50. While the BAE works directly for the BCT commander as a permanent member of his staff; aviation LNO teams represent the supporting aviation TF at a designated maneuver headquarters for the duration of a specific operation.

1-51. If collocated with the BAE, the LNO team will normally work directly for the brigade aviation officer as a functioning addition to the BAE staff section. Effective employment of LNOs is imperative for coordination and synchronization. Often aviation LNO teams will coordinate with the BAE and proceed to a supported ground maneuver battalion. For example; an aviation LNO team 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. The LNO must be capable of changing focus and his approach depending on location and who he is supporting at the time. See Chapter 4 of this manual for more information on AVN LNO teams.

RESPONSIBILITIES

1-52. LNO teams maintain and provide current:

- Aviation unit locations.
- Aircraft / equipment status.
- Crew availability and fighter management cycle status.

- Class III/V status.
- Mission essential task list (METL) training status.
- Continuous updates to the aviation commander and staff on the BCT's plan.

SECTION IV – ARMY AVIATION MISSIONS

UEX AVIATION BRIGADE MISSIONS- GENERAL

1-53. Each Aviation Brigade is tailored for specific missions as discussed in this chapter. However, each Aviation Brigade accepts other organizations and performs missions not necessarily defined in the unit's mission statement.

Combat Missions

1-54. Combat missions include:

- Reconnaissance.
- Security.
- Air assault.
- Close Combat Attack.
- Mobile strike.

Combat Support Missions

1-55. Combat support (CS) missions include:

- Command, control, communications, and intelligence (C3I).
- Air movement.
- Personnel Recovery operations.
- Aerial mine delivery operations (Volcano).
- MEDEVAC operations.

Combat Service Support Missions

1-56. Combat service support (CSS) missions include:

- ATS.
- Aerial sustainment.
- Downed aircraft recovery.
- Casualty evacuation (CASEVAC) operations.
- Rear area operations.

PRINCIPLES OF AVIATION EMPLOYMENT

1-57. The principles and guidelines for employment of aviation assets differ from those for typical ground maneuver forces. In general, aviation forces:

- Fight as an integral part of the combined arms team.
- Exploit the capabilities of other branches and services.
- Capitalize on intelligence-gathering capabilities.
- Suppress threat weapons and acquisition means.
- Exploit firepower.
- Exploit mobility.
- Exploit surprise.
- Mass forces.

- Use terrain for survivability.
- Displace forward elements frequently.
- Maintain flexibility.
- Exercise staying power.

1-58. Aviation forces normally operate as part of the combined arms team integrated from the BCT level to the theater level. The Aviation Task Force (TF) supporting a BCT primarily conducts reconnaissance, security and close combat support for the BCT.

1-59. The aviation brigade can employ other combined arms elements conducting ground operations, and can operate semi-independently, or as a part of a joint force.

ATTACK

1-60. The UEx aviation brigade has the organic capability to strike an enemy throughout the depth of the UEx area of operations (AO) from multiple directions, either in support of a BCT, or independently in non-contiguous battlespace. Attack reconnaissance aircraft carry a combination of missiles, rockets and conventional ammunition to destroy high priority targets, shield the maneuver forces as they move out of contact and to enable shaping of the battlespace. In addition to the traditional attack functions, the attack reconnaissance unit executes all the functions that air cavalry has performed throughout the ages. As an armor killer, it is deadly against massed moving targets, and is also effective against enemy field artillery, air defense, communications, logistics units, and point targets (bunkers, caves, windows in buildings). The attack reconnaissance unit cannot occupy terrain; however, it can deny terrain for a limited period of time with direct and indirect fires. Attack reconnaissance aircraft provide a highly mobile and lethal attack capability against selected targets.

1-61. The mobile strike capability of the aviation brigade, particularly when coupled with Army and Joint fires and effects provides the commander with a significant capability to extend the battle to the maximum range of organic and supporting sensors. Attack operations are normally conducted independently by the Aviation Brigade,. A BN TF, ARB, or ARS supporting a BCT may also conduct attach operations. . Attack reconnaissance units also make an excellent reserve or quick reaction force for the supported commander. The aviation brigade headquarters has the inherent staff planning experience to support maneuver, the synchronization and integration of joint effects, and the ability to control mobile strike operations.

RECONNAISSANCE

1-62. Attack reconnaissance aircraft are employed to support the commander's scheme of maneuver and significantly extend the battlespace of both the UEx and the BCT. Attack reconnaissance aircraft assist in locating the threat, building and sharing the common operational picture (COP), enhancing force protection, enabling freedom of movement, clearing the way for air assault and aerial mining missions, securing routes for aerial/ground resupply, and allowing the commander to focus combat power at the decisive point and time. Sensor video recording capability can provide the supported commander excellent reconnaissance and battle damage assessment (BDA) information.

1-63. Attack reconnaissance assets can fight for information. They can work through and counter enemy deception efforts, provide an expedient and reliable means of assessing terrain that the enemy is trying to configure to his advantage, can further develop the situation, and can effectively disseminate real-time information to commanders. The organic weapons systems of attack reconnaissance aircraft enhance the synergy achieved through employment of external fires and effects that gives commanders at all levels a robust counter-reconnaissance capability.

SECURITY

1-64. The Aviation Brigade supporting the UEx or the AVN TF, ARB, or ARS supporting the BCT can conduct security operations. Each can accomplish screen, guard, and cover security operations with augmentation for the latter two operations. Security operations are particularly valuable during early entry operations when the COP is degraded and when the dynamics of the battlefield change faster than expected. The combination of attack reconnaissance aircraft and UAVs enable commanders at all levels to quickly move or deploy interactive and interpretive intelligence collectors over great distances to provide early warning and gain and disseminate a timely picture of the battlefield. These aircraft can quickly transition from a reconnaissance/counter-reconnaissance or security mission to an economy of force or attack mission to provide reaction time, maneuver space, and protection for air-ground operations.

AIR ASSAULT AND AIR MOVEMENT

1-65. AVN BDE utility and heavy helicopter assets provide the maneuver commander the ability to sustain continuous offensive or defensive operations, and to conduct brigade level air assaults. Air assault operations extend the tactical reach of the maneuver commander, negate effects of terrain, seize key nodes, attain the advantage of surprise, and dislocate or isolate the enemy. The aviation brigade at the UEx level has the organic capability to air assault the dismounted elements of a combined arms battalion and its required support equipment in a single lift and to provide air assault security. Forward area re-arming and refueling points (FARP) emplaced by lift aircraft and ground assets enable aviation to support and sustain operations throughout the area of operations. Additionally, heavy lift helicopters are capable of transporting internal and external cargo in a variety of configurations to meet the combat support (CS) and combat service support (CSS) requirements of both the UEx and supported BCTs.

COMMAND AND CONTROL

1-66. The Army airborne command and control system (A2C2S), a UH-60-based package, represents a significant enhancement to the commander's ability to command and control forces. The A2C2S has five operational roles:

- Battle command on the move platform.
- Ground tactical command post (CP).
- Jump TOC.
- Early entry CP.
- First responder during national disasters.

1-67. On-board communications linkages allow the commander to be continuously in contact with committed forces, un-tethered to a static operations center, maintain the common operational picture (COP), issue and receive fragmentary orders (FRAGORD) with graphics, synchronize fires and maneuver, and extend his coverage throughout the entire battlespace. A2C2S systems are normally found in the general support aviation company GSAC of the aviation brigade.

MEDICAL EVACUATION/CASUALTY EVACUATION

1-68. Evacuation of casualties is the responsibility of the combat health support (CHS) system. Air evacuation is the preferred method of evacuation of seriously wounded and ill soldiers. The UEx aviation brigade has an organic aeromedical evacuation company. Air ambulance assets of the aeromedical evacuation company can collocate with CHS organizations, the aviation TF, or higher to provide air ambulance support throughout the

UEx AO. Medical evacuation (MEDEVAC) aircraft are equipped with medical personnel and equipment that enables enroute care of casualties. Utility and heavy helicopter units conduct casualty evacuation (CASEVAC) operations when medical aircraft are inadequate or not readily available.

PERSONNEL RECOVERY

1-69. Joint doctrine defines Personnel Recovery (PR) to include combat search and rescue (CSAR); search and rescue (SAR); survival, evasion, resistance, and escape (SERE); and coordination of forcible recovery operations. All component commanders are responsible for establishing and coordinating recovery operations. For the UEx, the UEy has additional communications linkages and detection capabilities, which may enable the rescue operation to be performed more safely and efficiently, within the constraints of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC). The UEy will then augment subordinate elements with the required assets in order to accomplish the mission. UEy PR operations will be conducted primarily in support of their own operations (downed Army aircrew recovery) and provide mutual PR support at both the intra-and inter service levels as required. Additionally, PR contingencies will be incorporated into all mission plans, special instructions (SPINS) will be issued for each plan and the UEx Aviation Brigade will be prepared to generate PR support requests.

DOWNED AIRCRAFT RECOVERY

1-70. Downed aircraft recovery operations will be coordinated at UEx and UEy level by the aviation support battalion (ASB). The GSAB of the Combat Aviation Brigade at UEx level will normally accomplish the mission with minimal risk to the soldiers involved in the operation.

REAR AREA OPERATIONS

1-71. Maneuver sustainment and support operations are normally conducted in the rear area. There may or may not be ground maneuver forces in the rear area. Aviation units provide a flexible mix of capabilities to effectively handle the full range of threats to the rear area. Reconnaissance, attack, and lift capabilities provide agile, responsive support of rear area operations, and may be performed by aviation units leveling support of the UEx or BCTs.

AERIAL MINE DELIVERY

1-72. Mine delivery operations are generally controlled at the UEx or UEy level. Aerial mine delivery is an assault helicopter mission that may be conducted by assault helicopter battalion (AHB) assets at either level. The aviation brigade has the capability, with proper coordination, to support a UEx mission or UEy mission anywhere in the area of operations.

AERIAL SUSTAINMENT

1-73. Aerial sustainment is the movement of equipment, material, supplies, and personnel by utility, heavy, and fixed-wing assets for operations other than air assault and combat support. Aviation provides air movement of personnel, equipment, ammunition, water, parts and supplies; and performs CASEVAC and aviation maintenance. These air movements are considered CSS missions because aviation forces are not task-organized with combined arms forces, nor do they move combat or combat support forces or assets whose primary mission is to engage and destroy enemy forces.

1-74. Heavy BCTs and Infantry BCTs have significantly different needs and requirements. Aerial sustainment through direct support (DS) and general support (GS) is critical for light, airborne, and air assault forces. Resupply of key ammunition and parts is critical for the HBCT.

1-75. Aviation taskings through command channels allow rapid transition between combat, CS, and CSS missions, keeps aircrews better informed, and permits simultaneous execution of all three mission types with the same set of aircraft.

1-76. The tempo of resupply operations can dramatically impact combat operations. It is essential that aircraft utilization be optimized. The goal is to maximize the number of turns during each shift. This can only be accomplished through coordination and training.

AIR TRAFFIC SERVICES

1-77. Air traffic services (ATS) assets provide A2C2 and ATS support to enable commanders to orchestrate the air and ground maneuver, lethal and non-lethal fires, and air and missile defense to conduct decisive operations. ATS support is provided throughout the BCT and UEx area of operations through automated airspace planning and enroute services, terminal control tower, precision recovery, and airfield operations services. These assets provide ATS and A2C2 support through the Tactical Airspace Integration System (TAIS) throughout the UEx battlespace. TAIS is the Army airspace C2 node of the Army Battlefield Communications System (ABCS). A2C2 cells organic to the battle staff at brigade and above will assist in deconflicting, synchronizing, and integrating all airspace requirements throughout the joint battlespace, including UAVSs. A2C2 cells will develop and maintain a real-time single integrated air picture (SIAP) through multi-path communications with all members of the air-ground team, allowing unhindered simultaneous access to the airspace across the full spectrum of operations.

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Chapter 2

UEx Aviation Brigade Training Fundamentals

FM 7-0, Training the Force, is the Army's capstone training doctrine and is applicable to all units, at all levels, and to all components. It provides the training and leader development methodology that forms the foundation for developing competent and confident soldiers and units that will win decisively in any environment. FM 7-1, Battle Focused Training is the Army's doctrinal foundation for how to train. It, too, is applicable to all units and organizations of the Army.

Successful aviation training, based on these doctrinal guidelines for how to train, will provide aviation forces with the capabilities required to fight and win across the full spectrum of operations. The impact of operating in the third dimension with large numbers of complex systems, while simultaneously performing combat, CS, and CSS functions requires constant focus and attention. Thus, aviation unit collective proficiency can best be accomplished by joint and combined arms battle focused training. Understanding how to conduct tough and realistic training at every echelon sets the groundwork for successful multi-echelon, JIM operations.

SECTION I – AVIATION BATTLE FOCUSED TRAINING

2-1. Battle focus is a concept used to derive peacetime training requirements from wartime missions. Commanders maintain battle focus when allocating resources for training based on wartime mission requirements. The use of battle focus in conjunction with the mission essential task list (METL) enables commanders to structure a training program that copes with non-mission related requirements, while focusing on mission essential training activities.

2-2. Battle focus recognizes that a unit may not attain proficiency to standard on every task possible due to time or other resource constraints. However, commanders can achieve a successful go-to-war training program by narrowing the training focus to the tasks that are essential to wartime mission accomplishment.

2-3. It is imperative that leaders at every level understand, orchestrate, and execute tough, realistic aviation training because:

- Aviation operations cut across the spectrum of combat, CS, and CSS.
- Aviation operations are often complex and mistakes or mishaps can be life-threatening.
- Aviation maintenance generates aviation's ability to perform its mission.
- Aviation provides mobility, lethality, flexibility, and synergy in support of ground combat.

2-4. Comprehensive and well-executed training is the key to combat mission accomplishment. Once the decision is made and deployment orders are issued, regardless of the state of training—the unit is on its way. That is the time to truly appreciate the importance of a well-planned and executed unit training program.

SECTION II – INTEGRATION OF SOLDIER, LEADER, AND COLLECTIVE TRAINING

2-5. A critical aspect of the battle focus concept is understanding the responsibility for and the linkage between collective, mission essential, crew, and individual tasks. With their unique technical and tactical expertise, aviation noncommissioned officers (NCO) and warrant officers provide management assistance to the commander to train and evaluate the unit.

2-6. As a team, the commander, operations officer (S3), command sergeant major (CSM), and senior standardization officer jointly prioritize the collective training of mission essential, individual, and crew tasks on which the unit will concentrate its training during a given period.

2-7. NCOs have the primary role in training and developing individual soldier skills. Warrant officer trainers have the primary role in training and developing individual aviator and crew skills. Officers at every level remain responsible to ensure training is conducted to established standards during both individual and collective training.

AVIATOR LEADER PROFESSIONAL DEVELOPMENT

2-8. Aviation leaders must be proficient aviators, capable of performing individual and crew duties as pilots, to ensure that they are capable of employing their systems and units. It is paramount that special attention be paid to providing opportunities for the development and sustainment of junior officer and warrant officer flying skills.

2-9. Pilot-in-command (PIC) proficiency leads to aviation leader proficiency as a flight lead, air mission commander (AMC), and ultimately the commander of units operating and fighting with combined arms and joint forces. A battle focused, proficiency-based, aircrew training program (ATP) is the commander's published plan that provides a tailored training focus for leader development at the individual, crew, and collective levels (crew through brigade battle staff).

STANDARDIZATION PROGRAM

2-10. The fielding of modern aircraft such as the AH-64D Longbow Apache, OH-58D (I) Kiowa Warrior, CH-47D Chinook, and UH-60L Blackhawk, while exponentially increasing the warfighting capabilities of aviation forces, creates diverse operational and training challenges. These increased capabilities require individual and crew proficiencies in very complex mission equipment packages, sometimes compounded by harsh flight environments.

2-11. An ATP that focuses on aviator currency rather than proficiency will no longer satisfy aviation readiness requirements, and will be detrimental to training and safety. The objectives of standardization are the improvement and sustainment of proficiency and readiness among soldiers and units. Standardization is accomplished through the universal application of approved practices, procedures, and standards.

AIRCREW TRAINING PROGRAM

2-12. Proficient aircrews are essential to effective collective training. Aviation leaders must maintain a balance between individual, aircrew, and collective training. The ATP, mandated by AR 95-1, Flight Regulations, is a structured and prescriptive management and evaluation program focused on training Army aircrews.

2-13. The ATP applies to all Army aviators in operational flying positions, non-rated crewmembers in designated flying positions, and non-crewmembers who perform crewmember duties per AR 600-106. Developed IAW TC 1-210, Aircrew Training Program Commander's Guide to Individual and Crew Standardization, and the appropriate aircrew training manuals (ATM), the ATP includes training of the individual and crew tasks necessary for the accomplishment of a unit's METL.

2-14. Leader supervision and participation at all levels is essential to the successful execution of the ATP. Commanders use the Commander's Guide, ATMs, mission training plans (MTP), FM 3-04.140, Helicopter Gunnery, FM 7-0, and FM 7.1 to develop the unit's ATP. The ATP is an integral, not separate, part of the commander's overall unit training program and it should be briefed at each quarterly training brief (QTB).

TRAINING PROGRESSION

2-15. Aviation commanders use a series of readiness levels (training gates) to track implementation and accomplishment of the Army's crawl, walk, run training methodology. Readiness level (RL) training begins with the development of proficiency at required tasks at the individual level, and progresses through crew to collective proficiency. RLs identify the training phase in which crewmembers are participating and measure crewmember readiness. Commanders evaluate each duty position to determine how it can best support the unit's METL. They develop commander's task lists (CTL) of individual and crew tasks to include the tasks in night flight required to accomplish the unit's mission. They also specify annual night vision device (NVD) training, flying-hour, and simulation device requirements IAW the appropriate ATM.

2-16. The CTL is a written agreement between the commander and the crewmember. The CTL requirements are battle focused, task-based requirements derived from the unit's METL, MTP and the appropriate ATM. The CTL designates authorized crew duty stations and specifies the hours, tasks, iterations, frequency, and responsibilities the crewmember must meet during the training year.

CREW QUALIFICATION

2-17. Aircrew member's progress from RL3 to RL1 by demonstrating proficiency in all individual tasks listed on the individual aviator's CTL. Prior to designation as RL2, training must be conducted and assessed by the appropriate aviation trainers. Upon designation to RL2, the aircrew member begins crew training in mission and additional tasks designated on the CTL.

MISSION QUALIFICATION

2-18. RL1 aviators are those who have completed RL2 training and demonstrate the proficiency to be a member of a battle rostered crew. RL1 aviators train as crews to sustain individual task proficiency, sustain proficiency in the conduct of the unit's unique METL requirements, and refine the skills necessary to perform as part of the unit.

2-19. When the commander or designated representative determines that a crewmember is fully capable of performing all the unit's METL tasks, he will indicate so on the crewmember's CTL.

GUNNERY

2-20. Helicopter gunnery training is an integral part of a unit's ATP. FM 3-04.140 provides commanders with training strategy information and guidance to develop and incorporate gunnery training into their ATP. FM 3-04.140 defines gunnery standards, required tables, and scoring criteria for live fire gunnery events. It provides the commander with the standard by which to measure the individual, crew, and collective gunnery skills of his unit. It is up to the commander to use this assessment to tailor his ATP accordingly. The commander sustains his unit's gunnery skills by incorporating the tactics, techniques, and procedures (TTP) defined in FM 3-04.140 into every scheduled training event. Effective gunnery training is conducted every time a mission is planned and executed, an aircraft is run-up, and an after action review (AAR) is conducted. For attack reconnaissance aircraft, every mission is a gunnery-training event and should include complete weapons initialization and bore sighting. Utility and heavy helicopter pre-mission planning and crew briefings should always include fire control requirements and sectors of fire. As is the case with ground combat units, aviation units must also incorporate proficiency with individual and crew-served weapons into their training program.

SUPPORTED AND SUPPORTING UNIT TRAINING

2-21. Operating and fighting with JIM forces requires training with JIM forces. Responsibilities overlap and can be confusing, but the ultimate responsibility is with the land component commander.

2-22. For example, if an assault helicopter battalion (AHB) is going to train to fight as a part of a UEx shaping operation, then the UEx commander and his staff have significant training responsibilities, primarily in the areas of planning and coordination with the many UEx agencies that are required for successful mission accomplishment.

2-23. Likewise, if an infantry BCT routinely conducts air assaults, then the BCT's METL should include air assault missions. In this case, the supported commander and his staff also have training responsibilities, to include staff planning and coordination for proper employment and the conduct of aviation missions.

2-24. Unit relationships, the training cycle system, and the training tasks each unit needs to accomplish all impact collective training. Supported unit training objectives may or may not be consistent with a particular aviation unit's training requirements.

2-25. For example, in the Forced Entry UEx, an attack reconnaissance battalion (ARB) supporting a BCT may conduct many air assault security and close combat attack (CCA) missions with few opportunities to conduct reconnaissance and mobile strike missions. However, reconnaissance and mobile strike collective proficiency is required in support of the UEx's METL.

2-26. Conversely, a heavy division ARB may need reconnaissance and assault security experience, because most of their training focuses on CCA and mobile strike missions.

2-27. The key is to determine the critical battle tasks that are common to aviation and ground maneuver in support of the higher headquarters METL.

SECTION III – AVIATION TRAINING MANAGEMENT

2-28. Training management focuses leaders on the science of training in terms of resource efficiencies (such as people, time, and ammunition) measured against tasks and standards. As with other units, the availability of resources does not affect METL development in an aviation unit. Resources for training, however, are always a major challenge as flying hours, maintenance requirements, range and ammunition availability, and other missions continually impact training and METL proficiency.

THE TRAINING PROCESS

2-29. The Army training management cycle is a foundation of the training process. The present divisional structure for ground maneuver, artillery, and logistical support fits well for a green, black and red training cycle system. Because of the structure of most UEx AVN BDEs, the implementation of this three-cycle time management system is impractical, dictating that a modified green-red time management system be used.

2-30. Since the primary consideration is the identification and protection of prime-time training periods, training plans (long, short and near-term) should be coordinated and linked to those of supported units. Aviation training is a matter for discussion at all QTBs.

2-31. The aviation commander's battle focused ATP, aircraft maintenance management, flying hours, flying hour resourcing, and risk management are critical factors in the management of aviation training. They are inherent to any discussion focused on aviation training, and should be included at aviation unit QTBs. The impacts of these factors should also be included at supported and supporting unit QTBs.

2-32. Senior commanders must ensure that the AVN BDE has the same opportunities, time, and resourcing as other brigades to adequately prepare and train for accomplishment of their METL.

INDIVIDUAL AND COLLECTIVE TRAINING INTEGRATION

2-33. To achieve maximum training results from limited resources, planning must be detailed and flying hours must be dedicated to maintaining individual and crew proficiency. The integration of individual continuation training into collective training makes maximum use of every hour of flight time.

2-34. Units must incorporate collective training into every element of the ATP. The link between the collective mission essential tasks, and the individual tasks that support them, is critical to the battle focused training concept. The commander plans, prepares, executes, and evaluates training using mission related scenarios based on the unit's METL. He selects critical battle tasks from the unit's METL and emphasizes the execution of these tasks during training and evaluation. These critical battle tasks become subordinate unit's METL.

BATTLE ROSTERING

2-35. Battle rostering should complement the aviation standardization and crew coordination programs. When commanders battle roster crews, they should consider the individual aviator's flight and unit experience, individual personalities, and individual maturity.

2-36. Prolonged battle rostering without consistent evaluation may lead to crew complacency, overconfidence, implicit coordination behaviors, and nonstandard procedures. Battle rostering is most beneficial when used for short periods, such as during training exercises, operational deployments, and gunnery training.

TRAIN TO SUSTAIN PROFICIENCY

2-37. Once individuals and units have trained to proficiency, leaders must structure and resource collective and individual training plans at the frequency necessary for sustainment. Army units prepare to accomplish wartime missions through frequent sustainment training on critical tasks rather than through infrequent "peaking" to the appropriate level of wartime proficiency.

2-38. Sustainment training enables crews and individuals to operate in the band of excellence described in FM 7-0 through appropriate repetitions of critical task training.

MTPs and ATMs are tools to help achieve and sustain collective, crew, and individual proficiency.

2-39. A major challenge is to balance resources to satisfy requirements at each level. Training to sustain individual and crew proficiency is primarily accomplished during collective training. Collective training should be conducted as often as possible in conjunction with joint or combined arms training.

FORCE PROTECTION

2-40. The protection of aviation soldiers and their weapon systems is a way of life in the aviation business. An effective ATP, well thought out and planned in conjunction with appropriate regulations and guidance, is arguably the most important factor in any unit's safety program once embraced by every soldier in the unit.

2-41. Flying "by the book" does not hinder, but actually enhances a unit's battle focus. The crawl, walk, run approach to training is imperative to risk reduction, as is the active participation of commanders at all levels of the training process. An effective risk management program is vital at all levels of aviation operations and requires the personal attention of unit commanders.

SECTION IV – AVIATION MAINTENANCE

2-42. The primary objective of Army Aviation maintenance is to provide safe, mission-capable aircraft to satisfy mission requirements. The aviation maintenance system has evolved over years of peacetime and combat operational experience to focus on providing the assets necessary to support operational and training needs without compromising safe maintenance standards.

2-43. Aviation maintenance is a complicated and sophisticated business that requires the constant support and participation of commanders at every level. Mission readiness, training, safety, and standardization all depend on the ability of the aviation commander to ensure that his unit has a viable and effective maintenance program.

2-44. Aviation commanders do not face a bigger challenge than ensuring that maintenance is given the visibility and priority commensurate with the time and energy expended by his soldiers. Realistically, there are many competing demands that conflict with the commander's ability to increase the productivity of his aviation maintenance personnel.

MAINTENANCE TRAINING

2-45. Maintenance training is integral to combat readiness training in aviation units and must be incorporated into scheduled training periods. Maintenance management training may be scheduled as a part of leader development training, or individual soldier maintenance training may be scheduled during sergeant's time. Similarly, hands-on instruction by maintenance supervisors must be incorporated into scheduled and unscheduled maintenance periods.

2-46. Maintenance training is often best achieved when "learning by doing". This requires maintenance supervisors to keep good records in soldier job books to ensure that critical tasks are not overlooked in the training plan. Likewise, soldiers proficient in certain tasks may oversee apprentice soldiers in execution of maintenance tasks. For example, an aviation mechanic may gain proficiency under the supervision of an experienced phase maintenance team chief prior to becoming a crew chief. A program to cross-train maintenance personnel on all required maintenance tasks is also important; especially in low-density military occupational specialties (MOS).

2-47. Leaders at all levels must understand basic maintenance management principles. This includes how to plan for and manage flow charts, bank time, scheduled and unscheduled maintenance, aircraft performance deficiency write-up procedures, and the Army's supply system. Training must also include cross training of enlisted maintenance personnel in order to maximize their benefit to the unit and their own professional development.

SECTION V – RESPONSIBILITIES

2-48. Training management focuses leaders on the science of training in terms of resource efficiencies (such as people, time, and ammunition) measured against tasks and standards. Training execution focuses leaders on the art of leadership to develop trust, will, and teamwork under varying conditions—intangibles that must be developed to win decisively in combat. Leaders integrate this science and art to identify the right tasks, conditions, and standards in training, foster unit will and spirit, and then adapt to the battlefield to win decisively.

UEY/UEX COMMANDERS

2-49. Army Aviation forces routinely conduct combat, CS, and CSS missions as members of combined arms teams and joint task forces. These commanders have the overall responsibility for resourcing and conducting appropriate training. Aviation training responsibilities include insuring that units fighting with aviation forces have the requisite training and equipment to support or be supported by aviation forces.

BRIGADE COMMANDERS

2-50. As the senior trainer and aviator in the brigade, the brigade commander sets the standards both personally and professionally, in and out of the cockpit, as he plans, integrates, and provides guidance and resources for training. He trains battalion commanders, evaluates companies, and is responsible for the brigade's safety program, standardization program, and ATP. The brigade is manned with subordinate leaders; officers, warrant officers, and NCOs, specifically trained to implement these programs.

BATTALION COMMANDERS

2-51. Aviation battalion commanders normally fight and lead from their aircraft. They maintain the highest level of proficiency in the aircraft and should be qualified as a pilot-in-command (PIC). They execute the ATP as the primary training manager for the battalion. They are responsible for training company commanders and evaluating platoons. The battalion commander focuses company training and integrates companies into joint and combined arms training. The management and use of his subordinate leaders to support execution of the safety and standardization programs in synchronization with the ATP is critical.

OPERATIONS OFFICER

2-52. The S3 is the commander's principal staff officer on operations and training. The S3 identifies training requirements and then plans and carries out training programs. He also determines and allocates training resources, plans and conducts training assessments, and compiles training records. The S3 should maintain a high level of proficiency in the aircraft and be a PIC.

COMPANY/TROOP COMMANDERS

2-53. The company/troop commander is a fighter; he integrates his unit into the joint and combined arms fight. Like the battalion commander, he strives to be highly proficient as an aviation leader and a PIC. He integrates the platoons and executes company training. He is responsible for training platoon leaders and for the overall assessment of individuals and crews. The company's senior NCOs, platoon leaders, and unit instructor pilots (IP) assist the commander in ensuring that soldiers and aircrews are properly trained at the individual, crew, and unit collective levels.

PLATOON LEADERS

2-54. The platoon leader is responsible for platoon level aviation training. Unit IPs assist platoon leaders in ensuring crews are properly trained. Platoon leaders are at a critical point in their aviation careers. Their challenge is to become proficient aviators, to become technically and tactically proficient aviation leaders, and to ensure their air crews are proficient in TTPs outlined in the appropriate FMs, ATMs and unit standing operating procedures (SOP). All platoon leaders are expected to achieve increasing proficiency in their aircraft and to attain PIC status. This is also the entry level aviation leader position for gaining a basic understanding of aviation safety, maintenance, and training. Platoon sergeants and maintenance test pilots play a key role in the professional development of a platoon leader's aviation maintenance expertise.

SAFETY OFFICERS

2-55. Aviation safety officers advise and assist the commander in safely accomplishing the aviation mission. They advise the commander and staff on all safety issues, to include the assessment of risk and the development and coordination of plans and orders to conserve warfighting resources. Major responsibilities include facilitating and incorporating safety into all aspects of training and mission accomplishment. Aviation safety officers are key advisors in developing and implementing safety policy, goals, objectives, and priorities, into all aspects of unit training and operations.

STANDARDIZATION OFFICERS

2-56. Brigade, battalion, and company/troop standardization officers assist the commander in developing and executing the unit ATP. They are technical and tactical experts, expected to train aviators at every level within the command. A major responsibility is to provide quality control for the ATP via the commander's standardization program. Along with their responsibilities as the primary technical and tactical experts for the standardization program, they serve as role models, mentors and aviation leaders for all unit crewmembers.

UNIT TRAINERS

2-57. Unit trainers (UT) are aviators designated to instruct in areas of specialized training. They assist in unit training programs and achieving established training goals.

MASTER GUNNER

2-58. A master gunner is designated by the commander to help with the administration of the unit helicopter gunnery program. The master gunner's duties are described in FM 3-04.140.

PILOTS IN COMMAND

2-59. PICs are critical members of the unit ATP. The PIC is the unit's primary aircrew coordination and crew trainer. The PIC is responsible for not only the safe operation of the aircraft and all occupants, but also the conduct of all operational and training aspects of a specific mission to a known standard. A critical aspect of a unit's PIC program is to ensure that PICs demonstrate the maturity and ability to execute their responsibilities appropriately.

AVIATORS

2-60. Individual aviators have the ultimate responsibility to ensure that they remain technically and tactically proficient at all assigned tasks, and maintain ATP proficiency and currency requirements. Given the resources to train, it is their responsibility to actively participate in all aspects of the ATP. Proficiency requires more than just participation in scheduled training events. Individuals must take advantage of every opportunity to become tactically and technically proficient aviators.

Chapter 3

Battlespace Framework

The Army's transformation to meet the challenges of the 21st Century centers on dominance of the battlefield's domains. The physical domain is combat. The information domain is the common operational picture (COP). The knowledge domain is the commander's intent. The combination of the information and knowledge domains yields situational understanding (SU). The capabilities provided by the Army Battle Command System (ABCS) enable commanders to transform operations into the knowledge domain and provide the synergy necessary to multiply combat power.

SECTION I – KEY OPERATIONAL CONSIDERATIONS

INTRODUCTION

3-1. The modern battlefield takes a variety of forms—linear, nonlinear, contiguous, noncontiguous, or a combination thereof. Despite its configuration, commanders employ decisive, shaping, and sustaining operations to accomplish assigned missions. The AVN BDE is a key maneuver and support force for these operations.

DECISIVE, SHAPING, AND SUSTAINING OPERATIONS

3-2. FM 3-0 defines three all-encompassing categories of operations—decisive, shaping, and sustaining.

- The decisive operation conclusively determines the outcome of a battle or engagement.
- Shaping operations establish conditions for a successful decisive operation.
- Sustaining operations generate and maintain combat power.

3-3. Commanders direct operations simultaneously and sequentially by synchronizing their forces in time, space, resources, purpose, and action.

DECISIVE OPERATIONS

3-4. There is only one decisive operation for any major operation, battle, or engagement for any given echelon. It may include multiple actions conducted simultaneously throughout the AO. Commanders weight the decisive operation by economizing combat power allocated to shaping operations.

3-5. The AVN BDE participates in and supports decisive operations by:

- Finding, fixing, and destroying enemy forces.
- Conducting air assaults and air movement.
- Emplacing minefields.

- Supporting C2 operations.

SHAPING OPERATIONS

3-6. Shaping operations establish conditions for the successful decisive operation by setting the conditions for success. Shaping includes lethal and non-lethal operations to make the enemy vulnerable to attack and impede or divert their attempts to maneuver. It also facilitates the maneuver of friendly forces, enhances deception, or otherwise dictates the time and place for decisive battle. Through shaping, commanders gain the initiative, preserve momentum, and control the tempo of combat.

3-7. When expressing their intent, commanders clearly and succinctly define how the effects of shaping operations support the decisive operation. Shaping operations may occur with, before, or after initiation of decisive operations. They may involve any combination of forces.

3-8. Some shaping operations, especially those that occur simultaneously with the decisive operation, are economy of force actions. If the available force does not permit simultaneous decisive and shaping operations, the commander sequences shaping operations around the decisive operation. A shaping operation may become the decisive operation if circumstances or opportunities dictate. In that case, the commander weights the new decisive operation at the expense of other shaping operations.

3-9. The AVN BDE can shape by destroying, neutralizing, turning, blocking, fixing, and disrupting enemy forces. This can be done with helicopter-emplaced minefields, attack reconnaissance helicopters, air assault forces, and mobile C2 platforms.

SUSTAINING OPERATIONS

3-10. Sustaining operations generate and maintain combat power. Failure to sustain normally results in failure of the overall effort. Sustaining operations at any echelon are those that help the shaping and decisive operations by assuring freedom of action and continuity of operations, such as CSS and C2. Sustaining operations include CSS, sustainment, base security and maintenance, movement control, terrain management, and protection of lines of communication (LOC) and headquarters.

3-11. Sustaining operations are inseparable from decisive and shaping operations, although they are not by themselves decisive or shaping. Sustaining operations occur throughout the AO. They underwrite the tempo of the overall operation, assuring the ability to take advantage of any opportunity immediately.

3-12. The AHBs and GSABs are ideal for sustaining operations. Attack reconnaissance forces, coupled with the mobile and agile aerial C2 platforms, are excellent forces for protecting sustainment forces as they move from one location to another or in their assembly areas (AA).

AREA OF OPERATIONS

3-13. The AO for the AVN BDE can take a variety of forms. Where once commanders focused on terrain clearly labeled as "friendly" or "enemy," the modern battlefield increasingly involves vague boundaries and an undefined threat. An AO can be either contiguous or noncontiguous (Figure 3-1), and the type of operations conducted in the AO can be either linear or nonlinear. Nonlinear and linear operations are not mutually exclusive. Depending on perspective and echelon, operations often combine nonlinear and linear characteristics. For example, the BCT or UEx may be deployed in a nonlinear manner, while the battalion or some of its companies are deployed linearly with respect to each other.

CONTIGUOUS AREA OF OPERATIONS

3-14. A contiguous AO is where the commander's subordinate forces' areas of operation share one or more common boundaries.

NONCONTIGUOUS AREA OF OPERATIONS

3-15. Subordinate forces that do not share a common boundary operate in a noncontiguous AO. It does not have distinctive forward, rear, and lateral boundaries. It is established by a boundary that encloses the entire area. Subordinate boundaries will be continuous, 360-degree arcs that closely approximate the subordinate unit's area of influence (AI).

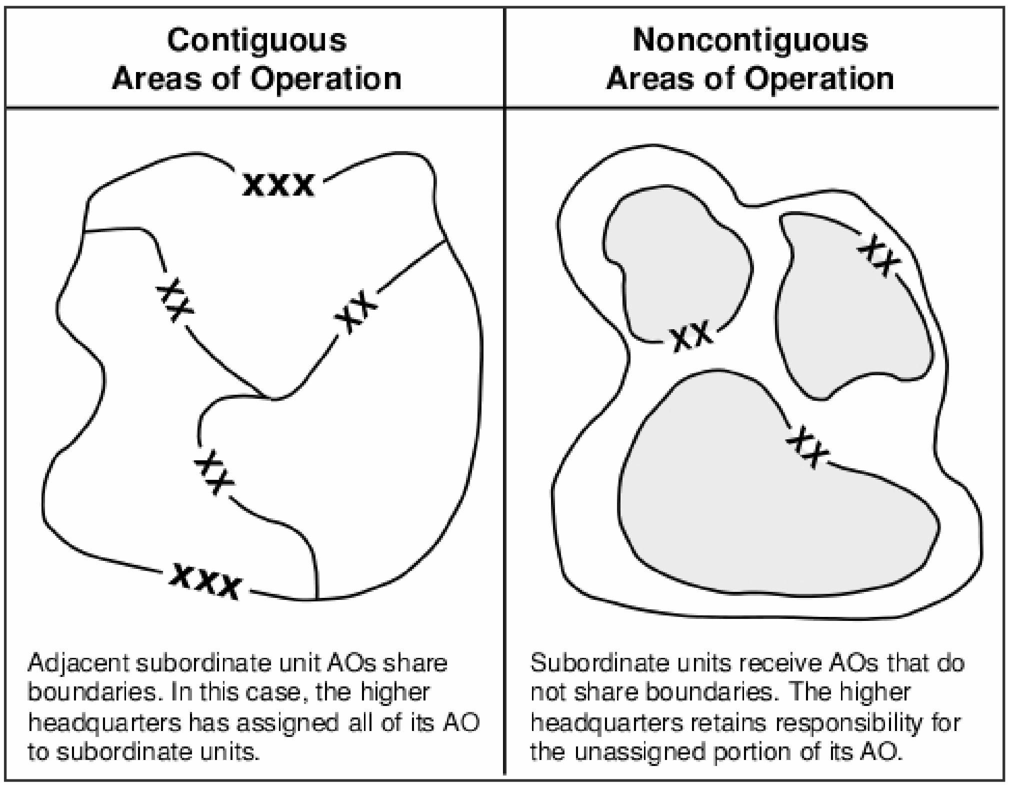

Figure 3-1. Contiguous and Noncontiguous Areas of Operations

NONLINEAR OPERATIONS

3-16. Nonlinear operations (Figure 3-2) characterize mission environments now more than ever. A nonlinear battlefield lacks the traditional grid of close, deep, and rear areas, and requires a high degree of SU in order to minimize risk. The resulting battle space is fluid, changing throughout mission preparation and execution. In the nonlinear environment, the aviation unit is an essential force for success.

3-17. Nonlinear operations occur in contiguous and noncontiguous AOs. The AO normally is greater in comparison to the number of troops deployed for an operation. Enemy forces may be widely dispersed and numerically superior. Especially in smaller-scale contingency (SSC) operations, the enemy can be expected to take advantage of restrictive and urban terrain.

3-18. Attacking forces must focus offensive actions against decisive points, while allocating the minimum essential combat power to shaping operations. Reserves must have a high degree of tactical mobility. Forces conducting nonlinear operations require robust communications and sustainment capabilities.

3-19. The fluid nature of the nonlinear battlefield and the changing disposition of attacking and defending forces increase the potential for fratricide. The presence of noncombatants further complicates operations. Commanders must exercise prudence when clearing fires, both direct and indirect, within this setting.

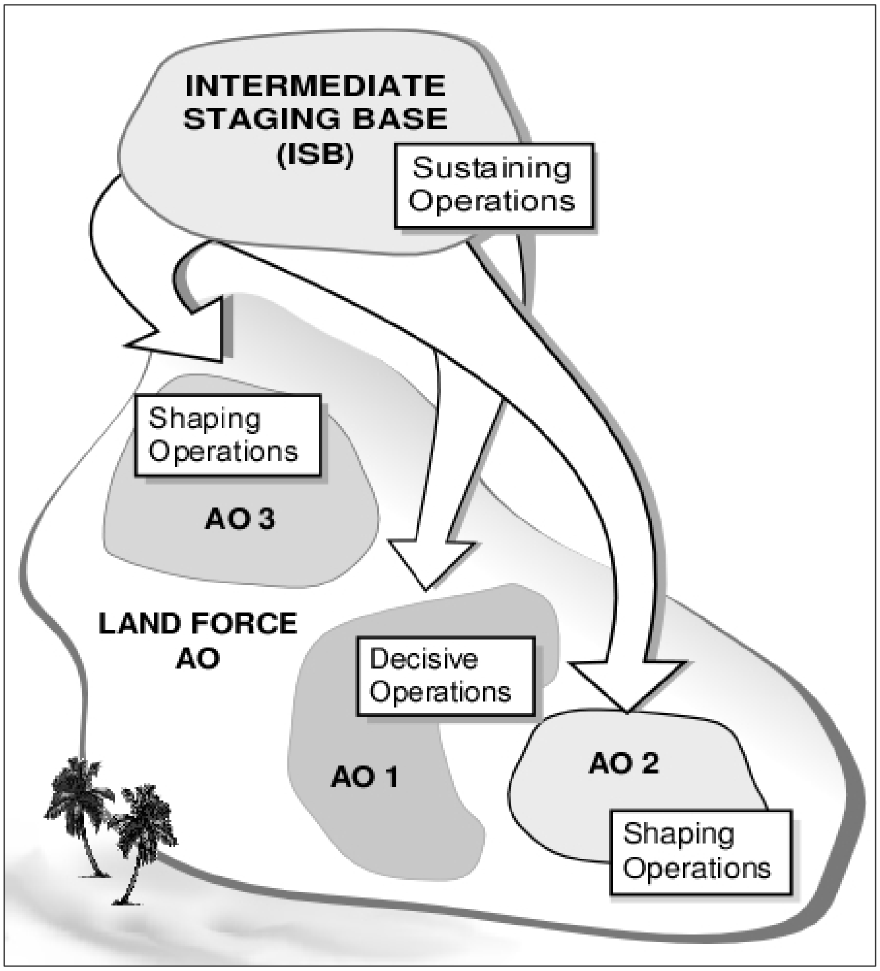

Figure 3-2. Example of Offensive Operation (Nonlinear, Noncontiguous Area of Operations)

LINEAR OPERATIONS

3-20. Traditional linear operations involve conventional combat and concentrated maneuver forces. Ground forces share boundaries and orient against a similarly organized enemy force (Figure 3-3). Terrain or friendly forces secure flanks and protect CSS operations.

3-21. Despite the increasing nonlinear nature of operations, linearity still characterizes many operations or phases of operations. When U.S. forces lack sufficient information, are severely outnumbered, or when the threat to LOCs reduce freedom of action, a force may conduct linear operations to concentrate and synchronize combat power. In some multinational operations, the capabilities and doctrine of partners may dictate this spatial organization of the AO. In such situations, commanders direct and focus on close, deep, and rear areas.

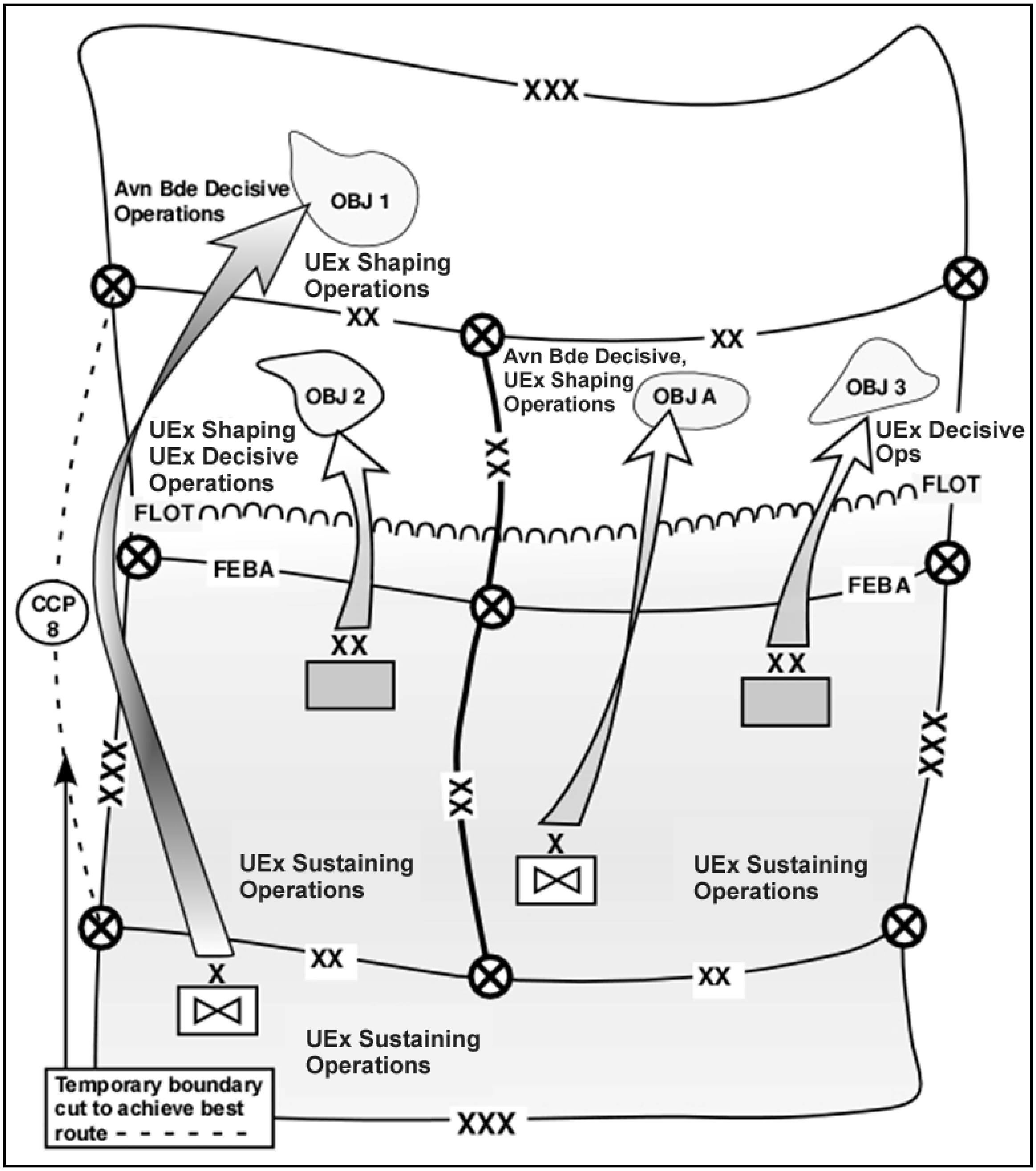

Figure 3-3. Example of Defensive Operation (Linear, Contiguous Area of Operations)

CLOSE AREAS

3-22. The close area is that area where the commander envisions close combat taking place or being imminent. Here he seeks to overmatch the enemy by synchronizing combat effects using maneuver and supporting fires to produce a decision. Subordinate commanders engaged in the force commander's close area designate their own close, deep, and rear areas.

DEEP AREAS

3-23. The deep area is an area forward of the close area that commanders use to shape enemy forces before they are encountered or engaged in the close area. Typically, the deep area extends from the forward boundary of subordinate units to the forward boundary of the controlling echelon. Thus, the deep area relates to the close area not only in terms of geography but also in terms of purpose and time. The AVN BDE depends heavily on its higher headquarters to develop the intelligence necessary to execute operations successfully in deep areas.

3-24. Although few friendly elements reside or operate in the deep area, the risk of fratricide to aviation elements actually increases. Friendly joint assets conducting combat air patrols are a threat to rotorcraft, and friendly AD may engage during the return to friendly lines. Identification Friend or Foe (IFF) procedures are critical. IFF systems may be turned off while in enemy territory to avoid emitting, but that choice must be balanced with the fratricide risk from other service and allied aircraft. In all cases, IFF must be on before returning to friendly lines.

3-25. Aircrews in deep areas risk target identification complacency by assuming all acquisitions are hostile. This places friendly ground and rotary wing elements also operating in deep areas at greater risk. Coordination between other Army and joint forces in deep areas is essential.

REAR AREAS

3-26. The rear area is a specific area within the AO used primarily for the performance of support functions. The majority of sustaining operations occur in the rear areas. Operations in rear areas assure freedom of action, continuity of operations, sustainment, and C2. The rear area may be contiguous with or separate from a close area. On a linear battlefield, the rear area for any particular command is the area extending forward from its rear boundary to the rear of the area assigned to the next lower level of command. On the nonlinear battlefield, it may be difficult to define rear areas. In essence, rear areas are wherever there are no ground maneuver forces within the higher headquarters AO.

3-27. The ability of the AVN BDE to rapidly react to enemy incursions and to move personnel and cargo allows it to contribute greatly to rear area operations. The brigade may designate attack reconnaissance aircraft to quickly react to rear area incursions, by air, land, or sea. However, the potential for fratricide may be the greatest in the rear area. Detailed planning and coordination, preplanned reaction drills, SOPs, and rehearsals serve to reduce this risk.

RULES OF ENGAGEMENT, RULES OF INTERACTION

3-28. All personnel must be thoroughly familiar with the higher headquarters rules of engagement (ROE) and rules of interactions (ROI) limitations. These restrictions must be carefully considered, particularly regarding civilian effects, the legal status of isolated persons, and restrictions on fires and types of weapons. ROE and ROI should be briefed and rehearsed on a regular basis to ensure understanding and to disseminate changes. Realistic scenarios must be war-gamed and rehearsed so all members of the unit fully understand whether to engage, and the degree of force to use if engaging.

SECTION II – BATTLEFIELD OPERATING SYSTEMS AND THE AVIATION BRIGADE

INTELLIGENCE

3-29. Accurate and timely intelligence is central to the effective employment of combat power. Each piece of information contributes to overall situational understanding (SU). Information dominance enables the commander to see an accurate picture of the battlefield and to dictate, in terms of time and space, maneuver against known enemy positions. The intelligence system plans, directs, collects, processes, produces, and disseminates intelligence on the threat and operational environment in order to execute:

- Intelligence preparation of the battlefield (IPB).
- Situation development.
- Target development and support to targeting.
- Event warnings.
- Intelligence support to battle damage assessment (BDA).
- Intelligence support to force protection.
- Intelligence support to personnel recovery (PR).

COMMON OPERATIONAL PICTURE

3-30. The COP involves knowing enemy and friendly positions and capabilities, as well as the status of environmental factors (weather, terrain, civilian populations). The COP is critical to achieving SU and operational success.

COMMON OPERATIONAL PICTURE FOR COMMAND POSTS

3-31. CP personnel must maintain a consistent common operational picture. Among systems assisting them are the intelligence systems of the UEx, and UEy, as well as the aviation brigade's own organic assets.

3-32. Every CP must know the current situation and be able to present COAs to the commander on demand, along with a recommendation for the best COA.

COMMON OPERATIONAL PICTURE FOR AIRCREWS

3-33. Advanced aircraft navigation and communication systems allow commanders an improved COP. The ability to know the present position of self, friendly, and enemy units through communication with adjacent units, onboard sensors, and positioning equipment promotes increased confidence and a common operational picture. Other information is available through the aviation mission planning system (AMPS) planning and preparation process, and through updates received and manually posted enroute. A moving map display in the cockpit is another tool to improve knowledge of the surrounding area.

COMMON OPERATIONAL PICTURE FOR ADVANCED AIRCRAFT

3-34. The AH-64D Longbow Apache and OH-58D(R) Kiowa Warrior bring additional capabilities to the battlefield to enhance the COP for commanders, staffs and aircrews. Each crew can automatically query the location of similar aircraft and provide their accurate locations. It can receive and automatically post digital messages from other friendly forces. Aircraft systems automatically post and show the crew digital messages, and Longbow aircraft can post enemy information from the fire control radar (FCR).

SITUATIONAL UNDERSTANDING

3-35. SU is the product of applying analysis and judgment to the common operational picture to determine the relationship among the factors of METT-TC. SU is a critical component of proper decision making and the ultimate goal of intelligence operations. Inaccurate or incomplete SU creates the "fog of war" frequently responsible for miscommunication, operational failures, and friendly casualties.

SOURCES

3-36. A highly accurate COP is generated from many sources. These sources include national assets, unmanned aerial vehicles (UAV), Army Aviation, and the many other command and control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) assets.

3-37. UAVs and other intelligence collection platforms may support aviation brigade operations with time-sensitive intelligence. Their feeds should be managed intensively to ensure the information and perhaps the feeds themselves go directly to the Air Assault Task Force Commander or Air Mission Commander (AATFC/AMC) in their aerial or ground CPs.

3-38. The front line soldier is the UEx commander's most valuable intelligence source. The commander can receive current intelligence from both aircrews and supported ground units conducting operations. Commanders should instill in all crew members that they are reconnaissance soldiers fighting for and confirming intelligence, and should do so as a matter of SOP. Their sightings and reporting of any activity (or lack thereof) may make the difference between victory and defeat. The intelligence officer (S2) debriefs aircrews as an essential part of gathering information.

3-39. The brigade S2 needs to coordinate closely with the G2 (UEx or higher) for information from external assets such as JSTARS, UAVs, electronic intelligence (ELINT), and imagery intelligence (IMINT) sources. The S2 should also coordinate with the supported unit S2 to confirm information within the AO of the supported unit. This ensures the best possible COP for fine-tuning engagement areas (EA) and identifying decision points (DP) during planned counterattack or shaping operations.

INTELLIGENCE PREPARATION OF THE BATTLEFIELD

3-40. The S2 prepares intelligence estimates and conducts the IPB process. Regardless of the nature and intensity of conflict, this involves a time-tested process. FM 34-130 contains appropriate checklists and an aviation-specific section. The IPB results are used to develop the products to support collection management, identify potential enemy COAs, and support the development of the commander's scheme of maneuver (to include branches and sequels).

3-41. A critical part of IPB involves collaborative, cross-BOS analysis at each level of command. Accurate intelligence, sound assessments, and target development can reduce many uncertainties about the battlefield.

3-42. The ability to see the battlefield, whether linear or nonlinear, is possible only by harnessing the capabilities available to the echelons above the AVN BDE. Procedures to ensure an accurate and continually updated IPB must be developed between the brigade and its higher headquarters. These procedures should be established as soon as possible and should be reflected in the SOP before deployment. FM 34-130 contains detailed information on the IPB process.

INTELLIGENCE TEMPLATES

3-43. The S2 section provides graphic displays of doctrinal, situation, event, and decision support templates (DST).

TEMPLATES AND ASYMMETRIC FORCES

3-44. During the Cold War, most nations patterned their doctrine after those of the two super powers—the United States of America and the Union of Soviet Socialist Republics. Consequently, many military operations around the world demonstrated a high degree of consistency. However, in the contemporary operating environment (COE) a large number of threat forces and operatives are evolving differently. Given this, it may be much harder to determine the doctrine used by threat forces and operatives. However, a pattern of operations can be determined over time, and asynchronous templates developed to predict patterns of operation.

DOCTRINAL TEMPLATE

3-45. Doctrinal templates illustrate the disposition and activity of enemy forces and assets conducting a particular operation unconstrained by the effects of the battle space. They represent the application of enemy doctrine under ideal conditions. Ideally, doctrinal templates depict the enemy's normal organization for combat, frontages, depths, boundaries and other control measures. The staff uses the doctrinal template as a guide and modifies the portrayed dispositions to take advantage of available defensive terrain. It also uses doctrinal templates to determine the likely locations of high-value targets (HVT). For unconventional operations, asynchronous templates can be developed as enemy patterns of operations emerge.

SITUATION TEMPLATE

3-46. Situation templates are graphic depictions of expected threat dispositions should the threat adopt a particular course of action (COA). They usually depict the most critical point in the operation as agreed upon by the intelligence and operations officers. The staff uses situation templates to support staff war gaming and develops event templates.

EVENT TEMPLATE

3-47. The differences between the named areas of interest (NAI), indicators, and target priority lists (TPL) associated with each COA form the basis of the event template. The event template is a guide for collection and intelligence, surveillance, and reconnaissance (ISR) planning. It depicts where to collect the information that will indicate which COA the threat has adopted.

DECISION SUPPORT TEMPLATE

3-48. The decision support template (DST) depicts decision points (DPs), timelines (movement of forces and the flow of the operation), and other key items of information required to execute a specific friendly COA. It translates intelligence estimates and the operation plan (OPLAN) into graphic form. This template is a total staff effort to help the commander synchronize assets and make timely decisions through war-gaming friendly and enemy COAs. The commander uses the template to confirm or deny enemy COAs, exploit assailable enemy flanks, and select HVTs for engagement. The commander may also plan to interdict critical points that will force the enemy to abandon or modify a COA.

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE PLAN

3-49. Collection management by the S2 is based on intelligence requirements not answered at this point by the IPB process. The ISR plan is updated continually. Frequent ISR adjustment gives the commander a time-phased picture of the battlefield. It also provides viable options for using critical assets in a timely manner.

3-50. A successful ISR plan centers on focus, timeliness, and supervision. The plan focus is tied to the commander's priority information requirements (PIR) or decision points (DPs). Collection must initiate on time and be tracked by headquarters to enable synchronization and identify gaps in coverage. Accurate and timely information eases the planning process and promotes timely decisions.

3-51. Other elements of the BOS should be integrated into the ISR plan, with fire support (FS) one of the most critical. The collection asset that first identifies the enemy should have the ability to engage immediately with supporting fires.

3-52. Ground surveillance radar (GSR), remote sensors, UAV, or other military intelligence (MI) assets may be available to the aviation brigade to enhance capabilities. The S2 incorporates these assets into the ISR plan and recommends employment methods to the commander.

COMMANDER'S INTENT

3-53. A clearly stated commander's intent, combined with specific commander's critical information requirements (CCIR), is fundamental to gain the intelligence information needed for the unit to accomplish its missions. CCIR also provide the focus required to understand critical information throughout the AVN BDE.

ESSENTIAL ELEMENTS OF FRIENDLY INFORMATION

3-54. Essential elements of friendly information (EEFI) are the critical aspects of a friendly operation that, if known by the enemy, would subsequently compromise, lead to failure, or limit success of the operation, and therefore must be protected from enemy detection (FM 3-13). Army doctrine defines EEFI differently from joint doctrine. The joint definition of EEFI focuses on information adversaries want to collect. The Army definition focuses on information friendly commanders want to protect.

3-55. EEFI helps commanders understand what enemy commanders want to know about friendly forces and why. EEFI tells commanders what cannot be compromised. For example, a commander may determine that if the enemy discovers the movement of the friendly reserve, the operation is at risk. In this case, the location and movement of the friendly reserve become EEFI.

3-56. EEFI provides a basis for indirectly assessing the quality of the enemy's SU. If the enemy commander does not know an element of EEFI, it weakens his SU.

COMMANDER'S CRITICAL INFORMATION REQUIREMENTS

3-57. Commanders channel information processing by clearly expressing which information is most important. They designate critical information that derives from their intent—the commander's critical information requirements (CCIR). CCIR are elements of information required by commanders that directly affect decision making and dictate the successful execution of military operations (FM 3.0). The key to effective information management (IM) is answering the CCIR.

3-58. Commanders personally designate CCIR to ensure their staffs and subordinates understand what information they deem necessary for decision making. CCIR include priority intelligence requirements (PIR) and friendly forces information requirements (FFIR).

3-59. As part of the military decision making process (MDMP), commanders visualize the battlefield and the fight. Information collected to answer the CCIR either confirms the commander's vision of the fight or indicates the need to issue a fragmentary order or execute a branch or sequel.

3-60. CCIR must be focused enough to generate relevant information. Unfocused requests, such as "I need to know if the enemy moves," may provide data but not much useable information. However, "I need to know when the enemy lead brigade reaches NAI 2" or "I need to know if the multinational unit on our right flank advances beyond Phase Line (PL) Blue" are examples of CCIR specific enough to focus collection and information management priorities.

PRIORITY INTELLIGENCE REQUIREMENTS

3-61. PIR are intelligence requirements that the commander has anticipated and stated as a priority in planning and decision making.

FRIENDLY FORCE INFORMATION REQUIREMENTS

3-62. FFIR are information the commander and staff need about the forces available for the operation.

BRIGADE INTELLIGENCE OPERATIONS

3-63. The aviation brigade is the UEx's primary aerial reconnaissance asset. When tasked, it uses multiple intelligence resources in addition to its own sensors to detect threats and provide other battlefield information. It also provides the ability to conduct reconnaissance by fire to reveal hidden enemy. Integration of these active and passive resources is critical to the timely provision of information to the UEx.

3-64. The aviation brigade S2, the supported unit S2, and the UEx G2 must work closely to exchange intelligence. This intelligence and COP flow is critical to the timely, effective, and survivable employment of aircraft. The BAE can assist the information exchange between the ground and aviation unit to ensure all required information is disseminated. An intelligence liaison from the AVN BDE can ensure the same at UEx or higher headquarters.

MANEUVER

3-65. Infantry, armor, and aviation forces are organized, trained, and equipped primarily for maneuver. Commanders maneuver these forces to gain positions of advantage against the enemy, thereby creating conditions for tactical and operational success. By maneuver, friendly forces can destroy enemy forces or hinder their movement by direct and indirect application of firepower, or the threat of its application.

AVIATION BRIGADE MANEUVER

3-66. The AVN BDE headquarters shapes the battle space to maximize its units' capabilities to find and fix the enemy and destroy enemy assets. It also provides firepower, supports air assaults, conducts air movement, and enhances C2 to support ground forces.

3-67. The ARBs/ARSs may support or be OPCON to heavy BCTs to screen, guard, or participate in a covering force. They may also operate in an overwatch and support-by-fire capacity. UEx and BCT commanders may employ aircraft directly on top of, behind, or adjacent to ground maneuver forces to maintain awareness of their location in relation to friendly armor. When employed in this manner, aviation forces are vulnerable to enemy artillery attack and direct fires intended to target friendly forces, and may reveal ground force locations. The greater range of Hellfire missiles allows overwatch and support-by-fire to occur at greater distances, but this can lead to confusion with respect to target priorities. The FCR is a valuable source of combat information for the digitized ground maneuver force.

3-68. Brigade aviation assault forces are well suited to conduct maneuver with infantry BCTs and supporting artillery to seize forward operating bases from which attack reconnaissance elements can conduct sustained operations in deep areas. Assault elements can lift smaller infantry teams conducting raids and ambushes to destroy limited objectives. They can conduct false and brief insertions to deceive the enemy through feints and demonstrations.

FIRE SUPPORT

3-69. Commanders integrate and synchronize fires and effects to delay, disrupt, or destroy enemy forces, systems, and facilities. The FS system includes the collective and coordinated use of target acquisition data and indirect fire weapons. It also includes fixed wing (FW) aircraft, armed helicopters, electronic warfare (EW), and other lethal and nonlethal means to attack targets. FS plans must be integrated and synchronized with the AVN BDE scheme of maneuver, consistent with the commander's intent, and with A2C2.

3-70. AVN BDEs ensure joint suppression of enemy air defense (J-SEAD) is planned and coordinated to include nonlethal means. AVN BDE commanders preplan J-SEAD fires to support ingress operations and preplan fires near the objective. Radio systems aboard aircraft can be employed by fire support elements (FSE) to initiate on-call fires as needed.

3-71. Utility aircraft can transport forward observer teams, mortars, and 105mm towed artillery. Heavy helicopters can additionally transport towed 155mm howitzers and Q-36 Firefinder radars into position. Utility aircraft are available to resupply artillery units supporting the ground and AVN BDEs. Heavy helicopters can also support FS operations by transporting ATACMS, MLRS, and cannon artillery ammunition for UEy and UEx units.

BRIGADE FIRE SUPPORT OPERATIONS

3-72. The AVN BDE assists the counter-battery mission to find and target enemy mortars and artillery. Higher headquarters can directly alert the AVN BDE to enemy locations should they prefer to use precision fires from the ARB/ARS rather than imprecise indirect fires to engage the target. The ARB/ARS has the speed and agility to quickly find and destroy enemy fires then report accurate BDA. Coordination and radio links to Firefinder radar units can assist.

3-73. ARB and ARS aircrews can designate for laser-guided artillery and may be trained to designate for other service munitions. ARB and ARS aircrews can also designate targets for first-time fire-for-effect artillery missions. If supporting fires are not adequate, attack reconnaissance aircraft can launch 2.75-inch rockets and Hellfire missiles to provide suppressive fires of their own, but such fires detract from their primary mission.

3-74. Close operations frequently require precision Army and joint fires or guided munitions due to the proximity of friendly forces. The ability of brigade aircraft to observe and precisely report enemy locations provides Army indirect FS units with the precise data needed to place accurate fires on the enemy and to preclude fratricide and limit collateral damage.

AIR DEFENSE

3-75. The AD system protects the force from air and missile attack, and from aerial surveillance. It prevents the enemy from interdicting friendly forces while freeing commanders to synchronize maneuver and firepower. All members of the combined arms team perform AD tasks; however, ground-based air defense artillery and missile units execute most Army AD operations. ARB and ARS sensors can help identify inbound enemy aircraft that may have evaded AD detection systems. Armed helicopters also can conduct limited defensive air combat operations to protect maneuver forces, augment AD forces, or provide self-defense for aviation forces.

BRIGADE AIR DEFENSE OPERATIONS

3-76. Effective AD protection includes passive and active measures. Army aviation units are a last resort to perform anti-air operations, usually engaging other aircraft only in self defense.

ACTIVE AIR DEFENSE

3-77. Active AD is direct action taken to destroy enemy aerial platforms or reduce their effectiveness. The aviation brigade can attempt to engage and destroy enemy aircraft threatening the AA with supporting AD systems, vehicular-mounted weapons, and small arms. Generally, units should not engage enemy aircraft with ground fire unless they are being attacked. FM 44-8 details the use of small arms in the AD role.

3-78. Active AD for aircraft aloft includes the use of onboard weapons, countermeasures, and jammers. If air-to-air combat is expected, evasive maneuver training and battle drills are essential for optimum employment and success.

PASSIVE AIR DEFENSE

3-79. The first line of defense against enemy air is the constant application of passive AD measures. Brigade ground elements can employ the following passive measures to avoid detection. (Bear in mind that the enemy may also employ the same measures to avoid detection from friendly air):

- Cover and concealment for stationary vehicles.
- Camouflage to conceal exposed vehicles or reflective surfaces.
- Covered and concealed routes during movement.
- Vehicle dispersion when stationary and moving.
- Concealed track marks and terrain disturbances around stationary positions.
- Prepared positions for stationary vehicles or elements.
- Not engaging a FW aircraft until it assumes an attack profile.
- Establishing and maintaining air guards.
- Establishing an air warning system in the AA.
- Establishing drills/scatter plan for immediate actions upon attack.

3-80. Brigade elements take measures to avoid detection by enemy aircrews. Such measures include terrain flight, camouflage, and selection of locations that provide cover and concealment. Threat aircrews may or may not need to see and identify a target to attack it. The effectiveness of enemy helicopters and high-performance aircraft is greatly reduced when units take advantage of terrain for cover and concealment.

STATIONARY UNITS

3-81. Stationary units should take the following precautions:

- Occupy positions that offer cover and concealment.
- Immediately wipe out vehicle track marks leading to and around the position.

- Ensure new tracks follow existing paths, roads, fences, or natural lines in the terrain pattern.
- Avoid silhouetting vehicles against the skyline or against an area of a different color.
- Post air guards in dismounted positions to provide warning of approaching aircraft.
- Rotate air guards frequently because scanning for long periods dulls visual perception.
- Disperse vehicles to make detection difficult, and to reduce the possibility of multiple losses from a single engagement.
- To reduce glare, place camouflaged coverings on the windshields, mirrors, and headlights of vehicles and on aircraft canopies. Exposed vehicles should be thoroughly camouflaged.
- Open vehicle hoods to break up silhouettes and allow for more rapid cooling of engines to counter enemy IR detection devices.
- Hide or camouflage aircraft as required.
- Operate during limited visibility as much as possible.
- Establish a scatter plan from the AA.

MOVING UNITS

3-82. Moving units should take the following precautions:

- Travel in open columns with 80 to 100 meters between vehicles. Dispersion decreases target density and reduces the lethal effects of enemy ordnance.
- Post air guards on vehicles to provide warning of approaching aircraft.
- Rotate air guards frequently because scanning for long periods dulls visual perception.
- Maintain COMSEC.
- Use covered and concealed routes.
- If attacked, turn vehicles 90 degrees from the direction of attack.
- Limit movements to periods of limited visibility as much as possible.
- Use armed helicopters for convoy security.

MOBILITY/COUNTERMOBILITY/SURVIVABILITY

3-83. The AVN BDE contributes directly or indirectly to each of these operations.

MOBILITY

3-84. Mobility operations preserve friendly force freedom of maneuver. They include breaching obstacles, increasing battlefield circulation, improving or building roads, providing bridge and raft support, and identifying routes around contaminated areas. Attack reconnaissance assets can locate adequate sites and routes, and provide overwatch for ground operations. Lift assets can transport outsize loads such as metal pipes for culverts, bridge materiel, and personnel.

COUNTERMOBILITY

3-85. Countermobility denies mobility to enemy forces. It limits the maneuver of enemy forces and enhances the effectiveness of friendly fires. Countermobility missions include obstacle building and smoke generation. Army Aviation can perform reconnaissance to find appropriate sites and routes for obstacle emplacement. They can insert engineers and materiel to create obstacles and provide over watch for ground operations. Selected UH-60s can emplace minefields with the Volcano system, while attack reconnaissance assets can provide fires to cover obstacles and employ white phosphorous rockets to provide smoke. Aerial mining operations must be planned in detail to ensure the slow moving mine delivery aircraft are not interdicted by enemy action.

SURVIVABILITY

3-86. Survivability operations protect friendly forces from the effects of enemy weapons systems and from natural occurrences. Hardening of facilities and fortification of battle positions (BP) are active survivability measures. Military deception, operations security (OPSEC), and dispersion also increase survivability. NBC defense measures are essential survivability tasks. Aviation can perform reconnaissance to find adequate sites and routes. They can insert or extract personnel and equipment and provide overwatch for ground operations. They also can conduct aerial surveys of known or suspected NBC contaminated areas.

3-87. The brigade enhances aircrew survivability by mission planning, coordination, and aircraft survivability equipment (ASE) settings based on threat analysis.

COMBAT SERVICE SUPPORT

3-88. The CSS system sustains forces. It includes use of host nation infrastructure and contracted support. CSS provides supply, maintenance, transportation, health service support (HSS), personnel support, legal support, financial management, religious support, and distribution management. It also includes most aspects of civil military operations (CMO). Aviation forces conduct air movement operations to move personnel, supplies, and equipment to support ground forces, refugees, or disaster victims. Attack reconnaissance assets perform reconnaissance to identify routes, over watch transport, and provide PZ or LZ security. See chapter 8 for more information on aviation brigade logistics operations.

COMMAND AND CONTROL

3-89. C2 is the exercise of authority and direction by a commander over assigned and attached forces. C2 has two components—the commander and the C2 system. Communications systems, intelligence systems, and computer networks form the backbone of C2 systems. They allow commanders to lead from any point on the battlefield. The C2 system enables the commander to make informed decisions, delegate authority, and synchronize the BOS. Moreover, the C2 system enables the commander to adjust plans for future operations, even while focusing on the current fight.

3-90. Staffs work within the commander's intent to direct units and control resource allocations. They also are alert to spotting enemy or friendly situations that require command decisions and advise commanders concerning them.

3-91. The AVN BDE enhances overall C2 flexibility and mobility by providing UH-60 aircraft equipped with C2 systems, and by transporting key personnel, LNOs, and high-priority messages and orders. C2 system-equipped aircraft provide communications support the UEx/UEy operations. The A2C2S aircraft, when available, provides additional communications capability and access to J-STARS, AWACS, UAV, and other BOS C2 networks.

SECTION III– OPERATIONS

CHARACTERISTICS OF OPERATIONS

3-92. UEx AVN BDE missions are offensively oriented and are typically the same whether the UEx or UEy is attacking or defending. Fundamental to the success of operations are the characteristics of surprise, concentration, tempo, and audacity.

SURPRISE

3-93. Surprise is attacking the enemy at a time or place or in a manner for which they are unprepared and do not expect. It delays enemy reactions, overloads and confuses their C2 systems, and induces psychological shock. It also forces them to make decisions they are not prepared to make. Surprise, however, may be difficult to achieve. Especially in SSC operations, enemy forces are generally small formations imbedded in urban and restrictive terrain, and tend to be engaged at relatively close range. At all levels of conflict, the enemy has access to global news, intelligence from sympathetic factions, possible assistance from local nationals, and discreet reconnaissance provided by other potential adversaries. Cellular telephones, electronic mail, and Internet instant messenger services may also speed the enemy's receipt and dissemination of information.

3-94. Aviation commanders and staff must perform a thorough analysis of their CCIR and guard them to preserve the element of surprise. Use of well-planned, effective deception operations also can preserve the element of surprise. Raids and air assaults at unexpected times and places can disrupt enemy operations. The ARB and ARS can screen the friendly force to preclude similar surprise by the enemy.

CONCENTRATION

3-95. Concentration is the massing of overwhelming combat power to achieve a single purpose. Commanders concentrate forces to the degree necessary to achieve overwhelming effects. They balance the necessity for concentrating forces with avoiding large formations that are vulnerable to attack. Synchronization is key to successful concentration.

TEMPO

3-96. Tempo is the rate of military action. After gaining the initiative, the attacker sets the tempo to maintain relentless pressure on the enemy. This forces the enemy to make decisions for which they are unprepared, to conduct maneuver they have not rehearsed, and prevents them from recovering from the initial shock of the attack. The key to maintaining the appropriate tempo is to anticipate enemy reaction within the MDMP, prepare the necessary plans, rehearse as required, and then quickly maneuver forces to seize opportunities when presented. The UEx AVN BDE's ability to rapidly exploit enemy weaknesses enhances friendly tempo.

AUDACITY

3-97. Audacity is a simple plan of action, boldly executed. It seizes and exploits the initiative. Aviation commanders must be prepared to act quickly to exploit opportunities.

SECTION IV – PLANNING CONSIDERATIONS

3-98. The AVN BDE's organization and capabilities require some unique planning considerations. A general discussion follows. Chapter 4 contains more information, including identification of brigade planning responsibilities versus those of the battalion.

AIRCRAFT CONSIDERATIONS

3-99. Training, planning, and operations differ between battalions due to the different aircraft types organic to each. For example, although both the AHB and GSAB conduct air movement operations, missions involving heavy loads or high/hot flight environments are better left for the CH-47s in the GSAB.

OPERATIONAL LIMITATIONS

3-100. Examples of operational limitations for helicopters and helicopter units include:

- Weather will dictate flying some missions and deployments using Instrument Flight Rules (IFR).
- High temperatures, humidity, altitudes, and other environmental effects reduce payloads and flight endurance.
- Weather effects (fog, heavy rain, blowing snow) or battlefield obscuration (smoke, dust) may limit day and night aided visibility and aircraft speed.
- Low ceilings limit terrain flight in mountainous or rolling terrain.
- Weather conditions (visibility, ice, high winds, and excessive turbulence) may preclude aviation operations.
- If used, auxiliary fuel tanks or Longbow radar limit allowable ammunition loads.
- Although aerial firepower has the ability to momentarily dominate terrain, aviation units do not possess the ability to hold terrain.
- Crew endurance and aircraft maintenance requirements will impact aircraft availability.
- Terrain may limit the ability to properly mask the aircraft or conduct terrain flight.

SECURITY / FORCE PROTECTION

3-101. Aviation units have limited capability to secure unit AAs while concurrently conducting operations and performing maintenance. A battlefield of a nonlinear, asymmetric nature requires that aviation forces carefully consider security force requirements. This battlefield rarely has clearly defined flanks or rear areas. Forces must be allocated to protect critical assets against conventional and terrorist attacks. Mutual support can reduce the amount of dedicated security needed by aviation forces.

FRATRICIDE PREVENTION

3-102. Six errors that contribute to a fratricide incident, in order of prevalence:

- Target misidentification.
- Inaccurate target location.
- Communication errors.
- Incorrect computations.
- Improper weapon employment.
- Mechanical malfunction.

3-103. A common operating picture, specifically timely and accurate information on friendly and enemy locations, is by far the best prevention technique. Technological advances, coordinated planning, and close communication are the best techniques to improve the COP and decrease the risk of fratricide. Specific preventative measures include:

- Habitual relationships between ground and aviation units.
- Associated mission graphics, control measures, and the ground commander's intent must be disseminated and understood at the aircrew level.

- Distinctive and easily identifiable markings on friendly equipment using materials that can be seen at night, such as thermal imagery tape or IR lights.
- Fratricide prevention measures integrated into SOPs.
- Fire Support Coordination Measures (FSCMs).
- Well-rehearsed plans, fully supported by tested battle drills involving all elements of the air and ground force.

3-104. Aviators may have to fly helicopters near friendly companies during mission execution. Factors that can reduce the potential for ground and air fratricide include the following:

- Automated identification measures such as identification friend or foe (IFF), Force XXI Battle Command Brigade and Below (FBCB2) Blue Force Tracker, and enhanced position location reporting system (EPLRS).
- Precision-guided munitions.
- Planned or hasty coordination and control.
- Knowledge of the ground tactical plan.
- Knowledge of the exact location of friendly companies.
- Knowledge of the exact location of aircraft.
- Knowledge of friendly marking techniques.
- Positive identification of targets.
- Familiarity between the supported unit and the aviation unit.

3-105. The BAE plays a key role in coordinating aviation support to the ground commander. The BAE helps reduce fratricide risk by fostering communication, coordinating A2C2, and keeping both aviation and ground units informed of friendly locations.

LOGISTICS SUPPORT

3-106. The combination of the nonlinear battlefield and the diversity of the UEx AVN BDE's battalions often require that FARPs and maintenance teams operate simultaneously at different locations. Establishment and resupply operations require careful planning and coordination. When possible, these activities should be part of the mission rehearsal.

SECTION V – TACTICAL STANDING OPERATING PROCEDURES CONSIDERATIONS

GENERAL

3-107. SOPs detail how forces execute specific techniques and procedures that commanders standardize to enhance effectiveness, timeliness, and flexibility. Commanders use SOPs to standardize routine or recurring actions that normally do not require their personal involvement. They develop SOPs from doctrinal sources, applicable portions of the higher headquarters SOPs, higher commander’s guidance, and techniques and procedures developed through experience. The tactical SOP must be as complete as necessary but not so voluminous that new arrivals or newly attached units cannot quickly become familiar with the routine of their new controlling headquarters.

BENEFITS

3-108. The benefits of SOPs include the following:

- Simplified, concise combat orders.
- Enhanced understanding and teamwork among commanders, staffs, and units.

- Established, synchronized staff drills.
- Established, abbreviated, or accelerated decision making techniques.

RESPONSIBILITY

3-109. The S3, with input from other staff sections, is responsible for preparing, coordinating, authenticating, publishing, and distributing the command's tactical SOP.

PRINCIPLES

3-110. Discussed below are some of the principles common to successful tactical SOPs.

SIMPLICITY

3-111. Simple, easy-to-read and easy-to-execute procedures are critical to tactical SOP application. Critical items of procedure should be presented in as few words and graphics as possible. Task organization changes can occur rapidly, but effective task organization requires each of the units attached or placed under OPCON to be able to operate with efficiency. A 200-page SOP is a daunting document to absorb when the unit is attached in the morning for an operation that afternoon.

DOCTRINE

3-112. A tactical SOP cannot deviate from doctrine. The more a tactical SOP parallels doctrine, the easier that it will be to learn and execute.

COMMONALITY

3-113. Standardization of tactical SOPs is essential within a UEx. Attack, assault, air reconnaissance, GS, heavy helicopter, and even UAV units could have difficulty operating together unless each unit operates from a common SOP. That standardization effort should include reinforcing units and, especially, reserve component units. Just as aviation units today conduct worldwide and local standardization conferences for flight operations, units within a UEx should consider conducting tactical SOP conferences to ensure standardization of tactical procedures.

TRAINING

3-114. No tactical SOP will produce the desired results unless it is constantly reviewed and tested. The tactical SOP should be a topic in every pilot's briefing. The tactical SOP should also be a point of discussion in every OPORD and plan—and during every tactical exercise after-action review. Standardized and internalized tactical SOPs make training easier to supervise and execute while making battles less costly to win.

Chapter 4

Battle Command

The UEx aviation brigade commander and staff provide the battle command and synchronization for up to six aviation battalions and coordinate all types of aviation support for the UEx. Battle command is the exercise of command in operations against a thinking enemy. Using judgment acquired from experience, training, study, and thought, brigade commanders visualize the current state and desired end state and then formulate a concept of operation to get from one state to the other. This chapter discusses principles and concepts for command and control (C2) of the UEx aviation brigade. It is in consonance with FM 6-0, *Mission Command: Command and Control of Army Forces*, with emphasis on how the structure and capabilities of the UEx aviation brigade affect command and control.

SECTION I – GENERAL

CONCEPT OF BATTLE COMMAND

4-1. Battle command is the art of combat decision making, leading, and motivating soldiers—and their organizations—into action to accomplish missions. It involves visualizing the current and future status of friendly and enemy forces, then formulating concepts of operations to accomplish the mission. It also includes assigning missions, prioritizing and allocating resources, assessing and taking risks, selecting the critical time and place to act, and knowing how and when to make critical adjustments during the fight. Commanders must see, hear, and understand the needs of seniors and subordinates, and guide their organizations toward the desired end. The concept of battle command incorporates three vital components—decision making, leadership, and control. These components are discussed below.

DECISION MAKING

4-2. Decision making is about knowing whether to decide, then when and what to decide. These are tactical and operational judgments, but can be strategic judgments. To command is to:

- Anticipate the activities that will be put into motion once a decision is made.
- Know how irretrievable some commitments will be once put into motion.
- Know the consequences of deciding.
- Anticipate the outcomes that can be expected from implementing a decision.

LEADERSHIP

4-3. Leadership is taking responsibility for decisions. It is loyalty to subordinates and seniors, inspiring and directing assigned forces and resources toward a purposeful end, and establishing a teamwork climate. The climate should produce success and demonstrate moral and physical courage in the face of adversity. It also provides the vision that both focuses and anticipates the future course of events.

4-4. "The duty of every leader is to be competent in the profession of arms. Competence requires proficiency in four skill sets: interpersonal, conceptual, technical, and tactical. Army leaders hone these skills through continual training and self-study"[1].

CONTROL

4-5. Control is inherent in battle command. Control monitors the status of organizational effectiveness. It identifies deviations from standards and corrects them. Control provides the means to regulate, synchronize, and monitor forces and functions. These tasks are performed through collection, fusion, assessment, and dissemination of information and data.

4-6. Commanders control operations. Commanders lead from critical points on the battlefield, delegate authority, allocate resources, and synchronize aviation actions with other battlefield operations. Skilled staffs work within command intent to direct and control units. Skilled staffs resource allocations to support the desired end.

SECTION II – COMMAND AND CONTROL

4-7. Commanders base decisions on the information derived from the C2 process, consisting of the following:

- Acquire information.
- Assess whether new actions are required.
- Determine what these actions should be.
- Direct subordinates to take appropriate actions.
- Supervise and assess.

4-8. Effective and efficient C2 is a process that begins and ends with the commander. The commander must develop techniques and procedures that promote an expeditious flow of information throughout the entire C2 process. These techniques and procedures should be in the unit's tactical SOPs. FMs 6.0 (101-5) and 1-02 (101-5-1) provide various techniques.

BATTLE COMMAND ON THE MOVE

4-9. Battle command on the move (BCOTM) is the ability to lead soldiers and command all elements of combat power by shaping and sustaining decisive actions seamlessly while anywhere on the battlefield. Commanders must synchronize those elements in close combat from any vantage point on the battlefield. The ability to reposition rapidly as the situation develops enables commanders to better see the battlefield and be at the critical point at the critical time.

4-10. With networked, digital, C2 systems, commanders and staffs can assimilate significantly greater amounts of data, faster and with greater clarity. Battlespace is limited only by a commander's ability to acquire and engage the enemy and to maintain control of his own fighting forces.

4-11. BCOTM is different than mobile C2 and is able to perform the following functions:

- See and understand the common operational picture (COP).
- Direct and control maneuver operations.

- Control direct/indirect fires and effects.
- Monitor enemy and intelligence activities.
- Synchronize forces.
- Direct reconnaissance/counter-reconnaissance operations.
- Execute OPORDs.
- Issue fragmentary orders (FRAGO).
- Receive and render reports.

COMMAND AND CONTROL SYSTEM

4-12. The C2 system is defined as the facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces.

4-13. The Army Battle Command System (ABCS) provides the electronic architecture in which we build the common operational picture. Signal planning increases the commander's options by providing the requisite signal support systems for varying operational tempos. These systems pass critical information at decisive times; thus, they leverage and exploit tactical success and make future operations easier. Appendix C contains additional information on ABCS. The three levels of ABCS are:

- Global Command and Control System—Army (GCCS-A).
- Army tactical command and control system (ATCCS).
- Force XXI Battle Command Brigade and Below (FBCB2).

4-14. Joint forces—ground and air—must be able to operate aerial vehicles and weapons systems within shared airspace with maximum freedom consistent with priorities, the degree of operationally acceptable risk, and the joint force commander's intent. The Army Airspace Command and Control (A2C2) system is the airspace management component of the army air ground system (AAGS). It outlines the Army's integration of airspace usage and C2 within the framework of the theater air-ground system (TAGS). These systems, in whole or in part, are placed in each echelon from maneuver battalion to numbered army. FM 3-52 and Appendix F provide more information.

4-15. The C2 system gives the commander structure and means to make and convey decisions and to evaluate the situation as it develops. The decisions and higher-level intent are then translated into productive actions. The decisions are based on the information derived from the C2 process, which consists of the following:

- Acquire information.
- Assess whether new actions are required.
- Determine what these actions should be.
- Direct subordinates to take appropriate actions.
- Supervise and assess.

COMMAND AND SUPPORT RELATIONSHIPS

4-16. Command and support relationships are fundamental to aviation operations. Table 4-1 depicts relationships and responsibilities.

COMMAND RELATIONSHIPS

4-17. Command relationships are assigned, attached, OPCON, or TACON. An AVN BDE unit is attached only to a unit that can support its logistics needs. The aviation unit is placed under OPCON or TACON when it is to be used for a specific mission, the effective time of the relationship is short, or the gaining unit is unable to provide logistics support. Normally, the parent headquarters retains control of the aviation unit.

4-18. Aviation units are traditionally OPCON or attached when operating outside the brigade. At the UEx level, units are placed under OPCON of other units to support ground operations. When operating as part of a task force or augmenting another unit for an extended period of time, the unit will be attached.

Assigned

4-19. Assignment is the placement of units or personnel in an organization where such placement is relatively permanent. The organization controls and administers the units or personnel for the primary function, or greater portion of the functions, of the unit or personnel.

Table 4-1. Command and Support Relationship to Inherent Responsibility

If Relationship is		Inherent Responsibilities are:							
		Has command relationship with:	May be tasked-organized by:	Receives CSS from:	Assigned position or AO by:	Provides liaison to:	Establishes / maintains commo with:	Has priorities established by:	Gaining unit can impose further command or support relationship of:
Command	Attached	Gaining unit	Gaining unit	Gaining unit	Gaining unit	As required by gaining unit	Unit to which attached	Gaining unit	Attached; OPCON; TACON; GS; DS
	OPCON	Gaining unit	Parent unit and gaining unit: gaining unit may pass OPCON to lower HQ Note 1	Parent unit	Gaining unit	As required by gaining unit	As required by gaining unit and parent unit	Gaining unit	OPCON; TACON; DS; DS
	TACON	Gaining unit	Parent unit	Parent unit	Gaining unit	As required by gaining unit	As required by gaining unit and parent unit	Gaining unit	GS; DS
	Assigned	Parent unit	Parent unit	Parent unit	Gaining unit	As required by parent unit	As required by gaining unit	Parent unit	Not applicable
Support	DS	Parent unit	Parent unit	Parent unit	Supported unit	Supported unit	Parent unit; supported unit	Supported unit	Note 2
	GS	Parent unit	Parent unit	Parent unit	Parent unit	As required by parent unit	As required by parent unit	Parent unit	Not applicable
Note 1: In NATO, the gaining unit may not task organize a multinational unit.									
Note 2: Commanders of units in DS may further assign support relationships between their subordinate units and elements of the supported unit after coordination with the supported commander.									

Attached

4-20. Attached is the placement of units or personnel in an organization where such placement is relatively temporary. Subject to limitations imposed by the attachment order, the commander of the unit receiving the attachment provides sustainment support above its organic capability. Normally, the parent unit has responsibility for transfers, promotion of personnel, nonjudicial punishment, courts martial, and administrative actions.

Operational Control

4-21. OPCON is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. OPCON may be delegated. It includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. OPCON normally provides full authority to organize commands and forces and to employ those forces as the commander considers necessary to accomplish assigned missions. OPCON does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

Tactical Control

4-22. TACON is the command authority that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. TACON is inherent in OPCON. TACON may be delegated. TACON allows commanders to apply force and direct the tactical use of logistics assets but does not provide authority to change organizational structure or direct administrative and logistical support.

SUPPORT RELATIONSHIPS

4-23. The support relationships of utility and heavy helicopter assets are direct support (DS) and general support (GS). Specific definitions and missions are listed below.

Direct Support

4-24. DS is a mission requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance. A unit assigned a DS relationship retains its command relationship with its parent unit, but is positioned by and has priorities of support established by the supported unit. Assault and heavy helicopter units will often be placed in a DS role for air movement operations, particularly logistics movement. When operating in a DS role, the missions can be coordinated directly between the aviation unit and the supported unit.

General Support

4-25. GS is the support that is given to the supported force as a whole and not to any particular subUEx thereof. As an example, assault helicopter units assigned at UEy levels may be placed in GS to several units within the theater or UEy. These units will receive missions from their parent headquarters based upon support priorities established by theater and UEy commanders. When operating in a GS role, the supported unit must request aviation support from the appropriate headquarters (UEx G3 for UEx aviation assets, UEy G3 for UEy aviation assets).

SECTION III – PLANNING

4-26. The aviation brigade is the first echelon at which the synchronization of all aspects of Army Aviation operations occurs. It possesses the staff expertise for battle command, planning and coordination, and the necessary logistical support for force tailoring all types of aviation units and execution of all the core competencies of aviation.

4-27. Aviation operations are inherently combined arms operations. Since aviation battalions are principally focused in a particular functional area, such as lift or recon/attack, brigades will continue to be required to conduct full spectrum planning and to synchronize and orchestrate operations of different types of aviation battalions.

4-28. The aviation battalion/squadron, as the principal fighting component of the brigade, is optimized for the conduct and support of tactical operations. It contains the first level of staff planning, integration, coordination, and sustainment for aviation in joint or combined arms operations; and is normally the lowest level aviation unit that operates independently or autonomously for any extended period of time, and then only with required support from the parent brigade, especially if task organized. The company, as the primary fighting component of the battalion, is the basic building block of aviation and is also optimized for offensive actions.

4-29. The AVN BDE develops its OPLANs as an integral part of its higher headquarters staff, at its own headquarters, or both.

PLANNING AT THE BRIGADE'S HIGHER HEADQUARTERS

4-30. The major advantage of the AVN BDE assisting the higher headquarters staff in the development of the overall plan is that it saves time. The intelligence situation and air tasking order (ATO) changes and restrictions are immediately available to all planners. Additionally, because aviation expertise is involved throughout the planning process, it ensures that aviation-related issues are resolved concurrently with plan development. All of the above preclude the time-consuming queries associated with planning at different locations, thus saving critical time in developing and distributing the required orders to execute the plan.

PLANNING AT THE AVIATION BRIGADE HEADQUARTERS

4-31. In addition to planning for operational missions, the AVN BDE must ensure the myriad details of aviation operations are also accomplished. Those details are planned, coordinated, and rehearsed concurrently with OPLAN development. Examples of ongoing preparation include:

- Task organization actions, such as unit movements or exchange of liaison personnel.
- Airspace C2 coordination.
- Theater air-ground system (TAGS), airspace control order (ACO), Air Tasking Order (ATO), and special instructions (SPINS).
- Selected rehearsals and training.
- Forward Arming and Refueling Point (FARP) movement, composition, and emplacement.
- Maintenance support movement, composition, and emplacement.
- Weather checks and analysis.
- Passage of lines planning.
- AD status.
- Ammunition availability.
- External fuel tank distribution and management.
- Internal configuration of utility and cargo aircraft.
- Communications planning.
- Aircraft Survivability Equipment (ASE) requirements and settings.
- Identification friend or foe (IFF) procedures and Mode 4 settings.

- PR planning.
- Brigade assembly area (AA) management.

4-32. Planning becomes more complicated for air assaults, insertions/extractions, and mobile strikes in deep areas. Operations beyond friendly lines involve extended distances and tremendous speed of execution. This may involve deep penetrations, wide sweeps, and bypassing enemy forces and terrain obstacles, usually at night. To react quickly to intelligence on hostile forces, planning and execution must keep pace with the accelerated attack tempo, maximizing surprise to ensure effective execution at the decisive place and time.

MILITARY DECISION MAKING PROCESS

4-33. To effectively plan and coordinate missions, the commander and staff follow the MDMP (Figure 4-1). Staff planners must focus on the previously listed aviation planning considerations to formulate a complete plan. Because of the inherent complexity, regular MDMP exercises are essential prior to deployment. FM 5-0 (101-5) discusses the process in detail.

4-34. The dynamic battlefield often does not allow a complete MDMP due to time constraints. The commander and staff must know current operational readiness in order to assess feasibility of mission requests immediately.

4-35. The steps of an abbreviated MDMP are the same as those for the full process; however, the commander performs many of them mentally or with less staff involvement. The commander may direct a COA based on experience to expedite planning. The products developed during an abbreviated MDMP may be the same as those developed for the full process; however, they are usually less detailed. Some may be omitted altogether. Unit SOPs should address how to abbreviate the MDMP based on the commander's preferences.

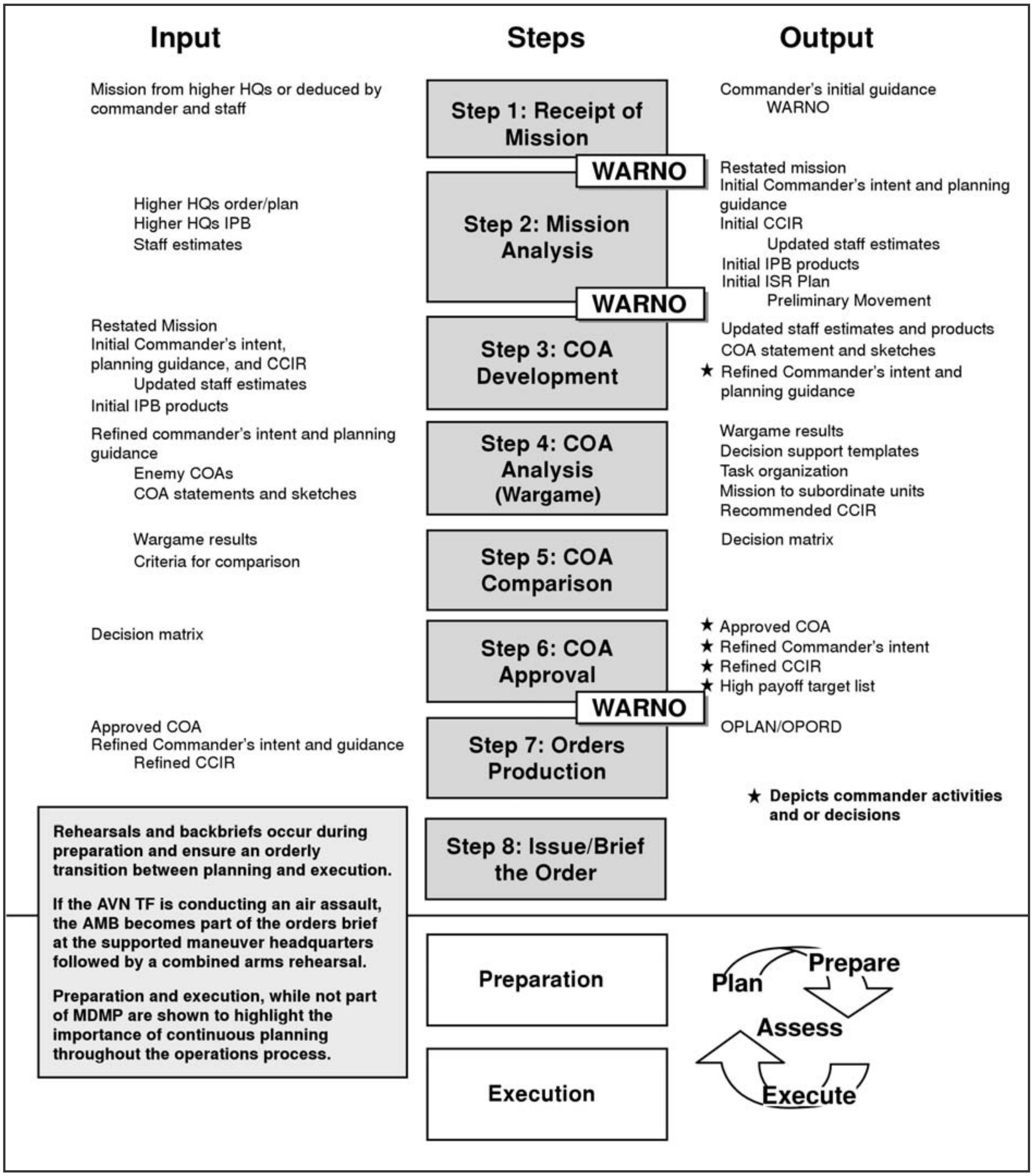

Figure 4-1. The Military Decision Making Process

TROOP LEADING PROCEDURES

4-36. Although the MDMP is essential to accomplish the mission, effective troop leading procedures (TLP) are equally important. Commanders with a coordinating staff use the MDMP. Company-level and smaller units do not have formal staffs and use TLP (Figure 4-2) to plan and prepare for operations.

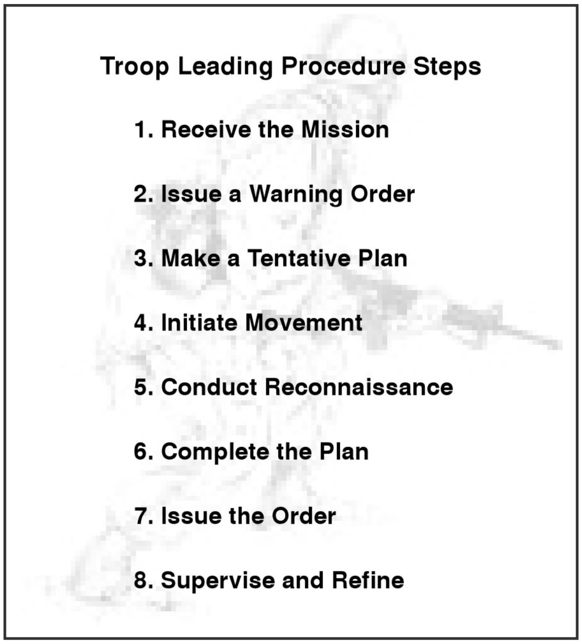

Figure 4-2. Troop Leading Procedures

4-37. TLP must be a matter of SOP and checklists within that SOP. Although quick directives can accomplish much in certain circumstances, a missed step can easily lead to mission shortfalls or failure. Written TLP steps provide a guide the leader applies in ways that are consistent with the situation, the leader's experience, and the experience of subordinate leaders.

DECIDE, DETECT, DELIVER, ASSESS METHODOLOGY

4-38. Decide, detect, deliver, and assess (D3A) methodology facilitates the attack of the right target or objective with the right asset at the right time. It was developed principally for targeting. Although D3A applies to Army Aviation, it does so in a slightly different manner. Aviation flies manned aircraft (and coordinates for UAV and other support) to a target area to deliver ordnance, and when required, conducts air assaults to achieve the desired results. For aviation, D3A is much more than targeting. The D3A process outlined below offers a method for aviation commanders to make the optimal use of the process.

Decide, Detect, Deliver, Assess Utilization

4-39. D3A is used in every aspect of mission planning. What must be accomplished may be included in the orders/directives from higher headquarters or it may fall squarely on the commander. D3A helps the commander decide what to attack, how to acquire necessary enemy information, when best to attack, and how to attack in a way that meets the higher commander's intent. Finally, it enables the commander to know whether the guidance has been met. D3A is a dynamic process. It must keep up with the changing face of the battlefield.

4-40. A high-value target (HVT) is a target the enemy commander requires for the successful completion of the mission. The loss of HVTs would be expected to seriously degrade important enemy functions throughout the friendly commander's area of interest.

4-41. A high-payoff target (HPT) is a target whose loss to the enemy will significantly contribute to the success of the friendly COA. HPTs are those HVTs, identified through war gaming, which must be acquired and successfully attacked for the success of the friendly commander's mission.

DECIDE

4-42. The decide function is the first step of the D3A process. It is based on current intelligence and helps define further intelligence development requirements. Targeting priorities must be addressed for each phase or critical event of an operation. The products developed include the high-payoff target list (HPTL). The HPTL is a prioritized list containing those targets whose loss to the enemy will contribute to the success of the friendly COA. It also includes the main targets and those targets that protect it. It provides the overall focus and sets priorities for intelligence collection, target selection standards (TSS) and attack planning. The decide function should answer the following questions:

4-43. What targets or objectives should be acquired and attacked?

- In what priority should targets or objectives be attacked?
- When and where are the targets or objectives likely to be found?
- What routes are required for Army Aviation ingress and egress?
- Who or what can locate the targets?
- How accurately must the target location be known to initiate the attack?
- What channels are needed to provide acquisition on a real-time basis?

4-44. The decide function is facilitated and supported by:

- The intelligence collection plan (which may include external assets such as Air Force, Navy, and Marine assets) that answers the commander's priority information requirements (PIR), to include those HPTs designated as PIR. At UEx level and below, an ISR plan supports the intelligence collection plan (see FM 34-2-1).
- The TSS that address target location accuracy or other specific criteria that must be met before targets can be attacked.
- The attack guidance matrix that is approved by the commander addresses which targets will be attacked, how, when, and the desired effects.

DETECT

4-45. The detect process finds the HPTs (critical enemy forces) that must be attacked to accomplish what has been decided for each phase of an operation. Target acquisition assets and agencies execute the intelligence collection plan and focus on specific areas of interest. Mobile HPTs must be detected and tracked to maintain a current target location. Target tracking is inherent to detection and is executed throughout the collection plan. Tracking priorities are based on the commander's concept of the operation and targeting priorities. The detect function should answer the following questions:

- What are the target description and its size?

- Where are the targets?
- What objective must be secured?
- What decision point should exist beyond which a target becomes an HPT?
- How long will the enemy remain in the desired target area once acquired?
- Do any ingress or egress routes have to be changed or modified?

4-46. The S2 is the main figure in directing the effort to detect the HPTs identified in the decide function. He determines accurate, identifiable, and timely requirements for collection systems. The detect function involves locating HPTs accurately enough to engage them. It primarily entails executing the intelligence collection plan.

DELIVER

4-47. The deliver function of the process executes the attack guidance and supports the commander's battle plan once the HPTs have been located and identified. Both tactical and technical decisions affect the selection of the attack systems and the units to conduct the attack. The decisions are reflected in the staff's earlier development of the attack guidance matrix, schemes of maneuver, and FS plans for planned targets. The decision to attack targets of opportunity follows the attack guidance. It is based on factors such as target activity, dwell time, and payoff compared to other targets currently being processed for engagement. The deliver function should answer the following questions:

- When should the target or objective be attacked?
- What is protecting the target and how will those targets be neutralized or destroyed?
- What is the desired effect/degree of damage?
- What attack system (aviation, artillery, other service, lethal or nonlethal) should be used?
- What unit(s), including ground forces, will conduct the attack?
- What are the number and type of munitions to be employed?
- What is the response time of the attacking unit(s)?

Attack Guidance

4-48. The staff recommends and the commander approves attack guidance, distributing it via the attack guidance matrix. The guidance should detail the when, how, desired effects, special instructions (SPINS), and required battle damage assessment BDA of the HPTL. The operations officer (S3) or fire support officer (FSO) recommends the attack system for each target. All attack assets, including ground forces, should be considered. The attack should optimize the capabilities of:

- Ground and SOF.
- Helicopters.
- Armed UAVs.
- Indirect fire assets: artillery, mortars, Naval surface fire support (NSFS).
- Combat air operations—CAS and air interdiction (AI).
- Engineers (countermobility: helicopter and artillery delivered mines).
- Air Defense (AD).
- Cruise missiles.
- Electronic Warfare (EW).
- Psychological operations (PSYOP).
- Civil affairs.
- Deception.

Attack Criteria

4-49. Effects refer to the target or objective attack criteria. The S3/FSO specifies attack criteria according to higher headquarters guidance. Target criteria should be given in quantifiable terms. Criteria may be expressed as a percentage of casualties, destroyed elements, time on target (TOT), and duration of fires, number of tubes or launchers, allocation or application of assets. If ground forces are required to achieve the desired effects, the size of force, time on the ground, extraction, and linkup plans must be determined. Additionally, the S3/FSO should identify accuracy or time constraints, required coordination, limitations on amount or types of ammunition (Table 4-2), use of ground forces, and BDA requirements.

Table 4-2. Munitions Selection

PREFERRED MUNITIONS	TYPE TARGETS
Missile, radar frequency (RF) Hellfire	Heavy armor, bunkers, cave entrances, helicopters, slow-moving FW aircraft, other hard targets. Used when minimizing exposure is essential for survival.
Missile, semi-active laser (SAL) Hellfire	Heavy armor, bunkers, cave entrances, helicopters, slow-moving FW aircraft, other hard targets. Used when a good line of sight (LOS) to target is available and to conserve RF missiles
Missile, Blast Frag Hellfire	Naval craft, MOUT targets, heavy equipment, light armor, weapon caches, and targets in a severe EO countermeasure environment. Warhead has a delay fuse with lethal fragmentation and incendiary pellets upon detonation.
Missile, Stinger	Helicopters, slow-moving FW aircraft.
Cannon, 30 mm high explosive, dual purpose	Materiel and helicopters.
Machine Gun, .50 caliber ball	Personnel, materiel, and unarmored vehicles.
Machine Gun, .50 caliber tracer	Observation of trajectory, incendiary effect, and signaling.
Machine Gun, .50 caliber, armor piercing	Light armor, concrete shelters, and similar bullet resistant targets.
Machine Gun, .50 caliber, incendiary	Hardened or armored targets to ignite flammable material.
Machine Gun, .50 caliber, armor piercing incendiary	Combined effects of armor piercing and incendiary rounds.
Machine Gun, 7.62 mm ball	Personnel and unarmored targets.
Machine Gun, 7.62 mm tracer	Observation of trajectory, incendiary effect, and signaling.
Machine Gun, 7.62 mm armor piercing	Light armor, concrete shelters, and similar bullet resistant targets.
Rocket, high explosive	Materiel, personnel, and wheeled vehicles.
Rocket, high explosive multi-purpose	Light armor, wheeled vehicles, materiel, and personnel.
Rocket, flechette	Personnel, unarmored vehicles, and helicopters.
Rocket, illumination	Battlefield illumination, shut-down of enemy night vision devices (NVD).
Rocket, white phosphorous (smoke)	Target marking, incendiary.

Danger Close

4-50. FM 3-09.32 provides risk-estimates for fixed- and rotary-winged aircraft-delivered ordnance.

4-51. Especially with rockets and guns, aviation commanders must consider aircrew proficiency when operating near ground units. FM 3-09.32 designates danger close for Army aircraft systems as:

- Hellfire, 75 m.
- Rockets, 175 m.

- Guns, 150 m.

> **WARNING**
>
> **These estimates and the resultant danger close ranges are for use in combat and are not minimum safe distances for peacetime training use. The supported commander must accept responsibility for the risk to friendly forces when targets are inside the danger close range.**

ASSESS

4-52. Combat assessment is the determination of the overall effectiveness of force employment during military operations. Combat assessment is composed of the following three major components:

- BDA.
- Munitions effectiveness assessment.
- Reattack recommendation.

4-53. BDA is the timely and accurate estimate of damage resulting from the application of military force. BDA accomplishes the following:

- Provides commanders with snapshots of their effectiveness on the enemy and an estimate of the enemy's remaining combat effectiveness, capabilities, and intentions.
- Provides essential information for determining if a reattack is required.

4-54. Munitions effectiveness assessment is conducted concurrently with BDA. It is the basis of recommendations for changes to increase the effectiveness of:

- Methodology.
- Tactics.
- Weapon system.
- Munitions.
- Weapon delivery parameters.

4-55. Reattack and other recommendations should address operational objectives relative to:

- Target.
- Target critical elements.
- Target systems.
- Enemy combat force strengths.
- Integration of the Decide, Detect, Deliver, Assess Process into the Decision Making Process

4-56. The D3A process is integrated into the unit's MDMP. As the staff develops plans for future operations, they use the D3A methodology to cross check and to ensure the synchronization of the plan.

MISSION ANALYSIS

4-57. During mission analysis, the S2 provides the HVT list that results from AVN BDE and higher headquarters analysis of the enemy COAs. The HVT list details the capabilities and limitations of each target. Additionally, each staff member reviews the assets available to acquire (detect), attack (deliver), or assess targets.

COMMANDER'S GUIDANCE

4-58. The commander issues guidance following approval of the restated mission. This guidance provides the staff an initial planning focus. The commander identifies the enemy COA considered most probable or most dangerous, along with its associated HVTs. The commander also identifies an initial focus on targets deemed critical to mission success. While issuing guidance on the scheme of maneuver, the commander issues initial attack guidance, indicating the desired effect on targets.

COURSE OF ACTION DEVELOPMENT

4-59. During the development of each COA, the staff determines the targets that, if successfully attacked, would contribute to the success of the mission. Forces are arrayed to acquire and attack these tentative HPTs to meet the commander's guidance.

COURSE OF ACTION ANALYSIS AND COMPARISON

4-60. The staff analyzes the COAs by risk assessment, war gaming, and a comparison of the war game results. During war gaming the staff prioritizes the HPTs and determines which assets are available to acquire the targets (this becomes the basis for the S2's ISR plan). The staff also determines which attack mechanisms are available to achieve the desired effects on the target. Target Selection Standards (TSS) are determined to identify the time and accuracy requirements necessary to destroy HPTs. Additionally, war gaming establishes the criteria for a successful attack, actions to achieve BDA, and reattack options. During COA comparison the staff can use the COA's ability to achieve the commander's attack guidance as a criterion. The results of the war gaming are reflected in the development of the initial targeting synchronization matrix.

RISK MANAGEMENT

4-61. Risk management provides a formalized, systematic tool to help commanders identify and assess hazards then implement controls to reduce or eliminate risks during operations planning and execution. It is imperative that commanders integrate risk management into all phases of the MDMP and TLPs. Controlling hazards protect the force from unnecessary risks. Eliminating unnecessary risks opens the way for audacity in execution, thus preserving combat power. Risk management is a five step process outlined below and explained in detail in Appendix J and FM 100-14.

IDENTIFY HAZARDS

4-62. A hazard is an actual or potential condition that can result in injury, illness, death, damage, or loss of equipment or property and mission degradation. Focus on those hazards most likely to be encountered for the operational mission and environment.

ASSESS HAZARDS

4-63. Examine each hazard in terms of probability and severity to determine the risk level of one or more hazards that can result from exposure to the hazard. The result is an estimate of risk from each hazard and an estimate of the overall risk to the mission that cannot be eliminated.

Develop Controls and Make Risk Decisions

4-64. After assessing each hazard, develop one or more controls to either eliminate the hazard or reduce the risk, (probability and/or severity), of a hazard. Then compare and balance the residual risk against mission expectations. A key element of the risk decision is determining if the risk is justified. The individual with the appropriate level of responsibility must decide if the controls are sufficient and acceptable and whether to accept the resulting residual risk. If the risk level is determined to be too high, he must develop additional controls or alternate controls, or modify, change or reject the COA.

Implement Controls

4-65. Controls are integrated into SOPs, written and verbal orders, mission briefings, and staff estimates. The critical check for this step, with oversight, is to ensure that controls are converted into clear, simple execution orders understood at all levels.

Supervise and Evaluate

4-66. Supervise mission rehearsal and execution to ensure standards and controls are enforced. Techniques may include spot-checks, inspections, situation reports, brief-backs, buddy checks, and close supervision. Continuously monitor controls to ensure they remain effective, and modify controls as necessary. Anticipate, identify, and assess new hazards to implement controls. Continuously assess variable hazards such as fatigue, equipment serviceability, and the environment. Modify controls to keep risks at an acceptable level.

AVIATION MISSION PLANNING SYSTEM

4-67. AMPS is an automated mission planning and synchronization tool designed specifically for aviation operations. Generally, it is used in the flight planning sections or tactical operations center (TOC) operations cells of AVN BDEs, battalions, and companies. AMPS functions include tactical planning, mission management, and maintenance management.

Aviation Mission Planning System Tactical Planning Function

4-68. The tactical planning function includes brigade and battalion level planning tasks, such as intelligence data processing, route, communications, and navigation planning. This facilitates review and preparation of the air mission brief. Additional AMPS uses are:

- Detailed terrain analysis.
- Determining LOS and intervisibility between a BP and an engagement area (EA).
- Determining prominent terrain along the route to be flown, using the perspective view feature.
- Creation and distribution of graphics.

4-69. Each of the Brigade Aviation Elements (BAEs) and the LNOs supporting the UEx main and tactical CPs have an AMPS available to assist COA development and war gaming during the MDMP, reverse-planning and coordination. During air assaults, the ground maneuver air assault task force (AATF) staff can exploit AMPS to simplify preparation of the landing plan, air movement plan and loading plan. The brigade may employ AMPS to plan shaping operations and integrate aviation routes with other deep joint suppression of enemy air defense (J-SEAD) and shaping fires.

4-70. Because BAE, AVN BDE, and battalion and below planners have AMPS access, planning can occur concurrently. Planners can use AMPS to pass AVN BDE and ground maneuver planning to lower echelons to update their plans. The orders function of AMPS assists operation order (OPORD), warning order (WARNO), and FRAGO development and distribution to lower echelons. This facilitates the passing of up-to-date information and changes from higher headquarters and supported units.

4-71. The mission management function also facilitates company and platoon level planning. These tasks include aircraft performance planning, weight and balance calculations, flight planning, and fighter management. The tasks also include OPLAN changes and OPORD development. It helps companies and platoons conduct rehearsals using the route visualization and intervisibility features of AMPS.

AVIATION MISSION PLANNING SYSTEM MISSION MANAGEMENT FUNCTION

4-72. AMPS and maneuver control system (MCS) work together as complementary systems. During the mission, MCS receives enemy locations, friendly locations, preplanned artillery locations, and forecast weather and transfers data to AMPS. AMPS applies the technical characteristics of the aircraft (speed, range, and payload) to give the commander mission alternatives.

4-73. When mission changes occur, commanders at all echelons can direct staffs to employ AMPS to speed the development of revised plans and new FRAGOs. This can involve new and alternate routes to a changing EA or objective of air assaults.

4-74. As one phase of a mission completes, the download of aircraft data into AMPS and subsequently MCS, can assist development of intelligence for higher echelons and staffs planning follow-on missions.

AVIATION MISSION PLANNING SYSTEM MAINTENANCE MANAGEMENT FUNCTION

4-75. The maintenance management function primarily assists unit level maintenance. This function permits post-mission downloading of aircraft data by maintenance personnel.

AVIATION MISSION PLANNING SYSTEM DATA

4-76. Aviation units may save AMPS data on a data transfer cartridge (DTC) and use it to upload mission data to the aircraft via the data transfer module (DTM). Data created at battalion level is given to the company for its own detailed planning down to platoon level. Printed output products can include weight and balance forms, strip maps, flight planning data, OPORDs, route navigation, and communications cards. After mission completion, aircrews use the DTC to download mission history to AMPS. Units can transfer AMPS post-mission products, such as enemy locations and BDA, to MCS to update the tactical situation. Aviation units also can employ AMPS, with a tactical communication interface module (TCIM), to view video cross link (VIXL) imagery sent from the OH-58D. Video imagery sent using VIXL requires the transmitting aircraft to address the image directly to a specific AMPS.

AVIATION MISSION PLANNING SYSTEM MAPS

4-77. AMPS can generate maps, created from a compressed ARC/ART digitized raster graphic (CADRG) and digital terrain elevation data (DTED) media available from the National Geospatial-Intelligence Agency (NGA) databases. Digitally-cut compact discs-read only memory (CD-ROMs) store maps for a particular AO for ready transfer to floppy disks, compact discs rewritable (CD-RWs) or the AMPS hard drive. Units can maintain and organize different AO databases or various scale maps on floppy disks.

AVIATION MISSION PLANNING SYSTEM LIMITATIONS

4-78. Because nearly all Army aircraft employ different DTCs, a single AMPS planning database cannot fill the DTCs for all aircraft types involved in any given mission. Units may employ a local area network (LAN), CD-RW, or floppy disc to transfer the planning database of one AMPS to another. Once this database transfers, the gaining AMPS operator can modify the data to fit the specific aircraft and use that aircraft's DTC to download mission information.

4-79. Crews are only able to transfer data in flight via joint variable message format (JVMF) message to the aircraft improved data modem (IDM), for those aircraft outfitted with this capability.

BATTLE RHYTHM

4-80. Battle rhythm is a term that describes a process essential to effective and efficient battle staff operations. Successful continuous operations require a tactical SOP that covers the management of rest, especially for critical personnel. For the purposes of describing the aspects of that requirement, the commonly accepted term battle rhythm is used.

4-81. The cycle of recurring events within a CP focuses staff members to meet information and action requirements. These recurring events include:

- Shift changes.
- Targeting meetings.
- Reports.
- Battle updates without the commander.
- Battle update briefings.
- Commanders' collaborative sessions.
- Battle captain collaborative sessions.

4-82. The staff must achieve a battle rhythm for updating and viewing information and understand how to use it to affect operations. A well-established battle rhythm will aid the commander and staff with CP organization, information management and display, decision making, and fighting the battle. Battle rhythm demands careful planning and design. The many competing demands must be deconflicted. Even subordinate units affect a higher echelon's battle rhythm based on their needs and unit procedures.

4-83. Command discipline is required to enforce sleep cycles and create an environment where sound sleep can be achieved. Battle rhythm and associated planning is a proactive, not reactive, exercise.

OPERATIONAL TEMPO AND BATTLE RHYTHM

4-84. The AVN BDE should be staffed for 24-hour operations; however, it also conducts cyclical missions. SOPs establish methods of ensuring the right personnel are available for either cyclical or 24-hour operations. Regardless of the methods used, practice during exercises must determine the strengths and weaknesses of each shift. Such knowledge allows leaders to focus on the critical areas that require additional training.

4-85. In planning, the brigade staff must consider the battle rhythm requirements of subordinate battalions. Depending on the situation, the brigade may schedule missions that allow battalion or company rotations to maintain their battle rhythm.

Absence of Battle Rhythm

4-86. Without the procedures to establish battle rhythm, leaders and units reach a point of diminished returns. This typically occurs between 72-96 hours of operations. As leader fatigue sets in, information flow, the planning process, execution, and logistics resupply operations suffer—often greatly. Symptoms of diminished battle rhythm include:

- Leader fatigue.

- Leaders who are not fully aware of critical DPs.
- Leaders who are not available at critical DPs.
- Disjointed timelines between various levels of command.

Presence of Battle Rhythm

4-87. Battle rhythm allows units and leaders to function at a sustained level of efficiency for extended periods. Effective battle rhythm permits an acceptable level of leadership at all times. It can focus leadership at critical points in the fight or during particular events. Procedures and processes that facilitate efficient decision making and parallel planning are critical to achieving battle rhythm. Every component of battle rhythm makes unique contributions to sustained operations.

Training

4-88. It is difficult, if not impossible, to establish battle rhythm while simultaneously conducting operations. Preplanning makes it happen. Planning, preparing, and training before deployment lays a solid foundation for a viable battle rhythm during operations.

Battle Rhythm Elements

4-89. Battle rhythm is a multifaceted concept that includes the following elements:

- Sleep/rest plans.
- Trained second and third-tier leadership in CPs and administrative and logistics operations centers (ALOC).
- Synchronized multi-echelon timelines.
- Parallel planning.
- Established processes and SOPs.

Staff Depth

4-90. Established processes and SOPs relieve many antagonistic effects of extended operations. SOPs that establish and maintain battle rhythm by facilitating routine decisions and operations are a step in the right direction. Soldiers who are trained to do the right things in the absence of leaders or orders can relieve commanders and staff of many of the time-consuming tasks that rob them of essential rest. Examples of areas that noncommissioned officers (NCOs) and junior officers can accomplish for the commander and staff include

- Battle summaries and updates during a fight.
- Intelligence updates before, during, and after a battle.
- CSS updates before, during, and after a battle.
- Updates to the next higher commander.
- Shift change briefings.

Challenges to Battle Rhythm

4-91. Challenges to battle rhythm include NCO, junior officer, and field grade duties; synchronization of planning, execution, rehearsal timelines, and sleep plans.

Noncommissioned Officer and Junior Officer Responsibilities

4-92. NCOs and junior officers can provide valuable contributions to operations. However, when NCOs and junior officers manning CPs and ALOCs are sometimes relegated to menial tasks, such as CP/ALOC security and TOC setup and teardown, they contribute little to the tactical missions. The improper use of personnel produces the following results:

- Key leaders become exhausted.
- Battle staff trained NCOs fade into obscurity during operations.
- The initiative of trained subordinates is stifled, and the incentive to train is diminished.

4-93. The following techniques ensure proper use of personnel:

- Appropriate tasks are assigned to junior NCOs and specialists.
- Effective training and SOPs will instill trust in the officers and confidence in junior NCOs and specialists.
- Instill trust in the officers and confidence in junior NCOs and specialists through effective training and SOPs.
- Examine field grade officer duties to ensure that they are not tasked with taking spot reports (SPOTREP), updating maps, or manning the CP during non-critical times.

Continuous Operations and Timelines Synchronization

4-94. Timelines for the operation at hand must consider 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 a brigade rehearsal that conflicts 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 SOPs that include planning, rehearsal, and execution timelines two levels below brigade prevents these conflicts.

Sleep Plans

4-95. Units must develop detailed rest plans and enforce them. Leaders must rest to maintain their effectiveness; however, some leaders attempt to get involved in every aspect of planning and execution. This phenomenon is 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 that leaders have confidence in the second and third echelon of leadership and their ability to make routine decisions.
- Instill trust and confidence in the officers, junior NCOs, and specialists by effective training and SOPs.
- Consider contingencies and establish criteria for waking leaders.
- Post sleep plans in CPs.
- Synchronize sleep plans with higher and subordinate headquarters.

STANDING OPERATING PROCEDURES UTILIZATION

4-96. SOPs must be practiced and reviewed during professional development and sergeants' time. The existence of an 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 that each step is considered even when leaders are exhausted.

SECTION IV – REHEARSALS

GENERAL

4-97. A rehearsal is essential for success in operations. Appendix F, FM 6.0 (101-5) contains a discussion of rehearsal types, techniques, responsibilities, and conduct. Items critical to aviation operations are discussed below.

4-98. Once commanders are satisfied that personnel understand the concept of operation and commander's intent, they must rehearse the plan. The rehearsal cannot become the brief to commanders. The purpose is to validate synchronization; the what, when, and where of subordinate units' tasks to execute the commander's intent.

4-99. Rehearsal types include:

- Confirmation brief.
- Backbrief.
- Combined arms rehearsal.
- Support rehearsal.
- Battle drill or SOP rehearsal.

4-100. Rehearsal techniques, in order of detail, include:

- Full dress rehearsal.
- Reduced force rehearsal.
- Terrain model rehearsal.
- Sketch map rehearsal.
- Map rehearsal.
- Network rehearsal.

4-101. Although a full dress rehearsal is preferred, a terrain model rehearsal is the most common technique. The terrain model must represent the unit's area of influence (AI) and be large enough for participants to traverse easily. An effective rehearsal is dependant on an accurate terrain model, complete with key terrain features, relief, obstacles, and unit positions (friendly and enemy) correctly portrayed. A standardized terrain model kit is an effective tool to reduce setup time.

4-102. Rehearsals are accomplished at all levels. They may be conducted separately at each echelon, in one large rehearsal, or using a combination of the two. An appropriate large rehearsal would be an operation in a deep area or cross-forward line of own troops (FLOT) air assault. An appropriate by-echelon rehearsal would be normal support to daily operations. Rehearsals are as detailed as time and resources permit. They may be a series of full-up, live-fire rehearsals or as simple as a quick review on the map. All rehearsals must include reviewing or conducting:

- Actions on the objective.
- Maneuver, movement, and fires.
- Critical event rehearsals.
- Contact drills en route.
- Contingencies.

REHEARSAL SEQUENCE AND ATTENDANCE

4-103. Rehearsals follow a script and proceed in the action, reaction, counteraction sequence. Elements of the script include:

- Agenda.

- Attendee response sequence to actions.
- Unit actions response checklist (standardized format).
- Sequence of events.

4-104. Rehearsals should start at the objective. One major reason for starting at the objective is time. If time becomes critical during the rehearsal, then the most critical part of the mission must be given adequate attention. Rehearsals must include a representation of the enemy and should cover:

- Actions on the objective.
- Enemy positions and disposition.
- Friendly scheme of maneuver/ground tactical plan.
- Actions on contact.
- Passage of lines.
- En route and return route plans.
- Loading plan (ammunition for attack and reconnaissance; troops, cargo, and equipment for assault).
- CASEVAC procedures.
- In-stride downed aircrew recovery procedures.
- Contingency plans (change of mission, aircraft equipment malfunction).

4-105. All critical members of the units should attend. Critical members are those who have key parts in the operation and whose failure to accomplish a task could cause mission failures.

REHEARSAL QUESTION RESOLUTION

4-106. The brigade commander and staff may conduct the rehearsal or observe it. Regardless, detailed questions serve to ensure that the units who will execute the mission thoroughly understand it, and that the brigade has accomplished its planning. The following questions are examples of critical questions that should be answered during the rehearsal:

- Contingency drills at the objective. What if the enemy does this? Or that?
- Who is responsible for calls for fire? Whom do they call?
- Who provides rear or flank security?
- Who collects and sends spot reports? Whom do they call, and on which net?
- Who initiates fires for the attack?
- Who is talking to the Air Force for JAAT operations?
- Who coordinates with the ground force commander?
- Who confirms all call signs, nets, and authenticators?
- What radio calls (digital and voice) are required during the operation?
- What are the success criteria, and how do we know if they have been met?
- What are the mission criteria, and who makes that decision?
- What are the divert criteria, and who makes that decision?
- What are the in-stride downed aircrew procedures?
- What are the CASEVAC procedures?
- What are the ROE? Review scenarios to ensure understanding.
- What are the ASE requirements and settings?
- Who makes BDA reports, to whom, and when?

CONFLICT RESOLUTION AT THE REHEARSAL

4-107. Conflicts may arise during a rehearsal. The commander must ensure conflicts are resolved and the rehearsal does not become a war game. War gaming should have been accomplished during the planning process. The rehearsal ensures that all members of the unit understand their roles and how they contribute to success. It is not the time to develop a new plan.

ADDITIONAL REHEARSALS

4-108. Subordinate battalions conduct similar rehearsals following orders generation, focusing on unit-specific missions and considerations. Other rehearsals found at the brigade and battalion level are the air assault rehearsal, communications exercise (COMMEX), fires rehearsal, and logistics rehearsal.

AIR ASSAULT REHEARSAL

4-109. Elements of the brigade staff may participate in rehearsals conducted by an air assault task force (AATF). Sections of the rehearsal that the brigade may perform include the air movement plan, landing plan, ground tactical plan, and extraction plan. It is designed to ensure synchronization of all efforts. The brigade commander and staff may execute subsequent rehearsals of brigade specifics of each assault phase with key personnel.

COMMUNICATIONS EXERCISE

4-110. The COMMEX should mirror the signal requirements of the mission. The COMMEX ensures assignment of nets, equipment capabilities, range, retransmission requirements, and COMSEC requirements. All elements participating in the mission participate in the COMMEX. Use of a common communications card for a quick reference guide to frequencies and call signs is highly recommended.

REHEARSAL COMPLETION

4-111. At the end of any rehearsal the commander should receive correct responses from every member present about the:

- Mission/actions at the objective.
- Commander's intent.
- Timetable for mission execution.

SECTION V – END OF MISSION DEBRIEFING AND AFTER ACTION REVIEW

MISSION DEBRIEF

4-112. Mission debriefs should be conducted as soon as practical upon completion of the mission. All personnel who participated in the mission should attend. The mission debrief should focus on all phases of mission planning and execution and how to improve upon each aspect of the operation.

AFTER ACTION REVIEW

4-113. An AAR is a structured review process of an event, focused on performance standards, that enables soldiers to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses. It is a tool that leaders and units can use to obtain maximum benefit from every mission or task. The AAR consists of four parts:

- Review what was supposed to happen (training plan).
- Establish what happened.
- Determine what was right or wrong with what happened.
- Determine how the task should be done differently next time.

4-114. Unit AARs focus on individual and collective task performance, and identify shortcomings and the training required to correct deficiencies. AARs with leaders focus on tactical judgment. These AARs contribute to leader learning and provide opportunities for leader development. AARs with trainers, evaluators, OCs, and OPFOR provide additional opportunities for leader development. See FM 7-1 (25-101) for more information

SECTION VI – BRIGADE COMMAND AND CONTROL FACILITIES

GENERAL

4-115. CPs throughout the brigade serve the C2 needs of the commander and staff. The dynamics of the battlefield require the highest level of organizational and operational efficiency within every CP. C2 facilities include:

- Command group
- Main Command Post
- Tactical Operations Center (TOC)
- Tactical CP (TAC)
- Brigade HQ Support Area
- ALOC
- Alternate CP.
- Subordinate unit CPs.

EMERGING COMMAND AND CONTROL SYSTEMS

4-116. The introduction of automated systems will minimize the time required for administrative and operational processing of information. Whether manual or automated, C2 systems must accurately:

- Depict the situation (friendly, enemy, non-combatant).
- Depict readiness status of friendly units.
- Provide data verification and audit trails.
- Provide other information, as required.

Digitized Challenges

4-117. As digitized systems are fielded, C2 nets and procedures will change. The challenge will be to integrate those changes and train to standard to ensure that the increased capabilities of new systems are maximized. This requires focused initial training and sustainment training.

Command and Control Warfare

4-118. Confronted by overwhelming combat power, the enemy often resorts to asymmetric responses to offset our advantages. For example, potential adversaries may attempt to counter U.S. advantages in precision firepower with a focused attack on C4I systems. Advanced jamming systems may be used from ground and airborne platforms or emplaced by artillery. Electromagnetic pulse (EMP) effects are sufficient to disable electronic components at tactical ranges and make protection of sensitive electronic components difficult. Direction finding and emitter location equipment are improving and are available worldwide. As these technologies advance, signature reduction and electronic deception become increasingly critical. An adversary can threaten digital systems in three fundamental ways:

- Compromises data by gaining access to sensitive or classified information stored within information systems.
- Corrupts data by the alteration of electronically stored or processed information so that it becomes misleading or worthless.
- Disruption of operations by destruction, damage, or delays (physically or electronically).

4-119. Threats include spoofing, electronic attack, signals intelligence, technical attack, directed energy, malicious code (viruses), physical destruction, and unconventional warfare. Individually or collectively, these threats can distort the picture of the battlefield. They can affect tempo, lethality, survivability, and battlefield synchronization. All can affect the mission performance.

Traditional Tactics, Techniques, and Procedures

4-120. Digitized units must be able to operate in various stages of system degradation. Digital communications interruptions caused by enemy asymmetric attacks and system failures can adversely affect Army Battle Command (ABCS) subsystems. Degradation of digital operational capability should not lead to major reduction of the common operational picture and the lethality, survivability, and operating tempo (OPTEMPO) that characterize digitized forces. In case of catastrophic system failure, commanders may find it necessary to make significant changes to the operation or reduce the size of their battle space. SOPs and nondigital contingency plans must ensure operational continuity.

COMMAND POST SURVIVABILITY

4-121. CPs present electronic, thermal, acoustic, visual, and moving-target signatures which are easy to detect. Upon detection, CPs can be destroyed through overt enemy action or disrupted and exploited by electronic means unless measures are taken to reduce vulnerability. Measures include:

- Maintaining local security.
- Locating on reverse slopes to deny enemy direct and indirect fire effects.
- Locating in urban areas to harden and reduce infrared (IR) 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 (LPI) techniques—landlines, directional antennas, and messengers.
- Providing communications security (COMSEC).

4-122. In most cases, survivability requires that the above techniques be combined. These measures must also be balanced against retaining effectiveness. Frequent displacement might reduce the vulnerability of a CP; but such movement may greatly degrade its C2 functions.

COMMAND POST LOCATION

4-123. Command posts are arrayed on the battlefield according to METT-TC. Three common methods are:

- CPs set up separately from unit locations.
- CPs set up with units.
- CPs use a combination of the above.

4-124. Setting up the CP separate from subordinate units separates the signatures associated with CP and helicopter operations. However, it makes face-to-face coordination more difficult unless adequate digital connectivity is available. Commanders decide which method to use during the IPB process.

COMMAND POST STANDING OPERATING PROCEDURE

4-125. CP organization, operations, and sustainment must be standardized in the SOP. All personnel associated with a CP must be completely knowledgeable of all aspects of the CP. Training drills are essential for CP movement, setup, tear down, security, and operations. Drills to counter loss of critical personnel and equipment must be standardized and practiced both day and night. Critical SOP items include:

- Personnel duties for each phase of CP operations and movement.
- Aviation communications setup priorities are METT-C dependent, but are generally—aviation and command radio nets, common user links (MSE, JNN, or WIN-T), and LAN, VTC, and retrans stations as required.
- Critical friendly and enemy information reporting.
- Maintenance of maps and graphics.
- Maintenance of command and control equipment.
- Set-up, tear down, and movement duties.
- Camouflage priorities.
- Light and noise discipline.
- Maintenance of generators.
- COMSEC changeover times.
- Maintenance of journals.
- CP security and admission procedures.

MAIN COMMAND POST

4-126. The main CP includes the soldiers, equipment, and facilities needed to provide C2 for the brigade. The brigade XO is responsible for the main CP.

MAIN COMMAND POST ELEMENTS

4-127. The main CP consists of the combined TOC and Support Area staff sections.

4-128. The TOC is composed of the S2 section, the S3 section, the FEC, the ALO, the Geographic Information and Services (GI&S) Topographic Engineer Element, the S6 section, USAF weather and the Air Defense Airspace Management (ADAM) cell.

4-129. The Support Area staff consists of the S1 section, the Joint Stars (JSTARS) Common Ground Station (CGS) Team, the Joint, Interagency, and Multinational (JIM) Aviation Command Liaison Element, nonlethal fires, the S4 section, the public affairs officer, the Unit Ministry Team, the Operational Law Section, the Flight Surgeon with the medical treatment teams and the HHC headquarters' elements.

MAIN COMMAND POST FUNCTIONS

4-130. The main CP coordinates, directs, and controls operations and plans for future operations. The main CP:

- Communicates with subordinate, higher, and adjacent units.
- Informs and assists the commander and subordinate commanders.
- Operates on a 24-hour basis.
- Plans ahead continuously.
- Estimates the situation continuously.
- Maintains the COP across the BOS.
- Maintains the status of the reserve.
- Receives, evaluates, and processes tactical information from subordinate units and higher headquarters.
- Maintains maps that graphically depict friendly, enemy, and noncombatant situations.
- Maintains journals.
- Validates and evaluates intelligence.
- Controls all immediate FS including CAS for units under AVN BDE C2 (may also be done by tactical CP).
- Coordinates airspace C2 and AD operations.
- Relays instructions to subordinate units.
- Coordinates combat, CS, and CSS requirements.
- Coordinates terrain management for C2 facilities.
- Maintains CS and CSS capabilities and status.
- Submits reports to higher headquarters.
- Makes recommendations to the commander.
- Prepares and issues FRAGOs, OPORDs, OPLANs, intelligence summaries (INTSUM), intelligence reports (INTREP), and situation reports (SITREP).

MAIN COMMAND POST CRITICAL ITEM REPORTING

4-131. The commander must be notified immediately of previously designated CCIR along with other friendly and enemy factors that may affect the mission.

Friendly Factors

4-132. The status of friendly forces that can affect the mission include:

- Changes in higher, subordinate, or adjacent unit mission.
- Changes in task organization.
- Changes in boundaries.
- Changes in supporting fires or tactical air (TACAIR) priority.
- Loss of unit combat effectiveness including DS or attached units, whether maneuver, CS, or CSS.
- Critical changes in Class III and V availability or location.
- Changes in status of obstacles and contaminated areas.
- Employment of smoke.
- Employment of nuclear and directed-energy weapons.
- Other elements of information according to the brigade commander's guidance.
- Status of the reserve.

ENEMY FACTORS

4-133. Enemy factors that can affect the mission include:

- Contact with or sighting of enemy maneuver or FS forces.
- Absence of enemy forces in an area or zone.
- Movement of enemy units—withdrawal, lateral, or forward.
- Employment of the enemy's reserve.
- Employment of NBC weapons or sighting of NBC capable equipment.
- Employment of directed-energy weapons.
- Employment of smoke.
- AD forces.
- Logistical stockpiles.
- Other elements of information according to the brigade commander's guidance.

MAIN COMMAND POST SITE SELECTION

4-134. The most important considerations for selecting any CP site are security and communications with higher, subordinate, and adjacent headquarters. Range of enemy artillery, accessibility to adequate entry and departure routes, cover, concealment, drainage, space for dispersing are other considerations. An adequate LZ should be nearby. The S3 selects the general location of the main CP. The HHC commander and S6 normally select the exact location. When selecting the general location of the CP, the S3 selects at least one alternate site should the primary site prove inadequate.

Offensive Operations

4-135. During offensive operations, the main CP should be well forward. In fast-moving operations, the main CP may have to operate on the move. Staff coordination and communications are usually degraded when CPs are moving; thus, CPs must train to operate while moving.

Defensive operations

4-136. During defensive operations, the main CP normally locates farther to the rear to minimize its vulnerability. The exact location depends on the enemy, terrain, the road network, and the ability to communicate.

Urban Operations

4-137. The main CP often sets up in built-up areas. Barns, garages, and warehouses minimize the need for detailed camouflage. Basements offer protection from enemy fires. Built-up areas also reduce IR and electromagnetic signatures.

Reverse Slopes

4-138. Reverse slopes cover and conceal CPs from direct observation and fires. Reverse slopes can degrade the enemy's ability to collect, monitor, and jam electronic transmissions. Electronic profiles run by the S6 provide the information to determine the ability to transmit and receive. Analysis of those profiles by the S2 provides the information to determine the enemy's ability to degrade CP capabilities or intercept traffic.

Prominent Terrain Features

4-139. Prominent terrain features or major road junctions should be avoided to make it harder for the enemy to determine CP location. Such features are often enemy preplanned artillery and air targets.

MAIN COMMAND POST DISPLACEMENT

4-140. The main CP displaces in either a single or a phased move. The method selected depends on METT-TC, the distance to be moved, and communications requirements. Movement degrades communication on all nets; however, the higher headquarters, brigade, and subordinate command nets must be maintained. An administrative move may entail both the TOC and the tactical CP moving simultaneously to a new AO. Maintaining contact with higher headquarters may require alternate communications means, such as aircraft or vehicle mounted systems. When operations are ongoing, moving the main CP is accomplished in a phased move requiring displacement of the tactical CP. During displacement, critical aspects of C2 must be maintained. Displacements are planned to ensure that the main CP is stationary during critical phases of the battle.

Displacement Steps

4-141. The S3 establishes the general area for the new CP. The HHC commander, signal officer, and a NBC team conduct detailed reconnaissance. Steps for the reconnaissance are listed below.

- The reconnaissance party identifies possible routes and sites. Locations must provide effective communications and accommodate all required vehicles and equipment. Several possible sites must be identified, reconnoitered, and planned to provide flexibility and alternate sites.
- The reconnaissance party makes route and site sketch maps showing the exact element locations within the new CP location.
- The S3 or commander approves the primary and alternate sites.
- A movement order is published. An SOP that has been practiced and drilled greatly reduces the effort required to produce the order.
- Security and guides are dispatched. The security force ensures the area is clear of enemy and contamination, and the guides prevent wrong turns and assist elements in occupation. Signals are especially important for low visibility and night displacements.
- Reporting and coordinating functions are shifted as required. This may be within main CP echelons, to the tactical CP, or to the rear or alternate CP.
- CP and HHC elements prepare and execute movement per SOP. The main CP may displace in one echelon if the tactical CP can provide C2 for the interim. If the tactical CP cannot execute the required C2, the main CP displaces in two echelons. The first echelon displaces with enough assets and personnel to establish minimum C2. The second echelon remains is place and provides C2 until the first echelon assumes control, then it displaces.

MAIN COMMAND POST AUSTERITY

4-142. The main CP is a major source of electromagnetic and IR energy. If the enemy detects these emissions, they can fix its location and place indirect fire, CAS, or EW strike on it. In such an environment, frequent movement is required.

- The TOC should be as light as possible and drilled in rapid tear down, movement, and setup. The larger and more elaborate a CP, the less rapidly it can move.
- Movement for movement's sake should be avoided. Too frequent movement hinders TOC operations, degrades communications, and sacrifices time. It may also increase the chances of enemy detection.

MAIN COMMAND POST SECURITY AND DEFENSE

4-143. The HHC commander plans and organizes the security and defense of the main CP. The plan establishes teams, squads, sections, and platoons and a chain of command for perimeter defense and the quick reaction force (QRF). The brigade XO approves the plan.

4-144. Positions are well prepared, mutually supporting, and known to all. Alarms are established and known to all. Minimum alarms include ground attack, air attack, and NBC attack. Rehearsals are conducted. All actions are greatly simplified if they are part of the SOP and drills are conducted often to ensure readiness. For unit personnel who have not been in combat, commanders should demonstrate what enemy personnel look like when advancing at night. Such training precludes erroneous sightings and time-consuming reactions to false alarms.

4-145. The staff supports the HHC commander by providing personnel for defense and security. In an actual attack, the main CP continues C2 of the brigade unless the situation compels the use of all personnel in the defense.

Reaction Forces

4-146. Reaction forces and attachments must be fully integrated into the overall plan. Each individual must have a clear and current common operational picture (COP) of friendly and enemy forces in the AO. For example, a CP reaction force should know if military police (MP) are conducting mounted patrols near the CP. The overall reaction force plan must integrate those MP units or establish boundaries between the reaction force and the MP unit.

4-147. A clear chain of command and training supported by battle drills are essential for reaction force preparedness. They must assemble and be ready to fight in no more than 10 minutes.

- Alarms should be the same throughout the brigade, UEx, and UEy. These alarms should be in the SOP.
- Reaction plans are rehearsed and executed on a routine basis. Prior to deployment and at in-country training centers, MILES gear and live or blank ammunition supplemented by pyrotechnics should be used whenever possible to enhance training realism. The reaction to a night attack on the main CP must be second nature if the enemy force is to be repelled.

4-148. Each reaction force assembles based on an alarm or orders. Personnel move to a predetermined rally point, establish communications, and conduct operations as required to counter the threat.

Preparation for the Security and Defense of the Main Command Post Site

4-149. Physical preparation for the defense of the main CP site includes:

- Ensuring each soldier is briefed, has a copy of the rules of engagement (ROE), and understands the ROE (for complicated ROE, it is often necessary to conduct situational training exercises to ensure understanding).
- Concealment—use of urban areas and camouflage.
- Cover—fighting positions, protective shelters.
- Vehicle revetments, transitory vehicle dismount points and parking areas.
- Protective wire barriers.
- Prepared defensive positions.
- Prepared alternate and supplementary positions.
- Prepared routes for supply and evacuation.

- Minefields to cover avenues of approach, if approved for use. Adherence to correct procedures makes mine recovery less dangerous when it is time to displace. Minefields must be observed.
- Prepared sleep areas that are dug in or revetted to protect against enemy direct or indirect fires.
- Listening posts/observation posts (LP/OP) that cover approaches to the main CP. These positions must be prepared so they cannot be seen when approaching them from the front.
- Devices such as ground surveillance radar, personnel detection devices, and field expedients to enhance early warning of enemy approach or infiltration.
- Crew served weapons emplaced to cover suspected avenues of approach. Cleared fields of fire.
- Wire and directional antennas to prevent detection by enemy EW elements.
- Air and ground patrols to inhibit observation and attack of the main CP. Returning aircraft should be given patrol areas to survey before landing. Ground patrols should conduct reconnaissance as required to detect enemy observers or civilians who may be enemy informants.
- Daily stand-to is to establish and maintain a combat-ready posture for combat operations on a recurring basis. Stand-to includes all steps and measures necessary to ensure maximum effectiveness of personnel, weapons, vehicles, aircraft, communications, and NBC equipment. Units assume a posture during stand-to that enables them to commence combat operations immediately. Although stand-to is normally associated with begin morning nautical twilight (BMNT), unit operations may dictate another time.

TACTICAL OPERATIONS CENTER

4-150. The TOC is the primary C2 structure for the brigade. Its primary mission is to control operations and prepare and publish orders and plans. The commander operates from the TOC when not operating from the tactical CP, command vehicle, or an aircraft. The S3 is responsible for all aspects of TOC operations. The TOC is usually organized into two groups— the operations cell and the plans cell. The operations cell usually operates in shifts to ensure 24-hour ability. The plans cell may or may not operate on a 24-hour cycle, and may or may not be in a separate facility from the TOC. The TOC:

- Monitors and assists in C2 by maintaining contact and coordination with higher, subordinate, and adjacent units and continuously updating the enemy and friendly situation.
- Analyzes and disseminates tactical information (including A2C2).
- Maintains situation maps.
- Ensures reports are submitted and received on time.
- Plans future operations and forecasts requirements.
- Coordinates with the ALOC to ensure that CSS is integrated and synchronized into the mission effort.

OPERATIONS CELL

4-151. The operations cell includes the following functional positions:

- The battle captain is usually the most experienced S3 officer other than the S3. He continuously monitors operations within the TOC to ensure proper personnel are available for the mission at hand. He does not command the battle, but performs battle tracking and makes operational decisions within assigned responsibilities.

- The operations NCO is the noncommissioned officer in charge (NCOIC) of the TOC. He moves and sets up the TOC. He is responsible for the physical functioning of the TOC. He also is responsible for shift schedules, organization within the TOC, and other functions as assigned.
- The TOC NCOIC is assisted by other S3 NCOs and assigned personnel, who maintain unit status, receive and process reports, and maintain the unit journal.
- The S2, S2 NCO, and intelligence analysts are responsible for all intelligence functions. They alert the commander, XO, or S3 to situations that meet the established CCIR. Intelligence personnel receive incoming tactical reports and process intelligence information. They also assist in moving, setting up, and the physical functioning of the TOC.
- When available, the FSO and fire support noncommissioned officer (FSNCO), as part of the FSE, are responsible for FS. They coordinate for responsive fires and expedite clearance of fires. They assist in moving, setting up, and the physical functioning of the TOC.
- Radio telephone operators (RTO) are critical links in the C2 structure. They often use radio headsets, answer telephones, and operate computer consoles. As such, they may be the only people who hear transmissions or see a critical piece of information. They must be aware of the operation so they can alert the leadership of any situation that might require their attention. RTOs cannot assume that all calls, information, and reports they monitor are also monitored or seen by the TOC at large.

Plans Cell

4-152. The plans cell is activated as required. It consists of personnel required to plan for the operations, such as S2, S3, FS, ALO, S1, S4, S6, engineer, S5, and attached units. Normally the chief of the plans cell is the senior S3 representative.

Tactical Operations Center and TACTICAL Command Post

4-153. The TOC remains operational even when the tactical CP has the battle. When communications allow, the TOC monitors the actions of the tactical CP and is always prepared to assume control of the battle if the tactical CP is disabled or destroyed. In cases where the TOC can control the battle without employment of the tactical CP, tactical CP assets and personnel augment the TOC.

ADMINISTRATIVE AND LOGISTICS OPERATIONS CENTER

4-154. The ALOC is the primary C2 structure for the brigade's logistics and combat service support operations, which is normally located in the Brigade HQ’s Support Area. The ALOC is composed mostly of the S1 and S4 sections, and representatives from attached CSS elements. The S6 section supports its communications requirements. The ALOC:

- Monitors and assists in C2 of CSS assets by maintaining contact and coordination with higher and adjacent units, while continually updating the personnel and logistics situation.
- Maintains the COP to ensure CSS elements are not adversely affected by enemy actions, friendly movements or ongoing operations.
- Analyzes and disseminates CSS information, maintains the CSS situation map, requests and synchronizes CSS as required.
- Ensures reports are submitted and received on time.
- Plans for future operations based on guidance from the TOC to ensure that CSS is integrated into the mission effort.

- Is prepared to assume TOC functions.

ADMINISTRATIVE AND LOGISTICS OPERATIONS CENTER ORGANIZATION

4-155. The ALOC normally is organized into two sections—personnel and logistics. Two areas generally are established within the ALOC—an S1 area for personnel, ministry, and medical actions; and an S4 area for all other CSS requirements. Other considerations are listed below.

- The XO is generally the ALOC officer in charge (OIC). He coordinates closely with the S1 and S4 to monitor CSS operations and ensure proper personnel and equipment are available to support the mission.
- The ALOC NCOIC is generally the S4 NCO. He moves and sets up the ALOC. He is responsible for the physical functioning of the ALOC. The ALOC NCOIC is also responsible for shift schedules, organization within the ALOC, and other functions as assigned.
- The ALOC NCOIC is assisted by the other ALOC NCOs and personnel. Among other duties, they maintain unit status, receive and process reports, and keep the CSS journal.
- RTOs are as critical in the ALOC as in the TOC and perform the same functions.

ADMINISTRATIVE AND LOGISTICS OPERATIONS CENTER LOCATION

4-156. The ALOC is frequently near the main CP to ensure close coordination within the brigade staff. However, the ALOC may form the central part of the support area. It may operate a split-section with the S4 section as part of the main CP and the S1 section as part of the support area or vice versa. The S1 section may be task organized to collocate with the ASB for certain Human Resource functions (e.g. mail, in-out-processing, or return to duty personnel (RTD)), that are best facilitated by close access to the ASB's distribution hub.

ADMINISTRATIVE AND LOGISTICS OPERATIONS CENTER AND TACTICAL COMMAND POST

4-157. ALOC functions continue from the ALOC even when the tactical CP controls operations. When the main CP displaces, the ALOC normally sends at least an S4 representative to the tactical CP to monitor CSS operations until the ALOC is reestablished.

TACTICAL COMMAND POST

4-158. The tactical CP is established to enhance C2 of current operations. It can be deployed to higher or subordinate headquarters to facilitate parallel planning, or when distances are too extended to operate from the main CP. It must communicate with higher headquarters, adjacent units, the employed subordinate units, and the main CP. The tactical CP helps the commander control current operations by:

- Maintaining the COP and assisting in developing situational understanding.
- Analyzing information for immediate intelligence.
- Developing combat intelligence of immediate interest to the commander.
- Maneuvering forces.
- Controlling and coordinating FS.
- Coordinating operations.
- Coordinating with adjacent units and forward AD elements.
- Monitoring and communicating logistics requirements (Classes III and V) to the main CP.

4-159. The tactical CP is small in size and electronic signature to facilitate security and rapid, frequent displacement. Its organization layout, personnel, and equipment must be in the unit SOP.

4-160. The TAC is normally composed of the command group, personnel from the S2 CP1 TAC, personnel from the S3 CP2 TOC and the lethal fires section. The S3 section is responsible for the tactical CP. Augmentation may include:

- Standardization instructor pilot (SIP), tactical operations officer (TOO), safety officer (SO), and other selected warrant officers.
- Air liaison officer (ALO), engineer, and S5, if available.
- Representatives from the ALOC (if the main CP is displacing).

4-161. METT-TC may dictate that an effective tactical CP operates from a C2- equipped UH-60.

BRIGADE HQ SUPPORT AREA

4-162. An aviation brigade HQ support area may be used to plan and coordinate sustainment with the Aviation Support Battalion, and the aviation brigades organic or attached battalions. The S4 or S1 normally is the support area commander.

4-163. The support area commander is responsible for the security of support area units of the AVN BDE. He ensures that they are integrated into an established base or base-cluster defense for mutual security. The brigade XO monitors the operations of the support area. The S4 and S1 maintain continuous contact with the main CP to coordinate the required support. They also coordinate extensively with higher echelon, support command elements for their support functions.

ALTERNATE COMMAND POST

4-164. The commander may designate an alternate CP to ensure continuity of operations during displacements or in case of serious damage to the TOC. The alternate CP may be the tactical CP, rear CP, or a subordinate battalion headquarters. Provisions for an alternate headquarters are normally established in unit SOPs.

COMMAND GROUP

4-165. The command group consists of the brigade commander and the representatives from the brigade staff and supporting units that the commander chooses. At a minimum this normally will be the S3, an S2 representative, and the FSO and ALO. The command group may operate from ground vehicles or an aircraft. The command group is not a command facility per se, but a grouping of critical decision makers that may operate separately from the main CP or the tactical CP periodically. The command group may deploy when personal observation or presence is necessary to accomplish the mission.

SECTION VII – COMMAND AND STAFF RESPONSIBILITIES

BRIGADE COMMANDER

4-166. The brigade commander commands, controls, and coordinates the AVN BDE. He is responsible for the outcome of his force's combat actions. The variety and impact of tasks confronting him are unique. Although he commands a brigade-level organization, his focus of employment is at UEx and UEy level, and often higher. These tasks require cooperation of many people, integration of complex systems that span into the joint community, and sensible division of work. The brigade commander C2s organic, assigned, or attached forces.

He must task-organize these forces to accomplish all specified and implied tasks. He must integrate the critical support provided by other friendly elements. His main concerns are to accomplish the mission and to ensure the welfare of his soldiers. The successful commander delegates authority and fosters an organizational climate of mutual trust, cooperation, and teamwork.

4-167. The brigade commander is the force behind tactical planning. He analyzes and defines the mission and directs its execution. He issues mission-oriented orders, which are detailed only to the extent necessary for coordination within a broad scope. The commander acknowledges the professional competence and expertise of his subordinate commanders who have extensive latitude within his intent in how they execute their missions.

4-168. The brigade commander is a critical advisor to senior commanders in developing the campaign plan. He must analyze the long-term aspects of the brigade's employment in the campaign and provide the necessary advice.

4-169. The brigade commander must understand the impact of his unit's actions and the actions of his soldiers on the modern battlefield. He must institute necessary training for his soldiers in media operations and ROE. Such training serves to eliminate or mitigate actions that would require much of the commander's time to resolve if they occurred.

4-170. All plans and orders are in concert with the senior commander's intent. Subordinate unit commanders and staffs must understand this intent. Thus, they can act appropriately when communications fail or local situations change. The brigade commander controls the ongoing battle. He provides guidance for planning future operations.

4-171. The AVN BDE's forces influence the spectrum of deep, close, and rear area operations; therefore, the commander must see the battlefield from the same perspective as the higher commander. Tactical decisions constantly must be aimed at synchronizing his combat efforts with those of other force assets. The commander must know the enemy as well as he knows his own forces. His guidance should reflect the products of a detailed mission analysis supported by a thorough and current IPB.

4-172. The brigade commander relies on his staff and subordinate commanders to advise and help plan and supervise operations. He must understand his staff's capabilities and limitations. He must train them to execute operational concepts in his absence. He institutes cross-training among the staff; thus, the unit can still operate when combat losses occur. He also is responsible for safety and standardization during all conditions—peacetime or combat. He develops and directs a brigade safety and standardization program.

COMMANDER'S PRESENCE

4-173. When not in battle, the brigade commander normally operates in the main tactical operations center (TOC) area. During battle, he moves to a position to best make the decisions necessary to influence the outcome of the fight. He must be in a position to affect operations while maintaining communications with higher, lower, and adjacent units. The best location for the commander could be the main TOC, the tactical CP, or forward with the battle. This decision is based on METT-TC as well as the commander's assessment of whether personal presence may be key to mission accomplishment. Even as digital linkages improve the ability to see the battle, at times personal presence may be the best option.

COMMANDER'S AIRCRAFT

4-174. The brigade commander selects the type helicopter that gives him the best visualization of the situation, time on station, or personal presence. The AVN BDE commander should be rated in more than one of the brigade's aircraft. The commander also should be current in his primary aircraft before assuming command.

BRIGADE EXECUTIVE OFFICER

4-175. The XO is second in command and the principal assistant to the commander. The scope of the XO's duties is often tailored by the desires of the commander. Normally, the XO directs, supervises, and ensures coordination of staff work and logistics, except in those specific areas reserved by the brigade commander. The XO disciplines the staff's work and provides quality control. He must understand the commander's guidance and intent because he supervises the entire process. He ensures the staff has the information, guidance from the commander, and facilities it needs. He determines timelines for the staff, establishes briefback times and locations, enforces the information management plan, and provides any unique instructions to guide the staff in completing the MDMP process.

4-176. By issuing guidance and participating in formal and informal briefings, the commander and XO guide the staff through the decision-making process. In a collaborative environment, the commander can extend this participation directly to subordinate commanders and staffs. Warning orderss are used to facilitate parallel planning. Such interaction helps the staff and subordinates to resolve questions and involves them in the complete process. The selected COA and its implementing OPORD are directly linked to how well both the commander and the staff accomplish each step of the MDMP.

4-177. During combat operations, the XO usually is positioned in the ALOC to supervise logistics operations and ensure a consistent sustainment effort. The XO remains current on the tactical situations and is always prepared to assume command. The commander should allow the XO to assume command during selected training exercises so that he will be prepared to assume command in combat.

4-178. As staff coordinator and supervisor, the XO:

- Formulates and announces staff operating policies.
- Ensures that the commander and staff are informed on matters affecting the command.
- Supervises the main CP operations.
- Ensures execution of staff tasks and the coordinated efforts of staff members.
- Ensures that the staff performs as a team; assigns definite responsibilities.
- Transmits the commander's decisions to the staff and to subordinate commanders, when applicable, for the commander. Staff members can deal directly with the commander; however, they are obligated to inform the XO of the commander's instructions or requirements.
- Establishes and monitors liaison and liaison activities.
- Supervises the information program.
- Serves as the materiel readiness officer.

BRIGADE COMMAND SERGEANT MAJOR

4-179. The command sergeant major (CSM) acts in the name of the commander and is his primary advisor concerning enlisted soldiers. The CSM focuses attention on functions critical to the success of the operation. The CSM assists the commander in the following ways:

- Monitors NCO development, promotions, and assignments.
- Identifies, plans, and assesses soldier training tasks to support the performance of collective (unit) tasks on the METL.
- Monitors subordinate unit morale.
- Provides recommendations and expedites procurement and preparation of enlisted replacements for subordinate units.
- Monitors food service and other logistics operations.

- Conducts informal investigations.
- Assists in controlling brigade movements.
- May lead the brigade advance or quartering party during a major movement, coordinating closely with the HHC Commander.
- Performs specific missions as directed by the BDE CDR

BRIGADE STAFF ELEMENTS

4-180. The paragraphs below provide brief descriptions of the key AVN BDE staff elements. Where necessary and appropriate, further discussion is contained elsewhere in this manual.

GENERAL

4-181. The brigade staff consists of the officers and enlisted personnel who plan, supervise, and synchronize combat, CS and CSS according to the brigade commander's concept and intent. Except in scope, duties and responsibilities of the brigade staff are similar to those of higher echelon staff. Key personnel must be positioned on the battlefield where they can carry out their duties.

BRIGADE STANDING OPERATING PROCEDURES AND THE STAFF

4-182. The SOP must clearly define the responsibilities of key personnel to preclude conflicts and ensure that all functions are supervised. SOPs streamline the reporting process by showing standard briefing formats and identifying the individuals who request, receive, process, and disseminate information.

REDUCTION OF DEMANDS ON THE COMMANDER'S TIME

4-183. Staff members reduce the demands on the commander's time. The staff:

- Obtains, analyzes, and provides information.
- Anticipates the situation.
- Makes recommendations. (The staff does not ask the commander for solutions. It presents issues, offers COA, and recommends one of those COA.)
- Prepares plans and orders.
- Supervises the execution of orders.
- Coordinates the operation.

MAINTAINS THE SITUATION

4-184. The staff gives the commander an accurate picture of the AO. Delays in receiving or disseminating critical information adversely affect the entire operation. The staff must identify key indicators and push for quick and accurate reports from both subordinate and higher headquarters. Information flow—both horizontally and vertically—must be on a priority basis. Operational conditions dictate priorities.

ESTIMATES

4-185. Staff estimates may be informal at brigade level and below; however, they must address battlefield activity, project COA, and predict results. Careful IPB, selection of the most important enemy indicators, and development of contingency plans facilitate estimates and allow timely response. The key person in this process is the XO. He ensures that the staff maintains a proper perspective.

STAFF COMMUNICATIONS WITH THE COMMANDER

4-186. Information flow is critical. For some information, the commander must be notified immediately. The commander must provide the staff with guidance on the types of information he considers critical. Many commanders post a list in the TOC of information categories that they want to be notified about immediately.

4-187. The staff must provide the commander with critical, concise, accurate information. The XO establishes the guidance and the training that ensures briefs do not burden the commander with time-consuming, lengthy, or meandering discussions. Critical information is communicated to the commander on a priority basis set by his guidance. The commanders set priorities for communicating critical information. Established briefings to the commander are open and frank, but follow a set agenda.

BRIGADE PERSONNEL SECTION

4-188. The adjutant (S1) has coordinating responsibility for military pay input, religious activities, public affairs, and, legal services support for the unit. The S1 is normally collocated with the S4 in the ALOC. The S1 and S4 must cross-train to enable them to conduct continuous operations.

4-189. The S1 is responsible for the all matters concerning human resources that include personnel readiness and personnel services. The S1 manages personnel strength and replacement; works with the Flight Surgeon to plan health services; coordinates morale support activities; coordinates legal, military pay input and postal services; maintains the awards program; oversees the administration of discipline, law, and order with the Provost Marshall (if present) and Brigade Judge Advocate; and manages casualty operations management.

4-190. The S1 assesses unit readiness and combat effectiveness for the organization. The S1 provides the following support to soldiers and their families:

- Manning the unit.
- Personnel readiness.
- Strength accounting.
- Casualty operations.
- Replacement operations.
- Mail operations.
- Morale, welfare, and recreation.
- Other essential personnel support and services.

BRIGADE INTELLIGENCE SECTION

4-191. The intelligence officer (S2) leads the intelligence staff section consisting of the S2 section, Command Post 1 TAC (CP1) and the Joint Stars (JSTARS) Common Ground Station (CGS) Team. The S2 is responsible for all matters concerning intelligence, surveillance and reconnaissance. The S2 provides current information and analyzed intelligence of tactical value concerning terrain, weather, and the enemy. This intelligence helps to facilitate planning and execution of combat operations.

4-192. The S2 section provides combat intelligence, which includes collecting and processing information. This 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 close and rear battle operations.

4-193. The CP1 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 close and rear battle operations.

4-194. The JSTARS Team provides the commander with near-real-time wide area surveillance and deep targeting data on both moving and fixed targets during daylight and darkness in all weather conditions. The teams receive, process, correlate, and disseminate imagery data from the Joint Stars System. The CGS receives, manipulates, displays, stores, and disseminates Joint STARS, UAV, Army AVN, SIGINT, broadcast intelligence and secondary imagery from tactical, theater and national systems.

4-195. The S2 staff section performs the following functions:

- Coordinates intelligence activities.
- Converts the information requirements of the commander into the CCIR.
- Perform Intelligence Preparation of the Battlefield (IPB)
- Helps develop the decision support template (DST).
- Develops the intelligence collection and reconnaissance and surveillance (R&S) plan.
- Frequently updates the commander and staff on the enemy situation.
- Maintains isolated personnel reports (ISOPREP).
- Works closely with the FEC and S3 section to ensure information is passed throughout the brigade.
- Performs Intelligence Support to Effects
- Provides Intelligence Support to Targeting
- Processes Relevant Information to assist in creating a Common Operating Picture
- Develops Operational Targets
- Develops High-Payoff and High-Value Targets

BRIGADE OPERATIONS SECTION

BRIGADE OPERATIONS OFFICER

4-196. The operations officer (S3) is responsible for matters pertaining to the organization, employment, training, and operations of the brigade and supporting elements. The S3 is responsible for planning, organizing, and supervising unit training and integrating supporting elements. The S3 monitors the battle, ensures necessary combat support and logistics assets are provided when and where required, and anticipates developing situations. If possible, the S3 should be rated in more than one of the brigade's aircraft.

S3 SECTION

4-197. The S3 section provides planning and task organization of brigade elements for combat operations, including personnel recovery. The S3 section maintains routine reporting, coordinates the activities of liaison personnel, and is always planning ahead. In the area of command, control, communications, computers, and intelligence (C4I), the S3 section, through the communications-electronics officer (S6), ensures that procedures are in place to resolve complexities posed by the different communications systems, army tactical command and control system (ATCCS), and connectivity in each type aircraft. The S3 section maintains close coordination with the S4 and the S1, to monitor brigade logistics and personnel statuses.

COMMAND POST 2 TACTICAL OPERATIONS CENTER

4-198. The CP2 conducts ongoing close operations, provides the commander with combat critical information, and disseminates the commander's decisions. This section is responsible for coordinating, integrating, and tracking current operations (ground and air). The section is positioned at a location where it can maintain positive control of all air and ground FS assets.

4-199.

JOINT, INTERAGENCY, AND MULTINATIONAL (JIM) AVIATION COMMAND LIAISON ELEMENT

4-200. The JIM provides necessary liaison between the aviation brigade and the JIM Aviation Command Post. The element is essential for the planning and execution of aviation missions in the brigade area. The JIM element represents the brigade commander at a separate location to facilitate communication and aviation planning.

4-201. Brigade commanders must empower liaison teams to act on their behalf and ensure they are fully supported. In return, commanders expect positive two-way communication and for teams to not commit assets or approve changes to a plan without coordinating with the brigade S3 or commander.

4-202. Liaison teams must have access to current brigade status information to provide the most accurate picture of capabilities. Constant communication with the parent unit is essential for updates on aircraft, maintenance, and FARP status.

BRIGADE FIRES AND EFFECTS CELL

4-203. The FEC is headed by the fire support officer (FSO), and provides fire support planning, coordination and execution. The FEC is comprised of a Non Lethal Effects Cell and Lethal Effects Cell, both of which provide fire support planning, coordination and execution. The primary duty of the FSO is to support the scheme of maneuver with lethal and non lethal fires, and direct the execution of the targeting process (detect, deliver, and assess) for the aviation brigade. Both missions are critical to the success of aviation operations. The FSO accomplishes this by close coordination with the S3 and brigade commander.

4-204. The FSO plans, controls, and synchronizes all lethal and nonlethal fire support (FS) for brigade operations. He coordinates J-SEAD. The FSO integrates and coordinates offensive information operations (IO) into FS planning. He works with the TOC and the A2C2 element regarding FA firing unit locations, changes to fire support coordinating measures (FSCM) and airspace control measures (ACM). The FSO maintains digital and voice communications with supporting artillery.

4-205. Targeting functions include collecting and processing battlefield information and intelligence to identify targets; disseminating targeting information; requesting and analyzing combat damage reports; providing assessments that inform and are integrated back into on-going targeting process; employing target acquisition assets; providing input into reconnaissance and surveillance planning and execution; and processing valid target information for supporting fires and effects assets (including IO) to execute in accordance with the effects plan.

4-206. The FEC accomplishes the following tasks:

- Conducts Nonlethal Fire Support operations/information operations
- Conducts Lethal Fire Support
- Employs Fire Support Coordination Measures
- Provides Firepower in Support of Operational Maneuver

- Provides Close Air Support Integration for Surface Forces
- Employs Positive Control Measures
- Employs Procedural Control Measures
- Provides Support to DOD and Other Agencies

BRIGADE AIR LIAISON OFFICER

4-207. Depending on the expected types of missions, an ALO may be provided. The ALO is an Air Force officer who is a member of the tactical air control party (TACP). He may serve as a forward air controller (FAC) or have additional officers assigned to the ALO as FACs. The ALO advises the commander and staff on the employment of air support, including CAS, AI, J-SEAD, aerial reconnaissance, and airlift. In the absence of an ALO, the S3 ensures these duties are accomplished.

BRIGADE S3 AIR

4-208. The aviation brigade S3 Air is responsible for coordinating air space issues, Joint Air Attack Team Operations (JAAT), and joint air operations. The aviation brigade S3 Air is responsible for the integration of Army airspace command and control (A2C2) planning, coordination, and airspace deconfliction for combined arms, joint, interagency and multi-national (JIM) operations in the aviation brigade.

4-209. The S3 Air oversees the following functions:

- Developing A2C2 procedures, plans, SOPs, and annexes.
- Submiting requests for Airspace Coordination Measures.
- Advising the brigade commander and staff on actions required at the brigade to follow or to implement the required A2C2 measures.
- Insuring A2C2 restrictions are incorporated in fire support planning.
- Obtaining and distributing the current airspace control (ACO) 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 A2C2 measures into the AVN BDE scheme of maneuver.
- Maintaining the A2C2 overlay.
- Establishing and monitoring the flight following net (ATS network) for brigade aircraft, when required.
- Assisting the S3 and the FSE plan J-SEAD fires.
- Coordinating for additional Army and Joint aviation support to support aviation operations such as movement of unit equipment, supplies, ammunition, and fuel.
- Assisting the S3 in planning, organizing, and coordinating Aviation Brigade participation in JAAT operations.

BRIGADE TACTICAL OPERATIONS OFFICER

4-210. The tactical operations officer's (TOO) primary duty is to advise the brigade commander and staff on appropriate ASE techniques and procedures, airspace planning, and integration of Joint assets for each major mission. The tactical operations officer conducts the ASE part of the risk management process. He integrates the unit's OPLAN into the theater airspace structure. He also manages the organization's PR program. The TOO is the primary subject matter expert (SME) for the organic AMPS and its associated products. He is frequently the other crew member for the brigade commander or S3. He is also a principal trainer and peer leader for the BAE and battalion TOOs.

BRIGADE CHEMICAL OFFICER

4-211. The chemical officer advises the commander on Chemical, Biological, Nuclear and Radiological (CBRN) operations, decontamination, smoke, obscurants, and flame. The chemical officer works directly for the S3 and integrates CBRN into all aspects of operations. The chemical officer may have other S3 section responsibilities, and can act as an assistant S3 when directed.

4-212. The chemical NCO provides advice to the commander and staff on CBRN defense matters, decontamination, equipment maintenance, CBRN reconnaissance, and support contingency requirements.

GEOGRAPHIC INFORMATION AND SERVICES (GI&S) TOPOGRAPHIC ENGINEER ELEMENT

4-213. This section provides the following topographic support:

- Database management.
- Topographic database development (predeployment).
- Terrain analysis.
- Topographic survey.
- Topographic production

BRIGADE LOGISTICS SECTION

4-214. The brigade Logistics Officer (S4) is responsible for brigade level coordination of all external and internal logistical support including supply maintenance, transportation, and equipment status records. The S4 as the brigade's logistics planner coordinates with battalion S4s or separate company supply officers or first sergeants (1SGs) about status of maintenance, equipment, and supplies. The S4 ensures logistics visibility for the brigade commander and the staff.

4-215. The S4 develops the logistics support plan, and coordinates with supporting units and higher headquarters staffs to ensure logistics support is continuous. The S4 section provides supervision and coordination of food service, supply, transportation, and maintenance support for the brigade. Inherent in his responsibilities are recommending basic loads and supply requirements; recommending the ammunition required supply rate (RSR) to the S3; coordinating all classes of supply (except CL VIII); coordinating equipment recovery, evacuation and repair; conducting planning for operational movement control and mode and terminal operations; coordinating with the CA cell for host nation support; coordinating services including water purification, mortuary affairs, aerial resupply, laundry, shower, and food preparation; and coordinating battlefield procurement and contracting.

Aviation Maintenance Officer

4-216. The aviation maintenance officer (AMO) is a staff officer assigned to the S4 section. He is an advisor to the brigade commander and staff for aviation maintenance issues. The AMO ensures close coordination with the aviation service company (ASC) and ASB commanders. He is responsible to the SIP for the standardization of the aviation maintenance contents of the reading files. The brigade AMO is a trainer and peer leader for the subordinate unit AMOs. He should be rated in the highest-density type aircraft in the brigade.

FOOD SERVICE TECHNICIAN

4-217. The aviation food service officer (FSO) is a staff officer assigned to the S4 section. He is an advisor to the brigade commander and staff for the Food Service Program and Class I issues. The FSO evaluates field feeding requirements and develops milestone plans to support major field exercises. He reviews and monitors requisitions for Class I, III, and IX supplies to support food service operations, and coordinates all planning for food service support for field training. The FSO evaluates garrison and field feeding operations to ensure food service personnel are complying with food service regulations relative to food preparation, service, accountability, and sanitation

COMMUNICATIONS-ELECTRONICS OFFICER

4-218. The communications-electronics officer (S6) advises the commander on signal matters, CP location, signal facilities, signal assets, and signal activities for deception. The S6 leads the S6 section and is the senior signal officer within the aviation brigade AO. The S6 maintains overall authority and responsibility for all network operations within the aviation brigade.

4-219. The S6 section plans for, coordinates, and oversees implementation of communications systems. It performs unit-level maintenance on ground radio and field wire communications equipment. It installs, operates, and maintains the radio retransmission site. The S6 monitors the maintenance status of signal equipment, coordinates the preparation and distribution of the signal operation instructions (SOI), and manages communications security (COMSEC) activities. The S6 section's responsibilities include supervision of electronic mail on both the unclassified and classified nets and the LAN.

4-220. The S6 and ASB Network Signal Company Commander (NSC) operate in close communication, resulting in a unity of effort for communications support to the aviation brigade. The NSC commander reports all network associated issues to the S6 when deployed to ensure continuous support to the aviation brigade commander's critical information requirements. The AVN BDE S6 and his staff plan the command, control, communications and computers (C4) support for the aviation brigade command posts and subordinate units organic to, assigned to, or operating within the aviation brigade AO. The aviation brigade S6 works closely with both the UEx G6 and the NSC commander.

AIR DEFENSE AIRSPACE MANAGEMENT OFFICER (ADAM)

4-221. The Air Defense Coordination and Management Officer is the leader of the ADAM section. This section provides liaison between the aviation brigade and air defense units. The employment of the ADAM element is essential in deconflicting airspace and preventing fratricide of friendly aircraft operating throughout the UEx area of operations.

Public Affairs (PA)

4-222. The aviation brigade PA officer leads the PA cell, which coordinates media and community relations. This cell provides coordination of public affairs and strategic messaging advice and counsel to the commander. They further coordinate requests for PA support from the UEx or higher echelon command; provide support to all accredited media operating in the AO; and provide advice to the commander and the fires and effects coordinator on the impact of targeting on public relations.

LEGAL OFFICER

4-223. The Brigade Judge Advocate, along with the OPLAW Judge Advocate and the Paralegal NCO form the Brigade Operational Law Team (BOLT). The Brigade Judge

Advocate serves both as a personal and special staff officer. The BOLT provides operational law advice to the commander and staff. The BOLT provides legal advice during and all other planning and targeting sessions conducted by the AVN BDE staff. The members of the BOLT serve as subject matter experts on rules of engagement (ROE), targeting, international law, law of armed conflict (including treatment of detainees, EPWs, civilians on the battlefield and other noncombatants) and all other legal aspects of operations The BOLT provides or coordinates with other legal offices for legal services in military justice, administrative and civil law, contract and fiscal law, claims, and legal assistance. The Paralegal NCO provides administrative and paralegal support to the judge advocates in the BOLT and supervises the paralegals in the aviation battalions. This NCO is responsible for establishing voice and digital linkage with UEx headquarters legal support elements

BRIGADE STANDARDIZATION INSTRUCTOR PILOT

4-224. The standardization instructor pilot (SIP) is a primary advisor to the commander for the standardization program. He develops, integrates, implements, monitors, and manages the aircrew training and standardization programs. He also advises, as required, on the crew selection process, employment of aircraft systems, sensors, and weapons. The brigade SIP acts as the coordinating staff officer for the standardization of reading files. He is also a principal trainer and peer leader for subordinate unit instructor pilots (IP). The brigade SIP often flies as the other crew member for the brigade commander or the S3. If the brigade commander does not use the SIP as his pilot, he may want an SIP rated in an aircraft other than the ones in which the commander is rated to expand available expertise.

SAFETY OFFICER

4-225. The safety officer (SO) assists the commander during the risk management process and monitors all brigade and subordinate unit missions to identify and address potential hazards. He recommends actions that allow safe mission accomplishment. The SO is frequently the other crew member for the brigade commander or the S3. The brigade SO is responsible to the brigade SIP for the standardization of the safety contents of the reading files. He is also a principal trainer and peer leader for the subordinate unit SOs. The SO must be rated in the highest-density type aircraft in the brigade.

BRIGADE CHAPLAIN

4-226. The aviation brigade Chaplain provides unit level religious support to all personnel assigned/attached to the brigade including non-denominational coverage and ministry for mass casualties and hospitalized members of the battalion. The Chaplain advises the commander on religious, moral, and soldier welfare issues. He establishes liaison with unit ministry teams of higher and adjacent units. He also supervises the subordinate unit chaplains and provides backup services as required. The chaplain and chaplain's assistant compose the UMT, which usually operates from the same location as the S1.

BRIGADE FLIGHT SURGEON

4-227. The flight surgeon provides combat health support for the brigade, and physician directed advanced trauma life support to battlefield casualties and routine sick call service when not engaged in combat.

4-228. The brigade flight surgeon advises and assists commanders on matters concerning the medical condition of the command including preventive, curative, and restorative care. The flight surgeon periodically flies with aircrews to monitor medical and environmental factors that affect crew readiness. He, with subordinate unit flight surgeons, conducts flight physicals for unit personnel. The flight surgeon determines requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies for the brigade HHC. The flight surgeon operates the brigade aid station that is normally located in the AA.

MEDICAL TREATMENT TEAM

4-229. The medical treatment team provides unit-level health service support (HSS) for the brigade HHC, and medical oversight for subordinate unit medical sections. The medical treatment team also provides emergency medical treatment, advanced trauma management, and routine sick call services

AIR FORCE WEATHER TEAM

4-230. The brigade may receive air force weather team support when local facilities or assets are unable to provide required weather information. The team locates with the brigade main CP and provides their own weather equipment. The team provides a staff weather officer and 24 hour forecasting and observation services to the aviation brigade commander and staff. An observer team may also provide observations from a field aircraft Landing Zone (LZ).

CIVIL-MILITARY OPERATIONS OFFICER

4-231. A civil-military operations officer (S5) is normally not available to the brigade. However, in certain operations, a S5 may be designated or attached. The S3 is responsible for civil-military operations (CMO) when an S5 is not provided. In operations where the areas of responsibility for the S3 and the S5 overlap, the S5 is subordinate to the S3. S5 personnel working in any of the brigade's subordinate unit areas are subordinate to the commander of that subordinate unit, regardless of rank.

CIVIL-MILITARY OPERATIONS

4-232. CMO are activities that support military operations embracing the interaction between the military force and civilian authorities. These operations foster the development of favorable emotions, attitudes, and behavior in neutral, friendly, or hostile groups.

CIVIL-MILITARY OPERATIONS CENTER

4-233. When accomplishing CMO duties, the designated officer may have to coordinate with a civil-military operations center (CMOC). This is an operations center formed from civil affairs assets. It serves as the primary interface between the U.S. armed forces and the local civilian population, humanitarian organizations, nongovernmental organizations, other international agencies, multinational military forces, and other agencies of the U.S. government. The CMOC ensures continuous coordination among the key participants regarding civil-military matters. It is a flexible, mission-dependent organization that can be formed at brigade and higher-level headquarters.

HEADQUARTERS AND HEADQUARTERS COMPANY ELEMENTS

4-234. The company headquarters, in addition to supporting the AVN BDE staff, has operational elements listed below.

HEADQUARTERS AND HEADQUARTERS COMPANY COMMANDER

4-235. The HHC commander is responsible for all the unit does or fails to do. He leads the HHC and mentors, guides, and inspires the soldiers of the company. He serves as the headquarters commander for the brigade AA, and answers to the brigade XO. The HHC commander should have qualified as a PC in his previous assignment, but it is not necessary that PC status be sustained for this position. The HHC commander supports, secures, and moves the main CP, and supports all elements of the HHC.

HEADQUARTERS AND HEADQUARTERS COMPANY EXECUTIVE OFFICER

4-236. The XO is the second in command of the company, usually a successful ex-platoon leader. He should have qualified as a PC in his previous assignment, but it is not necessary that PC status be sustained for this position. The XO is a key figure in assisting the HHC commander. The XO:

- Coordinates with the brigade when the company commander is not available.
- Receives new orders and begins TLPs when the commander is operating forward.
- Leads the company when the company commander directs.
- Manages company logistics requirements.

HEADQUARTERS AND HEADQUARTERS COMPANY FIRST SERGEANT

4-237. When dealing with the other NCOs in the unit, the HHC 1SG acts in the name of the commander. He is the commander's primary advisor concerning the enlisted soldiers. The 1SG focuses unit attention on any function critical to the success of their mission. The 1SG assists the commander in the following ways:

- Monitors NCO development, promotions, and assignments.
- Identifies, plans, and assesses soldier training tasks to support the performance of collective (unit) tasks on the METL.
- Monitors morale of the company.
- Provides recommendations and expedites the procurement and preparation of enlisted replacements for the company.
- Coordinates medical, mess, supply, administrative, and other logistics support.
- Conducts informal investigations.
- Leads company ground movements when required.

SUPPLY SECTION

4-238. The HHC supply section provides unit level supply support for the Company. It requests, receives, stores, issues, turns in, and accounts for necessary supplies and equipment; maintains supply records; and secures weapons and other equipment. The supply section performs unit maintenance on individual and crew served weapons.

SECTION VIII – BATTLE COMMAND PLATFORM OPERATIONS

4-239. This section describes not only the physical command posts available to the Aviation Brigade Commander, but what tools are used within the Aviation Brigade command posts to manage information and to control the warfight. Included is a description of the digital communications equipment designed to facilitate common operating picture (COP) and situational understanding (SU)

AIRBORNE BATTLE COMMAND

ARMY AIRBORNE COMMAND AND CONTROL SYSTEM (A2C2S)

4-240. The Army Airborne Command and Control System (A2C2S) provides an airborne battle command on the move capability to the Aviation Brigade. It consists of five workstations with the capability to host multiple C2 applications, and also hosts a robust communications suite. Developmental work is also underway to develop an L-Band INMARSAT capability.

4-241. The A2C2S is a UH-60 based C2 system that serves as an airborne tactical CP. It provides maneuver commanders—from ARB to echelons above UEy—with on-the-move C2. The system supports three major operational functions—mission planning, mission execution, and mission support. Its primary function is to monitor the execution of current operations while the main CP focuses primarily on planning future operations. Its onboard Maneuver Control System (MCS), All Source Analysis System (ASAS), Advanced Field Artillery Tactical Data System (AFATDS), Air and Missile Defense Work Station (AMDWS), Combat Service Support Control System (CSSCS), and Force XXI Battle Command Brigade and Below (FBCB2), provide a continuous battlefield common operational picture. It also is the source of digital information for nondigitized aircraft supporting the operation (Figure 4-3).

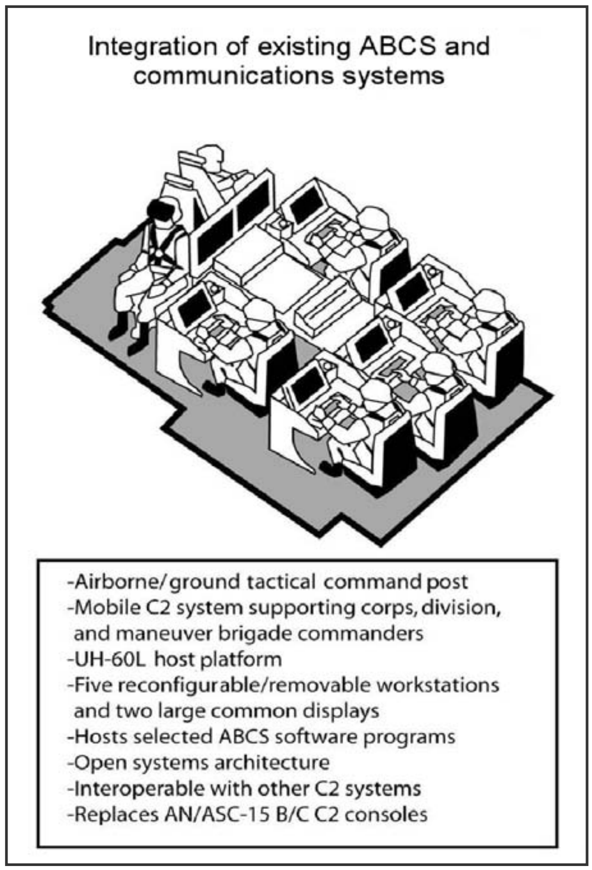

Figure 4-3. A2C2S Configuration

4-242. A2C2S enables the commander and his staff to traverse the battle space to critical places at critical times. The commander and staff can perform all battle command and coordination functions from A2C2S. It has simultaneous multi-band voice and data channels and a dynamic visual battlefield common operational picture and C2 via C4I connectivity. A2C2S provides the ability to manipulate, store, manage, and analyze COP information, intelligence data, mission plans, and mission progress data to support the C2 decision making process. The system has MSE and JNN interoperability and is compatible with NATO, civil aviation, maritime, and law-enforcement communications.

FEATURES AND PERFORMANCE

4-243. A2C2S provides:

- Robust Line of sight (LOS) and non-line of sight (NLOS) communications through SINCGARS Advanced System Improvement Program (ASIP), SATCOM demand assigned multiple access (DAMA), Have Quick II, enhanced position location reporting system (EPLRS), NTDR (SA), and HF.
- GPS for present position and standard National Geospatial Agency (NGA) (previously NIMA) maps with overlays for a complete picture of the battlefield.
- Automated display of the COP and C2.
- Five automated, reconfigurable, and removable workstations and a command database and two large common displays; each workstation incorporates a keyboard, monitor, and audio communications unit.
- Real-time battle-space control and monitoring.
- Common displays.
- Enhanced control of battle.
- Digital connectivity with all ABCSs.
- Standard communications and information security.
- Airborne and ground operational modes.

ARMY AIRBORNE COMMAND AND CONTROL SYSTEM INTERFACES

4-244. A2C2S interfaces with:

- Joint Surveillance Target Attack Radar System (JSTARS).
- SATCOM.
- Maneuver TOCs.
- CH-47F.
- AH-64D.
- OH-58D.
- M1 main battle tank.
- M2/M3 cavalry fighting vehicle.
- Multiple Launcher Rocket System (MLRS).

OPERATION AS A GROUND COMMAND POST

4-245. The preferred power source for ground operations is commercial power. If commercial power is not available, a generator is the next preferred power source. If external power is not available, aircraft power is required. Extended ground times may require a ground power unit, which could be brought in via sling load, or by a tactical ground vehicle, such as a HMMWV with a generator kit.

COMMAND AND CONTROL MISSION PLANNING CONSIDERATIONS

4-246. C2 planning considerations unique to A2C2S are discussed below.

SYSTEM INITIALIZATION

4-247. Initialization is an important step in preparing A2C2S automated systems. If A2C2S begins a mission without proper initialization, it is difficult to transfer the necessary volume of initial information while en route (in a timely manner) to exploit the capabilities of the automated workstations and data communications. A2C2S initialization is a three-step process:

- Initializing radios.
- Initializing the IDM (+)/INC.
- Loading of Maneuver Control System (MCS) data.

SYSTEM OPERATOR

4-248. A master operator manages the software/hardware while the commander and staff control the battle. The operator must be trained to initialize the system, use each of the component systems, and troubleshoot the system and provide immediate work-around solutions in case of malfunctions. The aviation unit may not have personnel available to operate the system. The supported unit commander must be prepared to provide a systems operator.

ARMY AIRBORNE COMMAND AND CONTROL SYSTEM OPERATOR MANUALS

4-249. This section is written to provide an overview of A2C2S. Operator manuals take precedence over any procedure in this section.

4-250. The information management capabilities of A2C2S are focused on controlling the execution of an operation. Planning capability is limited. Mission data are transferred to A2C2S from the digital TOC to bring it up to the same (current) operational status at the start of a mission.

INFORMATION FLOW

4-251. The Army Tactical Command and Control Systems (ATCCS) are primarily top-down planning tools. Once the execution phase begins, the primary flow of information is bottom-up via FBCB2. A2C2S draws real-time data from broadcast sources to determine changes to the enemy situation during the execution phase of a mission. The intelligence information that the ASAS provides is an analyzed and formal product. Intelligence information that A2C2S receives from tactical related applications (TRAP), Tactical Data Information Exchange-Broadcast (TADIX-B), and Tactical Information Broadcast Service (TIBS) broadcast sources is raw data (Figure 4-4).

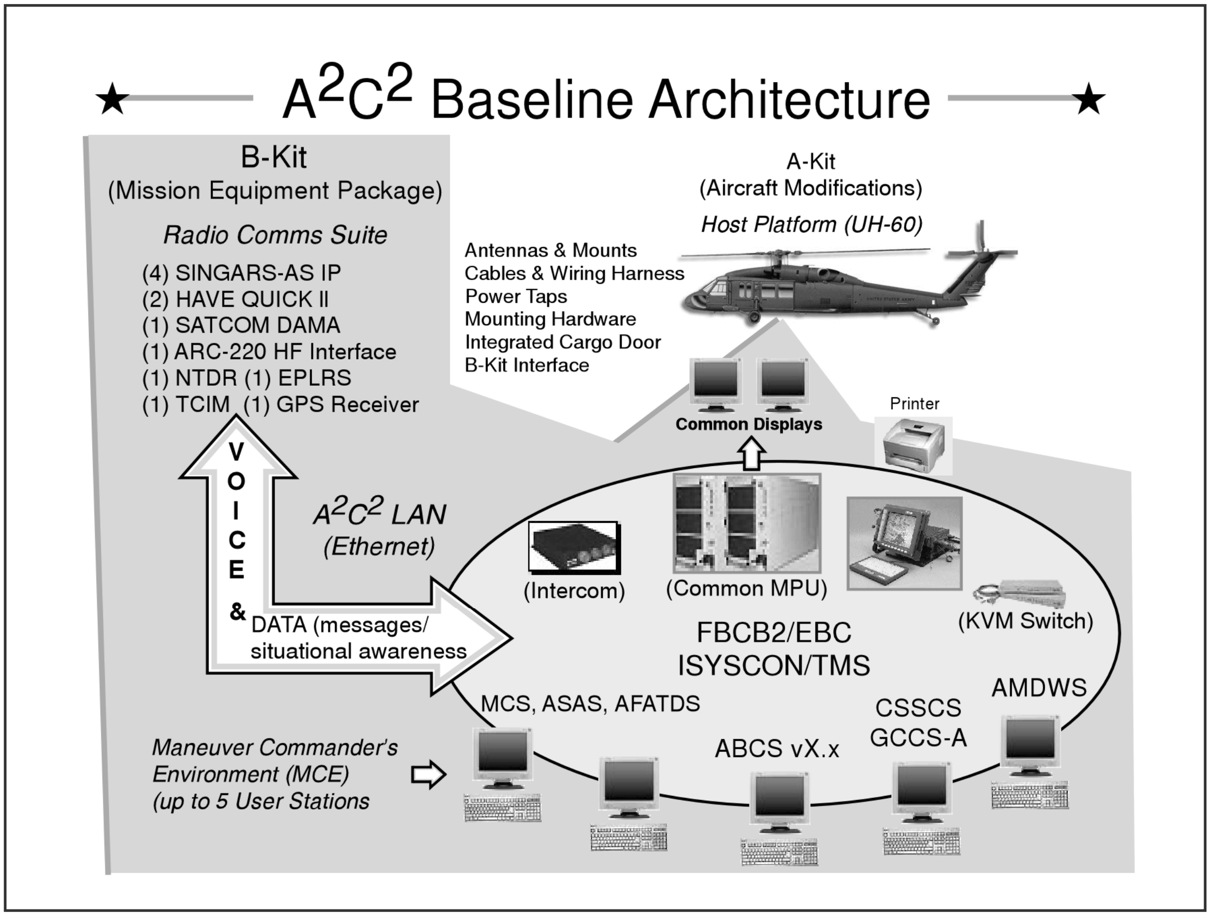

Figure 4-4. A2C2S Information Flow

BATTLEFIELD EMPLOYMENT

4-252. A2C2S expands the battlefield by providing the means to exercise C2 and gather tactical information in support of a mission while on the move. From A2C2S, the commander and staff influence the battle via direct exchange of voice and digital information with units conducting the mission. They simultaneously develop the situation beyond the range of their unit's sensors and shooters by accessing broadcast intelligence sources. See Figure 4-5 for employment capabilities.

COVERING FORCE AND DEEP AREAS

4-253. A2C2S enhances lethality during covering-force missions and shaping operations in deep areas by moving its command forward so that it can maintain contact with the maneuver forces. From A2C2S, the commander and staff can synchronize deliberate and hasty artillery fires. A2C2S can have a direct link to artillery, including the ATACMS. However, direct linkage is not necessary for direct FS or priority of fires.

CLOSE AREAS

4-254. Integral activities during operations in close areas include maneuver, close combat (including TACAIR), indirect FS, CS and CSS of committed forces, and C3I. Aviation organizations may be employed as a security or reserve force in the security or main battle area. A2C2S gives the commander a clear picture of the close battle and allows him to coordinate and synchronize maneuver and fires. Linked with other automated systems, A2C2S can pull information on demand. This allows the commander to operate at his own tempo, without the information delays characteristic of traditional reporting methods.

REAR AREAS

4-255. The AVN BDE gives the UEx commander a highly mobile and lethal combat force to counter a Level III incursion in the rear area. As a maneuver headquarters, the brigade can be tasked as a tactical combat force to respond to a significant threat. A2C2S provides a flexible and highly mobile tactical CP to control operations.

STABILITY AND SUPPORT OPERATIONS

4-256. During stability operations and support operations, the system provides connectivity to special operations C2, embassy, law enforcement, maritime, civil, and/or other humanitarian information and communication networks. A2C2S can improve the ability of local, state, and federal agencies to communicate and coordinate in a crisis environment such as a hurricane or forest fire.

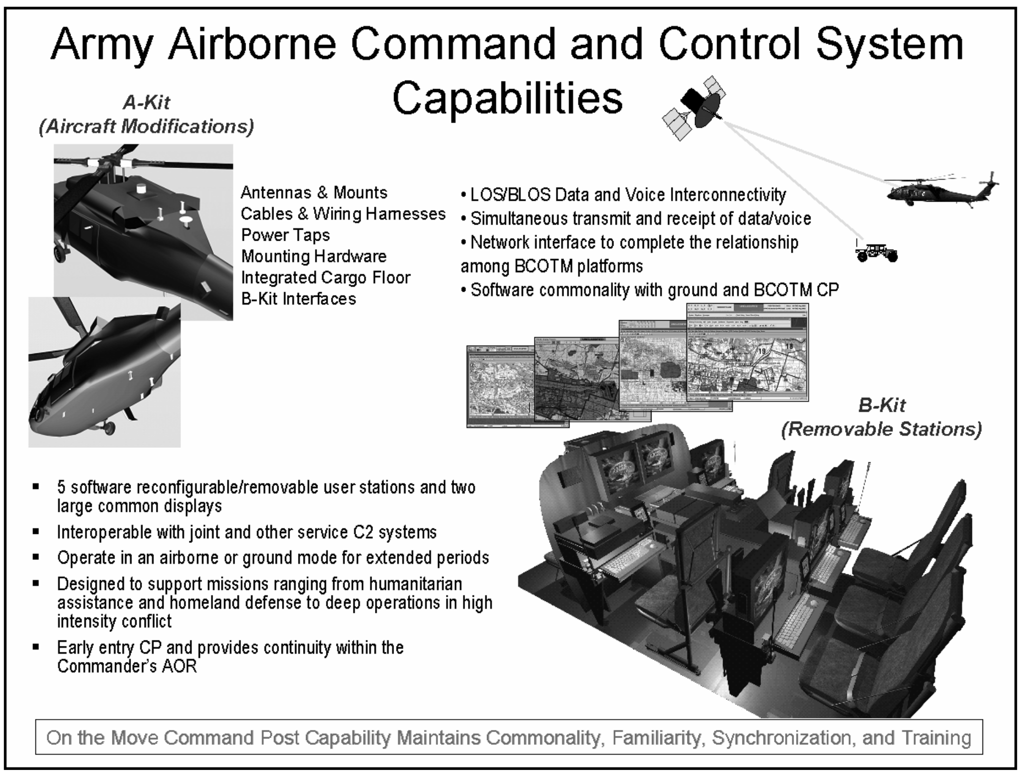

Figure 4-5. Army Aviation Command and Control System Capabilities

GROUND BASED BATTLE COMMAND PLATFORMS

4-257. The Army's standardized CP structure exists to facilitate communications. Commanders modify this structure to meet unique aviation mission needs, their personal command-and-control style, and the need for continuous operations. Personnel and communication systems availability constraints may not support traditional doctrinal CP structure. Force digitization and automation will further modify how units C2 in the future. The headquarters of the modular Aviation Brigade is more robust and staffed to minimize the old requirement for augmentation. The Aviation Brigade employs separable, deployable command posts for rapid response and entry; linked to Home Station Operation Centers to minimize forward footprints; and are network-enabled organizations capable of commanding or supporting joint and multinational as well as Army forces.

DIGITAL COMMAND POST LAYOUT

4-258. The standardized integrated command post system (SICPS) is the new generation of CP facility systems to support digitized units. SICPS is a C2 enabler, providing the platform from which to conduct digital CP activities. Its primary purpose is to support C2 of digitized units by housing their ABCSs. SICPS is designed to facilitate CP operations by providing the flexibility, commonality, and operational capabilities needed to enhance unit mobility and integrate ABCS and associated communication and networking equipment. It supports the integration of these command and control assets into platforms that can serve as a stand-alone CP or as an integrated element in a larger digitized CP.

4-259. The centerpiece of SICPS is the command post platform, which comes in three variants and is capable of hosting multiple battle command applications along with up to two integrated local area networks. It is required to be C-130 deployable and capable of rapid set up and tear down. Additionally there is a SICPS family of open environment tents with environmental control to provide a collaborative workspace, a command post communications system (Intercom) for selected platforms and a large scale display and video controller to support collaborative staff operations.

4-260. SICPS will be found at the Aviation Brigade Command posts. The Aviation Battalions will receive a tent environmental control and a large scale display (LSD) The battalions will be able to use the transit case LAN from the JNN small CP node to reach back to the server located at the Aviation Brigade for server functionality. See Figure 4-6 for SICPS capabilities.

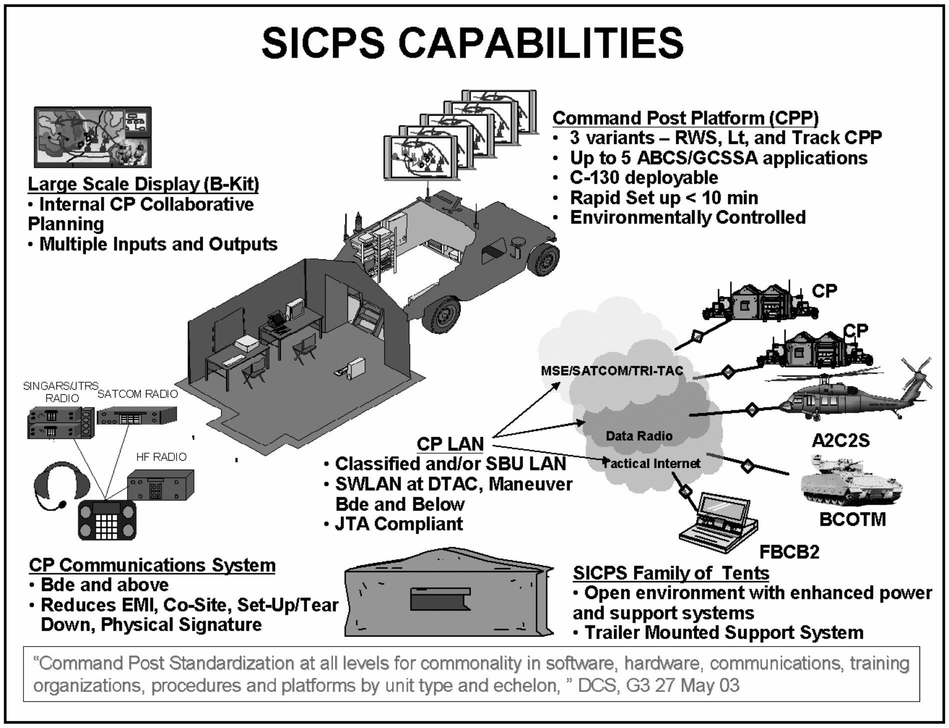

Figure 4-6. SICPS Capabilities

4-261. Figure 4-7 below shows one configuration of SICPS configured for the AVN BDE digital CP. Specific unit SOPs may differ from this example.

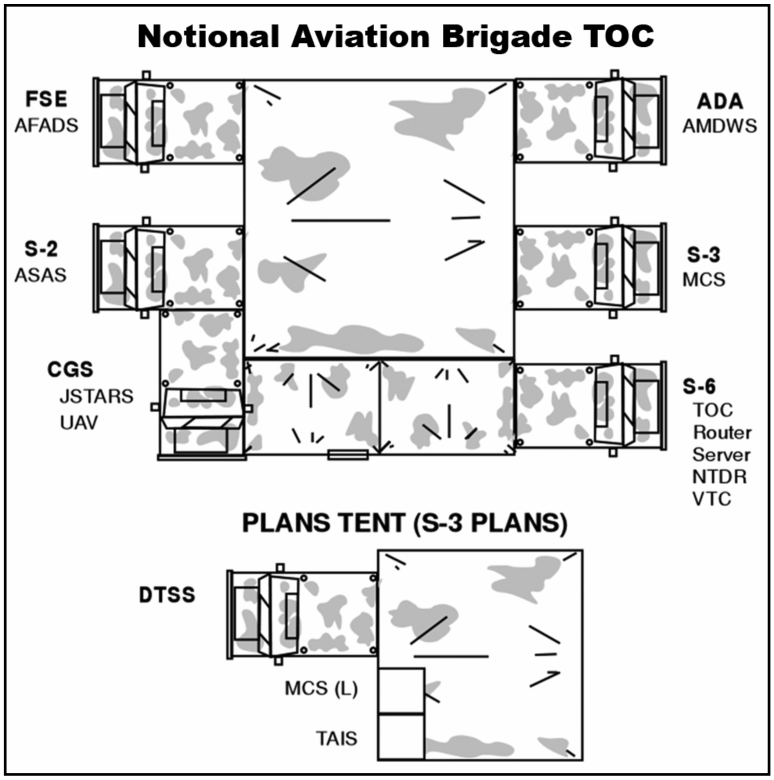

Figure 4-7 Example of a Digital CP set up using SICPS

SECTION IX – MANAGING INFORMATION IN THE DIGITAL COMMAND POST

4-262. As with the analog CP, the digital CP's physical setup must facilitate communication and analysis of information as well as accommodating computer hardware requirements. Within the digital CP, information is processed at two locations: individual workstations and the combat information center (CIC).

INDIVIDUAL WORKSTATIONS

4-263. The focus of the individual workstation is the individual Battlefield Automated System (BAS) and the specific Battlefield Operating System (BOS) that it supports. At his workstation, the staff member inputs and monitors data within his sphere of responsibility. He also accesses data posted to web pages and shared files by other staff sections in the LAN and WAN to carry out his BOS functions and duties.

COMBAT INFORMATION CENTER

4-264. The focus of the CIC is integrated battle monitoring and decision making. It is a special location within the CP for the display of information. The CIC is the central area for viewing information for the commander and his staff to maintain the COP.

LARGE SCREEN DISPLAY

4-265. The large screen display (LSD) is the only area in the CP where all key BAS data can be viewed simultaneously. It is, therefore, the place where battlefield vision is best supported. The commander uses the CIC to illustrate his guidance and, with his staff's assistance, to develop and maintain the COP. CICs will vary by MTOE. However, the typical CIC has two LSDs, each capable of displaying nine subscreens. Each subscreen can display the COP and can be configured in various ways to best support the commander's information display preferences. The more subscreens used, the lower the resolution of the image. It is, therefore, recommended that each LSD screen use no more than four subscreens. Two LSDs allow the display of eight subscreens, which should ordinarily be enough.

DATA DISPLAY MANAGEMENT

4-266. IO plays a key role in the commander and staff's ability to maintain an accurate picture of the battlefield in the CIC. With feeds from each ABCS, the LSD enables them to see more of the battlefield and to receive greater amounts of real-time battlefield information by BOS than is available with analog systems.

4-267. More information is not necessarily beneficial to mission planning and accomplishment. Data must be filtered, fused, and focused to create meaningful informational displays relevant to the mission. These displays or tactical pictures must, therefore, be presented in a logical manner on the LSD to support SU. CP digitization has replaced analog maps, acetate, and wing-boards with digital overlays and electronic files. Because electronically stored information is readily available through a minimum number of computer keystrokes, there is also less need to print paper copies of the information. However, information saved electronically has a tendency to be "out of sight, out of mind." Leaders and staff must, therefore, know what data is available to them to make decisions about what will be displayed.

4-268. Although the LSD can display any BAS electronic data, the narrative and static aspects of some information still lend themselves to paper-copy posting within the CP. This is especially true for information that is less likely to change during a mission such as CCIR and the synchronization matrix. In turn, this optimizes the use of LSD subscreens by freeing them to depict dynamic ABCS digital content. The commander, XO, S3, and battle captain must be able to orchestrate BOS coordination through the display of key information on the LSD. Each staff section must, therefore, maintain information relating to its BOS using visual graphics that support the COP. Staff sections and their supporting systems should be arranged around the LSD to facilitate information control, interaction, coordination, and information analysis.

4-269. The COP is displayed on the LSD through one ABCS, typically the S3's MCS or MCS-L. COP control and manipulation and CP LAN administration are aided by centrally collocating the CP server and the BAS that projects the COP. The ability to view the LSD through the BAS controlling the COP also facilitates communication and navigation through data. During discussions in the CIC, personnel can focus staff on key portions of the COP. Data will be displayed on the LSD via the COP using the ABCS COP application or through overlays provided by individual BASs. To portray the COP graphically requires METT-TC analysis of information. The COP displays enemy (shown as red feed and graphics), friendly (shown as blue feed and graphics), terrain (shown as characteristics and impact), and civilian considerations (shown as gray feed and graphics).

4-270. Friendly analysis occurs in the CIC by all BOS sections and systems. Each BAS provides BOS overlays for subsequent data manipulation and consolidated viewing in the form of operational pictures that form the COP. Enemy analysis is especially time-sensitive information.

4-271. The MCS whiteboard or electronic whiteboard equips leaders and staffs to conduct collaborative sessions. Participants at distributed locations view the same enemy and friendly COP on an MCS display and are linked with audio. The telestration feature of whiteboard allows each participant to use a mouse with a crayon drawing capability to visually depict locations, graphics, and other coordination measures that can be seen on the participants' screens.

DIGITAL STAFF ESTIMATES

4-272. Not all key information can be graphically depicted on the LSD. Such information must be captured in a readily available, continuous update format for quick dissemination and assimilation. FM 5-0 (FM 101-5) emphasizes that each staff section should maintain a staff estimate (in narrative form, at UEx and higher and, in graphical form, at brigade and battalion). In the analog CP, these graphical staff estimates correspond to the "wing board" and map data.

4-273. Digitization has eliminated the need to post information to wing boards but has created the need to organize digital data. Units must capitalize on the TACLAN web pages maintained by each staff section for organizing and posting critical mission data. By placing digital staff estimates on a web page, each staff section supports the commander's and staff's need to quickly review, update, and use information for battle monitoring and planning.

4-274. Establishing a standard staff estimate format facilitates navigation through the estimate and cross-referencing between estimates. Staff estimates should also list available BOS overlays by name to better focus graphical review within the ABCS COP application and to focus all echelons and staff on the same, most current data. Through digitally equipped LNOs, analog units should access these digital estimates to obtain current operational data and to help synchronize their operations with digital units.

DIGITAL INFORMATION MANAGEMENT

4-275. The Aviation Brigade staff must be organized to support the information management process of filter-fuse-focus. This process will be guided by doctrine, TTP, and unit SOPs. The staff must operate according to established procedures that specify access to common databases, common displays, and report formats. The staff must be organized to allow the vertical and horizontal flow of information. This organization should provide links between teams within staff sections, between staff sections within a CP, and between CPs at the same, higher, and lower echelons.

4-276. Digitization enables commanders and staff members to focus more on the execution of combat operations and much less on planning, coordination, and the processing of information. Commanders and staff will have much more data upon which to base their decisions. Their challenge, therefore, will be to manage the flow of vast amounts of data so that the right information gets to the right person at the right time. These specific challenges are:

- Relevancy: Determine the relevant information from among the vast amount of data available.
- Responsibility: Ensure that each product is the assigned responsibility of a specific staff section.
- Accuracy and Currency: Ensure that the data are correct and up-to-date.
- Dissemination: Ensure that information generated by the staff gets to the right personnel.
- Evaluation: Ensure that information is appropriately assessed.

RELEVANCY

4-277. Because of the large quantity of data available, the commander needs to establish information priorities to focus the staff during their data collection. These priorities must address the relevant information to the specific operation. The commander provides this focus via CCIR that are:

- Specified by the commander and applicable only to him.
- Situation dependent and linked to present and future operations.
- Based on events or activities that are predictable.
- Time sensitive (answers to CCIR must be reported to the commander by the most rapid and effective means).

4-278. Table 4-3 summarizes the Digital CCIR responsibilities.

Table 4-3. Summarizes the CCIR Responsibilities.

Duty Position	Sample Briefing Items
Commander	Establish CCIR Establish priorities for information collection and distribution Assign assets to collection information Determine display of information throughout his command during an operation
Chief of Staff/ Executive Officer	Manage CCIR Establish TTP for tracking when and how CCIR are answered Assign responsibilities to personnel within the staff sections and CPs to manage information Supervise commander's guidance for collecting, processing, and circulating information
Staff Leaders	Manage information within BOS Recommend CCIR based on analyses Record, evaluate, analyze, and report collected information to answer CCIR
Staff Section Operators	Monitor ABCS traffic Know what to file, what data to display, what to name/rename files, and where to store them Know what graphics to display Be alert to CCIR and know how to act on CCIR for these requirements

RESPONSIBILITY

4-279. The diverse products produced using ABCS must each be the responsibility of specific staff sections. This responsibility will usually be obvious, being based on doctrine. Unit SOPs/TTP must confirm these doctrinal responsibilities while ensuring that all other products are the assigned responsibilities of specific staff sections.

ACCURACY AND CURRENCY

4-280. Because ABCS is automated, it allows information to flow much more quickly and accurately. However, while ABCS is automated, most of its information does not flow automatically. Only friendly position data (which supports the friendly or "blue" picture) flows automatically via FBCB2 and the TI. For all other data to enter and flow throughout ABCS, each BAS must be properly initialized and its data maintained. Staff sections will have ready and routine access to the many products of other staffs and units at varied echelons. This outside access may take place without a staff section knowing about it. Staffs must ensure that they continuously post their most up-to-date products and maintain them on staff web pages or shared folders. CP internal procedures must specify routines and suspenses for producing and revising ABCS products and specify where they will be maintained.

DISSEMINATION

4-281. Because of bandwidth limitations, it might not be possible to routinely send out products through e-mail. On the other hand, it is not enough to merely post information to a web site or shared folder and expect others to use it. With the exception of routine, scheduled postings and updates, the staff must proactively notify users when such changes are made. When a product is posted or revised, staff sections must notify other staff sections and units at the same, lower, and higher echelons. This notification must include instructions on precisely where to find the product and its file name. Units must establish SOPs that specify file-naming conventions and file-management procedures. Whether forwarding products or providing notification of product postings in shared files/web pages, the right personnel must receive the right information. Correct address information using the ABCS address books and message handling tables (MHT) must be established to ensure that data will be sent to the correct BASs. Addressees must be the users employing the individual ABCS rather than generic role names in the address book. If this is not done correctly, information on one BAS will not flow to other BASs even in the same TOC. During initialization, operators must also create and distribute databases, which can be done via messages in ABCS. These databases will ensure that BASs can share the right kind of information.

EVALUATION

4-282. Computer data tends to be accepted at face value because it is computer-based and, therefore, is assumed to always be correct. Users of digital systems must resist this tendency. Error can be introduced through failures in BASs, databases, and communications systems; human error in inputting data; and failing to update information in a timely manner. Data must therefore be evaluated within the context provided by SU to verify that they are accurate and current. Users must follow up on discrepancies to ensure that they have the right information.

COMMAND POST DATA EXCHANGES

4-283. The Army is making rapid and drastic changes in CP design, taking full advantage of the newest computer technology. The CPs for digitized units will be mobile, deployable, and equipped to access, process, and distribute the information and orders for their echelon. The aviation brigade commander and robust staff must be able to provide the battle command and synchronization for up to six aviation battalions and coordinate all types of aviation support for the UEx. The commander is responsible for making recommendations on the proper employment of assigned and attached forces and for accomplishing the operational missions. The command post structure and manning must support the Aviation Brigade Commanders duties and responsibilities. This section outlines the internal operations of a digital CP. FM 71-100, 71-100-2, FM 71-100-3, and FM 5-0 contains more detailed discussion.

DATA EXCHANGE

4-284. Central to digital CP operations is the manner in which they exchange data. ABCSs share information either directly with one another or through the JCDB. The Joint Common Data Base (JCDB) resides on all of the ABCS computers in a CP and provides the data for the common applications that generate the COP. Battlefield information dynamically flows back and forth between ABCSs and the JCDB. When data is entered through a BAS, this change is forwarded to all ABCS subscribers on the CP's tactical LAN (TACLAN) and posted to the COP. Figure 4-8 below, shows this data exhange.

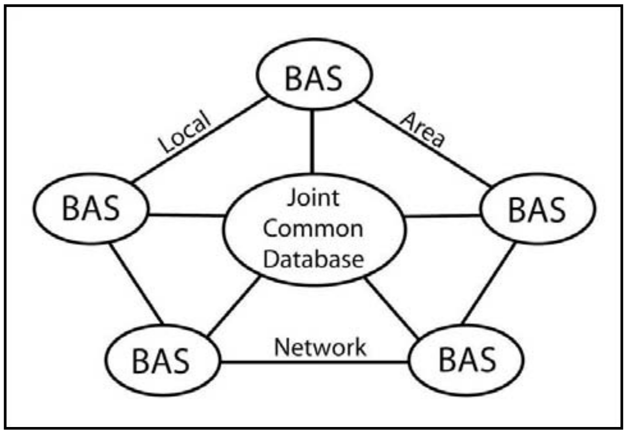

Figure 4-8. Data Exchange within the Aviation Brigade's Command Post LAN

4-285. Data is also exchanged between CPs. This exchange allows the same data to be maintained in the JCDBs in different CPs. Data generated by each BAS flows to its counterpart BAS at adjacent echelons. Each BAS then transfers this information to the JCDB at that echelon via the TI. Friendly picture position information flows from FBCB2 upward through the server located at each echelon. This information is then deposited into that echelon's JCDB. This data exchange ensures that all TOCs have JCDBs resembling one another. This is key to creating the COP. Figure 4-9 shows this data flow between an example battalion and brigade with their MCS operating as servers.

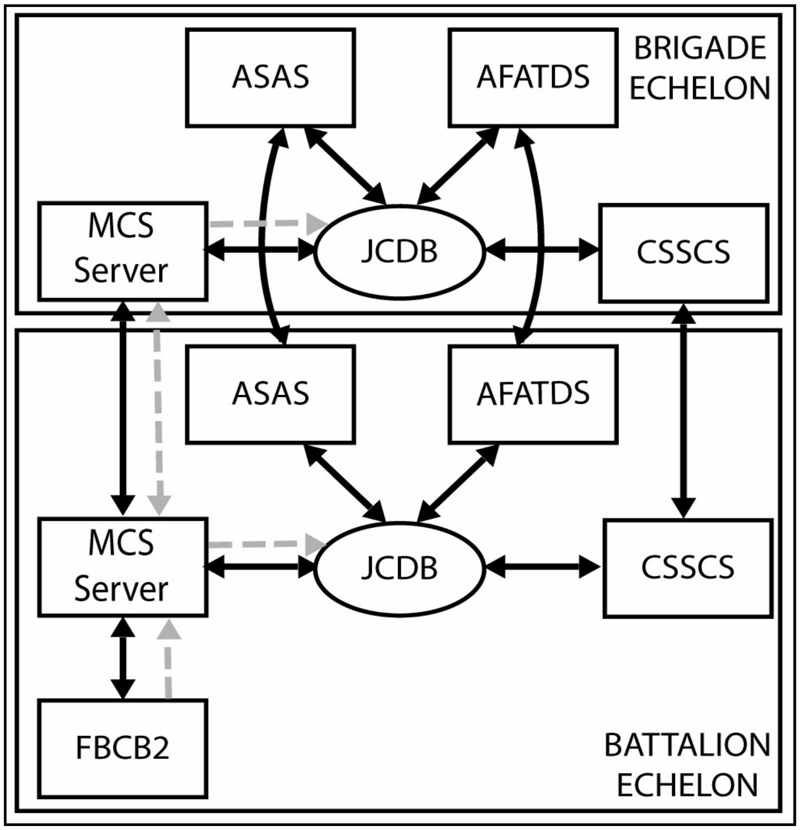

Figure 4-9 Example of a Data Exchange between CPs

ANALOG UNIT INTERACTION

4-286. Digitized units must be prepared to operate with non-digital units that do not have the technology to access the digital COP. Liaison parties will almost always be necessary to ensure full exchange of information between digitized and non-digitized units. The primary tasks of digital LNO teams are:

- Receipt and transmission of orders, graphics, and intelligence data via BAS.
- Provision of friendly and enemy SU to the analog unit using its BAS.
- Manual creation of the analog unit friendly and enemy SU and its transmission back to the parent organization.
- Fire support and coordination.

PLANNING

4-287. A digitized unit must exchange liaison teams with non-digitized units early and consistently throughout the planning process. Non-digitized units must strive to conduct parallel planning but will be at a disadvantage without digital staff tools. Parallel planning requires rapid exchange of information with analog units during the planning process. Involving higher, adjacent, and lower staff elements early in the planning process allows the entire staff to see both current and future operations and to identify known or potential problem areas.

LIAISON TEAMS

4-288. Digital liaison teams may be sent to the analog unit's CP. Liaison provides at least some digital capability to analog units. These teams will support SU for both the digital and non-digital unit, the issue of orders, and informal information exchange. The number of liaison teams is limited, and these alone cannot solve the C2 challenges of analog units that are without digitally based SU. Liaison teams may be needed to escort elements of the analog unit, even down to single vehicles if necessary. This latter option will provide SU for these analog elements but is only practical if the digital unit forms additional liaison elements.

EQUIPMENT REQUIREMENTS

4-289. The equipment and skills required of the liaison teams are a function of the type of operation being conducted and the force with which the team is coordinating. The following three basic forms of liaison affect the task organization of liaison teams:

4-290. Digital unit to digital unit: This requires the least equipment and personnel because information is easily shared in near-real time; critical SU is maintained in each unit's knowledge base.

4-291. Digital unit to analog unit: This may occur when conducting operations with some active component units, most reserve component units, and coalition forces; these teams require a full suite of digital systems to maintain the parent unit's COP and to provide SU of the non-digitized force back to the digital headquarters. Representation from each staff section may be required on the team.

4-292. Digital unit to nonmilitary forces/agencies: This is the same as for analog units but augmented with additional specialties such as the S5/G-5.

COMMAND POST ARMY BATTLEFIELD COMMAND SYSTEMS

ARMY BATTLEFIELD COMMUNICATIONS SYSTEM:

4-293. ABCS provides rapid and reliable information nets to enable the Army to project the force, protect the force, gain information superiority, determine the battle space, conduct decisive operations, and sustain the force. It provides real-time and near-real-time information that enables sound decision making inside the enemy's decision cycle.

4-294. ABCS is a collection of information management systems that assists the commander in exercising C2 and gaining SU. ABCS permits him to apply his judgment more productively, to use his command presence more efficiently, to develop and disseminate his vision effectively, and to understand better the dynamics of war (in general) and the specific operation (in particular). ABCS provides for common collaborative tools, training programs, and application

4-295. ABCS provides a visual means to see friendly and enemy forces and the ability to arrange and maneuver forces to accomplish missions. The ABCS components assist in answering the Commander's needs for information:

- Friendly Locations.
- Current Enemy Situation.
- Running Estimate
- Graphic Control Measures (GCMs, FSCM, Capability Overlays).
- FRAGO's.
- Commander's SITREPS.
- FS coordination measures/Capabilities Overlap.

- Joint and Coalition Interoperability

4-296. ABCS Version 6.4 provides for key technology enhancements of the current ABCS which include; integration and dissemination of terrestrial and satellite based FBCB2 Blue Force Tracking and C2 data, transitions Battle Command Systems from specialized workstations to Commercial-off-the-shelf laptops and introduces net-centric, XML-based publish and subscribe architecture. See Figure 4-10.

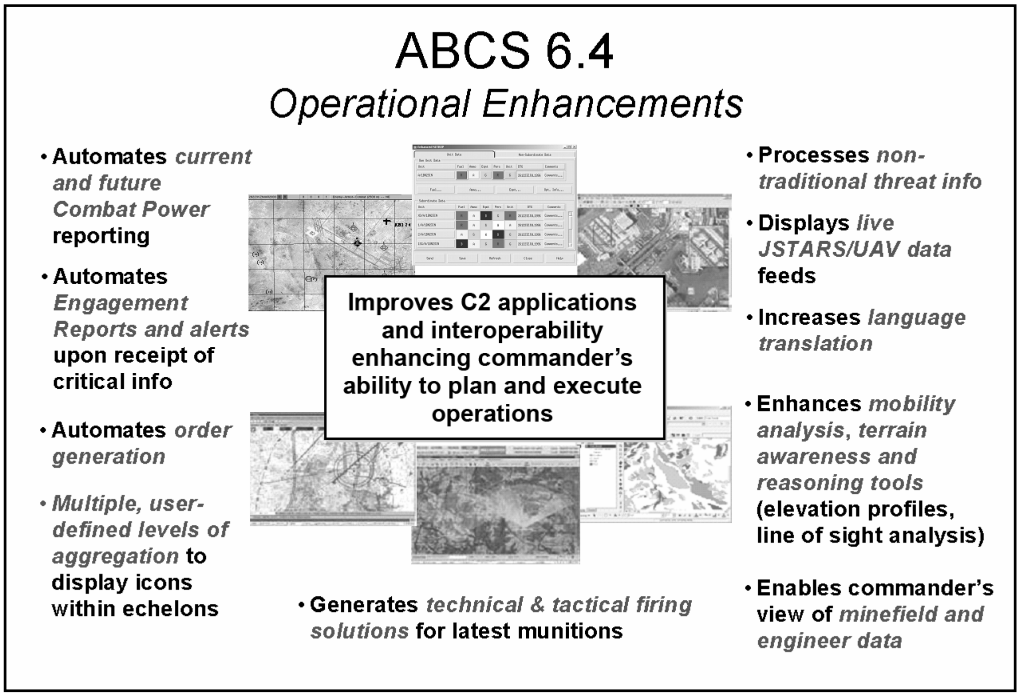

Figure 4-10. ABCS 6.4 Operational Enhancements

ABCS COMMON PICTURES

4-297. The terms Common Operation Picture (COP) and common tactical picture (CTP) are often used interchangeably, but have distinctly different definitions:

4-298. The COP is an operational picture tailored to the user's requirements, based on common data and information shared by more than one command; the COP facilitates collaborative planning and assists all echelons in achieving SU, which helps to synchronize execution. A shared COP allows for timely, accurate, reliable, and actionable use of information. It enables the user the ability to share and use information anywhere on the battlefield.

4-299. The CTP is an application available on ABCS computers and supporting systems; the application uses a common mapping background, is accessed through a common user interface, and displays information shared from the Joint Common Database (JCDB). The CTP is dynamically updated as data change in the JCDB.

4-300. Examples of COP overlays are the force disposition, enhanced by overlaying the operational overlay; FS overlays; and the A2C2 overlay. Additional information is available at the description of each system.

4-301. ABCS assists in answering these questions by providing a COP of the battle space through timely presentation of information in various types of formats including voice, data, imagery, graphics, and video. The operational picture also provides:

- Access to planning documents.
- Status reports.
- Timely, automatic warnings of air, missile, and NBC attacks.

4-302. Although each battlefield automated system (BAS) of ABCS makes contributions that support its own BOS-oriented tasks, the key contribution of ABCS is as an interoperable "system of systems." The synergistic capabilities of ABCS allow commanders to reach across the BOS to request, select, and evaluate data from diverse resources to create relevant information. The COP begins with a common map background against which a commander can display a variety of information such as:

- Friendly locations and graphic-control measures.
- Enemy units and equipment.
- Fire support control measures, range fans, and targets.
- Air tracks and tactical ballistic missile tracks.
- Logistics status and joint information.

4-303. The COP includes all relevant elements to include:

- Army units.
- Joint, allied or coalition forces.
- Enemy forces.
- Neutral elements.
- Unknown forces.

4-304. Each user can tailor his COP to show as little or as much information as he requires. ABCS' essential contribution to C2 is that it provides identical, shared data. ABCS enhances warfighting in the following ways:

- Accelerates the Military Decision Making Process (MDMP), preparation of estimates, COA development, wargaming, and orders production and dissemination.
- Assists in gathering and displaying relevant information while filtering out unnecessary data.
- Allows for dissemination of information in near-real time and minimizes latency of information exchanges.
- Facilitates the synchronization of CSS by increasing the opportunities for real-time coordination.
- Exploits digital map data and terrain-analysis products.
- Facilitates rehearsal and training through compatibility with current and future simulation and simulation systems.
- Enhances interoperability through commonality of task procedures.
- Provides data access to the commander in austere environments through reach-back capability.

ABCS COLLABORATION TOOLS

4-305. Collaboration tools include:

- VTC, whiteboard, and shared applications.
- Messaging.

- File transfers.
- Calendar creation/scheduling.
- Task management.
- Internet browser.
- Database query tools.

ABCS TRAINING PROGRAMS

4-306. These provide training and simulation capabilities for individual and collective training events.

ABCS APPLICATIONS

4-307. Common applications include word processor, spreadsheet, and presentation/graphics programs. Document interchange services support document exchanges between heterogeneous computer systems using common file formats.

4-308. The operational picture application creates a shared picture of the battle space.

4-309. The planning application automates aspects of the MDMP and enables parallel and collaborative planning.

4-310. ABCS is a system of systems that consists of information technology applications, nets, and communications that enable data exchange throughout the force. It is composed of subsystems for each BOS. Each subsystem supports and provides information to other systems to improve battlefield SU. By integrating the ABCS components to a JCDB, the COP can be viewed at any workstation according to the commander's specific requirements. In addition, ABCS subsystems provide an array of specialized capabilities and applications for units at all levels.

ARMY BATTLE COMMAND SYSTEM COMPONENTS

4-311. ABCS consists of the many subsystems which will be described in the following paragraphs. The ABCS subsystems are:

- GCCS-A.
- FBCB2.
- TAIS.
- DTSS.
- Integrated Meteorological System (IMETS).
- ATCCS.

GLOBAL COMMAND AND CONTROL SYSTEM—ARMY (GCCS-A)

4-312. GCCS-A is the Army hardware and software that directly support Army implementation of the Joint Global Command and Control System. It supports monitoring, planning, and execution of joint, combined, and Army operations for UEx missions and operations. GCCS-A ensures Aviation Brigade access to key information within the joint realm such as force tracking, host-nation and civil affairs support, theater AD, targeting, PSYOP, C2, logistics, and medical and personnel status. In turn, this information supports UEx-level planning, execution, and monitoring of mobilization, deployment, sustainment, and redeployment.

4-313. The key capabilities of GCCS-A are current, time phased force deployment data (TPFDD). This information is essential for planning the movement of forces and monitoring unit status and availability. The logistics analyzer allows planners to forecast resources needed in various combat situations. GCCS-A shares the client-server architecture common operating environment with the joint GCCS for the general functions of teleconferencing, messaging, file transfers, office automation, utilities, and system administration.

FORCE XXI BATTLE COMMAND BRIGADE AND BELOW (FBCB2)

4-314. FBCB2 provides command and control and situational understanding (SU) to the lowest tactical echelons (commander to the soldier level). FBCB2 will facilitate a seamless flow of battle command information across the battlespace, and will be interoperable with other command and control systems. It supports OPCON chiefly through the transmission and receipt of orders, reports, and data via combat messages. FBCB2 employs position navigation and reporting capability to depict and transmit the unit's own location. FBCB2 can also access other friendly units' locations, as well as intelligence, to show the friendly and enemy picture in near-real time, even while on the move.

4-315. FBCB2 assists SU by telling the user his location and the locations of other friendly forces, observed enemy forces, and reported battlefield obstacles. The user can adjust his picture of the battlefield by selecting which overlays, graphics, and icons are shown. Unit displays can be altered by grouping icons according to unit type or echelon.

4-316. FBCB2 automates frequently used urgent messages for reporting the enemy, requesting MEDEVAC, NBC attack, call for fire, cease fire, and unit situation reporting. Enemy information can be rapidly formatted via an automated report. This information is forwarded to all other FBCB2 users and the all source analysis system (ASAS) supporting the user, usually the task force or brigade S2.

4-317. FBCB2 supports the call-for-fire process via a message in joint variable message format (JVMF), which is sent directly to AFATDS. The integration of the laser ranger finder with FBCB2's Ground Positioning System greatly improves the speed and accuracy of both calls for fire and enemy spot reports.

4-318. It provides key information to the Combat Service Support Control System (CSSCS) on unit logistical status.

TACTICAL AIRSPACE INTEGRATION SYSTEM (TAIS)

4-319. TAIS is a digitized, integrated airspace management and decision support system to assist the commander in his role in the air battle. It supports automated A2C2 planning and operations and air traffic services. It also helps planners build Army input for the joint airspace control order (ACO) to distribute the approved A2C2 overlay. TAIS can display airspace control measures (ACM) in two or three dimensions while monitoring the real-time airspace situation. TAIS provides SU of the third dimension by providing real-time airspace information that displays the location and movement of aircraft transiting the battle space overlaid against current ACMs.

4-320. TAIS is found at the UEx Main Command post and at the Aviation Brigade where it can optimally provide flight-following functionality. At UEy level, one TAIS is at the main CP while a second is placed consistent with the tactical situation.

4-321. TAIS deconflicts (mathematically and graphically), in real time, airspace usage in the third and fourth dimensions (altitude and time). For example, the operator can graphically rotate a three-dimensional representation of the airspace to see ACMs from different angles, enabling him to see how they intersect and overlap.

4-322. The air traffic services display includes information from the ACO and ATO. TAIS operators can use this display to track the flight of aircraft. If an aircraft leaves the safe transition corridor, TAIS can alert the operator. TAIS will be able to communicate (voice and data) with current and future military aircraft (joint/combined), civilian aircraft and air traffic control systems, and other U.S. and allied forces airspace users.

DIGITAL TOPOGRAPHICAL SUPPORT SYSTEM (DTSS)

4-323. DTSS enables topographic support personnel to receive, format/reformat, store, retrieve, create, update, and manipulate digital topographic data. It gives digital terrain analysis, terrain databases, updated terrain products, and hard-copy reproduction of topographic products to include maps. Its tactical decision aids support COA analysis and the MDMP. These aids include mobility analysis, intervisibility (LOS) analysis, environmental and climatology analysis, terrain elevation, and other special products. Using the Global Broadcast Service (GBS), DTSS receives and distributes digital terrain data from the NGA. DTSS can update existing digital maps from satellite imagery and produce full-size, color paper maps from any DTSS product.

4-324. DTSS is found at the UEx main CP, and tactical and brigade CPs.

4-325. DTSS produces sophisticated mobility analysis products. For example, it provides a detailed analysis comparing off-road mobility of the HMMWV and M1 tank. It performs intervisibility analysis, which is overlaid on a terrain map backdrop. For example, from any point on the map, it can depict every other point within LOS of the first point. DTSS depicts a three-dimensional view such as a fly-through area. Colored areas show threat and friendly AD domes superimposed on satellite imagery. The DTSS database contains detailed terrain information but not weapon characteristics and locations; these must be obtained from the intelligence staff.

INTEGRATED METEOROLOGICAL SYSTEM (IMETS)

4-326. IMETS is the meteorological component of ABCS. It provides an automated, high-resolution weather system to receive, process, and disseminate current weather observations, forecasts, and weather and environmental effects decision aids. These workstations, manned by staff weather teams, are at the AVN BDE, UEx and UEy CPs.

4-327. IMETS receives and integrates weather information from polar-orbiting civilian and military meteorological satellites, the Air Force Global Weather Center, artillery meteorological teams, remote sensors, and civilian forecast centers. It also processes and collates forecasts, observations, and climatological data to produce timely and accurate weather products tailored to the warfighter's specific needs. Additional weather information is available via the IMETS web pages. Severe weather warnings are disseminated to units via USMTF message. The integrated weather effects decision aid (IWEDA) displays weather effects on weapon systems or missions. For example, it can show the various weather effects—whether favorable, marginal, or unfavorable—on various weapons over the next 24 hours.

ARMY TACTICAL COMMAND AND CONTROL SYSTEM (ATCSS)

4-328. ATCSS the term used to describe a family of automated C2 tools:

- Maneuver Control System (MCS)
- Maneuver Control System-Light (MCS-L)
- All Source Analysis System (ASAS)
- All Source Analysis System-Light (ASAS-L)
- Advanced Field Artillery Tactical Data System (AFATDS)
- Air and Missile Defense Work Station (AMDWS)
- Combat Service Support Control System (CSSCS)

MANEUVER CONTROL SYSTEM (MCS)

4-329. MCS is the Aviation Brigade S3's tool. It displays the current battle and enables planning for the future battle. It provides the ability to collect, coordinate, and act on near-real time battlefield information. MCS integrates information horizontally and vertically to provide the COP of friendly, enemy, and noncombatant locations. Workstations are allocated to command posts from battalion to UEy.

4-330. A message processor is available on all MCS workstations. It is used to create, edit, transmit, print, and store messages in both United States Message Text Format (USMTF) and JVMF. With word-processing templates and web-browser technology, MCS can rapidly produce and distribute OPLANs, OPORDs, FRAGOs, and WARNOs. Task organizations are created, edited, and displayed using the unit task organization (UTO) tool. MCS collaborative planning tools enable multinode collaborative planning sessions within or between CPs. These tools include data conferencing, chat, and whiteboard. The whiteboard is a powerful capability for war-gaming, orders briefs, and back-briefs. The chat feature is similar to current chat programs available on personal computers. Multiple users can communicate simultaneously by posting text messages that can be read simultaneously by all chat participants.

MANEUVER CONTROL SYSTEM –LIGHT (MCS-L)

4-331. MCS-L operates as a client of MCS. It is able to obtain data directly from the JCDB and to update the JCDB with friendly locations and battlefield geometry. The main difference between MCS-L and MCS is the ability of the latter system to perform various net server functions and to interface with FBCB2. MCS-L workstations are found at the brigade, battalion and in certain separate companies.

4-332. The MCS-L can be used to:

- Produce orders, plans, and annexes; used to develop task organizations, overlays, and synchronization matrices.
- Develop and assess courses of action; the MCS-L includes a distance/rate tool.
- Create messages and generate reports; used to maintain the staff journal.
- Record and depict NAIs, TAIs, and CCIR including HVTs and HPTs.
- Function as file transfer protocol (FTP) client/server; the MCS-L possesses Adobe Acrobat™, a file zip utility, Microsoft Office™, and a web browser.

ALL SOURCE ANALYSIS SYSTEM (ASAS)

4-333. ASAS is the intelligence fusion system. It receives and processes intelligence and information from sensors, processors, and communications systems at national, theater, and tactical echelons and spot reports from FBCB2. It provides a timely, accurate picture of the enemy situation. The Aviation Brigade and Battalion S2s use the ASAS remote workstation (RWS) for automated situation development, COAs, targeting, tactical warning, and BDA. The ASAS system is found at echelons from battalion to UEy.

4-334. Intelligence personnel can use the analysis tools in the ASAS RWS for their IPB. For example, it is able to depict tracked vehicle GO and NO-GO areas overlaid on a terrain map. The ASAS RWS assists the warfighter's COA analysis with information on enemy units, equipment, locations, and movements. Using reports and sensor inputs, the RWS can alert the operator to enemy targets and can automatically nominate them for friendly supporting fires. Commanders and staff can even focus ASAS on the specific types of targets that will best support the mission. ASAS also monitors the current enemy situation. Using the latest combat information and intelligence, it maintains and displays timely, detailed data on enemy units.

ALL SOURCE ANALYSIS SYSTEM-LIGHT (ASAS-L)

4-335. ASAS-L is found at battalion level and has vertical and horizontal interoperability with MCS, AFATDS, FBCB2, and other ASAS terminals. It is intended primarily for those who use preprocessed intelligence information and graphic IPB products from the analysis and control team, ACE, and the S2's ASAS RWS (the chief ASAS platform at UEy, UEx and brigade). ASAS-L receives and processes initial INTREP and information received via FBCB2. It will forward these reports to the analysis and control team and ACE where the information will undergo intelligence processing and integration before returning to the brigade S2 as fully correlated intelligence information. The ASAS-L provides ISR management and analytic support to the battalion S2 for SU, tactical warning, force protection, and targeting. It also provides an analyzed enemy picture to the operational picture.

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS)

4-336. AFATDS is the artillery management system employed by fire support (FS) personnel. It provides for fully automated FS planning, coordination, and control of close support; counterfire; interdiction; suppression of enemy ADs; and operations in deep areas. AFATDS matches FS weapons with targets based on target type, the commander's guidance, unit availability, weapon status, and ammunition availability. It encompasses FS platforms across the services—including mortars, field artillery cannons, rockets, missiles, CAS, attack reconnaissance helicopters, and naval surface fire support (NSFS). AFATDS is a multiservice system.

4-337. AFATDS is at the firing platoon through UEy. Remote terminals allow commanders, LNOs, and other FS personnel to monitor FS operations and issue guidance.

4-338. AFATDS analyzes a potential target and then identifies which available FS systems would be most effective. This information is shown to the operator through a visual display. Based on the commander's guidance, AFATDS prioritizes targets and supported units, specifying the method of engagement and the volume of fire for each type of target. These priorities can vary according to varying guidance for each phase of an operation to best support the commander's intent and scheme of maneuver. AFATDS processes fire missions through combat messages in dialogue with MCS, CSSCS, AMDWS, and FBCB2 and reports mission results to ASAS.

4-339. In addition to managing the FS of current operations, AFATDS assists FS planning for future operations. Its planning mode offers decision aids and analytical tools to determine which FS plan best supports a COA.

AIR AND MISSILE DEFENSE WORK STATION (AMDWS)

4-340. AMDWS is the AD system that enables monitoring of the current air operation while planning for future events. It also provides SU of the third dimension. The force operations capability of AMDWS supports the planning, coordination, and preparation for and sustainment of the AD mission. It integrates AD fire units, sensors, and C2 centers into a coherent system for defeating the aerial threat. Defense planning and analysis functions support the development of AD missions and the distribution and merging of missions between echelons. AMDWS also supports air battle management by displays that show ACOs, current fire unit status, alert posture, missile expenditure, and personnel ready for duty.

4-341. AMDWSs are found in the BCT ADAM/BAE Cell, as well as in the UEx and UEy command posts.

4-342. The AD unit status screen shows the location, alert status, on-hand munitions, vehicles, and personnel for AD units from section through battalion echelon. Its weapon and sensor visibility feature supports placement of AD weapons and sensors. By analyzing platform capabilities and digitized terrain elevation data, AMDWS can determine the area coverage of weapons and sensors at different locations. The AMDWS mission planner shows zones of sensor coverage, weapons coverage, friendly and hostile air tracks, air avenues of approach, and airfields. The commander can use this display to synchronize AD coverage with the planned scheme of maneuver. Operators can set parameters to depict aircraft at various altitudes based on the surrounding terrain.

COMBAT SERVICE SUPPORT CONTROL SYSTEM (CSSCS)

4-343. CSSCS is the automated system for planning and controlling the CSS of combat operations from battalion to theater level. Warfighters can logistically assess future COAs using current or planned task organizations and approved planning factors. CSSCS tracks the maneuver sustainment posture throughout the task organization down to company level.

4-344. Logistics reports depict unit and resource status with a color code of green, amber, red, or black by using corresponding percentages set by the user. Reports can be displayed as web-based custom reports or as standard, preformatted reports. The standard report shows the logistical readiness of a unit and its subordinate units. The user can focus on parts of the report to isolate specific units and materiel items. This capability helps identify how an individual status affects the overall readiness rating of the unit. In the custom report, the user can track the status of specific units and resources:

4-345. The capability report shows a unit's logistical ability to conduct sustained combat operations; this report provides unit resource status in relation to combat posture and intensity for the current day and next four days.

4-346. The supply class report shows resource status with items grouped by class of supply.

4-347. The personnel daily summary depicts unit personnel status and is available for all company-size units and separate battalions.

ARMY BATTLE COMMAND SYSTEM AND THE COMMON TACTICAL PICTURE

4-348. Figure 4-11 shows the ABCS's input that forms the CTP.

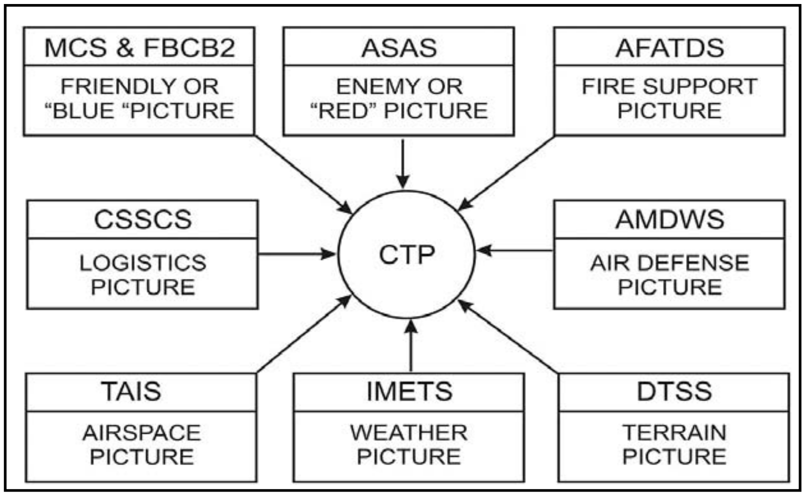

Figure 4-11. Common Tactical Picture

SECTION X – MANAGEMENT OF DIGITAL COMMAND POST PERSONNEL

BATTLE ROSTERS

4-349. Each section within each Aviation Brigade CP must maintain a digital 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 BAS.
- Assigned shift.
- Date of most recent training on system.
- Software version of most recent training.
- Estimated date of departure from unit.
- Operators should be managed in a manner similar to unit vehicle drivers according to the following principles:
- Depth: Have more trained operators than needed to ensure BAS 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 coverage, this ability enables section leaders to better supervise and employ the BASs that they oversee.
- Currency: Operators must be trained on the most current software carried on their BAS.

SHIFT MANAGEMENT

4-350. Shift changes are usually scheduled at 12-hour intervals. Commanders should consider offsetting shift changes at midshift for key personnel. Staggering personnel in this manner will maintain a constant interface of new and old shift personnel. This practice will ensure that at least one individual knows what happened during the previous shift. Figure 4-12 provides an example.

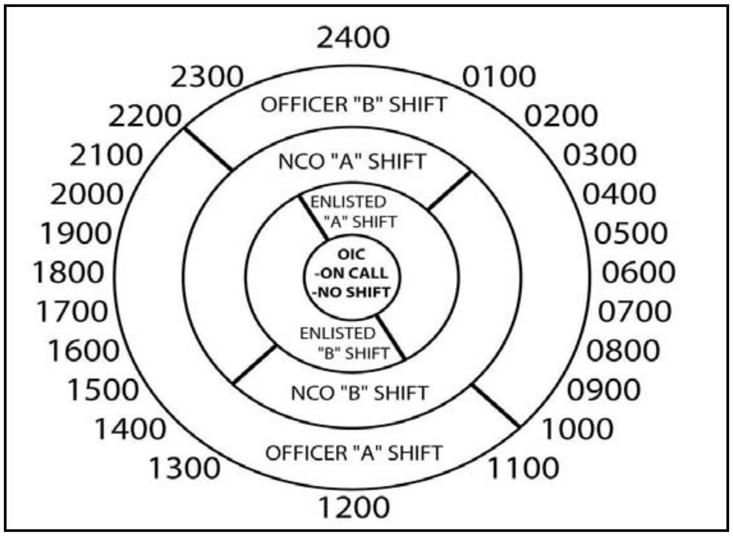

Figure 4-12. Example of Staggered Shift Changes

4-351. Soldiers must conduct a one-on-one exchange of information with the person who they are relieving. This exchange must be followed by section wide debriefs to ensure continuity in information flow and handoff of ongoing staff actions.

4-352. Following the individual brief, section-level products and actions should be reviewed. Each staff section should accomplish the following actions:

- Review the digital journal for the past 12 hours.
- Review and update any CCIR.
- Review the current approved overlays.
- Review the current COP products.
- Check files to ensure that standard naming conventions are used.
- Review unit tasking orders.
- Check section web products for updating and to ensure that they are posted properly.

4-353. A collective information exchange, in the form of a shift change brief, must be conducted so that the incoming shift receives a positive change of control. Personnel from different staff sections will have access to the key information produced by other sections and CPs. 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, the status of the current operations, and tasks to support future operations.

4-354. Critical digital considerations should be briefed collectively within the CP. Table 4-4 provides an example of what this brief may look like. Units should develop SOPs to address this requirement.

Table 4-4. Provides an Example of a Digital CP Shift Change Brief

Staff Position	Sample Briefing Items
S3 Battle Captain	Current higher and brigade changes to task organization Disposition/status of units Current and future missions Current operations LNO updates Combat power status Projected operations over next 12 hours Current timelines
S2/ Weather	PIR/CCIR Current SU and location/status of all ISR assets (national to UEx/brigade) RFI/RFA to higher (ARFOR or national) Weather – next 12 hours impact/effects on friendly and enemy systems HVT/HPT Battle damage assessment Significant activities during past 12 hours
FSE	Organization for combat Unit locations and status Priority of fires HPT/attack guidance matrix Fire support control measures Significant activities
ALO	Preplanned request status Immediate request status In-flight reports
AD	Organization for combat Current AD warning status Aircraft engagements Location and status of AD units
Engineer	Operations since last update Status of equipment and Class IV/V Future engineer operations Recommendations for the commander
Chemical	NBC condition Current and recommended MOPP Enemy NBC activity Chemical unit locations and status
S1/S4/ Surgeon	Equipment status Class VIII status Priority of support Personnel status/health service status
S6	Network status Scheduled outages/mitigations

BATTLE RHYTHM

4-355. Two key things to consider when establishing SOPs for the digital command post battle rhythm are scheduled updates (both with higher and subordinate units) and bandwidth. ABCS competes for bandwidth with the commander's digital updates or VTCs especially if the 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.

BATTLE UPDATE BRIEFING

4-356. The battle update briefing provides the commander with analyzed information essential to decision making and to synchronize the staff's actions. Use of the COP 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 will center 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 the fact that it is already available at each BAS. Unit SOPs, command guidance, and operational requirements will guide what information is briefed. Facts and capabilities may be presented in digital staff estimates for the commander to review before the briefing. This allows the battle update briefing to focus on by-exception information and on specific commander issues. Methods to update the commander depend on his location, connectivity, and the information that he requires. Table 4-5 compares delivery methods.

Table 4-5. Update Delivery Comparison

Commander in an Aviation CP	Commander in Another CP
Verbal	Voice (radio, phone)
Over the shoulder of an operator	FBCB2
Commander's update page and pull-up information	MCS or access to another BAS at his location
Links to staff section pages and pull-up information	Collaboration session
Collaboration session	
Large Screen Display	

4-357. Traditionally, these updates were a recounting of significant events since the last update. To build the update, the CP would establish an information cut-off time. The focus was on maintaining SU. ABCS has altered this briefing from a staff brief to a constantly available information package focusing on the commander's needs. Table 4-6 shows how the briefing has evolved from its traditional analog form to its digital form.

Table 4-6. Traditional Versus Digital

Traditional	Digital
Significant events since last update	Commander accesses his own critical information needs
Current as of cut-off time	Updated continuously
Periodic event	Available anytime
Current SU	Enhances SU
Staff presentations and their preparation were significant event	Staff routinely maintains information files, which continues with normal operations

4-358. Battle update briefs should maximize the use of information from BASs to aid in understanding the COP. Cutting and pasting information to non-ABCS 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 UEx level). By the time that slides are briefed, their information is outdated and inconsistent with the more current COP.

SECTION XI – DIGITAL COMMAND POST DUTIES AND RESPONSIBILITIES

4-359. Although the Aviation Brigade staff functions as described in FM 5-0 (FM 101-5) will not fundamentally change in the digital CP, these functions will be carried out differently using the digital tools that ABCS provides. Digitization will also require personnel to perform new functions as listed below. These digital CP tasks should be conducted in addition to and as a part of standard staff responsibilities.

COMMANDER

4-360. The commander has the following digital duties and responsibilities:

- Provides command guidance for employing ABCS.
- Provides C2 of automation resources.
- Establishes automation support priorities.
- Specifies the unit's COP.
- Establishes the CCIR and ensures that these requirements are depicted in ABCS.
- Ensures that subordinate leaders are trained in the employment, operation, and sustainment of automation.
- Trains subordinate leaders and staff to create, maintain, distribute, and use the COP.

EXECUTIVE OFFICER

4-361. The XO has the following digital duties and responsibilities:

- Coordinates the staff to ensure ABCS integration across BAS.
- Ensures that the staff integrates and coordinates its ABCS activities internally, vertically (with higher headquarters and subordinate units), and horizontally (with adjacent units).
- Manages the CCIR; ensures satisfaction of the CCIR.
- Directs the creation and distribution of the COP to include procedures for updating enemy and friendly SU.
- Monitors the 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 VTCs and whiteboard sessions.
- Monitors liaison teams with analog (nondigitized) units and joint/allied forces for their contribution to the COP.

S1

4-362. The S1 has the following digital duties and responsibilities:

- Is responsible for personnel functions of CSSCS.

- Employs CSSCS to monitor and report on personnel-related portions of the commander's tracked item list (CTIL).
- Manages Standard Installation/UEx Personnel System (SIDPERS) interface with CSSCS.

S2

4-363. The S2 has the following digital duties and responsibilities:

- Acts as staff proponent for ASAS and IMETS.
- Supervises ASAS and IMETS operations and support.
- Provides guidance on employment and support of ASAS and IMETS.
- Supervises the information security program; evaluates security vulnerabilities.
- Assists the G6/S6 in implementing and enforcing LAN security policies.
- Provides software application expertise on proponent systems.

S3

4-364. The S3 has the following digital duties and responsibilities:

- Acts as staff proponent for MCS, AFATDS, AMDWS, FBCB2, and AMPS.
- Plans, integrates, and employs ABCS.
- Develops the ABCS annex for plans and orders.
- Develops ABCS annexes to the garrison and tactical SOPs.
- Oversees offensive IO and defensive IO.
- Provides operational and support guidance regarding network employment to subordinate units.
- Integrates AMPS and distributed planning data.
- Creates, maintains, and displays the COP; maintains SU of all units.
- Coordinates with G6/S6 for communications connectivity in support of ABCS.
- Plans and monitors operator digital sustainment training.
- Provides software application expertise on proponent systems.
- Assigns LNOs and coordinates their digital support.
- Collects and distributes postmission results/BDA.

S4

4-365. The S4 has the following digital duties and responsibilities:

- Acts as staff proponent for CSSCS.
- Supervises CSSCS operations and support.
- Provides guidance on employment and support of CSSCS.
- Monitors and reports on the status of all automation equipment.
- Provides software application expertise on proponent systems.

S6

4-366. The S6 has the following digital duties and responsibilities:

- Serves as signal SME to the commander; advises the commander and staff on all signal support matters.
- Monitors WAN performance; integrates the CP LAN.
- Is responsible for all automation information systems, automation and network management, and information security.

- Ensures consistency and compatibility of automation systems.
- Manages the TI; is responsible for network employment, network configuration, and network status monitoring and reporting.
- Receives planning worksheets with LAN/WAN requirements.
- Ensures unit information network connectivity between unit and higher/lower echelons.
- Plans, coordinates, and manages network terminals.
- Develops, modifies, and manages network need lines, UTO, and base configuration files.
- Plans, coordinates, and manages communications links to include reach-back communications.
- Coordinates with higher echelon signal officers for additional communications support.
- Develops and coordinates the signal digital support plan.
- Determines system and retransmission requirements for the tactical situation.
- Coordinates with higher, adjacent, and subordinate units in development of the signal digital support plan.
- Manages the release of ABCS software within the unit.
- Provides a focal point for automation support (help desk).
- Implements and enforces LAN security policies.
- Establishes COMSEC accountability, distribution, destruction, and security procedures within the unit.
- Provides technical oversight to the Aviation Brigade's Signal Company

MISSION APPLICATION ADMINISTRATOR

4-367. The mission application administrator has the following digital duties and responsibilities:

- Helps the S6 manage the network.
- Plans and coordinates the linking of BAS to the unit CP.
- Supervises and performs unit-level maintenance and installs and performs maintenance on multifunctional/multiuser information processing systems, peripheral equipment, and associated devices in mobile and fixed facilities.
- Performs analyst functions; constructs, edits, and tests computer system programs.
- Performs preliminary tasks necessary for CP LAN initialization.
- Assists in troubleshooting digital systems.
- Conducts data system studies and prepares documentation and specifications for proposals.
- Maintains master copies of software.
- Backs up data for user-owned and -operated automation information systems.
- Assists in recovery of digital data at the user level.
- Operates and performs PMCS on assigned vehicles and power generators.
- Monitors BAS PMCS program.
- Coordinates repairs with the S6 section.

BATTLE CAPTAIN/BATTLE STAFF NONCOMMISSIONED OFFICER

4-368. The battle captain/battle staff NCO has the following digital duties and responsibilities:

- Oversees operations of assigned BAS.
- Controls/directs the initialization of the BAS within the CP LAN (battle staff NCO).
- Ensures that information flow and coordination take place between and within each staff section and with higher, adjacent, and lower headquarters.
- Accesses and employs information through ABCS in support of operations and planning.
- Ensures that key BAS products are available and current in support of the mission.

BATTLEFIELD AUTOMATED SYSTEM OPERATORS

4-369. The battlefield automated system operator has the following digital duties and responsibilities:

- Installs and operates assigned digital hardware and software.
- Establishes connectivity of assigned BAS within LAN/WAN; ensures that the system interfaces with correct tactical communications.
- Inputs operational data.
- Produces automated reports required by commanders and staff leaders.
- Performs PMCS on assigned BAS.
- Isolates, identifies, and tracks digital system problems.
- Maintains continuity of digital operations.
- Maintains portions of the COP, as assigned.
- Ensures unit-level information security.

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Chapter 5

Common Operational Procedures

UEx aviation brigades are organized multifunctionally with Attack/Reconnaissance, Air Assault, General Support and Aviation Support Battalions. They are tailored to execute operations that support the unit to which they are assigned. The UEx AVN BDE has the functionality to fully integrate into all operations of the maneuver brigade air-ground team as well as operate in the battlespace of the controlling UEx not occupied by maneuver brigades. Because the UEx aviation brigade can task organize as required to conduct reconnaissance, security, air-assault, close combat attack, mobile strike, and maneuver sustainment support, brigade commanders and staffs should be familiar with the current doctrinal literature for all types of aviation missions.

SECTION I – FUNDAMENTALS

TIME REQUIRED TO PLAN

5-1. Planning time is critical for every type of military mission. While aviation units can move rapidly, planning time is essential for coordination, clearing routes, mission briefings to soldiers and leaders, and unit SOP compliance. Warning orders (WARNOs) maximize time available by allowing subordinate units to prepare for pending action. Planning and operations are greatly simplified by SOPs that are understood, followed, and internalized through training.

WARNING ORDER

5-2. A WARNO is a preliminary notice of an order or action that will follow. It serves as a planning directive that describes the situation, allocates forces and resources, and establishes command relationships. It provides other initial planning guidance and initiates subordinate unit mission planning. Planning and coordination begin when the unit receives a notice of mission. Aviation units may also begin to reconfigure or reposition in support of the upcoming operation.

COMMANDER'S INTENT

5-3. A well-understood and disseminated commander's intent enhances C2. Each commander is expected to understand the intent of the commander two levels above along with the concept of his immediate commander and the supported BCT commander.

TYPES OF OPERATIONS

5-4. There are four types of operations: offensive, defensive, stability, and support (Tables 5-1 through 5-4).

Table 5-1. Types of Offensive Operations

OFFENSE	DEFINITION
Movement to Contact	Employing movement to develop the situation, establish contact, or regain contact with the enemy.
Attack	Destroys or defeats enemy forces through aerial firepower, mobility, and shock effect.
	CCA: Application of Army aviation into the close fight using integrated air-ground operations.
	Mobile Strike: Combines ground based fires, attack aviation, unmanned systems and joint assets to mass effects. Focused on key objectives, fleeting HVTs, and threats to friendly maneuver.
	Special Purpose: Special purpose attacks achieve objectives different from those of other attacks. Counterattacks are usually phases of a larger operation. Raids and ambushes are generally single-phased operations conducted by small units.
Exploitation	The follow-up of gains to take full advantage of success in battle.
Pursuit	An action against a retreating enemy force.

Table 5-2. Types of Defensive Operations

DEFENSE	DEFINITION
Mobile	Orients on the defeat or destruction of the enemy force by allowing it to advance to a point where it is exposed to a decisive attack.
Area	Orients on denying the enemy designated terrain. Conducted to defend specified terrain, when the enemy enjoys a mobility advantage over the defending force, when well-defined avenues of approach exist, and the defending force has sufficient combat power to cover the likely enemy avenues of approach.
Retrograde (Delay)	Mission that trades space for time while retaining flexibility and freedom of action.
Retrograde (Withdrawal)	A planned, voluntary disengagement that anticipates enemy interference.
Retrograde (Retirement)	A force not in contact with the enemy moves away from the enemy.

Table 5-3. Types of Stability Operations

STABILITY	DEFINITION
Peace Operations	Operations conducted to support diplomatic efforts to establish and maintain peace.
Foreign Internal Defense	Operations in support of a foreign government to free and protect its society from subversion, lawlessness, and insurgency.
Security Assistance	A group of programs that support U.S. national policies and objectives by providing defense articles, military training, and other defense-related services to foreign nations by grant, loan, credit, or cash sales.
Humanitarian and Civic Assistance	Assistance provided with military operations and exercises.
Support to Insurgencies	On National Command Authority (NCA) order, Army forces (ARFOR) support insurgencies that oppose regimes that threaten U.S. interests or regional stability.
Support to Counter-Drug Operations	ARFOR always conduct counter-drug operations that support other U.S. government agencies. When conducted inside the U.S. and its territories, they are domestic support operations.
Combatting Terrorism	Operations to deter or defeat terrorist attacks.
Noncombatant Evacuation Operations	Operations to relocate threatened civilian noncombatants from locations in a foreign nation to secure areas.
Arms Control	Conducted to prevent escalation of a conflict and reduce instability.
Show of Force	Conducted to bolster and reassure allies, deter potential aggressors, and gain or increase influence.

Table 5-4. Types of Support Operations

SUPPORT	DEFINITION
Homeland Defense	Assistance to U.S. civilian authorities in activities such as civil disturbance control, counter-drug operations, combatting terrorism, and law enforcement.
Humanitarian Assistance	Operations to relieve or reduce the results of natural or man-made disasters including conditions such as pain, disease, hunger, or privation that present a serious threat to life or loss of property.

COMMON TERMS

5-5. The terms defined below are terms common to aviation operations.

ASSEMBLY AREAS

5-6. There are three types of assembly areas (AAs) used by Army Aviation units—heavy assembly areas (HAA), forward assembly areas (FAA), and rear assembly areas (RAA).

5-7. An AA is a location where the unit prepares for operations. Activities include planning, orders, maintenance, and Class I, III, and V resupply. AAs should be located out of enemy medium artillery range and be large enough for dispersion of the unit. AAs should not be located along an axis of advance. Other considerations involved in selecting appropriate AAs are:

- Security.
- Concealment.
- Accessibility to main supply routes (MSR).
- Air avenues of approach.
- Location of friendly units.
- Suitability of ingress and egress routes.

Heavy Assembly Areas

5-8. HAAs (Figure 5-1).are locations where aviation units conduct routine maintenance, resupply, planning, and other preparations for combat operations. They contain all the life support requirements for combat crews and are the normal place for crew endurance activities. The main CP normally locates in the HAA. All elements in this area can relocate while unit aircraft are fighting forward. HAAs relocate according to METT-TC.

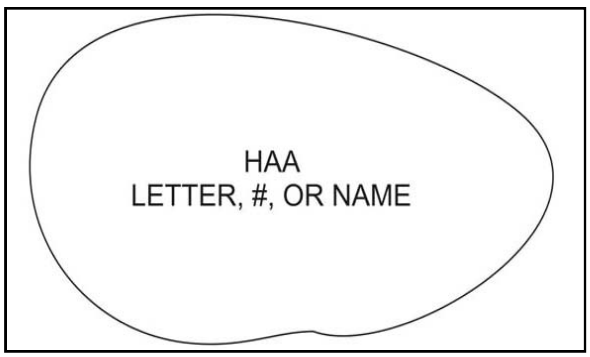

Figure 5-1. Heavy Assembly Area

Forward Assembly Areas

5-9. Units use FAAs (Figure 5-2), also known as tactical assembly areas (TAA), to reduce response time, plan mission changes, conduct final planning, and task-organize as required by the situation or mission changes. Normally, only operational helicopters and tactical CPs (brigade and battalion) are found in an FAA, but occasionally a small FARP may collocate. Because of the FAA's distance from the HAA, some circumstances require a contact team to provide a more timely response to maintenance needs. Vehicles other than those assigned to the tactical CP are the exception rather than the norm. Units normally use FAAs for no more than 6 to 12 hours.

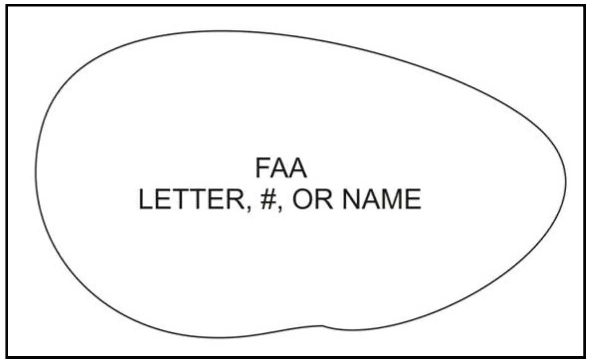

Figure 5-2. Forward Assembly Area

Rear Assembly Areas

5-10. Units establish RAAs (Figure 5-3) for sustainment operations that are not feasible in the HAA. When the enemy air threat is not high, the RAA collocates with the HAA to better facilitate aviation maintenance. The RAA relocates according to METT-TC. During deployments the RAA may remain at the ISB while the rest of the brigade establishes operations at the host nation HAA. The ASB should position in the HAA or RAA so that it moves as little as possible to allow more time to conduct sustainment operations.

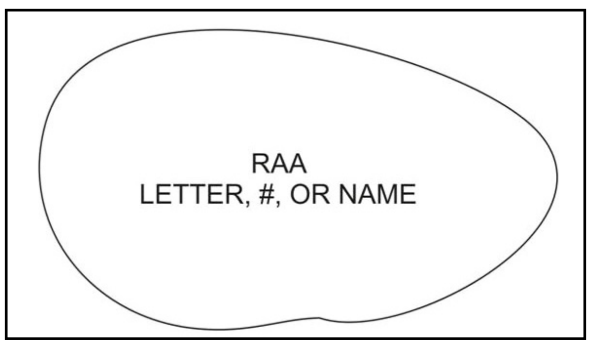

Figure 5-3. Rear Assembly Area

BATTLE POSITIONS

5-11. BPs (Figure 5-4) are areas where attack reconnaissance helicopters can maneuver and fire into a designated engagement area (EA) or engage targets of opportunity. BPs are more restrictive in nature, using distinct firing points to employ aircraft. The following elements apply to effective BPs:

- Nature of the target – target type and array. Flank or rear shots are best.
- Obstacle clearance – height above obstacles (10 feet within 200 meters of the aircraft is the minimum for Hellfire).
- Range to target – plan for a minimum of 75 percent kill probability (Pk) for the weapons system or maximum sensor range, whichever is closer.
- 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 BPs.

- Multiple firing positions – large enough for each helicopter to have several firing positions.
- Adequate area for proper dispersion between helicopters. Area large enough for maneuver and safety.

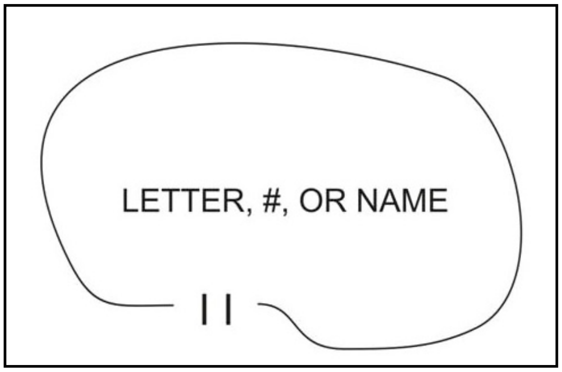

Figure 5-4. Battle Position

HOLDING AREAS

5-12. Units establish HAs (Figure 5-5) as a temporary measure to control aircraft movement. HAs are usually unsecured, but should provide some cover and concealment from enemy direct fire or observation. ARBs/ARSs can designate a site between the AA and BP as a HA for final coordination before occupation and engagement. FARPs use HAs as an area for aircraft awaiting service. Assault aircraft executing an artillery raid may utilize a HA near the LZs while awaiting completion of the fire mission. Helicopters should not shut down or go to auxiliary power units in HAs without a thorough risk assessment.

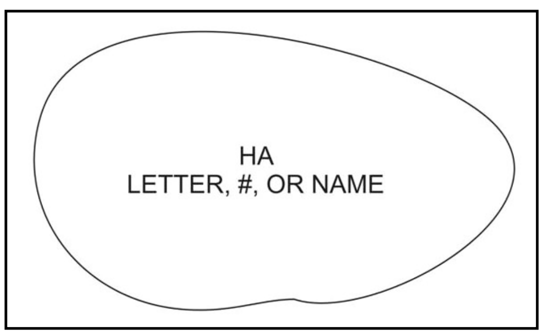

Figure 5-5. Holding Area

LAAGER AREAS

5-13. A secure area separate from the AA utilized by aircraft as a temporary holding location is a laager area. These may include limited maintenance, refueling, and/or rearming capability, and can be used to resolve timing errors and conduct final coordination before a mission. It should provide cover and concealment from enemy fire and occupation time should be minimized.

FIRING POSITIONS

5-14. Attack reconnaissance aircraft use firing positions (Figure 5-6) to engage the enemy and maintain standoff. Planners and aircrews will want to designate and use firing positions that provide as much security and cover as possible. The following should be taken into consideration along with METT-TC when planning or actually using a firing position:

- Background—dark background prevents sky-lining the helicopter.
- Range to target—plan for a minimum of 75 percent Pk for the weapons system.
- Altitude—at the same altitude or higher than the EA (consider a look-down angle) and low enough for missile ceiling constraints.
- Sun—keep the sun to the rear of the helicopter, never to the front.
- Shadows—reduce glare, reflection off the canopy and will help to hide the helicopter.
- Cover and concealment.
- Rotorwash—dust, sand, and snow clouds can quickly give away the helicopters location.
- Adequate maneuver area—multiple firing positions and room to maneuver.
- Fields of fire—continuous target visibility and direct line of site (LOS) to the EA.

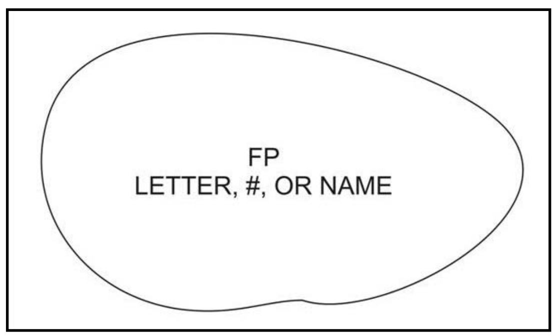

Figure 5-6. Firing Position

ATTACK BY FIRE POSITIONS

5-15. Attack by fire (ABF) positions (Figure 5-7) are fires (direct and indirect) employed to destroy the enemy from a distance, normally used when the mission does not dictate or support occupation of the objective. This task is usually given to the supporting element during the offensive and as a counterattack option for the reserve during defensive operations. An ABF is not done in conjunction with a maneuvering force. When assigning this task, the commander must specify the intent of the fire—to destroy, fix, or suppress. ABF positions are less restrictive than BPs and better suited to a fluid battlefield. They allow the unit to maneuver and engage the enemy, but not maneuver over the enemy.

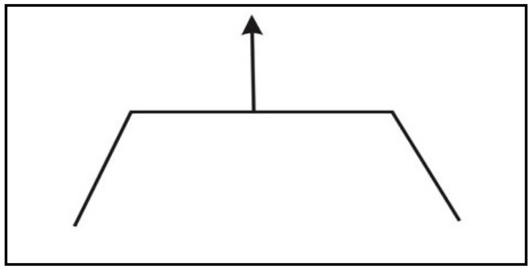

Figure 5-7. Attack by Fire

SUPPORT BY FIRE POSITIONS

5-16. A support by fire (SBF) position (Figure 5-8) is a tactical task in which a maneuver element moves to a position on the battlefield where it can engage the enemy by direct fire. It supports a maneuvering force by either support by fire by overwatching or by establishing a base of fire. The maneuver element does not attempt to maneuver to capture enemy forces or terrain.

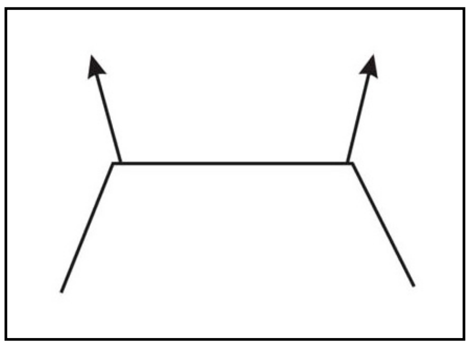

Figure 5-8. Support by Fire

ENGAGEMENT AREA

5-17. 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. Commanders must use obstacles, 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 has at least the characteristics listed below:

- Several BPs for attacking the enemy from various directions.
- Obstacles, either natural or man-made, to slow target movement and permit the effective use of direct and indirect fires.
- Allow aircrews to engage targets at the maximum range that permits a high probability of kill (Pk).
- Provide an unobstructed view of the target from firing or designating positions.
- Appropriate distance to allow aircrews the ability to detect the enemy with the primary sensor.

Kill Box

5-18. Kill box is a joint term describing a three-dimensional engagement area enabling timely, effective coordination and control to facilitate rapid attacks.

START POINT

5-19. The air control point (ACP), which designates the beginning of a specific air route, is the start point. It is a well defined point which initiates route timing, airspeed, and formation (if applicable). Responsibility for proper aircraft operation and maneuvering past the start point rests with the air mission commander (AMC).

RALLY POINT

5-20. Units designate a rally point to reassemble separated or dispersed elements (Figure 5-9). A rally point is used to:

- Reform units before, during, or after an operation.
- Regroup a team, platoon, or company after a hasty withdrawal from contact.
- Assemble personnel after their position has been overrun.
- Assemble reaction teams.

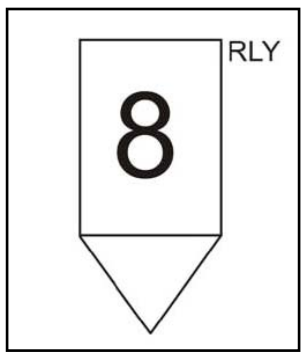

Figure 5-9. Rally Point

RELEASE POINT

5-21. An RP is the location where aircraft break formation and proceed to their assigned BP. At this point, preparatory fires lift or shift and aircraft adjust airspeed and altitude, if required. It is generally 3 to 8 km from the BPs.

AIR CONTROL POINT

5-22. An air control point (ACP) is a key point along an air route where the route changes direction, another action commences or finishes, or flights submit a report. The air mission commander (AMC) may use ACPs to judge variation from the desired timing and adjust plans or airspeed accordingly.

SECTION II – PLANNING CONSIDERATIONS

GENERAL

5-23. Planning considerations are predicated on METT-TC. Some of these elements are specific to the mission and are discussed in the appropriate chapter of this manual. This section addresses planning considerations that are common to any mission the brigade might be assigned.

MISSION

5-24. Higher headquarters assign missions to the AVN BDE. Commanders determine their specified and implied tasks by analyzing their assigned mission and coordinating with supported units. The results of that analysis yield the essential tasks that, together with the purpose of the operation, clearly indicate the actions required. The mission includes what tasks must be accomplished; who is to do them; and when, where, and why the tasks are to be done. Mission analysis includes risk management considerations.

MISSION CRITERIA

5-25. For any mission, the commander seeks to establish criteria that will maximize his probability of success (such as ground conditions, visibility, and force ratios). The supported commander and the brigade higher headquarters set mission criteria. During the planning process, mission criteria are quantified and stated in easily understood terms. If any of the stated criteria are achieved before or during the mission, the designated commander should execute predetermined actions. Below are several considerations that influence mission criteria.

Weather

5-26. AR 95-1 sets the minimum weather conditions, stated as ceiling and visibility, for certain types of helicopter missions over certain types of terrain. Weather conditions must be at or above minimums for the entire time that aircraft are flying, and over the entire area in which they will operate, unless waived by the appropriate commander due to criticality of a specific combat operation.

Aircraft Available

5-27. Mission effectiveness with minimum casualties requires rapid massing of combat power at the critical place and time. The appropriate commander may terminate the mission if the mission requires more aircraft than available (either due to combat loss, non-mission-capable aircraft, or lack of aircrews).

Time

5-28. If mission delays mean that aircraft cannot apply required combat power at a specified hard time, the commander may modify or terminate the mission.

Lack of Mission-Essential Combat Power

5-29. This could be the result of increased enemy or decreased friendly capability. If the attack reconnaissance force meets stronger than expected resistance, or loses combat or supporting assets en route, the commander may request additional UEx, UEy, or joint support before modifying or terminating the mission.

Mission Criticality

5-30. The importance of the mission drives the abort criteria. Less critical missions are quicker to terminate. For example, attack reconnaissance aircraft may perform UEy or higher echelon shaping operations. While some operations may depend on the success of an attack reconnaissance mission, others may be harassing in nature and not as critical to the campaign.

Enemy

5-31. Enemy activity along flight routes or in the BPs that may result in extensive friendly losses may require a mission termination. Critical joint mission needs that divert supporting fires may arise just before or during a mission. A catastrophic event such as a nuclear explosion or unexpected use of chemical weapons may also cause higher headquarters or the commander to terminate or modify the mission.

MISSION MODIFICATIONS

5-32. The AVN BDE or BN TF helps plan actions/reactions for these situations, but specific modification or mission termination criteria must be set prior to execution. If any of the stated criteria are achieved before or during the mission, the AMC must be prepared to advise the commander. Example actions include delay, divert, or terminate in part.

Delay

5-33. If sufficient time remains, and circumstances can reverse with ground combat and other supporting fires, the commander may delay a mission. He may place aircraft in a "racetrack" pattern, reduce their airspeed, or land them in HAs. The commander might decide to take similar actions if forecast weather suddenly changes, forcing aircraft to land or proceed at slower airspeeds and/or lower altitudes.

Divert

5-34. If time, fuel, or safe laager areas are not available to permit a delay, the commander may execute a divert contingency. Examples include use of alternate flight routes to avoid threats or foggy areas and use of alternate BPs.

Postpone or Terminate In Part

5-35. If a situation exists that a delay or divert cannot correct, the commander may decide to postpone or terminate a mission phase and attempt to continue with available forces and support.

ENEMY

5-36. Analysis of the enemy includes information about his strength, location, activity, and capabilities. Commanders and staffs also assess the most likely enemy COAs. Analysis includes adversaries, potentially hostile parties, and other threats to success. Threats may include the spread of infectious disease, regional instabilities, or misinformation. Commanders consider asymmetric as well as conventional threats.

THREAT ANALYSIS

5-37. The brigade conducts a threat analysis during planning, based upon the IPB prepared by it and higher headquarters. A common mistake is to orient too much on terrain as opposed to the enemy. Knowing the enemy's location, his forces, capabilities, and intentions are key to success. Knowledge of the enemy ensures the best use of terrain to exploit his weaknesses and capitalize on friendly strengths.

5-38. Aviation Survivability Equipment (ASE) settings depend on accurately analyzing the enemy AD threat. Knowing the threat is critical to effective passive and active countermeasures.

TERRAIN AND WEATHER

5-39. Terrain includes man-made features such as cities, airfields, bridges, railroads, ports, and contaminated areas. Terrain and weather also have pronounced effects on ground and air maneuver, precision munitions, air support, and CSS. To find tactical advantages, commanders and staffs analyze and compare the limitations of the environment on friendly, enemy, and neutral forces.

TERRAIN ANALYSIS

5-40. Commanders and staffs perform terrain analysis whether using digitized tools or paper maps. They evaluate terrain for cover and concealment, its impact on maneuver, and the enemy's movements. The key elements of terrain analysis are summarized in the following mnemonic OCOKA:

- Observation and fields of fire.
- Cover and concealment.
- Obstacles to movement.
- Key terrain.
- Avenues of approach.

OBSTACLES

5-41. Obstacles and reinforcement of terrain must be included in the tactical plan. Engineers use obstacles to disrupt, fix, turn, or block the enemy. Disruptive obstacles cause enemy formations to separate or bunch up, which disrupts their maneuver and attack. Fixing obstacles slow enemy progress and allow friendly fires the opportunity to mass effects. Turning obstacles drive the enemy toward friendly EAs and massed fires or force them to expose their flanks. Blocking obstacles deny the enemy access to an area or prevent advance in a given direction. Although the aviation brigade probably will not have engineer support to establish obstacles, the commander must understand the ground force commander's obstacle plan and use it to his advantage.

TERRAIN RECONNAISSANCE

5-42. Because maps are sometimes inaccurate or incomplete, commanders should conduct detailed, personal reconnaissance. Brigade commanders should create the conditions where battalion commanders can ensure their aircrews are familiar with the terrain and scheme of maneuver. If possible, battalion commanders—and their crews—should perform a map reconnaissance; visit LZs, PZs, and BPs and FPs; and conduct rehearsals. These actions help them understand the scheme of maneuver and commander's intent, and quicken their reactions during the chaos of battle. Commanders consider all sources of intelligence. Aerial photographs, satellite imagery, and human intelligence (HUMINT) can be critical.

WEATHER

5-43. Weather affects soldiers, equipment, operations, and terrain. Cloud cover, wind, rain, snow, fog, dust, light conditions, and temperature extremes combine in various ways to affect human efficiency. They also limit the use of weapons and equipment. Weather impacts both friendly and enemy assets. For example, rain can degrade forward looking infrared (FLIR) systems, but it also inhibits the cross-country maneuverability of enemy forces. Each system used on the battlefield has its strong and weak points in relation to the weather. Commanders must know the strengths of their systems and use them to attack the weaknesses of the enemy systems.

VISIBILITY

5-44. Limited visibility affects operations and often favors ground maneuver. Fog and smoke reduce the effective range of many weapon systems; including AD weapons, and friendly semi-active laser (SAL) Hellfire. Commanders use the concealment of limited visibility to maneuver forces to a positional advantage. The brigade should plan operations to maximize the advantages of its superior sensor systems.

TROOPS AND SUPPORT AVAILABLE

5-45. Commanders assess the training level and psychological state of friendly forces. The analysis includes availability of critical systems and joint support. They examine combat, CS, and CSS assets, including contractors. The status of all AVN BDE units should be readily available for the commander and the staff per SOP.

SUPPORTING FIRES

5-46. The brigade will frequently have access to supporting fires from a coordinated fires network. These complementary fires could facilitate movement to the objective through J-SEAD, engage targets bypassed by aircraft, or provide indirect fires on the objective. Knowing what type of fire support (FS) is available and when are important considerations during mission planning and EA development. Efforts to coordinate joint fires for actions on the objective could be critical toward success for operations in deep areas.

AIRSPACE COORDINATION

5-47. Total familiarity with the theater air ground system (TAGS) is essential to deconflict operations and prevent mission delays. Brigades may need to comply with provisions in the ACO, ATO, and SPINS. They have strict timelines and FSCMs to take into account during brigade and subordinate planning cycles.

Airspace Control Order

5-48. ACO is an order implementing the airspace control plan that provides the details of the approved requests for ACMs. It is published either as part of the ATO or as a separate document. ACO coordination is required for any operations outside of Army controlled airspace.

Air Tasking Order

5-49. ATO is a method used to task and disseminate to components, subordinate units, and C2 agencies projected sorties, capabilities and/or forces to targets and specific missions. It normally provides specific instructions to include call signs, targets, and controlling agencies, as well as general instructions.

SUPPORTED UNIT COORDINATION

5-50. The BAE is an aviation planning and coordination cell organic to the BCT which synchronizes aviation operations into the ground commander’s scheme of maneuver. Working in conjunction with the BAE, the AVN BDE must ensure that all aspects of the mission are thoroughly planned, coordinated, and rehearsed with the supported unit. Supported unit graphics are essential for SU. Aviation often conducts passage of lines with supported units, and such operations require close coordination. Fires must be considered to ensure the necessary artillery is available when called. When appropriate, AVN BDE LNO teams augment the BAE in coordinating and executing aviation missions for the BCT

5-51. The BAE and aviation LNO teams facilitate aviation operations. For aviation missions to be successful, aviation commanders and operations officers must be directly involved in the BCT planning and execution process.

TIME AVAILABLE

5-52. Commanders assess time available for planning, preparing, and executing the mission. They consider how friendly and enemy forces will use the time and the possible results. Proper use of time available can be a key to success. The one-third, two-thirds rule should be used whenever possible. Concurrent planning makes the best use of time. Emerging digital systems enhance concurrent planning capabilities. For operations in deep areas, concurrent planning also must involve the AVN BDE's higher headquarters staff.

CIVIL CONSIDERATIONS

5-53. Civil considerations relate to civilian populations, culture, organizations, and leaders within the AO. Commanders consider the natural environment, to include cultural sites, in operations directly or indirectly affecting civilians. They include political, economic, and information matters, as well as more immediate civilian activities and attitudes.

CIVIL IMPACT

5-54. Civil considerations at the tactical level generally focus on the immediate impact of civilians on current operations; however, they also consider larger, long-term diplomatic, economic, and information issues. Civil considerations can tax the resources of tactical commanders. The local population and displaced persons influence commanders' decisions. Their presence and the need to address their control, protection, and welfare affect the choice of COAs and allocation of resources. In stability operations and support operations, civilians can be a central feature of planning.

POLITICAL BOUNDARIES

5-55. Political boundaries of nations, provinces, and towns are important considerations. Conflict often develops across boundaries, and boundaries may impose limits on friendly action. Boundaries, whether official or not, determine which civilian leaders and institutions can influence a situation.

MEDIA PRESENCE

5-56. Media presence guarantees that a global audience views military activity in near real-time. The activities of the force—including individual soldiers—can have far-reaching effects on domestic and international opinion.

PLANNING MODELS

5-57. AVN BDEs plan missions to support ground units. An air assault is an example of a mission in support of a ground unit. They also plan missions that are commanded and controlled by the AVN BDE. A deliberate attack across the FLOT by attack reconnaissance helicopters is an example of a mission under the C2 of the AVN BDE.

COMMON PLANNING PROCESS

5-58. The planning process for AVN BDE operations does not differ from the doctrinal processes already in place. Because the brigade may have units joining it from each aviation mission area, it is critical to discuss the commonality and the differences that each brings to the brigade. Critical planning includes reconnaissance, security, attack, air assault, air movement, aerial mine emplacement, AD, A2C2, FS, CAS, C2, and aeromedical evacuation. Brigade planners may be available from each aviation mission area. If not available, planners still must plan missions to the same level of expertise and detail expected of a mission area subject matter expert (SME).

Reverse Planning Process

5-59. Planning begins with the terminal end of the mission—actions at the objective, the cargo delivery point, and the passenger drop-off point. Table 5-5 shows the commonality of the planning phases of each mission area. It is intended as a starting point to assist in team building.

Table 5-5. Planning Phases

Air Assault	Attack	Attack Reconnaissance	Air Movement	Command and Control
Ground tactical plan	EA plan	Observation/ engagement plan	Pax and cargo delivery plan	C2 Support Plan
Landing plan	BP/ HA occupation plan	Recon/ OP occupation plan	Landing plan	Landing plan
Air movement plan	Air movement plan	Air movement plan	Air movement plan	Air movement plan
Loading plan (Pax & equip)	Loading plan (ammo)	Loading plan (ammo)	Loading plan (Pax & cargo)	Loading plan (Cdrs & staff)
Staging plan (PZ)	Staging plan (FAA)	Staging plan (FAA)	Staging plan (PZ)	Staging plan (PZ)

BRIGADE AND SUBORDINATE PLANNING RESPONSIBILITIES

5-60. For most operations the brigade and battalions plan at different levels. Table 5-6 provides a general guide for planning responsibilities.

Table 5-6. Brigade and Battalion Planning Responsibilities

AVIATION BDE PROVIDES THE BN	BATTALION DETERMINES
General timings	Exact speeds, routes, flight modes and timings
H-hour (line of departure [LD], LZ).	Exact planning times from AA to LD, PP, BP, PZ, or LZ.
PP locations	Exact flight route.
Suppression of enemy AD (SEAD)/J-SEAD plan.	Adjustments as LD time nears.
EAs, LZs, PZs, battle areas of potential BPs.	Release points (RP), rally points, FPs, ABF positions, exact BPs, kill zones, landing areas.
Flight axes.	Exact flight routes.
NAI/TAI/DPs.	Exact surveillance plan.

5-61. Figures 5-10 and 5-11 graphically depict the planning responsibilities between the brigade and the battalion, and incorporate the general rules in Table 5-6. They also include some of the planning steps of the AVN BDE's higher headquarters.

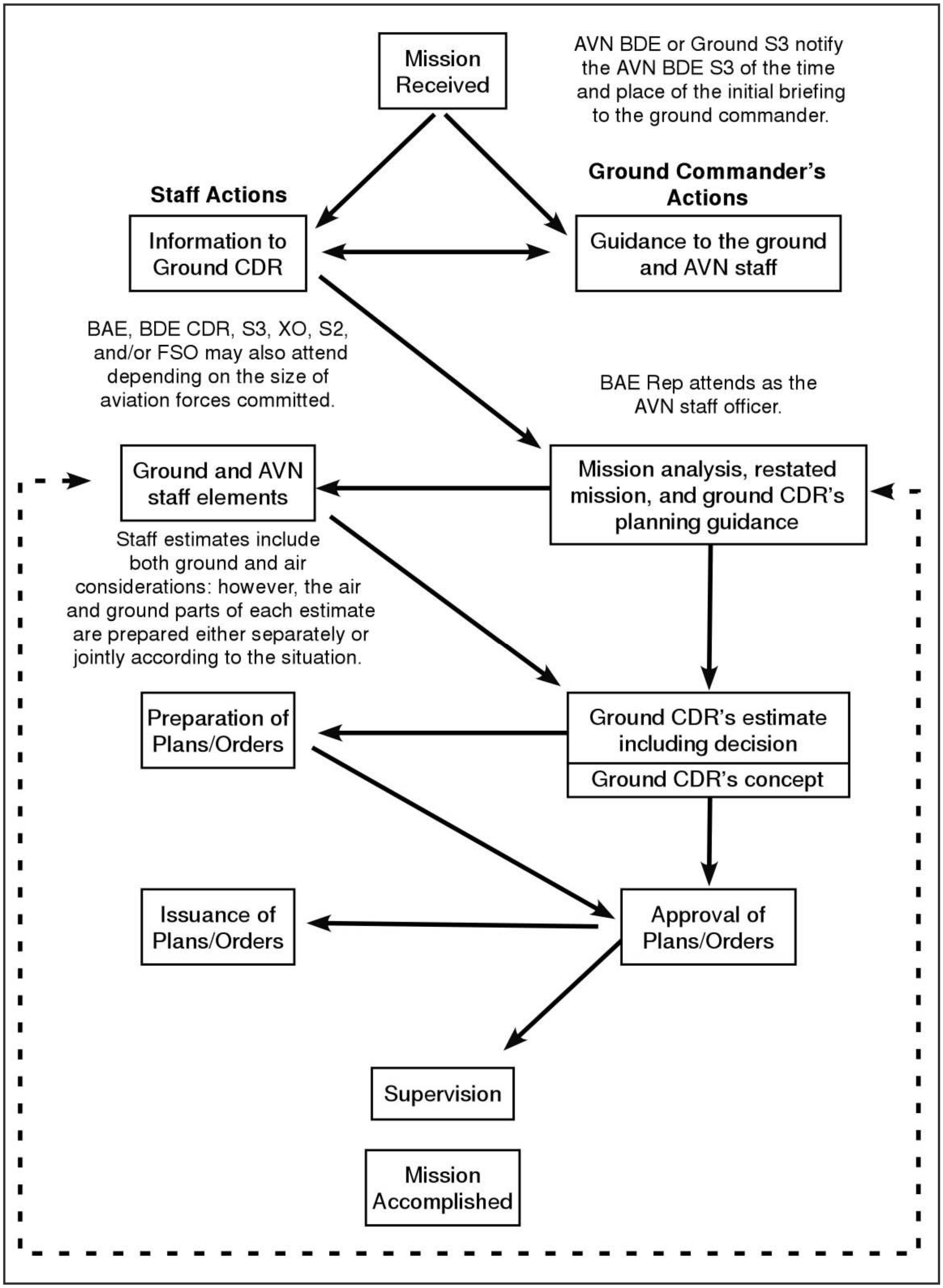

Figure 5-10. Brigade Planning Responsibilities, Aviation Forces in Support of a Ground Unit

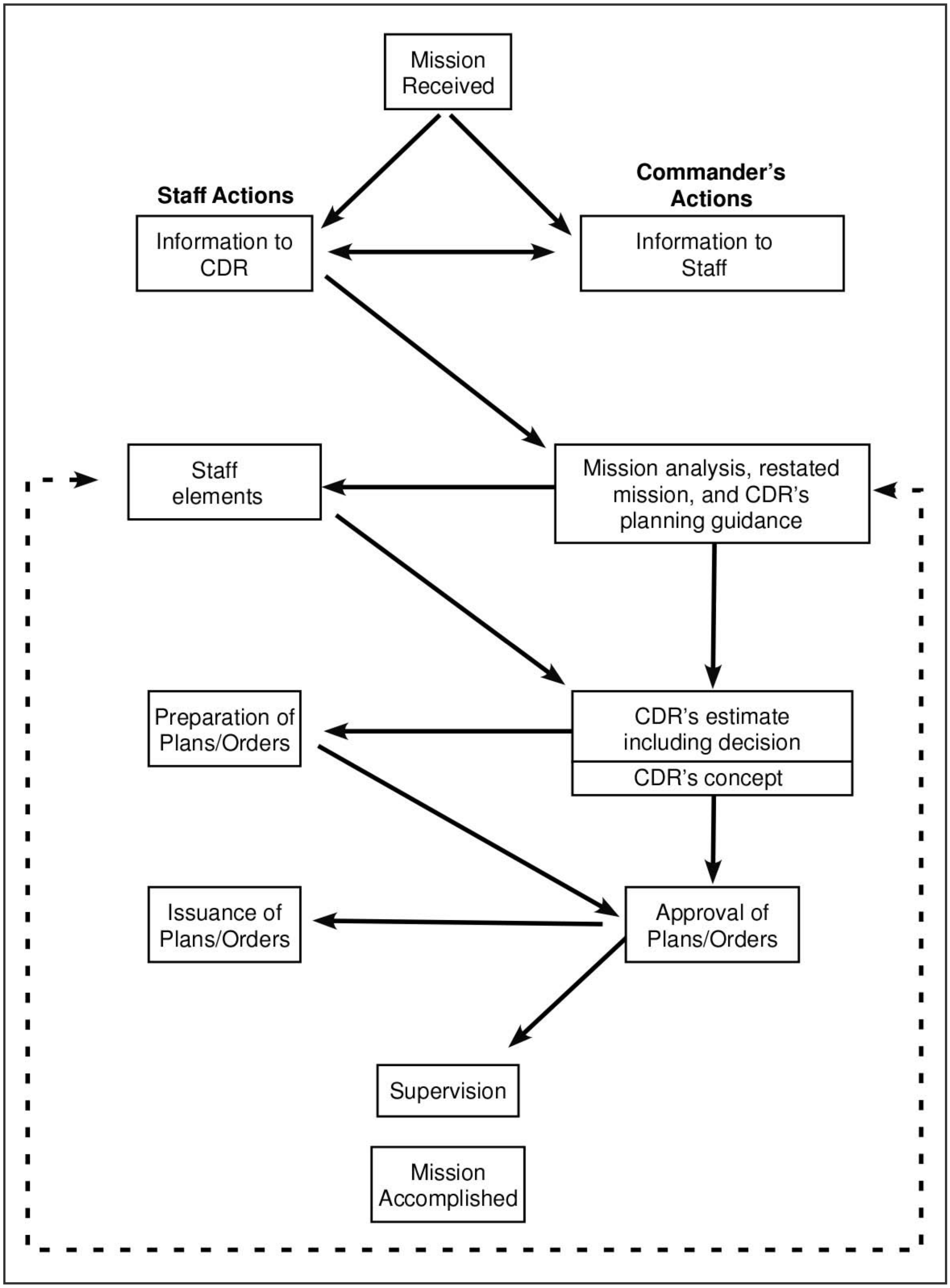

Figure 5-11. Brigade Planning Responsibilities, Aviation Forces under AVN BDE Control

5-62. Figure 5-12 depicts a deliberate attack by the AVN BDE forward of the FLOT. Figure 5-13 depicts an air assault supported by the AVN BDE. Figure 5-14 depicts an AVN BDE supporting a ground brigade within the ground brigade sector both in front of and behind the FLOT. Figure 5-15 depicts the AVN BDE supporting a ground brigade in a counter-penetration mission.

5-63. Times and airspeeds depicted in these figures are examples. Additionally, circumstances may require the brigade to provide the exact routes (airspace coordination) and exact times to effect timely coordination with supporting elements.

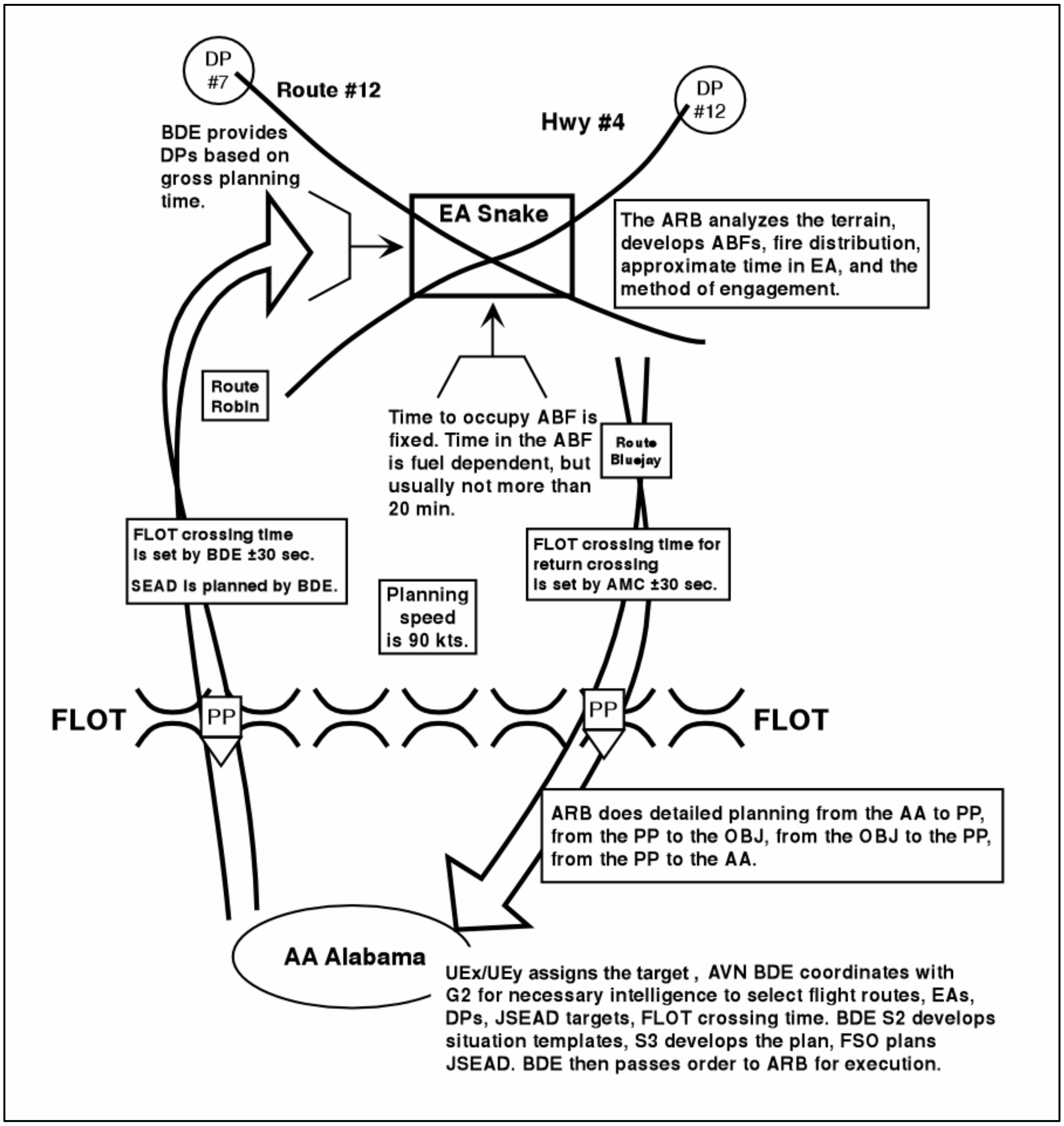

Figure 5-12. AVN BDE Conducts a Deliberate Attack

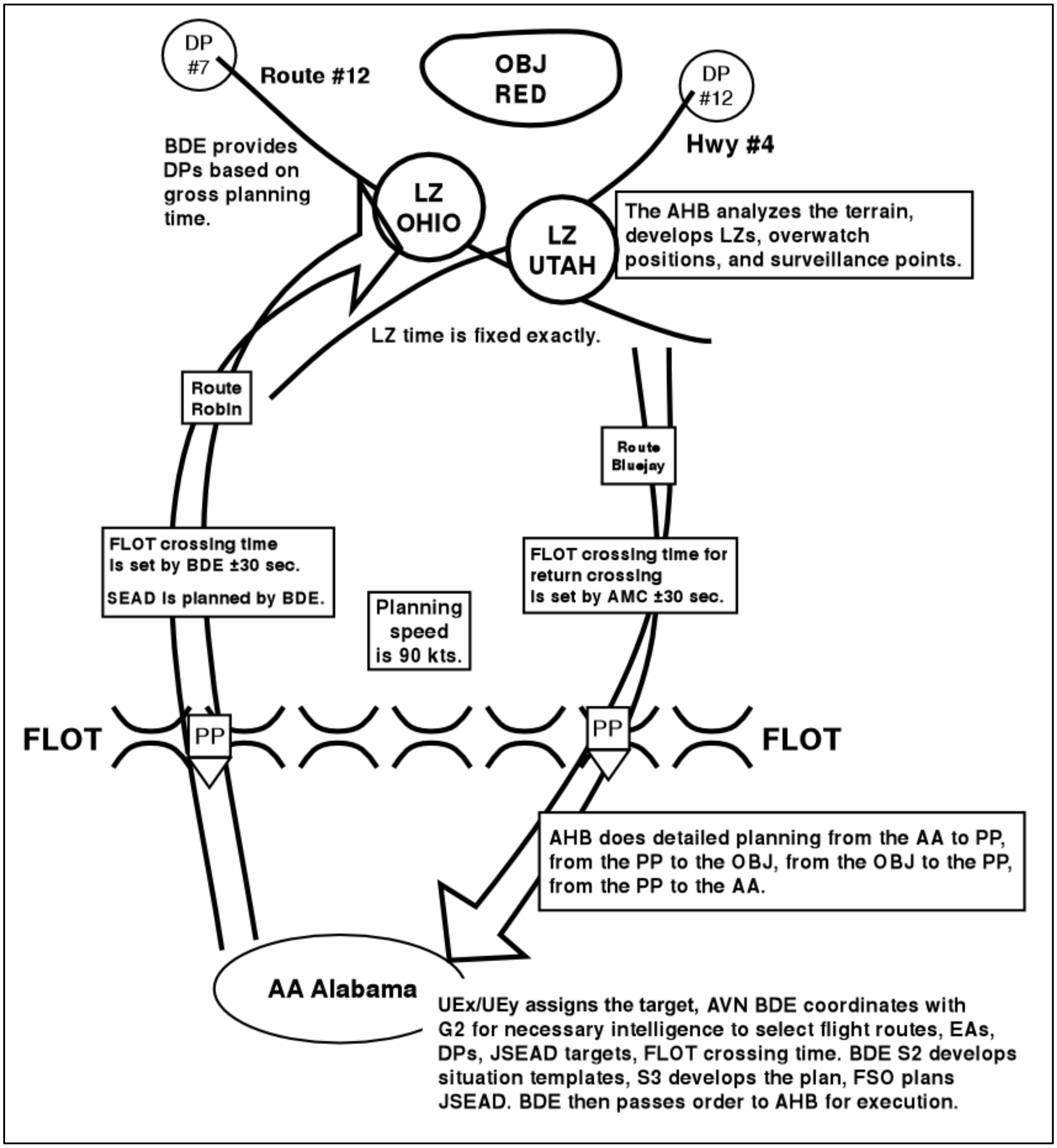

Figure 5-13. Aviation Brigade Supports an Air Assault

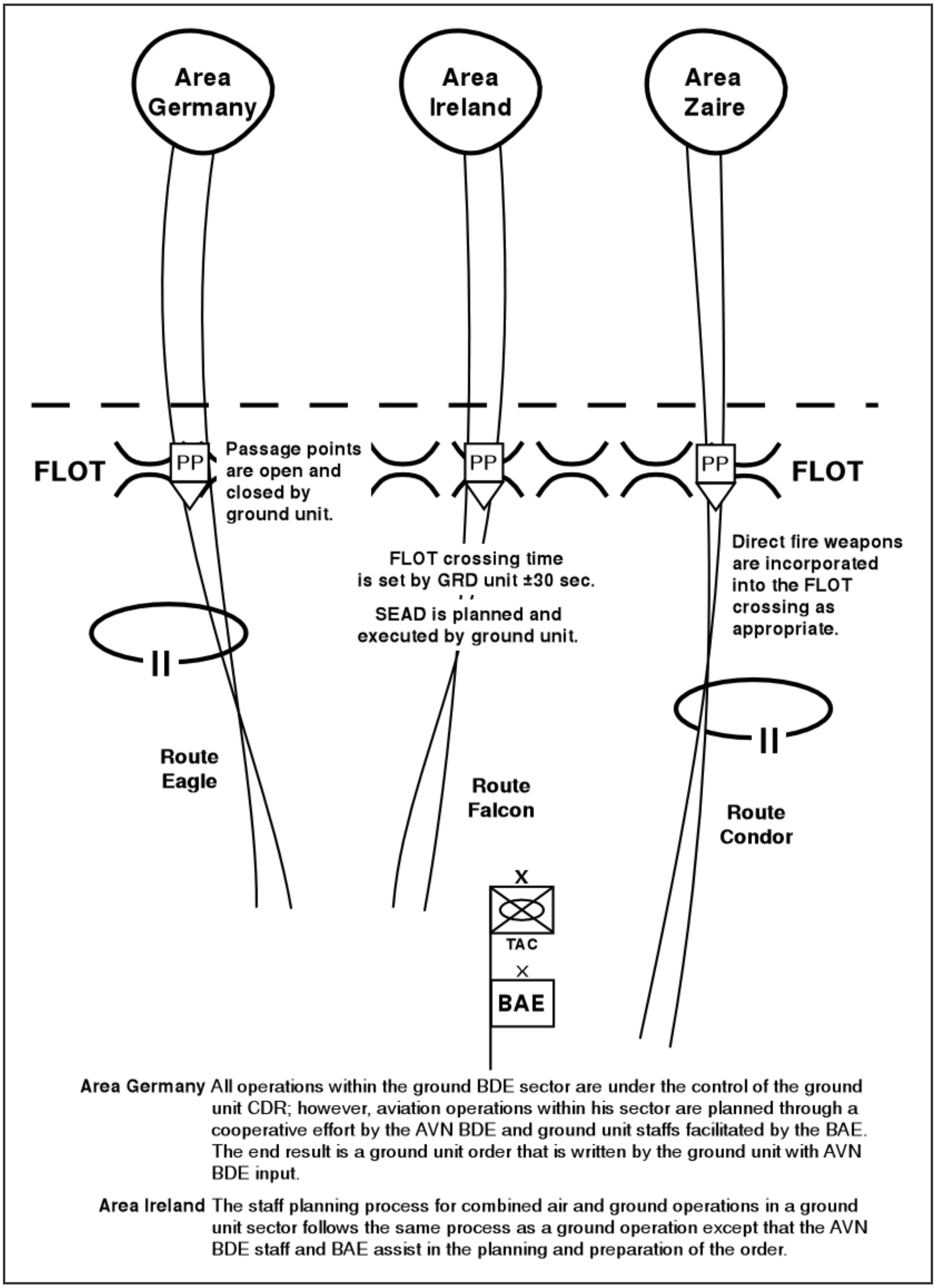

Figure 5-14. Aviation Brigade Supports Ground Brigade Operations

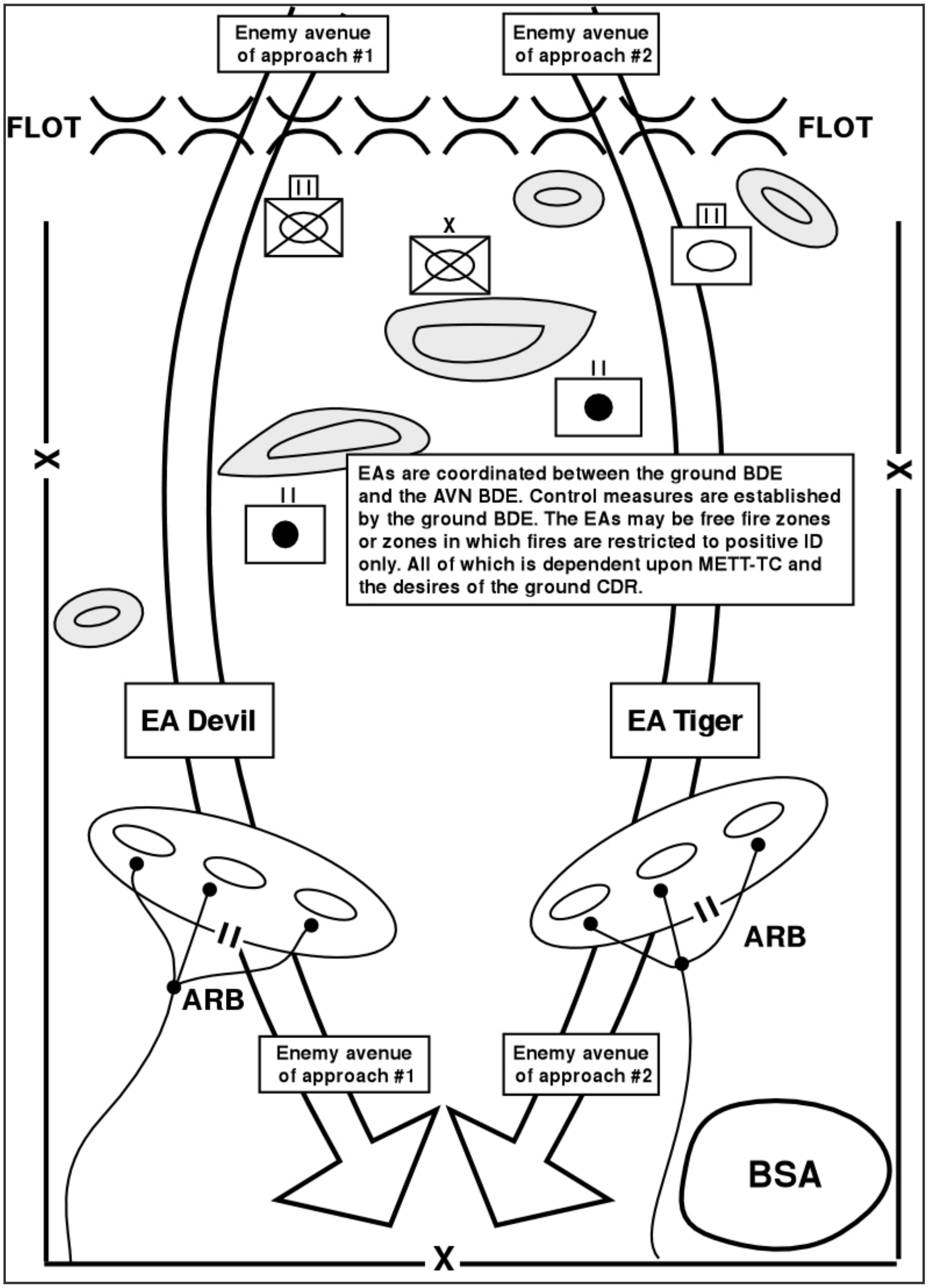

Figure 5-15. AVN BDE Conducts a Counter-Penetration Mission in a Ground Brigade Sector

CLOSE AND MOBILE STRIKE OPERATIONS

5-64. Mission planning factors vary between close and Mobile Strike operations. These differences include the following:

- Graphics for close operations will normally include restrictive control measures to prevent fratricide during engagements in close proximity to friendly elements.
- Actions on the objective: what if the enemy is not in the EA or NAI? In a close fight, the attack reconnaissance unit would maneuver to establish contact with the enemy force. In Mobile Strike operations, units conduct a movement to contact to develop the situation.
- Weapons loads for AH-64s may vary as auxiliary fuel tanks may be added for long-duration Mobile Strike operations. Further, commanders may choose to include auxiliary fuel tanks on aircraft in close fights to increase station time at the objective area.
- Mobile Strike operations involve coordinated planning with UEx, UEy and joint elements; while close operations can be organized at the BCT level. For instance, Mobile Strike operations will primarily involve joint fires while close operations use both organic fire support and joint fires.
- C2 headquarters for close fights are normally the ground element in contact. Mobile Strike operations are normally controlled from the AVN BDE.

5-65. In-stride or immediate recovery of downed aircrews in contested or enemy territory is the preferred extraction method. Accompanying or nearby aircraft travel to the aircrew's location and utilize any means necessary for safe removal, to include securing individuals to the exterior of the aircraft. If ground forces are available to make the recovery, aircraft can maintain contact with the isolated personnel and provide security for the relieving elements. The battalion may support joint recovery and rescue efforts.

SECTION III – ATTACK MISSIONS

GENERAL

5-66. The close combat attack (CCA) and mobile strike capability of the aviation brigade, particularly when coupled with Army and Joint fires and effects provides the commander with a significant capability to extend the battle to the maximum range of organic and supporting sensors. The aviation brigade headquarters has the inherent staff planning experience to support maneuver, the synchronization and integration of joint effects, and the ability to control mobile strike operations.

5-67. The ARB/ARS brings firepower, speed, and shock effect to the fight. ARB and ARS elements assigned to the BCT provide the UEx or BCT commander a capability to reach beyond his organic indirect fire capability. Attack reconnaissance aviation can also act as a counterattack force to block or destroy enemy penetrations.

5-68. The ARB/ARS contributes to shaping the battlefield by assisting in finding, fixing, and engaging the enemy. When early engagement of enemy forces is desired in a meeting engagement, attack reconnaissance units may be employed to develop the situation until adequate ground forces can move into position to join the fight. Attack operations can occur in either offensive or defensive schemes of maneuver, and either near or independent of friendly forces.

FORMS OF ATTACK

5-69. The two forms of attacks are hasty attack and deliberate attack. The major difference between the two is the planning time available.

HASTY ATTACK

5-70. Hasty attacks may serve as a precursor to a deliberate attack or may result from unexpected enemy contact. Unexpected contacts occur most often during reconnaissance and survelliance (R&S) operations, meeting engagements, and in response to an enemy attack. In all cases, units conduct hasty attacks to rapidly develop the situation or overwhelm the enemy before they can adequately respond. Units may conduct hasty attacks without the foreknowledge of the location of engagement areas (EA) and battale positions (BP). Planners may not know of the exact attack time, location, and threat, until shortly before the mission. CCA battle drills, habitual training, and contingency plans based on probable enemy actions and intelligence preparation of the battlefield (IPB) improve the success of hasty attacks.

DELIBERATE ATTACK

5-71. 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 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.

TYPES OF ATTACKS

5-72. The two types of attack missions the UEX AVN BDE will be tasked to perform are CCA and mobile strikes.

MOBILE STRIKE

5-73. The aviation brigade plans and conducts mobile strike operations. Mobile strike operations are extended combat operations that capitalize on the ability of attack aviation to maneuver to the full depth of the UEx AO, deliver massed direct fire, and employ precision munitions in support. The UEx executes mobile strikes outside of the BCT areas against targets that are capable of maneuvering to avoid precision strikes.

5-74. Mobile strike combines ground based fires, attack aviation, unmanned systems and joint assets to mass effects, in order to isolate and destroy key enemy forces and capabilities and to shield friendly forces as they maneuver out of contact. A mobile strike is a shaping operation in support of UEx or a BCT. A mobile strike is focused on key objectives and fleeting HVTs such as enemy C2 elements, Air and Missile Defense systems, mobile, long-range surface missiles to SSMs and artillery, and reinforcing ground forces. The purpose of a mobile strike is to deny the enemy freedom of action, support friendly maneuver, and destroy key enemy forces and capabilities.

5-75. Mobile strike tasks are:

- Isolate and destroy key enemy forces and capabilities.
- Shield friendly forces as they maneuver out of contact.
- Focus on key objectives and fleeting HVTs.
- Destroy enemy C2 elements, AD systems, mobile, long-range surface-to-surface missiles (SSM) and artillery, and reinforcing ground forces.

CLOSE COMBAT ATTACKS

5-76. Close combat is inherent in maneuver and has one purpose—to decide the outcome of battles and engagements. It is carried out with direct-fire weapons and supported by indirect fire, CAS, and non-lethal effects. Close combat defeats or destroys enemy forces or seizes and retains ground. The range between combatants may vary from several thousand meters to hand-to-hand combat. During close combat, attack reconnaissance aircraft may engage targets that are near friendly forces, thereby requiring detailed integration of fire and maneuver of ground and aviation forces. CCA is sometimes referred to as aviation "over the shoulder" fires in support of ground forces. To achieve the desired effects and reduce the risk of fratricide, air-ground integration must take place down to company, platoon, and team levels. Close-combat engagements also require a higher training standard for aerial weapons delivery accuracy. Appendix E, FM 3-04.111 contains additional information.

5-77. For aviation units, CCA is defined as a hasty or deliberate attack in support of units engaged in close combat during either offensive or defensive operations. During CCA, armed helicopters engage enemy units with direct fires that impact near friendly forces. Targets may range from tens of meters to a few thousand meters. CCA is coordinated and directed by a team, platoon, or company-level ground unit using standardized CCA procedures in unit SOPs.

5-78. CCA tasks are to:

- Conduct fire, maneuver, and tactical assault in close support of ground forces.
- Provide complementary fires and maneuver while taking advantage of terrain, stand off, and ground forces for protection.
- Provide reinforcing fires.
- Continue development of dynamic situation.
- Extend the tactical reach of maneuver forces, particularly in urban and other complex terrain.
- Present the enemy with multiple/simultaneous dilemmas from which he cannot escape.
- Establish and control the OPTEMPO of the fight.
- Synchronize all available reconnaissance, security, and target acquisition (RSTA), fires (Joint/Army), and maneuver on the enemy force.
- Provide extended acquisition range and lethality to the force after contact is made.
- For CCA specific Aviation forces are usually OPCON to specific ground forces (and vice versa) as situation dictates.

ATTACK MISSIONS ACCOMPLISHMENT CRITERIA

5-79. The attack missions that an ARB/ARS can expect to accomplish—and the results of these attacks—are attack to:

- Destroy (kill at least 70 percent of the enemy force).
- Attrit (kill at least 30-70 percent of the enemy force).
- Disrupt.
- Deny terrain.

ATTACK EMPLOYMENT METHODS

5-80. Attack employment methods include the continuous attack, phased attack, and maximum destruction that vary by duration.

CONTINUOUS ATTACK

5-81. A continuous attack is planned to provide constant attack reconnaissance aviation assets onto a target area for an extended timeframe. For example, while one company is engaged in the battle, the other two companies prepare to relieve the engaged company by positioning at the HA or at the FARP, or maneuvering to the BP. The continuous attack method provides the aviation brigade or battalion commander with the most flexibility as well as the most efficient operation of FARPs.

PHASED ATTACK

5-82. To exert increased initial firepower of the aviation brigade or battalion on the enemy force, the aviation commander employs one battalion (or ARC/ART) to begin the attack and then quickly phases in the second battalion (or ARC/ART). If available, a third battalion is phased into the fight when either of the other battalions is low on fuel or ammunition. The commander may choose to modify this method of employment. For example if only two ARBs/ARSs are avaialble, he may employ one company or troops to set up the fight and then exploit the attack with the remainder of his attack reconnaissance forces.

MAXIMUM DESTRUCTION

To exert maximum combat power on the enemy force the aviation brigade or battalion commander will employ the maximum destruction method. To overwhelm the enemy force with massed fires, the aviation commander will attack with all of his available forces simultaneously. While employing this method, it is important for the supported commander to understand that the entire aviation force will be out of the fight for 20 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(s) and the time required for refueling and rearming after the initial engagement.

SECTION IV – AIR-GROUND INTEGRATION

5-83. Air and ground assets require effective integration to conduct operations successfully and minimize the potential for fratricide and civilian casualties. Integration starts at home station with the implementation of effective tactical SOPs, habitual relationships, and training. It continues through planning, preparation, and execution of the operation.

FUNDAMENTALS

5-84. To ensure effective integration, commanders and staffs must consider some fundamentals for air-ground integration. The fundamentals that provide the framework for enhancing the effectiveness of both air and ground maneuver assets include:

- Understanding capabilities and limitations of each force.
- Use of SOPs.
- Habitual relationships.
- Regular training events.
- C2.
- Maximizing and concentrating the effects of available assets.
- Employment methods.
- Coordination of direct and indirect fires.
- Synchronization.

5-85. Employment of attack reconnaissance aviation with the HBCT requires coordinated force-oriented control measures that allow aviation forces to fix and weaken the enemy at extended ranges, then to reinforce ground unit fires. This type of employment requires constant practice and close coordination.

COMMAND AND CONTROL

5-86. Aviation assets normally remain under AVN BDE or battalion control. Subordinate battalion and company commanders operate on the command network but coordinate detailed actions on other nets or face-to-face. The commander ensures the focus of subordinate elements remains synchronized while executing various missions. He also clarifies coordination priorities and issues orders to each subordinate element, particularly on support issues, such as FARP operations. This does not preclude direct coordination between ground and aviation elements.

AIR-GROUND CONTROL

5-87. An alternate method of C2 is the formation of air-ground task forces or teams. This normally is a temporary relationship to deal with a specific situation. OPCON is the normal command relationship. Specific employment guidelines must be established before operations. Air-ground teams are best used when decentralized company operations are required. Based on mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC), control may reside with either the ground or air commander. Rehearsals are essential.

SECTION V – OPERATIONS IN ASYMMETRIC ENVIRONMENTS

5-88. Recent military conflicts have gravitated from conventional engagements executed on a linear battlefield to more undefined operations against an asymmetrical threat on a nonlinear battlefield. Although a conventional, linear environment is still relevant, commanders must be familiar with the emerging unconventional battlefield environment.

ASYMMETRY

5-89. Asymmetry is defined as the dissimilarities in organization, equipment, doctrine, capabilities, and values between other armed forces (formally organized or not) and US forces. Asymmetric operations exist when forces, technologies, and weapons are significantly different, or if a resort to terrorism and rejection of more conventional ROE are the norm. Asymmetric engagements can be extremely lethal, especially if the target is not ready to defend itself against the asymmetric threat. Asymmetry tends to decay over time as adversaries adapt to dissimilarities exposed in action. The likelihood of asymmetric attack increases with the continued conventional dominance of U.S. forces, and the growing threat of weapons of mass destruction (WMD).

5-90. Countering asymmetric attacks may require altering ROE, organization, doctrine, training, or equipment. To reduce the vulnerability to asymmetric attacks and to minimize their effects, Army organizations, training, and equipment emphasize flexible employment in diverse situations. Protective measures, such as physical security and OPSEC, lessen the effects of asymmetry. A credible NBC defense capability at the tactical level deters the use of WMD. The threat of asymmetric action requires emphasis on security, even in low-threat environments.

THREAT

5-91. Often unable to challenge the Army in conventional combat, adversaries seek to frustrate Army operations by resorting to asymmetric means, weapons, or tactics. Attacks pose threats from a variety of directions with a broad range of weapons systems designed to stress the enemy's defenses. For example, luring attack helicopters into an ADA ambush by displaying a prominent target (tank) is a common asymmetric operation. The enemy can also be expected to take refuge in any available restrictive or urban terrain to conduct operations.

5-92. Potential threats vary from heavy conventional units to adaptive, asymmetric forces structured for local and regional use. Enemy forces may be widely dispersed and numerically superior. Especially in SSC, the enemy can be expected to take advantage of restrictive and urban terrain. Adversaries will also seek and obtain technologies that challenge US strengths in information technology, navigation, night vision systems, and precision targeting and strike capabilities. The proliferation of WMD and long-range delivery systems will enable adversaries to threaten U.S. forces at greater ranges with increased lethality and precision.

5-93. Because of the difficulty in predicting asymmetric threats, IPB is essential. Accurate intelligence decreases the uncertainty critical to enemy success. Operational success requires identifying enemy capabilities (strengths and vulnerabilities), intentions, and COAs. Identifying and disseminating intelligence gaps to operational units prevents a false sense of security.

5-94. Army aviation primarily utilizes reconnaissance, search and attack, and CCA closely integrated with ground maneuver elements against asymmetric threats. Without a massed threat, friendly units are organized into small, decentralized, combined arms teams.

5-95. Aviation can expect to conduct 24-hour operations to support reconnaissance, search and attack, CCA, reserve missions such as quick reaction forces, and resupply requests. The brigade will depend on each BCT BAE and aviation LNO teams working with supported units to coordinate aviation support requests.

5-96. Small arms, rocket propelled grenades (RPG), and shoulder-fired SAMs, create a dangerous environment for rotary-wing aircraft. By operating in small teams, engaged aircraft can focus on survivability while directing lethal fires from CAS or attack aircraft on enemy positions.

5-97. The most effective aviation TTP against asymmetric threats is using enablers and FS assets to neutralize known enemy positions. Running fire, suppressive fires, and maneuvering flight are most effective during CCA or unexpected enroute engagements.

TRAINING

5-98. Training and preparation is critical to countering the asymmetric threat and minimizing the inherent advantages. Collective training in the AO, or in similar conditions prior to deployment, will promote familiarity with the terrain and enemy tactics. By minimizing the element of surprise and maintaining heightened security, enemy operations are more effectively countered.

5-99. The present conventional dominance of the U.S. military and recent conflicts implies future operations are more likely to be asymmetric. Adhering to the "train as you fight" philosophy, training must involve more asymmetric scenarios and continue once deployed in that environment. Since each situation is unique, units must experiment and adapt to the scenario, disseminating and training effective TTP.

FRATRICIDE

5-100. The potential for fratricide increases because of the fluid nature of the nonlinear battlefield and the changing disposition of attacking and defending forces. The presence of noncombatants in the AO further complicates operations. In this setting, commanders exercise judgment in clearing fires, both direct and indirect.

COMBAT SERVICE SUPPORT

5-101. The dispersed nature of noncontiguous AOs often separate flight, maintenance, and refuel operations, requiring extended LOCs and innovative means to conduct sustaining operations. The demand for helicopter security for convoy and air movement operations can be expected to increase as sustainment distances and asymmetric threats increase.

COMMAND AND CONTROL

5-102. Nonlinear and asymmetric operations frequently involve a larger AO and increased communication requirements. A reliable C2 architecture is critical to aviation's responsiveness.

SECTION VI – NUCLEAR, BIOLOGICAL, AND CHEMICAL

5-103. U.S. forces are likely to encounter an NBC environment, especially when facing a militarily less-capable threat that resorts to asymmetric responses. The AVN BDE must avoid the effects of NBC weapons, take protective measures, respond to their use, and continue the mission. SOPs and training are the best preparation for operations in an NBC environment.

5-104. The commander must consider the exposure guidance from higher headquarters, the enemy's capability, the mission, and the condition of the unit when establishing the unit's mission oriented protective posture (MOPP). Because of the degradation in aircrew effectiveness in MOPP equipment, intensive fighter management is required. To reduce risk in an NBC environment, units must:

- Avoid detection.
- Retain mobility.
- Seek terrain shielding by carefully selecting AAs and preparing shelters and fighting positions.
- Instill discipline and physical conditioning to prepare troops for the confusion and physical demands of a NBC environment.
- Plan for continued operations if attacked.

CONTAMINATION AVOIDANCE

5-105. The term avoidance does not necessarily mean aborting a mission or suspending operations. Soldiers go into contaminated areas only when necessary. Normally, it is preferable to bypass these areas. The NBC warning and reporting system, reconnaissance, monitoring, and surveys identify contaminated areas.

PROTECTIVE MEASURES

5-106. When elements cannot avoid contamination, or are under direct attack, soldiers must take appropriate actions to survive. Specific actions are taken before, during, and after attack. To sustain operations in an NBC environment, personnel must understand and practice individual and collective protection. Individual protection involves those measures each soldier must take to survive and continue the mission. These measures include immediately donning MOPP gear, seeking cover, and using other protective equipment and devices. Collective protection provides a contamination-free environment for selected personnel and precludes the continuous wear of MOPP gear. Considerations for NBC protection include:

- Positioning NBC reconnaissance assets at likely locations for enemy employment.

- Combining reach-back intelligence with battlefield sources to anticipate enemy use of weapons of mass destruction.
- Using smoke to support disengagement.

SECTION VII – SPECIAL ENVIRONMENTS

5-107. The brigade will be called upon to execute its mission in a variety of environments. It is imperative that commanders understand the impact of these environments on their soldiers and equipment. Commanders need to think through the impact of environmental conditions and provide necessary training. The Army's concept of "just in time" training, supported by the use of distance learning products, provides opportunities for commander's to meet some of the unique training challenges that special environments demand.

URBAN ENVIRONMENT

5-108. In urban areas, fields of fire are restricted, landing areas are limited, and buildings provide cover for enemy forces to engage helicopters with near impunity. The presence of noncombatants, protected structures, and important resources and facilities normally demands careful weapons and munitions selection to avoid collateral damage. The proximity of enemy and friendly ground forces increases the risk of fratricide. Communications may be degraded by many structures. Thermal effects from paved surfaces and the channeling effects of buildings can cause wind conditions to vary significantly from point to point. Special, restrictive ROE should be expected. Standoff is key to aviation survival.

5-109. Man-made structures and the density of noncombatants in urbanized terrain affect the tactical options available to commanders and aircrews. Whether engaged in MTW, SSC, stability operations, or support operations, the AVN BDE probably will conduct operations in urbanized terrain. This is partly because of growing populations, but also results from a potential adversary's tendency to create a nonlinear battlefield rather than attempt to face U.S. forces directly. Potential adversaries can be expected to use urbanized terrain for cover and concealment, and to reduce U.S. combat superiority by taking advantage of weapons restrictions and reduced options available to commanders under ROE, ROI, and Law of War. ROE and ROI must be rehearsed, practiced, and reinforced continually throughout the operation. FM 3-06.1 and Appendix D of this manual contain additional information on operations in urban terrain.

Conducting Operations In An Urban Environment

5-110. U.S. forces may conduct operations in urbanized terrain for the following reasons:

- The unit is force-oriented and the enemy occupies a built up area.
- The political importance of the urban area justifies using time and resources to liberate it.
- The area controls key routes of commerce , which provides a tactical advantage to the commander who controls it.
- The enemy in the urban area, if bypassed, might be able to interdict LOCs.
- Critical facilities within the urban areas must be retained or protected.

5-111. U.S. forces may avoid operations in urbanized terrain for the following reasons:

- The enemy, if bypassed, presents no substantial threat to friendly operations.
- The commander does not have sufficient forces to seize and clear the area.
- The urban area is declared an open city, making an attack illegal under the Law of War.

Planning and Execution of Urban Operations

5-112. Operations in urban terrain generally follow the same planning and execution concepts as in other terrain; however, special planning and consideration of the characteristics unique to urban terrain is required. Aircraft must standoff to engage targets in urban areas. Overflight and engagement of targets within urban areas may require night operations and special preparation because of possible enemy direct fire at close range. Hovering in urban areas exposes aircraft to small arms fires and should only be done if essential to the mission and adequate overwatch fires are available. Wire, tower, and antenna hazards are especially prevalent and must be considered in the IPB. Other examples include:

- Demographics of the local population.
- Subterranean, ground level, and above ground terrain analysis.
- Civilian maps and diagrams.
- Airfields, helipads, and rooftops that can be used as LZs.
- Structures and areas protected by the Law of War or restricted by ROE.
- Supplementary electronic and visual signals to differentiate friend from foe.
- Weapons selection to produce the desired effect while minimizing collateral damage, and maximizing standoff.

5-113. Helicopters can emplace forces on rooftops, in parks, stadiums, parking areas, and other similar areas. The presence of wires, poles, antennas, debris, and other obstacles may limit some landing areas. Attack reconnaissance aircraft cover landings and minimize exposure by engaging targets using running fire and diving fire. Helicopters must minimize ground time and hovering to avoid sniper, grenade, and rocket propelled grenade (RPG) engagement when inserting or overwatching forces.

5-114. Due to the dynamics of urban growth, current maps and photographs are essential for accurate planning. In the absence of these materials, detailed reconnaissance is required to minimize risk.

Civil Concerns

5-115. Operations in urbanized terrain almost always have a significant impact on noncombatants. Special considerations are required. Units should maintain liaison with local police, ATS, civil, and military authorities.

Care of Civilians

5-116. Civilians may be removed from the area or protected in their homes. In some cases, the AVN BDE may be required to arrange for supply, transportation, medical care, and other support for civilians.

Security

5-117. The threat of espionage, sabotage, and terrorism must be carefully considered and guarded against during all phases of aviation operations.

Civilian Interference with Military Operations

5-118. The AVN BDE must ensure that civilians do not interfere with the execution of military operations. The AVN BDE relies on MPs, Staff Judge Advocate (SJA) representatives, and HUMINT teams to liaison with local law enforcement officials. They gain their aid in controlling displaced civilian flow while they help identify and interrogate any suspicious displaced persons moving through the AO.

MOUNTAINS AND HIGH ALTITUDES

5-119. The mountainous environment—particularly its severe and rapidly changing weather—affects aircraft performance capabilities, accelerates crew fatigue, and influences basic flight techniques. Limited visibility operations in the mountains are extremely hazardous and require extensive aircrew training. Common problems associated with mountain operations are more complex at night, even when using NVDs.

5-120. While high altitude limits load-carrying capabilities, compartmentalized mountain terrain enhances rapid movement to the flanks and rear of an isolated enemy force. Enemy mechanized forces are slowed and canalized as they move up steep grades and down narrow valleys or are restricted to roads and trails. Mountains provide excellent terrain masking and allow easy avoidance of radar and visual acquisition; however, high ridges also provide effective FPs for AD guns and hand-held missiles. Mountain flying techniques are critical to taking advantage of this terrain.

HIGH ALTITUDE TRAINING SITE

5-121. High altitude training site (HATS), located at Eagle, Colorado, provides excellent high altitude and power management training for rotary-wing aviators. If possible, all PCs should attend the course before deploying. The course is valuable for operating at high gross weights or high altitude. Course length is one week and there is an exportable training package available.

SNOW, ICE, EXTREME COLD WEATHER

5-122. Operations in snow, ice, and extreme cold weather pose operational and maintenance challenges. Unpredictable weather conditions complicate the planning process and commonly cause a deliberate reduction in OPTEMPO.

5-123. Ice can prevent proper weapons and missile function. Uncovered aircraft require frequent checks and services to prevent icing. Aircraft that become ice-covered may take hours to de-ice. Aircraft skis may be required.

5-124. The depth and consistency of snow in a landing area is an important consideration. Blowing snow can create whiteout conditions, especially during takeoff, landing, or hovering. The AMC should increase the spacing between aircraft in snow-covered landing areas, and preparation teams should pack the snow prior to arrival. Low and slow flying aircraft may produce large snow clouds that the enemy can easily detect, and blow snow off trees, thus leaving a trail visible to enemy aircrews or UAVs.

5-125. Aircraft may utilize frozen bodies of water as landing areas. Suitability of the landing area depends on aircraft weight and ice thickness. For more information, see FM 31-71.

5-126. Navigation using terrain following and maps is degraded over snowfall and frozen waterways. NAVAIDs and global positioning systems (GPS) are essential in this environment.

5-127. Units that do not normally operate in these conditions should request unit SOPs and guidance from units experienced in these conditions. Measures to combat lower temperatures and snow will constrain the operations tempo.

JUNGLES

5-128. Dense jungles and wooded areas degrade fields of fire and target identification, and can negate the advantages afforded by superior acquisition systems. Humid, tropical air decreases the effectiveness of optics. It also decreases payload capacity. While tropical jungle can be some of the harshest terrain available for aviation operations, mobility advantages offered by aviation over ground forces are exponentially increased.

5-129. Downed aircraft without a smoke signature can be difficult to locate. Aviation Life Support Equipment (ALSS) radios, GPS systems, and survival gear are especially critical as are effective flight following using GPS coordinates and preplanned posted routes. SOPs must address aircrew recovery.

DESERTS

5-130. The brigade can effectively operate in the desert, but open desert terrain increases the unit's vulnerability to enemy long-range observation and acquisition. Leaders should take advantage of periods of limited visibility, or consider a wider dispersion of aircraft.

5-131. The weather in desert regions can be extremely unpredictable. Sandstorms—accompanied by constantly fluctuating wind speeds—may reduce visibility from in excess of 50 km to zero in less than five minutes. Pilots must be carefully briefed on prevailing weather conditions before takeoff. Warning of any expected variations in conditions must be transmitted immediately to all airborne aircraft.

5-132. Desert surface composition affects the choice of LZs, maintenance sites, FARPs, and operating bases. Hard, packed sand provides the best conditions, but prolonged use will produce finer sand particles resulting in degraded ground and air operations. Leaders must seek airfields and hardstand surfaces when possible. If not, sealant, oil, diesel fuel, or water may be applied after a thorough environmental assessment to limit dust clouds.

5-133. Heat limits the load bearing capability of aircraft. Placing FARPs closer to objective areas can mitigate the effects of reduced payload capabilities. Aircrews can employ running landings to carry a greater payload. Because many deserts have extremes in temperature, many missions are best conducted at night when temperatures are cooler.

5-134. During Desert Shield, units were often restricted to 150' MSL altitude during training. When the war began and crews attempted to fly below 50' MSL, it was a difficult transition. Many aircrews used the IR searchlight to improve terrain definition using ANVIS. Units must balance the risk of sophisticated enemies detecting such searchlights against the risk of radar AD engagement at higher altitudes, or accidental terrain contact. Regular training with NVDs can reduce reliance on the IR searchlight and its accompanying risks.

5-135. Aircraft flying low and slow during take-off, hover, and landing produce large dust clouds that the enemy can easily detect. Dust clouds produce brownout conditions that obscure pilot vision during the day and under NVDs. These activities also are extremely damaging to turbine engines, rotor blades, and nearby ground equipment, reducing their operational lifespan. Aircrews must minimize hovering, expedite takeoffs and landings, or fly IMC if brownout occurs. Units must train in a desert combat environment to be comfortable operating a blacked-out aircraft in brownout conditions.

OVER-WATER OPERATIONS

5-136. Over-water operations may be necessary to defeat enemy waterborne operations or to move from one location to another. As in desert environments, openness increases the unit's vulnerability to enemy long-range observation and acquisition. The lack of NAVAIDs and prominent terrain features makes navigation extremely difficult without GPS, Doppler, or some other form of navigation assistance. Over-water operations require special equipment and training. For example, water wings, rafts, and helicopter emergency egress device (HEED). Units that normally do not operate in these conditions should request unit SOPs and guidance from units experienced in these conditions. See FM 1-564 for more information.

SMOKE AND OBSCURANTS

5-137. Smoke and obscurants are integral parts of most potential adversaries' doctrine, tactics, equipment, and training. Enemy forces will use smoke to increase their effectiveness and reduce their vulnerability. Specifically, the enemy can use smoke to:

- Deny information.
- Mask the use of chemical weapons.
- Disrupt movement, operations, and C2.
- Restrict NOE and contour flight.
- Reduce the effectiveness of sensors, range finders, target designators, and visual observation.

FRIENDLY SMOKE

5-138. Through the use of smoke, the brigade can:

- Suppress visually sighted enemy AD systems and small arms.
- Sector portions of EAs, isolating part of the enemy force.
- Obscure LZ or PZ operations from enemy view.
- Screen the displacement of attack reconnaissance aircraft while they move or break contact.

5-139. For deliberate operations, an aviation brigade and battalions can employ multi-spectral smoke-generating equipment. Helicopters can employ white phosphorus rockets on enemy positions to obscure vision if:

- Adequate numbers of rockets are available.
- Weather conditions are favorable.
- The mission is coordinated in advance with friendly forces that may be in the immediate area.

5-140. The downside of friendly or enemy use of obscurants is the degraded performance of sensors and the potential negative effect on use of SAL Hellfire (RF Hellfire is unaffected by smoke). During air-ground integration planning, both air and ground units must plan schemes of maneuver and SBF positions that consider the effect smoke may have in obscuring friendly observation and designation. In both Desert Storm and OIF, Iraq attempted to employ oil fires to disrupt air attacks with little success.

SECTION VIII – AIRFIELD OPERATIONS

5-141. Army aviation units are able and can expect to operate from diverse locations and alongside aircraft from other services and nations. The desire of all aviation forces to operate from airfields or improved areas increases the probability of the brigade collocating with several different aviation units. This increases the burden on ATS to deconflict operations, necessitating close coordination between commanders and establishment of standard procedures.

AIRFIELD MANAGEMENT

5-142. When more than one unit occupies an airfield, the appropriate joint forces commander will appoint an airfield commander. The airfield commander is responsible for the safe operation and accommodation of aircraft. This is accomplished through the construction and maintenance of facilities and implementation of procedures and controls. Responsibility for daily operations can be delegated to an airfield manager.

5-143. Care must be made at airfields to mitigate the effect of environmental conditions on aviation operations. Severe weather and temperatures can cause catastrophic damage to equipment and loss of life, not to mention the corrosive effect of wind, rain, snow, and sand. See the previous section of this chapter for more information on environmental considerations.

5-144. Wartime OPTEMPO and the consolidation of several units in one location can exacerbate wear and tear on airfield facilities and runways. Airfield managers must allocate engineer resources to reinforce, improve, and maintain high-traffic areas and those structures not originally designed to accommodate sustained operations.

AIR TRAFFIC SERVICES

5-145. ATS assets promote safe, flexible, and efficient use of airspace. Army aviation units share airspace with a multitude of weapon systems. ATS units enable Army aviation to maximize technology by helping coordinate airspace and by providing recovering capabilities.

SHIPBOARD OPERATIONS

5-146. Shipboard operations provide many options to joint force and component commanders. Army helicopter operational capabilities are greatly expanded when ships are available for operations near large bodies of water and islands. Shipboard operations require special training prior to helicopters landing on or operating from ships. See FM 3-04.564, Shipboard and Overwater Operations, for more information.

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Chapter 6

Employing the UEx Aviation Brigade

SECTION I – GENERAL

6-1. This chapter addresses employment aspects for the HVY, LT and Forced Entry AVN BDEs. Those operations common to all three brigades are covered in Chapter 5, and are not repeated here.

6-2. The AVN BDE's primary role is to set the conditions for success by:

- Ensuring the required C2 facilities are in place and operational.
- Ensuring SU—enemy, friendly, and allied.
- Ensuring the necessary liaison to and from other organizations is in place.
- Coordinating the brigade's movements and operations within the battlespace.
- Coordinating the necessary combat enablers and logistics.

SECTION II – HEAVY UEX AVIATION BRIGADE

OVERVIEW

6-3. The heavy UEx AVN BDE is the primary headquarters for Army aviation operations conducted by a heavy UEx. The brigade has two ARBs, an AHB, a GSAB, and an ASB.

TASK ORGANIZATION CONSIDERATIONS

6-4. The brigade has a total of 110 aircraft: 48 AH-64Ds, 38 UH-60s, 12 HH-60s, and 12 CH-47s.

6-5. Internal task organization to accomplish air assaults, movement to contact, and screening operations is routine. The UEx AVN BDE is an appropriate covering or guard force if additional forces are attached or OPCON. The brigade will often receive additional assault helicopter forces from the UEy or uncommitted UExs to augment its air assault capability.

HOW TO FIGHT

6-6. The heavy AVN BDE’s primary mission is to facilitate ground maneuver through aviation operations. Utility and heavy helicopters allow the brigade to move forces and materiel quickly throughout the battlespace. Attack reconnaissance aircraft focus on providing quick reaction fire support through CCA to friendly maneuver forces in contact and mobile strikes against high-value targets (HVT).

6-7. The AVN BDE is the primary integrator of aviation assets within the UEx. It sets the conditions for success for each of its units. The brigade must prepare to fight as a unit, to support BCTs using pure or aviation battalion task forces, and to conduct multiple independent missions requiring pure or task-organized units. Heavy UEx AVN BDE missions include:

- Close Combat Attack (CCA).

- Mobile strike.
- Air assault.
- Reconnaissance.
- Security.
- Command, and control (C2).
- Air movement.
- Personnel recovery (PR) operations.
- Aerial mine delivery operations (Volcano).
- MEDEVAC operations.
- UEx rear area operations.
- Aerial sustainment.
- Downed aircraft recovery.
- CASEVAC operations.

6-8. The AVN BDE allocates resources based on METT-TC, the scheme of maneuver, available assets, and the UEx commander's priorities.

6-9. The brigade's ARBs and AHB are a primary shaping force. Through mobile strikes and air assaults, the brigade can quickly project infantry forces into positions of advantage or neutralize enemy effects in the close fight.

6-10. The deep nature of shaping operations may require aircraft to fly with auxiliary fuel tanks. Training on the use of these tanks and their affect on power management, flight characteristics, and onboard ordnance capability is essential, and must be part of the unit SOP.

6-11. The brigade may act as or provide the maneuver headquarters for operations to react to rear area threats. It is able to react quickly to deliver forces, observation, and/or fires over a wide area.

6-12. The brigade commander requires units to maintain collective training proficiency among battalions within the brigade.

6-13. The heavy ARB is effective against massed, moving targets. It also is effective against point targets (such as cave entrances, bunker apertures, windows in buildings) and other hard or soft targets. The ARB enables the UEx or BCT commander to mass combat power rapidly at the decisive time to shape the battlefield for decisive operations or to conduct decisive operations.

6-14. With two heavy ARBs, the brigade has the ability to dedicate aircraft to the close fight, reconnaissance, security, and shaping operations simultaneously. Reconnaissance operations may be degraded when compared to a light AVN BDE due to the AH-64D's relative lack of maneuverability, restricted visual lookdown angle, and larger signature. Effective use of the Longbow fire control radar (FCR) may mitigate these disadvantages.

6-15. The AHB provides a robust air assault and aerial mine delivery capability. For larger air assaults, heavy UExs require UEy assault augmentation and light infantry forces to allow heavy infantry to remain with their combat system in coordinated simultaneous attacks.

6-16. The GSAB provides aerial sustainment and support to logistics operations with its diverse assets. The GSAC provides aerial C2 and GS support, the HvyHC heavy-lift support, and the air ambulance company provides MEDEVAC support.

INTELLIGENCE

6-17. The UEx may task the brigade with conducting intelligence liaison with other elements to gather aviation-specific information. This could be as simple as flying to the closest Air Force intelligence source, or as complicated as placing LNOs with allied and joint forces. UAV support for aviation missions is essential to identify threats without risking manned aircraft. The brigade's aircrews can provide a great source of combat information through spot reports, debriefings, and AARs.

MANEUVER

6-18. The brigade conducts shaping operations with the ARB and AHB. In the economy-of-force role, it may advance with or without ground maneuver, and with or without air assault forces in an effort to hold the enemy in check while the bulk of the UEx's ground maneuver forces advance on another axis.

6-19. As the UEx reserve, it may respond to rear area threats, support the UEx commander's scheme of maneuver when he needs to exploit success, conduct pursuit, or reinforce ground forces.

COMMAND AND CONTROL

6-20. Communication is a major challenge for the heavy UEx AVN BDE. Operations in close proximity to the enemy require terrain flight altitudes that make LOS communications difficult. CPs and aircrews may employ radio relay, retransmission, or alternate communications to maintain contact. HF radio with automatic link establishment (ALE), in both voice and data mode provides alternate NLOS communications for longer distance missions and NOE communications. SATCOM is available to support both C2 aircraft customers and the brigade's own C2 needs. The future use of UAVs for radio relay and retransmission missions may enhance and ensure good communications over extended distances.

SECTION III – LIGHT UEX AVIATION BRIGADE

OVERVIEW

6-21. The light UEx AVN BDE is the primary headquarters for Army aviation operations conducted by a light UEx. The brigade has two ARSs, an AHB, a GSAB, and an ASB.

TASK ORGANIZATION CONSIDERATIONS

6-22. The brigade has a total of 122 aircraft: 60 OH-58Ds, 38 UH-60s, 12 HH-60s, and 12 CH-47s.

6-23. Internal task organization to accomplish air assaults, movement to contact, and screening operations is routine. The AVN BDE is an appropriate covering or guard force if additional forces are attached or OPCON, such as one or two light infantry battalions, artillery, engineers, and UEy utility and heavy helicopter units. The brigade will often receive additional assault helicopter forces from the UEy or uncommitted UExs to augment its air assault capability.

6-24. BCTs from light UExs often deploy to support contingencies requiring infantry to fight on difficult terrain. As such, the light AVN BDE may deploy an aviation TF to support a BCT. The aviation brigade task force may also deploy in stability operations, support operations, or as part of a rotation of forces in support of a BCT.

HOW TO FIGHT

6-25. The light AVN BDE's primary mission is to facilitate ground maneuver through aviation operations. Utility and heavy helicopters allow the brigade to move forces and materiel quickly throughout the battlespace. Attack reconnaissance aircraft focus on reconnaissance and security missions to protect maneuvering forces, and to provide quick reaction fire support through CCA once enemy contact is established.

6-26. The AVN BDE is the primary integrator of aviation assets within the UEx. The brigade sets the conditions for success for each of its units. The brigade must prepare to fight as a whole, to support other units using pure or task-organized units, and to conduct multiple independent missions requiring pure or task-organized units. Light UEx AVN BDE missions include:

- Reconnaissance.
- Security.
- Air assault.
- Mobile strike.
- CCA.
- C2.
- Air movement.
- PR operations.
- Aerial mine delivery operations (Volcano).
- MEDEVAC operations.
- UEx rear area operations.
- Aerial sustainment.
- Downed aircraft recovery.
- CASEVAC operations.

6-27. The AVN BDE allocates resources based on METT-TC, the scheme of maneuver, available assets, and the UEx commander's priorities.

6-28. The brigade's ARSs and AHB are a primary shaping force. Through mobile strikes and air assaults, the brigade can quickly project infantry forces into positions of advantage or neutralize enemy effects on the close fight.

6-29. The brigade may act as or provide the maneuver headquarters for operations to react to rear area threats. It is able to react quickly to deliver forces, observation, and/or fires over a wide area.

6-30. The ARS is ideally suited for crisis response, urban and sustained operations. Due to the size and simplicity of the OH-58D, it is the easiest battalion to deploy. While the UEx awaits follow-on forces, the ARS can support early tactical operations and ground maneuver with reconnaissance, security, and CCA. The OH-58D also excels in urban environments due to its size, maneuverability, and ability to visually acquire threats directly below the aircraft. With more aircraft than the heavy ARB, the ARS is better suited for continuous operations.

6-31. The light ARS fights in close coordination with ground units and is an excellent force for conducting reconnaissance and security missions. Battalion attack operations against massed forces or operations beyond the close area are limited due to the OH-58D's limited range.

6-32. The AHB provides a robust air assault and aerial mine delivery capability. The air assaults support seizure of key terrain or to allow light forces to gain a maneuver advantage over enemy forces. It can conduct a battalion-sized air assault without augmentation.

6-33. The GSAB provides aerial sustainment and support to logistics operations with its diverse assets. The GSAC provides aerial C2 and GS support, the HvyHC heavy-lift support, and the air ambulance company provides MEDEVAC support.

6-34. The brigade commander requires his subordinate units to maintain collective training proficiency.

INTELLIGENCE

6-35. The UEx may task the brigade with conducting intelligence liaison with other elements to gather aviation-specific information. This could be as simple as flying to the closest Air Force intelligence source, or as complicated as placing LNOs with allied and joint forces. The brigade may have access to a JSTARS common ground station that can provide real-time intelligence access from a variety of sources. UAV support for aviation missions is essential to identify threats without risking manned aircraft.

MANEUVER

6-36. The light infantry UEx exploits terrain and urban areas for both offensive and defensive operations. Aviation forces can support an infantry BCT in any terrain, day or night. Aviation's rapid mobility can quickly assist the UEx's infantry forces as they move under the concealment of night and the cover and concealment of restricted terrain.

6-37. The light AVN BDE conducts limited shaping operations with the ARS and AHB. The brigade also conducts economy-of-force or reserve missions. In the economy-of-force role it may advance with or without air assaults forces to hold enemy forces in place while the UEx maneuvers toward the main objective. As the UEx reserve, it may respond to area battle threats, support the UEx commander's scheme of maneuver when he needs to exploit success, conduct pursuit, or reinforce ground forces.

6-38. As the UEx reserve, the AVN BDE may respond to rear area threats, support the UEx commander's scheme of maneuver when he needs to exploit success, conduct pursuit, or reinforce ground forces.

COMMAND AND CONTROL

6-39. Communication is a major challenge for the light UEx AVN BDE. Operations in close proximity to the enemy will require terrain flight altitudes that make LOS communications difficult. CPs and aircrews may employ radio relay, retransmission, or alternate communications to maintain contact. HF radio with automatic link establishment (ALE), in both voice and data mode, provides alternate NLOS communications for longer distance missions and NOE communications. SATCOM is available to support both C2 aircraft customers and the brigade's own C2 needs. The future use of UAVs for radio relay and retransmission missions may enhance and ensure good communications over extended distances.

SECTION IV – FORCED ENTRY UEX AVIATION BRIGADE

OVERVIEW

6-40. The forced entry UEx AVN BDE has a heavy ARB, a light ARS, an AHB, a GSAB, and an ASB.

6-41. Forced entry UExs are uniquely tailored to deploy rapidly into unimproved points of entry, forcibly if necessary. They are customarily the first forces to respond to a situation and have the ability to overwhelm hostile anti-access forces with maneuver and firepower. The Forced Entry Aviation Brigade prepares to deploy the first aircraft in as little as 18 hours after notification, with aircraft unloaded and mission ready within 72 hours of arrival at the point of entry.

6-42. The Forced Entry Aviation Brigade sacrifices some combat power by first deploying the OH-58D from the ARS in lieu of the ARB's AH-64s to enhance air-deployability.

TASK ORGANIZATION CONSIDERATIONS

6-43. Each Forced Entry Aviation Brigade has a total of 116 aircraft: 30 OH-58Ds, 24 AH-64Ds, 38 UH-60s, 12 HH-60s, and 12 CH-47s.

6-44. Internal task organization to accomplish air assaults, movement to contact, and screening operations is routine. The AVN BDE is an appropriate covering or guard force if additional forces are attached or OPCON. The brigade will often receive additional assault helicopter forces from the UEy or uncommitted UExs to augment its air assault capability.

6-45. Brigade units may be under the OPCON of an air assault task force that includes ground forces. AVN BDE units form habitual relationships with the BCT they support. During deployments of a single BCT, attack reconnaissance units often task-organize with utility and HvyHC to form a supporting aviation task force.

6-46. During air assaults, attack reconnaissance and assault elements augment brigade assets as part of a larger air assault brigade or battalion task force. This includes additional utility and heavy helicopter assets to support FARP operations.

6-47. The forced entry UEx AVN BDE may deploy an aviation task force to support a UEx contingency. A typical deployment task force includes a BCT and a towed artillery battalion, an AHB, an ARS, a CH-47 company, supporting engineers, other combat support units and logistics support. This gives the aviation brigade task force adequate capability to move infantry forces and much of the supporting artillery in multiple lifts with UH-60 seats removed and Kevlar blankets installed. As part of a rotation of forces or when the entire UEx deploys, supporting elements from the UEy or other UExs may be attached to augment assault support.

HOW TO FIGHT

6-48. The forced entry aviation brigade's primary role is to deploy quickly into a point of entry and provide aviation combat, CS and logistics capability in support of decisive, shaping and sustainment operations. The brigade may deploy into multiple unimproved points of entry, using force to overwhelm hostile anti-access capabilities.

6-49. The Forced Entry Aviation Brigade is the primary integrator of aviation assets within the UEx. Its primary role is to set the conditions for success for each of its units. The brigade must prepare to fight as a unit, to support other units using pure or task-organized units, and to conduct multiple independent missions requiring pure or task-organized units. Forced entry UEx AVN BDE missions include:

- Reconnaissance.
- Security.
- Air assault.
- Mobile strike.
- CCA.

- C2.
- Air movement.
- PR operations.
- Aerial mine delivery operations (Volcano).
- MEDEVAC operations.
- UEx rear area operations.
- Aerial sustainment.
- Downed aircraft recovery.
- CASEVAC operations.

6-50. The forced entry UEx AVN BDE may perform forcible entry from ships or intermediate staging bases in adjacent allied territory. It may conduct assisted or unassisted entry as an airlifted force deployed to a lodgment airfield. It subsequently defends the lodgment and conducts shaping air assault and mobile strike operations as required to deter attacks on the lodgment. As more forces deploy or if the brigade force is adequate to conduct offensive operations, the brigade task force may conduct a movement to contact, deliberate and hasty attacks, and exploitation and pursuit.

6-51. During deployment and early entry operations, the AVN BDEs will perform vital reconnaissance and security operations, air movement of critical personnel and equipment throughout the AO, C2, and crucial logistical support until ground lines of communication (LOC) can be established.

6-52. The AVN BDE allocates resources based on METT-TC, the scheme of maneuver, available assets, and the UEx commander's priorities.

6-53. The brigade may act as the maneuver headquarters for operations to react to rear area threats, , or provide a battalion task force to perform this function. The brigade is able to react quickly to deliver forces, observation, and/or fires over a wide area.

6-54. The heavy ARB is effective against massed, moving targets. It also is effective against point targets (such as cave entrances, bunker apertures, windows in buildings) and other hard or soft targets. The ARB enables the UEx commander to mass combat power rapidly at the decisive time to shape the battlefield for decisive operations or to conduct decisive operations.

6-55. The ARS is ideally suited for early entry, urban, and sustained operations. Due to the size and simplicity of the OH-58D, it is the easiest battalion to deploy. While the UEx awaits follow-on forces, the ARS can support forced entry operations and ground maneuver with reconnaissance, security, and CCA. The OH-58D also excels in urban environments due to its size, maneuverability, and ability to visually acquire threats directly below the aircraft. With more aircraft than the ARB, the ARS is better suited for continuous operations.

6-56. With an ARB and an ARS, the brigade has the ability to dedicate aircraft to the close fight, reconnaissance, security, and shaping operations simultaneously. Reconnaissance operations may be degraded when compared to a light AVN BDE due to the AH-64D’s relative lack of maneuverability, restricted visual lookdown angle, and larger signature. Effective use of the Longbow fire control radar (FCR) may mitigate these disadvantages.

6-57. When two Forced Entry Aviation Brigades are available, the UEx has the ability to combine its organic AHB and HvyHC from both AVN BDEs to conduct large-scale air assault and air movement operations.

6-58. The GSAB provides aerial sustainment and support to logistics operations with its diverse assets. The GSAC provides aerial C2 and GS support, the HvyHC heavy-lift support, and the air ambulance company provides MEDEVAC support.

6-59. The brigade commander requires units to maintain collective training proficiency among subordinate battalions and units they habitually support.

INTELLIGENCE

6-60. The UEx may task the brigade with conducting intelligence liaison with other elements to gather aviation-specific information. This could be as simple as flying to the closest Air Force intelligence source, or as complicated as placing LNOs with allied and joint forces.

MANEUVER

6-61. The forced entry UEx AVN BDEs may conduct independent shaping and decisive operations as the UEx commander dictates. They may conduct hasty, deliberate, and spoiling attacks, and counterattacks. They may also conduct raids, feints, and demonstrations. Each brigade, with ground and assault force augmentation, conducts movement to contact, pursuit and exploitation. During initial lodgment and as conditions dictate, the brigades conduct mobile and area defense, but even in the defense, their actions are offensive in nature.

6-62. Attack reconnaissance elements provide initial security and reconnaissance during initial entry/lodgment. They conduct route, area and zone reconnaissance, and reconnaissance-in-force. The brigades can act as UEx guard when augmented with ground units. They conduct flank screens with their attack and reconnaissance aircraft, and provide security for MSRs and rear areas.

6-63. Aviation brigade UH-60, UH-60/HH-60 air ambulances, and OH-58D aircraft may provide assets for PR to recover downed joint and Army aviators.

6-64. The AHBs provide a robust air assault and aerial mine delivery capability. They can conduct a brigade-sized air assault without augmentation. For larger air assaults, the UEx requires UEy or other UEx augmentation.

6-65. The GSABs provide aerial CS and CSS with their diverse assets. The GSACs provide aerial C2 and GS support, the HvyHCs provide heavy-lift support, and the air ambulance company provides MEDEVAC support.

SECTION V – AVIATION SUPPORT DURING OFFENSE OPERATIONS

6-66. UEx aviation brigade assets contribute during offensive operations by assisting the ground maneuver commander in finding, fixing, and engaging the enemy.

MOVEMENT TO CONTACT

ATTACK RECONNAISSANCE HELICOPTERS

6-67. Missions the ARB/ARS can perform, but are not limited to include:

- Conduct armed reconnaissance or reconnaissance in force to gain and maintain enemy contact.
- Screen front, flank, or rear (counter-reconnaissance).
- Conduct route reconnaissance. Aircraft and ground scouts should work together for a detailed reconnaissance. Aircraft working alone will accomplish the reconnaissance quicker but with less detail.
- Conduct guard operations. The battalion must be augmented with tanks or BFVs to accomplish this mission.

- Augment and reinforce ground scouts seeking enemy contact. Especially effective due to the AH-64D's and OH-58D's night capability.
- Act as rapid reaction force (hasty attack) to develop the situation in a meeting engagement or allow for disengagement if enemy is too strong for the advance guard forces.
- Conduct screen operations while units consolidate on objectives. The battalion can provide security for an assaulting force after it has reached its objective. Attack reconnaissance assets can provide early warning of enemy counter attack or routes of the enemy withdrawal.

ASSAULT HELICOPTERS

6-68. Missions that the AHB could perform include conducting air movements for general resupply, air assaults and CASEVAC, if available.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-69. Missions the GSAC can perform include:

- Supporting Air Assault forces.
- Employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-70. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Supporting Air Assault Operations.

Aeromedical Evacuation Company

6-71. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

HASTY ATTACK

ATTACK RECONNAISSANCE HELICOPTERS

6-72. Missions the ARB/ARS can perform include:

- Conduct flank or forward screen to provide early warning, maneuver space and reaction time for the force conducting the hasty attack.
- Conduct route reconnaissance to prevent disruption of the movement.
- Recon enemy frontage and depth to locate routes around enemy position.
- Recon to the rear of an enemy position to provide reports on enemy positions, reserves, artillery, and control CAS and artillery fires.
- Conduct deception operations to prevent detection of the movement to contact force.
- Be the BCT's tactical combat force (TCF) for rear operations.
- Attack enemy's flanks and rear to develop the situation, divert his attention. They can be used as either main or supporting attacks.
- Screen own flanks.
- Act as reserve.

- Conduct a mobile attack to separate echelons, prevent/disrupt counterattacks.
- Conduct air assault security to protect air assault task force.
- Pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-73. Missions the AHB can perform include:

- Air assault forces to seize key terrain, disrupt the enemy's rear.
- Conduct air movement to emplace REMBASS to assist in NAI observation.
- Conduct air movement for CASEVAC.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-74. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-75. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Air assault forces to seize key terrain, disrupt the enemy's rear.
- Conduct air movement for CASEVAC.

Aeromedical Evacuation Company

6-76. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

DELIBERATE ATTACK

ATTACK RECONNAISSANCE HELICOPTERS

6-77. Missions the ARB/ARS can perform include:

- Conduct a deliberate attack into the enemy's flanks or rear to develop the situation ordivert his attention.
- Screen own flanks.
- Act as reserve.
- Conduct a mobile attack to separate echelons, prevent/disrupt counterattacks (main or supporting attack).
- Conduct Air Assault Security to protect Air Assault Task Force.
- Pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-78. Missions the AHB can perform include:

- Air assault forces to seize key terrain, disrupt the enemy's rear.
- Conduct air movement to emplace REMBASS to assist in NAI observation.
- Conduct air movement for CASEVAC.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-79. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-80. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Air assault forces to seize key terrain, disrupt the enemy's rear.
- Conduct air movement for CASEVAC.

Aeromedical Evacuation Company

6-81. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

EXPLOITATION

ATTACK RECONNAISSANCE HELICOPTERS

6-82. Missions the ARB/ARS can perform include:

- Screen vulnerable own flanks or gaps when performing as part of a large force.
- Conduct Air Assault Security to protect the Air Assault Task Force.
- Attack flanks and rear to maintain constant pressure on the defeated force.
- Attack rear area C2 and CSS assets to ensure total defeat of the enemy force.
- Act as reserve to blunt any counterattacks or provide the decisive blow by attacking to destroy lucrative targets.
- Pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-83. Missions the AHB can perform include:

- Conduct air movements to resupply food and ammunition rapidly to help maintain momentum.
- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-84. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-85. Missions the HvyHC can perform but are not limited to include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions rapidly to help maintain momentum.

- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.

Aeromedical Evacuation Company

6-86. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

PURSUIT

ATTACK RECONNAISSANCE HELICOPTERS

6-87. Missions the ARB/ARS can perform include:

- Screen vulnerable own flanks or gaps when performing as part of a larger force.
- Attack to destroy/disrupt/attrit counterattack or reserve forces.
- Attack to fix withdrawing forces.
- Screen pursuing forces' flanks, especially at night.
- Conduct Air Assault Security to protect the Air Assault Task Force.
- Pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-88. Missions the AHB can perform include:

- Conduct air movements to resupply food and ammunition rapidly to help maintain momentum.
- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-89. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-90. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions rapidly to help maintain momentum.
- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.

Aeromedical Evacuation Company

6-91. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

SECTION VI – AVIATION SUPPORT DURING DEFENSIVE OPERATIONS

6-92. During defensive operations, the speed and mobility of UEx aviation brigade assets can help maximize concentration and flexibility.

RELIEF IN PLACE

ATTACK RECONNAISSANCE HELICOPTERS

6-93. Missions the ARB/ARS can perform include:

- Facilitate movement for both the brigade assuming the battle and the brigade leaving the battle to ensure movement into and out of the area is smooth.
- Screen forward or flanks during relief, especially at night or during limited visibility to provide early warning of an attack; during the transfer of responsibility.
- Attack enemy forces to divert their attention away from the relief.
- Act as reserve during relief.
- Pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-94. Missions the AHB can perform include:

- Conduct air movement operations to move limited numbers of personnel and equipment into and out of relief positions.
- Conduct air movement operations to evacuate casualties (CASEVAC).
- Augment C2 by providing mobility for commanders.
- Conduct air movement operations of critical personnel such as moving MPs forward/rearward to man traffic control points.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-95. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-96. Missions the HvyHC can perform include:

- Conduct air movements for general resupply, especially oversized, heavy, and special munitions.
- Conduct air movement operations to move personnel and equipment into and out of relief positions.
- Conduct air movement operations to evacuate casualties (CASEVAC).

Aeromedical Evacuation Company

6-97. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

PASSAGE OF LINES

ATTACK RECONNAISSANCE HELICOPTERS

6-98. Missions the ARB/ARS can perform include:

- Conduct screen/overwatch of Battle Handover Line (BHL).
- Attack to disrupt enemy force to allow friendly forces to disengage.
- Act as reserve force during passage of lines.
- Use AH-64Ds to pinpoint artillery fires (Copperhead).

ASSAULT HELICOPTERS

6-99. Missions the AHB can perform include:

- Conduct air movement operations to evacuate casualties (CASEVAC).
- Augment C2 by providing mobility for commanders.
- Conduct air movement operations of key personnel such as MPs required to man traffic control points.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-100. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-101. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Conduct air movement operations to evacuate casualties (CASEVAC).
- Conduct air movement operations of key personnel.

Aeromedical Evacuation Company

6-102. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

BREAKOUT OF ENCIRCLED FORCES

ATTACK RECONNAISSANCE HELICOPTERS

6-103. Missions the ARB/ARS can perform include:

- Screen the front or flanks during the breakout to give the moving commander early warning, maneuver space, and reaction time especially at night.
- Attack to destroy enemy forces at the rupture point of the breakout.
- Attack to disrupt enemy forces and divert attention away from the rupture point however, this is not the best utilization of the attack assets.
- Act as reserve force or attack to support reserve force (assets should not be located with encircled forces due to vulnerability).
- Attack to disrupt enemy fighting against rear guard.
- Pinpoint artillery fires (Copperhead) at the rupture point.

ASSAULT HELICOPTERS

6-104. Missions the AHB can perform but are not limited to include:

- Conduct air movement operations to move limited numbers of personnel and equipment into and out of the encircled forces.
- Conduct air movement operation to evacuate casualties (CASEVAC).
- Augment C2 by providing mobility for commanders.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-105. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver, and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-106. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Conduct air movement operations to move limited numbers of personnel and equipment into and out of relief positions.
- Conduct air movement operation to evacuate casualties (CASEVAC).

Aeromedical Evacuation Company

6-107. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

RIVER CROSSING OPERATIONS

ATTACK RECONNAISSANCE HELICOPTERS

6-108. Missions the ARB/ARS can perform include:

- Screen forward, especially for the initial assault force establishing the bridgehead.
- Screen assault force crossing and far bank seizure.
- Facilitate movement around the marshalling area and on routes to the crossing site.
- Conduct Air Assault Security to protect the Air Assault Task Force.
- Attack deep to destroy, disrupt, or attrit forces defending the bridgehead.

ASSAULT HELICOPTERS

6-109. Missions the AHB can perform but are not limited to include:

- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.
- Conduct air movement operations to resupply assault force with limited fuel and ammunition.
- Conduct air movement operations to move MPs forward to man traffic control points.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-110. Missions the GSAC can perform include employing A2C2S platforms in support of the UEx command group, maneuver and AVN BDE commanders' C2 requirements.

Heavy Helicopter Company

6-111. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions to resupply assault force.
- Air assault forces to seize key terrain (bridges, crossing sites) to help maintain momentum.
- Conduct air movement for CASEVAC.

Aeromedical Evacuation Company

6-112. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

RESERVE OPERATIONS

ATTACK RECONNAISSANCE HELICOPTERS

6-113. Missions the ARB/ARS can perform include:

- Act as reserve.
- Attacks to destroy enemy forces, reinforce, or blunt/block penetrations during enemy counterattacks.
- Receive contingency missions to conduct offensive operations similar to attack helicopters.
- Conduct zone or route reconnaissance of the attack axis for the reserve force.
- Overwatch/screen passage of lines.
- Pinpoint artillery fires to hide intentions of reserve force.

ASSAULT HELICOPTERS

6-114. Missions the AHB can perform include:

- Conduct air movement for CASEVAC.
- Air assault reserve forces.
- Support Personnel Recovery operations.
- Support Downed Aircraft Recovery Team (DART) operations.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-115. Missions the GSAC can perform include:

- Employ A2C2S platforms in support of the commander of the reserve forces' C2 requirements.
- Provide mobility for commander of reserve force to see the battlefield.

Heavy Helicopter Company

6-116. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Conduct air movement for CASEVAC.
- Air assault reserve forces.

Aeromedical Evacuation Company

6-117. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

REAR OPERATIONS

ATTACK RECONNAISSANCE HELICOPTERS

6-118. Missions the ARB/ARS can perform include:

- Responsibility for its own Level I and II response and may be designated as the tactical combat force (TCF) or form a part of the TCF upon arrival in the rear area.
- Reconnaissance and security missions in the rear area will normally be assigned if the organic MP support cannot meet the required missions. Close coordination with the MPs is required to minimize duplication of effort.
- Conduct screen and reconnaissance, especially in vulnerable areas or likely LZs/DZs.
- Conduct zone, area, or route reconnaissances.
- Act as TCF.
- Attacks to destroy rear area Level III threats.
- Overwatch MSRs to prevent ambush of supply vehicles.

ASSAULT HELICOPTERS

6-119. Missions the AHB can perform include:

- Conduct air assault operations to provide mobility for TCF.
- Conduct air movement operations to support other aviation assets involved in rear area operations.

GENERAL SUPPORT HELICOPTERS

General Support Aviation Company

6-120. Missions the GSAC can perform, but are not limited to include:

- Employ A2C2S platforms in support of the Rear Area Commander's C2 requirements.
- Provide mobility for the Rear Area Operations Commander.

Heavy Helicopter Company

6-121. Missions the HvyHC can perform include:

- Conduct air movements for general resupply especially oversized, heavy, and special munitions.
- Conduct air assault operations to provide mobility for TCF.

- Conduct air movement operations to support other aviation assets involved in rear operations.

Aeromedical Evacuation Company

6-122. Missions the Aerormedical Evacuation Company can perform include conducting MEDEVAC for the BCTs and other assigned UEx forces.

SECTION VII – AVIATION SUPPORT DURING RECONNAISSANCE OPERATIONS

6-123. Commanders will frequently task UEx AVN BDEs to conduct reconnaissance to obtain information about the activities and resources of the enemy, or about the meteorological, hydrographic, or geographic characteristics of a particular area. Commanders need real-time information during the execution of current operations to be precise in the maneuver and application of combat power against the enemy.

6-124. A major source of near real-time information is the ARB/ARS, which is an intelligence source that can fight for information. Attack reconnaissance aircraft have decisive advantages over other intelligence resources because they:

- Work through and counter enemy deception efforts better than any sensor system. Provide the fastest, most reliable means of assessing terrain that the enemy is trying to configure to his advantage.
- Are not passive sources. Aircraft not only find the enemy but can further develop the situation and force the enemy to reveal more information.
- Can more effectively disseminate information to commanders who have an immediate need for intelligence.

6-125. Reconnaissance missions are divided into four categories: route, zone, area, and reconnaissance in force. In most mission profiles, integration of ground and air reconnaissance provides mutual reinforcement. For example, ground units may reinforce air reconnaissance units if the terrain offers concealment from aerial observation. The distance the reconnaissance unit operates from the supported unit is a function of METT-TC, but generally is far enough forward to provide the ground commander time to maneuver before enemy engagement.

6-126. Types of useful information the ARB/ARS can supply to higher headquarters in near real-time includes:

- The actual size, disposition, and composition of the enemy.
- Areas of strength and weakness.
- Current enemy activity.
- Where and when the precise application of superior combat power could have a decisive effect.
- Best route to an objective.
- Location of friendly forces.

AERIAL RECONNAISSANCE TASKS

6-127. Aerial reconnaissance tasks:

- Conducted as part of integrated air-ground (and eventually manned/unmanned) team to avoid meeting engagement, develop the situation out of contact, identify HPTs, enable freedom of maneuver, and enhance force protection.
- Orchestrate employing off-board and on-board R&S assets along with man-in-loop observation in order to see first and understand first.
- Apply fundamentals of reconnaissance.
- Execute actions on contact to fix, destroy, or disengage as required.

RECONNAISSANCE FUNDAMENTALS

6-128. ARB/ARSs conduct reconnaissance according the seven fundamentals listed below:

1- Gain And Maintain Enemy Contact

6-129. Reconnaissance centers first on acquiring, and then identifying enemy forces. The degree of contact desired is determined before the mission begins. Once contact is made, it is not voluntarily broken until orders to break contact are received. Attack reconnaissance aircraft report information immediately, and continually update the commander on the tactical situation. An Attack reconnaissance unit may maintain visual contact from a distance, or it may engage with company aircraft or supporting fires.

2 - Orient On The Objective

6-130. Reconnaissance should orient on the location or movement of the reconnaissance objective. The objective may be a terrain feature, a locality, or an enemy force. Aerial reconnaissance orients on the objective and positions itself to retain freedom of maneuver.

3 - Report Rapidly And Accurately

6-131. Reconnaissance units should report all information rapidly and accurately. Information that initially appears unimportant may become valuable when combined with other information. Knowing that an enemy force is not in one location can be just as important as knowing that it is in another. Reconnaissance reports must be relayed in a timely manner for the information to be useful.

4 - Retain Freedom To Maneuver

6-132. Attack reconnaissance units obtain information by stealth when possible, but fight as necessary to accomplish the mission. Attack reconnaissance aircraft retain the freedom of maneuver thru overwatch, suppressive fires, cunning, and constant awareness of the tactical situation. Commanders maneuver unit elements to avoid decisive engagement. Engagements during reconnaissance operations are used to gain information.

5 - Develop The Situation Rapidly

6-133. Immediately upon gaining enemy contact, the ARC deploys to cover/concealment, reports, maintains observation, and develops the situation. It develops the situation based on the order, unit SOP, or the commander's intent.

6 - Ensure Maximum Reconnaissance Forces Forward

6-134. Aerial reconnaissance is most valuable when providing essential battlefield information. The optimal number of intelligence-gathering assets should be employed in the reconnaissance effort. To do this, they must be positioned as far forward as METT-TC, CS, and CSS factors allow. UAV integration should be maximized.

7 - Ensure Continuous Reconnaissance

6-135. Effective reconnaissance is continuous and is conducted before, during and after all operations. Before an operation, aerial reconnaissance focuses on filling gaps in information about the enemy and the terrain. During an operation, aerial reconnaissance focuses on providing updated information that verifies the enemy's composition, dispositions, and intentions as the battle progresses. After an operation, aerial reconnaissance focuses on maintaining contact with the enemy to determine his next move and collecting information necessary for planning subsequent operations.

METHODS OF RECONNAISSANCE

6-136. The methods of reconnaissance are deliberate reconnaissance or reconnaissance by fire. Unit leaders may use any method or combination of methods necessary to accomplish the mission.

Deliberate Reconnaissance

6-137. Also known as stealth reconnaissance, this method avoids physical contact with the enemy and gathers information by quiet, deliberate techniques. Surveillance is the primary task performed.

Reconnaissance By Fire

6-138. Reconnaissance by fire reduces the chance of ambush within established kill zones. The intent is to cause the enemy to disclose their presence by moving or returning fire. It is even more advantageous when employed against a poorly disciplined enemy that will likely react when engaged.

6-139. Reconnaissance by fire is appropriate against suspected enemy positions near:

- Natural or man-made obstacles.
- Obvious kill zone(s).
- Signs of recent enemy activity.
- Future friendly positions (BP/ABF/SBF/AA/HA) prior to occupation.

6-140. Supporting indirect/joint fires are the primary means of engagement on suspected enemy positions in order to maintain aircraft concealment. An integrated J-SEAD plan around flight routes and BPs is a primary example of indirect reconnaissance by fire. The disadvantage is that effects obscure observation and should not be used in close proximity to friendly companies, structures of tactical or political importance, and noncombatants.

6-141. Running fire is the primary technique for direct fire reconnaissance in close proximity to enemy forces. Machine gun and rocket accuracy are improved during running fire and are the primary weapon systems.

6-142. Disadvantages are loss of surprise, exposing the firing element, and the possibility of becoming decisively engaged.

Aerial Reconnaissance

6-143. Aerial reconnaissance is characterized by:

- Need for rapid reconnaissance.
- Need to clear the area forward of ground elements to accelerate the reconnaissance tempo.
- Requirement to maintain reconnaissance over extended distances.

- Use of aircraft systems to acquire targets or reconnaissance objectives at maximum standoff distance.
- Use of aircraft video imagery to acquire combat information.
- Low probability of effective AD threat.

6-144. The advantages of aerial reconnaissance are available firepower, maneuverability, advanced optics, navigational aids (NAVAID), and communication capabilities. The disadvantage is the larger overall signature and exposure of aircraft.

6-145. When conducting reconnaissance forward of ground companies, detailed coordination must take place to reduce the potential for fratricide.

DISMOUNTED RECONNAISSANCE

6-146. Aircrews may conduct dismounted reconnaissance when information is required on a specific objective. This technique is time-intensive, can place the aircraft and crew in a vulnerable position, and does not maximize use of aircraft systems.

ROUTE RECONNAISSANCE

6-147. Route reconnaissance focuses along a specific line of communication, such as a road, railway, air route, or cross-country mobility corridor. It provides new or updated information on route conditions such as obstacles and bridge classifications, and enemy and civilian activity along the route. A route reconnaissance includes not only the route itself, but also all terrain along the route from which the enemy could influence the friendly force's movement. The commander normally assigns this mission when he wants to use a specific route for friendly movement. Route reconnaissance is often conducted as part of a zone reconnaissance.

6-148. Figure 6-1 shows typical graphics for a route reconnaissance.

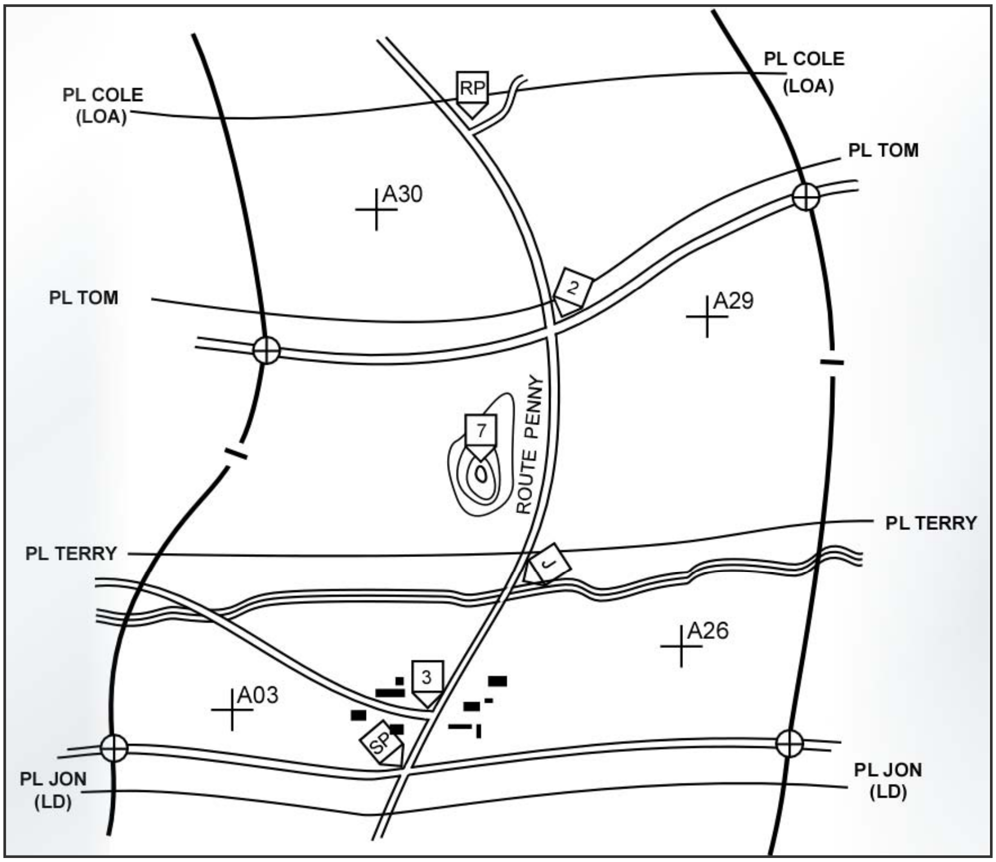

Figure 6-1. Route Reconnaissance

6-149. The mission is best accomplished by employing ground elements with air-reconnaissance teams. The ground force, if used, normally commands the route reconnaissance.

6-150. Augmenting the air recon team with UH-60s to transport infantry, ground scouts, or engineers can speed the reconnaissance effort. These elements gather information about the designated route and all adjacent terrain from which an enemy could engage friendly forces with direct fires. The air teams reconnoiter to the front, flanks, and rear providing early warning, uncovering ambushes, and providing overwatch. An air team element may periodically be required to dismount and inspect key terrain.

ROUTE RECONNAISSANCE TASKS

6-151. The following tasks are critical:

- Reconnoiter all terrain the enemy can use to dominate movement along the route.
- Overwatch ground elements, especially in built-up areas.
- Reconnoiter all defiles along the route for possible ambush sites and locate a bypass.
- Locate bypasses around built-up areas, obstacles, and contaminated areas.
- Determine the trafficability of the route in the case of adverse weather.
- Classify all bridges, overpasses, underpasses, and culverts within the zone.

- Locate fords and crossing sites in proximity of the route.
- Locate mines, obstacles, and barriers along the route.
- Find and report all enemy forces that can influence movement along the route.
- Report route information.

PRE-MISSION PLANNING

6-152. Before conducting a route reconnaissance, air–recon teams must know certain information about the route. This information includes:

- Critical tasks to be accomplished by the air team and the ground element.
- Task organization: any reinforcements, especially engineers, and their relationship to the ground element are identified. Supporting artillery relationships are also defined.
- Start point (SP), RP, and delineation of the route.
- Actions to be taken prior to the SP and after reaching the RP.
- Time the mission is to start and, if required, to be completed.
- Critical points along the route identified as checkpoints.
- IPB-related information on the route and enemy situation.
- Any constraints, restrictions, or changes to the ROE.
- Expected weather conditions for the time of movement.
- Type of unit or vehicles expected to use the route, if applicable.
- Time of day or night the route is expected to be used, if applicable.

HASTY ROUTE RECONNAISSANCE

6-153. When time is limited, ground elements are not available, or the mission does not require detailed information, air reconnaissance teams may be tasked to conduct a hasty route reconnaissance. In this case, information gathering is limited to the type of route and obstacle limitations. The commander may also direct certain additional information that must be gathered.

RECORDING ROUTE RECONNAISSANCE RESULTS

6-154. Air and ground elements that conduct the route reconnaissance should keep records on all routes reconnoitered. Several methods are acceptable for recording this information. One method is to assign each key terrain feature (bridge, fording site, bypass site) a number on the map and detail the intelligence information on a separate worksheet. This method ensures completeness and simplicity and reduces map clutter.

Video Recording

6-155. The use of video capabilities to record areas of interest along the route provides excellent combat information to the requesting headquarters. If the video is used, planning must be conducted to return the tape to the requesting headquarters, and crews must use a standardized scanning technique, established by SOP, to clearly associate terrain with the targets portrayed on the video image. If sending of real-time or still frames of video is used, the AMPS operator may print the video image and transmit the image by fax or courier to the using headquarters.

AIR ROUTE RECONNAISSANCE

6-156. The principles of an air route reconnaissance are the same as for a ground route reconnaissance but the areas of interest are different. Aviation forces moving along an air route are primarily concerned with the location of enemy forces, ease of navigation, suitability of landing sites and zones, and hazards to flight. Hazards to flight include suspected enemy AD locations, mountainous areas, wires, large bodies of water, open terrain, other natural and man-made features.

ZONE RECONNAISSANCE

6-157. A zone reconnaissance is conducted to obtain information concerning routes, obstacles (to include NBC contamination), terrain, and enemy forces within a zone defined by a line of departure (LD), LOA, and lateral boundaries. The boundaries are restrictive. Permission is required for the team to extend their reconnaissance outside of them. Every route within the zone must be reconnoitered unless otherwise directed. It is the most time-consuming of the reconnaissance missions. Figure 6-2 shows typical graphics for a zone reconnaissance.

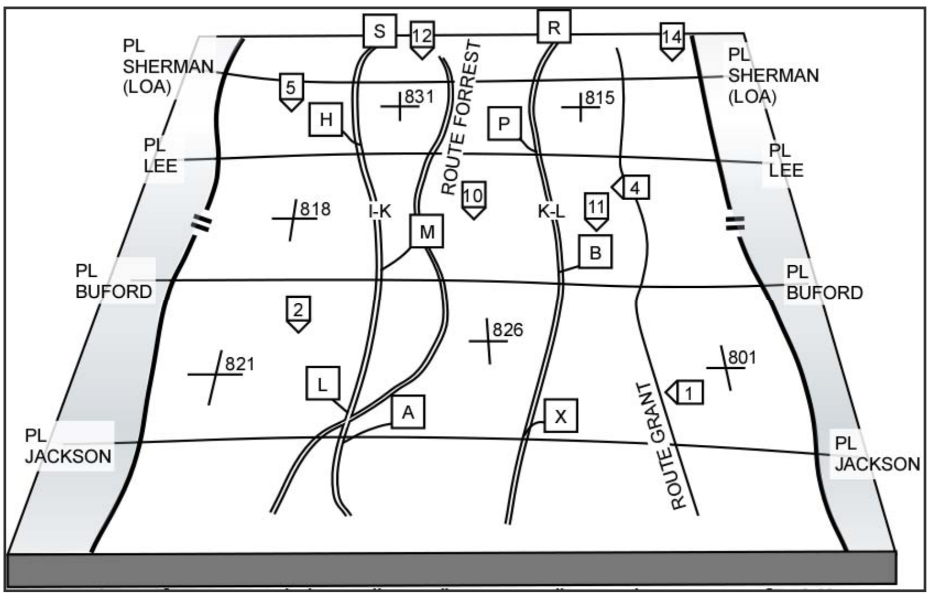

Figure 6-2. Zone Reconnaissance

6-158. A zone reconnaissance is normally conducted when information on cross-country trafficability is desired or when the enemy situation is in doubt. The battalion normally conducts the mission by employing air-reconnaissance teams in concert with ground platoons, but a company may perform the mission alone. If available, additional attack reconnaissance assets may be held in reserve or, if time is critical, they can support the zone reconnaissance effort using their onboard sensors while providing overwatch.

6-159. The battalion provides specific engagement and/or bypass criteria for the air-reconnaissance teams. To ensure continuity of effort, the battalion designates the forward movement of the operation and tells each element what to do after mission completion. If the battalion is not given a follow-on mission, the air-reconnaissance teams should be assigned objectives on dominant terrain to maintain surveillance and ensure enemy situation in zone remains as reported.

ZONE RECONNAISSANCE TASKS

6-160. Certain tasks must be accomplished during a zone reconnaissance unless specifically directed otherwise by the commander. The following tasks are critical:

- Reconnoiter terrain within the zone.
- Find and report all enemy forces within the zone.
- Find suitable covered and concealed ground or air avenues of approach.
- Determine the presence of significant adverse weather.
- Locate bypasses around built-up areas, obstacles, and contaminated areas.
- Inspect and classify all bridges, overpasses, underpasses, and culverts within the zone.
- Locate fords and crossing sites near all bridges in the zone.
- Locate mines, obstacles, and barriers in the zone.
- Overwatch ground elements during clearance operations.
- Report information.

ZONE RECONNAISSANCE PRE-MISSION PLANNING

6-161. Before departing on the mission, the team leader and aircrews select checkpoints and plan routes between checkpoints, using terrain and vegetation to conceal aircraft movement. The team leader also coordinates to ensure specific tasks for support of the ground force commander are integrated into the reconnaissance plan. Specific tasks that may be assigned to attack reconnaissance teams working with ground forces include:

- Reconnoitering terrain not easily accessible to ground vehicles.
- Checking key points in zone.
- Locating and reporting the flanks of encountered enemy forces.
- Locating, reporting, and bypassing obstacles.
- Locating, reporting, and bypassing enemy positions.
- Providing security on the far side of obstacles while ground forces reconnoiter and clear them.

Control Measures

6-162. The commander assigns boundaries between elements to specify sectors of responsibility. After establishing sectors, the unit designates a LD and specifies a crossing time. PLs, contact points, coordination points, and checkpoints ease essential coordination between adjacent elements. PLs are established as needed to control and coordinate forward movement. Failure to keep company elements abreast may result in the bypass of enemy elements, envelopment by enemy forces, or engagement of friendly forces. Like boundaries, PLs should generally follow features that are easy to recognize, particularly for night operations or periods of limited visibility (smoke, haze, fog). Contact points are designated on boundaries to ensure physical coordination between adjacent elements. Contact points are designated at:

- Points that ensure proper coverage of the zone.
- Critical points (such as a route crossing from one sector into another).
- Points that ease movement, lateral coordination of fires or positions, passage of lines, or logistics support.

6-163. Whenever possible, air–reconnaissance teams should perform a coordinated zone reconnaissance in concert with ground units. Companies reconnoiter terrain not accessible to the ground element. If time is critical, the ARC may perform the zone reconnaissance alone with the understanding that the combat information obtained will be less detailed.

EMPLOYMENT CAPABILITIES

6-164. When a company conducts a zone reconnaissance in nonrestrictive terrain, it can operate up to 10 kilometers forward of ground companies due to the quality of communications, target acquisition capability of onboard systems, and the aircraft's armament. Close coordination and continuous communication between forces is critical to reduce the risk of fratricide.

MOVEMENT WITHIN THE ZONE

6-165. Elements report crossing PLs but do not stop unless ordered to do so. Once the operation begins, the enemy may be alerted. Forward momentum should be maintained to gain and maintain enemy contact and to keep the enemy off balance. The zone is systematically reconnoitered from the LD to the objective or LOA.

AREA RECONNAISSANCE

6-166. Area reconnaissance is conducted to obtain detailed information concerning the terrain or enemy activity within a prescribed area. The area may be key terrain, a farm, bridge, ridgeline, wooded area, proposed AA, LZ, or other features critical to an operation. An enclosed boundary line designates the specified area. Air-reconnaissance teams also reconnoiter dominant terrain outside the specified area from which the enemy can influence friendly operations. Figure 6-3 shows typical graphics for an area reconnaissance.

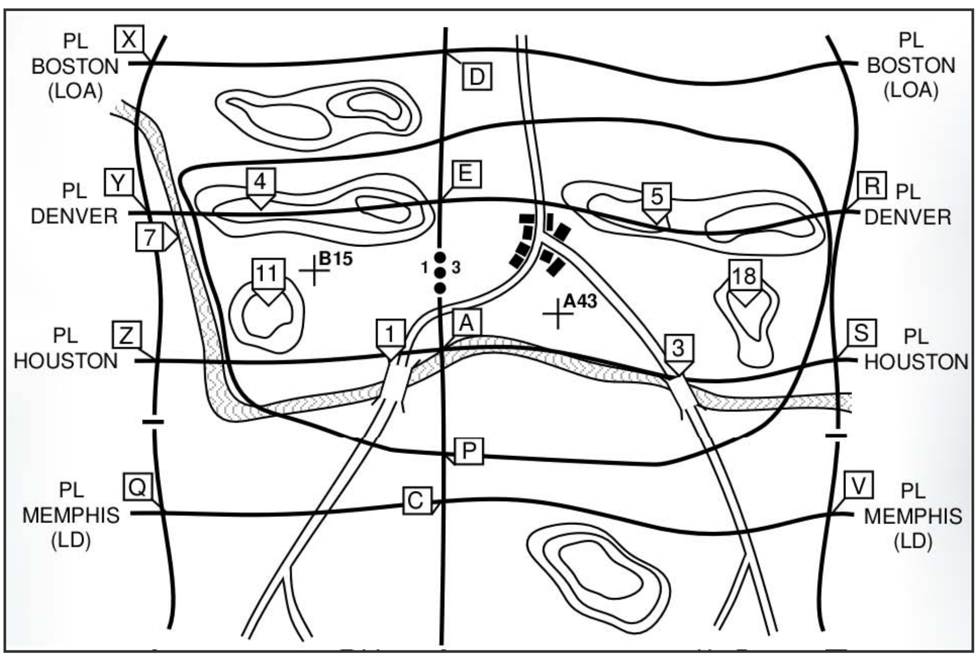

Figure 6-3. Area Reconnaissance

AREA RECONNAISSANCE TASKS

6-167. During an area reconnaissance, the following critical tasks apply, unless directed otherwise:

- Reconnoiter terrain within the area and dominant terrain outside the specific area from which the enemy can influence friendly operations.
- Find and report all enemy forces within the area.
- Find suitable cover and concealed ground or air avenues of approach.
- Determine the presence of significant adverse weather.
- Locate bypasses 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 mines, obstacles, and barriers in the area.
- Overwatch ground elements during clearance operations.
- Report information.

PRE-MISSION PLANNING

6-168. The commander first considers the factors of METT-TC. Rapid movement to the objective is important, but the main consideration is usually security. Avoidance of known enemy locations and surveillance elements is imperative. Primary and alternate routes to the objective area are, therefore, selected based on security and speed. Terrain flight techniques are used to move to the area. Upon completion of the reconnaissance, the reconnaissance elements depart the area on a different route.

LANDING ZONE OR PICKUP ZONE RECONNAISSANCE

6-169. LZ/PZ reconnaissance is an area reconnaissance performed to determine the suitability for air assault operations of a designated area. Principle concerns are determining if enemy forces are present, whether they are in a position to bring direct fires on the LZ or PZ, and evaluating the physical characteristics of the area. This reconnaissance is often performed as a subtask during air assault security missions. An LZ or PZ reconnaissance looks for predetermined, specific intelligence requirements. The commander assigned this mission should receive, as a minimum, information on the ground force’s objective and other actions after landing, the time of the air assault or air movement, and the number and type aircraft in each lift. Reconnaissance elements evaluating the LZ or PZ should create a sketch of the area with pertinent information (Figure 6-4).

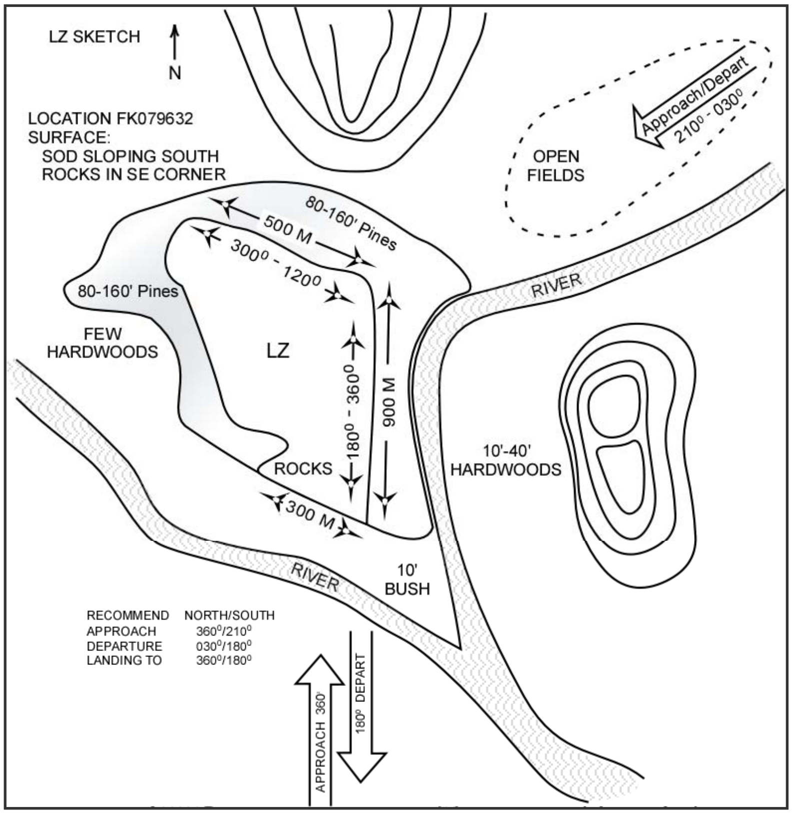

Figure 6-4. Figure LZ or PZ Sketch

CONDUCTING THE RECONNAISSANCE

6-170. Reconnaissance elements evaluate and make recommendations of the following tactical considerations:

- Whether the LZ or PZ will facilitate the unit's ability to accomplish the mission.
- Whether the LZ or PZ meets the commander's intent for distance from the objective.
- Forces required for security during the assault.

CHARACTERISTICS

6-171. Technical characteristics (utilizing the pneumonic LONGLASSV) of the LZ or PZ include:

- Landing formations.
- Obstacles and hazards in the landing area and vicinity.
- Number and type of aircraft that the LZ or 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.

6-172. 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.

RECONNAISSANCE IN FORCE

6-173. A reconnaissance in force is a deliberate combat operation designed to discover or test the enemy's strength, dispositions, and reactions or to obtain other information. It is assigned to a larger-than-company force when this information cannot be gathered by other means.

COMMAND AND CONTROL

6-174. The C2 function for a reconnaissance in force is similar to that for any other operation. However, a reconnaissance in force is characterized by violent, high-tempo actions that must be integrated and coordinated throughout the entire effort. Armor or infantry units make up the main ground force, and artillery assets provide DS. AD assets may also augment the ground forces to enhance the overall protection of the force.

COLLECTION

6-175. Reconnaissance elements collect and analyze information through contact with community leaders and the local populace, coupled with observation and trends analysis, to develop SU. Multi-dimensional reconnaissance assists in defeating or countering asymmetrical threats. It can be a stand-alone mission or imbedded as a critical task in other forms of reconnaissance.

CRITICAL TASKS

6-176. The following are critical tasks for multi-dimensional reconnaissance:

- Recognize threat and countermeasures (identify threat activities and recommend probable threat COA).
- Find all threats that can affect the mission.
- Establish and maintain contact with local civilian and military leadership.
- Identify key municipal infrastructure (utilities, sewage, water, and communications).
- Determine media activities.
- Understand the regional, local, and neighborhood situations.
- Clarify organizations and methods of operation for terrorists, trans-national groups, and ethnic centers of power.
- Identify local populace allegiances to factions, religious groups, or other organizations.
- Analyze the threat centers of influence to clarify the threat order of battle, centers of gravity, and intentions.
- Reconnoiter specific terrain.
- Report all reconnaissance information.

TECHNIQUES

6-177. When the battalion receives a multi-dimensional reconnaissance mission, the assigned area or areas is identified as the terrain inside a solid, continuous boundary. In most situations, the air elements operate within the boundaries of a ground maneuver force. PLs may be used to better define the operational area.

SECTION VIII – AVIATION SUPPORT DURING SECURITY OPERATIONS

GENERAL

6-178. The four types of security missions are screen, guard, cover, and area security. Security operations are undertaken to:

- Provide early and accurate warning of enemy operations.
- Provide the force being protected with time and maneuver space within which to react to the enemy.
- Develop the situation to allow the commander to effectively use the protected force.

6-179. Security operations are characterized by reconnaissance to reduce terrain and enemy unknowns, gaining and maintaining contact with the enemy to ensure continuous information flow, as well as providing early and accurate reporting of information to the protected force. The UEx AVN BDE is capable of conducting all security missions. However, it normally participates in covering force operations as a part of a larger force. To act as the covering force headquarters, the UEx AVN BDE will require ground elements and DS artillery.

SECURITY MISSION TASKS

6-180. ARB/ARS security operation tasks:

- Orchestrate sensors to develop the situation.
- Maneuver to positions of advantage increasing agility and mobility of the force.
- Develop and share common operational picture (COP) with all members of the air-ground team.
- Apply principles of reconnaissance – gain and maintain contact.
- Conduct actions on contact to fix, isolate, provide reinforcing fires, or destroy threat forces.
- Synchronize fires, maneuver, and tactical assault as required.
- Maintain communications with all members of the air/ground team.
- Air assault security operation tasks:
- Conduct reconnaissance for route to the objective as well as the objective itself.
- Provide over watching fires during insertion/extraction.
- Conduct route security and area security.
- With respect to security missions:
- When task organized with ground units, battalion elements can screen over wider areas and for longer periods of time.
- Aviation units can conduct guard operations when task organized with the appropriate ground units, commensurate with their level of training.
- Attack reconnaissance units do not normally conduct covering force operations, but can participate in covering force operations as part of a larger force.

ROLES

6-181. The fundamental purposes of the ARB/ARS in security operations are—

- Provide near real-time terrain and enemy information based on the commander's guidance and PIR.
- Provide reaction time and maneuver space for the main body.
- Preserve combat power.
- Facilitate C2.
- Facilitate movement.
- Perform rear area operations.
- Act as a ready reaction force.

6-182. These roles are not necessarily missions themselves, but are translated into mission statements by the regimental or battalion commander. Attack reconnaissance participates in these roles as a team with ground forces or as an independent force.

SECURITY FUNDAMENTALS

6-183. The UEx AVN BDE conducts security operations according to five fundamentals, known by the pneumonic MOPPP.

MAINTAIN ENEMY CONTACT

6-184. Once gained, contact is maintained to ensure a continuous flow of combat information. Contact is never broken unless specifically directed by the commander.

ORIENT ON THE MAIN BODY

6-185. A security force operates between the main body and known or suspected enemy units. The distance should be based upon the relative vulnerability of the main body and the expected enemy rate of advance. As a general rule, the main body's required preparation time is multiplied by the expected enemy rate of advance in kilometers per hour. This equals the minimum distance to emplace security. If this distance cannot be achieved, additional combat power and a more robust obstacle plan may be required.

PERFORM CONTINUOUS RECONNAISSANCE

6-186. A security force performs continuous reconnaissance to gain all possible information about the enemy force and the terrain within the assigned AO.

PROVIDE EARLY AND ACCURATE WARNING

6-187. The UEy or UEx commander's ability to seize or retain the initiative and concentrate overwhelming combat power at the right time and place depends on having current and relevant threat information, such as:

- Current dispositions.
- Size.
- Composition.
- Direction of movement.
- Rate of advance.

PROVIDE REACTION TIME AND MANEUVER SPACE

6-188. A commander thinks and plans in terms of the time and space required to maneuver and concentrate subordinate units against enemy weaknesses. Reconnaissance elements develop the situation and prevent the commander from fighting at a disadvantage by reconnoitering or performing security operations well forward or to the flanks of the main body.. The ARB/ARS provides time for the commander to assess the situation, determine a COA, issue orders, and maneuver. The ARB/ARS also provides space to maneuver, creating flexibility for the commander to respond to unanticipated enemy initiatives. The amount of time and space provided may be determined by the commander's intent. The assigned mission defines it.

6-189. An ARC/ART, operating independently, normally maintains an 8 to 10 kilometer front based on METT-TC. Using its organic firepower, it screens or fights within range of the main body artillery. This maximizes its ability to provide reaction time and maneuver space for the main body commander to concentrate combat power. During cover operations, forces forward may be out of the main body's artillery range.

TYPES OF SECURITY MISSIONS

6-190. The types of security missions are screen, guard, cover, and area security. Each is discussed, below.

SCREEN

6-191. The primary purpose of a screen is to provide early warning to the main body. Screen missions are defensive in nature, largely accomplished by establishing a series of OPs and conducting patrols to ensure adequate surveillance of the assigned sector. The screen provides the protected force with the least protection of any security mission. Based on the higher commander's intent and the screen's capabilities, security elements destroy enemy reconnaissance and may be tasked to impede and harass the enemy main body with indirect or direct fires.

Screen Lines

6-192. The graphical symbol for the screen (lightning bolts) indicates the general area for screening operations. In no way does the symbol indicate a requirement for physical occupation.

6-193. Once the order to screen is received from UEx or UEy, the AVN BDE S3 coordinates with all units that will be adjacent to the screen and establishes boundaries, contact points, PPs, and other coordinating measures as required to allow the battalion to pass through and operate in vicinity of main body units.

6-194. The battalion staff then further develops the plan providing the orders and graphics necessary to accomplish the screen. The battalion provides exact OP locations, how long OPs will be occupied, routes between OPs, and other graphics required.

6-195. The ARC's and ART's then execute the screen mission from the OPs assigned by the battalion.

GUARD

6-196. A guard force accomplishes all the tasks of a screening force. Additionally, a guard force prevents enemy ground observation of and direct fire against the main body. A guard force reconnoiters, attacks, defends, and delays as necessary to accomplish its mission. A guard force normally operates within the range of main body indirect-fire weapons. The main body commander assigns the guard mission when contact is expected or there is an exposed flank that requires greater protection than a screen provides.

COVER

6-197. A covering force accomplishes all the tasks of screening and guard forces. Additionally, a covering force operates apart from the main body to develop the situation early and deceives, disorganizes, and destroys enemy forces. Unlike screening or guard forces, a covering force is tactically self-contained and capable of operating independently of the main body. The UEx AVN BDE or ARB/ARS usually participates in covering force operations as part of a larger force.

AREA SECURITY

6-198. Area security includes R&S of designated personnel, airfields, unit convoys, facilities, MSRs, LOCs, equipment, and critical points. An area security force neutralizes or defeats enemy operations in a specified area. It screens, reconnoiters, attacks, defends, and delays as necessary to accomplish its mission. Area security operations focus on the enemy, the force being protected, or a combination of the two.

DEFINING MISSION SCOPE

6-199. The aviation force commander, in conjunction with the main body commander, determines the width and depth of the security requirement and establishes a rear boundary between the security force and the main body. The battalion may initially assume responsibility for the area between the main body and the security force. The aviation force may conduct a zone reconnaissance from the main body to the initial screen line and then maintain surveillance between the security force and the screen line. The main body may be required to conduct patrols or establish OPs.

PLANNING CONSIDERATIONS

6-200. The main body commander should give the security force commander the following critical items of information to facilitate planning:

- Dimensions of the security mission (depicted on graphic overlay).
- Minimum reaction time required.
- Minimum size enemy force that must be detected. This allows the commander to determine required density of the screen.

PRE-MISSION PLANNING

6-201. The aviation force commander follows general planning principles in preparing for a security mission, and determines those assets required to perform the mission. He specifies the area of the security mission and the time security must be established on avenues of approach (battalion-sized avenues of approach for a UEx in MTW). The AVN BDE or AVN BN commander must not establish initial security too close to the main body. The depth of the area should provide the main body sufficient reaction time. Passage points (PPs) and routes through friendly units must also be coordinated.

MISSION SUPPORT REQUIREMENTS

6-202. Unique aspects of the mission may generate requirements for assets not organic to the screening unit. The resultant force may receive ground or CS assets to perform the mission effectively.

PLANNING INDIRECT FIRES

6-203. Fires are planned and the emplacement of obstacles is coordinated to impede the enemy's advance. The combination of fires and obstacles allows the battalion to impede enemy lead elements, gain and maintain contact, and avoid decisive engagement. Upon contact, the AVN BDE or AVN BN focuses its effort on destroying the enemy reconnaissance elements by direct and indirect fires before they can penetrate the initial screen line.

SCREEN

6-204. The primary purpose of a screen is to provide early warning to the main body. Screen missions are defensive in nature, largely accomplished by establishing a series of OPs and conducting patrols to ensure adequate surveillance of the assigned sector. The screen provides the protected force with the least protection of any security mission.

6-205. Attack reconnaissance elements can screen forward, to the flanks, or to the rear of a stationary main body, and to the flanks or to the rear of a moving main body. Screening operations are usually not performed forward of a moving force. Zone reconnaissance, movement to contact, or advance guard is more suited for operations forward of a moving force. Based on the higher commander's intent, the AVN BDE TF and the battalions' reconnaissance elements may be required to impede and harass the enemy with internal and supporting fires and, within its capabilities, destroy or repel enemy reconnaissance elements without becoming decisively engaged. The screen provides the protected force with the least protection of any security mission. See Figure 6-5 for screen locations.

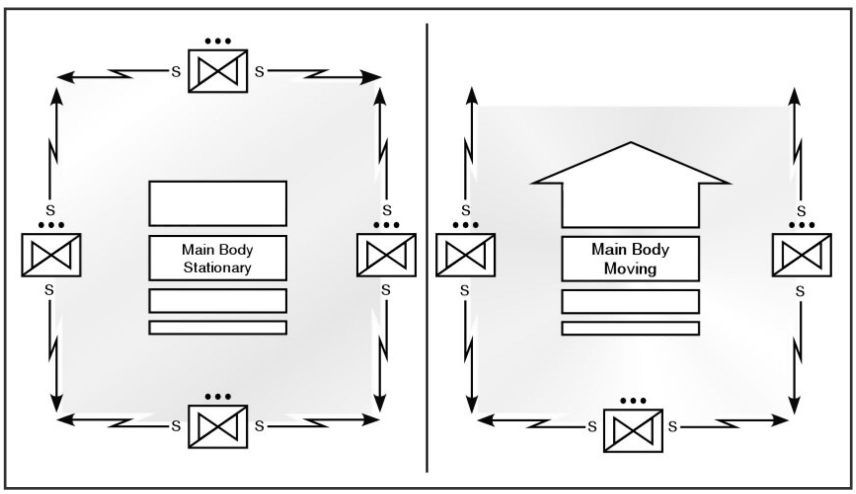

Figure 6-5. Screen Locations

SCREEN LINE TERMS

6-206. The following are common terms used in screen line planning and execution.

Lead/Wingman teams

6-207. A lead and wingman aircraft operate as a team. These teams are the norm for attack reconnaissance operations. They provide mutual support, local security, and overwatch. Generally, teams operating in the reconnaissance role are very lightly armed to extend endurance.

Rapid Response Team

6-208. Inherent in the screen mission is the destruction of enemy reconnaissance assets. To accomplish that destruction, the lightly-armed teams on the screen line rely on preplanned and on-call fires, and the more heavily armed rapid response team.

Observable area

6-209. This is the area that can be observed from an OP. Ideally, it is large enough that the observing attack reconnaissance team can move away from one OP to other OPs and return before an enemy unit moves into the standoff zone.

Standoff Zone

6-210. This is the area between the OP and the observable area that provides protection from expected enemy direct fire weapons systems.

Observation Posts

6-211. Aircrews use a series of OPs along the screen line to observe. Aircraft move to and from screen line OPs to detect enemy movement before the enemy can pass through the observable area available from each OP.

SCREEN LINE PLANNING

6-212. The graphical symbol for the screen (lightning bolts) indicates the general area for screening operations. In no way does the symbol indicate a requirement for physical occupation.

6-213. Once the order to screen is received from UEx or UEy, the AVN BDE S3 coordinates with all units that will be adjacent to the screen. They establish boundaries, contact points, PPs, and other coordinating measures as required allowing the ARB/ARS to pass through and operate in vicinity of main body units.

6-214. The ARB/ARS further develops the plan providing the orders and graphics necessary to accomplish the screen. The battalion provides exact OP locations, how long OPs will be occupied, routes between OPs, and other graphics required.

6-215. Companies or troops then execute the screen mission from the OPs assigned by battalion.

TERRAIN AND VISIBILITY INFLUENCE SCREEN LINE SIZE

6-216. Factors that influence the size of a screen line include:

- Cross-compartmentalized, mountainous, or winding terrain: affect the size of the observable area(s).
- Trafficability for ground forces: High-speed enemy avenues of approach decrease the time required for ground units to pass through the observable area.
- Illumination, IR crossover, and weather: affect the size of the observable area and the standoff area.
- Distance to FARP (s): affects time on station.
- Routes between OPs: affects the time required to move between OPs.

SCREEN CAPABILITIES

6-217. Aviation Attack Reconnaissance Battalions and Squadrons are ideally suited for screen missions due to their superior mobility, day and night target acquisition capability, and long range digital or voice communication capabilities. ARBs and ARSs may conduct screen operations independently or as an integral part of a larger unit's task organization. When participating in guard and cover operations, battalions normally screen or conduct zone reconnaissance as part of a larger force.

CRITICAL TASKS

6-218. Critical tasks of the screening force include:

- Provide early warning of enemy approach.
- Maintain continuous surveillance on all battalion-sized avenues of approach into the sector, (protected UEx in MTW).
- Gain and maintain enemy contact.
- Report enemy activity.
- Destroy, repel or suppress enemy reconnaissance units (within capabilities) without becoming decisively engaged.
- Impede and harass the enemy with indirect fires.
- Guide reaction forces.

CONCEALMENT

6-219. Each screen is situated to maximize the air recon team's ability to maintain concealment while maintaining observation of the battlefield. Elements work together, ensuring fields of observation overlap and preventing the enemy from passing unnoticed. Air routes to and from succeeding screen lines should provide good cover and concealment. Cover may be difficult to obtain along a route, but concealment is critical. During movement, the teams ensure that visual contact with the enemy is continuously maintained.

STATIONARY SCREEN

6-220. During reconstitution, defensive operations, or the planning and preparation phases of offensive operations, the main body may remain stationary. These activities may require a stationary screen (Figure 6-6).

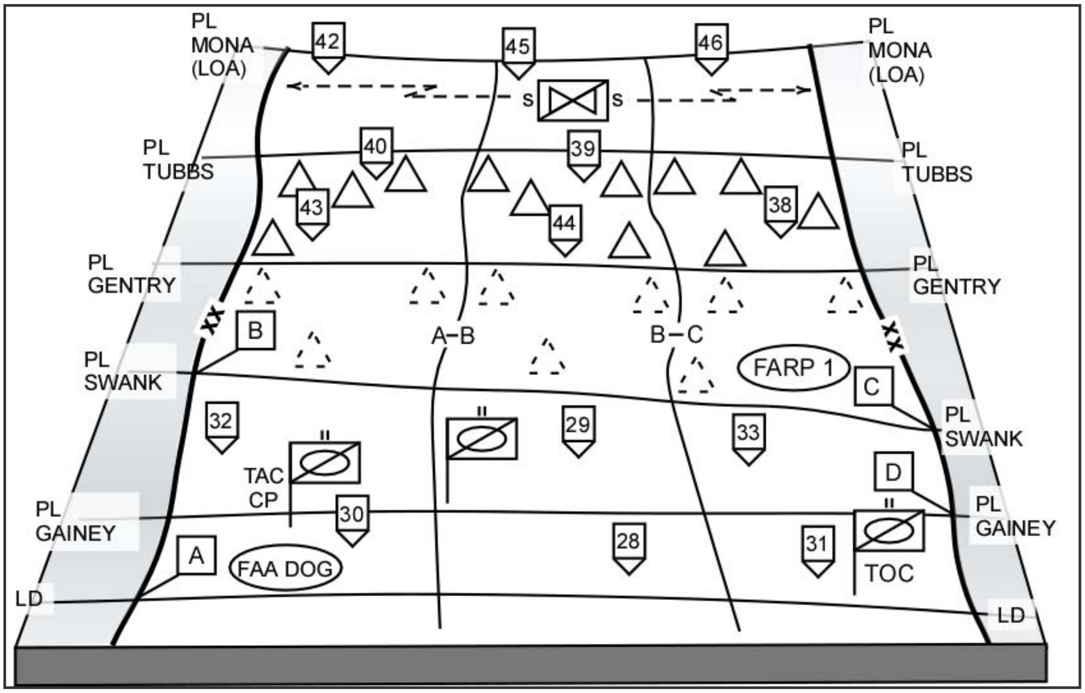

Figure 6-6. Stationary Screen

6-221. The above figure illustrates how the heavy UEx ARB/ARS may be employed forward of the supported ground force. The ground battalion commander determined the enemy main avenue of approach was in the center sector. Charlie Company conducts its screen in the east sector while Alpha Company screens in the west sector. Ground elements use dismounted OPs. Each has be-prepared missions to conduct emergency CASEVAC and downed aircrew recovery. Bravo Company has the screen in the center sector and is prepared to receive support from Alpha or Charlie Company. Two ARCs conduct screen operations forward of the line of OPs to the LOA. The battalion's third company could be positioned either as a reserve force or employed as part of the screen force rotation.

Task Organization

6-222. The ARB/ARS task organizes and assigns teams to occupy the screen and establishes a company or team rotation to maintain continuous surveillance. If the ARC/ART requires relief on station or battle hand over (BHO) from another unit, the battalion staff coordinates with the relieving unit to determine the requirements. Reconnaissance elements relieve each other by aircraft, team, or company as briefed. In each case, the screening element leader links up with the incoming leader and communicates the current friendly positions, enemy situation, and plan for relief or handover. When the AMPS is used to maintain a common operational picture net, the relieving force should arrive with updated graphics, reducing the time needed to conduct the relief or handover.

Initial Screen Line

6-223. The most secure method of establishing an initial screen line is to conduct a zone reconnaissance to the initial screen line. When air recon assets reach the general trace of the screen line, they reconnoiter and refine it. They also select positions for good observation and fields of fire. Air recon elements seek to remain undetected while reporting on enemy activity and engaging enemy forces with indirect fires at maximum range. A combination of obstacles and coordinated fires allows the air recon elements to impede enemy lead elements, maintain contact, and avoid decisive engagement. This gives the main body reaction time and maneuver space to engage the enemy effectively. Aviation elements may continue reconnaissance forward to identify enemy second echelon and follow-on forces. Upon contact, attack reconnaissance elements focus their efforts on the destruction of enemy reconnaissance elements by direct and indirect fires before the enemy can penetrate the initial screen line.

Successive Screen Lines

6-224. Successive screen lines are located one behind the other and provide the screening force maneuver space. Air reconnaissance elements report and request to maneuver to the next screen line as enemy pressure threatens the security of the screening force, or movement of the main body dictates. Staggered movement off the screen line allows the commander to identify the flanks and rear of attacking forces. This procedure ensures that gaps occurring during movement are quickly closed. The main body commander decides when the screen force is no longer necessary and directs the screening force to conduct follow-on missions.

MOVING SCREEN

6-225. A moving screen is conducted when the main body is moving. The commander determines the technique of screening a moving force based on METT-TC, the maneuver force commander’s intent, and the unit’s orientation. The commander assigning the screening mission provides the parameters of the screen and the times and locations the screen is to be established. He also identifies the unit or units to be screened and provides the operations overlay and control measures. The two types of moving screens are flank and rear.

MOVING FLANK SCREEN

6-226. The moving flank screen is the most difficult screening mission. Screening elements move on a route parallel to the movement axis of the main body. The commander defines the initial area to be screened, subsequent screen lines, and the rear boundary. Air reconnaissance elements occupy a series of OPs on the screen line. The forward air recon element maintains contact on the near flank of the main body as their lead elements move on the axis of advance. The main body and the screening unit must maintain contact at all times. When working with ground units in a moving flank screen mission, air reconnaissance elements are well-suited to maintain contact with the main body and to perform reconnaissance forward of the ground units. If possible, the air elements reconnoiter out to the maximum range of supporting fires. Except for these procedures, the mission is planned and conducted the same as a stationary screen. While maintaining contact with the main body, the air recon elements must be aware of the distance of the ground units from the main body to prevent over-extension of the screen.

Observation Post Emplacement

6-227. The most forward OP is positioned abeam the leading ground unit, and the subsequent OPs are arrayed along the length of the main body toward the rear. Movement along the flank screen line may be controlled using one of three methods—successive bounds (similar to bounding overwatch), alternate bounds (similar to traveling overwatch), or continuous (similar to traveling). The most secure technique is one in which aircrews 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 OPs moving forward simultaneously on command to the next OP. The screening force may also move continuously, but this is the least secure and least preferred method.

REAR SCREEN

6-228. Screening the rear of a moving force is essentially the same as screening a stationary force. As the protected force moves, the air recon team occupies a series of successive screen lines. Movement is regulated by the requirement to maintain the time and distance factors desired by the main body commander. Sectors and responsibilities are assigned as in the stationary screen. In a rear screen, a unit may move to subsequent screen lines without enemy pressure as long as it remains within friendly artillery range and can effectively screen the rear. If enemy contact is made, the air elements execute actions on contact the same as a stationary screen.

Rear Area Incursion Screen

6-229. During rear area enemy incursions, UEx aviation battalions and squadrons may respond with both attack and security operations. The purpose is to gain and maintain contact, and destroy enemy forces in conjunction with ground reaction forces. Aircraft can guide friendly QRFs or assist in the attack and destruction of the enemy force. Figure 6-7 shows the ARB/ARS roles in a rear area operation.

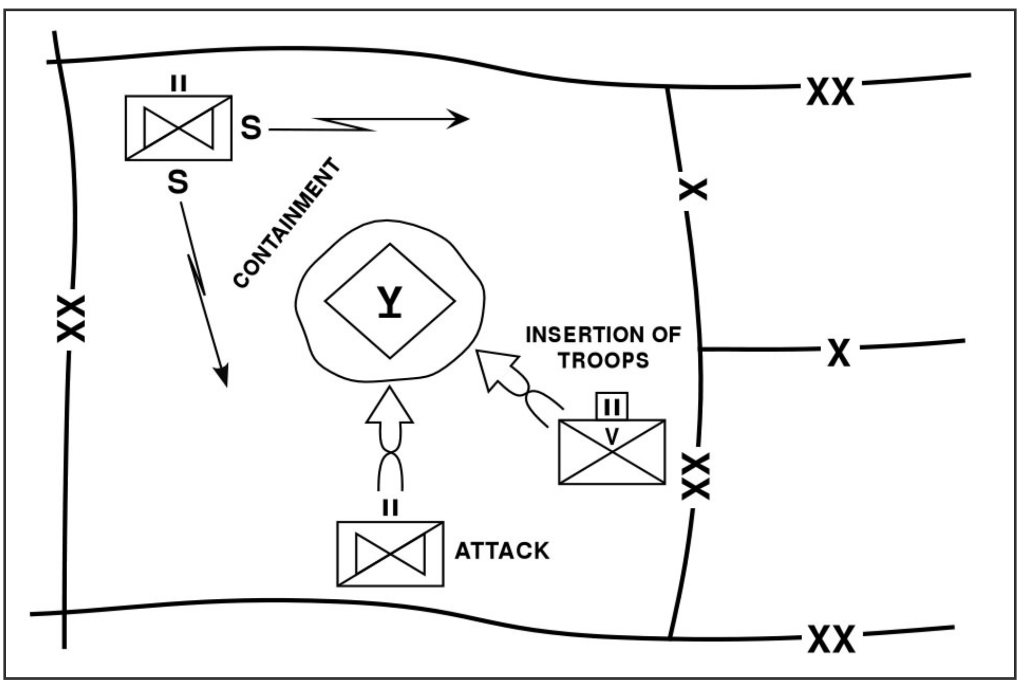

Figure 6-7. Reaction to Rear Area Threat

SCREENING AGAINST ENEMY AIRCRAFT

6-230. Part of the screen mission may be to alert friendly forces of approaching enemy aircraft. The air recon elements 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 air reconnaissance team to the AD warning system provides aircrews the common operational picture they need to maintain an effective aerial screen.

GUARD OPERATIONS

6-231. A guard operation protects the main body from enemy ground observation, direct fire, and surprise attack. A guard may be performed for a stationary or moving force, and to the front, flank, or rear of the main body. The guard force reconnoiters, screens, attacks, defends, and delays to destroy enemy reconnaissance elements and to disrupt the deployment of enemy first echelon forces. A guard operation is conducted within the range of friendly artillery. The ARB/ARS may serve as the guard force headquarters, or it may operate under another maneuver headquarters. A guard mission is not normally assigned to echelons below battalion level.

AIR ATTACK RECONNAISSANCE CRITICAL TASKS

6-232. Air reconnaissance performs the following critical tasks as part of the guard force:

- Performs reconnaissance along the main body's axis of advance.
- Maintains continuous surveillance of designated enemy avenues of approach.
- Maintains contact with the lead combat element of the main body.
- Reconnoiters the zone between the main body and the guard force BPs.
- Destroys or repels enemy reconnaissance and surveillance (R&S) forces.
- Defeats, repels, or fixes enemy ground forces before they engage the main body with direct fire.

Planning Considerations

6-233. 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, they normally operate on narrower fronts than screening forces. 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 guard force may need additional assets to clear this area while keeping enough combat power forward to protect the main body. Guard units may have FA in DS or priority of fires. This assistance depends on the amount of artillery support available and the type and level of protection required by the commander who assigns the guard mission. Normally, guard units occupy BPs across the most likely avenues of approach. They do not withdraw to successive positions without the permission of the main body commander. Elements within the guard force often have different missions. For example, one element may screen a less vulnerable zone while the remaining elements guard an area with critical avenues of approach.

ADVANCE GUARD

6-234. An advance guard for a stationary force deploys forward and defends. Once contact is made, the guard 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 enemy units along the axis of advance. Air reconnaissance elements usually participate as part of an advance guard. The advance guard provides for the uninterrupted movement of the protected force. If the guard force encounters enemy forces beyond its capability, it defends, continues close reconnaissance, and prepares to pass elements of the main body forward or retrograde.

6-235. As units of the advance guard identify targets of opportunity, the attack reconnaissance unit can expect to conduct hasty attacks to destroy or disrupt those targets. The rapid mobility of the attack reconnaissance allows the advanced guard commander to quickly attack, destroy and move through located 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 attack reconnaissance elements to reconnoiter forward of ground companies or screen along exposed flanks.

6-236. Attack reconnaissance reconnoiters forward of ground forces or screens along exposed flanks. When tasked with this mission, unless relieved by the supported commander, the attack reconnaissance also:

- Determines the trafficability of all high-speed routes within the zone.
- Inspects and classifies all bridges, culverts, overpasses, and underpasses along high-speed routes.
- Identifies all bypasses and fords that can support rapid movement of heavy equipment.
- Clears all high-speed routes of mines and obstacles within its capability or finds bypass routes.
- Finds and reports all enemy forces within the zone and determines their size, composition, and activity.

FLANK GUARD

6-237. Flank guards are reconnaissance oriented, concentrating on enemy battalion-sized avenues of approach (protected UEx in MCO) to protect an exposed flank of the main body. A guard force should be task organized so that it will be able to guard one flank of up to a UEx-sized force. In performing this mission, the guard force operates beyond the assigned zone or sector of the protected force. Normally, the flank guard's responsibility begins at the trail element of the advance guard or the lead combat element in the main body, and ends at the rear of the protected force or lead element of the rear guard. The protected force commander clarifies this responsibility as necessary. A flank guard is similar to a flank screen except that defensive positions are planned for in addition to OPs.

Stationary Flank Guard

6-238. Air reconnaissance elements can be integrated as part of the guard force by screening between and in front of BPs as they are established. Air recon elements may also be used to reconnoiter the area between the guard force and the main body, maintaining contact with both elements and freeing the ground flank guard force to concentrate on its BP tasks. Figure 6-8 shows a company conducting a stationary flank guard.

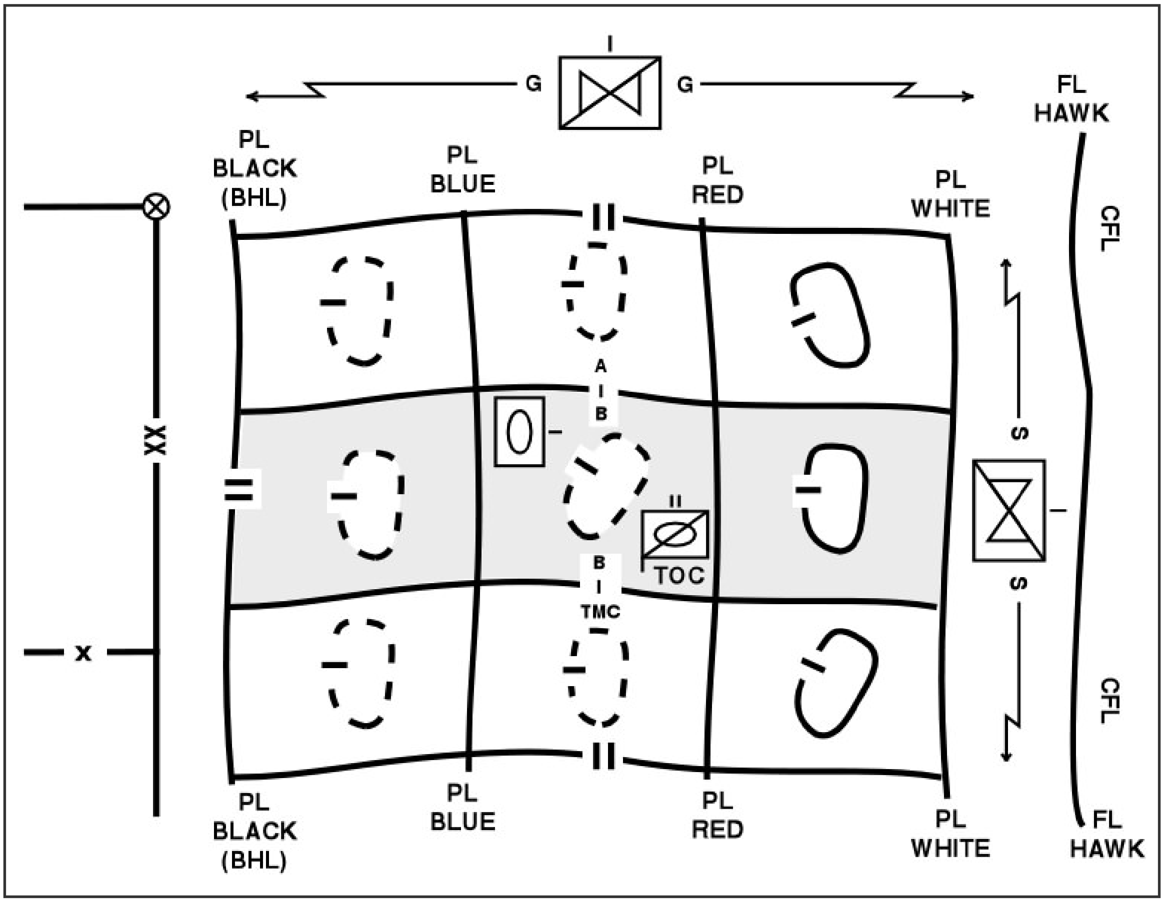

Figure 6-8. Stationary Flank Guard

Moving Flank Guard

6-239. As a flank guard, the attack reconnaissance elements perform the same tasks for a moving force as they do for a stationary force. A flank guard for a moving force advances systematically 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. Flank guards are primarily reconnaissance-oriented. During a flank guard, air elements can be used to screen between the guard force and the main body. They can also be used to screen forward of the guard force during the movement to BPs. In both situations, the attack reconnaissance can use a zone reconnaissance moving to successive screen lines forward of a moving force. Figure 6-9 shows a company, with augmentation, conducting a flank guard for a moving force.

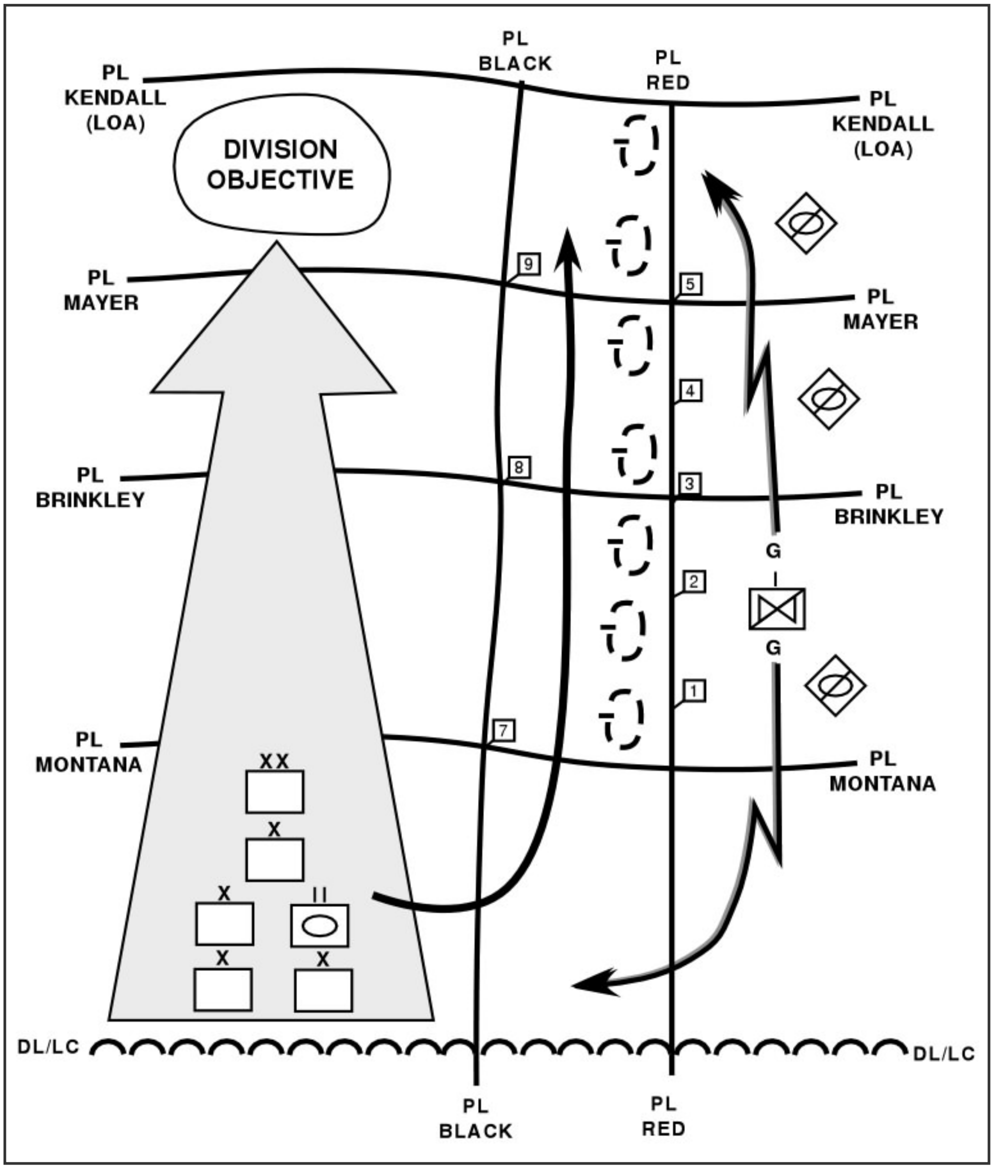

Figure 6-9. Augmented ARC Conducting a Flank Guard for a Moving Force

REAR GUARD

6-240. A rear guard protects the exposed rear of moving or stationary main bodies. The critical tasks listed for the stationary flank guard apply. The rear guard for a moving force displaces to successive BPs along phase lines (PLs) in depth as the main body moves. The nature of enemy contact determines the method of displacement. Establishing the rear guard during retrograde operations may be done in two ways. The guard force may relieve other units in place along the FLOT as they move to the rear. Alternatively, the guard force may establish a position in depth behind the main body and pass those forces through.

Stationary Rear Guard

6-241. During the advance of the main body, the rear guard detects and defeats enemy units that threaten the rear of the protected force. The critical tasks of the stationary flank guard apply.

Moving Rear Guard

6-242. The guard force conducts a delay without contact at a distance prescribed by the main body commander. The delay operation is normally within friendly artillery range, and is oriented away from the main body's rear on the same axis of advance. The air reconnaissance element's primary role is to screen the guard force as it delays, while the main body moves. Air recon teams screen forward or between BPs and may reconnoiter the area between the rear guard and main body.

COVER OPERATIONS

6-243. A covering force is a self-contained, combat-oriented force capable of operating independently of the main body, unlike a screen or guard force. It accomplishes all the tasks of screen and guard forces.

6-244. A covering force, or portions of it, often becomes decisively engaged with enemy forces. Therefore, the covering force must have substantial combat power to engage the enemy and accomplish its mission. A covering force develops the situation earlier than a screen or a guard force, and deceives, disorganizes, and destroys enemy forces. It fights longer and more often, and defeats larger enemy forces. The covering force also locates and breaches the defenses of a deploying or deployed enemy force. The covering force does not bypass enemy forces, or allow itself to be bypassed, without the permission of the main body commander.

6-245. The covering force's distance from the main body depends on the intentions and instructions of the main body commander, the terrain, enemy location and strength, and the rate of march of both the main body and the covering force. The width of the covering force area is the same as the AO of the main body.

6-246. The covering force mission is normally assigned to an echelon above battalion, such as an attack reconnaissance regiment or aviation brigade. An aviation battalion alone should not be assigned a cover mission.

6-247. As a part of the covering force, a UEx AVN BDE or attack reconnaissance battalion or squadron may be required to destroy enemy reconnaissance and advance guard units, and to force first echelon elements to deploy.

6-248. A covering force may be offensive or defensive in nature. A covering force for a stationary force performs a defensive mission, while a cover force for a moving force generally conducts offensive operations. A cover force normally operates forward of the main body in the offense or defense, and to the rear for a retrograde operation. Unusual circumstances could dictate a flank covering force, but this is normally a screen or guard mission.

6-249. The UEx AVN BDE must be prepared to operate and to facilitate maneuver of the covering force, locate enemy forces, and prevent surprise. Roles may include:

- Conduct a zone reconnaissance or movement to contact.
- Conduct screen operations.
- Assist in locating and penetrating the enemy's security and forward defensive zones.

- Assist in destroying enemy reconnaissance and advance guard elements, or in forcing an advancing enemy's first echelon to deploy.
- Assist in clearing the area between the covering force and the main body.
- Assist in maintaining contact with the protected force.
- Report enemy location and maintain contact.
- Assist in the disengagement of ground units during BHO and passage of lines with the main body.
- Provide elements for the covering force reserve.

OFFENSIVE COVER

6-250. An offensive covering force seizes the initiative early for the main body commander, allowing him to attack decisively. Offensive covering force tasks include:

- Performing zone reconnaissance along the main body's axis of advance or within the AO.
- Clearing or bypassing enemy forces within the AO IAW bypass criteria.
- Denying the enemy information about the strength, composition, and objective of the main body.

6-251. Covering tasks against a defending enemy include:

- Penetrating the enemy's security area to locate enemy main defensive positions.
- Determining enemy strengths and weaknesses.
- Locating gaps or weaknesses in the enemy's defensive scheme.
- Defeating or repelling enemy forces as directed by the higher commander.
- Deceiving the enemy into thinking the main body has been committed and causing him to launch counterattacks prematurely.
- Fixing enemy forces to allow the main body commander to maneuver around enemy strengths or through weaknesses.

6-252. In a meeting engagement, covering tasks include:

- Destroying the enemy reconnaissance, advance guard, and lead elements of the main body.
- Determining the location of enemy assailable flanks.
- Fixing enemy forces to allow the main body to maneuver around enemy strengths or through weaknesses.

6-253. Planning for offensive cover operations is similar to planning for zone reconnaissance or movement to contact. The commander determines specific missions for subordinate elements and assigns boundaries.

6-254. When the covering force can advance no farther, it defends and prepares to assist in passage of lines of main body units. It continues to perform reconnaissance of enemy positions to locate gaps or assailable flanks. The covering force may guide main body units as they attack through or around the covering force. Attack reconnaissance units are excellent forces for these missions. If the covering force has accomplished its mission, the main body commander can attack the enemy's weak point with previously uncommitted main body forces at the appropriate time.

DEFENSIVE COVER

6-255. A defensive covering force prevents the enemy from attacking at the time, place, and combat strength of his choosing. Defensive cover gains time for the main body, enabling it to deploy, move, or prepare defenses. It accomplishes this by disrupting the enemy's attack, destroying his initiative, and establishing the conditions for decisive operations.

The covering force makes the enemy deploy repeatedly to fight through the covering force and commit his reserve or follow-on forces to sustain the momentum.

6-256. A defensive covering force emphasizes the following tasks:

- Prevent the main body from being surprised and becoming engaged by direct-fire weapons.
- Defeat enemy advance guard formations.
- Maintain continuous surveillance of high-speed avenues of approach into the security area.
- Defeat all enemy reconnaissance formations before they can observe the main body.
- Cause the deployment of the enemy main body.
- Determine the size, strength, composition, and direction of the enemy's main effort.
- Destroy, defeat, or attrit enemy forces within its capacity.
- Deprive the enemy of his FS and AD umbrellas, or require him to displace them before he attacks the main battle area.
- Deceive the enemy regarding the location of main body and main defensive positions.
- Avoid being bypassed.

6-257. A defensive covering force operates to the front, flank, or rear of the main body. UEx AVN BDEs or Battalion Task Forces may be tasked to conduct reconnaissance and screening operations or serve as a rapid reaction force for counterattacks and reinforcements.

6-258. The conduct of a rearward passage of lines is an inherent part of the conduct of a defensive cover with its associated requirement to transfer responsibility for the battle between units. The commander must thoroughly plan this complex task as an integral part of the covering force mission. Passage of lines may not occur simultaneously for all cover force units. As some units begin passage, others may still be taking advantage of offensive opportunities in other parts of the security area.

FLANK COVER

6-259. Flank cover may be employed in the offense or defense. The main body commander normally establishes a flank cover when he perceives a significant threat to one of his flanks. The mission is performed much the same as a flank guard. The main differences between the two missions are the scope of operations and the distance the covering force operates from the main body.

6-260. Just as in a flank guard, the flank covering force must clear the area between its route of advance and the main body. It must also maintain contact with an element of the main body specified by the main body commander. This element is normally part of the advance guard for the flank unit of the main body.

AREA SECURITY

6-261. Area security includes R&S of designated personnel, airfields, unit convoys, facilities, MSR, LOCs, equipment, and critical points. An area security force neutralizes or defeats enemy operations in a specified area. It screens, reconnoiters, attacks, defends, and delays as necessary to accomplish its mission. Area security operations focus on the enemy, the force being protected, or a combination of the two.

6-262. An area security force performs screen, guard, or cover to protect forces within a specified area utilizing the same methods and procedures discussed earlier. The headquarters assigning the area security mission defines the area.

AREA SECURITY OPERATIONS

6-263. This mission is commonly assigned around an airhead or lodgment areas following airborne, air assault, or forced entry operations. It is also used extensively in security operations and support operations and for operations on the nonlinear, noncontiguous battlefield. Area security should also be used to provide early warning to an isolated force that cannot tie its flanks into a friendly unit.

EMPLOYMENT TECHNIQUES

6-264. A screen is established by integrating OPs, ground survelliance radar (GSR), and patrols. If available, tanks and anti-armor weapons are placed on restrictive terrain and high-speed avenues of approach. Likely enemy drop zones (DZ) and LZs are identified and kept under observation.

AIR ASSAULT AND AIR MOVEMENT SECURITY

6-265. The aviation and air assault task force (AATF) commanders integrate attack reconnaissance into the scheme of maneuver for the conduct of reconnaissance, screening, or overwatch operations during all phases of the operation. The successful execution of the operation is based upon a careful analysis of the factors of METT-TC and a detailed, precise, reverse planning sequence. Planning begins with the ground tactical plan and works backwards to the staging plan as indicated in Figure 6-10. Reverse planning is imperative, as each successive planning step impacts the phase that precedes it. The landing plan, for example, helps air assault planners determine the sequence and composition of lifts during the air movement phase.

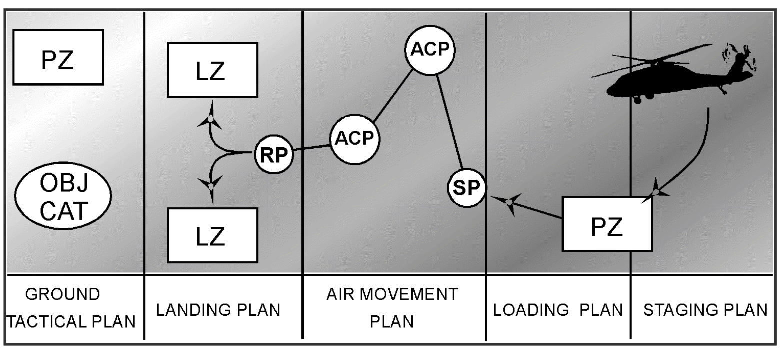

Figure 6-10. Air Assault Planning Stages

STAGING PLAN

6-266. Attack reconnaissance elements may conduct screening operations to provide early warning and limited security while friendly companies form on or near the PZs. If enemy forces are close by, or contact is likely, attack reconnaissance should be reinforced with battalions to increase its ability to repel enemy forces.

LOADING PLAN

6-267. Battalion elements may be tasked to reconnoiter PZs beyond the security areas established by ground forces before the arrival of assault helicopters. Once the PZ is cleared, they may screen a vulnerable flank or likely avenues of approach. Ground mechanized or armor companies are also well suited to participate in providing security in both the staging and loading phases. Table 6-1 shows standard PZ markings for security elements to reference.

Table 6-1. 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 ring around obstacle
Loads to be picked up	Hook up team on loads	Swinging IR chemical light per load

AIR MOVEMENT PLAN

6-268. Attack reconnaissance elements may be tasked to precede the air assault element along the air route. They can conduct route reconnaissance followed by area reconnaissance of the LZs and possibly the objective, depending on the factors of METT-TC. ARB or ARS elements penetrate the FLOT at a time interval dictated by the mission and conduct or assist with an aerial passage of lines. Along the route, they locate any previously unknown enemy AD weapons and radar, and suppress those systems or develop a bypass route for the air assault element. Attack reconnaissance elements may also provide information on threats to flight, including natural and man-made obstacles. They may perform this mission by a moving flank screen or by occupying BPs along the route. Attack reconnaissance elements can also provide early warning of the enemy's approach and can engage the enemy with organic weapon systems or indirect fires. They may also be assigned responsibility for coordinating the recovery of downed aircrews with other elements of the TF.

LANDING PLAN

6-269. Battalions can also be tasked to perform the same tasks during the landing phase as they do during the staging and loading phases. They may occupy BPs to overwatch LZs and the objective.

GROUND TACTICAL PLAN

6-270. As the ground force moves toward and seizes its objective, the battalion may again be tasked to conduct reconnaissance and screening operations, in addition to providing overwatching fires. Battalion reconnaissance teams can reconnoiter the ground route to the objective as well as the objective itself from standoff ranges.

FIRE SUPPORT

6-271. Planned fires along the route of flight protect aircraft against known or suspected enemy positions. These fires must be intense and of a duration that destroys or suppresses enemy forces but does not interfere with aircraft as they fly past specific locations. They are planned on areas and fired on a time schedule or on call. Fire plans cover PZs, LZs, flight routes, and suspected enemy avenues of approach to LZs. FS plans include lethal and nonlethal J-SEAD and smoke. Plans ensure the friendly FS elements do not use ordnance that obscures aircrew vision, especially during NVD missions.

SECTION IX – TIME AND SPACE CONSIDERATIONS FOR RECONNAISSANCE AND SECURITY MISSIONS

GENERAL

6-272. Reconnaissance and security (R&S) missions require detailed planning. Part of that planning is calculation of the area an ARB or ARS can screen or reconnoiter. This section discusses the screen line planning in particular; however, with modification the method applies to other R&S missions by ground and attack reconnaissance or other assets like UAV.

6-273. The size of the area depends on METT-TC, mission duration, and aircraft/aircrew availability. While every mission and situation is different, this section discusses the general methods of calculating the area of coverage for a screen. Recent lessons learned indicate a need to emphasize the importance of basic time and space considerations.

6-274. The area a company or troop can screen extends from a width of about 3-5 kilometers (what a single air recon team can see from one OP) to a maximum of 30 kilometers. Under the optimum conditions of wide-open terrain, excellent visibility, and all available aircraft screening and rotating through the FARP, a company can screen along 30 kilometers for 8-12 hours. However, wide-open terrain and good visibility are not the norm, and the lightly-armed attack reconnaissance often requires the commitment of at least two of six available aircraft as a rapid response team to destroy or repel enemy reconnaissance teams.

6-275. As a general rule, a company or troop screens with one team of two aircraft on the screen line, one team of two aircraft moving to, in, and from the FARP, and two aircraft in reserve to provide a rapid response team. This gives the commander the flexibility to reinforce the screen line with an additional team if necessary. With this force disposition and the optimum conditions of wide-open terrain and excellent visibility, the ARC/ART can cover 15 kilometers. But again, wide-open terrain and excellent visibility are not typical and the area screened could be as small as the area observed from a single OP (3-5 kilometers).

SCREEN PLANNING EXAMPLES (8-12 HOURS)

6-276. Figure 6-11 (below) shows a single air recon team screening from OP 2. The terrain is constricted and the avenue of approach follows a valley. The standoff area is about 3 kilometers and the observable area is 5 kilometers. The next avenue of approach is in the next valley and is 10 kilometers away. Concealed air route availability prevents the air recon team from moving to the next valley and back again before the enemy can pass through the observable area. This requires the air recon team to maintain continuous observation from OP 2. Because it is mountainous terrain and the aircraft munitions load is too small to repel expected enemy reconnaissance forces, a rapid reaction team is on standby to repel or destroy enemy reconnaissance forces. Team 1 observes, while Team 2 moves to, in, and from the FARP. Team 3 positions itself where it can react to any enemy force observations. Alternate kill zones are selected south of the observed area in case the enemy moves faster than expected through the observable area.

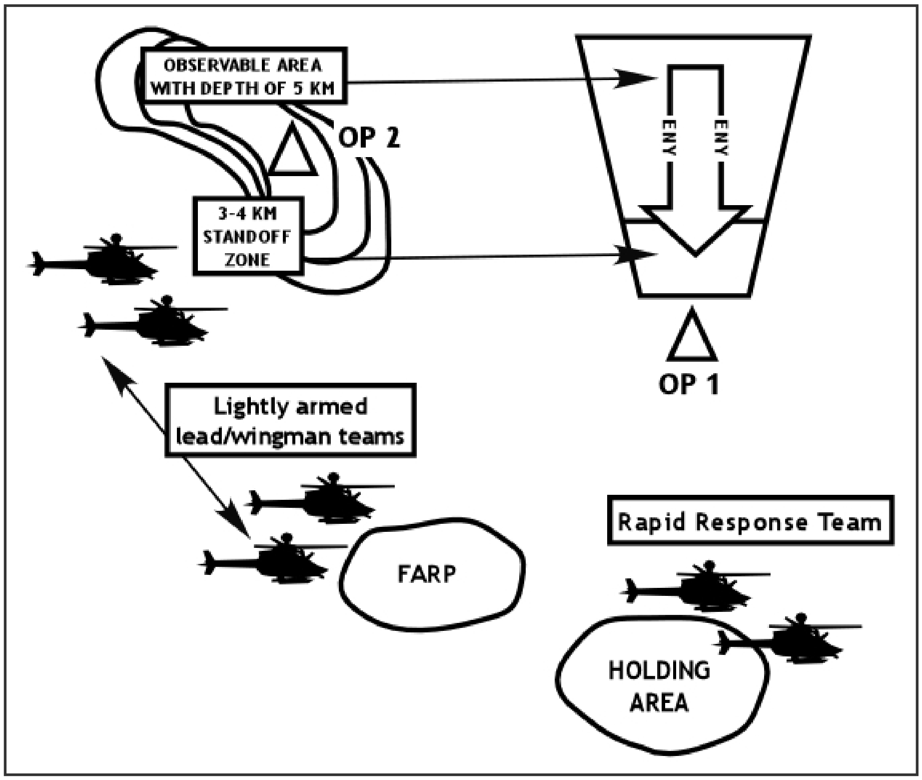

Figure 6-11. Screen with Rapid Response Team

6-277. Figure 6-12 (below) shows two teams screening along OPs 1-4. The terrain is open and allows excellent standoff and observable areas. The standoff area for each is about 3 kilometers and the observable area is about 5 kilometers along each avenue of approach. The distance between OPs is 15 kilometers. An attack reconnaissance team from the battalion provides the rapid reaction team. The air recon teams rotate through the screen areas and the FARP. Team A moves to the area defined by OPs 1 and 2, Team B moves to the area defined by OPs 3 and 4. They observe for forty minutes and then Team A is relieved by Team C, Team B is relieved by Team A, and Team B moves to the FARP. This rotation continues until the ARC/ART is relieved by another ground or air unit, contact is made, the mission is terminated, or until crew endurance requires the ARC/ART to move to the AA.

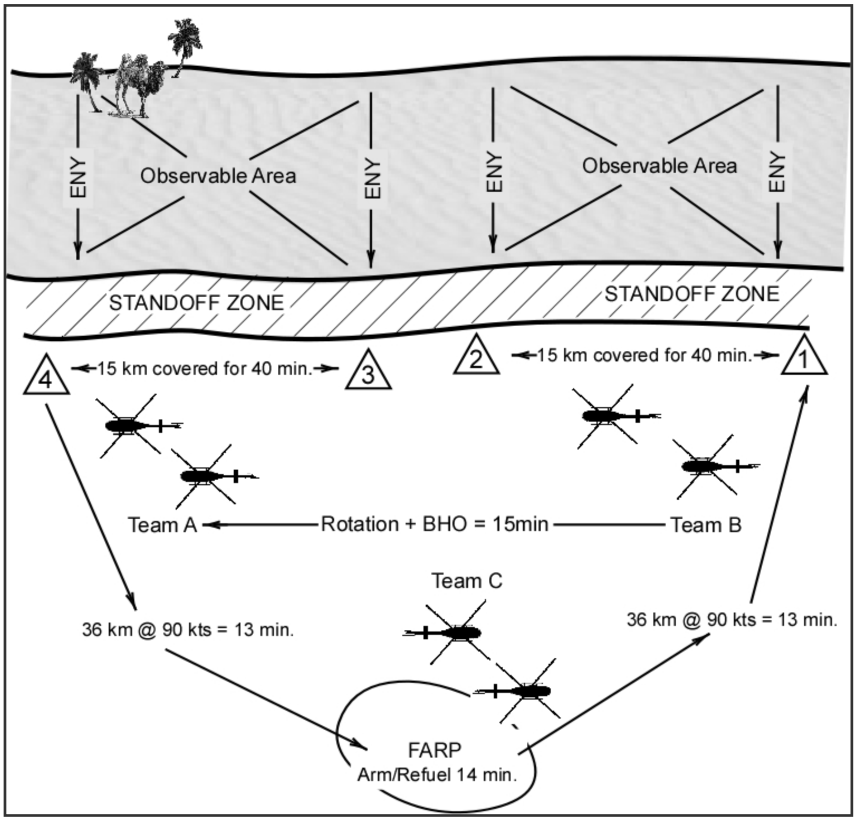

Figure 6-12. Maximum Screen Line Option

SCREEN PLANNING CALCULATIONS (8-12 HOURS)

6-278. Screen planning calculations require assumptions and planning. The observable area and the enemy's assumed movement speeds determine how long and how often friendly forces must observe from selected OPs. Air speed and OP occupation times determine the time it will take to move between OPs and into position. Each requires knowledge of the enemy, careful planning, and adherence to schedules. The challenge is achieve the optimum screen line size that can be adequately observed.

6-279. In the scenario depicted in Figure 6-13, Teams A, B, and C rotate between OPs 1 and 2, OPs 3 and 4, and the FARP. Each team will man the screen line for a total of 55 minutes while the third team travels to the FARP (13 min), rearms and refuels (14 min), returns to the OP (13 min), and teams execute BHO/rotation (15 min).

6-280. Each team can cover two OPs because each team can travel from its first OP to the second, observe, and then return to the first OP before the enemy can traverse the observable area. Those calculations follow: An enemy force moving 20 kilometers/hour will require 15 minutes to traverse the observable area. The air recon team requires about seven to eight minutes at 60 knots to travel between each OP and about one to five minutes moving into the OP, unmasking, observing, masking, and moving out of the OP. This provides a two minute time buffer for the air recon team to move between OPs.

6-281. In the scenario depicted in Figure 6-12, a reaction force is required and the time required to travel between OPs is too long to cover more than one at a time; therefore, requiring the entire recon team to cover that single approach.

6-282. The formula for planning times is outlined in Figure 6-13. The formula for planning ground unit speed is in Figure 6-14.

Flight time computation:

$$T = \frac{D \times 60}{S \times 1.85}$$

T = Time in minutes

D = Distance in kilometers

S = Groundspeed in knots

Airspeed-ground speed conversion:

Note: The number 60 converts hours to minutes. The number 1.85 converts knots to kilometers/hour. Round fractions to the nearest whole minute.

Example: given 50 km distance from OP 4 to the FARP at an average groundspeed of 90 knots.

$$T = \frac{50 \text{ km} \times 60}{90 \text{ knots} \times 1.85}$$

T = 3000/166.5 = 18 minutes flight time from OP 4 to the FARP at 90 knots.

Sample groundspeeds in knots converted to rounded off km/hour and km/minute:

65 knots = 120.4 km/h r= 2.0 km/min…..100 knots = 185.2 km/hr = 3.1 km/min.

80 knots = 148.2 km/hr = 2.5 km/min…..110 knots = 203.7 km/hr = 3.4 km/min.

90 knots=166.7 km/hr=2.8 km/min……120 knots=222.2 km/hr=3.7 km/min.

Figure 6-13. Computing En Route Time

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

Observable area in kilometers X 60 = time in minutes for ground unit to pass

Groundspeed in kilometers/hour

Example: If the observable area is 5 km and the enemy unit's groundspeed is observed at 20 km/hr, 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, Groundspeed = 20 km/hour

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

Figure 6-14. Computing Ground Unit Movement Time

24-HOUR SURVEILLANCE PLANNING

6-283. The ARC may be required to provide continuous day and night coverage. Although the company can surge to provide the continuous coverage, without augmentation it more than likely will violate the guidelines of AR 95-1. Table 3-1 of AR 95-1 is a crew endurance guide that recommends a maximum flight time of 8 hours in a 24-hour period and 15 hours in a 48–hour period. It also specifies environment relative factors (ERF) that are multiplied by actual flight hours to reflect the additional strain of certain types of flight. The duty day for aircrews can be up to 16 hours for a 24 hour period and 27 hours for a 48 hour period. Commanders must execute a thorough risk management process when conducting approaching or surpassing these guidelines.

6-284. The manning and materiel limits of the company make 24-hour operations unsustainable indefinitely. Crews will require approximately a 24-hour reset period and aircraft will require approximately 48-hours for battle damage assessment and repair (BDAR) and scheduled maintenance.

SECTION X – AIR ASSAULT OPERATIONS

GENERAL

6-285. Air assault operations are the movement of assault forces (combat, CS, and CSS), using the firepower, mobility, and total integration of helicopter assets, to engage and destroy enemy forces or to seize and hold key terrain. It allows friendly forces to strike over extended distances and terrain barriers to attack the enemy when and where he is most vulnerable using speed and surprise as its main weapon.

6-286. Both assault and heavy helicopter units perform air assault operations, normally lifting company to brigade size TFs. Light and forced entry UExs rely extensively on heliborne assault for battle insertion and extraction. Heavy force assaults may involve dismounted infantry or reserve light infantry elements assisting heavy forces in gap-crossing security and seizure of key terrain and chokepoints prior to arrival of armored and mechanized forces.

6-287. Air assaults routinely involve night operations, multiple false insertions, and multiple LZs and PZs. Suppression of enemy air defense (SEAD) and route planning are extensive and attack reconnaissance aircraft and close air support (CAS) and air interdiction often provide assault force security en route and at the objective.

6-288. Army Aviation and Infantry units fully integrate with other combined arms team members to form an AATF to rapidly project combat power. Air assaults require detailed, centralized planning and precise synchronization. FM 90-4 covers air assault operations in detail, and each UEx usually has detailed SOPs on how it conducts air assaults.

6-289. The directing or establishing headquarters allocates assets, defines authority and responsibility by designating command and support relationships, and forms the AATF early in the planning stage. UEx aviation assets may be inadequate; therefore, additional aviation resources must be requested from UEy units.

6-290. The availability of aviation assets is normally the major factor in determining AATF task organization. An AATF will exist only until completion of a specified mission. After that, aviation elements are returned to the control of their parent unit(s).

6-291. The complexity of air assault operations emphasizes the need for close coordination and communication between participating units. Regularly scheduled training events involving all elements are required to maintain proficiency and update SOPs.

CAPABILITIES AND LIMITATIONS OF AIR ASSAULT FORCES

6-292. AATFs provide the unique capability to extend the battlefield and concentrate combat power rapidly. An AATF can:

- Attack enemy positions from any direction.

- Bypass obstacles and strike objectives in otherwise inaccessible areas.
- Conduct operations in deep areas.
- React rapidly to tactical opportunities.
- Exploit success to complete the enemy's destruction.
- React to rear area threats.
- Secure and defend key terrain rapidly.
- Achieve surprise.
- Conduct operations at night.
- Reinforce committed units rapidly.

6-293. The AATF also has limitations that include:

- Adverse weather that hinder helicopter operations.
- Near total reliance on air lines of communication (LOCs) for deep assaults.
- Reduced ground mobility once inserted, especially for artillery.
- Dependence on availability of LZs and PZs.
- Susceptibility to battlefield smoke and obscuration, especially at night.
- Significant fuel requirements.
- Detailed planning requirements.

AIR ASSAULT AIRCRAFT ROLES

Assault Helicopters

6-294. With seats installed, the allowable combat load (ACL) for the UH-60 is 11 combat-loaded soldiers. With major army command (MACOM) approval, seats may be removed to increase the ACL to approximately 16 combat-loaded, or 20 without full combat loads. Heat, humidity, and altitude, as well as installation of Kevlar blankets, can reduce this quantity. UH-60L models have a greater ACL than UH-60A in high/hot environmental conditions.

6-295. Assault helicopters also perform a wide range of missions to support air assaults:

- Airborne C2 systems for the AATFC and staff.
- Volcano emplaced mines to slow enemy forces attempting to respond to assaults.
- Artillery raids.
- Transport of light vehicles and equipment to support the ground force.
- Aerial sustainment (including FARP emplacement and support).
- CASEVAC.
- Support for Downed Aircraft Recovery Teams (DART).

Heavy Helicopters

6-296. The CH-47 can augment UH-60 aircraft in transporting troops and equipment during assaults. The CH-47 is not as susceptible to temperature and altitude extremes, and can carry 31 seated combat-loaded troops. With MACOM approval, up to 60 soldiers are transportable; however, this may expose soldiers to great risk if the aircraft experiences a hard landing, accident, or enemy fire.

6-297. The CH-47 is the only Army aircraft capable of transporting the 155mm towed howitzer that supports many air assaults. Heavier HMMWV variants also require CH-47 transport.

6-298. The CH-47 has extensive internal and external cargo carrying capability to carry bulky and heavier items. In the Fat Cow configuration, the aircraft can carry four 600-

gallon fuel pods to support FARP operations. It can carry up to 24 litter patients for CASEVAC. The helicopter internal cargo handling system (HICHS) allows internal transport of three 463L pallets or 10 wooden pallets for ease of loading and unloading ammunition and other supplies.

AIR ASSAULT TASK FORCE KEY PERSONNEL

6-299. This section describes key leaders involved in planning and executing air assaults.

AIR ASSAULT TASK FORCE COMMANDER

6-300. The AATFC normally is the BCT or battalion commander whose subordinate echelon constitutes the main combat force. During rear area air assaults, stability operations, or support operations, higher level commanders may designate an aviation battalion commander as the AATFC. In a light or forced entry UEx movement to contact, the AVN BDE commander may be the AATFC.

6-301. The AATFC commands assault elements and is responsible for assault planning and execution. The AATFC should command the unit one echelon above the assaulting unit, and usually locates in a C2 aircraft in order to maintain positive control.

AIR ASSAULT TASK FORCE OPERATIONS OFFICER

6-302. Normally from the AATFC's staff, he serves as the AATFC in his absence and positions himself in either the jump TOC or TAC along with the aviation S-3.

AIR ASSAULT TASK FORCE STAFF

6-303. The AATF staff plans air assaults. The BCT Brigade Aviation Element (BAE) will assist in this effort, providing information and requirements to the aviation task force as appropriate. The AATFC staff must divide and coordinate planning tasks between the infantry staff and aviation unit staff. The AATFC staff must resource and synchronize all elements of the combined arms AATF.

AIR MISSION COMMANDER

6-304. The AMC is responsible for all aviation operations and is provided by the supporting aviation unit. He performs much of the attack, FS, and CAS coordination, and then assumes control over the aviation assets during the mission. For major assaults involving multiple aviation elements, the AVN BDE commander is the AMC. The AHB commander (or designated aviation battalion task force commander) is the AMC when his battalion is the primary assault force with limited attack security. For smaller assaults, the AHB commander may designate a company commander or platoon leader as the AMC, but the battalion staff still plans most assaults. The AMC:

- Receives and executes the AATFC's guidance and intent.
- Ensures that all participating aviation units conduct operations according to the air mission brief (AMB).
- Coordinates actions during the assault and synchronizes attack reconnaissance, EW, CAS, and artillery assets as required. Tthe attack reconnaissance helicopter air battale captain (ABC) may be designated to coordinate much of the attack, FS, and CAS coordination.
- Advises the AATFC on any situation that might require him to adjust the air assault scheme of maneuver and recommends changes that fully exploit aircraft capabilities.

- Designates a flight lead, serial commanders (if required), an LNO, and a planning cell to the AATF headquarters.
- Usually co-locates with the AATFC.

GROUND TACTICAL COMMANDER

6-305. The GTC is the commander of the largest ground maneuver force in the air assault. He is usually an AATFC subordinate commander and flies on one of the first serials into the objective area. His staff assists the AATFC staff in air assault planning. He and his subordinate commander's are primary executors of the ground tactical plan. He maintains communications with the AATFC during flight on the combat aviation net, and then on the AATF command net once on the ground.

AVIATION LIAISON OFFICER

6-306. The aviation LNO is the AMC's representative to the AATFC. He advises the AATFC and staff on matters relating to aviation's mission in the air assault. The LNO assists the AATF staff and AMC in:

- Selecting PZs, LZs, and primary/alternate flight axis.
- Developing the air movement table.
- Developing an ingress/egress security plan.
- A2C2 coordination.
- PZ operations.

6-307. The LNO does not replace the AMC during the planning phase of the air assault, but in his absence acts according to the AMC's guidance. The LNO must understand the AMC's intent and must coordinate with the AMC to receive guidance and update him on planning status, changes, and adjustments. The LNO should not make decisions for the AMC unless delegated that authority. To function, the LNO and aviation planning staff require transportation, AMPS, and communications equipment.

FLIGHT LEAD

6-308. The flight lead is responsible for assisting the AMC in selecting flight routes (primary and alternate) within the flight axis, developing timing for the routes, and submitting route card data to the aviation staff for production of route navigation cards. During the mission, he navigates the flight routes and ensures that air assault times are met according to the air movement table.

PICKUP ZONE CONTROL OFFICER

6-309. The AATFC designates a pickup zone control officer (PZCO) (generally a representative of his staff) for each PZ to organize, control, and coordinate PZ operations. He operates on a designated PZ control frequency and executes mission changes according to the AATFC's orders and aircraft availability.

6-310. The PZCO executes the bump plan (units or cargo to be delayed or left behind if aircraft numbers fall short) as necessary and keeps the AATFC informed of any PZ situation requiring adjustment of the air assault scheme of maneuver. The PZCO ensures the PZ is clear of obstacles, marks landing areas, plans PZ security and FS, and communicates with aircraft on the PZ control net. The aviation LNO assists the PZCO in all aviation-related PZ functions.

AVIATION UNIT STAFF

6-311. Two aviation staffs participate in air assault planning with the AATF. The staff of the aviation battalion conducting the air assault conducts mission-specific planning and execution, while the BAE has other planning and coordination functions it is better suited to accomplish.

6-312. During the initial planning conference (IPC), the aviation battalion S-2 and S-3 are on hand to assist the AMC and LNO in coordinating the aviation scheme of maneuver, flight routes, mission timing for the air mission table, planning security against threats to assault aircraft, discussing ISR assets to monitor those threats, coordinating airspace and passage of lines, and developing SEAD plans. The brigade S-2 and S-3 may also participate. The aviation unit staff ultimately develops the aviation OPORD for all aviation elements involved in the assault.

6-313. The S-4 coordinates necessary FARP requirements for the assault and works with the S-3 to determine the need for auxiliary tanks.

ATTACK RECONNAISSANCE HELICOPTER COMMANDER/AIR BATTLE CAPTAIN

6-314. The ABC is responsible for coordinating, integrating, and controlling all aviation attack reconnaissance and supporting fires (ground and air). He understands the AATFC's FS plan and places himself where he can maintain positive control of all air and ground FS assets.

6-315. Attack reconnaissance aircraft provide security en route and support the ground tactical plan. If air reconnaissance assets are available, they generally precede the assault force to reconnoiter the flight route, LZ, and objective areas. Attack reconnaissance aircraft may initiate preplanned fires according to the AATF's SEAD and preparatory FS plan. The AATFC may designate an ABC to control attack employment if employing extensive security and objective-support attack reconnaissance aircraft assets.

6-316. Attack reconnaissance assets often accompany the assault force providing security while flying at the front, rear, or flanks. Generally, an AATF has no more than an attack reconnaissance company providing air assault security, however, METT-TC and support for the ground tactical plan may require more.

6-317. At some point in the mission, the AATFC diverts some or all attack reconnaissance assets from the assault force security mission to support at the objective as part of the ground tactical plan. The AMB covers all aspects of attack reconnaissance support, planned by the AATF staff, executed by the AATFC, and under AMC/ABC control.

COMMAND AND CONTROL

6-318. The AATFC, assisted by the AMC, addresses C2 requirements early in the assault planning phase. Controlling diverse and dispersed air and ground elements between the LZ and PZ requires effective C2 networks that function at NOE altitudes and over great distances. Planning must include digital data transfer and preplanned voice brevity codes to minimize radio traffic.

COMMAND POSTS

6-319. The AATF CP may be a ground C2 node of the AATFC headquarters, or it may be an airborne C2 aircraft. If the AATF CP is on the ground, the AHB (or BN TF) should co-locate a tactical CP with the AATF CP. Typical AATF CPs are staffed by the AATFC, AATF S-2, AATF FSO, AMC (AVN BDE or battalion commander), aviation S-3, and ALO if joint FS is planned.

RADIO NETS

6-320. A mix of air-to-air, air-to-ground, and ground-to-ground nets support assault C2. The number of nets involved often exceeds the ability of a single aircrew to monitor. This requires task splitting among several aircraft. The following nets support a typical air assault:

- AATF command net. The AATFC and subordinate ground commanders use this FM net to execute the ground tactical plan (a HF or TACSAT command link may exist to communicate to the infantry brigade main CP).
- Combat aviation net (CAN). The AMC, AATFC, ground commanders, and PZCO use this secure FM net for air-ground communication at the PZ/LZ and to transmit SITREPs and mission changes (all aviation units monitor this net, especially in the vicinity of the PZ/LZ).
- Air battle net (ABN). The AMC uses secure Havequick for air-to-air communication, to include joint air assets (all aviation units monitor the net).
- FS net. The AATF FSO and designated aviation unit use this secure FM-relayed net to initiate pre-planned and on-call fires.
- Aviation internal nets. Flight lead and serial leaders use VHF for internal communications.
- PZ control net. The PZCO uses this FM net to control the flow of personnel/vehicles in and around the PZ.
- AHB command net. The AMC or aviation S-3 uses this secure FM-relayed, HF, or SATCOM net to communicate with the battalion and brigade TOCs.

AIR ASSAULT PLANNING STAGES

6-321. Successful air assault execution requires METT-TC analysis and the reverse planning sequence. The five basic plans that comprise an air assault operation are the ground tactical plan, landing plan, air movement plan, loading plan, and staging plan as depicted in Figure 6-15. Air assaults are planned in reverse sequence to ensure timing and synchronization.

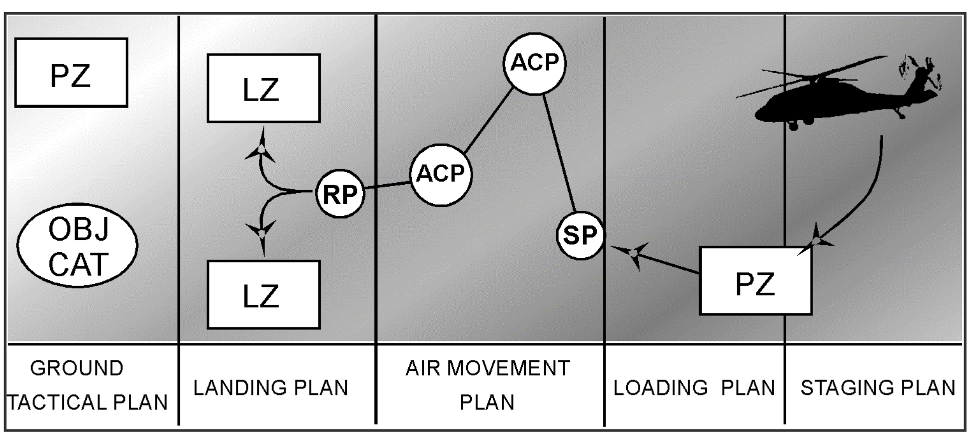

Figure 6-15. Air Assault Planning Stages

GROUND TACTICAL PLAN

6-322. The ground tactical plan is the focal point of planning and the foundation for a successful air assault. All other operations support this plan. It specifies actions in the objective area to accomplish the mission and to set the stage for subsequent operations.

6-323. This plan specifies actions from exiting the LZ to attack of the objective area. It addresses the following:

- Task organization for combat—identifies the number and type of combat, CS, and CSS elements that are essential to mission accomplishment.
- FS—identifies systems that are available and within range to strike the LZ and objective area, such as:
  - Multiple launch rocket systems (MLRS).
  - Cannon artillery and special ammunition needs such as rocket assisted projectiles (RAP).
  - ATACMS.
  - Towed 105mm or 155mm howitzers and the aircraft to lift them if artillery systems require airlift into new positions to support the operation.
  - CAS or air interdiction.
  - EW assets.
- Scheme of maneuver—defines how the commander intends to maneuver the ground force from the LZ to accomplish the mission and seize assigned objectives.
- Commander's intent—describes the method of execution and end state that initiates subsequent plans, including:
  - Location of the force (land on the objective or near it and maneuver to it).
  - The value of surprise versus SEAD and prepartory fires.
  - Supporting fires guidance.
  - Observation plan guidance.
  - Other factors based on METT-TC and CCIR.
  - Attack reconnaissance helicopters—when and which units will transition from assault force security under AMC control to support the ground tactical plan under the AATFC/GTC.

LANDING PLAN

6-324. The scheme of maneuver and ground tactical plan directly impacts the selection of LZs, landing formations, and the amount of combat power going into the LZs. The landing plan outlines the distribution, timing, and sequencing of aircraft into the LZs.

6-325. After coordinating with the AMC and LNO, the AATFC selects primary, alternate, tertiary, and false insertion LZs (if applicable and METT-TC dependant) based on the following factors:

- Location. The LZ may be on the objective, nearby, or some distance from the objective.
- Capacity. LZs must be sufficiently large for TF aircraft, without excessive slope or uneven terrain.
- Enemy disposition and capabilities. The location of potential enemy reinforcements, AD and other weapon locations and ranges influence LZ location.
- Unit tactical integrity. Squads must land intact with platoons and companies in the same serial to ensure unit integrity.
- Supporting fires. LZs should be within range of supporting fires.

- Obstacles. LZs should be free of large rocks, debris, mud, ice, fine dust/snow, and brush, unless executing special patrol insertion/extraction system (SPIES) or fast rope insertion/extraction system (FRIES) operations or allowing troops to safely jump to the ground from a low hover.
- Identifiable from the air. LZs should be identifiable by aircrews at night and from low altitude, yet should be shielded from enemy direct fires and observation.
- Orientation. The effects of prevailing winds, illumination, and sun direction at landing time on elements in the LZ.

6-326. The AATFC's intent and ground tactical plan influence the decision to use single or multiple LZs. Advantages of a single LZ:

- Simplifies C2.
- 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 because of confinement to a smaller area of the battlefield.

6-327. Advantages of multiple LZs:

- Reduces the risk of concentrating the entire assaulting force in one location that 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.

6-328. During the landing phase, attack reconnaissance helicopters provide overwatch of the LZs, reconnoiter egress routes, call for fire (if designated), and screen to warn the AATFC and ground force commander of any enemy counterattack during the ground tactical phase.

6-329. The plan must address door gunner fires to reduce the risk of hitting other aircraft in the formation or troops on the ground. Depending on the landing formation, door gunners usually are free to fire. As soldiers exit the aircraft, fires must shift or cease. On subsequent lifts, units limit door gun fires with controlled or restrictive fire lines.

6-330. The unit may plan single door exits away from a potential enemy position. This technique allows the door gunner closest to the enemy position to continue firing while soldiers exit from the other side of the aircraft. In this scenario, rucksacks may hamper rapid exit from the aircraft. The same applies to other cross-leveled equipment belonging to Javelin and mortar sections.

AIR MOVEMENT PLAN

6-331. The AATF staff develops the air movement plan and corresponding air movement table with the AMC, LNO, and flight lead. This plan schedules movement of troops, equipment, and supplies from the PZ to the LZ. It also provides a plan of action for serial and lift routes, SPs, ACPs, RPs, aircraft speeds, altitudes, en route formations, actions on enemy contact, FS en route, and egress.

6-332. Factors of METT-TC determine flight route selection. Higher headquarters may recommend general flight axis or designate flight corridors from which to plan exact flight routes. The AATF staff and flight lead develop primary and alternate flight routes while considering:

- Airspace management—coordinate flight corridors, axis, and passage points (PPs) with ground maneuver, artillery, AD, joint, UAV, MEDEVAC and other potential airspace users to reduce fratricide risks (the ground and/or AVN BDE usually coordinate airspace management).
- Support of the landing plan—develop flight routes and LZ formations that conceal and facilitate rapid aircraft approach and departure from the LZ and exact landing/take-off locations.
- Enemy capabilities—avoid known or suspected enemy positions en route; choose routes that provide maximum terrain masking at contour speeds and altitudes.
- FS—select routes that friendly artillery can range, plan to lift towed artillery to support en route and objective fires. Deconflict routes with position areas of artillery (PAA) and gun-target lines.
- Distance—minimize flight route distance to decrease aircraft exposure time and increase speed of turnaround.

6-333. Figure 6-16 shows how to calculate en route time. Add about two to five minutes flight time to an LZ that is three to eight kilometers from the rally point, two to five minutes flight time for a PZ three to eight kilometers from the SP, and one minute for acceleration/deceleration time.

Flight time computation:

$$T = \frac{D \times 60}{S \times 1.85}$$

T = Time in minutes

D = Distance in kilometers

S = Groundspeed in knots (aviation planners convert airspeed to groundspeed)

Note: The number 60 converts hours to minutes. The number 1.85 converts knots to kilometers/hour. Round up fractions of a minute to the next whole minute.

Example: given 80 km distance from start point to RP at an average groundspeed of 100 knots.

$$T = \frac{80\text{kms} \times 60}{100 \text{ knots} \times 1.85}$$

$T = \frac{4800}{185}$ = 25.9 minutes. Round this up to 26 minutes one-way from the SP to RP.

Sample groundspeeds in knots converted to rounded off km/hour and km/minute:

80 knots=148.2 km/hr=2.5 km/min……..110 knots=203.7 km/hr=3.4 km/min.

90 knots=166.7 km/hr=2.8 km/min……..120 knots=222.2 km/hr=3.7 km/min.

100 knots=185.2 km/hr=3.1 km/min…….130 knots=240.8 km/hr=4.0 km/min.

Figure 6-16. Computing En Route Time

6-334. The RP should be chosen so that flights cross it within a 30 degree arc of the final approach path to the LZ. This allows more precision in timing and simplifies transition from the en route to the landing formation.

6-335. If the AATF employs JSEAD, enroute fires, or CAS/air interdiction, it may request designated flight corridors for portions of the flight route. The AVN BDE or AATF staff coordinates the corridor through airspace management channels. A flight corridor has a maximum width and altitude. This restricts navigation within that corridor.

6-336. Air corridors may exist only within the vicinity of the PP and at en route locations deemed potentially dangerous and requiring long-range indirect fires or air interdiction. The AATF may designate the remainder of the planned route as a wide flight axis, giving the AMC and flight leads greater latitude in choosing a route.

6-337. The AVN BDE or AATF should request a high density airspace control zone (HIDACZ) around the vicinity of the LZ/objective. The inner and outer HIDACZ boundaries must allow CAS and aviation reconnaissance. Units request the HIDACZ within the airspace control order (ACO) cycle.

LOADING PLAN

6-338. The loading plan establishes PZ operations to include the appointment of the PZCO and the air loading table. The air loading table designates the troops, equipment, and supplies load for each aircraft in a manifest along with the priority of loads, the frustrated load plan (i.e. too heavy, sling legs intertwined, etc.), the bump plan, and the cross-loading of equipment and personnel.

6-339. Although ultimate responsibility for aircraft loading rests with the aviator and aviation unit, SOPs and loading plans must be coordinated between the aviation and supported unit. SOPs must address at least 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).

6-340. The loading plan and PZ selection should aim to maintain ground unit integrity. Just as a squad should not be divided between chalks, a platoon should remain in one serial and a company should not be divided into different lifts or PZs.

6-341. The AATF staff selects primary and alternate PZs with the AMC and LNO. Multiple PZs can speed the assault. Units often designate multiple PZs to separate internal loads and external loads, troops and equipment, or UH-60 and CH-47 operations.

6-342. The AATF staff bases PZ selection on METT-TC, the AATFC's intent, the assault force's location in relation to the PZ, and the capacity of available terrain. 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.
- Free of excessive slope, blowing dust, sand, or snow, rocks, mud, ice, brush, and other obstacles.

- Masked by terrain from enemy observation.
- Outside the range of enemy medium artillery.

6-343. The AATFC appoints a PZCO for each PZ. The PZCO forms a PZ control party with troop control teams, rigging-support, ATS, and security personnel. PZ communications occur using wire and a secure FM PZ control net. Units minimize radio communications using preplanned brevity codes.

6-344. To avoid confusion at night, the PZCO establishes marking procedures and lighting controls. The PZ control party may employ blue flashlight filters and chemical lights to designate active ground staging areas because these lights do not interfere with aircraft night vision systems. Table 6-2 illustrates examples of techniques units may employ to mark PZs.

Table 6-2. Marking Techniques for Day And Night PZs

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 ring around obstacle
Loads to be picked up	Hook up team on loads	Swinging IR chemical light per load

6-345. The PZCO directs the marking of the PZ to simplify night identification. Beanbag or chemical lights in a shallow trench forming an inverted "Y" form a reliable marker for inbound aircrews. Chemical lights placed near each chalk can mark touchdown points. Other night marking mechanisms include glint tape, strobe lights with IR filters, meals ready to eat (MRE) heaters, flares, and reverse polarity tape. VS-17 panels and smoke are good daylight markers.

6-346. PZ sketches promote understanding of the loading plan. The PZCO or LNO should provide the flight leader with kneeboard PZ sketches at the rehearsal or AMB. 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 to expedite loading. Figure 6-17 illustrates a sample PZ/LZ kneeboard diagram.

PRIMARY PZ DIAGRAM	PRIMARY LZ DIAGRAM
ALTERNATE PZ DIAGRAM	ALTERNATE LZ DIAGRAM

PZ name/grid coordinates	**PZ elevation/LZ elevation**	**LZ name/grid coordinates**
PZ formation	**PZCO Freq/Call Sign**	**LZ formation**
Alternate PZ name/grid coordinates	**Chalk aircraft, entry/exit PZ: LZ**	**Alternate LZ name/grid coordinates**
PZ landing direction/touchdown point marking, takeoff direction	**PZ wind direction** **LZ wind direction**	**LZ landing direction:** **Primary LZ:** **Alternate LZ:**
PZ time/load/weight: **Lift 1:** **Lift 2:** **Lift 3:**	**Onboard fuel versus minimum fuel for lift:** **PZ fuel lift 1: /** **PZ fuel lift 2: /** **PZ fuel lift 3: /**	**Take-off direction** **Primary LZ:** **Alternate LZ:** **Collection point for CASEVAC**

Figure 6-17. Sample PZ/LZ Kneeboard Diagram

6-347. The AATF may have spare aircraft to offset mechanical problems or combat losses during the air assault. The bump plan indicates how spares join serials in the PZ and fit into the bump plan. One technique is to employ all available aircraft during the first critical lift, and then to 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 if aircraft numbers fall short.

6-348. During the loading phase, attack reconnaissance aircraft can overwatch the PZ and conduct route reconnaissance of the air assault flight routes.

STAGING PLAN

6-349. The staging plan prescribes the arrival times and order of movement of aircraft, ground personnel, and equipment to the PZ. Loads must be ready before aircraft arrive. The PZCO and PZ control party have primary roles in the efficient transition from the staging plan to the loading plan.

6-350. During the staging phase, the aviation unit conducts mission planning, orders, and checks to ensure mission times are met during the air assault. Other preparation includes:

- Coordination between the AATF and AMC.
- Load preparation and inspection.
- Aircrew briefings, mission planning, and rehearsals.
- Aircraft preparaton, reconfiguration, and spacing.
- Preflight inspections and PCC.
- Emplacement of FARPs to sustain the mission.
- Selection of flight routes to the PZ.
- Selection of routes to and from refueling points.
- Confirmation of communications card and frequency/COMSEC fill accuracy.

AIR ASSAULT PLANNING

6-351. As a general guide, air assault planners need at least 48 hours for a brigade operation, 24 hours for a battalion operation, and 12 hours for company and smaller operations. For smaller air assaults, the battalion is the lowest level resourced to plan an air assault.

6-352. Twelve hours represents the absolute minimum planning time for smaller assaults and coordination of supporting assets. Units experience serious difficulty in executing the abbreviated MDMP and TLPs, adhering to the 1/3, 2/3 rule, and conducting an AMB and non-flight rehearsal within 12 hours. Habitual training and detailed tactical SOPs help units optimize available planning time.

6-353. Integration of the BOS is critical during the early planning stages, specifically for IPB and FS. A proper IPB facilitates LZ and route selection and eases integration of SEAD into the air movement plan.

WARNING ORDER

6-354. Air assault planning begins when the aviation unit receives a WARNO from higher headquarters for the upcoming air assault mission. The WARNO specifies the AATFC and task organization. This allows the aviation commander to dispatch an LNO to the AATF headquarters early in the planning phase. Other WARNOs and FRAGOs should follow as the AATF staff and commander work through the reverse planning sequence.

AVIATION ORDERS DEVELOPMENT

6-355. Throughout the air assault mission planning process, the aviation headquarters produces its OPORD, conducts aircrew briefs at company and serial level, and rehearsals of the aviation portion of the mission. The OPORD covers all aviation elements to include attack reconnaissance, MEDEVAC, and heavy helicopters. The AMC and his staff brief other aviation unit commanders at the main CP. Planners comply with the 1/3, 2/3 rule during the orders process to give subordinate leaders time to prepare. WARNOs and AMPS maximize preparation time for subordinate echelons.

INITIAL PLANNING CONFERENCE

6-356. The IPC is the first meeting between the AATF staff and aviation unit. The AMC, LNO, AHB S-2 and S-3, flight leads, ABC, attack reconnaissance security commander, and select AVN BDE staff personnel should represent the aviation unit. The IPC's location generally is the AATF headquarters.

6-357. The AATF staff should have at least hastily wargamed their concept for the ground tactical plan before the IPC, so that assembled planners can discuss and determine LZs, routes, and PZs. If more planning time exists, units may conduct a subsequent air mission coordination meeting (AMCM), which is similar to the IPC, but occurs after the ground tactical plan and other mission details are finalized.

6-358. Following the IPC, both ground and aviation staffs should understand the distance and general time involved for each lift, what forces will be in the first lift, and in each serial of the first lift. They should know which first-lift serials are going to which LZs and by which route. Subsequent lifts and follow-on echelon lifts, while discussed at the IPC, can be planned in detail at a later AMCM if time permits.

AIR MOVEMENT TABLE

6-359. The AATF S-3 and aviation LNO begin work on the air movement table after the IPC. This gives them an early idea of the challenges involved in getting units to the LZ with the number of aircraft available and the distance and number of lifts involved. Table 6-3 gives air movement table planning guidelines for two assault helicopter companies.

Table 6-3. Lift Scenarios with Two Assault Companies

One-way Distance/# of lifts	Mission Duration	Aircraft per lift (80% availability)	Transportable Troops 11 fully loaded troops/aircraft with seats 16 fully loaded troops/aircraft w/o seats 20 partially loaded troops/aircraft w/o seats
150km/2 lifts	4 hrs, 10 minutes	16 UH-60 loads per lift, 32 total	342 (171 per lift) with seats, fully loaded 512 (256 per lift) w/o seats, fully loaded 640 (320 per lift) w/o seats, partially loaded
100km/4 lifts	7 hrs, 16 minutes	16 UH-60 loads per lift; 64 total	684 (171 per lift) with seats, fully loaded 1012 (256 per lift) w/o seats, fully loaded 1280 (320 per lift) w/o seats, partially loaded
50 km/6 lifts	9 hrs, 12 minutes	16 UH-60 loads per lift; 96 total	1026 (171 per lift) with seats fully loaded 1536 (256 per lift) w/o seats, fully loaded 1920 (320 per lift) w/o seats, partially loaded

AIR MISSION BRIEFING

6-360. The AMB is the final coordination meeting where key air assault personnel brief the plan to the AATFC for approval. The AMC, aviation S-3, aviation S-2, flight lead, serial commanders, all pilot-in-commands (PICs), and the LNO should attend. The AMC or his S-3 briefs the aviation portion of the AMB. FM 90-4 contains other information about the AMB. See Figure 6-18 for an example of an AMB checklist.

BASIC AIR MISSION BRIEF PRODUCTS

6-361. There are seven basic documents that should be available at the AMB to assist air-ground integration:

- Air movement table regulating sequence of flights from PZ to LZ (AATF S-3 Air/aviation LNO).
- Tadpole diagram describing each lift's composition (AATF S-3 Air).
- Kneeboard-size communications cards (AATF signal officer).
- Kneeboard PZ diagram (AATF PZCO).
- Kneeboard LZ diagram for each primary and alternate LZ (AATF S-3).
- Kneeboard sketch of ground tactical plan scheme of maneuver for attack reconnaissance crews (AATF S-3).
- Route cards for all ingress/egress routes (AMC/flight lead).

6-362. Additional air assault planning products include:

- Air assault execution checklist; a checklist with codewords permiting communication brevity and a sequential list of events to ease battle tracking.
- FARP sketch(s).
- FSCM.
- Ground tactical plan overlay.

Air Mission Brief Checklist

ROLL CALL
TIME ZONE
TIME HACK
PACKET CHECK
REFERENCES
TASK ORGANIZATION
(Infantry Brigade TF)

1. **SITUATION.**

   a. Enemy forces (synopsis of overall enemy situation) (TF S-2).

      (1) Air IPB.
      (2) Enemy air capability.
      (3) Enemy ADA capability.
         (a) Type/location.
         (b) Night capability/range.
         (c) Weather/NOTAMS.
         Sunrise / Sunset.
         Moonrise / Moonset.
         Max % Illum. Illum Range:(during AASLT, i.e. 0% - 45%).
         NVG Window / Ceiling/Visibility.
         MAX Temp / MAX DA/PA.
         EENT / BMNT.

   b. Friendly forces (TF S-3).

      (1) Mission higher headquarters (include CDR's intent).
      (2) BDE/BN Infantry scheme of maneuver (TF S-3).

2. MISSION (TF S-3).

   a. BDE/BN CDR's intent (AATFC).

   b. Conditions for AASLT. Conditions for ice.

   c. Mission risk assessment (TF S-3).

   d. Aviation mission (AVN S-3).

3. **EXECUTION.**

   a. Aviation commander's intent (AMC).

   b. Concept of the aviation operation (AVN S-3).

   c. AVN tasks to subordinate units (AVN S-3).

   d. Fires (FSO).
      (1) Field Artillery. ANNEX I (FS graphics).
         (a) Purpose of supporting fires.
         (b) Unit/location.
         (c) Priority of fires.
         (d) SEAD information/targets.
         (e) LZ prep.

Figure 6-18. Example of an Air Mission Brief Checklist

(2) Close air support (ALO).
- (a) Purpose/mission.
- (b) Coordinating altitude.
  - Rotary wing.
  - Fixed wing.

(3) Attack aviation. (Attack S-3/CDR).
- (a) Mission.
- (b) Concept.
- (c) Attack BPs/ABFs/sectors/routes in/out.

e. Staging plan. ANNEX A (PZ DIAGRAM) (TF XO).

(1) Name/number.
(2) Coordinates.
(3) Load time.
(4) Take off time.
(5) Markings.
(6) Control.
(7) Call signs/frequencies.
(8) Landing formation.
(9) Heading.
(10) Hazards/go arounds.
(11) Supported unit bump plan. (ANNEX A-1 Coordinating Instructions).
(12) PZ arrival times.

f. Air movement plan. (ASSLT S-3/MSN lead).

(1) Routes/corridors. ANNEX B (ROUTE CARD).
- (a) Ingress primary/alternate.
- (b) Egress primary/alternate.
- (c) Others.

(2) Enroute hazards.
(3) Abort criteria.
- (a) Weather.
- (b) Aircraft available .
- (c) Time.
- (d) Mission essential combat power.
- (e) Mission criticality.
- (f) Enemy.

(4) Penetration points.
(5) Enroute formation/rotor separation/angle/airspeeds. (as per crew brief).
(6) Deception measures/false insertions.
(7) Air movement plan. ANNEX D.
(8) Cargo doors.
(9) External lighting (SOP).
(10) ROA locations.
  - AASLT C2.
  - ATK C2.
  - QUICKFIX.

(11) MEDEVAC/CASEVAC aircraft plan.
(12) Aircraft decontamination plan.

Figure 6-18. Example of an Air Mission Brief Checklist (Continued)

g. Landing plan. ANNEX C (LZ DIAGRAM) (ASSLT S-3/MSN lead).

(1) Name/number.
(2) Coordinates.
(3) LDG times (as per air movement table).
(4) Markings.
(5) Control.
(6) Call signs/frequencies.
(7) LDG formation/direction.
(8) LZ abort criteria (Based on GTCs guidance).
(9) Go arounds (Flight/single ship - as per crew brief).
(10) Departure (as per crew brief).

h. LAAGER plan. (ASSLT S-3/MSN Lead).

(1) Name/locations.
(2) Times/REDCON status.
(3) Security plan.
(4) Scatter plan.
(5) Call forward plan.

i. Extraction plan. (ASSLT S-3/MSN lead).

j. Coordinating instructions. (Aviation) (ASSLT S-3).

(1) MOPP level/NBC warning status.
(2) M60D control status.
(3) ADA status.
(4) IFF procedures/times.
(5) Chaff/ALQ 144 employment.
(6) NVG specific procedures (SOP).
(7) VHIRP/IIMC (as per crew brief).
(8) Mission contingencies (SOP).
 (a) DAARP/SAR/EAE.
 (b) Downed aircraft/SERE/DART.
 (c) BDAR.
(9) Spare aircraft procedures.
(10) Special aircraft equipment/preparation .
(11) PPC.
(12) Mission brief sheet.
(13) Risk assessment form (completed/signed).
(14) Safety considerations/hazards.
(15) OPSEC considerations (SOI, kneeboard sheets, maps).
(16) Weather decision plan/times.
(17) Debrief location/time.

k. Coordinating instructions. (TF) (TF S-3).

4. **SERVICE SUPPORT.**

a. Class I (1 case MREs/5 gallons water/survival kits) (TF S-4).

Figure 6-18. Example of an Air Mission Brief Checklist (Continued)

b. Class III/V (III/V PLT LDR).

(1) Minimum fuel. (as per crew brief).
(2) Basic load.
(3) FARP/RRP.

c. Class VIII (HSSO).

(1) Casualty collection point.
(2) Evacuation plan/hospital location.

d. MEDEVAC/CASEVAC plan. (HSSO).

5. **COMMAND AND SIGNAL. (TF S-3).**

a. Command.

(1) A2C2. As per ACO, this AMB, and established tactical flight procedures.
(2) AATFC/location.
(3) AVN TF AMC/location.
(4) ABC/location
(5) Aviation chain of command (As per serial chain of command).

b. Signal. (TF S-6).

(1) Commo card day (ANNEX____).
(2) Execution matrix (ANNEX ____).
(3) Code words.

MISSION BRIEF BACK
FINAL QUESTIONS
COMMANDERS COMMENTS

Figure 6-18. Example of an Air Mission Brief Checklist (Continued)

AIRCREW BRIEF

6-363. Subordinate aviation unit and serial commanders brief the flight crews. This aircrew brief covers essential aircrew actions throughout the mission.

REHEARSAL

6-364. Aviation elements rehearse to synchronize elements. Representatives from the supported unit, the AATF, and supporting units should participate. Aviation units can also conduct rehearsals without supported ground elements, but must include key aviation personnel and start with the ground tactical plan/actions on the objective.

6-365. AMPS is a good rehearsal tool. Actual flight rehearsal on similar terrain is another possibility, given time and resources. For most air assaults, a full-dress rehearsal is desired.

PZ UPDATE BRIEF

6-366. The PZ update brief is the final assembly of key leaders prior to conducting the air assault. The purpose of the brief is to disseminate the most current operational and intelligence information. It is conducted on the PZ after the aircraft arrive so pilots can attend. The following are reviewed: enemy situation update, operations update (target location), communications update, time hack, and commander's comments. At the conclusion of the brief, higher headquarters is contacted for the final decision to proceed or terminate the mission.

AIR ASSAULT SECURITY

6-367. Security and reconnaissance elements precede the AATF and protect it enroute using lethal and nonlethal means. SEAD fires, attack reconnaissance helicopters, pathfinders, ground scouts, long-range surveillance teams, JSTARS, UAV, and EW are among the assets that can disrupt enemy communications, radars, and air support.

6-368. The focus of SEAD planning is protection of friendly aircraft and synchronization of fire support assets (lethal and non-lethal), facilitating the rapid destruction of enemy forces capable of interdicting attack and assault aviation assets during air assault operations. SEAD fires are planned for any operation where air assets (both rotary and fixed-wing) are employed. These operations include setting conditions for attack aviation mobile strikes, setting conditions for air assault operations, and employment of CAS. There are two types of SEAD fires: lethal (TACAIR, FA, Mortars, NGF), and non-lethal (EW, smoke).

6-369. There are four basic techniques for SEAD: planned, on-call, immediate, and deceptive SEAD.

- **Planned SEAD**: Planned around an H-hour. Planned SEAD may incorporate electronic attack from joint and combined assets.
- **On-call SEAD**: Planned and conduct similar to planned SEAD with the exception of a floating H-Hour based on the tactical situation.
- **Immediate SEAD**: Conducted on ADA targets of opportunity. Delivery systems and quick-fire nets are critical to support immediate SEAD operations.
- **Deceptive SEAD**: Involves firing a SEAD program in an area to deceive the enemy or cause him to reposition his air defense weapons away from when the actual operations will take place.

6-370. SEAD programs will normally be initiated by event, such as crossing a specific phase line or aerial check point (ACP). The event initiating the SEAD program should be a phase line or ACP that is no less than 5 minutes flight time outside the first threat air defense range fan or "bubble" that may be encountered.

HOT LZ PROCEDURES

6-371. Related to mission criteria are actions the AATFC, AMC, ABC, and flight/serial leaders take when encountering a hot LZ. The mnemonic device STRIKE describes actions to take when landing aircraft encounter enemy fire. Table 6-4 illustrates these procedures.

Table 6-4. Hot LZ Procedures

S	Suppress enemy/obscure friendly positions
T	Turn off fires as subsequent lifts approach
R	Report to higher/activate battle command net
I	Isolate enemy using all direct/indirect fires
K	Kill enemy using fires and maneuver if necessary
E	Evaluate the situation: Continue, delay, divert, terminate, and evacuate casualties and possible force extraction.

6-372. Generally, aircraft should land in staggered trail. This formation enables door gunners to fire from both sides of the aircraft and reduces excessive dispersion of the assaulting force.

TEAM INSERTION/EXTRACTION

6-373. Assault and heavy helicopter units perform team insertions and extractions of long-range surveillance detachments (LRSD), rangers, special operations teams, infantry patrols, forward observers and combat observation laser teams (COLT), combat engineer demolition teams, and pathfinders. Missions may also require SPIES or FRIES equipment, rappelling ropes, hoists, auxiliary fuel tanks, and additional training or rehearsals.

6-374. Although it follows the same five-stage planning process, the primary difference between air assaults and team insertions is that a conventional AATF may not exist. A command structure still must be established to plan, organize, and execute the operation. Assault and attack reconnaissance units may internally task-organize for habitual insertion/extraction missions. Alternatively, the TF may be temporarily OPCON or TACON for these missions.

6-375. The inserting or extracting aviation element commonly consists of two UH-60s and two AH-64D/OH-58D aircraft. UH-60s conduct multiple false insertions before and after the actual insertion and enable immediate downed aircrew recovery. AH-64Ds provide security and may conduct feints or demonstrations to help cover the operation.

6-376. The unit may have as little as six hours to plan a team insertion. For many team insertions, this condensed planning timeline is due to the need to gather intelligence early in the planning process of a larger mission.

6-377. There may be multiple team insertions/extractions associated with a major mission. For example, the mission may require insertion of:

- LRSD and/or Pathfinders 72 to 96 hours prior to H-Hour.
- Scouts 48 hours before H-Hour.
- Advance elements and forward observers/COLT teams several hours or less before H-hour.

6-378. Aviation elements should expect the inserted element to choose insertion/extraction points 5 to 10 kilometers or more from planned mission objectives. They also should plan different ingress/egress routes. Insertion mission orders must include:

- Planned extraction points.
- Emergency extraction rally points.
- Lost communications extraction points.

6-379. Planned extraction points and emergency extraction rally points require communications to verify the preplanned pickup time or to coordinate an emergency pickup time window. The lost communications extraction point involves ground teams moving to that point after two consecutive missed communication windows to wait up to 24 hours for pickup.

6-380. Battalions plan team insertions/extractions because companies lack the resources to both plan and prepare for the mission. Unit SOPs should outline an abbreviated planning process for these missions.

6-381. On short-notice missions, it may be impossible to coordinate JSEAD, or units may elect to avoid using lethal JSEAD dependent on the threat and stealth requirements. Escorting armed helicopters and artillery can provide some protection.

ARTILLERY RAID

6-382. The air assault artillery raid is a high-risk, short duration operation. It is used to facilitate the attack of HPTs located beyond the range of current friendly artillery positions and/or targets tactically "out of reach" of other available FS or maneuver systems. Detailed planning, accurate fires of sufficient volume, and speed in execution are key to its success. Minimal required equipment and personnel should be taken. The artillery raid is identical to an air assault in terms of planning and execution.

6-383. Both the M119 (105mm) and the M198 (155mm) can be transported in an air assault artillery raid. While the available aircraft may limit some of the configuration choices, the battery commander normally determines the most suitable configuration based on METT-TC and in coordination with the artillery S-3 and the AMC.

AIR MOVEMENT

6-384. Air movement operations are those operations involving the use of Army airlift assets for other than air assaults. These operations are used to move troops and equipment, to emplace artillery pieces and to transport ammunition, fuel, and supplies. The same planning sequence and phases used for air assault operations apply to air movement operations. In these operations, aviation is not task-organized with other members of the combined arms team to engage enemy forces.

6-385. Assault and heavy helicopter units perform air movement on a DS or GS basis. Air movements are especially effective in moving forces and their equipment when:

- Ground routes are nonexistent, limited, congested, or damaged.
- Enemy activity or obstacles block ground routes.
- The supported unit does not have adequate available vehicles.
- Time is critical.

AIR MOVEMENT PLANNING AND DECENTRALIZED CONTROL

6-386. Large air movements require planning and C2 similar to that for air assaults, but usually without associated task organization. Most air movements are smaller and highly decentralized.

6-387. On a typical mission, one or two mission aircraft may operate at distances that can often outstrip maintenance support and normal radio communications ranges. These missions may require extensive pre-mission planning to coordinate:

- Maintenace support from other units.
- Alternate communication means (SATCOM, aerial RETRANS, HF radio, or message relay by the supported unit).

- Threat data along the route and an alternate means for obtaining intelligence updates.
- PZs and LZs.
- POCs at supported and supporting units.

6-388. A2C2 for air movement may include having the mission published in the airspace tasking order and coordinated by the ATS tactical airspace integration system. Unit aircrews still have the responsibility to exercise caution and be aware of and not over fly artillery units, UAV launch/recovery locations, AD sites and other airspace users. Battalions must coordinate with the brigade to ensure flight across the FLOT, or forward in nonlinear theaters, are published in the ACO to reduce the potential for fratricide. Flight following or procedural control is the norm for air movement operations with altitude restrictions often in place.

EXTERNAL AIR MOVEMENT LOADS

6-389. Typical external loads include bulk supplies, fuel or water drums, vehicles, trailers, material handling equipment, towed artillery and other weapons systems, and ribbon bridges. The supported unit is responsible for preparing, weighing, and rigging external loads. FM 10-450-4 and FM 10-450-5 contain information on typical loads and their weights. FM 10-450-3 contains additional detail, required rigging equipment, and methodology for preparation and transport.

6-390. High altitudes and high temperatures degrade aircraft performance, reducing the weight they can carry and/or the amount of fuel onboard. Reduced fuel restricts the distance that items can be carried and causes more frequent refueling during missions with multiple lifts. Ground units operating in hot weather and desiring missions with PZs, LZs, or flight routes in areas of high elevation must consider these factors when planning for heavier loads. Aircraft available power is higher during the cooler night, early morning, and late afternoon hours.

6-391. Supported units must avoid loading vehicle, trailers, pallets, and other containers beyond maximum weights coordinated with the aviation unit. If the aircraft is unable to lift the load or to transport it the required distance, the supported unit must reduce the weight by removing items. This could involve partial derigging, rerigging, and reinspection delays. The ground unit could lose aviation support if the aircraft are scheduled for other missions.

AIR MOVEMENT RESPONSIBILITIES

SUPPORTED UNIT AT THE PICKUP ZONE

6-392. The sending unit provides rigging equipment and completes the sling inspection checklist. If the unit desires backhaul of slings and rigging equipment, this must be precoordinated. The sending unit prepares loads for air movement. This includes marking, prioritizing, rigging, inspecting, weighing, and tracking loads. The sending unit also is responsible for PZ marking and operations, including ground guides and radio communication. For external loads, the ground unit performs the static discharge and hooks the load.

AVIATION UNIT

6-393. The aviation unit ensures the load is safe to fly, and determines in advance what portion of the load to carry internally and externally. It transports the loads and notifies the receiving unit of any changes it makes in the precoordinated plan.

SUPPORTED UNIT AT THE LANDING ZONE

6-394. The supported unit is responsible for LZ markings and operations, including ground guides and radio communications. The supported unit guides the aircraft to the desired point for landing or external load release. It prepares the LZ, unrigs the load, and loads rigging material for backhaul for subsequent lifts, if coordinated.

AVIATION STAFF RESPONSIBILITIES

6-395. The S-2 section identifies threats to 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 nonlinear,

6-396. The S-3 section provides mission PZ and LZ information including grid locations, frequency, call signs, markings, and landing direction. The S-3 also provides critical mission times and a supported unit POC. This section specifies the means of flight following and periodic situation reporting of activities and locations by pre-coordinating HF, FM-relay or RETRANS, or other radio communications. The S-3 section ensures compliance with the A2C2 structure, and advises aircrews of other potential airspace users along projected flight routes. If a threat is anticipated, the S-3 section works with the supported unit's FSO to ensure aircrews know of preplanned and on-call fires available to support PZ and LZ operations. For large or cross-FLOT/nonlinear missions, the S-3 may coordinate attack reconnaissance helicopter security. The S-3 section also ensures that aircrews are aware of downed aircraft procedures. A detailed mission brief can suffice instead of an OPORD for most air movement operations.

6-397. The S-4 section arranges rapid refuel and maintenance coverage to support missions beyond the range of battalion support. When in DS of a particularly large air movement mission, the section may plan throughput of fuel supplies directly to the supported unit's trains where Class III sections can link up their FARP equipment with supplies. The S-4 section coordinates DART coverage with the AVUM commander on an area basis.

SECTION XI – AERIAL SUSTAINMENT OPERATIONS

GENERAL

6-398. Army aviation is an extension of ground maneuver providing an aerial dimension to the UEx or BCT. Army aviation performs combat, combat support (CS), and CSS missions within all the BOS. Aviation is ideal for air movement and aerial sustainment in support of special operations, light, airborne, air assault, and heavy forces.

6-399. Aviation performs crucial tasks in providing Aerial Sustainment Support to the force as a whole, primarily during Sustainment Replenishment and Mission Staging Operations (SRO/MSO). Current operations are sustained through a globally networked, distribution based logistics system and reach-back capabilities. Increased operational distances, non-secure LOCs and a non-contiguous battlespace, result in greater reliance on aerial distribution platforms as a means of providing responsive and agile support from multiple locations within the theater.

6-400. Lift aviation forces conduct air assaults, team insertion/extraction, mine dispensing, C2, air movement, and aerial sustainment to accelerate the tempo of ground combat elements.

6-401. Enhanced lift capabilities of multi-function aviation brigades increases the tonnage of aerial sustainment supplies, which means aerial sustainment can supply a larger percentage of fuel, ammunition, and other needs to supplement ground transport.

AERIAL SUSTAINMENT

6-402. Aerial sustainment is the movement of equipment, material, supplies, and personnel by utility, heavy, and fixed-wing assets for operations other than air assault and combat support. Aviation provides air movement of personnel, equipment, ammunition, water, parts and supplies; and performs CASEVAC and aviation maintenance. These air movements are considered CSS missions because aviation forces are not task-organized with combined arms forces, nor do they move combat or combat support forces or assets whose primary mission is to engage and destroy enemy forces.

6-403. Heavy BCTs and Infantry BCTs have significantly different needs and requirements. Aerial sustainment through direct support (DS) and general support (GS) is critical for light, airborne, and air assault forces. Resupply of key ammunition and parts is critical for heavy brigade combat teams (BCT).

6-404. Aerial sustainment of the modular force is achieved through DS and GS on an anticipatory preplanned basis, not attachment to the support command structure. The number and variety of missions, coupled with the limited lift assets, necessitates that command, not CSS channels, initiate air movement and aerial sustainment taskings. Mission requests go through command channels for allocation of support based on the commander's and G3's priorities. Although aircraft may provide a level of DS and GS support to a particular aerial sustainment mission, these aircraft are not transportation assets, and do not fall under CSS unit control. The myriad of combat and combat support missions these aircraft must perform with limited assets prohibits organic or attached support as a transportation asset.

6-405. Aviation taskings through command channels allow rapid transition between combat, CS, and CSS missions. This process also keeps aircrews better informed, and permits simultaneous execution of all three mission types with the same set of aircraft.

6-406. The tempo of resupply operations can dramatically impact combat operations. It is essential that aircraft utilization be optimized. The goal is to maximize the number of turns during each shift. This can only be accomplished through coordination and training.

EXECUTING AERIAL SUSTAINMENT OPERATIONS

DEVELOPING BRIGADE COMBAT TEAM AERIAL SUSTAINMENT REQUIREMENTS

6-407. At the beginning of brigade sustainment operations, the brigade support battalion (BSB) support operations officer (SPO) receives support requirements from the BCT S4 during the logistics meeting that occurs the day prior to the actual re-supply operation. The BCT S4 is responsible for consolidating each Battalion's LOGSTAT, constructing the BCT LOGSTAT from the derived forecasts, prioritizing the support requirements from the subordinate battalion S4s and synchronizing the delivery of the CSS assets with the BSB SPO.

6-408. After wargaming, which includes input from the BSB commander, the BCT commander approves the BCT OPORD with a concept of support plan, which includes the support annex and CSS synchronization matrix. The SPO plans re-supply missions for the entire BCT based on input from the BCT S4. During the BCT MDMP process, the SPO provides recommendations on how best to array support assets to perform re-supply for units. If this is a daily or periodic mission where a MDMP process is not occurring, the BSB commander approves the SPO's and the BCT S-4's recommendation and then ensures the tasking order is approved by the BCT commander prior to it being published by the BCT S-3. The BCT Brigade Aviation Element (BAE) will assist in this effort, providing information and requirements to the aviation task force as appropriate.

6-409. The aviation force supporting the BCT will provide aerial resupply for sustainment based on METT-TC and the BCT resupply plan (CSS synchronization Matrix).

AIR MISSION COORDINATION MEETING (AMCM) FOR LOGISTICS

6-410. After support requirements have been identified, the SPO conducts an AMCM at the BSB TOC the night before the planned aerial resupply. Attendees include:

- SPO.
- Aviation operations representatives (BAO, S3, LNO, CO CDR, PLT LDR or pilots).
- BCT S4.
- LOGPAD OIC.
- Battalion S4s.
- BSB Co Cdrs/FSC Co Cdrs or Distribution platoon leaders.

6-411. The SPO presents the air mission brief (AMB) in five paragraph OPORD format. The LOGPAD OIC provides a PZ sketch of the LOGPAD to the aviation operations representative. The battalion S4s and distribution leaders also provide LZ sketches to the aviation operations representative for each LZ. The battalion S4's coordinate with their battalion S3's for LZ/LRP security and A2C2 deconfliction. The BSB SPO provides PZ and LZ times to the aviation operations representatives.

6-412. This AMCM produces an operational resupply mission matrix (Table 6-5) used to execute the resupply missions. This table can be used as is or reconfigured as needed by the user.

Table 6-5. Operational resupply mission matrix

Unit	ACFT Type	Cargo	Time	PZ	LZ	Marks	Freq	Call Sign

Sample

6-413. Distribution leaders ensure that their resupply loads are prepared on the BSB LOGPAD using their respective unit's air items. When the re-supply aircraft arrive (in accordance with the operational matrix coordinated the night before), battalion S4s take control of the hookup crews and the distribution leaders may fly in the lead aircraft during the resupply missions. This allows the distribution leaders to coordinate last minute changes at the load drop-off point due to changes in the tactical situation. It also allows the distribution leader to coordinate directly with the combat trains and provide terminal guidance for the pilots.

PREPARATION FOR AERIAL SUSTAINMENT OPERATIONS

6-414. Some units establish in the brigade support area (BSA) a logistics helipad (LOGPAD) controlled by a designated logistician. The LOGPAD often serves as the focal point for aerial resupply missions where internal and external loads can be picked up for delivery to units. Battalion's direct their distribution unit leaders to prepare supplies for slingload operations on the BSB LOGPAD based on the guidance from the BCT S3, S4, and the SPO.

6-415. The BSB LOGPAD operates in the BCT AO and should ideally accommodate four CH-47s simultaneously. As always, safety is paramount; training, rehearsals, communications, coordination, and NCO supervision must mitigate the inherent danger in LOGPAD operations. The following items should be considered when establishing a LOGPAD.

- Location: road networks to and from.
- Security.
- Size: enough usable space?
- Spill plan (POL) with berm for BLIVET filling and spill kits prepared.
- Can multiple loads be staged on each point?
- Aviation hazards in immediate vicinity such as wires, poles/antennas, dust.
- Approach and departure headings (do not over-fly tents or TOCs).
- Trafficability of terrain in poor weather.

6-416. At BCT level, LOGPAD sketches are developed by the BSB and distributed to the supporting aviation S3s by the BAE for dissemination to their units. All sketches should be kneeboard size and contain at a minimum the following information.

- Name.
- Lead touchdown coordinates.
- Markings (NATO T, swinging chem, flashlights with cones).
- PZ control location.
- Numbered pick-up points (essential for C2).
- Call sign.
- PZ frequency (FM, frequency HOP secure).
- PZ alt frequency (FM, single channel unsecure).
- Emergency touchdown points.
- Approach/departure headings.
- Go-around direction.

6-417. A2C2 sketches are developed by the BAE or AVN LNO and reviewed by both the BSB support operations section and LOGPAD OICs. Sketches should be distributed to support aviation S3s for dissemination to their units. Sketches are kneeboard size and contain a general concept of the flow of air traffic in and out of the BCT AO. These concepts must tie in with the UEx and BCT A2C2 plan.

6-418. When possible, a rehearsal will be conducted of LOGPAD operations. This will consist of an actual hook up, load transport, and AAR. A fuel spill rehearsal will also be conducted; this will consist of a physical inventory of spill kits, a class on spill procedures, and actual rehearsal of these procedures.

6-419. The supporting aviation unit provides aircraft and crews to conduct hookup training on the LOGPAD for personnel who comprise hook-up teams. The LOGPAD OICs are overall responsible for supervising this training.

SECTION XII – MEDICAL EVACUATION/CASUALTY EVACUATION

GENERAL

6-420. The aviation brigade has an organic aeromedical evacuation company as a part of the general aviation support battalion (GSAB). Air ambulance assets of the aeromedical evacuation company can collocate with HSS organizations, the aviation TF, or higher to provide air ambulance support throughout the UEx AO. When required to co-locate air ambalance assets, the GSAB will normally provide air ambulance platoons of three MEDEVAC aircraft as determined by METT-TC.

6-421. Medical evacuation uses purpose-built, specially manned, unarmed aircraft. Medical evacuation (MEDEVAC) aircraft are equipped with medical personnel and equipment that facilitates enroute care of casualties.

6-422. Casualty evacuation (CASEVAC) uses standard mission aircraft to move the wounded. Utility and heavy helicopter units conduct CASEVAC operations when medical aircraft are inadequate or not readily available. CASEVAC aircraft and crews do not include medical personnel, are not able to provide enroute medical care, and are not protected under the Geneva Convention. CASEVAC aircrews are neither trained nor equipped to provide the medical treatment available on air ambulances.

6-423. During high tempo combat operations, it may be necessary to reinforce the air ambulance unit with utility and heavy helicopter CASEVAC support. CASEVAC is a part of Force Health Protection (FHP). CASEVAC includes battlefield pickup of casualties; evacuation of casualties to initial treatment facilities; and subsequent movement of casualties to treatment facilities within the combat zone. CASEVAC is an aviation mission directly supporting a ground unit.

6-424. Utility and heavy helicopters augment air ambulances to move casualties normally not in need of enroute care beyond level 1 health care. CH-47 aircraft transport medical personnel, equipment, and supplies as necessary to augment air ambulances. Utility and heavy helicopters are designed to carry litters, if litters are available.

6-425. The CH-47 can transport up to 24 litter patients, or 31 ambulatory patients; or some combination thereof. The UH-60 A/L can carry three or four litters depending on seating configuration. Supported units should ensure that aircrews know the locations of their battalion and brigade treatment facility LZs or casualty collection points (CCP) where ground ambulances can meet and treat casualties.

EXECUTING MEDICAL EVACUATION

6-426. Table 6-6 is the 9-line MEDEVAC request format. The 4-line format uses only lines 1, 2, 3, and 5.

Table 6-6. 9-Line MEDEVAC Request Format (4-Line Uses 1,2,3,5)

LINE ITEM	EXPLANATION	WHERE/ HOW OBTAINED	WHO PROVIDES	REASON
1 Location of pick-up site	Transmit the grid coordinates of the pickup site	From map/PLGR	Unit leader; check with GPS PLGR	Required so aircrew knows where to pickup casualty. Also so that unit Coordinating the mission can approve and clear the route for the MEDEVAC/CASEVAC aircraft.
2 Radio frequency, call sign and suffix of requestor	Transmit the freq of the radio at the pickup site (not a relay freq). The call sign of person to be contacted at the pickup site may be transmitted in the clear.	From SOI	RTO	Required so aircraft can contact requesting unit while enroute.
3 Number of casualties by precedence	Report only applicable information and the brevity codes. A = urgent B = urgent-surgical C = priority D = routine E = convenience If two or more categories must be used in the same request, insert the word “break” between each category	From assessment of casualties	Medic, combat life saver, or unit leader	Required by commander controlling the aircraft to assist in prioritizing missions.
4 Special equipment	Send the applicable brevity codes. A = none B = hoist C = extraction equipment (jaws of life) D = ventilator	From senior medic or combat life-saver	Medic, combat life saver, or unit leader	Required so that the equipment can be placed on board the aircraft prior to takeoff.
5 Number of casualties by type	Report only applicable information and send the brevity code. If requesting MEDEVAC for both types, insert the word “break” between the litter entry and ambulatory entry. L + # of casualties - litter A + # of casualties - ambulatory	From assessment of casualties	Medic, combat life saver, or unit leader	Required so that the appropriate number of appropriately configured aircraft may be dispatched to the PZ.
6 Security of pickup zone (Wartime Mission)	N = no enemy troops in area. P = possible enemy troops in area. E = enemy troops in area. X = enemy troops in area; PZ under fire. (request armed escort)	From evaluation of situation	Unit leader	Required to orient and protect inbound aircrews.

Table 6-6. 9-Line MEDEVAC Request Format (4-Line Uses 1,2,3,5)

LINE ITEM	EXPLANATION	WHERE/ HOW OBTAINED	WHO PROVIDES	REASON
6 Number and type of wounded, injury or illness (Peacetime lifesaving)	Specific information regarding casualty wounds by type. Report serious bleeding, along with patient blood type, if known	From assessment of casualties	Medic, combat life saver, or unit leader	Required to permit more rapid and effective treatment of casualties.
7 Method of marking PZ	Send brevity codes: A = VS-17 panels. B = pyrotechnic signal. C = smoke signal. D = none. E = other (then describe).	Based on situation SOP, and availability of materials	Unit leader	Required to assist aircrew on final approach to PZ. Do not transmit color of panels, smoke, or pyrotechnic; make inbound aircrew identify the color on final approach.
8 Patient nationality and status	The number of casualties in each category need not be transmitted. Send only the applicable brevity codes. A = US military B = US civilian C = Non-US military D = Non-US civilian E = EPW	From assessment of casualties	Medic, combat life saver, or unit leader	Required to alert destination aid stations and hospitals of inbound patient load, and to alert guards for EPWs. Ensure at least one rep at the PZ speaks English.
9 NBC contamination (Wartime Mission)	Include this line only when applicable. Send the applicable brevity codes. N = nuclear B = biological C = chemical	From evaluation of situation	Unit leader	Required to protect and orient inbound aircrews.
9 Detailed terrain description (Peacetime lifesaving)	Include details of terrain features in and around LZ. If possible, describe relationship of site to prominent terrain feature (lake, tower, mountain, road).	From evaluation of situation	Unit leader	Required to reduce risks on final approach,. especially if hoist will be used.

6-427. The following are keys to successful MEDEVAC or CASEVAC operations.

- Request MEDEVAC thru the controling headquaters.
- Deconflict airspace through the BAE.
- Plan every MEDEVAC mission as a combat operation.
  - Use lethal and non-lethal SEAD.
  - Integrate attack reconnaissance aviation escort and/or PZ overwatch.
  - Ensure PZ security.
- Send MEDEVAC aircraft into secure PZs.

- Select LZ's that are level and clear of debris (wires, engineer tape, loose equipment) within a 50 meter radius
- Ensure terminal guidance into the PZ.

6-428. When task organized to the BCT, MEDEVAC aircraft work for the aviation task force. When an aviation task force is assigned to the BCT, the MEDEVAC aircraft work for the BSB CDR

LANDING ZONE OPERATIONS

6-429. Preferred methods of marking LZs:

- Day = smoke (do not pop until instructed), panel marker
- Night = strobe or chemlight (blue/green not visible under aviation NVGs)

6-430. Keep vehicles and personnel, except signalman, clear of area until instructed otherwise by aircrew. A well marked LZ and inexperienced signalman is better than a poorly marked LZ and experienced signalman.

6-431. Keep all other light sources away from LZ (they will shut down aviators' NVGs) unless instructed otherwise by aircrew.

6-432. Once aircraft is inbound, expect an estimated time of arrival call from the crew. The person on the radio at the site must have visual on the LZ to confirm signal, if required, or to assist crew in positioning.

6-433. Once landed, keep personnel away from the aircraft, the medic will come to the patient. The unit must provide personnel to assist in loading the patient on the aircraft (under direction of the medic).

6-434. Weapons and pyrotechnics will not normally be evacuated (real-world casualties).

MEDICAL EVACUATION PAD

6-435. The BSB medical company commander ensures the MEDEVAC pad is appropriately marked and easily identifiable for pilots conducting day and night MEDEVAC/CASEVAC operations. Once the BSB establishes a dedicated MEDEVAC pad, the location of the pad will be disseminated throughout the BCT and relayed to the UEx Medical Operations Center if applicable. This pad will be within the BSA perimeter, also the forward support medical company commander will have a PZ control node controlling the medical pad and tracking all MEDEVAC/CASEVAC missions of the company headquarters.

FORCE HEALTH PROTECTION REHEARSAL

6-436. Force Health Protection (FHP) requires its own distinct rehearsal to get it right. This is distinct from the CSS rehearsal. When time permits, the BCT or battalion XO should conduct a formal rehearsal. Depending on the mission, BCT participants may include:

- BCT S1 (OIC).
- BCT surgeon.
- BAO.
- BCT FSE representative or FA battalion representative.
- Aviation battalion representative.
- BSB logistics operations officer.
- BSB health services support officer.
- BSB Medical company commander.

- BSB S2.
- BSB ground ambulance platoon leaders.
- Air ambulance forward support medical team (FSMT) leader.
- BCT medical operations center representative.
- Maneuver battalion S1s and S4s.
- Maneuver battalion medical platoon leaders.

6-437. The rehearsal of the FHP plan includes review of the enemy and friendly situation and C2 relationships. It rehearses communications, casualty collection, casualty treatment, evacuation, and the use and manning of MEDEVAC and CASEVAC aircraft for each phase of the operation. Specific points covered include:

- A walk through of casualty collection from point of injury to casualty collection points (CCPs).
- Locations and markings of CCPs.
- Transmission of MEDEVAC request format.
- Tracking of casualties and MEDEVAC/CASEVAC missions from the point of injury to treatment facilities.
- Airspace control, to include PZs, LZs, routes, and SEAD plans.
- Planned location and daytime/nighttime marking of the MEDEVAC pad located near the forward support medical company.
- Communications plan and timings. (When time permits, MEDEVAC/CASEVAC communications should be rehearsed using actual means.)
- Litter exchange.
- Class VIII resupply.

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Chapter 7

Employing Combat Enablers

Combat support is the operational assistance provided to combat elements. These entities are “enablers,” or a resource that contributes to mission success. Through the efficient allocation of enablers, commanders maximize combat potential and facilitate the application of overwhelming combat power.

SECTION I – MILITARY INTELLIGENCE

7-1. Intelligence enables the commander to see the battlefield and directly influence the effectiveness of maneuver, fire support (FS), and force protection. The UEx AVN BDE relies on its higher headquarters for information other than it receives from its own sources.

INTELLIGENCE ENABLERS

7-2. Ground support radar, remote sensors, UAVs, or other MI assets may be placed under OPCON or attached to the brigade to enhance reconnaissance and security capabilities. The S2 incorporates these assets into the ISR plan and recommends employment methods to the commander.

COUNTERINTELLIGENCE

7-3. The essence of counterintelligence (CI) is to support force protection. CI are those actions that counter the hostile intelligence threat; safeguard the command from surprise; deceive enemy commanders; and counter sabotage, subversive, and terrorist activities. FM 34-60 contains more information on CI.

ELECTRONIC WARFARE

7-4. EW employs electromagnetic and directed energy to control the electromagnetic spectrum (EMS) or attack the enemy while retaining its use for friendly forces. The S2 works with his higher headquarters counterpart to accomplish offensive and defensive EW tasks.

7-5. The three sub-divisions of EW are electronic attack, electronic protection (EP), and electronic support (ES).

ELECTRONIC ATTACK

7-6. Electronic attack (formerly electronic countermeasures (ECM)) is to use jamming, electronic deception, or directed energy to degrade, exploit, or destroy the enemy's use of the EMS. Electronic attack can attack the enemy anywhere from their tactical formations to their national infrastructure.

ELECTRONIC PROTECTION

7-7. EP (formerly electronic counter-countermeasures) is protection of the friendly use of the EMS. EP covers the gamut of personnel, equipment, and facilities. For example, self and area-protection systems can interfere with the enemy's target acquisition and engagement systems to prevent destruction of friendly systems and forces.

ELECTRONIC SUPPORT

7-8. ES (formerly electronic support measures) is conflict-related information that involves actions tasked by or under the direct control of an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy to detect immediate threats. ES is the embodiment of combat information and capitalizes on the timelines of sensor-to shooter systems.

SECTION II – FIRE SUPPORT

PLANNING

7-9. Units employ fires to set the conditions for operations. The objective of Joint and organic fires is to apply a desired effect to achieve a specified purpose (shaping, close, counter strike). Fires may be used for many effects, including:

- Suppression, neutralization, or destruction of forces.
- Isolation of forces.
- Slowing, canalizing, or interdicting enemy maneuver.
- Obscuration of the battlefield.
- Reduction of the effects of enemy artillery with counter strike.

7-10. Planning and coordination of lethal, nonlethal, and deception SEAD for operations beyond the close fight is critical for success. In Operation Iraqi Freedom (OIF), ATACMS proved valuable for SEAD beyond the fire support coordination line (FSCL) due to its ability to suppress an entire grid square. For SEAD within the FSCL, howitzer and MLRS munitions are preferred. Aircraft should avoid using onboard munitions for SEAD unless aircrews unexpectedly encounter an AD threat. SEAD is preplanned and executed along a strict timeline matching the ingress/egress plan.

7-11. The brigade has several FS assets at its disposal across the joint spectrum including mortars, howitzers, multiple launch rocket system (MLRS), Army Tactical Missile System (ATACMS), NSFS, and joint air support. Use of these systems provides maximum fires on the enemy and may be used to conserve ammunition.

7-12. Two critical pieces that must be in place to effectively employ FA are the fire plan and a quick-fire net.

PLANNED TARGETS

Planned targets are those targets that are known to exist in an operational area, and against which effects are scheduled in advance or are on-call. Examples range from targets on joint target lists in the applicable campaign plans, to targets detected in sufficient time to list in the air tasking order, mission-type orders, or fire support plans. Planned targets are frequently scheduled in an H-Hour firing sequence.

IMMEDIATE TARGETS

7-13. Immediate targets are targets that have been identified too late, or not selected for action in time to be included in the normal targeting process, and therefore have not been scheduled. Immediate targets may be either unplanned or unanticipated. Unplanned immediate targets are those targets that are known to exist in an operational area but are not detected, located, or selected for action in sufficient time to be included in the normal targeting process. Unanticipated immediate targets are those immediate targets that are unknown or not expected to exist in an operational area. Both planned and immediate targets can be used for unknown situations such as a movement to contact, screen, and zone reconnaissance. The UEx AVN BDE brigade coordinates fires for battalions, and establishes priorities. Usually the fire support officer (FSO) in the battalion tactical CP (or S3 if no FSO is available), conducts calls for fire relayed by scout or attack crews because these helicopters usually operate too low to establish communication directly with the artillery. When direct communication can be attained, scout and attack crews may call directly. Direct contact with the field artillery (FA) must be previously coordinated in the plan or cleared by the battalion tactical CP.

DIGITAL FIRE SUPPORT NET

7-14. Brigades and battalions equipped with the advanced FA tactical data system can establish digital FS nets with digitally equipped aircraft. Aircraft can send digital calls for fire direct to the brigade or battalion FSE over the FM digital FS net.

QUICK-FIRE NETS

7-15. The AVN BDE often does not have artillery in DS. Quick fire nets provide a means to request and receive responsive fires. An artillery unit is assigned the nonstandard mission to answer calls for fires from the participating unit. The FSO establishes communications with the designated FA TOC on the appropriate fire net. The artillery TOC monitors the net to ensure the appropriate FA unit processes requested fire missions or provides additional fires as required.

GROUPS OF TARGETS

7-16. A group of targets is two or more targets on which fire is desired simultaneously. Groups of targets are identified with a group designator consisting of two letters assigned by the maneuver brigade with a number between the letters.

SERIES OF TARGETS

7-17. A series of targets in artillery and naval fire support is a number of targets and/or group(s) of targets planned to support a maneuver phase. A series of targets is indicated by a nickname. [Note: the Army definition also applies to mortar fire.] See FM 6-20-40. (Marine Corps) A number of targets and/or groups of targets fired in a predetermined sequence in support of a scheme of maneuver. An example use of groups and/or series of targets might be SEAD fires supporting aircraft ingress routes, fires in the objective area, and aircraft egress routes

JOINT PRECISION-GUIDED FIRES

7-18. Army forces may laser-designate targets for precision-guided munitions delivered by joint assets; however, there are stringent training requirements that must be accomplished before Army personnel may perform this function. Check current regulations before directing Army personnel to designate for joint assets. See CAS and NSFS paragraphs below.

FIRE SUPPORT COORDINATING MEASURES

7-19. Boundaries and FSCMs are critical control measures for artillery and aviation units. Boundaries are restrictive in that no fires may be delivered across a boundary without coordination with and clearance by the force controlling the far side of the boundary.

7-20. Coordinated fire lines (CFL) permit unrestricted fire beyond the CFL out to the brigade boundary. When forces are moving and converging, headquarters may create a restrictive fire area (RFA), in which specific restrictions may apply. A restrictive fire line (RFL) may also be created between converging units that prohibit fires or their effects from crossing the line without coordination with the affected force. The UEx may create a fire support coordination line (FSCL). Fires up to the FSCL must be coordinated with the maneuver commander or his FSO within the boundary. Fires and attacks beyond the FSCL can occur with less coordination. Nevertheless, coordination with joint air elements helps avoid fratricide from high trajectory artillery or from joint air assets engaging or bombing near Army aircraft.

7-21. FSCMs are used to facilitate the rapid engagement of targets while providing safeguards for friendly forces. As a minimum, measures provide:

- A graphic depiction of the control measure.
- An abbreviated name of the control measure.
- The headquarters that established the control measure.
- An effective date-time group and termination date-time group, if appropriate.

Fire Support Coordination Line

A fire support coordination line (FSCL) is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines (FSCLs) facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. An FSCL does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The FSCL applies to all fires of air, land, and sea-based weapons systems using any type of ammunition. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse attacks on, or to the rear of, the line. Short of an FSCL, the appropriate land or amphibious force commander controls all air-to-ground and surface-to surface attack operations. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resource (JP 1-02). (See Figure 7-1).

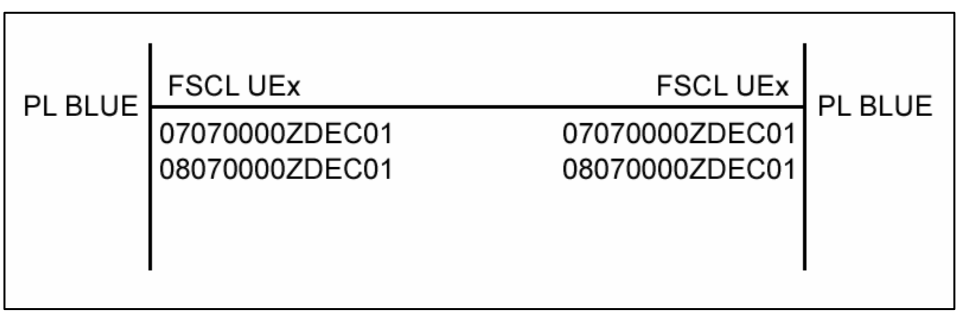


Figure 7-1. Fire Support Coordination Line

Coordinated Fire Line

7-22. The coordinated fire line (CFL) is a line beyond which conventional direct and indirect surface FS means may fire at any time within the boundaries of the establishing headquarters without additional coordination. The purpose of the CFL is to expedite the surface-to-surface attack of targets beyond the CFL without coordination with the ground commander in whose area the targets are located. Air-to-surface fires on either side of the CFL require coordination with the ground commander. It usually is established by a BCT or UEx but may be established by a maneuver battalion (Figure 7-2). See FMs 3-09, 6-series, and 7-90.

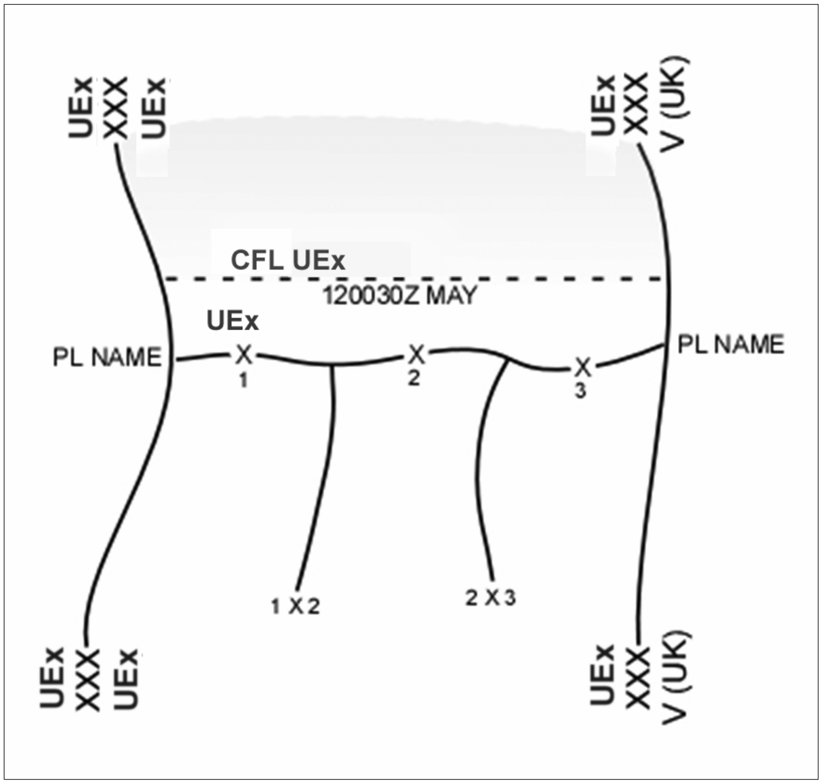


Figure 7-2. Coordinated Fire Line

Free Fire Area

7-23. The free fire area (FFA) is a specific designated area (Figure 7-3) into which any weapon system may fire without additional coordination with the establishing headquarters. Normally, UEx or higher headquarters establishes it on identifiable terrain. See FM 6-20 series.

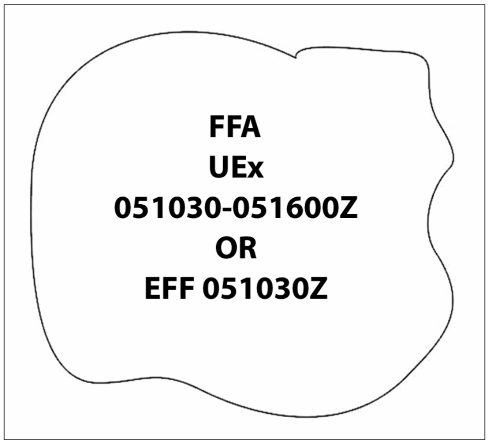


Figure 7-3. Free Fire Area

Restrictive Fire Area

7-24. The restrictive fire area (RFA) is an area (Figure 7-4) in which specific restrictions are imposed. Fires that exceed those restrictions may not be delivered without prior coordination with the establishing headquarters. See FM 6-series.

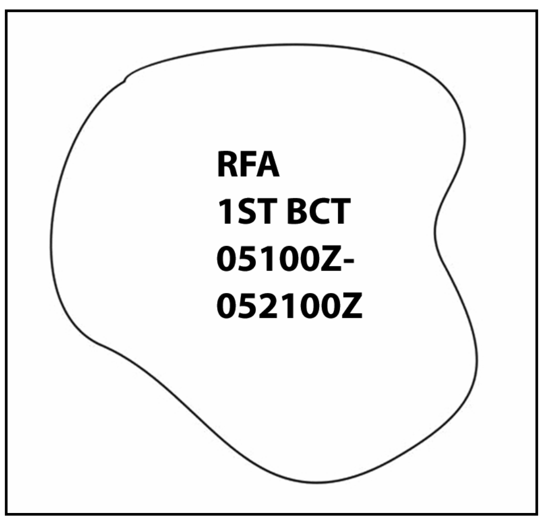


Figure 7-4. Restrictive Fire Area

No-Fire Area

7-25. A no-fire area (NFA) is an area (Figure 7-5) in which no fires or effects of fires are allowed. Two exceptions are when establishing headquarters approves fires temporarily within the NFA on a mission basis, and when the enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force.

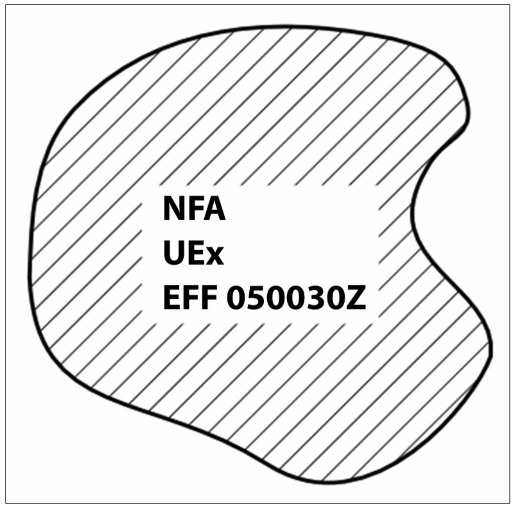


Figure 7-5. No-Fire Area

Airspace Coordination Area

7-26. An airspace coordination area (ACA) is a three-dimensional block of airspace in a target area, established by the appropriate ground commander, in which friendly aircraft are reasonably safe from friendly surface fires. The airspace coordination area may be formal or informal (Figure 7-6). See FM 3-52 (FM 100-103).

ACA
UEx
MIN ALT: 500
MAX ALT: 3000
GRIDS NK2313 TO NK 3013
TO NK2320 TO NK3022
EFF: 281400ZAPR-
281530ZAPR

Figure 7-6. Airspace Coordination Area

NONLETHAL EFFECTS

7-27. Electronic attack (EA) and special information operations (IO) are used to degrade, neutralize, or destroy enemy C2. They include deception and computer network attack.

7-28. PSYOP influence enemy force behavior in support of U.S. national interests and other information-related activities.

7-29. Civil affairs teams are used to influence relations between military forces and civil authorities.

7-30. Public affairs teams provide media support according to the public affairs information strategy and conduct media facilitation, as necessary.

7-31. Lethal attack systems may also be used to achieve nonlethal effects. For example, a demonstration impact of lethal munitions in view of target personnel may cause them to surrender or cease hostile acts. The low overflight of armed aircraft may cause a crowd to disperse.

CLOSE AIR SUPPORT

7-32. CAS missions are air strikes against hostile targets close to friendly forces. These missions require detailed integration with the fire and maneuver of supported forces to increase effectiveness and avoid fratricide. The ALO and TACP integrate CAS and other USAF fires.

PREPLANNED AND IMMEDIATE REQUESTS

7-33. CAS missions are executed based on preplanned or immediate requests.

Preplanned Requests

7-34. Preplanned requests permit detailed planning, integration, and coordination with the ground tactical plan. Munitions can be tailored precisely to the target, and complete mission planning can be accomplished. The AVN BDE S3, FSO, and ALO review unit requests for suitability of the target and potential airspace conflicts. As a minimum, they integrate the request into the FS plan. The S3 may add the missions to other preplanned requests, consolidate it with other requests, or assign it a priority. The consolidated preplanned mission request is then forwarded to the higher headquarters.

Immediate Requests

7-35. Immediate requests fulfill urgent, unforeseen requirements. Details of the mission are generally coordinated while CAS aircraft are held on airstrip alert or are airborne. The AVN BDE S3 and ALO evaluate the request and pass it to higher headquarters.

GROUND AND AIR ALERTS

7-36. The commander may request CAS to be placed on either ground or air alert. Planning for either of these options can improve the responsiveness of CAS. CAS assets on air alert close behind the forward edge of the battle area (FEBA) may be able to respond to a preplanned request within five minutes. Conversely, even in response to an immediate request, diverted aircraft or aircraft on ground alert may require 30 to 60 minutes for launch and transit. The specific tactical situation and type CAS aircraft available dictate the better option.

CLOSE AIR SUPPORT TARGET ACQUISITIONING AND TARGETING

7-37. CAS also can acquire targets. S3 personnel work closely with the ALO to ensure that other means are used to attack acquired targets not suitable for air attack. To be effective, CAS must be employed against targets that present the most immediate threat. Almost any threat encountered inside the FSCL and near the FLOT may be suitable for CAS targeting. Indiscriminate use of CAS may increase aircraft attrition and the chances of fratricide. Mobile massed armor formations present the most immediate threat to friendly ground forces and, thus, are prime candidates for air attack.

CLOSE AIR SUPPORT CAPABILITIES AND LIMITATIONS

7-38. JP 3-09.3 provides key employment guidelines, capabilities, and limitations.

Capabilities

7-39. CAS capabilities include high-speed and long-range support, versatile weapon/ammunition mixes, and accurate delivery. CAS pilots have an excellent air-to-ground communications capability and can strike moving targets. In addition, night CAS is available using AC-130 gunships that can provide accurate support for extended periods.

Limitations

7-40. CAS aircraft are limited by resource scarcity, delivery restrictions caused by limited visibility, adverse weather, or the proximity of friendly forces. CAS flight restrictions caused by enemy ADs may impose delayed response and short loiter times, or may limit reattack capabilities.

CLOSE AIR SUPPORT COORDINATION AND CONTROL

7-41. A TACP advises the ground commander and staff on the integration of CAS with ground operations. The TACP also coordinates and directs close air strikes. A trained and qualified Army person designated by the ground commander may also control an air strike. When this occurs, the ground commander assumes responsibility for the safety of ground units. When ordnance is a factor in the safety of friendly units, the aircraft's axis of attack should be parallel to the friendly forces. The person controlling the air strike locates and describes the target, identifies friendly positions, and relays this information to the pilots. Although most fighter aircraft have FM radio capability, the ground commander may have to relay this information through an Army aircraft that has both FM and UHF capabilities.

NAVAL SURFACE FIRE SUPPORT

7-42. NSFS can provide large volumes of immediate, responsive FS to land combat forces operating near coastal waters. Naval ships may be assigned missions in DS or GS. Ships assigned the mission of DS provide fires for a committed maneuver unit. Ships assigned the mission of GS provide fires for a committed maneuver brigade or larger unit. Naval gunfire liaison sections may be attached to Army and allied headquarters from the maneuver company to UEx level.

SECTION III – AIR DEFENSE

7-43. It is possible that the enemy occasionally will control some of the airspace above the battlefield. Beyond its supporting AD systems, the aviation brigade may have to contribute directly to the AD effort.

PLANNING AND EMPLOYMENT

7-44. The commander analyzes the AO, terrain, numbers and types of enemy aircraft expected, and likely fixed- and rotary-wing air avenues of approach. The commander then balances the threat analysis against the available AD weapons. After the commander establishes priorities, the S3 and AD officer determine the specifics of AD weapons allocation and positions to be occupied. The S3 coordinates and supervises supporting AD activities throughout the operation.

7-45. In digital units, the air and missile defense work station (AMDWS) assists the commander in AD planning and interface.

AIR DEFENSE AIRSPACE FIRE CONTROLCOORDINATING MEASURES

7-46. Units use ACMs to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. JP 3-52 and FM 3-52 (FM 100-103) provide additional information.

7-47. The threat of fratricide from direct and incidental AD protection increases during close or rear operations, or as friendly air superiority decreases. SOP, aircraft markings, identification transmissions, and close coordination with AD units minimize fratricide.

Air Defense Operations Area

7-48. An AD operations area is an area and the airspace above it is an area where procedures are established to minimize mutual interference between AD and other operations. It may include designation of one or more of the following: AD action area, AD identification zone, or firepower umbrella.

Base Defense Zone

7-49. A base defense zone is an air defense zone established around an air base and limited to the engagement envelope of short-range air defense weapon systems defending that base. Base defense zones have specific established entry, exit, and IFF procedures.

Weapons Engagement Zone

7-50. A weapons engagement zone (WEZ) is airspace of defined dimensions where the responsibility for engagement normally rests with a particular weapon system (Figure 7-7). Some examples of WEZs are:

- Missile engagement zone (MEZ).
- Fighter engagement zone (FEZ).
- High altitude missile engagement zone. (HIMEZ).
- Joint engagement zone (JEZ). JEZ is airspace of specific dimensions where friendly surface-to-air missilesSAMs and fighters are simultaneously employed.
- Low altitude missile engagement zone (LOMEZ).
- Short range AD engagement zone (SHORADEZ).

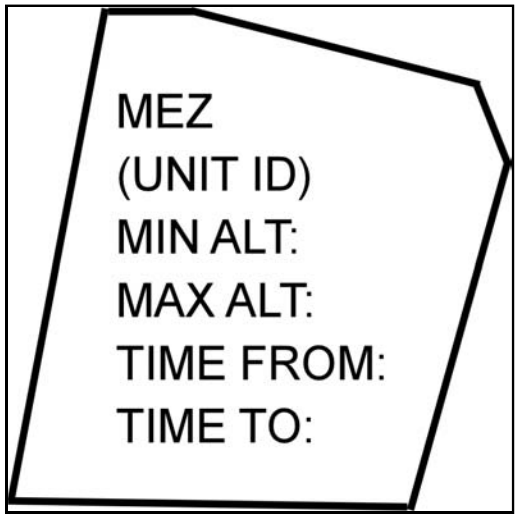


Figure 7-7. Missile engagement zone

High Density Airspace Control Zone

7-51. A high density airspace control zone (HIDACZ) (figure 7-8) is a defined area of airspace in which there is a concentrated employment of weapons and airspace users. The zone has defined dimensions that usually coincide with geographical features or NAVAIDs.

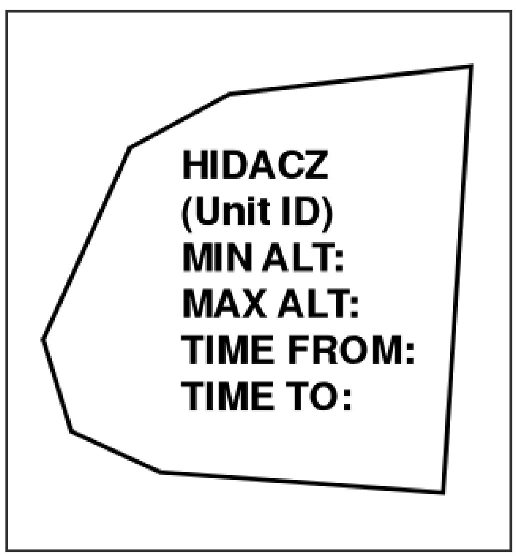


Figure 7-8. High-density airspace control zone

Weapons Free Zone

7-52. A weapons free zone (WFZ) (figure 7-9) is an AD zone established for the protection of key assets. It is a zone where weapons systems may be fired at any target not positively identified as friendly.

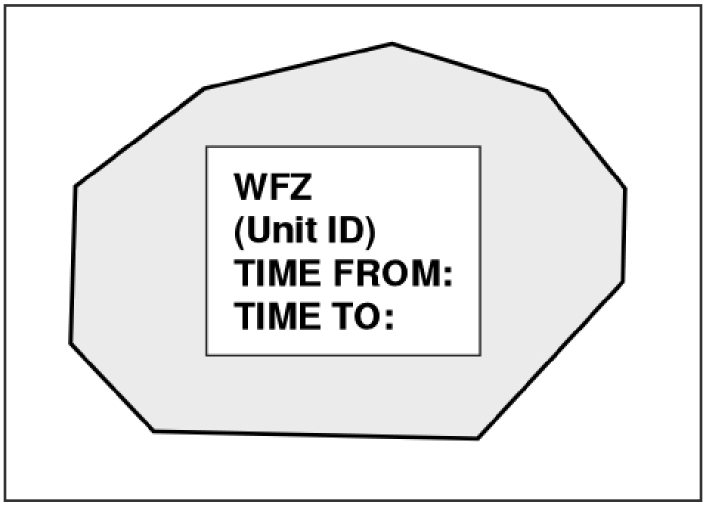


Figure 7-9. Weapons Free Zone

Air Defense Indentifcation Zone

7-53. An air defense identification zone (ADIZ) is airspace of defined dimensions within which the ready identification, location, and control of airborne vehicles are required.

ARMY AIRSPACE COMMAND AND CONTROL MEASURES

7-54. All Army Aviation operations are coordinated through joint airspace control to manage airspace use. Aviators must be familiar with the following procedural control measures utilized for deconfliction. Further information can be found in Appendix F of this manual, FM 3-52, or JP 3-52.

Coordinating Altitude

7-55. Coordinating altitude is a procedural airspace control method used to separate fixed- and rotary-wing aircraft. This method determines an altitude below which FW aircraft will normally not fly and above which rotary wing aircraft normally will not fly. The coordinating altitude is normally specified in the airspace control order and may include a buffer zone for small altitude deviations. It does not prohibit using fixed- or rotary-wing aircraft in airspace above or below the coordinating altitude; however, aircraft that need to cross the coordinating altitude should coordinate with the appropriate controlling agency before they penetrate it. Coordinating altitudes do not apply to ADA or FA fires.

Low Level Transit Route

7-56. A low level transit route (LLTR) (figure 7-10) is a temporary corridor of defined dimensions established in the forward area to minimize the risk to friendly aircraft from friendly air defenses or surface forces. Airspace elements establish LLTRs to avoid:

- Field artillery positions.
- Targets planned for engagement with ground-based systems.
- LZs, PZs, FARPs, landing sites, and airfields.
- Known enemy ADA locations.

- Other planned or active special-use airspace.

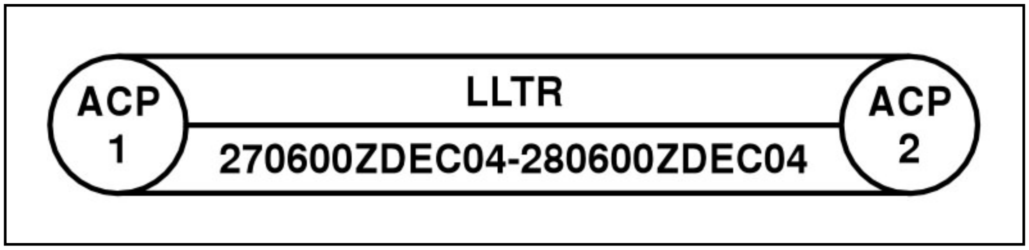


Figure 7-10. Low Level Transit Route

Minimum Risk Route

7-57. Minimum risk routes (MRRs) (figure 7-11) are temporary corridors of defined dimensions recommended for use by high-speed, FW aircraft that presents the minimum known hazards to low- flying aircraft transiting the theater airspace. MRRs normally extend from the UEx rear boundary to the FSCL. Low-level transit routes (LLTR) are employed in a similar fashion in North Atlantic Treaty Organization (NATO).

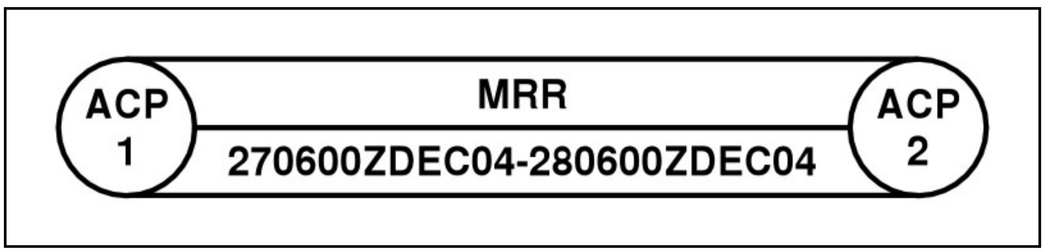


Figure 7-11. Minimum Risk Route

Restricted Operations Area

7-58. Restricted operations areas (ROA) (figure 7-12) are volumes of airspace set aside for a specific operational mission or requirement from which the operation of one or more airspace users is restricted until termination of the mission. ROAs are normally used for drop or LZ activity, ATACMS missile launch and target hazard areas, and search and rescue operations.

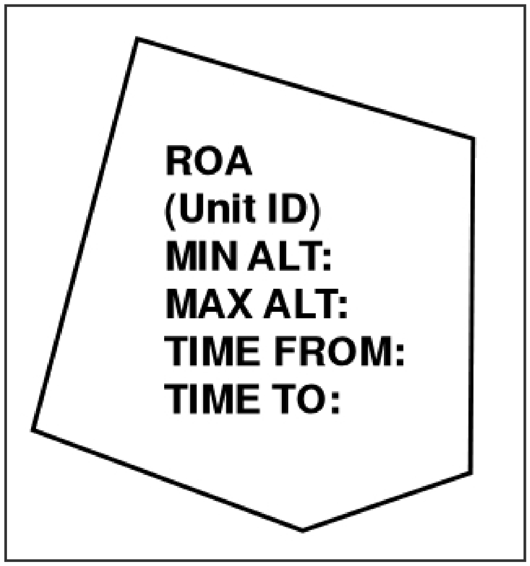


Figure 7-12. Restricted Operations Area

Special-Use Airspace

7-59. Special-use airspace is an area of airspace reserved for a specific purpose and is established by the controlling authority. It may also designate airspace in which no flight activity is authorized. Special-use airspace typically applies to base defense zones, combat air patrol (CAP), and orbit areas.

High Density Airspace Control Zone

7-60. A high density airspace control zone (HIDACZ) (figure 7-13) is a defined area of airspace in which there is a concentrated employment of weapons and airspace users. The zone has defined dimensions that usually coincide with geographical features or NAVAIDs.

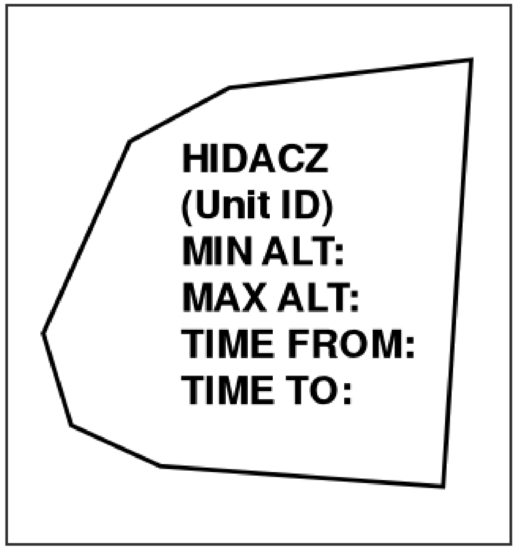


Figure 7-13. High-Density Airspace Control Zone

Standard Use Army Aircraft Flight Route

7-61. Standard-use Army aircraft flight routes (SAAFR) (figure 7-14) are routes established below the coordinating altitude to allow the Army commanders to safely route movement of their aviation assets performing CS and CSS missions. Although jointly recognized, these routes do not need airspace control authority approval. SAAFRs normally are located in the UEx through brigade rear areas but may be extended to support logistics missions.

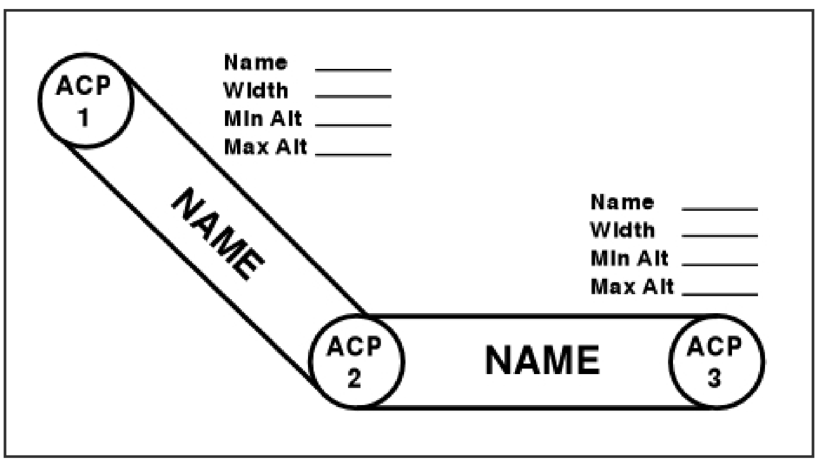


Figure 7-14. Standard Use Army Aircraft Flight Route

SECTION IV – ENGINEER SUPPORT

PLANNING CONSIDERATIONS

7-62. The brigade may receive engineer support for a specified mission or time period. Units can utilize the support to improve terrain and/or structures at unit locations.

7-63. The senior engineer officer advises the commander about using engineers and their equipment. He also advises the commander on environmental issues, coordinates with other staff officers to determine the impact of operations on the environment, and helps the commander integrate environmental considerations into the decision making process. When planning engineer support for tactical operations, the commander should consider that engineers will accompany lead ground elements and be employed as far forward as possible.

7-64. Volcano and family of scatterable mines (FASCAM) minefields are employed to disrupt and stop enemy forces in predetermined engagement areas (EAs). The timely employment of minefields enhances shaping operations and counterattacks.

FUNCTIONS

7-65. Engineer units provide mobility, countermobility, and survivability support. Supported units incorporate engineer support into the defense plan. Engineer units can also perform infantry combat missions, if essential. FM 3-34 (FM 5-100) contains detailed information about engineer combat operations.

7-66. Proper obstacle use confuses the enemy, causes repetitive breaching operations, canalizes enemy approaches into kill zones and fire traps, and slows any advance. The brigade commander ensures that any mine, obstacle, and bridge destruction operations or the obstacle plan, do not hinder the planned maneuver of ground elements.

MOBILITY SUPPORT

7-67. Engineers can build and improve roads, and protect roads from washing out by emplacing culverts and sandbags. They also repair bridges and emplace temporary bridges.

COUNTERMOBILITY SUPPORT

7-68. Part of the countermobility task is to disrupt attackers or turn them into selected areas such as EAs. These operations canalize the enemy, degrade their ground mobility, and increase their time in the killing zone. Countermobility efforts also ensure that maximum combat power is massed on enemy concentrations. The AVN BDE can support these operations through the emplacement of aerial delivered minefields.

SURVIVABILITY SUPPORT

7-69. Engineers focus on survivability when operating with aviation to protect semi-fixed positions from enemy observation and fires. Because aviation units usually locate in large, open areas to accommodate aircraft, there is a large demand for survivability support. Berms to protect CPs, digging in FARP locations to protect vital III/V assets, defensive fighting and survival positions, and defensive perimeter obstacles (countermobility) are all priorities for engineer support. They can also build aircraft revetments and improvements.

INFANTRY COMBAT MISSION

7-70. When engineers perform as infantry, their ability to accomplish specialized engineer missions is significantly degraded. The infantry mission is assigned only when essential. The

AVN BDE must provide its own perimeter defense. Perimeter defense is not an engineer function.

SECTION V – MILITARY POLICE SUPPORT

7-71. The AVN BDE may find itself working with or in support of MPs, particularly in stability operations and support operations. MPs perform missions critical to the success of the tactical commander's intent and concept of operation. They expedite movement of combat resources on main supply routes (MSRs) leading into rear areas, and patrol their AO to protect critical locations and facilities. They evacuate enemy prisoners of war (EPW) from forward areas and conduct law-and-order operations. These services include investigating criminal offenses, performing law enforcement operations, and confining U.S. military prisoners. FM 3-19.10 [FM 19-10] discusses MPs.

BATTLEFIELD MISSIONS

7-72. The specific operations MPs perform at a given time are determined by the tactical commander's needs and the availability of MP resources.

BATTLEFIELD CIRCULATION CONTROL

7-73. Battlefield circulation control (BCC) helps move military traffic along MSRs. MPs reroute traffic to meet changes in tactical situations, enforce MSR regulations, reconnoiter primary and alternate MSRs, and control refugees and stragglers. As MPs perform these functions they collect and report information on friendly and enemy situations. They monitor road and traffic conditions and report the status of key terrain influencing the military road network.

AREA SECURITY

7-74. MPs protect designated facilities, units, convoys, MSR critical points, and people from enemy activity in the rear area. They also conduct area reconnaissance to gather and document information about enemy activity.

REAR AREA OPERATIONS

7-75. MPs conduct rear area operations to identify, intercept, and destroy small enemy forces before they can close on their objective. They normally are designated as a response against Level II threat attacks on bases and units that cannot defeat the enemy without assistance. MPs determine the size and intent of Level III threat forces, delay and disrupt their progress, and hand over the battle to regular combat forces.

AREA DAMAGE CONTROL OPERATIONS

7-76. MPs perform these operations to reduce the damage caused by hostile actions, natural disasters, and man-made disasters. They provide support including BCC and limited local physical security when required.

ENEMY PRISONER OF WAR CONTROL

7-77. MPs control the flow of EPWs from capture to internment. They operate a forward EPW collecting point at the brigade and central collecting points at UEx and UEy.

LAW AND ORDER

7-78. If needed, MPs provide police services on the battlefield. These services include investigating criminal offenses, performing law enforcement operations, and confining U.S. military prisoners.

SECTION VI – AEROMEDICAL EVACUATION

7-79. Medical evacuation applies to both air and ground evacuation. All aeromedical evacuation capability is housed in the AVN BDE and provides support to all theater, corps, and UEx subordinate units. It is important to note that air ambulance assets are responsible for a multitude of implied tasks relative to the continuum of health care with Title 10 of U.S. Code. These implied tasks include, but are not limited to evacuation support to joint, interagency and multinational (JIM) operations, transportation of blood and biologicals, movement of key and essential medical personnel, equipment, supplies, and support to civilian population when necessary.

7-80. The speed, range, flexibility, and versatility of aeromedical evacuation permits patients to be moved directly to a treatment facility best equipped to deal with their condition. The HH-60 is used as the primary dedicated air ambulance.

7-81. The primary mission of the air ambulance company is patient evacuation; however, the air ambulance company also provides the following:

- Movement of medical personnel and equipment.
- Emergency movement of Class VIII to include blood products and biologicals.
- PR support.
- Flight medical aidmen for in-flight medical treatment and surveillance for patients.
- Aerial noncombatant evacuation (NEO) when directed by applicable commander/authority.
- MEDEVAC support both within the UEx and external to the UEx AOR in support of U.S. Code Title 10 taskings.
- MEDEVAC is a combat multiplier. An efficient medical evacuation system offers the following:
- Minimizes mortality by rapidly and efficiently moving the sick, injured, and wounded to a medical treatment facility (MTF).
- Clears the battlefield enabling the tactical commander to continue his mission.
- Builds the morale of the soldiers by demonstrating that care is quickly available if they are wounded.
- Provides enroute medical care that is essential for improving the prognosis and reducing disability of wounded, injured, or ill soldiers.

7-82. All MEDEVAC asset use will be directed through the AVN BDE, GSAB, or TF TOC as appropriate. Mission coordination between the theater medical command structure and the AVN BDE, GSAB, or aviation TF structure will be required for execution of MEDEVAC missions as it relates to the entire HSS spectrum.

7-83. MEDEVAC missions require two approval authorities:

- Mission authority: The validation of a medical requirement (casualty, blood/biologicals, emergency medical re-supply), establishment of medical priorities (urgent, urgent-surgery, priority, and routine), and recommendation of mission platform (ground or air, if air then either air ambulance or opportunity aircraft) in the form of a 9-line MEDEVAC request. A medical officer determines mission authority, and approves the utilization of MEDEVAC aircraft for the mission based on medical necessity and asset availability.

- Launch authority: The aviation commander considers the collective risk assessment of the mission and determines final mission execution authority or launch authority. The operational aspects related to the collective risk assessment include but are not limited to the following:
  - Threat.
  - ROE.
  - Weather.
  - Fighter management.
  - Escort requirements.
  - Overall tactical situation.

7-84. Aeromedical evacuation is a critical capability used across the breadth and depth of the battlefield. Both mission approval authority and aircraft launch authority must be specified by the senior commander, with request procedures clearly understood by all subordinate units.

7-85. Recent conflicts indicate that extended distances from point of injury to treatment facilities make enroute patient care more important than ever. Effectively trained and competent flight medics are essential for patient stabilization/sustainment over extended distances. Recent conflicts have also indicated the need for armed aerial escort and often a trail aircraft during MEDEVAC mission execution.

SECTION VII – PSYCHOLOGICAL OPERATIONS

7-86. PSYOP teams use persuasion to influence perceptions and encourage desired behavior. The cornerstone of PSYOP is truth, credibly presented to convince a given audience to cease resistance or take actions favorable to friendly forces.

GENERAL

7-87. PSYOP teams enable commanders to communicate information to large audiences via radio, television, leaflets, loudspeakers, and internet-based distribution (particularly in a stability operations and support operations environment). They seek to demoralize the enemy by causing dissention and unrest in their ranks, while at the same time persuading the local population to support U.S. troops. PSYOP teams are also provided with continuous analysis of the attitudes and behavior of enemy forces so they can develop, produce, and employ information communication successfully.

AVIATION IN PSYCHOLOGICAL OPERATIONS

7-88. The AVN BDE may be called upon to enhance C2 or fly missions whose intent is purely psychological (such as dropping leaflets, show of force, and loud speaker platform). Other missions whose intent is purely tactical can produce residual psychological effects. An example is an attack company raid that destroys a logistics site 100 km behind the FLOT. The psychological effect on the enemy force in contact could be as demoralizing as a direct fire engagement.

SECTION VIII – CIVIL AFFAIRS SUPPORT

7-89. Civil affairs teams are the commander's link to the civil authorities in the AO. They assist a host government in meeting its peoples' needs and in maintaining a stable and viable civil administration.

GENERAL

7-90. Civil affairs specialists identify critical requirements of civilians in war or disaster situations. They also can:

- Locate civil resources to support military operations.
- Help minimize civilian interference with operations.
- Support national assistance activities.
- Plan and execute noncombatant evacuation.
- Support counter-drug operations.
- Establish and maintain liaison or dialogue with civilian personnel agencies, commercial organizations, and private organizations.

AVIATION IN CIVIL AFFAIRS OPERATIONS

7-91. The AVN BDE may airlift supplies and equipment, assist in evacuation of noncombatants, conduct reconnaissance (locate noncombatants, suspected drug facilities), and provide security for all stages of these missions. During counter-drug operations, armed aircraft could be called on to attack and destroy drug-making or storage facilities.

SECTION IX – AIR FORCE WEATHER TEAM SUPPORT

7-92. Weather teams provide information essential to the commander's tactical decision making and aircrews' flight planning. This support is required on a continuous basis.

WEATHER TEAMS

7-93. Weather teams exist at brigade and higher echelons. Depending on the echelon, teams consist of a staff officer with forecasters and observers. In those instances where aviation elements are operating independent of the AVN BDE, necessary coordination must be made to insure availability of weather support for aviation operations.

Chapter 8

UEx Aviation Brigade Logistics

As the Army continues to transform, there is an increased need for realignment and reshaping of the current force for rapid deployment, increased lethality and modular employment to meet the challenges of full spectrum operations. The Army has deployed repeatedly for the past several years to conduct both conventional and unconventional warfare. Wartime missions and exigencies have forced the Army to rapidly shift from a force based on Cold War doctrine and threat, to one capable of modular employment and sustainment against an agile and adaptive enemy. This transformation requires changes in the design capability of aviation logistics units and mandates changes in the logistics distribution system to support the Warfighter structure.

This chapter describes emerging logistics doctrine with a focus on the Aviation Support Battalion (ASB), and how this battalion optimizes organizational effectiveness while balancing sustainability, mobility, and survivability against requirements for rapid strategic deployability. This chapter also provides a general explanation of tactics and techniques, which can be employed to exploit the ASB's range of logistics capabilities, and to ensure versatility across the full range of potential requirements.

SECTION I –OVERVIEW OF LOGISTICS TRANSFORMATION

GENERAL

8-1. Logistics transformation provides a more streamlined logistics command and control (C2) structure, and tailored “modules” that may be shaped to meet the regional combatant commander’s (RCC) requirements, which include increased flexibility and reduced vulnerability to enemy attack. In the near term, the distribution-based system continues to eliminate reliance on large stockpiles; substituting speed and efficiency for mass. See Figure 8-1 for highlights of what needs to change in the logistics concept for the modular Army.

What Needs to Change

	Today	Modularity
Operations	• Phased Campaigns • Component Focused Planning • Task Organized Forces • Joint Effects • Echeloned Service C^2	• Simultaneous Full Spectrum Operations within a JOA • Joint Fight at Tactical Level • Expeditionary and Modular • Joint Interdependent • Joint C^2 Network
Logistics	• Delinked Functional C^2 • Supply Based • Layered and Redundant • Echeloned Support • Segmented RSO • Multiple Unit Designs • Ad Hoc Life Support • Stove Piped Joint Logistics • Limited FP and Security	★ Single Log C^2 ★ Single Distribution Manager • Flatter • Expeditionary • New METL • Modular • Integrated Life Support • Leverage **Joint** Capabilities • Includes Support to SOF • Defeats Level 1; Defends Level 2

Figure 8-1. What Needs to Change

8-2. Figure 8-1 illustrates how the Army is organized versus where the Army is heading. In general, the effect of modularity on logistics can be characterized by more modular and capable organizations, reduced C2 echelons that allow for streamlined management, and increased throughput directly to forward locations, with increased capability and mobility forward. At the core of this shift is a new organization, which provides for single logistics command and control that can operate in multiple JOA or AOR while remaining linked to the strategic base. The logistics concept for the modular army is predicated on a combat force with increased logistics capabilities, with each brigade combat team (BCT) prepared to conduct tactical support operations internally, while relying on the theater support command (TSC) distribution system to provide the replenishment necessary to maintain continuous operations.

8-3. The following paragraphs provide an overview of the operational environment (OE) and emerging logistics doctrine that impacts upon the aviation logistics units being developed to support the modular force. The new units include the Sustainment Brigade, the UEx aviation brigade, the aviation brigade's Aviation Support Battalion (ASB), the Aviation Battalion Forward Fupport Company (FSC) and the Aviation Maintenance Company/Troop (AMC/T). This overview discusses the following items:

- The changing operational environment for logistics.
- Emerging logistics doctrine that impacts upon the aviation brigade.
- The organizational structure of the UEx Sustainment Brigade.

- Aviation Brigade Logistics design changes.

THE CHANGING OPERATIONAL ENVIRONMENT (OE) FOR LOGISTICS

8-4. Logistics units are the essential providers for sustainment operations for the Army and joint forces at the tactical and operational level for at least the rest of this decade. Figure 8-2 provides the changing operational environment (OE) for logistics, which contributed to the aviation brigade's redesigned logistics systems.

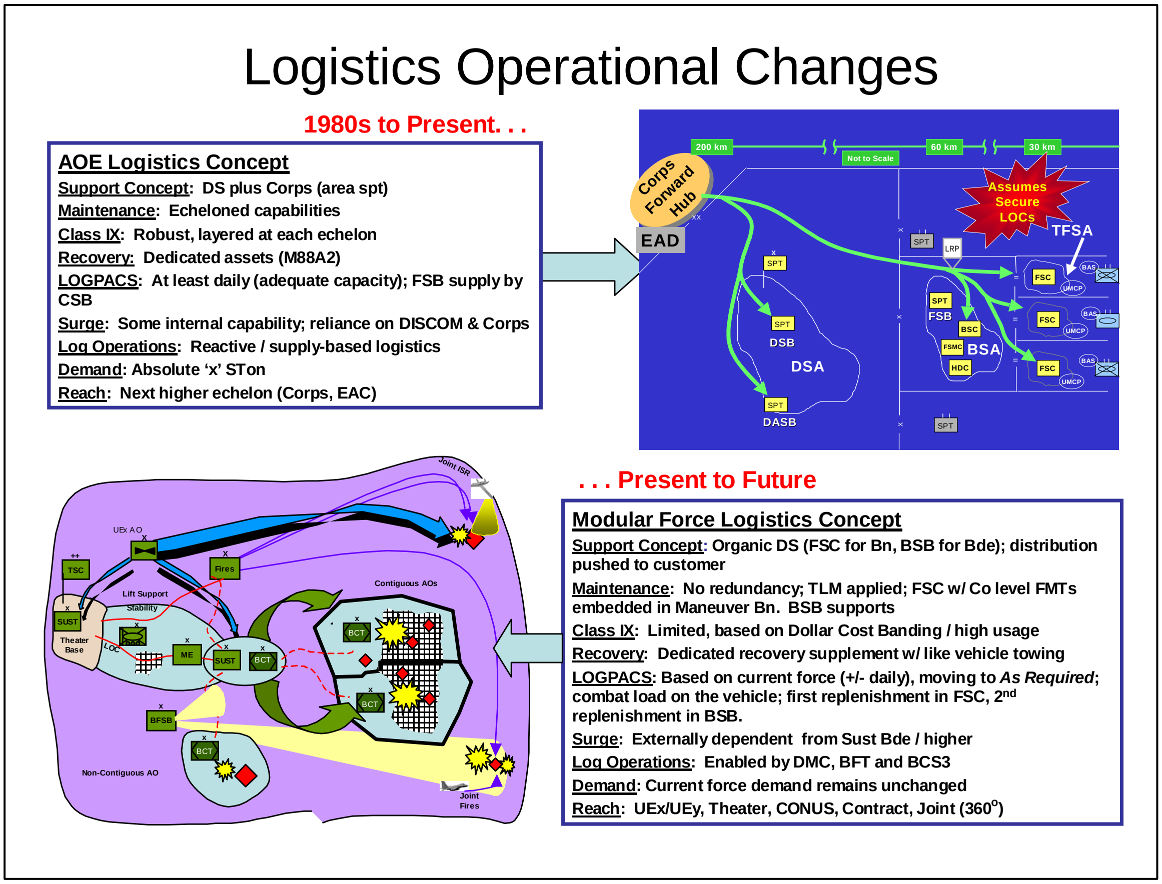


Figure 8-2. The Changing Operational Environment for Logistics

8-5. Today's OE has a significant impact on Army support concepts and logisticians must adapt to these conditions. In a theater of operations, with combat forces widely distributed and operating in often non-contiguous areas, support must be provided in innovative ways, leveraging new technologies and new ideas. Support that does not come in a continuous stream across the communications zone, but, instead, in distinct packages is *pulsed logistics*. This is a new method for the commander who can take advantage of pulsed logistics with this redesign as the most commonly expected method of sustainment operations. These packages include the support units, as well as engineers, air and missile defense, and combat units for security—a combined arms approach for logistics support. Pulsed logistics assists combat commanders in maintaining a high degree of combat power, while, at the same time reducing the requirement on logistics units or their supported units to secure lines of communication (LOC) at all times and in all places within the battlespace.

8-6. Pulse operations will be used where the UEx designs operations to allow for cycling of the maneuver brigade combat teams to temporary bases where the brigade rests, refits, and receives large quantities of supplies. Hence, pulse operations are used so that maneuver units pulse in and out of contact to be replenished and returned to the fight, or readied for another mission. Pulsed logistics is especially important when sustaining combat units widely distributed over a non-contiguous battlefield or a battlefield with LOC that can only be secured temporarily.

8-7. In the contemporary operational environment (COE), support can no longer be viewed as a continuous and secure function. In many types of operations, support is at risk as much as maneuver, with maneuver units having an effective logistics duration that will expire if support is not reestablished when cut off, or if the maneuver units are not directed to another source of support.

8-8. Whereas Soldiers and leaders must be proficient in their technical and warrior skills, technology only allows Soldiers and leaders to do both of these Soldier requirements better. Soldiers and leaders must first master technical and warfighter skills and field craft before they can become digital experts.

8-9. Logistics units in support of the aviation brigade conduct operations in an OE consisting of six dimensions: threat, political, unified action, land combat, information and technological. Each affects how the unit combines, sequences, and conducts military sustainment operations. Commanders tailor forces, employ diverse capabilities, and support different missions to succeed in this environment. The following paragraphs discuss the technological dimension and the threat dimension with its implications for AVN BDE logistics units and sustainment during combat operations. Whereas the other dimensions are important, they do not have such a significant change upon transformed aviation logistics units that they bear discussing in this chapter.

TECHNOLOGICAL DIMENSION

8-10. Technology enhances leader, unit, and Soldier performance and impacts how Army forces plan, prepare, and execute full-spectrum operations in peace, conflict, and war. Technology has significantly increased our ability to conduct ISR operations and the ability to generate a logistical common operating picture (LCOP). Use of Battle Command Sustainment Support System (BCS3) assists with generating the LCOP. Technology greatly enhances the ability to conduct battle command through modern telecommunications and micro processing. The proliferation of advanced technology systems requires the commander to integrate the capabilities of highly modernized organizations and less-modernized and multinational units. Additionally, logistics commanders must also realize that they do not have a monopoly on advanced technology for war fighting. Even adversaries lacking a research and development program can purchase sophisticated systems in the global marketplace and gain selected parity or superiority to US systems.

THREAT DIMENSION

8-11. Multiple threats to US national interests exist. Some threats are direct, such as a cross border attack; others are indirect, such as coercion. Some regional powers aspire to dominate their neighbors and have the required conventional force capabilities. Such situations may threaten US vital interests, US allies, or regional stability. Transnational groups conduct a range of activities that threaten US interests and citizens at home and abroad. Extremism, ethnic disputes, religious rivalries, and human disasters contribute to destabilizing governments and regions through extensive refugee migrations. Collectively, these transnational threats may adversely affect US interests and may result in military involvement (as further described in FM 3-0).

THREAT IMPLICATIONS TO THE AVIATION BRIGADE'S LOGISTICS UNITS

8-12. Weather and terrain will be extreme, and vary widely in character. The spread of urban environments and mix of civilians, paramilitaries, insurgents, and others in close physical proximity and often in cooperation with formed military forces will challenge all aspects of sustainment operations at the brigade level. Opposition will be dispersed, camouflaged, and difficult to locate. Aviation logistics units must also be able to discriminate and see through deception.

8-13. To defeat these adaptive adversaries operating with unparalleled lethality and mobility in close terrain, aviation brigade sensor-shooter links must be informed and near instantaneous. The aviation brigade will employ a construct of focused intelligence preparation of the battlefield (IPB), indications and warnings, targeting, battle damage assessment (BDA), situational development (SD), and force protection (FP) actuated by intelligence, surveillance and reconnaissance (ISR) integration to develop and maintain situational understanding (SU) and cut through battlefield clutter. Aviation logistics units must be postured to take advantage of the aviation brigade's combat power focused on defeating the enemy and provide their own Level 1 and II defense.

8-14. Different characteristics that the threat may pose are:

- Adaptive adversaries will seek to modify their operations to create false battlefield presentations, reduce signatures through deliberate and expedient means to frustrate intelligence preparation of the battlefield (IPB), and lastly deceive and show the brigade exactly what it expects to see.
- Threat will intentionally complicate indications and warnings—the process of detecting and assessing threats that fundamentally alter the commander's selected course of action (COA). Adversaries will position decoys and deception minefields in locations where the brigade expects to see them, while emplacing real ones where they are not anticipated, making indications and warnings— complicated and difficult.
- Security operations at the aviation brigade level will be made difficult by complex terrain. This, combined with a myriad of commercially available deception measures, deliberately raises the level of ambiguity with the goal of slowing the pace of brigade maneuver, thereby making it still more vulnerable. This is especially important to logisticians as security requirements are heightened in this OE.
- Enemies will seek to complicate brigade targeting by shielding of forces in cities, among civilian populations, or within landmarks and social or religious structures.
- Presence of niche high-technology systems in enemy hands will also make discerning signatures of high payoff systems more difficult, further confounding the brigade's targeting efforts. Differentiating valid and invalid targets will consume time, impact intelligence, surveillance, and reconnaissance (ISR) capabilities through deception and, dispersion.
- Battle effects will be difficult to determine due not only to dispersion and signature reduction efforts, but there will be compounded masking of the true effects of strikes through the same deception and denial techniques employed against targeting. Brigades will routinely operate across a dispersed variable highly lethal environment; to survive and win, They must therefore see first; enabled by organic/embedded UEx, joint, and national intelligence, surveillance, and reconnaissance capabilities (ISR) before and during entry and decisive operations.
- The brigade, augmented by UEx and UEy air and missile defense operations (AMDO) must ensure the enemy sees last by destroying enemy unmanned aerial

vehicles beyond standoff and conducting an aggressive counter-reconnaissance, surveillance, target acquisition (RSTA) effort.

- Logistics forces also operate in areas where the people are desperately poor and may steal anything of value to sell or trade for food and other essentials. Some cultures consider that unguarded items are not needed by the owner and, therefore, acceptable to pilfer. These events are not necessarily acts of warfare, but must be in the ROE.

8-15. The sum of our current and future adversaries' efforts will be to seek defeat of the aviation brigade by confounding its ability to achieve and maintain unparalleled situation development—superior knowledge of the enemy in relation to friendly forces and intentions, and through it, dominant situational awareness. The net effect will be to drive the increased speed and unparalleled decisiveness the aviation brigade commander must possess to act within his opponent's decision cycle and win.

8-16. Future operational environments will place mid-grade and junior leaders in complex situations with international, informational and political importance, where their tactical actions have operational and strategic impact. These leaders must effectively recognize and solve challenging problems in these difficult circumstances. The unparalleled visibility and reach provided by both sensors and shooters available on the worldwide arms markets means that brigade's logistics units must be capable of conducting security operations of its moving formations, and performing immediate action at ranges beyond line of sight (BLOS). An example is a convoy operation when engaged by mortars and the use of counter-fires or UAVs to determine the enemy location(s) and allocate appropriate forces for their destruction.

8-17. The variety of difficult terrain sets in the future OE, which includes adverse weather and the lethal nature of adaptive learning opponents, that are often equipped with state of the art equipment, operating with home ground advantage, means that the aviation brigade must seek lethality, survivability and information overmatch. The brigade's logistics units must take advantage of the brigade strengths and focus on their own survivability requirements.

SUSTAINMENT DURING COMBAT OPERATIONS

8-18. The purpose of sustaining operations is the generation and maintenance of the brigade's combat power. Sustaining operations are operations at any echelon that enable shaping and decisive operations by providing logistics, rear area/unassigned area security, movement control, and terrain management. Sustaining operations include the following elements:

- Logistics sustains combat power by providing essential capabilities, functions, activities, and tasks necessary to sustain all elements of the operating forces. Sustainment operations encompass those activities at all levels of war that generate and maintain forces on the battlefield.
- Rear area security in contiguous operations and unassigned areas security during noncontiguous operations includes measures taken by a military unit, an activity, or an installation to defend and protect itself against all acts that may impair its effectiveness.
- Movement control includes the planning, routing, scheduling, controlling, and security of personnel and materiel moving into, within, and out of the AO. Maintaining movement control and keeping lines of communication (LOC) open when necessary are critical requirements with ensuring requisite movement throughout the AO.
- Terrain management includes the process of allocating terrain, designating assembly areas, and specifying locations for units and activities.

8-19. Sustaining operations are inseparable from decisive and shaping operations, although they are not by themselves decisive or shaping. Failure to sustain normally results in mission failure. Sustaining operations occur throughout the AO, not just within the rear area or non-contiguous support areas. Sustaining operations determine how fast forces reconstitute and how far forces can exploit success. At the tactical level, sustaining operations underwrite the tempo of the overall operation; they assure the ability of the brigade to take immediate advantage of any opportunity.

8-20. In order to support sustaining operations, the logistics units must be able to conduct combat operations themselves. The enemy will use many different tactics to degrade the logistics infrastructure that is critical to support military operations. Unfortunately, the Army does not know which tactics will be chosen by the enemy, so the aviation brigade's logistics assets must be prepared to defeat or destroy the enemy in order to, at a minimum, mitigate their desired effects i.e. defeat level I and defend against level II threats.

8-21. Aviation logistics units, their Soldiers and leaders, must be trained, equipped and manned to operate in a potentially hostile environment while accomplishing their mission(s). Hence, the preceding discussion on Threat implications, the contemporary operational environment (COE) and the following implications to logistics units need to be considered in development of a unit METL.

8-22. The aviation logistics command team then executes the training program that supports the attainment of a trained unit ready to execute its assigned mission. The following paragraphs discuss implications for aviation logistics units conducting sustaining operations current OE.

8-23. Due to the potentially lethal environment, the logistics organizational structure and equipment must be resourced to support combat operations. Examples are up-armored vehicles, night observation devices (NODs), radios for each vehicle with the ability to dismount and still be able to communicate, machineguns with gun mounts for transportation vehicles and their escort vehicles and protective vests for each Soldier.

8-24. The S2/3 section must have the ability to conduct intelligence, surveillance, and reconnaissance (ISR) with the unit's assets and conduct pre-briefs and debriefings of all convoy operation's leaders or Soldiers as necessary. The S2/3 controls all movement operations into and out of the support area.

8-25. All commanders must acknowledge the basic concept that as security requirements go up, the ability to conduct sustainment operations go down. Figure 8-3 displays this very simply. Generally accepting risk in the rear in contiguous spaces, or unassigned areas in noncontiguous spaces is no longer a valid concept for any operations. The aviation logistics commander must consider what level of force protection his unit can accomplish while still performing sustainment and support operations; i.e. defeat Level 1 threat, defend against Level 2 threat with a response force and defeat with assistance, and employment of a tactical combat force (TCF) for defeating a Level 3 threat. But, this does not presume that a 100% level of sustainment operations can occur 100% of the time. Sustainment ability may fluctuate depending upon the threat level and enemy operations and the requirement to employ logistics forces to defeat the threat. If the enemy threat is stronger than the ability of the aviation logistics unit to destroy or defeat, then the prudent commander knows that other forces are required to sustain logistics operations at the level desired or risk their destruction. In addition, the ability to provide an obviously well-trained and equipped force, which is enabled to take the fight to the enemy, is in itself a force protection measure of deterrence.

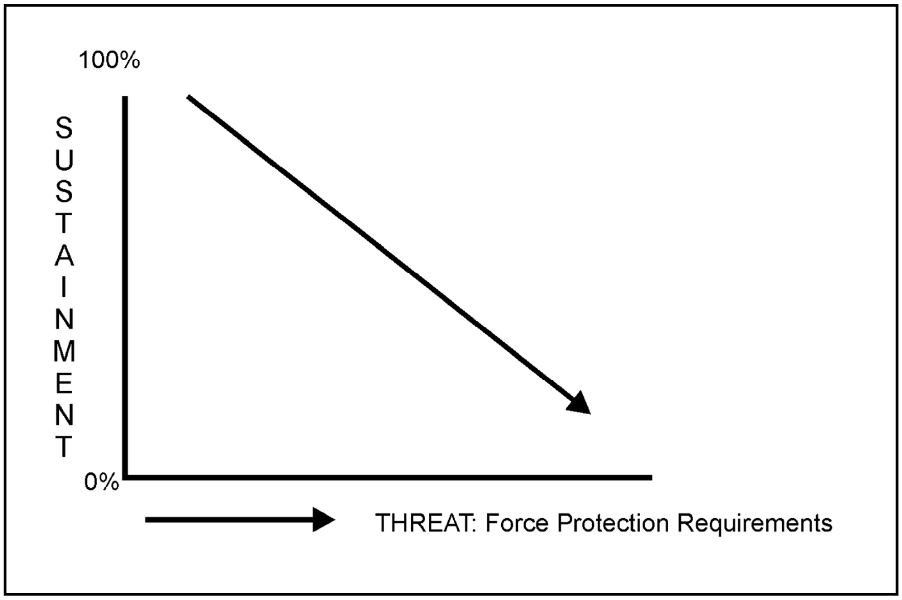


Figure 8-3. As Threat Increases, Sustainment Operational Capability Decreases

8-26. Aviation logistics leaders must be imbued with the concepts of battle command as discussed in Chapter 4. Simply acknowledging their premises is no longer valid. Every leader must be imbued with the doctrine of FM 6-0 and become a consummate practitioner. Logistics Soldiers, leaders and their units must be trained and as previously mentioned equipped to defeat at least a Level I threat and defend with a response force against a Level II threat. They are not Infantry Soldiers, but logistics Soldiers must inculcate the Chief of Staff's Warrior Ethos intent. This requires that logistics Soldiers are competent in executing individual and collective level combat tasks required for their unit and battlespace in a potentially lethal environment.

8-27. Maneuver commanders must be willing to allocate combat power as an essential part of the mission to defend high risk aviation logistics units and open and maintain as necessary ground and aerial lines of communication. This may take the form of combat unit(s) escorting combat logistics patrols, attaching a combat unit to reinforce the perimeter defense or occupying an area with sufficient force for a stated period of time to eliminate an air or ground threat.

8-28. The implied task for the aviation logistics commander is to have the requisite skills to integrate the maneuver commander's forces into his security plan. All logistics leaders must also be capable of defending an assigned AO by employing organic assets. As appropriate, the aviation logistics commander should coordinate with the Aviation Brigade or Battalion S3 for assistance in development of the rear area defense plan in a linear battlefield or the unassigned area defense plan in a non-contiguous battlespace.

8-29. Aviation logistics leaders and their Soldiers must know how to execute the tactical enabling operations of road marches and combat logistics patrols (tactical resupply convoy or LOGPACs).

EMERGING LOGISTICS DOCTRINE FOR THE AVIATION BRIGADE

8-30. One goal of a transformed logistics system is to reduce reliance on stockpiles and static inventories located at each echelon; a characteristic of the old Army of Excellence (AOE) supply-based system. In addition, the reduction of large stockpiles is assisted by the accuracy of reporting of requirements by the user and the logistician ensuring mission success with the units they support.

8-31. This does not mean there will be no on-hand supplies within the aviation brigade. For example, the unit will have limited combat spares (limited PLL, shop and bench stock). Hence, once the request is submitted it is expected that it will be satisfied in a timely manner i.e. no need for the prescribed load list (PLL) clerk or supply sergeant to reorder multiple times to ensure success. Use of Battle Command Sustainment Support System (BCS3) is designed to assist with developing the needed trust by painting a logistical common operating picture (LCOP) that is accurate and timely. Therefore, distribution in the new logistics system substitutes reduced “order to receipt” time for large amounts of mass.

8-32. This type of logistics system combines a logistics common operating picture and capabilities with efficient, yet effective delivery systems to form a seamless distribution pipeline. In essence, the supply pipeline becomes part of the warehouse, representing inventory in motion, thereby reducing but not eliminating both organizational and material layering in forward areas.

8-33. Logisticians control the destination, speed, and volume of the distribution system. With in-transit visibility (ITV), total asset visibility (TAV), improved materiel management, and improved decision support system technology, logisticians have access and visibility over all items within the distribution pipeline. This visibility allows logisticians to redirect, cross-level, and mass logistics assets more effectively in support of the maneuver commander's intent. Logisticians also maintain situational understanding of the battle-space via the LCOP, which greatly facilitates planning and execution. The current BCS3 has greatly enhanced the original LCOP logisticians had available to them.

8-34. The logistics system relies on reduced *order to receipt* time to produce efficiency, but is designed with an overall intent to be effective in a combat environment. Direct throughput from the theater’s UEy sustainment brigade to the aviation brigade’s ASB or as needed to the FSC or AMC/T in the aviation battalion is a goal of distribution-based logistics. Throughput distribution bypasses one or more echelons in the supply system to minimize handling and to speed delivery to forward units. Improved materiel management systems allows supplies to be tailored, packaged and placed into configured loads (CL) for specific supported units based on a specific time and location point of need, synchronized through distribution management channels based on the combat commander's mission and operational tempo (OPTEMPO).

8-35. Improved delivery platforms, such as the palletized load system (PLS) and the container roll in/roll out platform (CROP) will be used to deliver materiel to support units. Using ITV/TAV, delivery will be tracked and managed from higher echelons to points as far forward as possible. Additional enablers will include advanced satellite based tracking systems, movement tracking system (MTS) and radio frequency identification (RFID). Radar tracking station (RTS) tags, which provide detailed distribution platform interrogation of items/materiel/stocks that, in turn, provide detailed asset visibility to the distribution system managers and forward units; a much improved materiel management system. BCS3 greatly assists this process.

8-36. Lastly, a secure intermediate staging base (ISB) located in close proximity to the area of responsibility (AOR) may be required to conduct rapid resupply when needed. All these aforementioned methodologies allow modular logistics units to focus on their supported units while conducting security operations.

ORGANIZATIONAL DESIGN OF THE SUSTAINMENT BRIGADE

8-37. A sustainment organization above brigade level at the UEx is required to conduct echelons above brigade (EAB) replenishment operations for the aviation brigade and provide modular maneuver units with the ability to extend their operational reach. That is a function of the sustainment brigade, which has assumed many of the missions of the Army of Excellence's (AOE) division's main support battalion (MSB) and the AOE's corps support command (COSCOM).

8-38. The sustainment brigade is a scalable, tailorable, networked logistics brigade providing full spectrum logistics support. It is a modular organization comprised of a headquarters and both functional and multifunctional subordinate logistics units. The sustainment brigade is an operational command with multifunctional support units and a staff that support multifunctional operations. The senior logistics commander would be the senior logistics advisor to the UEx commander, when in support of a UEx. It has a command and staff structure capable of providing logistics management at the tactical level and at the operational level, from providing an aviation brigade with external support to area support in rear areas or the unassigned areas in a noncontiguous battlefield. In support of a UEx aviation brigade, the sustainment brigade staff coordinates with the UEx G4 to plan and direct sustainment operations. Figure 8-4 illustrates the general structure of a multifunctional sustainment brigade.

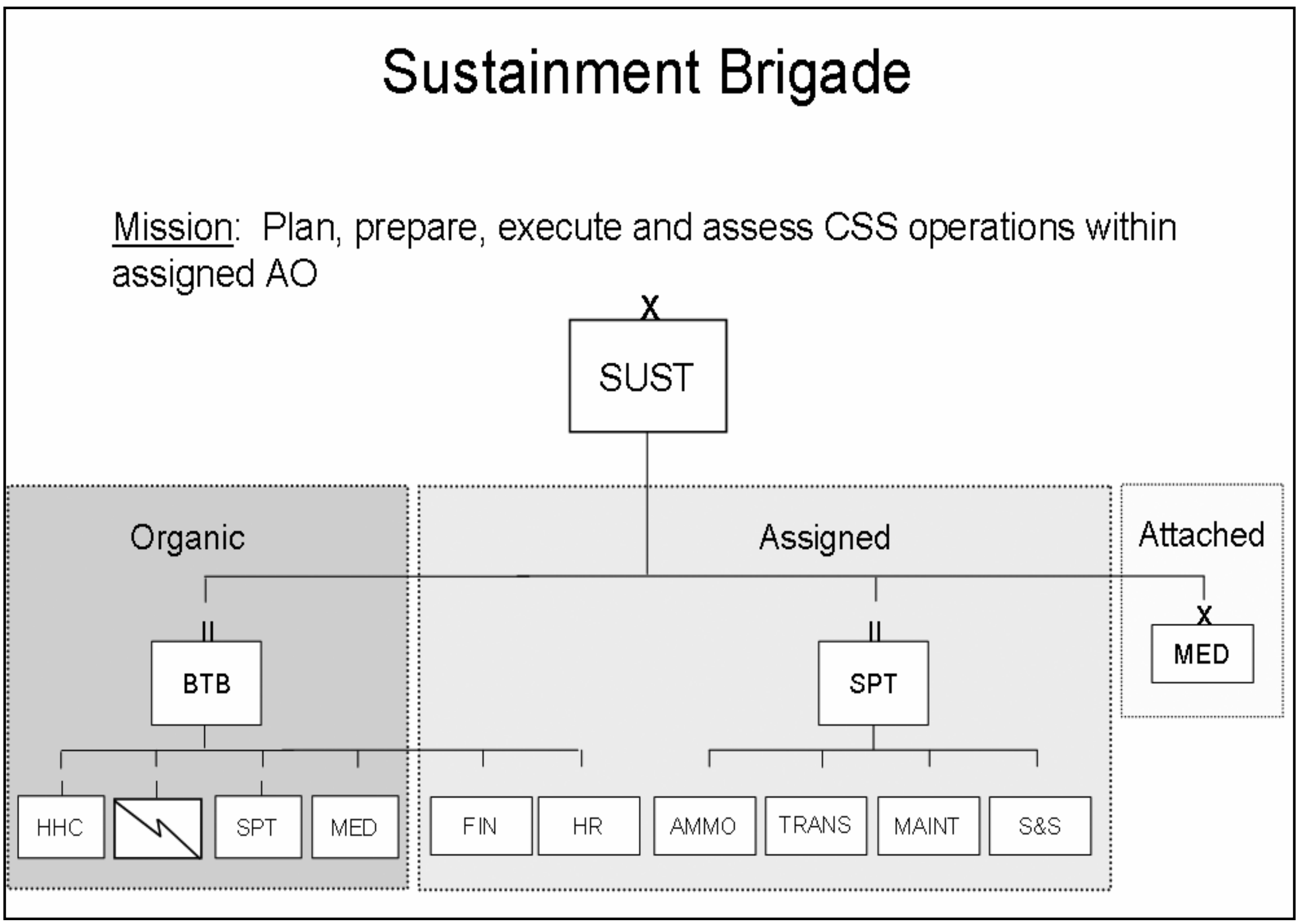


Figure 8-4. General Support of a multifunctional sustainment brigade

8-39. When considering the differences between the ranges of full-spectrum military operations, the sustainment brigade performs the same tasks and functions across the spectrum of operations. The design of the sustainment brigade staff incorporates the necessary staff to operate across the spectrum of operations. While the intensity of selected operations may change from one type of operation to another, the requirement for sustainment never goes away. Staff planners must account for the changes in the operational environment during the staffing process.

AVIATION BRIGADE LOGISTICS DESIGN CHANGES

8-40. There are significant changes in the aviation brigade's concept of support. Previously the Army's concept of support by a forward support battalion was supply point operations. We have now moved the entire Army to distribution based logistics with pulsed operations as the basis for tactical level support.

8-41. Preplanned pauses in battle rhythm allow combat forces to replenish routinely. Pulse operations include movement from the decisive operations zone to mission staging operations and redeployment to the decisive operations zone.

8-42. Aviation logistics organizations must be designed to place the right logistics resources at the right location and accept modular "plugs" of both military and civilian personnel to meet workload surges. Aviation logistics organizations will primarily consist of an Aviation Support Battalion (ASB) at the UEx and UEy level, an AVIM platoon at the UEy TSAB level, and an aviation maintenance company/troop (AMC/T) and forward support company (FSC) with each operational aviation battalion (except for the fixed wing battalion). They collectively form the framework for aviation logistics in the Army's redesigned force structure.

8-43. In the area of logistics organization and command and control, the following is now true for the aviation brigade:

- The ASB commander and battle staff will manage the change from legacy AOE *push to talk* C2 systems to the digitized C2 architecture.
- In the near future the AVN BDE S4, ASB and BN S4's will use the Battle Command Sustainment Support System (BCS3) instead of the now dropped Combat Service Support Control System (CSSCS) to achieve the LCOP.
- The aviation logistics force structure redesign with its most up-to-date technology enablers has provided subordinate units the ability to attain a level of LCOP and autonomy not achieved in structures of the past.
- The use of forward support companies (FSCs) in an aviation brigade is an entirely new doctrinal method of support for the aviation community. FSCs and AMC/Ts are the logistics providers for the aviation brigade's battalions/squadrons. These companies are organic to the aviation battalions/squadrons.
- The FSCs do not have a support operations section. Functions required of a support operations section are picked-up by the FSC commander and his executive officer or as determined by the FSC commander.
- Aviation brigade ALOC now monitors/controls current operations within the brigade headquarters support area.
- The ASB is better organized and equipped to conduct joint/expeditionary spilt based sustainment and security operations.
- The ASB now has a CL V storage capability at its ammunition transfer point (ATP), which enables establishing an ammunition transfer holding point (ATHP).
- The ASB's ground maintenance capability supports the ASB's assigned companies and the aviation brigade headquarters, and provides limited or no back-up to for the FSCs or AMC/Ts.

- The ASB now has a Level I enhanced medical capability with its organic medical platoon.
- UEx AVN BDE S4s are FA 90 officers instead of FA15s.
- The ASB now has a Combat Service Support Automation Management Office (CSSAMO) to support the AVN BDE logistics automation systems.

8-44. The above organizational changes permit the aviation brigade logistics design to achieve self-sufficiency, and a level of effectiveness not seen before in the aviation logistician's battlespace.

SECTION II – UEX AVIATION SUPPORT BATTALION MISSION AND ORGANIZATION

GENERAL

8-45. The ASB is the primary aviation logistics organization in the UEx. See figure 8-5 for a diagram of the ASB's organization. The ASB is organic to the UEx AVN BDE. The ASB provides both aviation and ground field maintenance, replenishment of all supplies and medical support in order to sustain the aviation brigade during MCO, SSC and peacetime operations. The ASB has been optimized to support the aviation brigade's FSCs, AMC/Ts and the brigade HHC. In addition, it has been resourced to support simultaneously from two locations. It consists of the four companies; the Headquarters and Support Company (HSC), the Distribution Company, the Aviation Maintenance Support Company (AMSC) and the Network Signal Company.

8-46. The ASB provides aviation and ground field maintenance, resupply, and medical support. The distribution company functions as a supply support activity and distributes supplies to subordinate units of the AVN BDE. The HSC provides medical support and conducts field-ground maintenance and recovery. The AMSC supports on-aircraft and critical off-aircraft field level maintenance for assigned aircraft, conducts battle damage assessment and repair (BDAR) and provides backup field support to the aviation maintenance company/troop (AMC/T). The network signal company provides network and signal support to the AVN BDE headquarters.

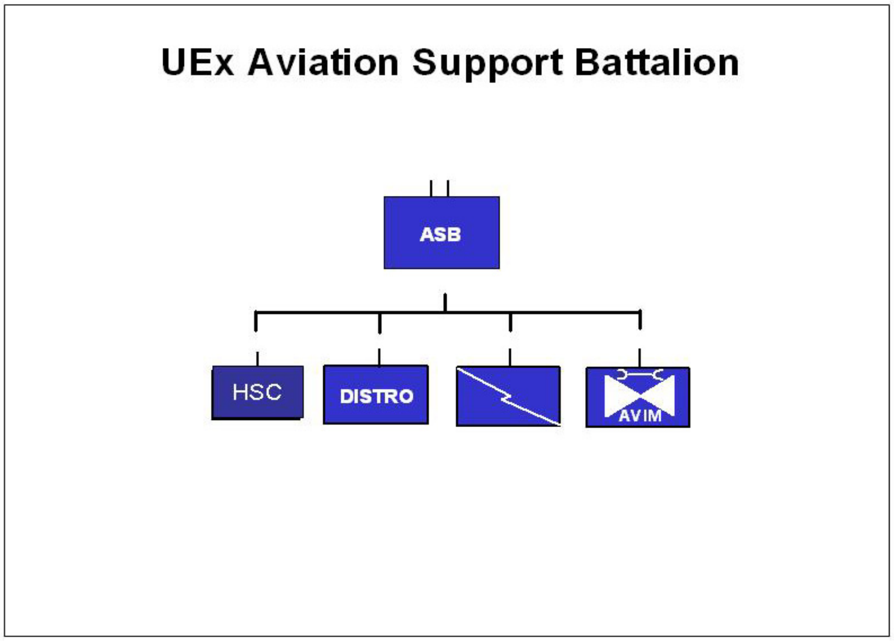


Figure 8-5. Aviation Support Battalion

8-47. In addition to the standard battalion staff, the ASB now has an organic Combat Service Support Automation Management Office (CSSAMO) and a well-staffed Support Operations (SPO) section. The CSSAMO capability will provide support to the entire brigade's automation, including the Unit-level logistics systems – Aviation (ULLS-A) systems.

8-48. The SPO Section is organized to coordinate logistics support and provide distribution management to the Aviation Brigade. The SPO Section is also manned to accomplish contracting, medical and medical logistics, petroleum, ammunition, movement control, transportation, and mortuary affairs functions.

8-49. The ASB is 75 percent mobile in one lift. It plans and coordinates the brigade's logistics requirements. The ASB executes replenishment operations in concert with the operational plan and the UEy/UEx and coordinates with the aviation battalion's FSCs in coordination with the battalion S4. It combines a logistics common operating picture with efficient delivery systems to form a distribution pipeline, thereby reducing most stockpiles. Supplies are tailored and packaged for specific supported units based on a specific time and location. Total asset visibility (TAV), including in-transit visibility (ITV), gives logistics personnel visibility over all assets and infrastructure capacity in the area of operations (AO).

8-50. The ASB plans and supports combat replenishment operations (CRO), sustainment replenishment operations (SRO) and mission staging operations (MSO).

- CROs are brief or pit-stop like events to rearm, refuel, provision essential supplies, and support the maintenance function by cross leveling and use of on-board spares with up to 3 hours duration.
- SROs are quick, in-stride, sustainment operations that are conducted within a unit's battle rhythm with 3 to 7 hours duration. An SRO can be either a deliberate or hasty operation if an opportunity exists or circumstance allow.
- MSOs are intense time-sensitive operations which include all preparations for an upcoming mission—planning, troop leading, rehearsals, training, reconnaissance,

and surveillance, reconstitution, tailoring for the next mission, information operation, etc. to ensure mission success. This is a planned deliberate operation. MSO can be in duration of one to three (1-3) days, that will require support from the ASB and the sustainment brigade.

MISSION

8-51. The ASB distributes supply classes I, II, III, IV, V, VIII, and IX. It performs field maintenance and recovery, both air and ground, and has health service support (HSS) assets to conduct force health protection (FHP) operations at an enhanced Level I medical treatment facility for the AVN BDE. It carries the replenishment stocks for the AVN BDE i.e. generally one DOS for most classes of supply except for Class III (B) and Class V where it is one combat load for the aviation brigade's maneuver battalions. The ASB plans and coordinates for the AVN BDE's logistics requirements in coordination with the brigade S4; during the brigade's MDMP. The ASB executes replenishment operations for the FSCs and the AMC/Ts in concert with the aviation brigade's operational plan. The ASB is the parent battalion headquarters for the network signal company that supports the brigade headquarters.

TASKS

8-52. The ASB performs the following tasks:

- Conducts field maintenance both ground and air including UAVs and recovery operations
- Provides signal and network support for the aviation brigade headquarters to enable control of subordinate battalions and to enable it to work for a BCT, UEx or directly for a JFC or a multinational HQ.
- Provides logistics for ground, air, missile and aviation ground support equipment (AGSE) systems
- Monitors and updates the current situation i.e. develops logistical and tactical common operating picture.
- Plans, synchronizes, manages, and executes sustainment operations at brigade level within the aviation commander's battle rhythm.
- Plans, establishes, maintains, and synchronizes distribution management operations within the aviation brigade; links with the UEx/y for logistics coordination of requirements and synchronization of distribution of materiel.
- Determines and anticipates logistics requirements for maneuver operations.
- Provides level I enhanced medical support plus emergency resuscitative surgery. Plan, coordinate, and provide emergency medical treatment and advanced trauma management for wounded, and disease non-battle injury patients and sick call services.
- Provides mass casualty management to include: triage, treatment, and evacuation.
- Integrates mission tailored logistics augmentation to support the concept of maneuver as required.

LIMITATIONS OF THE AVIATION SUPPORT BATTALION

8-53. The ASB is not designed to provide all or part of the following logistics functions:

- Medical support is limited to an enhanced Level I medical platoon
- Field Services:
  - Mortuary affairs—planning only—no collection, processing and evacuation without augmentation

    - Laundry and bath is not organic at this level—support is provided by the sustainment brigade
- Limited Class IX/VIII storage capability
- Limited capability to re-configure load. Ammunition from EAB must be in strategic or operational configured loads.
- No fire fighting capability
- Explosive ordnance disposal (EOD) is provided by the maneuver enhancement brigade
- Human resources other than its own unit S-1 HR operations. Reliance on the sustainment brigade to provide additional critical wartime personnel support.
- Legal Support is limited to the assigned brigade operational law team (BOLT); augmentation to support all JAG functions is required.
- There is no built-in maintenance backup support to the maneuver units but the ASB commander can provide support when capacity is available to provide support. Another option is when the aviation brigade commander will accept risk with the ASB and aviation brigade headquarters maintenance; hence, there is an inability to provide multiple site support to the battalion task forces.
- No optical fabrication and blood product management support
- No organic aeromedical evacuation support but it is organic to the aviation brigade.

THE ASB HEADQUARTERS AND SUPPORT COMPANY (HSC)

HEADQUARTERS COMPANY FUNCTIONS

8-54. The HSC consists of the battalion headquarters and the support company. The HSC has the typical battalion staff structure with a Command Section, S1 Section, consolidated S2/3 Section, S4 Section, Unit Ministry Team (UMT), S6 Section, and a Support Operations (SPO) Section. The battalion headquarters provides command, control and administration support for all organic and attached ASB units. The battalion headquarters also plans, directs, and supervises logistical support for the Aviation Brigade. The HSC also has an organic Combat Service Support Automation Management Office (CSSAMO).

SUPPORT COMPANY FUNCTIONS

8-55. The support company portion of the headquarters and support company (HSC) provides ground maintenance, medical, supply, and food service support for units organic and attached to the ASB.

8-56. The Army's current maintenance strategy (referred to as Two Level Maintenance) merged the Organizational and Direct Support (DS) levels of maintenance into a single level called Field level maintenance. General Support and Depot levels of maintenance merge into the second level of maintenance called Sustainment Level. The DS maintainers formally located in the support organizations have been reallocated to the supported battalions, who will now conduct all of their own field level maintenance. The maintenance platoon is responsible for field level maintenance for all of the ASB's organic ground equipment.

8-57. The Medical Platoon provides Level I enhanced medical care. The platoon is organized into a Headquarters Section, a Treatment Section, and an Evacuation Section. Additionally, the platoon has four ambulances. The Brigade HHC and the flight battalions retain their organic flight surgeons and their Medical Treatment Team. The medical platoon provides the following capabilities:

- Emergency medical treatment and Acute Trauma Management (ATM) for wounded and DNBI patients.

- Sick call services.
- Ground ambulance evacuation from supported units.
- Mass casualty triage and management.
- Limited patient decontamination.

DISTRIBUTION COMPANY

8-58. The Distribution Company provides the aviation brigade a single source for all supply (less Class VIII) and transportation operations. The Distribution Company includes a Fuel and Water Platoon, a Supply Platoon and a Transportation Platoon. The Main Support Battalion and the Corps Support Group formally provided much of the capability now resident in this company.

8-59. The Fuel and Water Platoon has the capability to store and distribute 105,000 gallons (one day of supply) of fuel for the brigade using three LHS Modular Fuel Farms. Additionally, the platoon has the capability to set up and run multiple refuel points for brigade aircraft. This platoon also has the capability to purify 30,000 gallons of water daily, and can store 18,000 gallons of water. The platoon has an organic Quartermaster Petroleum Quality Assurance Team assigned to provide quality assurance testing for bulk aviation fuel. The team will perform quality evaluation and provide technical assistance for handling, storing, sampling, and identifying of petroleum products and their containers for the Aviation Brigade.

8-60. The supply platoon has a supply support activity (SSA) and an Ammunition Transfer and Holding Point Section. This platoon provides Class II, III (P), IV, V, VI, VII and IX direct support to the brigade. The Supply Platoon receives, stores (limited) and issues Class II, III (P), IV, and IX. It also receives and distributes Class I and VI under the distribution based doctrine of pushing supplies to the Forward Support and Aviation Maintenance Companies/Troops, and receives and issues Class VII as required. The platoon also maintains the Class II, III (P), IV and IX ASL for the brigade. The Ammunition Transfer Holding Point (ATHP) Section supports the brigade with Class V and operates the Brigade ATHP.

8-61. The Transportation Platoon's purpose is to add organic transportation and distribution capability to the Brigade and to increase the mobility of the ASB to 75%. The transportation platoon also has the ability to transport Class V and Class IX to the supported FSCs and AMC/Ts.

AVIATION MAINTENANCE SUPPORT COMPANY (OLD AVIM)

8-62. The Aviation Maintenance Company (AMSC) provides aviation intermediate maintenance (AVIM) to the aviation brigade's aircraft. The AMC provides intermediate level avionics maintenance support, aircraft airframe, power plant, armament, and component repair. The AMSC also provides mobile maintenance contact teams to perform AVIM repairs forward. The AMSC can also provide backup aircraft recovery, retrograde of repairable aviation equipment by ground, and coordination for air recovery backup and rigging capability for recovery of supported aircraft. The AMSC also provides maintenance test flight evaluator support to supported aviation unit maintenance (AVUM) units. The AMSC will form a collection and classification point for aircraft peculiar materiel and provide fueling and defueling service for supported aircraft while in the AMC. Additionally, Heavy and Medium ASBs will continue to have a six-man Electro-Optics Test Facility (EOTF) Augmentation Team assigned.

NETWORK SIGNAL COMPANY

8-63. The Network Signal Company provides 24-hour operations supporting the Aviation Brigade network. It provides signal elements designed to engineer, install, operate, maintain and defend the network. It extends Defense Information Systems Network services to the brigade and its subordinate elements and provides basic network management capabilities. During military operations, the company executes its technical mission under the functional control of the brigade S6, when based upon brigade OPORDs or other directives, the brigade S6 direct actions and movement of signal elements in support of brigade operations. The Network Signal Company Commander maintains command authority over the company's assigned operational platoons or attached elements.

AVIATION MAINTENANCE COMPANY/TROOP AND THE FORWARD SUPPORT COMPANY

8-64. The aviation maintenance company/troop and the forward support company (FSC) are not part of the ASB's organizational design. However, it is important to note the support functions in each of their assigned maneuver battalions. The ASB provides limited back-up support for each of these companies and distribution of replenishment supplies.

8-65. The Aviation Maintenance Company/Troop (AMC/T**)** is assigned to each of the operational aviation battalions within the UEx and UEy aviation brigades (except the fixed wing battalion). The company is designed to provide tailored aviation field maintenance support and battle damage assessment and repair (BDAR) for assigned aircraft and UAVs. Each AMC/T is tailored to support the type of aviation battalion in which it is assigned. Short duration high frequency services such as 75/100 hour services will be accomplished by the AMC/T.

8-66. The Forward Support Company is assigned to each of the operational aviation battalions within the UEx and UEy aviation brigades (except the fixed wing battalion). The company is designed to provide support for ground, air, missile, and AGSE systems, provide refueling and rearming support, provide necessary logistics support, and coordinates through the battalion S4 to request from the ASB logistics augmentation. Each of the FARPs can be task organized to provide maintenance, armament support, rearming and refueling necessary to support continuous operations. The FSC also maintains two days of supply (DOS) of class I, provides field fielding and distribution support, maintains class IX (ground) repair parts and provides ground maintenance, while maintaining one combat load of Class III (B) and Class V for its supported battalion.

SECTION III- ASB COMMMAND AND CONTROL

GENERAL

8-67. The duties of the ASB commander and the support operations officer (SPO) are different enough from the normal battalion functions that an explanation of their responsibilities is warranted. The other functions of the battalion staff are generally similar to the Army's battalions.

ASB BATTALION COMMANDER

8-68. The ASB commander is the senior battle logistician for the brigade commander. He manages logistics through the use of an array of digital information systems and a technologically competent battle staff that is capable of capitalizing on all of the technological innovations. The ASB commander directs all units organic or attached to the battalion in support of the brigade's mission. He also has control of all elements in the BSA for security and terrain management. He provides subordinate elements with clear missions, taskings, and a statement of his intent.

8-69. The commander with his battle staff supervises the activities of subordinate units. They ensure that decisions, directives, and instructions are implemented and that the commander's intent is being fulfilled. The ASB commander and battle staff advises the brigade commander on support operations required to sustain the aviation brigade.

8-70. The battalion commander's duties include the following:

- The commander is responsible for everything the ASB does or fails to do.
- Understanding their responsibility to the Soldiers under their command.
- Senior logistics leader that provides distribution management at the brigade level and maintains situational understanding of the logistics assets required to support the brigade.
- Develop and provide a logistics common operating picture in meaningful terms for the brigade commander and his staff.
- Stay personally involved in and appraised of replenishment operations and the tactical situation throughout the brigade AO and brigade support area (BSA) battlespace.
- He must be proficient in the tactical employment of the battalion and its assigned and attached logistics elements.
- Establishes his commander's critical information requirements (CCIR) and essential elements of friendly information (EEFI).
- The commander must also know the capabilities and limitations of the company's personnel and equipment in performing the logistics mission to include security operations as well as those of logistics elements attached to him.
- His responsibilities include leadership, discipline, tactical employment, training, administration, personnel management, supply, maintenance, communications, and logistics activities of the company.
- Establish an effective perimeter defense plan for all assets within the BSA that is fully coordinated with the brigade S3. Personally ensure the establishment of the plan by subordinate commanders/leaders with on-site inspections.
- Develop fully coordinated, effective combat convoy movement plans with the brigade commander and their staff, for execution if necessary with combined arms forces.
- Understand the full capabilities of the tactical and logistics radio and data transmission capabilities available to the commander and his staff.
- Maintain contact with higher, lower and adjacent, supported and supporting units. Use a liaison if that is the best solution.
- Ensure trained staff and leaders use them effectively and to their full capability.
- Ensures connectivity of Standard Army Management Information Systems (STAMIS) and FBCB2 with the brigade and supporting units.
- Know the responsibilities and capabilities of higher, lower and supporting units and know the support required and what support each level or type of organization can provide.
- Use effective oral communications and write clear directives and orders.
- Provides commander's intent and mission guidance.
- Reviews battle staff estimates of the tactical and logistical situation, their course of action (COA) analysis, and then recommend the COA that best supports the brigade mission by sustaining the fighting capability of the brigade.
- States his estimate of the situation and announces his decision.

- Be familiar with the law of land warfare with respect to civilians, civil affairs, and civil-military operations
- Ensure there is a well-known and rehearsed plan of command succession.

SUPPORT OPERATIONS SECTION

8-71. This section, under the direction of the support operations officer, provides centralized, integrated, and automated command, control, and planning for all sustainment operations conducted by the battalion. It coordinates with logistics leaders and staff planners and medical personnel in the fields of supply, maintenance, force health protection (FHP), mortuary affairs, and movement management for the support of all units assigned or attached in the brigade area. Its primary concern is supported units and increasing the responsiveness of support provided by subordinate units. It continually monitors the support and advises the battalion commander on the ability to support future tactical operations. With the Global Combat Support System-Army (GCSS-A), BCS3, FBCB2, and MTS the support operations section has access to more information and receives information in near real time. Therefore, the support operations section possesses the capability to view a logistics common operating picture and the combat power in the maneuver units. This allows support operations to identify problems quicker and allocate resources more efficiently. BCS3 gives the support operations section the visibility of the logistics status from the ASB back to the sustainment brigade and potentially throughout the world depending upon level of detail required.

8-72. This battle staff section serves as the point of contact (POC) for supported units. It directs problems to appropriate technical experts within subordinate branches. The duties of the support operations section include the following:

- Conducts continuous brigade focused logistics preparation of the battlefield.
- Plans and coordinates for aerial resupply and plans for landing zones (LZs) vicinity of the BSA.
- Develops the brigade logistics synchronization matrix.
- In conjunction with the BDE S4 submits logistics forecasts to the UEx sustainment brigade.
- Manages all flatracks throughput to and retrograding from the brigade support area.
- Coordinates and provides technical supervision for the ASB's sustainment mission; supply activities, maintenance support, FHP, and coordination of transportation assets.
- Identifies tentative force structure and size to be supported.
- Coordinates the preparation of the logistics estimate for external support.
- Provides support posture and planning recommendations to the ASB commander.
- Sets up and supervises the logistics operations center located in the ASB TOC.
- Coordinates with brigade S3 Air for air routes for supply and aeromedical evacuation support.
- Provides centralized coordination for units providing support to the brigade.
- Analyzes the impact of BCS3 reports to achieve situational understanding.
- Advises the battalion commander on the status of logistics support.
- Coordinates logistics support for units passing through the brigade's area i.e., works with ASB S3, aviation brigade S3, as appropriate, for terrain management and movement across other unit's AO.
- Analyzes contingency mission support requirements.

- Revises customer lists (as required by changing requirements, workloads, and priorities) for support of tactical operations.
- Coordinates external logistics provided by subordinate units.
- Advises the battalion commander on the supportability of ASB support missions and of shortfalls that may impact on mission accomplishment e.g. occurs normally in a brigade MDMP, but must occur also during fast paced operations that have taskings/requirements passed at best with an abbreviated MDMP by brigade.
- Serves as the single point of coordination for supported units to resolve logistics support problems.
- Plans and coordinates contingency support.
- Develops (in coordination with the brigade S4) supply, service, maintenance, and transportation policies that include logistics synchronization and maintenance meetings.

8-73. The support operations officer will perform functions as the BCS3 manager. The support operations officer must work in conjunction with the S2/S3, S4, and S6 to establish and manage the BCS3 network and database. The support operations officer must maintain supply point and maintenance data entered into the system.

SUPPLY AND SERVICES CELL

8-74. The support operations supply and service officer plans and recommends the allocation of resources in coordination with the supported chain of command. This includes coordination with the distribution section. He also forecasts and monitors the distribution of supplies within the brigade. Support requirements are entered into BCS3 at the brigade S4 and transferred to the BCS3 at the BSB's support operations. This allows support operations to identify problems quickly and allocate resources more efficiently through BCS3. The supply and service officer is responsible for mortuary affairs (MA) activities carried out within the brigade area of operations. He is also responsible to coordinate and monitor all transportation movements of replenishment stocks and services for and within the ASB.

8-75. The supply and services cell has two traffic management coordinators assigned to control the movement of logistics transportation assets in support of the aviation brigade at the ASB level and above. The traffic management coordinator coordinates, monitors, controls, and supervises the movement of personnel, equipment, and cargo. They develop and review movement programs (to include convoy planning) for logistical support functions within the ASB/BSA. They advise in the preparation of support plans where transportation is required. They verify the accuracy of movement control documents. They ensure allocation of transport capability is appropriate to accomplish each mission in the most effective course of action given the concept of maneuver. When transportation requirements exceed the ASB's capability, the traffic management coordinators coordinate support with the movement control office (MCO) in the sustainment brigade's support operation section. They also anticipate and recommend the use of main supply route (MSR) to the MCO.

8-76. The addition of new enabling technologies allows the traffic management coordinators to track, trace, and divert transportation platforms operating in the brigade AO. The traffic management coordinators are responsible for the in transit visibility (ITV) in the theater of operations. This will be best accomplished by the ASB movements NCO interfacing with other STAMIS to develop inbound/outbound requirements and also using the movement tracking system (MTS) and other ITV technology to get a near real-time location of transportation assets and supplies. In addition, the traffic management coordinators are able to synchronize the delivery schedule via FBCB2 with customer units to minimize the offload/upload times. With FBCB2 and the MTS control station, the traffic management coordinators are able to give specific coordinating instructions to the vehicle operators without having to rely on manned control points. These new technologies will allow information to be transferred between the brigade S4, battalion S4, ASB support operations section and the traffic management coordinators to schedule and synchronize transportation requirements within or in support of brigade/battalion/squadron operations.

MAINTENANCE CELL

8-77. The support operations maintenance officer plans and recommends the allocation of resources in coordination with the supported unit's chain of command. This includes coordination of the maintenance company's operations. He also forecasts and monitors the workload for all equipment by type. The maintenance officer and maintenance NCO use standard Army maintenance system- level 2 (SAMS-2) to collect and process maintenance operations data and to assist in the management of maintenance operations. It processes maintenance information required to control workload, manpower, and supplies. The SAMS-2 capabilities are designed to assist in both maintenance and readiness management. SAMS-Enhanced will replace SAMS-2, SAMS-1 and ULLS-G.

8-78. Maneuver units will transmit logistics situation report (LOGSITREP) electronically to the brigade S4 and ASB SPO via FBCB2 and BCS3. This allows support operations to identify problems quickly and allocate resources more efficiently. FBCB2 also provides map graphics that portray unit locations, grid coordinates, and terrain features so support operations can track maintenance on the battlefield.

8-79. The support operations maintenance cell develops the plans and policies for reparable exchange, and Class IX operations. It monitors shop production and job status reports in the field maintenance company and FSCs. It also monitors and reviews the combat spares and coordinates critical parts status with the sustainment brigade. For unserviceable items, the SAARS box in the distribution company generates disposition instructions based on UEx and UEy commander guidance. Instructions include evacuation, cannibalization, and controlled exchange IAW stated policies. With the brigade S4, it reviews backlogs on critical weapon systems. For any additional support requirements, the ASB support operations coordinates through the UEx sustainment brigade materiel management branch.

HEALTH SERVICE SUPPORT (HSS) SUPPORT CELL

8-80. For brigade force health protection operations (FHP) operations, the HSS cell provides input to the brigade surgeon section (BSS) for inclusion into the FHP annex of the brigade OPLAN. See FM 4-02.21 for definitive information on the BSS. The HSSO provides BSS information on all medical activities to include: attachment of sustainment brigade medical elements, Class VIII resupply, medical evacuation, and priority of FHP for the BSA and brigade AO. The HSS cell plans for the use of nonstandard platforms for casualty evacuation and the support operations section manages their use during mass casualty operations. See FMs 8-10-6 and 8-10-26 for definitive information on medical evacuation operations.

8-81. The medical communications for combat casualty care (MC4) system will assist the HSS cell and the BSS in performing their responsibilities through the collection, integration, and transmission of medical information. These sections will have near real-time information on the status of medical units, brigade unit medical readiness information, casualty evacuation, medical supplies, and medical treatment.

ASB COMMANDER'S C2 STRUCTURE

8-82. Brigade support battalions use echeloned command and control to plan and direct operations. Battle command is tailored to meet the requirements of each operation. The aviation support battalion command group normally operates within the aviation brigade's battlespace as appropriate to meet the logistics and force protection requirements. It consists of the commander and those selected to assist in controlling the operational and sustaining elements of the battalion. The commander determines the composition, nature, and tasks of the command group based on METT-TC analysis. As a minimum, the command group:

- Integrates support battalion and attached logistical assets in support of sustainment operations and force protection.
- Controls sustainment operations and force protection operations.
- Maintains situational understanding.
- When not at the TOC, they provide close situation information to the TOC of observations achieved by proximity to the activity.

8-83. The commander, SPO and S2/3 monitor the battle, develop the situation, analyze courses of action, and control the companies except as noted for the signal company. The ASB commander's C2 structure for replenishment operations and security operations and the systems that assist the commander are used to see the battlefield and lead the battalion as it conducts operations.

8-84. The commander and the S2/3 are the only battalion level leaders that can issue tasking orders. The SPO should coordinate requirements and provide WARNOs for replenishment operations in support of the brigade, but the S3 issues the tasking order. This is doctrinally correct but in past years, the SPO was often allowed to be the tasking authority for support operations responding to replenishment requirements by the supported units. Due to the COE, the S2/3 has the best visibility of all assets in the ASB and is the doctrinal staff officer who is responsible for movement operations.

8-85. The ASB commander's C2 structure for logistics centers on three entities—the ASB commander's location, his command group and the ASB TOC. The logistician's headquarters enables the commander to maximize command, control, and information management for logistics and tactical operations. The TOC will employ the current battle command systems required to command and control the ASB's organic and supporting BOS and units. The ASB commander's C2 systems will also enhance the logistics staff's ability to provide the commander with timely information; maintain an accurate COP/LCOP; efficiently process, analyze, and disseminate battlefield information; and provide updated mission orders rapidly. The commander will operate independently, establishing a battle command on the move as necessary, or operate from the ASB TOC based on the situation and phase of the operation. When the commander is mobile, it is not uncommon for the battalion commander to travel with a personal security detachment (PSD) of 2-3 guntrucks with appropriate personnel and equipment for dismounted operations, too.

8-86. Battle command, as discussed in Chapter 4, is the art and science of applying leadership and decision-making to achieve mission success enabled by technology while synchronizing command and control with maneuver and information. Aviation support battalion command and control consists of the key personnel, equipment and the command post from which the battalion commander, assisted by the battlestaff, directs operations and sustains the force. METT-TC will dictate the organization of command and control personnel, facilities and location of the command group.

COMMANDER'S LOCATION ON BATTLEFIELD

8-87. Commanders consider their position in relation to the units they command and the mission. Their location can have important consequences for executing sustainment operations. Modern INFOSYS can help commanders command throughout their area of operation (AO) without losing access to the information and analysis of their TOCs. Should commanders require a larger facility to exercise C2 temporarily, they can use one of their subordinate TOCs and establish communications linking them to their TOC.

8-88. At battalion level for logistics, the TOC is normally the focus of information flow and planning. Yet the logistics commander cannot always visualize the battlefield and direct and synchronize operations from there. He must sometimes assess the situation up on the ground—face-to-face with subordinate commanders and their Soldiers. Commanders design their C2 systems so they can position themselves wherever they can best command without losing the situational understanding that lets them anticipate situations and respond to opportunities and changing circumstances.

8-89. At the ASB level, commanders command more indirectly through their subordinates. They may want to have personal contact or intervene to lead or to make decisions at the location or with the command executing the decisive operation. Similarly, when commanders lose their feel for the situation, they need to reestablish a common operating picture and commander's visualization to achieve a clear situational understanding.

SECTION IV- LOGISTICS FUNDAMENTALS

GENERAL

8-90. The Army has developed basic logistics fundamentals for supporting military operations. It is important that all leaders know them - not just logisticians. By understanding how the logistician is doctrinally trained, manned and equipped for sustainment operations, the supported commander will know what to expect. The following paragraphs discuss logistics principles, logistics characteristics, and methods of resupply. The commander does not have to follow them, but he should understand that deviation may result in higher risk to successful mission accomplishment. This should not dissuade a commander from executing his mission based on METT-C analysis. The commander on the ground must always plan and prepare for mission execution based upon his own mission analysis.

AVIATION BRIGADE LOGISTICS PRINCIPLES

8-91. Aviation brigade logistics principles have evolved from the principles and doctrine for FXXI and the Stryker brigade combat team (SBCT). These evolving principles assist the logistician's battlefield challenges by incorporating advanced information and transportation technology, streamlining logistics organizations, and shifting from the AOE supply-based logistics system to a distribution-based system. The following are the logistics principles for the brigade:

- Dedicated logistics operator: Unity of command for sustainment within maneuver units i.e. maneuver commander has organic logistics units; EAB logistics commander is single point of contact for support e.g. sustainment brigade commander.
- Increased velocity with reduced *order to receipt* time.
- Situational understanding (SU) achieved with the assistance of a LCOP.
- An agile logistics system.

8-92. Dedicated logistics operator: Logistics principles incorporate the unity of command imperative by centralizing distribution management and providing the unit maneuver commander assigned/organic logistics as the focal point for sustainment operations at each echelon within a brigade. The brigade commander, based upon staff and ASB commander input, will order cross-leveling, redirecting and massing of logistics assets; not the ASB commander, unless he is surging his own organic assets. Unity of command (single point of contact for logistics) at EAB for logistics facilitates the cross-leveling, re-directing, and massing of logistics assets within and between echelons down to the brigade, and is an essential element of the distribution-based concept for the sustainment brigade i.e. the sustainment brigade commander can surge the sustainment brigade's logistics assets. Within the aviation brigade, the maneuver commanders have C2 over the FSCs, AMC/Ts and medical assets assigned/organic to their units. Hence the brigade commander is the only one who surges logistics assets assigned to the aviation brigade.

8-93. Increased velocity refers to the time required to move supplies, equipment, and capability from the strategic base through the distribution system to the end user once the support requested is submitted. This is especially critical for the brigade. Replenishment and how long it takes is very time sensitive to the commander's ability to shape the battlefield conditions. The increased velocity concept relies on effective command and control provided by unity of command coupled with situational understanding. An example of increased velocity is the ability of the sustainment brigade to by-pass the ASB to deliver configured loads directly to the FSCs or AMC/Ts.

8-94. Situational understanding (SU) is the product of applying analysis and judgment to the COP and LCOP to determine the relationships among the factors of METT-TC (see FM 6-0). Situational understanding for sustainment refers to the logistician's complete picture of the friendly situation, the enemy situation, and the logistics situation and knowing what this information means; quite often this is developed through the use of information technology enablers e.g., Battle Command Sustainment System (BCS3). They enhance decision-making by identifying opportunities, threats to the force or mission accomplishment, and information gaps. Situational understanding, based on LCOP, fosters initiative in subordinate commanders by reducing, although not eliminating uncertainty. SU has limits. It requires constant verification. SU focuses on the current situation; however, achieving accuracy depends at least as much on human judgment as on machine-processed information—particularly when assessing enemy intent and friendly combat power. Simply having a technologically assisted portrayal of the situation cannot substitute for technical and tactical competence. The logistics system is now able to have a logistics COP depicting what the maneuver commander needs to know. The logistics system now knows through predictive analysis when and where the maneuver units need their support without wasting assets.

8-95. An example could be through the use of BCS3, the FSC commander knows that a combat logistics patrol with Class III (bulk) is due at a specified time and amount of fuel. However, due to enemy interdiction of the LOC, the FSC commander and the battalion S4 will know that the specified time is delayed two hours with no enemy impact upon the fuel for resupply. The impact upon the aviation battalion will be minimal as the refuel requirement had a four hour window to receive the fuel. The mission will not be impacted and the battalion commander is so advised.

8-96. An agile logistics system is one that takes the preceding principles and allows the commander to use their command position to provide the ability to surge support and provide recommendations based upon the ability to *paint a picture* with the LCOP provided by the latest technology enablers e.g. BCS3 and FBCB2 BFT. This allows the flexibility to ensure that the commander has the ability to use the modular unit concept to meet specific missions or needs as they develop or are anticipated. Because this allows commanders to provide modular support based upon the mission, it therefore reduces the logistics footprint in the overall battlespace. The reduction of personnel, equipment and supplies improves the agility of the aviation brigade during maneuver operations. The key to agility is to place on the ground only those modular logistics assets that are definitely needed for the mission, no more, no less.

LOGISTICS CHARACTERISTICS

8-97. The tenets of Army operations—agility, initiative, depth, versatility, and synchronization—are basic to successful operations. They also establish the framework for organizing sustainment operations. An effective and efficient logistics system allows the

Army to operate in accordance with (IAW) these tenets. Such a system has several fundamental characteristics as discussed in FM 3-0 and FM 4-0.

8-98. For all the changes that technology and force redesigns have brought, one thing remains true, that success in battle is dependent upon the unity of effort between the tactical operation and its sustainment operations. The combat commander succeeds or fails by how well the logistics operators on the battlefield understand and adhere to the logistics characteristics as discussed in FM 4-0. In addition, how well the combat commander emphasizes accurate and timely reporting and incorporates the logistics leaders into the planning and preparing process prior to execution also impacts upon his success or failure. FM 4-0's logistics (CSS) characteristics are:

- Responsiveness.
- Simplicity.
- Flexibility,
- Attainability.
- Sustainability
- Survivability
- Economy
- Integration

8-99. Responsiveness is providing the right support in the right place at the right time. It includes the ability to foresee operational requirements. Responsiveness involves identifying, accumulating, and maintaining the minimum assets, capabilities, and information necessary to meet support requirements. It is the crucial characteristic of logistics; responsiveness involves the ability to meet changing requirements on short notice. Anticipating those requirements is critical to providing responsive logistics. It is also the ability to respond to changes in the maneuver commander's intent and changes on the battlefield without interrupting the flow of support. This must be done with little or no advance notice and as the combat operations are being carried out. The ASB, AMC/T and FSC must maintain maximum flexibility and be ready to respond quickly, often with a task-organized structure that possesses appropriate firepower and lethally capable systems to meet combat logistics patrol requirements.

8-100. Simplicity means avoiding unnecessary complexity in conducting—planning, preparing, executing and assessing—sustainment operations. Mission orders, drills, rehearsals, and standardized procedures contribute to simplicity. Emerging logistics information systems can be highly efficient tools to help with such tasks as establishing clear support priorities and allotting supplies and services e.g. Battle Command Sustainment Support System (BCS3).

8-101. Flexibility is the ability to adapt logistics structures and procedures to changing situations, missions, and concepts of operations. Logistics plans, operations, and organizations must be flexible enough to achieve both responsiveness and economy. The logistics force provides support in any environment throughout the spectrum of conflict and adapts as operations evolve. Flexibility may require improvisation, inventing, arranging, or fabricating what is needed from what is on hand. When established procedures do not provide the required support, logistics personnel seek innovative solutions, rapidly devise new procedures, or take extraordinary measures to adapt to the situation.

8-102. Attainability is generating the minimum essential supplies and services necessary to begin operations. Before an operation begins, the focus of the logistics effort is on generating combat power. The commander sets the minimum level of combat power he needs before an operation begins. This requires integrating operations and logistics planning. It involves the ability to identify and accumulate the critical resources required at the start of an operation.

8-103. Sustainability is the ability to maintain continuous support during all phases of campaigns and major operations. One of the characteristics of land combat is duration. Logistics personnel must work with operations planners to anticipate requirements over the duration of the operation and with logistics operators to synchronize provision of required supplies and services throughout. Logistics personnel must effectively perform their roles to attain the minimum combat power, and then be able to follow on with additional resources to sustain operations for as long as required.

8-104. Survivability is the ability to protect support functions from destruction or degradation. Logistics survivability is a function of force protection, which consists of those actions to prevent or mitigate hostile actions against personnel, resources, facilities, and critical information. Integrating logistics with operational plans and force protection plans is critical to logistics survivability. Economy, through such methods as logistics reach operations, contributes to protecting capabilities by limiting the logistics resources that require protection. Dispersion and decentralization of logistics operations may also enhance survivability. The commander may have to balance survivability with economy in considering redundant capabilities and alternative support plans. The aviation logistics units must be able to defeat a Level I threat and defend against a Level II threat until a response force arrives.

8-105. Economy means providing the most efficient support to accomplish the mission. Resources are always limited. The commander achieves economy by prioritizing and allocating resources. Economy reflects the reality of resource shortfalls, while recognizing the inevitable friction and uncertainty of military operations. Many logistics developments focus on the ability of the logistics commander to provide required support with the minimum expenditure of resources.

8-106. Integration consists of synchronizing logistics operations with all aspects of combat operations. First, it involves total integration of Army sustainment with the operations—plan-prepare-execute-assess—process. Support of the commander's plan is the goal of all logistics efforts. Effective support requires a thorough understanding of the commander's intent and synchronizing sustainment plans with the concept of operations. Because of technological advancements, the anticipated OPTEMPO on the battlefield will increase. Through technology the logistics operators will have massive amounts of tactical and logistical information at their fingertips. They will have access to the same common relevant picture of the battlefield as the maneuver elements. Their challenge will be to sift rapidly through the information, assess its effect, and apply the logistics characteristics to provide the right logistics to the right place at the right time to support the tactical effort.

METHODS OF DISTRIBUTION

8-107. Logistics units distribute supplies to using units by different methods but the Army has focused its doctrine on using distribution based logistics.

PUSH SYSTEM DISTRIBUTION

8-108. This is the initial go-to-war supply system in an undeveloped theater. Initial quantities are based on strength data and historical demand. When the theater stabilizes, the supply system in some cases becomes a pull system based on actual demand.

SUPPLY POINT DISTRIBUTION

8-109. The supplying unit issues from a supply point to a receiving unit. The receiving unit goes to the supply point and uses its own transportation in moving the supplies to its area. This not the doctrinally preferred method but can be used based upon the commander's METT-TC analysis.

UNIT DISTRIBUTION

8-110. The supplying unit delivers supplies to the receiving unit. This is the prevalent design capability of modularity for logistics units. The ASB and the FSCs use this to support their units and is the Army's doctrine for distribution-based logistics.

THROUGHPUT

8-111. Shipments bypass one or more echelons in the supply chain to lessen handling and speed delivery forward. Throughput is more responsive to the needs of the user, is a more efficient use of transportation assets, and reduces exposure to pilferage and damage. Throughput is used whenever possible to support continuous FARP operations.

SECTION V- AVIATION BRIGADE PLANNING FOR LOGISTICS

8-112. The brigade S4 and the brigade surgeon and ASB SPO, operating from their respective TOCs in the brigade TOC sustainment cell and the ASB TOC respectively, monitor sustainment operations and ensure appropriate collaboration and synchronization of support. They use the logistics estimate, a product of the logistics preparation of the battlefield (LPB), to determine logistics capabilities, anticipate support requirements, identify and resolve shortfalls, and develop support plans. In addition, they work with their respective S2s to develop the enemy threat conditions to logistics operations from the IPB. They integrate all planning to develop, collaborate and synchronize logistics with maneuver and fire plans. Logistics planners must thoroughly understand the mission, tactical plans, and the commander's intent and develop the Logistics Preparation of the Battlefield (LPB). This culminates during the military decision making process with a fully developed and integrated logistics/FHP plan. See Table 8-1 for each MDMP step's Input, Actions and Outputs. Use of C2 products is very useful for the development of situational understanding (SU) by the logistics planners and the ASB commander. Throughout this entire process is the use of staff estimates to assist with maintaining the commander's situational understanding.

Table 8-1. Sustainment Aspect of MDMP: Inputs, Actions and Outputs

MDMP STEP	INPUTS	ACTIONS	OUTPUTS
Receipt of Mission and Mission Analysis	Higher HQ WARNO or OPORD. Facts from higher, lower, and adjacent logistics planners. Higher HQ LPB and staff LPB products. Enemy COA from S2. High value targets. (HVTs) by phase or critical event. Facts from logistics assets. CDR's initial logistics guidance Staff estimates Constraints and ROE	Understand higher maneuver Plan. Conduct logistics staff estimate -organize and analyze facts. Identify specified/implied tasks Determine and portray friendly and threat INFOSYS capabilities and vulnerabilities. Translate status of logistics assets into capabilities/limitations. Analyze effects of LPB on sustainment Develop draft desired logistics effects Identify logistics related CCIR and EEFI. Identify logistics constraints/ restrictions. Obtain Cdr's initial logistics priorities.	Initial WARNO upon mission receipt. Logistics portion of mission analysis brief. (End State Analysis, Logistics Effects Development) Draft logistics RFIs Recommend logistics tasks ROE guidance. Logistics CCIR/EEFI inputs. Initial logistics/FHP rehearsal guidance. CDR: approves initial logistics or modifies. CDR gives other sustainment guidance. WARNO after mission analysis brief.
COA Development	See outputs from previous step.	Determine logistics tasks for each COA Allocate logistics assets to sustain. Allocate logistics assets forces to each IO task Identify requirements for additional resources Integrate sustainment triggers with maneuver COA. Analyze relative logistics combat power. Use battle calculus. Assist S2 in ISR plan development to support logistics. Prepare logistics portion of COA/ sketch.	For each COA developed: Concept of Support -ISR Plan Logistics Effects IO execution timelines as they pertain to logistics. Input to force protection plan Refined logistics tasks.
COA Analysis and COA Comparison	See outputs from previous step.	Wargame the brigade COA & integrated logistics plans vs. enemy COAs. ID coordination requirements to produce synchronization matrix. Synchronize logistics effects	Final Drafts: Paragraph 4 and logistics annex

Table 8-1. Sustainment Aspect of MDMP: Inputs, Actions and Outputs

MDMP STEP	INPUTS	ACTIONS	OUTPUTS
		Finalize logistics tasks. Modify/refine inputs as required. Refine and test logistics plans.	
COA Approval and Orders Production Staff Supervision	See outputs from previous step.	Approval briefing. Logistics plan briefed as part of each COA. Bde S4 or ASB SPO presents logistics analysis.	Commander: Selects, modifies or approves COA. Bde S3: Issue WARNO as required. Finalize logistics products. Issue logistics plan and annexes with OPORD. Logistics planners back brief. Manage refinement. Rehearsals.

AVIATION BRIGADE LOGISTICS DIGITAL PLANNING TOOLS

8-113. Soldiers and leaders must have a thorough understanding of the decision-making processes that digital applications support as part of Battle Command. The logistics preparation of the battlefield (IPB) and the military decision making process (MDMP) are examples where C2 systems enable commanders to see, understand, act and finish decisively. Commanders and battlestaffs at all levels must have a through knowledge of these processes to understand how C2 systems enable decision-making as well as to function in the event those systems fail.

8-114. The aviation brigade's organic Aviation Support Battalion (ASB) provides the aviation brigade distribution-based, centralized logistics. The ASB is fully digitally enabled with Battle Command Sustainment Support System (BCS3); Force XXI Battle Command Brigade and Below (FBCB2) and Movement Tracking System (MTS). These digital enablers assist with providing a logistical common operating picture (LCOP) with communications linkages to the Standard Army Management Information System (STAMIS). These systems are critical to enabling the ASB support operations section to gain and maintain oversight of logistics requirements. The increasing use of assured communications and improvements in digital information technology provide the logistics operator and the unit S4 the information dominance and digital tools needed to tailor the logistics package. Through near real-time information, the aviation brigade staff and the ASB staff are able to make timely adjustments in their support requirements.

8-115. The ASB commander, supported by his SPO and in conjunction with the aviation brigade S1/4 and surgeon, closely monitors the implementation of the logistics concept of support as outlined in the brigade OPORD's logistics annex. The ASB commander adjusts logistics operations or shifts resources within his unit to account for a change in METT-TC factors or to replace lost logistics capabilities. Recommendations to surge logistics assets from units within the brigade but not subordinate to the ASB or request UEx support are made to the brigade commander by the ASB commander and the brigade logistics staff.

LOGISTICS PREPARATION OF THE BATTLEFIELD (LPB)

8-116. LPB is the process of gathering data against pertinent battlefield components, analyzing their impact on logistics, and integrating them into tactical planning so that support actions are synchronized with maneuver.

8-117. LPB is a conscious effort to identify and assess those factors, which facilitate, inhibit, or deny support to combat forces. Just as intelligence preparation of the battlefield (IPB) is important to the conduct of actual combat operations, LPB is equally important to sustaining the combat power of the force. Working together leaders must synchronize support actions with maneuver in a unified plan so that logistics is a factor in the success of a mission rather than a cause of failure. In addition to METT-TC, LPB focuses on determining the status and impact of the specific components that make up tactical logistics. It assesses how time and space requirements and restrictions of the battlefield affect support.

8-118. The process requires tacticians to understand the data needed by logisticians to plan and provide timely, effective support. It requires logisticians to understand the mission, the tactical plan, and the battlefield's time and space implications for support.

8-119. It is a coordinated effort to prepare the battlefield logistically. The basic steps in systematizing the process are:

- Determine battlefield data pertinent to support actions.
- Determine sources from which raw data can be derived.
- Gather pertinent data.
- Analyze collected data elements and translate them into decision information by assessing their impact on the mission and the competing courses of action.
- Integrate decision information into tactical planning by incorporating it in logistics estimates and brigade or battalion (as appropriate) plans and orders.

8-120. The following LPB products are:

- A logistics estimate.
- A visualization of the pending battle and logistics activity required by phase of operation.
- Anticipated logistics challenges and shortfalls.
- Solutions to logistics challenges and shortfalls such as external support requirements.
- How, when, and where to position logistics units to best support the tactical commander’s plan.
- A synchronized tactical and logistical effort.

LOGISTICS ESTIMATE

8-121. A logistics estimate is an analysis of logistics factors affecting mission accomplishment. The key concerns of logistics planners are the status of supply Classes III, IV, and V and the operational status of critical generators of combat power e.g. helicopters by specified type, tanks, Bradley Fighting Vehicles (BFVs), Stryker, infantry Soldiers and other units that provide combat power. Logistics estimates at the maneuver battalion level are often not written, though at the ASB and the brigade you will find written products such as combat power charts or the periodic updated briefings or commander’s updates. They are frequently formulated in terms that answer the following questions:

- What is the current and projected status of maintenance, supply, and transportation?
- How much of what is needed to support the operation?
- How will it get to where it is needed?

- What external echelons above brigade (EAB) support is required?
- Can the requirements be met using host nation or throughput from EAB or are other techniques such as aerial resupply necessary?
- What are the shortfalls and negative impacts?
- What courses of action can be supported?

SECTION VI- ASB OPERATIONS

GENERAL

8-122. The aviation brigade receives logistics from various elements depending on the logistics organizational structure at brigade and UEx level. The deputy brigade commander of the aviation brigade and the battalion XO is responsible to their respective commanders for overwatching sustainment operations and inserting themselves where appropriate to ensure successful sustainment operations for the aviation brigade. The brigade/battalion S4 identifies the logistical requirements for the maneuver plan and provides the requirements to the FSC, AMC/T or ASB commander as appropriate for the level of command.

8-123. The FSC provides all logistics (less medical by the HHC and air maintenance by the AMC/T) to the aviation battalion. The principal source of external support to the battalions in the aviation brigade is the aviation support battalion (ASB). Logistics augmentation required by the aviation brigade is requested from the ASB through the brigade S4 to the UEx's sustainment brigade.

AVIATION BRIGADE COMMAND RESPONSIBILITY

8-124. The aviation brigade commander ensures that sustainment is provided not only for his organic and attached elements but for any operational control (OPCON) or supporting units that are by doctrine still to receive support from their parent unit, but often do not receive parent unit support. The brigade S4 coordinates logistics for the attachments and verifies who is to provide this sustainment and how support for attachments is to be requested. When a large unit attachment (a company minus) joins the aviation brigade, the attachment should bring an appropriate modular unit of logistics assets from its parent unit.

8-125. These logistics assets are controlled by the unit they are to support. They can be attached to the ASB or the aviation battalion's FSC or AMC/T in accordance with (IAW) the attachment instructions of the unit they support. The attached unit leader must coordinate with the brigade unit's S1 and furnish him with a copy of his unit battle roster as well as provide the status of all key elements of equipment to the brigade unit's S4. Thereafter, the attached unit submits reports and requests support according to the aviation brigade standard operating procedure (SOP).

SUPPLY OPERATIONS

8-126. Supply operations involve acquisition, management, receipt, storage, and issue of all classes of supply except Class VIII. FM 3-04.500 gives more details on supply operations. FM 3-04.500, FM 4-0, JP 4-0, JP 4-03, and FM 10-1 contain additional information.

8-127. The classes of supply are:

- Class I - Subsistence (food and water).
- Class II - Clothing and individual equipment.
- Class III – POL.
- Class IV - Construction materials.
- Class V – Ammunition.

- Class VI - Personal demand items.
- Class VII - Major end items.
- Class VIII - Medical items.
- Class IX - Repair parts.
- Class X - Agriculture/economic development items.

CLASS I (AND CLASS VI WHEN APPLICABLE)

8-128. The Class I supply system during the initial phase of an operation pushes rations. Personnel strength, unit location, type of operations, and feeding capabilities determine the quantities and types of rations pushed forward. As the battlefield stabilizes, the supply system converts to a pull system. Rations are throughput as far forward as possible.

8-129. The brigade S4 generates ration replenishment requests for basic loads, and monitors the operational ration requests. Requests are based on personnel strength. Class I ration requests are consolidated by the S4 section and forwarded to the AVN BDE S4, or the appropriate support area if operating independently. Extra rations usually are not available at distribution points; therefore, ration requests must accurately reflect personnel present for duty, including attached personnel.

CLASSES II, III (PACKAGED), IV, AND VII

8-130. These classes of supply are handled in a manner similar to Class I. Requisitions originate at the brigade unless a subordinate unit is operating under another headquarters. Normally, the MMC authorizes shipment to the supply point in the support area via unit distribution. The ASB’s distribution company then distributes the items to the battalions. In some cases, the items may be throughput from the UEx or UEy to subordinate battalions.

WEAPON SYSTEM REPLACEMENT OPERATIONS

8-131. This special management system replaces critical pieces of equipment for Class VII major weapon systems. Weapon systems, including personnel and ancillary equipment, are selectively replaced consistent with available resources and priorities. The XO, as the weapon system manager, coordinates the efforts of the S1, the S4, and other logistics assets. The XO allocates weapon system resources to subordinate units. A SITREP provides information to the commander and staff on the status of weapon systems within the battalions. The appropriate requisition is placed into the system by the brigade property book officer (PBO) when losses occur,

CLASS III BULK

8-132. The basic load of Class III bulk is the hauling capacity of the unit's fuel vehicles, including the fuel tanks of the unit's vehicles. Topping off aircraft, vehicles, and equipment when possible, regardless of the fuel level, is essential to continuous operations.

8-133. Units normally use fuel forecasts to determine bulk petroleum, oils, and lubricants (POL) requirements. Battalions estimate the amount of fuel required based on projected operations, usually for the period covering 72 hours beyond the next day. Battalion S4s forward requests through the brigade S4 to the appropriate MMC. Units bulk POL is delivered by the support area Class III section i.e BSB to FSC and FSC to companies/troops, unless supply is used at the FARP. .

8-134. A key exception to this principle is refuel-on-the-move operations. Although these operations may use unit assets, typically they involve supporting fuel units' equipment. The purpose is to ensure the unit's vehicles and bulk fuel assets are topped before critical phases of an operation. FM 10-67-1 contains details.

8-135. Class III bulk for the UEx AVN BDE is delivered by UEx sustainment brigade assets. The UEx sustainment brigade can store a one-day supply of Class III bulk. This fuel is stored and distributed from collapsible bladders or 5,000-gallon tanker trailers. Class III bulk normally is delivered by the UEx sustainment brigade as far forward as the brigade support area (BSA). However, it may be delivered as far as the FSC's FARP in certain situations.

CLASS V AND CLASS V (A) (CONVENTIONAL AMMUNITION)

8-136. Conventional ammunition is the standard ammunition associated with conventional weapons such as M60 machine-guns for the UH–60 and weapon systems mounted on the AH–64 and OH-58D. These classes include standard explosives such as hand grenades, claymores, C-4, and pyrotechnics (flares, star clusters, and smoke grenades). Special ammunition, which does not apply to the AVN BDE, includes nuclear ammunition, special missile warheads, and rocket motors.

8-137. Normally, the S4 requests ammunition from the appropriate MMC. Ammunition managers use combat loads rather than days of supply. Combat loads measure the amount of Class V a unit can carry into combat on its weapons system. Once the request has been authenticated, the ASB's distribution company distributes the ammunition to the battalion FSC from the ammunition transfer holding point (ATHP).

REQUIRED SUPPLY RATE

8-138. The required supply rate (RSR) is the estimated amount of ammunition needed to sustain the operations of a combat force without restrictions for a specific period. RSR is expressed in rounds per weapon per day. This RSR is used to state ammunition requirements. The S3 normally formulates the brigade RSR, but higher headquarters often adjusts it.

CONTROLLED SUPPLY RATE

8-139. The controlled supply rate (CSR) is the rate of ammunition consumption (expressed in rounds per day per unit, weapon system, or individual) that can be supported for a given period. It is based on ammunition availability, storage facilities, and transportation capabilities. A unit may not exceed its CSR for ammunition without authority from higher headquarters. The S4 compares the CSR against the RSR; then remedies shortages by requesting more ammunition, sub-allocating ammunition, cross-leveling, or prioritizing support to subordinate units. The commander establishes CSRs for subordinate units.

BASIC LOAD

8-140. The basic load is the quantity of ammunition authorized by the theater commander for wartime purposes and is required to be carried into combat by a unit. The basic load provides the unit with enough ammunition to sustain itself in combat until the unit can be resupplied.

COMBAT LOAD

8-141. The combat load is that quantity of supplies e.g. fuel or ammunition that can be carried by the combat system or solider into combat.

CLASS VI

8-142. Class VI supplies may be made available through local procurement, transfer from theater stocks, or requisitioning from the Army and Air Force Exchange Service (AAFES).

Available shipping space dictates Class VI supply to the theater. Class VI items are personal care items, candy, and other items for individual consumption. Health and comfort items (formally referred to as ration supplement sundry packages) are class VI supply items managed by the Defense Personnel Supply Center. They are issued through the standard supply system (normally class I supply channels) without cost to Soldiers in the early stages of a deployment. They contain items such as disposable razors, toothbrushes, toothpaste, and other personal care items. Defense Logistics Agency (DLA) Regulation 4145.36 contains additional information on these packages.

CLASS VII

8-143. Class VII supplies consist of major end items such as vehicles and aircraft. Because of their importance to combat readiness and high costs, Class VII items are usually controlled through command channels and managed by the supporting MMC. Each echelon manages the requisition, distribution, maintenance, and disposal of these items to ensure visibility and operational readiness. Units report losses of major items through both supply and command channels. Replacement requires coordination among materiel managers, Class VII supply units, transporters, maintenance elements, and personnel managers.

CLASS IX AND CLASS IX (A)

8-144. The UEx/y sustainment brigade MMC normally manages Class IX. Within the battalions, the FSCs and AMC/Ts maintain combat spares items. ASL items are maintained at the ASB level.

8-145. Class IX requisitioning begins with the unit filling requisitions from its combat spares. If the item is not stocked on the combat spares, or it is at zero balance, the requisition is passed to the supply support activity (SSA). This unit fills the request from its ASL stocks or passes the requisition to the MMC. The ground maintenance sections of aviation units normally maintain the Class IX ASL for ground equipment. The AMC/T maintains the Class IX (A) combat spares.

SUPPORT BY HOST NATION

8-146. Logistics support and transportation may be provided by host nation organizations and facilities. Common classes of supply may be available and obtained from local civilian sources. Items may include barrier and construction materials, fuel for vehicles, and some food and medical supplies. Requisitioning and distribution of materiel are coordinated through logistics and liaison channels.

MAINTENANCE PRINCIPLES

8-147. Maintenance entails keeping materiel in operational condition, returning it to service, or updating and upgrading its capability. It includes performance of preventive maintenance checks and services (PMCS); recovery and evacuation of disabled equipment; diagnosis of equipment faults; substitution of parts, components, and assemblies; exchange of serviceable materiel for unserviceable materiel; and repair of equipment. FM 3-04.500 gives more details on aviation maintenance operations. FM 4-0 and FM 4-30.3 contain additional information.

8-148. Maintenance is a combat multiplier. When the threat has relative parity in numbers and quality of equipment, the force that combines skillful use of equipment with an effective maintenance system has a decisive advantage. It has an initial advantage in that it enters battle with equipment that is likely to remain operational longer. It has a subsequent advantage in that it can return damaged equipment to the battle faster.

8-149. Well-trained and equipped forward maintenance elements are critical to the success of the maintenance concept. They must have the proper personnel, equipment, tools, and immediate access to high usage replacement parts. Readiness-level focused maintenance units concentrate on the rapid turnaround of equipment to the battle, while sustainment-level maintenance units repair and return equipment to the supply system.

8-150. The maintenance system is organized around forward support. All damaged or malfunctioning equipment should be repaired on-site with replacement of the parts, or as close to the site as possible.

VEHICLE/GROUND EQUIPMENT MAINTENANCE

MAINTENANCE SUPPORT STRUCTURE

8-151. Ground maintenance support for each of the battalions is provided by their organic FSC. The ASB provides ground maintenance support to the AVN BDE HHC and the battalions.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

8-152. The operator or crew and organizational maintenance personnel perform unit maintenance that includes scheduled and unscheduled unit-level maintenance, repair, and PMCS. PMCS maintains the operational readiness of equipment through preventive maintenance and early diagnosis of problems.

8-153.

VEHICLE AND EQUIPMENT RECOVERY PROCEDURES

8-154. The recovery manager in each supporting logistic unit and the brigade HHC coordinates recovery operations with the overall repair effort to best support the commander's priorities and the tactical situation. FM 9-43-2 describes the technical aspects of vehicle recovery operations.

RECOVERY PRINCIPLES

8-155. The unit recovers its equipment. When it lacks the physical means to recover an item, the unit requests assistance from the supporting maintenance element. Management of recovery operations is centralized at the battalion whenever possible.

8-156. Maintenance personnel repair equipment as far forward as possible within the limits of the tactical situation, amount of damage, and available resources. Recovery vehicles return equipment no farther from the unit owning the equipment than necessary, usually to the maintenance collection point of the supporting maintenance unit.

8-157. Recovery missions that might interfere with combat operations, or compromise security, are coordinated with the tactical commander.

AVIATION MAINTENANCE

8-158. . As Army aviation transforms into the Modular Force structure, the aviation maintenance company/troop (AMC/T) within each battalion and squadron will continue to provide unit maintenance above the capability of the flight companies or troops. The aviation maintenance support company (AMSC) assigned to the ASB will continue to provide primarily intermediate maintenance and secondarily provide backup unit maintenance to the aviation brigade’s battalions and squadrons.

8-159. Aviation maintenance is performed on a 24-hour basis. The governing concept is to replace forward, repair rearward, so units can rapidly return aircraft for operational needs. Emphasis is on component replacement rather than repair. Such replacement requires increased stockage of line replaceable units (LRU) and quick change assemblies (QCA). Damaged or inoperable aircraft that require time-consuming repair actions are handled in more secure areas toward the rear. FM 3-04.500 provides more detail.

MANAGEMENT BALANCE

8-160. Balancing the flying-hour program, operational ready rates, and bank hours is critical to meeting operational needs. Commanders and maintenance officers/technicians evaluate available resources using the T4-P4 concept (tools, time, technology, training, problem, plan, people, and parts) and adjust them accordingly.

SCHEDULED MAINTENANCE

8-161. In most situations, commanders need to avoid situations that cause an excessive number of aircraft to require scheduled maintenance at the same time, or in which scheduled maintenance must be overflown. All imminent scheduled maintenance should be accomplished before deployment or initiation of surge operations. Refer to FM3-04.500 for further information concerning scheduled maintenance flow.

PHASE AND PROGRESSIVE PHASE MAINTENANCE

8-162. Ongoing operations, training exercises, deployments and combat operations can have a major impact on readiness (for example, flying too many aircraft into scheduled maintenance at a critical time). To support the unit's flying hour program, OPTEMPO, deployments, training, and the availability of resources (tools, maintenance personnel, repair parts, special equipment) must be considered when planning phase maintenance (AH-64, CH-47, and UH-60) and progressive phase maintenance (OH-58D) inspections.

8-163. To facilitate phases in fast-moving operations (combat or otherwise), phases normally are done at the ASB or out of country. If the "out of country" option is used, then replacement aircraft may be required depending upon the METT-TC conditions for the mission.

UNSCHEDULED MAINTENANCE

8-164. Unscheduled maintenance is generated by premature or unexpected malfunction, improper operation, or battlefield damage. Units must be doctrinally and organizationally prepared to apply responsive corrective action on an as-needed basis. Maintenance support teams must be identified prior to missions and assigned to scheduled shifts to quickly react to unscheduled maintenance requirements, ensuring aircraft availability for follow-on missions.

OTHER MEASURES

8-165. The supporting ASB Company can provide personnel augmentation to the AMC/T during surge periods. TM 1–1500–328–23 addresses deferred maintenance.

MAINTENANCE SUPPORT SYSTEM FORCE STRUCTURE

8-166. The maintenance support system is a two-level structure--- defined as Field and Sustainement. See figure 8-6 for a review of moving from three-level to two-level maintenance and sustainment.

8-167. Field Maintenance is performed within the AVN BDE based upon both personnel assigned within the various Tables of Organization and Equipment (TOEs) and the sets, kits, outfits and tools (SKOT) provided therein. Aviation Battalions and Squadrons perform maintenance within their capability both in the flight companies/troops and within their internal AMC/T. They are limited mainly by SKOT in order to keep the supported maneuver battalions responsive and flexible, thus making them more lethal. Tactical maneuver Battalions and Squadrons are authorized to perform unit maintenance detailed in the TMs IAW AR 750-1. The AMSC contained within the ASB is equipped with the SKOT that enable their assigned personnel to perform intermediate maintenance detailed in the aircraft TMs. The AMSC is authorized to perform intermediate maintenance IAW AR 750-1.

8-168. Sustainment Maintenance is performed within Field Repair Activities (FRA), Army Depot, Aviation Classification and Repair Depot (AVCRAD) and Original Equipment Manufactures (OEM) either by contracted representatives or within their factories. On a case by case and limited basis the AVN BDE may obtain authorization via the assigned AMCOM Logistics Assistance Representative (LAR) to affect repairs classified as Depot IAW aircraft TMs. Army Depots are most often positioned at fixed bases within CONUS.

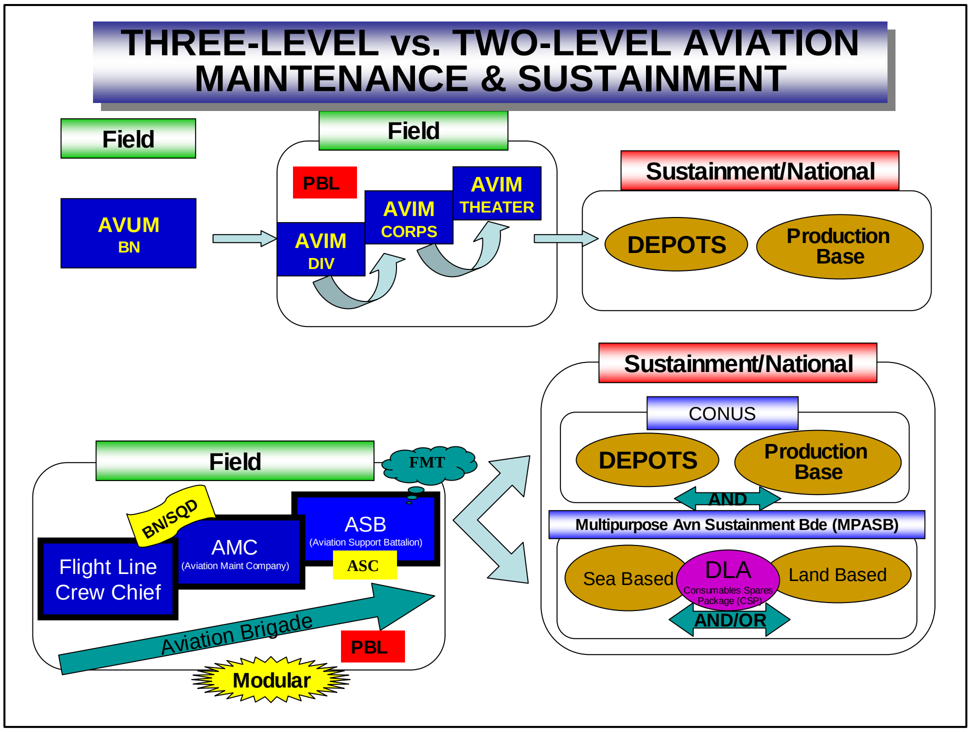


Figure 8-6. Three-Level to Two-Level Maintenance and Sustainment

FLIGHT COMPANY / TROOP

8-169. Crew chiefs perform aircraft launch and recovery operations, maintain aircraft logbooks in accordance within Army guidance and unit SOP. They perform both scheduled and unscheduled unit maintenance to include the replacement of major subsystem components, maintenance operational checks and main and tail rotor vibration analysis. The Battalion/Squadron flight company/troops received back-up support from the AMC/T in the conduct of both scheduled and unscheduled maintenance.

AVIATION MAINTENANCE COMPANY/TROOP (AMC/T)

8-170. The AMC/T is comprised of three modular Aviation Support Platoons, which include: Headquarters Platoon, Maintenance Platoon, and a Component Repair Platoon. The purpose of the AMC/T is to assist in the building of combat power and aviation maintenance sustainment of its supported battalion/squadron. The AMC/T is arranged in order to provide quick, responsive, real-time internal maintenance support and repair within its capability. The AMC/T troubleshoots and diagnosis' airframe and component malfunctions and performs maintenance and repair actions requiring less than 3 days completing. The AMC/T is authorized to perform maintenance at the unit level in accordance with the maintenance allocation chart (MAC). It will conduct battle damage assessment and repair (BDAR) and recovery within its capability.

8-171. The Headquarters Platoon contains the Production Control section, Quality Control section and the Technical Supply section. This platoon provides for the internal management of repairs, quality of repairs and logistics support within the battalion/squadron. The tech supply section operates logistics STAMIS, requisitions class IX

(A) spares and manages the battalion/squadron prescribed load list (PLL). The battalion/squadron aviation material officer assigned to the S-4 provides oversight.

8-172. The Component Repair Platoon contains the assigned aviation repair specialty MOSs to include avionics, armament, engine, hydraulics, pneumatics and sheet metal repair assets. The component repair platoon diagnoses airframe and component malfunctions and performs maintenance, repair actions, removes and installs line replaceable units (LRU) within its capabilities.

8-173. The Maintenance Platoon provides quick, responsive internal maintenance support and repair turn around within its capability. When assigned to support aircraft managed under the phase maintenance concept, the maintenance platoon is the primary provider of this scheduled maintenance within the Battalion. The maintenance platoon operates and maintains aviation ground support equipment; operates and performs unit level maintenance on AGPU's, generators and ground support equipment.

8-174. The AMC/T is enabled to provide mobile, responsive support through Field Maintenance Teams (FMTs). FMTs are used to repair aircraft onsite or to prepare them for evacuation. The AMC/T commander and PC officer coordinate and schedule maintenance at the forward locations of the battalion. The members of the forward element must be able to diagnose aircraft damage or serviceability rapidly and accurately. FMT operations follow these principles:

- Teams may be used for aircraft, component, avionics, or armament repair.
- When the time and situation allow, teams repair on site rather than evacuating aircraft.
- Teams must be 100-percent mobile and transported by the fastest means available (normally by helicopter).
- Teams sent forward must be oriented and equipped for special tasks.

8-175. In some situations, normal maintenance procedures must be expedited to meet operational objectives. In such cases, the unit commander may authorize use of aircraft combat maintenance and battle damage repair (BDR) procedures. Aircraft combat maintenance and BDR is an AMC/T responsibility with backup from the supporting ASB. The concept uses specialized assessment criteria, repair kits, and trained personnel to return damaged aircraft to the battle as soon as possible. Often, these repairs are only temporary. Permanent repairs may be required when the tactical situation permits. This method is used to meet operational needs. It is not used when the situation allows application of standard methods.

AVIATION MAINTENANCE SUPPORT COMPANY (AMSC)

8-176. The AMSC in the ASB is comprised of three to four platoons; Headquarters, Airframe Repair Platoon and the Component Repair Platoon. Modularity within the AMSC is based on a contact support team concept and utilizes five Shop Equipment Contact Maintenance (SECM) vehicles per platoon. See figure 8-7 for the SECOM. The AMSC is capable of supporting a Brigade split based operation in two locations. The AMSC primarily performs intermediate maintenance in accordance with the maintenance allocation chart (MAC), It also provides back-up unit maintenance in support of the aviation brigade. The AMSC provides logistics support operations for the Aviation Brigade assets (Aviation and Ground Equipment) in a sustained combat environment, to include Unmanned Aerial Vehicle Systems and Air Traffic Control Equipment. The AMSC also performs production control, quality control and conducts Maintenance Management/Maintenance Test Pilot functions. Additionally, ASBs assigned to Heavy and Forced Entry will continue to have a six man Electro-Optics Test Facility (EOTF) Augmentation Team assigned.

Figure 8-7. Shop Equipment Contact Maintenance (SECM)

8-177. The Headquarters Platoon contains the Production Control section, Quality Control section and the Technical Supply section. This platoon provides for the internal management of repairs, quality of repairs and logistics support within the battalion/squadron. The tech supply section operates logistics STAMIS, requisitions class XI (A) spares and manages the battalion/squadron prescribed load list (PLL). The battalion/squadron aviation material officer assigned to the S-4 provides oversight.

8-178. The Airframe Repair Platoon (ARP) performs maintenance actions, which require more than 3 days to complete (such as phase maintenance and preventative maintenance and services.). The ARP performs in depth troubleshooting and diagnosis of airframe and component malfunctions; fixes and fuels organic battalion equipment, ground vehicles and aviation ground support equipment; operates and performs field level maintenance on Aviation Ground Power Units, generators and ground support equipment; and performs battle damage repair at the platoon level. The ARP contains modular maintenance contact teams to support battalion level deployments (5 sections/1 per Battalion). The primary methods of returning aviation systems to a mission capable status for a field level maintenance activity are through the use of repair parts, BDAR, controlled substitution, cannibalization, and Class VII replacement. As the senior logistician in the Brigade, the ASB Commander will tailor the ARP to support the multiple AMC/T to support the aviation brigade's mission. Each AMC/T will be organic to its supported aviation battalion. In addition, component repair organizations may be attached to the ARP to facilitate rapid turnaround of critical combat power levels off of aircraft tasks/components.

8-179. The ARP is designed to provide on aircraft and critical off aircraft Aviation Field Level Maintenance both unit intermediate in accordance with the MAC. The ARC also performs Battlefield Damage Assessment and Repair for all assigned aircraft and UAVs in the aviation brigade. Long duration low frequency services such as phases will be accomplished at the ARC. In addition, the UEy ASB's Component Repair Company (CRC) may attach platoons or teams to the UEx ASB field maintenance activities in order to support the repair of components during the initial phases of a deployment or SSC operation or to provide unique support to current systems. The habitual attachment of these component repair elements to the UEx ASB will be an interim step until the Army is able to fully transition to Single Stock Fund, National Maintenance Program business practices, and Two-level maintenance.

8-180. The Component Repair Platoon (CRP) repairs line replaceable unit (LRU) components to the Technical Manual Standard and returns them to the user. The CRP fixes the following components to Technical Manual Standard: Night Vision Goggle Systems; Aviation Life Support Equipment (ALSE); avionics-electrical and hydraulic components, has limited capability to fabricate hydraulic lines, performs engine repair; prop and rotor repair; armament and armament sub-system repair. The CRP also provides limited fabrication capability using welding and machine shops and operates intermediate level STAMIS, and repairs and troubleshoots unit level (AMC/T and FSC) logistics STAMIS with support from the CSSAMO at the ASB's HSC.

FIELD MAINTENANCE TEAMS (FMTS)

8-181. The AMSC provides mobile, responsive support through FMTs. These FMTs are used to repair aircraft on-site or to prepare them for evacuation. The AMSC commander and production control (PC) officer coordinate and schedule maintenance requirments. The members of the FMT must be able to diagnose aircraft damage or serviceability rapidly and accurately. FMT operations follow the principles listed below:

- Teams may be used for aircraft, component, avionics, or armament repair.
- When the time and situation allow, teams repair on site rather than evacuating aircraft.
- Teams must be 100-percent mobile and transported by the fastest means available (normally by helicopter).
- Teams sent on missions must be oriented and equipped for special tasks.

AIRCRAFT COMBAT MAINTENANCE AND BATTLE DAMAGE REPAIR

8-182. In some situations, normal maintenance procedures must be expedited to meet operational objectives. In such cases, the unit commander may authorize use of aircraft combat maintenance and battle damage repair (BDR) procedures. Aircraft combat maintenance and BDR is an AMC/T responsibility with backup from supporting ASB units. The concept uses specialized assessment criteria, repair kits, and trained personnel to return damaged aircraft to the battle as soon as possible. Often, these repairs are only temporary. Permanent repairs may be required when the tactical situation permits. This method is used to meet operational needs. It is not used when the situation allows application of standard methods.

PHASE AND PROGRESSIVE PHASE MAINTENANCE

8-183. Ongoing operations, training exercises, and deployments can have a major impact on readiness (flying too many aircraft into scheduled maintenance at a critical time). To support the unit's flying hour program, OPTEMPO, deployments, training, and the availability of resources (tools, maintenance personnel, repair parts, special equipment) must be considered when planning phase maintenance (AH-64, CH-47, and UH-60) and progressive phase maintenance (OH-58D) inspections.

8-184. To facilitate phases in fast-moving operations, phases normally are done at the ASB or out of country. If out of country options are used, replacement aircraft may be provided.

BATTLEFIELD MANAGEMENT OF DAMAGED AIRCRAFT

8-185. BDAR/recovery operations are planned and coordinated in detail as part of the overall PR concept to minimize risk. Recovery operations are those that move an aircraft system or component from the battlefield to a maintenance facility. Recovery may require on-site repair for a one-time flight, or movement by another aircraft or surface vehicle. In extreme circumstances, only portions of inoperative aircraft may be recovered. An aircraft will be cannibalized at a field site only when the combat situation and aircraft condition are such that the aircraft would otherwise be lost to enemy forces. See FM 3-04.500, and FM 3-04.513 for more detailed information on aircraft recovery.

RESPONSIBILITY

8-186. The owning unit is responsibile for aircraft recovery. The unit should use its AMC/T assets within the limits of their capability. A successful recovery operation is a highly coordinated effort between the owning organization, its ASB support, other supporting unit, and the ground element where the operation is to take place. If the recovery is beyond the AMC/T team's capability, ASB support is requested. Overall, control of the recovery rests with the AVN BDE TOC.

RECOVERY TEAMS

8-187. The AMC/T organization prepares for aircraft recovery contingencies by designating a DART. The DART, as a minimum, includes a maintenance test pilot, maintenance personnel, aircraft assessor, and technical inspector. The technical inspector may also be the assessor. All members must be trained to prepare aircraft for recovery as preparing aircraft for recovery is a unit responsibility. The team chief ensures that rigging equipment and quick-fix BDR kits (tools, hardware, POL products, repair parts, and technical manuals (TM)) are kept ready for quick-notice recovery missions. The owning flight company may be required to provide a crew chief to the DART. FM 3-04.513 contains a sample aircraft recovery and evacuation SOP.

FACTORS AFFECTING RECOVERY OPERATIONS

8-188. Assessment of the following factors facilitates selection of the best COA:

- Location of downed aircraft.
- Types of special equipment packages installed on the aircraft.
- Amount of damage to aircraft.
- Tactical situation and proximity to enemy.
- Time available (planning time for AMC/T preparation and rigging is 30 to 60 minutes, which may vary based on METT-TC).
- Weather.
- Assets available.

COURSES OF ACTION

8-189. The unit SOP provides guidance required to determine which of the following actions is appropriate for the situation:

- Make combat repairs, defer further maintenance, or return the aircraft to service.
- Make repairs for one-time flight, and fly the aircraft to an appropriate maintenance area.
- Rig the aircraft for recovery (surface or aerial) and arrange for transport.
- Selectively cannibalize, destroy, or abandon the aircraft according to TM 750-244-1-5 and unit SOP.

AERIAL RECOVERY

8-190. General procedures typically are covered in unit SOPs. FM 3-04.513 provides detailed procedures for preparing and performing aerial recovery operations for specific aircraft. FM 1-120 provides doctrinal guidance on the requirements, procedures, and C2 tasks involved in planning, coordinating, and executing the airspace control function. Unless a battalion has attached or assigned UH-60s or CH-47s, it will have to request them to conduct an aerial recovery.

PLANNING

8-191. Recovery operations and, to a lesser degree, maintenance evacuations, can easily be detected and attacked by enemy forces. Plan command, control, and coordination for recovery operations in advance. Recovery and evacuation procedures must be included in unit SOPs, contingency plans, OPORDs, and air mission briefings.

SPECIAL ENVIRONMENTS

8-192. CBRN decontamination of aircraft, equipment, and personnel should be accomplished before delivery to the maintenance site, if possible. The increased risk associated with night recovery operations, must be weighed against the urgency to recover the aircraft, considering time, weather, the need for security, and the tactical situation.

AIRCRAFT COMMANDER AND CREW

8-193. When an aircraft is forced down, the crew should notify the unit or AMC/T via an aircraft or survival radio. Important information includes:

- Aircraft identification and type.
- Location of aircraft.
- Number of people on board.
- Assessment of site security.
- Adaptability of the site for the insertion of a DART or BDAR team.
- An evaluation of damage, to the extent possible, so that needed BDAR personnel, equipment, and parts requirements can be estimated.
- Information on crew and passenger capability to assist. For example, the aircraft commander may be able to fly the aircraft out, eliminating the need for an aviator as part of BDAR.

AVIATION LIFE SUPPORT SYSTEM (ALSS)

8-194. Commanders ensure that mission-required ALSS is on-hand in sufficient quantities, and that the equipment is in serviceable condition. To meet the Army's demanding transformation requirements, newer and more complex, integrated systems are being fielded. These systems demand better maintenance planning, higher maintenance skills, and dedicated facilities.

8-195. Commanders are required to establish an ALSS maintenance management and training program budget to meet resource requirements. Funding for equipment, supplies, and repair parts is imperative. When preparing the budget, review AR 95-1, CTAs 8-100, 50-900, 50-909, and applicable MTOEs and TDAs.

RECONSTITUTION

8-196. Reconstitution is a set of actions that a commander plans and implements to restore his unit to a desired level of combat readiness. Although not a logistics (CSS) function, reconstitution is often logistics intensive, especially regeneration. Reconstitution is a total process. Its major elements are assessment, reorganization and regeneration. Reconstitution decisions belong to the commander. The commander, with his staff's support, assesses unit effectiveness (see FM 100.9). He does not base his reconstitution decisions solely on facts, figures, and status reports from subordinate units. His assessment relies also, and probably more importantly, on other factors. These include:

- Knowledge of his Soldiers
- Condition and effectiveness of subordinate commanders and leaders
- Previous, current, and anticipated situations and missions.

8-197. Planners must be prepared for mass casualties, mass destruction of equipment, and the destruction or loss of effectiveness of entire units. The aviation battalion or companies that have been catastrophically depleted or rendered ineffective are returned to combat effectiveness through this MSO. Reconstitution consists of the actions to restore companies to a desired level of combat effectiveness commensurate with mission requirements and availability of resources. Reconstitution differs from sustaining operations, replenishment sustainment operations (RSO) in that it is undertaken only when a unit is at an unacceptable level of combat readiness. RSO's are routine actions to maintain combat readiness. Weapon system replacement operations can be part of RSO's. Commanders reconstitute by either reorganization or regeneration.

ASSESSMENT

8-198. Assessment measures the unit's capability to perform a mission. Subordinate unit commanders assess their units before, during, and after operations. If a commander determines his unit is no longer mission capable even after reorganization, he notifies the aviation brigade commander. The aviation brigade commander either changes the mission of the unit to match its degraded capability or removes it from combat. Commanders can reconstitute their units by reorganization or regeneration to bring their units up to the necessary readiness level for the next mission.

REORGANIZATION

8-199. Reorganization is the action taken to shift resources within a degraded company to increase its combat power. Measures taken include cross-leveling equipment and personnel, matching operational weapons systems with crews, or forming composite companies. It can be conducted down to and including company level. Depending upon the type of reorganization, the unit's own assets may be used or higher echelon resources might be used.

8-200. Immediate battlefield reorganization is the quick and often temporary restoration of companies conducted during an operation; for example, reorganizing on the objective and implementing the established succession of command is a quick method that does not require a mission staging operation (MSO) to achieve the desired results.

8-201. Deliberate reorganization is a permanent restructuring of the unit. It is the type of reorganization considered during reconstitution planning. Deliberate reorganization is supported with higher echelon resources (such as maintenance and transportation), and additional replacements and other resources may be made available during a MSO. The parent-unit commander one echelon higher than that reorganized must approve deliberate reorganization. For example, the aviation battalion commander cannot approve the deliberate reorganization of an attached company, but the parent aviation battalion commander or the aviation brigade commander can approve it.

REGENERATION

8-202. Regeneration is incremental or whole-unit rebuilding through large-scale replacement of personnel, equipment, and supplies; reestablishing or replacing essential command, control, and communications; and conducting the necessary training for the rebuilt unit. It is used when the unit has become combat ineffective.

8-203. The unit must be removed from combat to be regenerated during a MSO. UEx is responsible for the regeneration of aviation battalions. UEy is responsible for aviation brigade regeneration. To regenerate a unit, the UEx/y commander must balance priorities for supplies, equipment, or other logistics requirements to include medical, and he must task the support organizations to provide the needed support.

8-204. It is quite possible that aviation brigade regeneration could occur with redeployment back to its home station or an equally suitable environment. This requirement would place the brigade in a location to effectively receive requisite resourcing (personnel and equipment) and a stable environment to retrain. A new aviation brigade would be deployed to assume its mission requirements in the AO.

TACTICAL ENABLING OPERATIONS: MOVEMENT

8-205. Movement operations which logisticians conduct to support the aviation brigade are the movement of troops, materiel and supplies from one place to another by any available means. The ability of a commander to posture his force for a decisive or shaping operation depends on his ability to move that force and provide logistics for it. The aviation support battalion's movement is governed by the use of its prevailing organization i.e. its own 75% mobility using one lift, support from the aviation brigade as necessary to mitigate risk and the use of its technology to move and occupy and sustain the brigade. The essence of battlefield agility is the capability to conduct rapid and orderly movement to concentrate the effects of combat power and it's sustaining components at decisive points and times. Successful movement normally known as combat logistics patrols in the COE or replenishment operations as discussed earlier in Section I places troops, material and supplies at their destination at the proper time to support a unit's readiness for combat. Information on convoy survivability is at the Combined Arms Support Command's website:

http://www.cascom.army.mil/td/td_trans/Training_Products/newindex.htm

ROAD MARCHS

8-206. Logistics units conduct two kinds of movement: administrative and tactical. An administrative movement is a movement in which troops and vehicles are arranged to expedite their movement and conserve time and energy when no enemy interference, except by air, is anticipated (J.P. 1-02). It considers tactical implications, but its primary emphasis is on expediting movement and conserving time and energy. Administrative movements are based on the assumption that contact with the enemy during or shortly after the move is unlikely, but still the movement must prepare for enemy contact. A tactical road march is a rapid movement used to relocate units and materiel in a combat zone in order to prepare for combat operations. Hostile contact is anticipated; hence the unit must maintain security measures and be prepared to react to enemy contact. All road marches in a theater of operations under the contemporary operational environment (COE) should be considered as a tactical road march, normally called a combat logistics patrol when conducting replenishment operations. Contact with the enemy is expected to be likely. All movements should be planned, prepared for, executed and assessed as a combat operation with an offensive spirit.

ASB SECURITY OPERATIONS

8-207. Logistics elements locate most of their assets in the AVN BDE support area. These elements deploy in a manner that maintains unit cohesion, supports integration into the defensive plan for collocated units, and provides responsive support to the battalions. FM 3-04.500 and Appendixes B and H contain additional information about logistics movement and operations.

8-208. The brigade commander's goal is to retain overall freedom of action for fighting military operations. This means the MSRs are clear, unobstructed, and secure; units can move quickly and in an orderly fashion throughout the brigade area; logistical resupply via combat logistics patrols and reconstitution are sustained; and all CS and logistics units are secure.

8-209. The brigade commander is responsible for plans and operations throughout the brigade area of operations. He assigns tasks to subordinate and supporting commanders to accomplish all brigade missions. The brigade S3 includes detailed planning for the ASB area of operation, as part of operational planning for offensive, defensive and sustaining operations missions to include stability operations and support operations. .

8-210. The ASB commander is responsible for the defense of the BSA. Hence, the brigade support area's (BSA) perimeter defense is under the command and control (C2) of the ASB commander. The ASB commander's plan of action must achieve adequate protection to ensure accomplishment of missions by BSA elements with as small a force as necessary, since any drain of time and personnel from operational activities will adversely affect the accomplishment of their missions. However, survival of his unit is most important for the continuing success of the brigade's ability to sustain itself.

8-211. The purpose of BSA security operations is to prevent interruption of current and future operations. Rear area for linear warfare or unassigned area in noncontiguous warfare (BSA included) constitutes one of the five elements of sustaining operations. (See FM 3-0 for a discussion of sustaining operations as part of the battlefield framework.)

8-212. The security planning by the ASB's military decision-making process (MDMP) starts with the aviation brigade's first WARNO during the brigade MDMP. Whereas the sustainment concept of the support plan that the ASB will execute is developed during the brigade's MDMP. Like all other subordinate battalions of the brigade, the security operations planning for the ASB and the units within the BSA are conducted by the aviation support battalion.

8-213. The ASB commander has control of all elements in the BSA for defense and positioning. The major elements in the BSA assist with forming the perimeter normally in a contiguous perimeter. It is possible due to METT-TC conditions that the perimeter is broken into battle positions of individual perimeter defense that are independent but interlocking for defense. The senior individual in each position is the commander for the perimeter defense. The ASB standard operating procedures (SOP) will cover as many defense procedures as possible.

8-214. Key logistics elements from the ASB are designated to evacuate the BSA to allow minimum support to the maneuver brigade should the enemy confront the BSA in sufficient strength to impact upon the ability to defend the BSA. The ASB should develop a displacement plan to support this requirement. However, all units must be able to defend against Level I activities (sniper, agents, saboteurs, or terrorist activities). They should be able to defend and thereby impede Level II attacks until a response force from the brigade arrives. ASB units must defend themselves against attempts to disrupt their operations. They must be able to minimize destruction and to reinforce their units. ASB units must also be able to gain time until response forces arrive.

8-215. If an enemy incursion exceeds the capability of response forces, tactical combat forces must be committed to neutralize the threat. Assistance may come from a MP unit as a response force or a tactical combat force (TCF). No logistics unit can sustain a defense against a determined Level II or III attack, but it should plan and train to protect itself until a tactical combat force (TCF) arrives to repel the enemy attack with assistance from the BSA. The ASB must be able to synchronize self-defense with BSA assets, MPs, attached/OPCON maneuver units and the TCF when it arrives.

8-216. When the aviation support battalion (ASB) commander plans in coordination with (ICW) the aviation brigade S3 for the defense of the ASB's area of operation, he needs to have complete knowledge of what elements are in his sector of responsibility. What assets does each unit have that will allow it to defend itself and identify what elements can defend against a large enemy threat? Most supporting type BOS units (signal, engineer, ADMO, logistics) in the ASB's area of operation area are located in the BSA. Sometimes due to mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) many small elements form battle positions with the entire group of battle positions making up a BSA, which in itself is as perimeter defense.

8-217. Combat commanders need to realize that the time and effort required to defend logistics units degrades their ability to perform their primary support mission. A dialogue between the aviation brigade commander and the aviation support battalion (ASB) commander regarding the ability of the brigade support area (BSA) to conduct sustainment operations and its force protection requirementsmust occur. There is a continuum of balancing requirements that as the risk of an enemy threat increases, the amount of sustainment operations to be conducted decreases. The brigade commander and the ASB commander must have this discussion as to what is a reasonable amount of risk to accept and then plan accordingly with as much risk mitigation as possible.

SAFETY DURING COMBAT OPERATIONS

8-218. An effective safety program for logistics operations is a basic requirement in all units. Everyone must be alert to immediately recognize and correct potentially dangerous situations. Accidents can cause more losses than enemy action unless the unit embraces safety.

ACCIDENT CAUSES

8-219. An aviation accident is seldom caused by a single factor such as human error or materiel failure. Accidents are more likely to result from a series of contributing incidents. The following areas require constant command attention to prevent aviation accidents:

- Human factors.
- Training, education, and promotion.
- Equipment design, adequacy, and supply.
- Normal and emergency procedures.
- Maintenance of equipment.
- Facilities and services.
- Environment.
- The more complex aircraft have higher maintenance-related mishap rates. Commanders and maintenance supervisors must ensure that their personnel learn from maintenance errors generated in their own units. Flightfax and other publications provide additional examples and information.

8-220. All personnel must strictly adhere to published standard operating procedures and apply risk management at all levels of operations.

SAFETY REGULATIONS

8-221. AR 385-10 regulates overall safety. AR 385-95 regulates the Army aviation accident prevention program. DA Pam 385-40 covers accident investigation and reporting.

RESPONSIBILITIES

8-222. The quality assurance (QA) section has primary responsibility for safety for all maintenance work performed on aircraft or their components. However, everyone in the unit has responsibilities in the unit's safety and aviation/ground accident prevention programs. General responsibilities for key personnel are outline below. Appendix N contains additional information.

UNIT COMMANDER

8-223. Commanders ensure that all unit activities are conducted according to established safety rules and regulations. These regulations include ARs 385-40 and 385-95, DA Pam 385-40, and local directives. Commanders also determine the cause of accidents and ensure that corrections are made to prevent recurrence. When deviation from an established safety rule is desired, commanders obtain permission from the appropriate higher commander.

SUPERVISORS

8-224. Effective supervision is the key to accident prevention. Supervisors must apply all established accident prevention measures in daily operations. They should frequently brief subordinates on safety procedures, get their suggestions for improving safety practices, and announce any new safety procedures. Recommended agenda items are listed below.

- The overall job and expected results.
- The how, why, and when of the job, and any ideas from the group on ways to improve methods and procedures.
- The part each person contributes.
- Existing and anticipated hazards and the action needed to resolve these problems.
- The need for prompt, accurate reporting of all injuries, accidents, or near accidents.
- Basic first aid procedures, training, and readiness.
- The need to constantly search for, detect, and correct unsafe practices and conditions to prevent accidents and injuries.

INDIVIDUALS

8-225. All personnel must be aware of the safety rules established for their individual and collective protection. Each person must read and follow unit SOPs, instructions, checklists, and other safety-related information. They must report safety voids, hazards, and unsafe or incomplete procedures. Each Soldier must follow through until the problem is corrected.

SECTION VII - STANDARD ARMY MANAGEMENT INFORMATION SYSTEMS (STAMIS) ARCHITECTURE

GENERAL

8-226. To sustain combat power, the Army must have the ability to “see the requirements” on-demand through a logistics data network. Logistics operations have typically been reactive in nature. Within the sustainment brigade, Army logisticians will be an integral part of the joint battlefield network, with satellite-based communications that provide full-time connectivity on demand, enabling logisticians to pass and receive key data from the battlefield to the industrial base. These capabilities will allow joint force commanders to make decisions base upon accurate, real-time logistics information.

8-227. STAMIS consist of computer hardware and software systems that automate diverse functions based on validated customer requirements. STAMIS facilitate the vertical and horizontal flow of logistics and maintenance status information to units Army wide. See Figure 8-8.

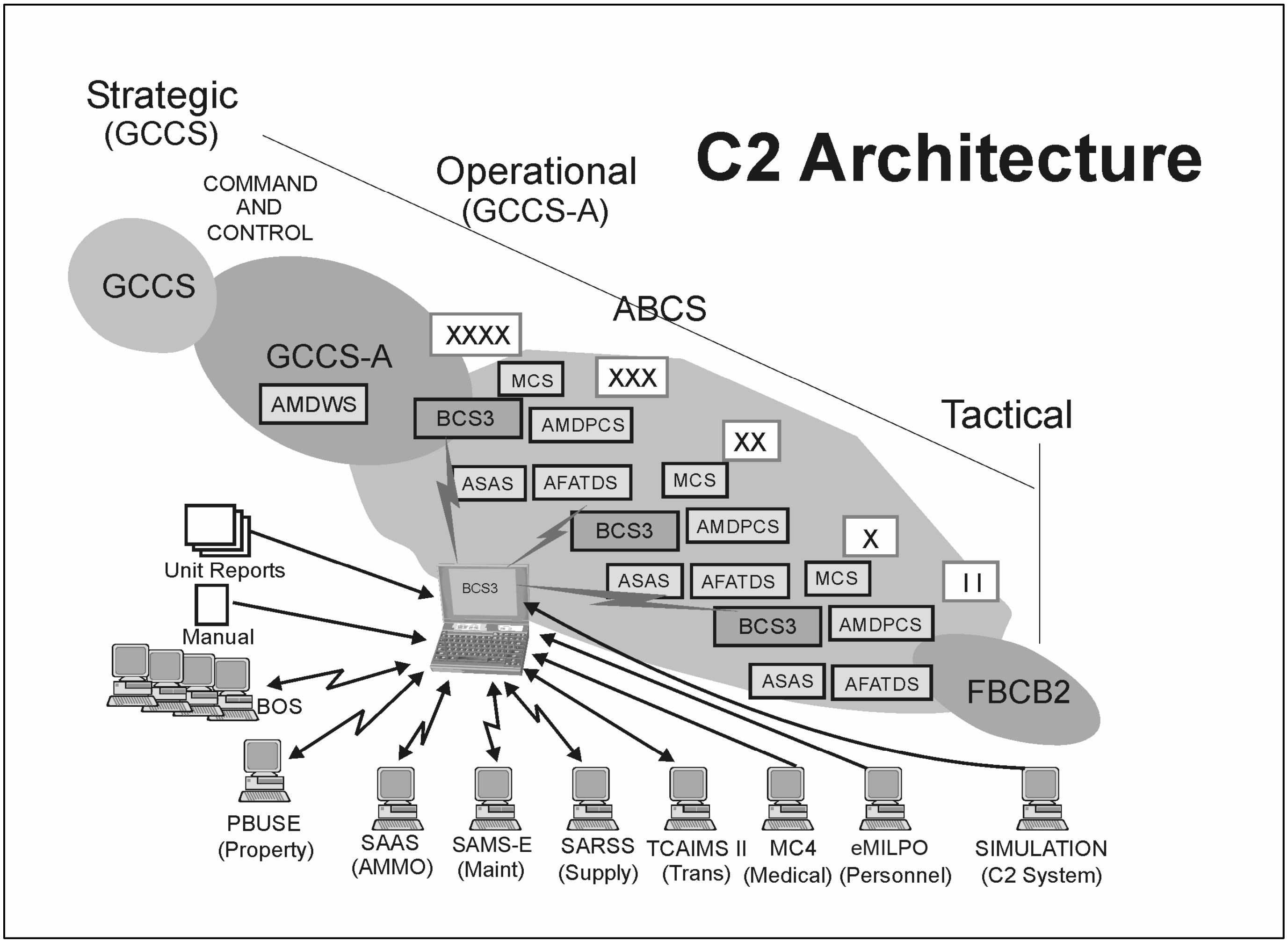


Figure 8-8. STAMIS Architecture

STANDARD ARMY RETAIL SUPPLY SYSTEM-OBJECTIVE

8-228. The standard Army retail supply system-objective (SARSS-O) is a STAMIS for retail supply operations and management. It includes all units and installations (active, reserve, and NG). It provides supply-related data to the integrated logistics analysis program (ILAP) system. SARSS-O is comprised of four integrated systems:

- SARSS-1 at the SSA level.
- SARSS-2AD at the UEx sustainment brigade MMC level (not in future designs).

UNIT-LEVEL LOGISTICS SYSTEMS

8-229. Unit-level logistics systems (ULLS) consist of software and hardware that automates the logistics system for unit supply, maintenance, and materiel readiness management operations. It prepares unit supply documents, maintenance management records, readiness reports, and property records. ULLS consists of three applications—ULLS-Aviation (ULLS-A), ULLS-Ground (ULLS-G), and ULLS-S4.

UNIT-LEVEL LOGISTICS SYSTEMS-AVIATION (ULLS-A)

8-230. ULLS-A enables aviation production control officers to generate and manage AVUM level work orders and post status to the maintenance request register. It also provides quality control officers automated component, inventory, and inspection master files. Production control receives a master maintenance data file (MMDF) updated and supplied from logistics support activity (LOGSA).

8-231. The Army materiel status system (AMSS) reporting capability within ULLS-A replaces the manual readiness reporting requirements outlined in AR 700-138. AMSS is intended to become the commander's link to monitoring the supply and maintenance posture of the unit.

UNIT-LEVEL LOGISTICS SYSTEMS –GROUND (ULLS-G)

8-232. ULLS-G is located at units that have an organizational maintenance facility. It automates vehicle dispatching, combat spares management, and the Army maintenance management system (TAMMS). The automotive information test (AIT) interrogator is connected directly to the ULLS-G. ULLS-G is linked to the wholesale supply system through SARSS-Gateway.

UNIT-LEVEL LOGISTICS SYSTEMS -S4 (ULLS-S4)

8-233. ULLS-S4 is located at unit-level supply rooms and at battalion and brigade S4 sections. ULLS-S4 automates the supply property requisitioning/document register process, hand/subhand receipts, component, budget, and logistics planning activities. It also receives and produces AMSS reports generated by ULLS-G/A systems or by another ULLS-S4 system. The AIT interrogator is connected directly to ULLS-S4. ULLS-S4 interfaces with the standard property book system-revised (SPBS-R), ULLS-G and ULLS-A (for budget and AMSS data transferring), standard Army ammunition system (SAAS), SARSS-O at the DS level, the standard Army intermediate level logistics system supply (SAILS), the SARSS-Gateway and Battle Command Sustainment Support System (BCS3)

STANDARD ARMY MAINTNENANCE SYSTEM (SAMS)

8-234. This system includes standard Army maintenance system (SAMS)-1 and SAMS-2.

STANDARD ARMY MAINTENANCE SYSTEM-1 (SAMS-1)

8-235. SAMS-1 enables automated processing of DS/GS maintenance shop production functions, maintenance control work orders, and key supply functions. Requisitions are prepared automatically and automatic status is received from SARSS-1. SAMS-1 has interfaces with other systems such as ULLS and SARSS-O. It also provides completed work order data to the LOGSA for equipment performance and other analyses.

STANDARD ARMY MAINTENANCE SYSTEM-2 (SAMS-2)

8-236. SAMS-2 is an automated maintenance management system used at the FSC and ASB level.

8-237. SAMS-2 enables monitoring equipment NMC status, and controlling and coordinating maintenance actions and repair parts usage to maximize equipment availability.

8-238. SAMS-2 receives and processes maintenance data to meet information requirements of the manager, and to fulfill reporting requirements to customers, higher SAMS-2 sites, and the wholesale maintenance level. Data can be accessed instantly to enable management control, coordination, reports, analysis, and review.

8-239. SAMS-2 provides maintenance and management information to each level of command from the user to the wholesale and DA levels.

SAMS-ENHANCED TO REPLACE ULLS-G AND SAMS-1 &2

8-240. SAMS-Enhanced will enhance ULLS-G, SAMS-1 and SAMS-2 by incorporating the Windows graphical user interface (GUI) operating systems. This change is a maintenance systems modernization initiative, which complies with the Chief of Staff of the Army's "Good Enough" guidance, which allows SAMS-E to act as a bridge between current functionality and the Enterprise Resource Planning (ERP) solution. There are numerous benefits with SAMS-E:

- Replicates fully the functional capabilities of the current legacy systems: ULLS-G and SAMS-1 & 2.
- Reduces the number of computers and operators on the battlefield.
- Operates in the Windows 2003/XP environment that fully replicates the capabilities of the three legacy systems; ULLS-G and SAMS-1 become integrated and utilizes the same relational database as SAMS-2.
- Systems meet requirement of AR 25-2 Information Assurance, DODD 8500.1 Information Assurance and DODI 8500.2 Information Assurance Implementation.
- Enables Ordnance Corps' two (2) level maintenance concept.
- Allows better operational support with its Windows capabilities.

PROPERTY BOOK AND UNIT SUPPLY ENHANCED (PBUSE) PROGRAM

8-241. PBUSE provides close to real time, accurate visibility of the unit's property book account that operates on the Army Knowledge Online portal. It proves a responsive and efficient means to maintain accountable records for the Army's inventory of property. The old program only provided snapshots of the account when it was last updated. There are a number of additional benefits with the use of PBUSE:

- Replaces two legacy systems: the SPBS-R and ULLS-S4.
- Capability to offer total asset visibility thus improving accuracy of combat power reports because of timely and accurate visibility of unit level weapons systems and stocks.
- Uses one common platform (light weight Pentium laptop) versus multiple platforms
- Better operational support with its web-enabled capabilities (i.e. operates on any computer with web connection).
- Provides office automation, e-mail, on-line help and end user manual and automated catalog changes.
- Provides support for unit transfer/task force/split operations.

- Uses fewer data sources because of the centralized database eliminating the need for thousands of smaller databases throughout the Army.
- Better collaboration and interoperability provided by a common source of information required to support war planning via the global combat support system (GCSS), the joint command and control system.

INTEGRATED LOGISTICS ANALYSIS PROGRAM (ILAP)

8-242. The ILAP family of existing and planned management information utilities provides logistics and resource managers with integrated views of cross-functional data. Data is taken from the STAMIS at local, regional, and national levels, and from the Defense Finance and Accounting Service (DFAS). This data is then integrated and displayed at levels of aggregation appropriate for each management level.

DEFENSE AUTOMATIC ADDRESSING SYSTEM (DAAS)

8-243. Logistics information processing system (LIPS), which is maintained by the defense automatic addressing system (DAAS), is DOD's central repository for information on the status of requisitions. It also augments global transportation network (GTN) in monitoring the status of non-unit cargo shipments.

ABCS CONTROL SYSTEMS FOR HBCT LOGISTICS

8-244. Maneuver Control System. The Maneuver Control System (MCS) is the maneuver component provided by ABCS. It is the primary information system supporting the battalion/squadron commander and staff. MCS serves as the horizontal and vertical integrator of force-level information from battalion to UEx. It maintains and disseminates the common operational picture (COP) for all command posts. Commanders and staffs update the MCS database by entering readiness data, battle plans, and battle plan changes as they occur at each echelon. The MCS system consists of window and menu-based software allowing system operators to process retrieve, store, and send information in textual or graphical form. Reports, operation orders (OPORD), overlays, and messages are available to the user.

8-245. Battle Command Sustainment Support System. Battle Command Sustainment Support System (BCS3) is the ABCS component that provides relevant logistics information for the maneuver units. It will provide critical, timely, integrated and accurate automated logistical information. BCS3 provides plan, rehearse, train and execute capabilities on one system. The system software can operate on unclassified or classified systems and it also provides a map-centric display on a commercial laptop.

8-246. BCS3 will collect and process selected logistics data in a seamless manner from CSS Standard Army Management Information Systems (STAMIS), manual systems/processes, and other related source data and automated C2 systems (such as FBCB2 and the GCCS-A). It helps answer the questions of what can I bring to the fight, where are my parts and, what's the status of critical resources as specified in the commander's CCIR by providing the following information:

- Combat Power. Provides the latest status of critical weapon systems, fuel, ammunition and personnel
- Logistical Course of Action (COA) Analysis. Provides a simulation tool that allows the user to project supply consumption and assists with training, planning and execution.
- Log Related Commander's CCIR Alerts. Provides audio and visual cues that a log related CCIR event has occurred.

8-247. BCS3 provides a logistics picture for Battlefield Operating Systems (BOS) information in support of the ABCS common operating picture of the battlefield. The system provides information on all classes of supply, maintenance, medical services (a desired future capability), personnel, and movements to commanders and staffs. This information is consolidated and collated into situation reports and planning estimates for current and future operations. This capability provides a concise picture of unit requirements and support capabilities that commanders have deemed crucial to success of an operation. It also will have joint application. See Figure 8-9 for its actionable capabilities.

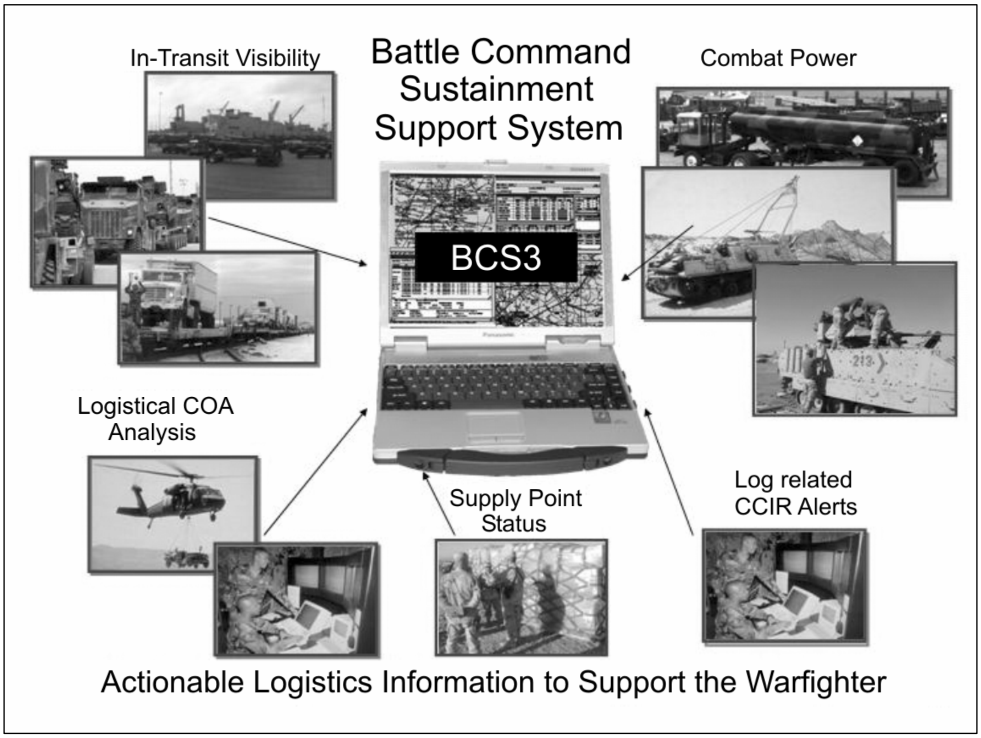


Figure 8-9. Actionable Capabilities for Logisticians and Warfighters

8-248. Force XXI Battle Command Brigade and Below. Logistics commanders and staffs will be digitally linked by FBCB2 to the platforms and organizations that they support. This capability of viewing logistics assets and supported units within the AVN BDE will provide:

- Near real time visibility of combat operations to include precise unit locations.
- Near real time visibility of logistics assets and supported units on the battlefield.
- Automated management of logistics critical tasks.
- Enhanced visibility of unit logistics status and of supply point status.
- Enhanced capability to request, track and synchronize logistics support.

8-249. FBCB2 uses the variable message format (VMF) to send and receive messages horizontally and vertically on the battlefield, irrespective of task organization. VMF improves current configurations in which the BOS automation systems do not communicate to each other. This provides communication and processing capabilities to the Warfighter, which yields significant advantages in two key areas:

8-250. Situational Information. Situational information is a state of understanding gained from knowledge based on accurate and real-time information of friendly, enemy, neutral, and noncombatant locations. It consists of a common, relevant picture of the battlefield scaled to specific levels of interest and needs.

8-251. Command and Control. C2 is direction by a commander over assigned forces in accomplishing a mission. A commander employs C2 functions as he plans, directs, and controls forces and operations to accomplish a mission.

8-252. FBCB2 provides each echelon with battlefield situational information two echelons up and down and one adjacent unit left and right. FBCB2 significantly improves the effectiveness of the force by providing up-to-date combat situation information, based on echelon and location, to include:

- Friendly and enemy positions.
- Reports of logistics status.
- Air and ground unit positions.
- Maps, terrain, and elevation.

8-253. Each time there is a unit task reorganization, FBCB2 hosts affected by the task reorganization must receive new initialization data. Transfer of the modified initialization data occurs through signal channels to the ultimate users.

8-254. Blue Force Tracker (BFT). Blue Force Tracker provides units with a limited common operational picture of the locations of friendly ground forces much like FBCB2. BFT has less messaging capability, is satellite based, and has a longer latency rate for information.

8-255. Good Enough Battle Command. As a lesson learned from recent combat operations, new standards for the minimum distribution of BFT have been established to bridge the gap between the Army Master Fielding Plan for ABCS and a fully digitized Army. Good Enough Battle Command brings horizontal proliferation of digital battle command throughout the field Army.

Appendix A

Joint Air Attack Team Operations

SECTION I – FUNDAMENTALS

A-1. A JAAT operation is a coordinated attack by rotary and FW aircraft, normally supported by artillery or naval surface fire support. Ground or airborne electronic warfare systems may also support the JAAT. JAAT operations support the joint force commander (JFC) in offensive and defensive operations day or night.

COMMAND RESPONSIBILITIES

A-2. Normally, the maneuver force commander, within an assigned operational area, is the individual responsible for determining when a JAAT is necessary, but any commander (air, land, or maritime) 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.

A-3. Designation of a mission commander occurs after coordination between the requesting commander and supporting commanders. The mission commander is responsible for the planning, coordinating, and execution of the JAAT. The mission commander has tactical control (TACON) of JAAT assets to support the commander's battle plan.

ROTARY-WING ELEMENT

A-4. Rotary-wing aircraft provide firepower, target acquisition, designation, and mission coordination to the JAAT. The Army provides attack and scout rotary-wing aircraft for JAAT operations. The Navy and Air Force do not have rotary-wing attack aircraft.

A-5. The Army employs attack reconnaissance helicopters in JAAT operations. AH-64D Apaches are organic to attack battalions and are used in the attack as well as the reconnaissance role. OH-58D Kiowa Warriors, organic to light UExs and forced entry units, are used primarily for reconnaissance, but they do have limited attack capabilities. As a minimum, Army helicopters operate in pairs and typically operate in sections or companies of four to eight aircraft. They are usually employed as three flights to provide continuous coverage for the JAAT but may be employed as a battalion-sized flight to achieve massed fires on the target. Army aircraft are less vulnerable to enemy ADs at night; therefore, they generally conduct mobile strike operations at night.

FIXED-WING AIRCRAFT

A-6. FW aircraft will employ close air support (CAS) procedures and tactics, described in FM 3-09.32, (JFIRES Multi Service Tactics, Techniques, and Procedures), during JAAT operations. In addition to exercising control of the aircraft, the FAC(A) may also provide air reconnaissance, surveillance, target marking, and communications.

AIR FORCE

A-7. Air Force CAS aircraft are capable of performing JAAT operations. Only qualified crew members are authorized to participate in JAAT. Air Force members will execute JAAT according to AFI 11-214 and ACCR 55-26 following CAS procedures detailed in FM 3-09.32.

NAVY

A-8. All tactical FW Navy aircraft are capable of supporting JAAT operations. (EA-6B aircraft may be able to support JAAT operations with their specific mission roles.) All F-14 squadrons have FAC(A) qualified aircrews who routinely train in JAAT operations, including control and coordination of FW aircraft, rotary-wing aircraft, and indirect fire support integration and deconfliction. Each air wing will typically deploy with 12 to 16 FAC(A) qualified aircrew. Navy FAC(A) aircrew train routinely with Army and Marine Corps attack helicopters in JAAT operations. All other Navy tactical FW aircrews have limited training in JAAT operations and are generally only exposed to a JAAT once or twice a year.

INDIRECT FIRE SUPPORT

A-9. Indirect fire support (artillery, mortars, and/or naval surface fire) should be planned to support and augment the firepower of JAAT operations. Normally fire support provides suppression of enemy air defenses (SEAD) and target marking. Additionally, fire support may provide close fires, fires in depth, and counterfire. JAAT indirect fire support requirements generally use the same request, planning, and coordination, control, and execution procedures as ground operations. The Army and Navy provide indirect fire support.

ARMY

A-10. The FSE of the maneuver commander who requests or orders the JAAT will plan for, coordinate, and oversee the execution of fire support for the JAAT. The mission commander should contact the FSE if the mission requires additional fire support or other assistance. The FSE coordinates the requested support. If a maneuver commander requests or orders a JAAT that is to take place in another commander's AO, (that is, UEx JAAT in brigade AO), then that commander's FSE must coordinate with the FSE in whose AO the JAAT is to take place.

NAVY

A-11. Naval surface fire support for Army units is coordinated through the Marine Corps Air and Naval Gunfire Liaison Company (ANGLICO). The ANGLICO UEx and brigade liaison teams are normally attached to the FSE of the supported UEx or brigade. These teams are responsible for planning, liaison, control, coordination, and employment of supporting arms. Navy FAC(A)s are qualified to perform artillery air spot and calls for fire in support of the maneuver commander's battle plan.

SECTION II – PLANNING

OPERATIONAL PLANNING CONSIDERATIONS

A-12. The JAAT offers the commander unique strengths. JAAT operations provide mutual support with an increase in each member's survivability and a capability to mass combat power through diverse ordnance and employment procedures. This includes reconnaissance, surveillance, and communications redundancy, combined with an enhanced force protection capability.

A-13. The maneuver commander has the responsibility for integrating JAAT missions into the battle plan. The requesting commander's staff plans for, organizes, and coordinates JAAT operations to support this plan. Successful JAAT execution depends upon careful mission analysis, coordination, and planning.

MISSION

A-14. The planning process begins during mission analysis when the requesting commander/staff determines that employing JAAT will assist in accomplishing the mission. JAAT engagement area (EA) development and distribution of all fires must be part of developing the plan. Because each of the members of the JAAT retains their own C2 system, mission planning must be a coordinated effort. Constant coordination is desired between requesting commander, mission commander, FAC(A), fixed- and rotary-wing representative, ACP, fire support officer (FSO) and the air support operations center (ASOC). As elements of the mission change all members must be informed so they can adjust accordingly.

INTELLIGENCE PREPARATION OF THE BATTLEFIELD

A-15. A key ingredient to the success of the JAAT intelligence effort is the continuous collection and appropriate dissemination of information. The mission commander requires continuous information on the objective before, during, and after the mission. The intelligence officer (G2/S2) is responsible for the intelligence preparation of the battlefield. The G2/S2 identifies the target, target area, named areas of interest, enemy defenses, enemy and friendly decision points, and a 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 G2/S2 coordinates the collection effort, refines the information, and ensures planning staffs and supporting units receive the information. The intelligence preparation of the battlespace (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.

THREAT AIR DEFENSE ENVIRONMENT

A-16. The mission commander considers how various elements of the JAAT can assist to neutralize or suppress the enemy AD.

TERRAIN ANALYSIS

A-17. Planners should ensure the most effective use of terrain. Terrain analysis is conducted to identify EA(s), 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

A-18. Weather conditions may limit the capabilities of aircraft and weapons. High humidity, fog, and precipitation reduce visibility and the effectiveness of infrared (IR) devices and interfere with lasers. Low ceilings also affect 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 affect accuracy of indirect weapons employment and can limit the use of rotary-wing aircraft. If weather forces the cancellation of one or more of the JAAT components, a contingency plan should be derived.

ASSETS

A-19. The commander/staff should determine what assets are required and available to accomplish the JAAT. Assets considered include—combat air patrol, tankers, UAVs, Airborne Warning and Control System (AWACS), airborne battlefield command and control center (ABCCC), FW aircraft, reconnaissance/collectors, rotary-wing assets, and electronic warfare (EW) assets.

TIME AVAILABLE

A-20. The more complex the JAAT mission, the more planning time required. A planning horizon of 36 hours usually allows time for a complete joint air tasking order (ATO) cycle. Anything less can be planned but may not be in the joint ATO. ATO requirements are discussed in Joint Publication 3-30, Command and Control for Joint Air Operations. Include requests for fighter aircraft and reconnaissance aircraft early in the planning process. A staff that has prior JAAT training and a working SOPs can significantly reduce the amount of planning needed to conduct a successful operation. An immediate or spontaneous JAAT can be accomplished with minimum coordination. A time, location, and common frequency for all participants may suffice in an immediate or spontaneous JAAT situation.

SYNCHRONIZATION

A-21. 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 the synchronization of the various elements during the 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 the individual elements of the JAAT.

BATTLESPACE CONSIDERATIONS

A-22. When planning a JAAT operation, the proximity of friendly forces must be considered. The requesting commander will define close proximity to friendly forces. Special emphasis must be placed on preventing fratricide. JAAT operations beyond the fire support coordination line (FSCL) must be coordinated with the joint air operations center (JAOC) through the battlefield coordination detachment (BCD).

A-23. The EA is an area in which the commander intends to fix and attack the enemy force with massed fires of all available weapons. EAs are terrain oriented control measures that focus the JAAT fires. Fire distribution planning ensures effective fires throughout the EA. To develop an EA, the IPB process determines where the enemy is currently located, where they will go, where best to engage them, and when they will be there. The commander selects the EA based on the IPB. The EA then becomes the focus for JAAT planning. JAAT assets are coordinated and integrated to destroy the enemy in the EA through massed firepower.

A-24. Once the EA is developed, the mission commander develops the fire distribution plan to avoid redundancy, minimize risk of fratricide, and maximize the effects of long-range weapon systems.

A-25. Planners must establish C2 procedures for conducting the attack. A good SOP that members of the combined arms team understand greatly reduces C2 coordination requirements. Every effort should be made to involve each community in the planning as early as possible. In establishing the "team" part of JAAT, face-to-face meetings help.

A-26. Communications among JAAT participants is key to mission effectiveness. Designing a JAAT communications plan and disseminating it early to participants helps ensure timely radio contact. Once developed, the communications plan is coordinated with the mission commander. Considerations include using tactical air coordinator (airborne)/forward air controller (airborne) (TAC[A]/FAC[A]) as a radio relay; UAV communications node (UCN) as a communications relay platform; the availability of Have Quick and secure radios; and providing all components with the appropriate frequency and authentication. Additionally, friendly force AD units operating along ingress/egress routes and in the AO must be informed of JAAT missions occurring in the area.

FIRE SUPPORT

A-27. The maneuver commander, TACP, fire support coordinator (FSC)/FSO, operations officer (G3/S3), G2/S2, A2C2 element, Army aviation liaison officer (AVN LNO), and the mission commander work together to ensure adequate fire support for the JAAT.

INDIRECT FIRES

A-28. Indirect fire support can greatly increase the survivability of JAAT aircraft and the destruction of the enemy. Furthermore, it can be used to begin the attack, suppress or destroy enemy AD, force armored vehicles to deploy, and create confusion for the enemy.

CLOSE FIRES

A-29. Fire support can attack targets in the EA to assist the JAAT. Planners should consider the effects of close fires might obscure the target area, decreasing the ability of pilots to acquire targets. Using precision-guided artillery munitions, such as Copperhead to engage high-payoff targets can minimize obscurants. However, precision-guided munitions require detailed planning and coordination with observers, artillery firing units, and the mission commander.

COUNTERFIRES

A-30. Rotary-wing attack reconnaissance aircraft are vulnerable to enemy fire support during the JAAT operation. Friendly indirect fire support assets should be allocated to counter the enemy fire support capability. Counterfire radars should be coordinated early to facilitate cueing and rotary-wing battle position identification.

TARGET MARKING/DESIGNATION

A-31. Target acquisition and identification is critical to effective JAAT operations. There are three main techniques of marking a target. The first is a marking round from any of the JAAT elements; second is laser designation; and third is IR “pointer” for night operations.

A-32. All fire support ground laser designators can be used to designate targets for laser guided munitions (Copperhead, Hellfire missiles, and laser guided bombs) and/or laser spot tracking devices. Several fire support assets could be made available to do this. Army fire support teams (FIST) and combat observation and lasing teams (COLT), Marine forward observer teams/shore fire control parties, and forward air controllers (FAC) can use lasers to designate targets. Laser equipped fixed- and rotary-wing aircraft can also provide laser designation and calls for fires during the day or night.

A-33. When using multiple lasers in the same area, laser pulse repetition frequency codes must be coordinated. During planning, the laser geometry must be coordinated to allow best acquisition by laser-guided weapons (LGW) and aircraft laser spot trackers (LST). In addition, laser geometry should exclude the designator from the field of view (FOV) for LGW and LST. A laser employment plan is part of any mission that includes target designation, particularly multiple lasers.

A-34. For operations involving night vision devices, IR pointers may be used to mark/designate targets. See Joint Publication 3-09.3 for a more detailed discussion of night friendly position and target marking devices.

SOURCES OF JOINT AIR ATTACK TEAM FIRE SUPPORT

A-35. Sources of artillery support vary from BCT to UEx to UEy level. At the brigade combat team, indirect fires may be available from the organic or reinforcing field artillery battalion or naval surface fire support. Mortars and electronic attack support may also be coordinated through the maneuver brigade S3 and fire support element. At UEx and UEy indirect fires are normally provided by field artillery battalions assigned a general support or general support-reinforcing mission. The UEx or UEy G3 and fire support element coordinate for naval surface fire support when it is available. Mortar indirect fire support is normally not available for tasking at UEx and UEy.

A-36. During rotary-wing movement to contact, the FW element of the JAAT may be capable of providing additional threat information and SEAD for the attack helicopter component. Because of their higher operating altitudes and sensors, FW aircraft can often detect AD threats quicker than the attack helicopter force can. Actual engagement of these threats should be coordinated by the mission commander, because helicopters offer significant advantages in attacking some SEAD targets while FW aircraft can successfully engage others. If specific AD systems are known to be in the area, it may be possible to preplan mutually supporting SEAD actions. Other forms of dedicated SEAD should be considered first, however, since time and fuel may be a limiting factor for the JAAT participants. Electronic countermeasures pods carried by some FW strike aircraft are capable of limited jamming in support of other aircraft. When possible, JAAT operations should be conducted concurrently with theater level joint suppression of enemy air defenses (J-SEAD) operations, thereby benefiting from airborne jamming and defense suppression platforms operating in the same area.

A-37. J-SEAD operations can enhance survivability for JAAT elements operating in the EA as well as during the ingress/egress phases. J-SEAD in and around the EA can be an important part of JAAT. The priority of the initial observed indirect fires is to suppress enemy AD systems. Priority of initial rotary-wing fires is to suppress remaining enemy AD systems to protect themselves and FW aircraft. J-SEAD assets are employed according to mission objectives and system capabilities. Suppression is accomplished through lethal or nonlethal means or a combination of both. Destructive means are cumulative and employ direct and indirect fire weapons. Disruptive means temporarily neutralize enemy ADs. Ground, air, and naval standoff jamming should be part of the overall battle plan. For a more detailed discussion of how to accomplish a J-SEAD operation refer to Joint Publication 3-01.4, Joint Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses (J-SEAD).

A-38. AD threat suppression should be provided while friendly aircraft ingress, attack, or egress the EA. During the JAAT, enemy air defense and missile operations can be neutralized. Helicopters accompanying lead enemy attack elements constitute a threat to the JAAT. The ability to rapidly suppress these threats is critical. While rotary- and FW aircraft react quickly, consideration should be given to indirect fire support assets that can execute rapidly by using preplanned targets. The asset allocation decision should be made early and should take into account such factors as reaction time, weapons effects/duration, and economy. Most air defense and missile operations can be neutralized or suppressed by observed fire using dual purpose improved conventional munitions (DPICM) or high explosive (HE) projectiles with variable time (VT) fuses.

JOINT AIR ATTACK TEAM PLANNING GUIDELINE

A-39. Effective preplanned JAAT operations depend on the IPB, the resources to conduct the JAAT, and time for the staff to plan the operation.

A-40. The following guideline provides a good starting point for JAAT planning:

- Commander's guidance.
  - Friendly situation.
  - Enemy situation.
  - Success criteria.
- Intelligence/weather.
  - Collection plan/products request.
  - Plan for updates before launch and en route.
  - Enemy vulnerabilities, possible courses of action.
  - Enemy air threat/type/location (including air and surface means).
  - Type of targets and size.
  - Target priorities.
  - Target activity.
  - Assets/weapons-to-target/ environment match.
  - Weather.
  - Sensor employment plan.
  - Alternate targets/contingency plans.
  - Electro optical tactical decision aids (EOTDA).
  - Mission abort criteria/notification procedures.
- EA.
  - Success criteria.
  - Tactics and attack options.
  - Firepower timing.
  - Fire support coordination measures (FSCM).
  - Aircraft positioning and EA flow.
  - Ordnance trajectory.
  - Fragmentation/illumination effects.
  - Control points and attack by fire/battle positions.
  - Ingress/egress routes.
  - Friendly fire support locations and capabilities.
  - Provisions for SEAD/J-SEAD.
  - Friendly AD artillery weapons coordination.
  - Locations of other friendly units.
  - Timing options.
  - Time on target (TOT) or time to target (TTT) methods.
  - Attack methods.
  - Target area mechanics/geometry.
  - Target reference point (TRP).
  - Target sort.
  - Laser employment plan.
  - Target marking options.
  - Disengagement considerations.

  - Mutual support.
  - Fires.
  - Sensor support.
  - Communications relay.
  - PR
  - Collection of BDA.
- C2.
  - Communications (frequencies, Have Quick procedures, and authentication).
  - EW considerations.
  - Lost communications procedures.
  - Egress/return to force (RTF) procedures.
  - ROE/training rules.
  - Risk management.
  - Critical information flow.

SECTION III – EXECUTION

BASIC JOINT AIR ATTACK TEAM COMPONENTS

A-41. The JAAT mission commander must integrate the following five basic components to effectively accomplish the assigned mission:

- Airspace control measures (ACM).
- Check-in and briefing.
- Firepower timing options.
- Attack methods.
- Disengagement.

AIRSPACE COORDINATION

A-42. 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 A-1).
- Altitude separation (Figure A-2).
- Time separation (Figure A-3).
- Combination of the above.

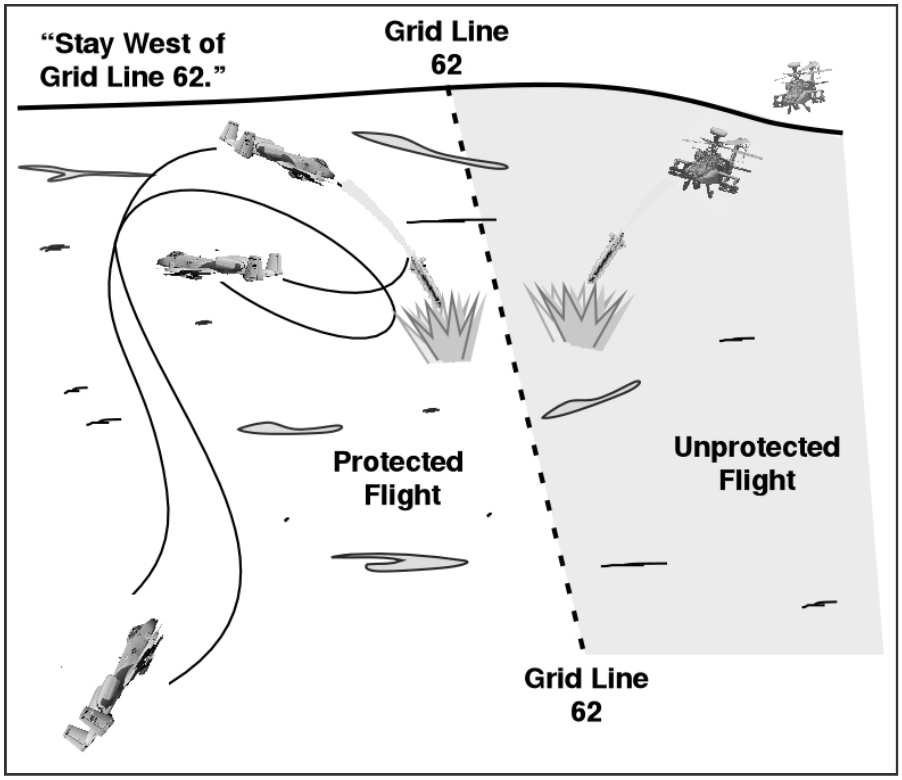


Figure A-1. Lateral/Geographic Separation

A-43. The fire plan includes appropriate airspace coordination measures and will coordinate use of ACAs for JAAT operations. For more information on ACAs see JP 3-52, and FM 3-09.32.

A-44. The mission commander is responsible for ensuring that ACMs are established and coordinated with all JAAT participants. Airspace management methods in the objective include ACAs, restrictive fire headings, maximum ordnance trajectory, minimum altitude, sectors, and timing separation.

A-45. Detailed ACMs, disseminated via the DD Form 1972 (Joint Tactical Air Strike Request), can be used during preplanned JAAT operations, while immediate missions may require simpler control measures. All participants must understand established control measures.

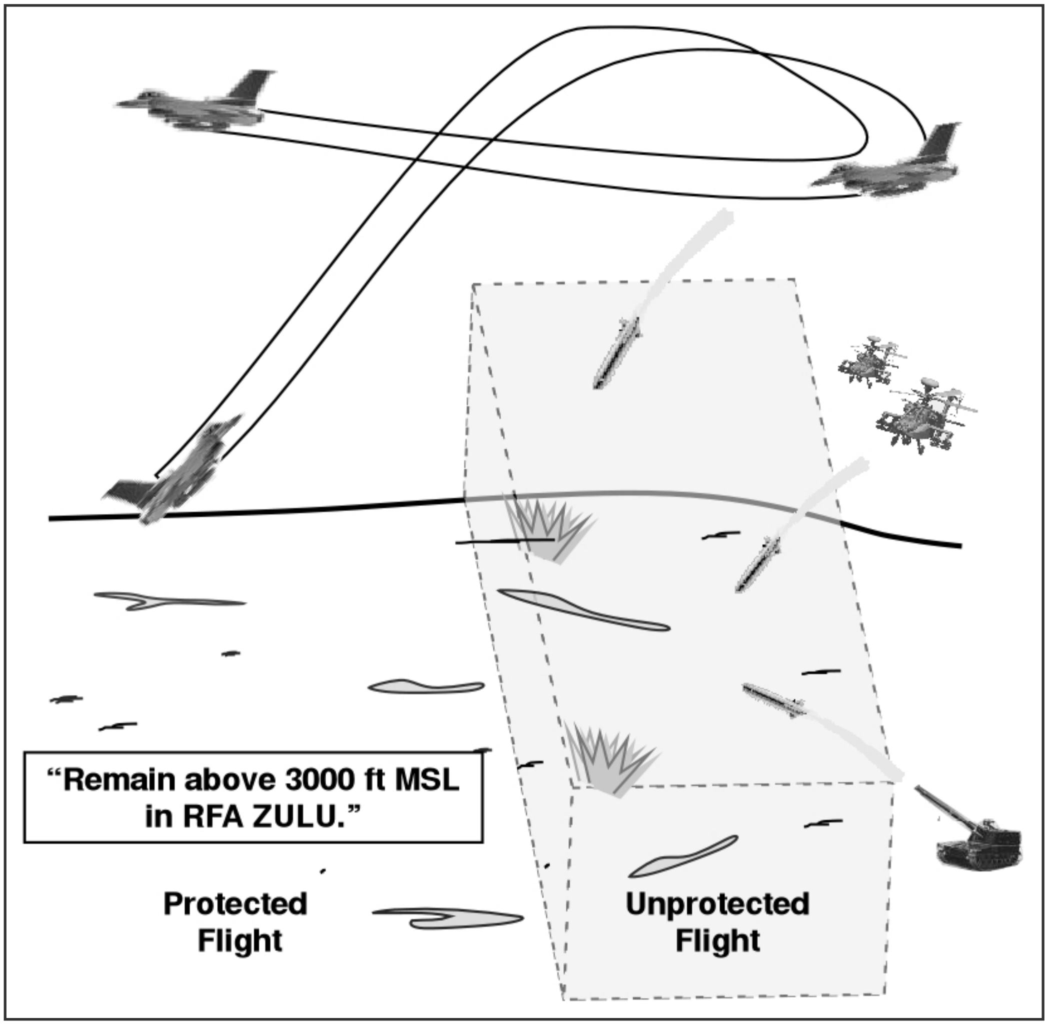


Figure A-2. Altitude Separation

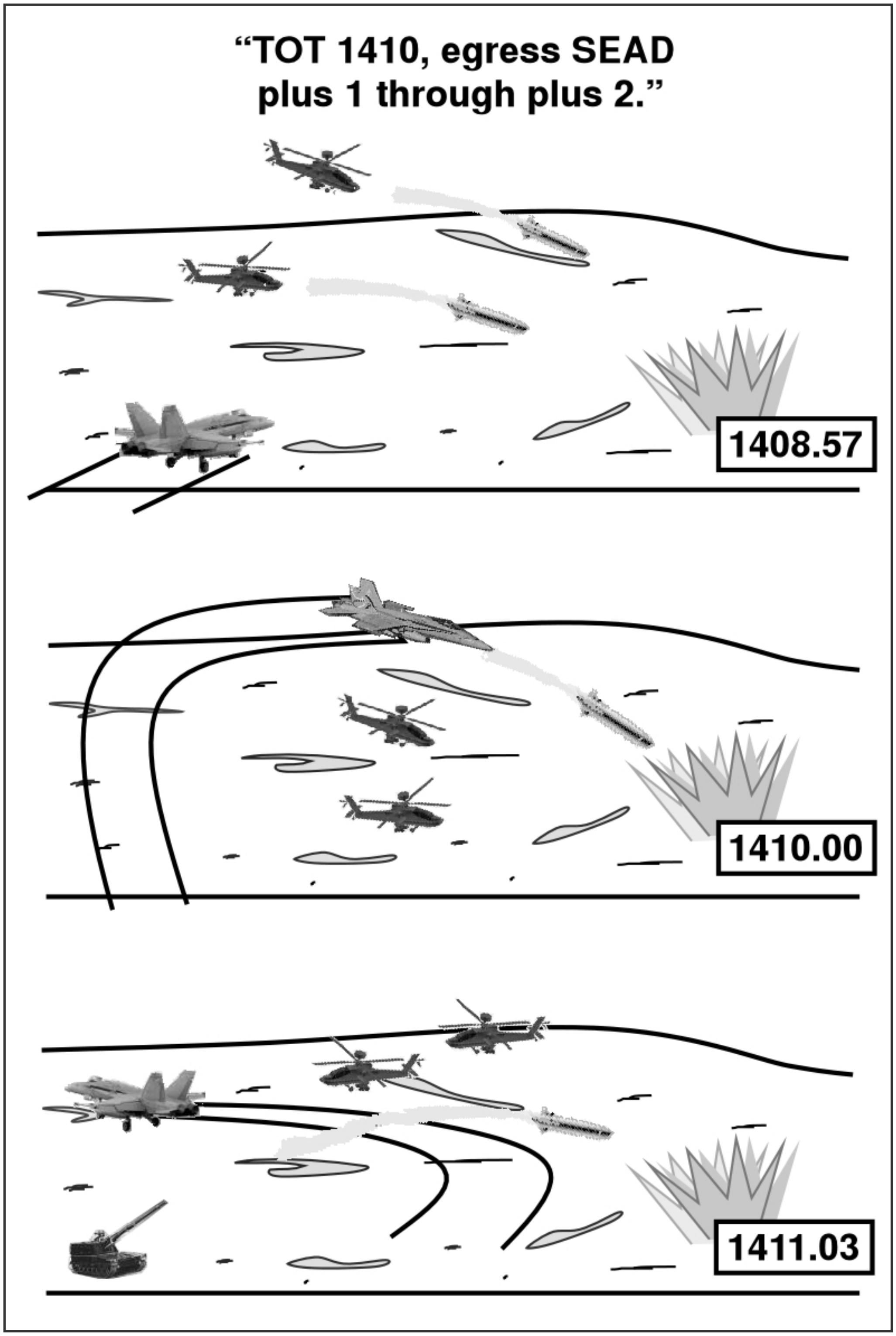


Figure A-3. Time Separation

CHECK-IN AND BRIEFING

A-46. FW participants check-in with the TACP, FAC(A), or Army AMC in accordance with CAS check-in briefing (Figure A-4). After initial contact between the flight lead and the controller has been established, the controller provides the standard 9-line CAS brief to the FW flight lead (Figure A-5).

CAS CHECK-IN BRIEFING

Aircraft Transmits to Controller

Aircraft: "________________ this is ______________________________"
(Controller Call Sign) (Aircraft Call Sign)

Note: Authentication and appropriate response suggested here. The brief may be abbreviated for brevity or security ("as fragged" or "with exception").

Identification/Mission Number: "______________________________"

Number and Type of Aircraft: "______________________________"

Position and Altitude: "______________________________"

Ordnance: "______________________________"

Play Time: "______________________________"

Abort Code: "______________________________" (if applicable)

*Remarks (as appropriate): "______________________"(NVG, LST, Special Mission Items)

____"

*Optional Entry

Figure A-4. CAS Check-in Briefing

CAS BRIEFING FORMAT (9-LINE)

(Omit data not required, do not transmit line numbers. Unit of measure are standard unless otherwise specified. *denotes minimum essential in limited communications environment. BOLD denotes readback items when requested.)

Terminal controller: "________ this is ________"
(Aircraft Call Sign) (Terminal Controller)

*1. **IP/BP:** "________"

*2. Heading: "________" (Magnetic)
(IP/BP to Target)

Offset "________" (Left/Right)

*3. Distance: "________"
(IP-to-Target in Nautical Miles/BP-to-Target in Meters)

*4. Target Elevation: "________"
(in Feet/MSL)

*5. Target Description: "________"

*6. **Target Location**: "________" (Latitude/Longitude or Grid Coordinates or Offsets or Visual)

*7. Type Mark: "________" Code: "________"
(WP, Laser, IR Beacon) (Actual Code)

Laser to Target Line: "________ Degrees"

*8. **Location of Friendlies:** ________"

Position Marked By: "________"

9. Egress: "________"

Remarks (as appropriate): "________"
(Threats, Restrictions, Danger Close, Attack Clearance, SEAD, Abort Codes, Hazards)

*Time on Target (TOT): "____ " or Time to Target (TTT): "Stand by ___ plus ______, Hack."

Note: When identifying position coordinates for joint operations, include the map datum data.

Figure A-5. CAS Briefing Format

FIREPOWER TIMING OPTIONS

A-47. The three fire power timing options, simultaneous, sequential, and random are used to mass and deconflict fires. Employ these timing options using the attack methods described later in the chapter.

Simultaneous

A-48. Advantages of simultaneous timing option:

- Masses fires.
- Maximizes shock effect.
- Complicates enemy ADA targeting scheme.
- Unpredictable.

A-49. Disadvantages of simultaneous timing option:

- Complicates target array sorting and direct fire planning.

- Simultaneous weapons impacts can interfere with one another.

Sequential

A-50. Advantages of sequential timing option:

- Target area marked for subsequent attackers.
- Continuous pressure on target over time allows attackers to reposition while other attackers shoot.
- Less interference from weapons effects for subsequent shooters.
- Ensures that individual targets are not double-targeted.
- Preference for multiple flights of FW.

A-51. Disadvantages of sequential timing option:

- Enemy ADs can target all players.
- Takes longer, reduces shock effect, and could provide opportunities to the enemy.

Random

A-52. Advantages of random timing option:

- Easiest on pilots–no timing required.
- Reduced C2 requirements.
- Unpredictable.

A-53. Disadvantages of random timing option:

- Requires aircraft/weapons deconfliction.
- No guarantees for effects, possible loss of pressure on the enemy.
- Can complicate fire support plan.

ATTACK METHODS

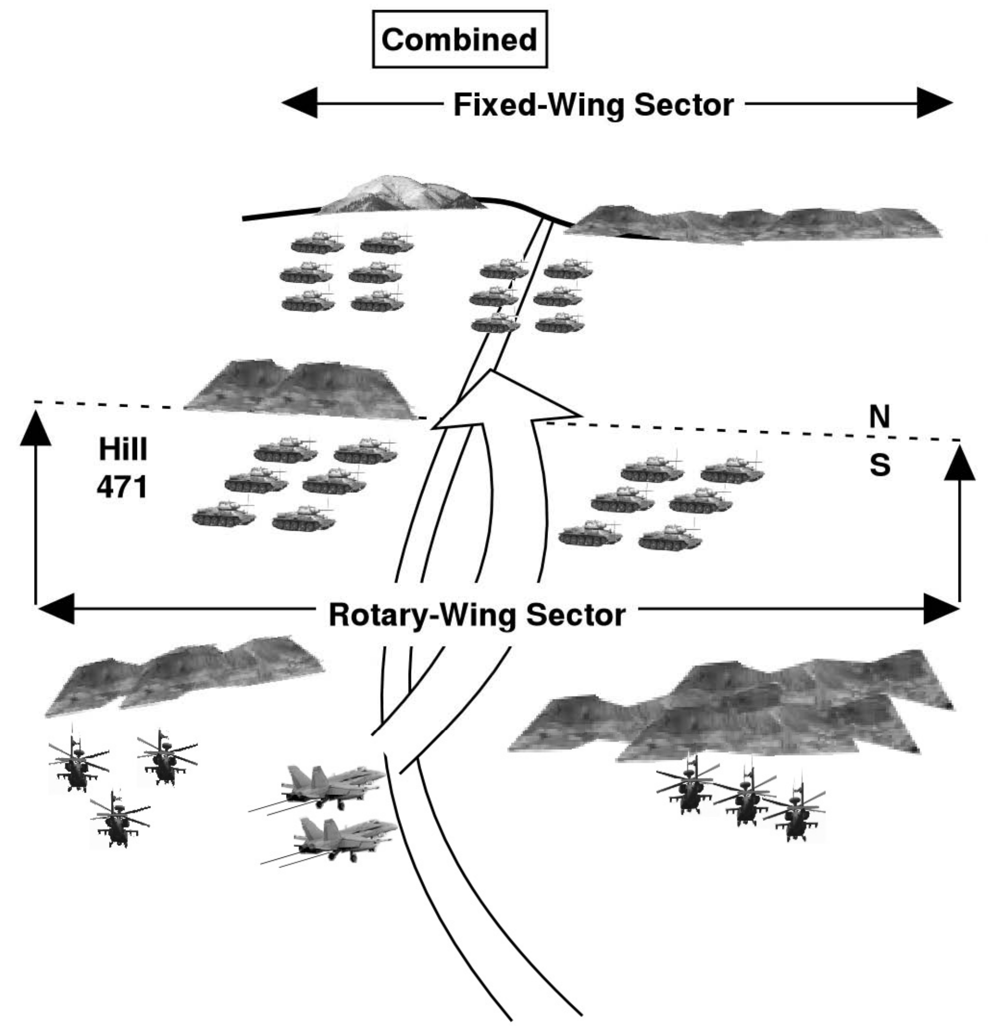
A-54. The attack methods describe control techniques for attacking targets within an objective area and is briefed during the 9-Line. Methods may apply to the joint attack as a whole and again within each attacking flight or units' individual plan of attack. The two attack methods are combined and sectored.

Combined Method

A-55. The avenue to the target is shared airspace. During this attack, all JAAT members will fly in the same area. The AMC will reference the FW's 60-second call, visually acquire the FW, and direct the attack helicopters to engage. The intent, in this case, is for all elements to attack simultaneously. FW flight has been directed to attack the northern half of the specified target area. After attacking, the FW have been directed to clear the target area. This may imply a follow-on artillery barrage or simply reflect the ground commander's scheme of maneuver. See Figure A-6.

Sectored Method

A-56. The avenue to the target is sectored (using acknowledged sectors). During this attack, the A-10 flight will maneuver exclusively west of a north/south line drawn through the target area (the road). The mission commander has directed the A-10 flight to attack at a specified TOT. The timing coordination call ("60 seconds" in this example) is requested in order to update the attack plan timing. Pilots must still 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 to never fire more than 30 degrees towards or into the other sector. Coordination between the type of attack and the timing option is vital. See Figure A-7.



FALCON: OUTCAST 16, FALCON 1 standing by.

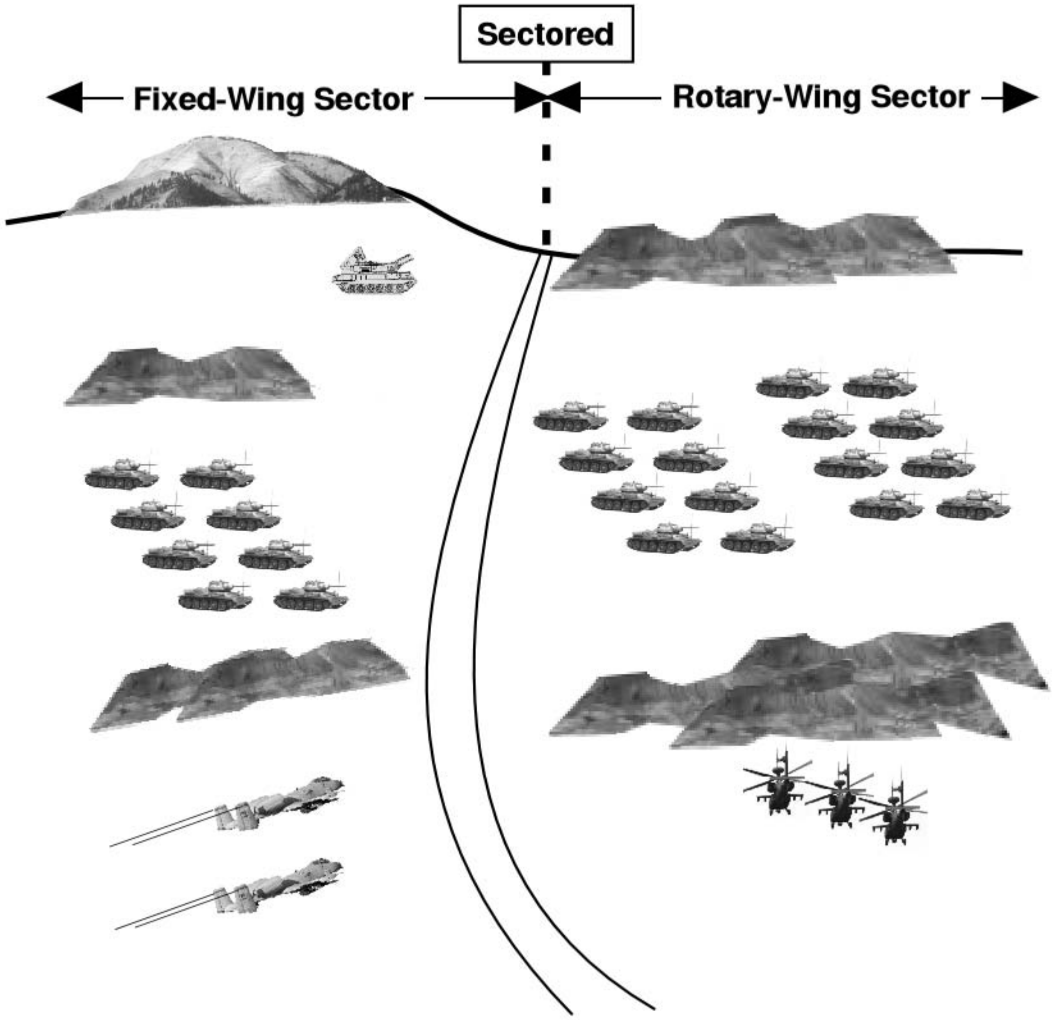
OUTCAST 16: Target vicinity PL 382114. Armor moving east. ZSUs in the vicinity.

FALCON: Roger, ZSUs in the vicinity.

OUTCAST 16: FALCON, combined, simultaneous, visual. FALCON attack targets north of hill 471. Call 60 seconds. Egress to IP.

FALCON: FALCON WILCO.

Figure A-6. Example of Combined Attack



HOG: VIPER 26, HOG 1 standing by.

VIPER 26: HOG 1, target location vicinity PL 385211, ZSU two clicks north. Sector west of road running through the target area.

HOG: HOG, sector west of road, roger.

VIPER 26: HOG, sectored-sequential, TOT 1525

HOG: HOG 1, Roger 25.

VIPER 26: HOG, call 60 seconds.

HOG: HOG, WILCO.

Figure A-7. Example of a Sectored Attack

DISENGAGEMENT

A-57. Consideration must be given to the disengagement phase of the operation. These considerations should include:

- Covering fires. Fixed- and rotary-wing aircraft may provide suppressive fires and SEAD as the other elements egress. Artillery (cannon, MLRS, and ATACMS, if authorized) can also provide suppressive and SEAD fires. EW assets also may provide SEAD with antiradiation missiles or electronic attack.
- Route of egress. Due to the flexible nature of operations, planned egress routes might 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

A-58. 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 the execution, participants must implement additional controls.

A-59. Hazards to consider include:

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

A-60. Control measures used to mitigate risk may include:

- Airspace coordination measures.
- 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.

A-61. Minimum criteria include:

- Adequate situational awareness.
- Known location of friendly elements.
- Positive hostile identification.
- Minimum separation for munitions employment (fragmentation deconfliction).
- Communications.
- Friendly combat identification (identification, friend or foe (IFF), IR markings, lights).
- Authentication.

NIGHT CONSIDERATIONS

A-62. Tactics procedures for night employment of the JAAT remain the same as for day operations. However, techniques required to accomplish night JAAT operations tactics require a more deliberate tempo and strict adherence to these basic procedures. To ensure that all participants maintain situational awareness. FM 3-09.32 and unit/aircraft specific tactics manuals provide detailed information on conducting night operations.

A-63. Perspective and target resolution vary based on aircraft systems. The aviation mission commander must provide a detailed description of the objective area to ensure that all participants, regardless of perspective or available sensors, have a clear picture of the objective area. Night sensor/night vision goggles (NVG) used by all participants greatly increase the capability and effectiveness of the JAAT; however, certain limitations exist. A terrain feature that is visible by a NVG/forward-infrared looking radar (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.

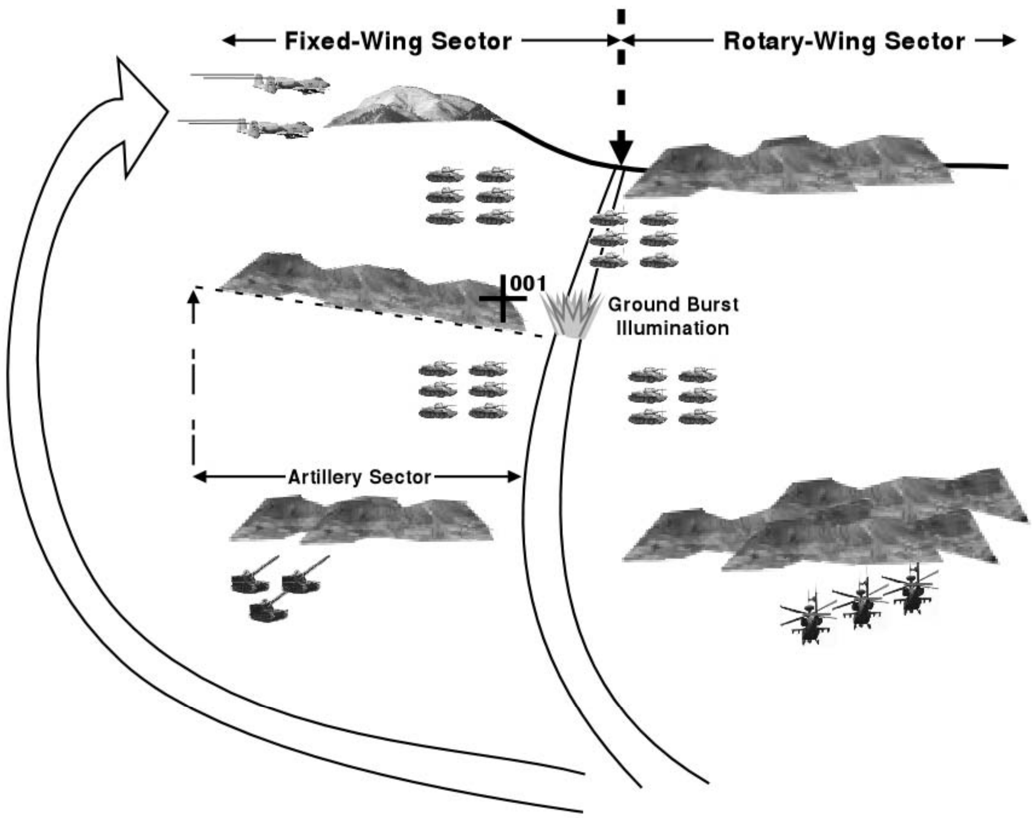
A-64. Night positive control is more difficult as controllers probably cannot observe both target and attacking aircraft. Friendly and threat situational awareness is necessary. Aircraft lighting, thermal combat identification, ground unit identification, and location descriptions all aid in situational awareness.

A-65. 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.

CONTROL MEASURES.

A-66. Figure A-8 depicts example measures that will assist JAAT 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 ft.
4. Weapon release at 8,000 ft.
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 TRP, ridge line, and illumination. Attack all targets north of TRP 001. Friendlies are artillery and helicopters south of the hill mass that is south of the engagement area. Rotary-wing will engage east of the road with Hellfire. IR illumination in southwest quadrant marking for artillery impacting in that quadrant. Gun-target line is 005 degree.

Figure A-8. Night JAAT and Associated Control Measures

CONCLUSION

A-67. JAAT operations involve the participation of different force components with varying operating procedures; they are by nature inherently complex and high risk operations. Therefore, execution procedures must be as simple as possible and lie within the capabilities and understanding of the players involved. FM 3-09.32 assists the JAAT commander, mission commander, and support personnel identify areas of consideration for preplanned or immediate JAAT execution. FM 3-09.32 contains procedures proven by exercise and combat experience that can reduce the overall risk to the forces involved.

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Appendix B
Air-Ground Integration

SECTION I – GENERAL

B-1. Operations must be integrated so that air and ground forces can simultaneously work in the battlespace to achieve a common objective. Integration maximizes combat power through synergy of both forces. The synchronization of aviation operations into the ground commander's scheme of maneuver may require the integration of other services or coalition partners. It may also require integration of attack reconnaissance, assault, and cargo helicopters.

PLANNING AND TRAINING

B-2. Integration starts at home station with:

- Development of common SOPs among aviation and ground maneuver units.
- Habitual combined training, including battle drills, to help all team elements maintain awareness of the locations and needs of other elements.

B-3. Training, procedural standardization, and familiarity of team members greatly accelerate planning and coordination, especially in unfamiliar environments. A team built in this manner establishes battle efficiency sooner and maintains a higher tempo of combat operations. Familiarity and compliance with joint procedures are essential to allow seamless integration with other services' ground and air units.

B-4. Commanders must insist on a high degree of combined arms training with habitually supporting units in the way that they are expected to fight—the whole intention of integration. Air and ground units regularly train and execute battle drills together to make coordination and reaction in combat instinctive.

B-5. Aviation and ground units should be so accustomed to working together that separate training is considered a deviation from the standard. Lessons learned at the Combined Training Centers (CTCs) reveal that many units had to invent ways to coordinate because they had not prepared. This situation must not happen in war. Tested methods of coordination, practiced in training, reduce the difficulty of unfamiliar situations in new terrain and conditions.

WORKING WITH OTHER TEAMS

B-6. When units have not been able to create the desired habitual relationship, the planning and coordination processes will be longer and more detailed. Rehearsals are essential for success. In-country training exercises should also be accomplished whenever possible. The probability of mistakes is increased unless coordination, planning, rehearsals, and training are conducted. Commanders must apply risk-management procedures throughout planning and execution.

SITUATIONAL AWARENESS

B-7. Attack and attack reconnaissance units often engage targets near friendly forces and noncombatants. This situation may occur during various types of operations—shaping, decisive, and sustaining. Aircrews must have knowledge of friendly force and noncombatant locations. Procedures for positive identification of enemy forces are required.

SYNCHRONIZATION OF WEAPONS

B-8. The main reason for using several weapons systems at once is to overwhelm the enemy with more than it can counter. When possible, units sequence the employment of CAS, indirect fires, direct fires, and armed helicopters so closely as to seem simultaneous in fire effects. Fires are lifted or shifted at the most advantageous time for ground elements to overwhelm the objective before the enemy can offer effective opposition.

B-9. Army aviators may be the key in controlling the employment of multiple weapons systems because of their vantage point on the battlefield and their ability to quickly relocate. Aviation units must routinely train with ground units so that they can effectively employ other Army and joint weapons systems.

SECTION II – EXAMPLES OF INTEGRATED OPERATIONS

GENERAL

B-10. True integration occurs when the commander effectively uses every available asset to its fullest extent. The following are some available assets and capabilities:

- Satellites provide information concerning enemy location and movements, weather, terrain, and obstacles.
- Joint Surveillance Target Attack Radar System (JSTARS) aircraft provide real-time information on enemy formations, direct TACAIR strikes, and furnish targeting data for other weapons systems.
- UAVs operate from immediately in front of the ground forces to deep into the enemy rear; they provide information and targeting data and, if armed, may attack enemy formations and installations.
- EW systems provide interception, disruption, deception, and targeting information.
- CAS elements destroy enemy formations and installations.
- Attack reconnaissance and ground units search in front of the ground force, confirm enemy strengths and weaknesses, protect flanks, and allow the commander to orient on threats or exploit opportunities.
- Heavy BCTs, Infantry BCTs and Stryker BCTs forcibly take and occupy key terrain or deny terrain to the enemy.
- Attack helicopters maneuver to attack enemy forces and deny terrain for limited periods.
- UH-60 helicopters move troops, light vehicles, light artillery, and supplies; they also can emplace minefields and augment C2.
- CH-47 helicopters move troops, medium vehicles, medium artillery, and supplies.
- Artillery provides indirect fires to disrupt and destroy enemy formations; aviation and ground forces also employ artillery for immediate suppression of enemy elements until they can maneuver and eliminate the threat.

OFFENSE

B-11. Reports from aviation units, UAVs, JSTARS, and satellites provide valuable tactical information. These systems' higher vantage points and long-range sensor devices assist in directing ground vehicles against enemy elements that ground elements cannot detect. Enemy forces can be identified, engaged and destroyed, blocked or bypassed, as desired, by the maneuver commander. Attack reconnaissance helicopters are positioned ahead, behind, or to the flanks of the ground formation. Ground units in movement to contact, exploitation, or pursuit can markedly increase movement rates when preceded by attack reconnaissance helicopters.

DEFENSE

B-12. A defensive example of integrated operations is a counter-penetration mission. In this type of mission, the AVN BDE may be tasked to coordinate directly with the defending BCT to develop EAs to destroy penetrating enemy forces. This complex operation requires full understanding by both the ground and air elements. All ground and air units must know the EAs to reduce the potential for fratricide. Aviators must positively identify targets to avoid engaging friendly troops who may not have cleared the area or may have mistakenly entered. Buffer zones and fire-control measures must be established.

COMBAT SUPPORT AND COMBAT SERVICE SUPPORT

B-13. UH-60 and CH-47 aircraft must be integrated into the ground commander's scheme of maneuver. Examples include the following:

- Air assault.
- Team insertions.
- CASEVAC.
- Volcano employment.
- Resupply.

SECTION III – MISSION PLANNING

GENERAL

B-14. Mission planning encompasses mission training, mission rehearsal, and mission execution. During planning, the commander and staff visualize how the battlefield will look at various stages. They war-game the scheme of maneuver and anticipate enemy COAs at critical points. They plan friendly integrated aviation-ground COAs necessary to maintain the initiative. They also determine branches and sequels for the commander to exploit enemy actions, reactions, and weaknesses.

B-15. Training exercises validate planning, training, and rehearsal. The outcome of the training exercise tells the commander where to place emphasis for future training and where to focus sustainment training (Figure B-1).

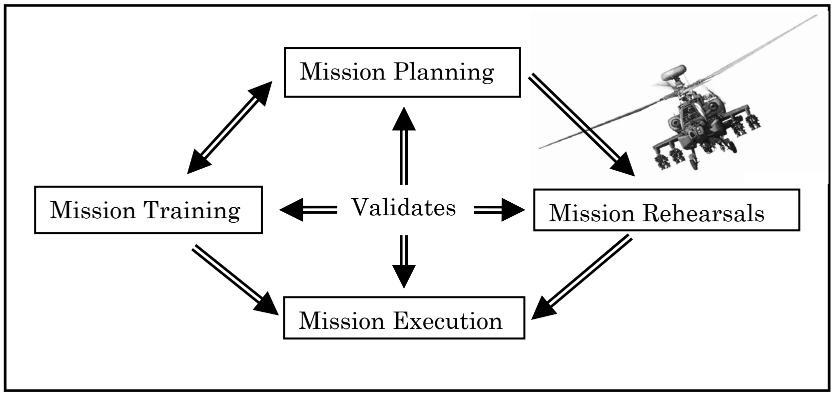

Figure B-1. Mission Planning through Execution Cycle

B-16. Rehearsal validates planning and training for the mission. Minor planning adjustments may be made as a result of the validation provided during mission rehearsal. Optimal rehearsal includes integration of all mission participants. In combat, this integration allows the organization to operate as a whole, forming the combined arms or joint teams that will culminate in a synergistic air-ground effect.

B-17. All efforts of planning and preparation affect mission execution. Future training and planning may be altered by lessons learned during the execution of current missions.

B-18. Mission recovery ensures readiness for follow-on missions. Recovery includes munitions reconfiguration, refueling, maintenance, CP movement, and crew changes.

B-19. Although integrated missions are conducted with or under the control of a ground maneuver commander, they usually require direct coordination between aircrews and ground platoons or squads. Therefore, the aviation commander, his staff, and subordinate commanders and staffs typically directly coordinate with the supported unit throughout the planning process.

MINIMUM BRIGADE PLANNING REQUIREMENTS

B-20. The minimum information required by the Army aviation team to ensure accurate and timely support is:

- Situation including friendly forces' location, enemy situation highlighting known ADA threat in the AO, mission request, and tentative EA coordinates.
- Brigade- and battalion-level graphics update via MCS or AMPS or via radio communications, updating critical items—such as limit of advance (LOA), fire-control measures, and maneuver graphics—to better integrate into the friendly scheme of maneuver.
- Fire support coordination information: location of DS artillery and organic mortars, and call signs and frequencies.
- Ingress/egress routes into the AO; this includes passage points into sector or zone and air routes to the HA or LZ.
- Call signs and frequencies of the battalion in contact, down to the company in contact; air-ground coordination must be done on command frequencies to provide a common operational picture for all elements involved.
- GPS and SINCGARS time coordination; care must be taken to ensure that all units are operating on the same time.

B-21. . Digital transmission of information, such as coordinates, is faster and more accurate, if that method is available. Voice communications are necessary to verify information and to clarify needs and intentions.

LIAISON WITH THE GROUND MANEUVER FORCE

B-22. The liaison demands on the AVN BDE are reduced by the implementation of the BAEs. Much of the air-ground liaison at the BCT level is handled separately by the BAE at the respective BCT headquarters. See the BAE handbook for more information on BAE liaison operations.

B-23. The BAE is organic to and organized and equipped to support the BCT. The BAE provides a 24-hour operational capability to facilitate aviation planning and operations in support of the BCT. The BAE provides:

- Integration and synchronization of aviation into the BCT commander's scheme of maneuver,
- Focus on incorporating aviation into the commander's plan.
- Direct coordination with AVN BDE(s).
- Close integration/synchronization with the air liaison officer (ALO) and fire support officer (FSO).
- Employment advice and planning for the attack reconnaissance elements, assault helicopters, airborne C2 assets, heavy helicopters, MEDEVAC helicopters, and UAVs.
- A2C2 planning, coordination, and airspace deconfliction for combined arms, JIM operations.

B-24. In addition to the personal involvement of the aviation commander and staff, the aviation commander may provide an LNO or a liaison team to the ground commander. The LNO interacts with the ground unit staff and other units' LNOs to ensure cross coordination at all levels. LNOs, at a minimum, should be captain's career course graduates and current or former PCs. They should possess a strong knowledge of the capabilities of all aircraft and units CSS in the brigade. The aviation commander should also ask for a ground LNO from the maneuver brigade. The aviation battalion commander should implement an LNO certification program at home station to ensure that LNOs are proficient in the full spectrum of operations.

B-25. LNOs are vital for the coordination and deconfliction of the various elements that affect the scheme of maneuver. LNOs provide immediate access for each commander to an officer who has more intimate knowledge of the corresponding commander and his unit.

B-26. Home-station training is not possible for all contingencies. Future alliances and coalition with foreign forces may require coordination without the opportunity for LNOs to become familiar with those units. As soon as possible upon deployment notification, the unit must prepare to operate with nontraditional partners. Units should send advance party personnel to begin coordination and training with forces in the theater. If U.S. units are already there, coordination with and lessons learned from them can be invaluable.

DECONFLICTION

B-27. Deconfliction is a continual process for ground, aviation, and other supporting units. During planning and execution, aviation units must deconflict their operations with friendly units:

- Indirect fires, including mortars.
- CAS.
- UAVs.

- ADs.
- Smoke operations.
- Other internal aviation operations.
- Nonorganic aviation operations.
- Other services' delivery systems such as supply drops.
- Maneuver/movements for combat, CS, and CSS units.

SECTION IV – MISSION EXECUTION

ACTIONS ENROUTE TO THE OBJECTIVE

B-28. The ground maneuver headquarters informs its units in contact when aircraft are inbound. En route to the HA, the AMC contacts the ground maneuver element on its FM command network for a SITREP on the enemy and friendly forces.

B-29. A battalion close fight SITREP consists of the following:

- Type and center of mass of enemy vehicles and equipment position and direction of movement; if dispersed, provide front line trace. Ground elements may not have a clear picture of the air defense and missile defense operations (ADMO) situation.
- Location of friendly elements in contact, mission assigned to them, method of marking their position, and location of flanking units.
- Call sign/frequency verification and method of contact.

AVIATION TEAM CHECK-IN

B-30. It is essential to positively identify locations of friendly units and supporting aircraft. Aircrews confirm with each other or wingmen their positive location. Ground elements must be extremely careful to verify any position information.

B-31. The aviation team usually checks in on the command net of the unit that has the element in contact or as directed in the mission briefing. Upon initial radio contact, the aviation team leader executes a check-in as depicted in Figures B-2 and B-3. The team's location may be expressed by grid coordinates or position with respect to a known point or common graphics.

Aviation Team Check-In

1. Initial contact.
2. Team composition, altitude, and location.
3. Munitions available.
4. Station time.
5. Night vision capabilities and type: image intensification, thermal, or both.

Figure B-2. Aviation Team Check-In

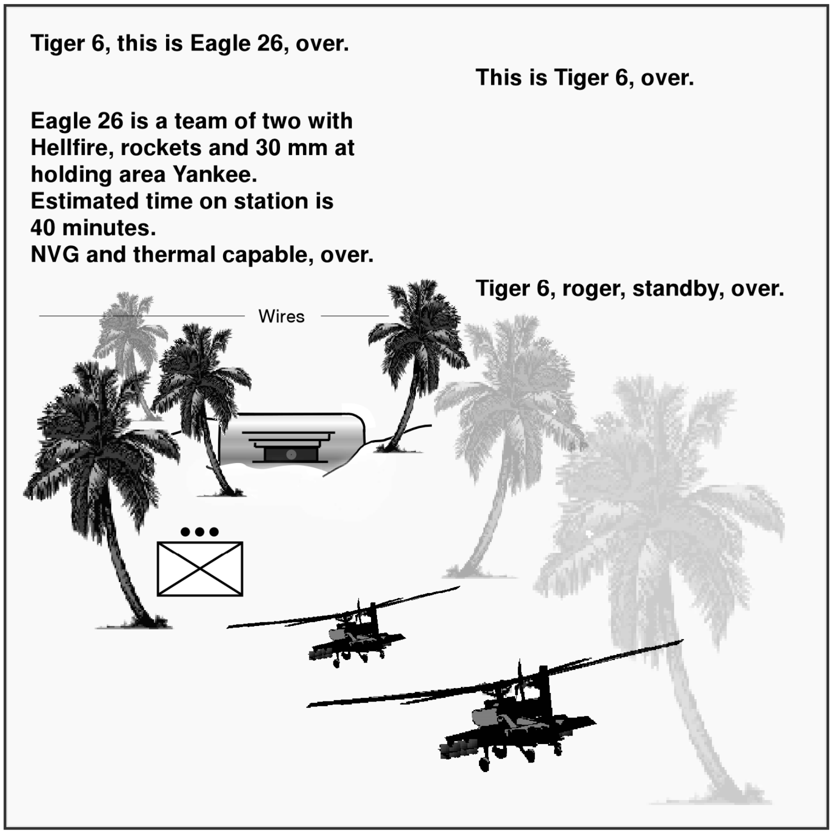

Figure B-3. Example of Aviation Team Check-In

B-32. The aviation team, if required, selects and occupies a holding or orbit area within FM communications range until required coordination is complete. High altitudes and high-density altitudes may preclude hovering by a fully loaded aircraft. The aviation team may need to establish a racetrack orbit oriented behind the LZ, BP, ABF, or SBF position. The AMC informs the ground unit leader of the orbiting pattern or the series of positions that his team will occupy.

B-33. The BP, ABF, or SBF is normally offset from the flank of the friendly ground position but close enough to facilitate efficient target handoffs. This ensures that rotor wash, backblast, ammunition casing expenditure, and the general signature of aircraft do not interfere with operations on the ground or reveal ground unit positions. The offset position also allows aircraft to engage the enemy on its flanks, rather than its front, and lessens the risk of fratricide along the helicopter gun-target line. Friendly forces must clear any positions over which helicopters may hover or orbit to preclude engagement by hidden enemy forces.

B-34. The AMC provides the ground maneuver unit leader with his concept for the operation. This briefing may be as simple as relaying the direction of aircraft approach or attack route and time required to move to the recommended BP. On completion of coordination with the lowest unit in contact, the flight departs the holding or orbit area.

WEAPONS SELECTION

B-35. Anything that kills the enemy for the ground force should be used. Hellfire is the preferred system for armor or hardened targets; however, Hellfire may be appropriate for use against a machine-gun position, bunker, or even an individual if that is what is required to assist the ground unit. Area fire weapons, such as gun systems and 2.75-inch rockets, are preferred for engaging troops in the open and other soft targets such as trucks and trench works. A Hellfire will usually not destroy the bunker unless it detonates ammunition or explosives stored in the bunker. It is important to note that the machine-gun crew may have been killed although the bunker appears undamaged.

SECTION V – POSITIVE LOCATION/TARGET IDENTIFICATION

COMMAND AND CONTROL TECHNIQUES

B-36. Figures B-4 through B-7 show some C2 techniques that can be effective during air-ground operations with Army aircraft:

- Reference point technique—uses a known TRP or an easily recognizable terrain feature.
- Grid technique—uses grid coordinates to define the point.
- Sector/terrain technique—uses terrain and graphics available to both air and ground units.
- Phase line technique—uses graphics available to both air and ground units.

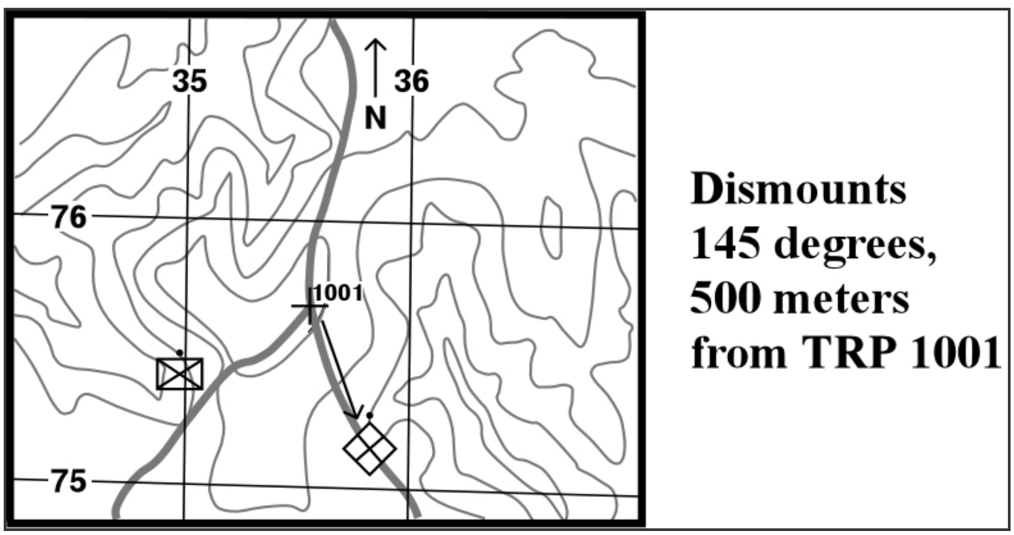

Figure B-4. Reference Point Technique

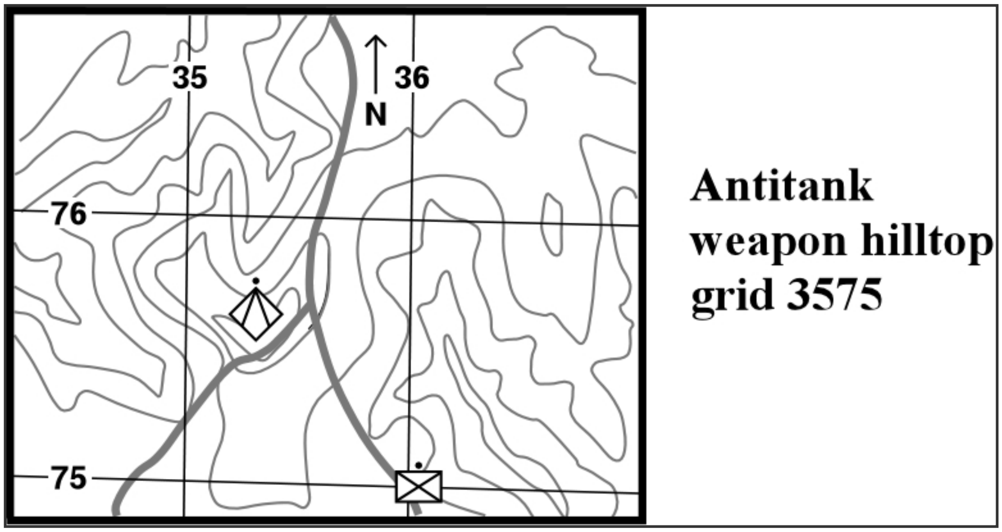

Figure B-5. Grid Technique

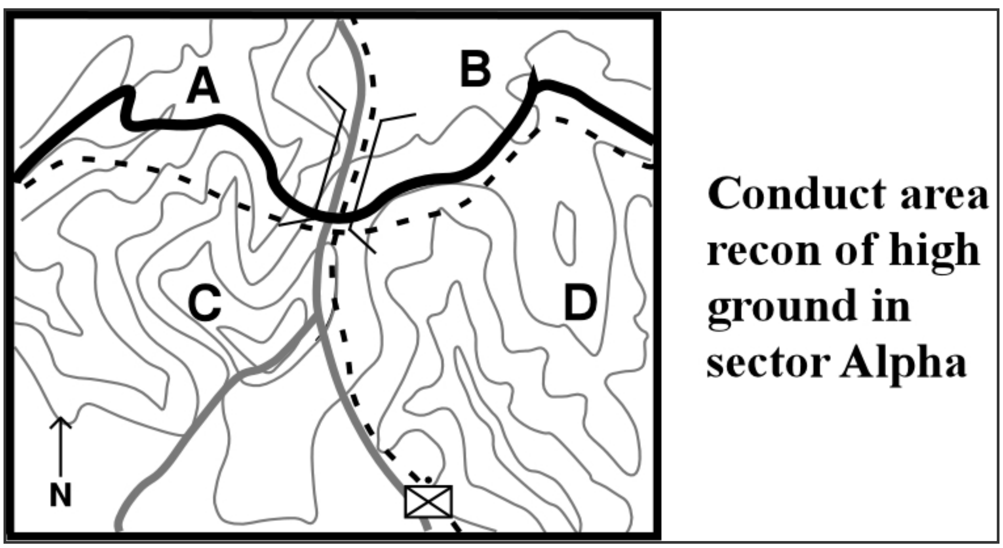

Figure B-6. Sector/Terrain Technique

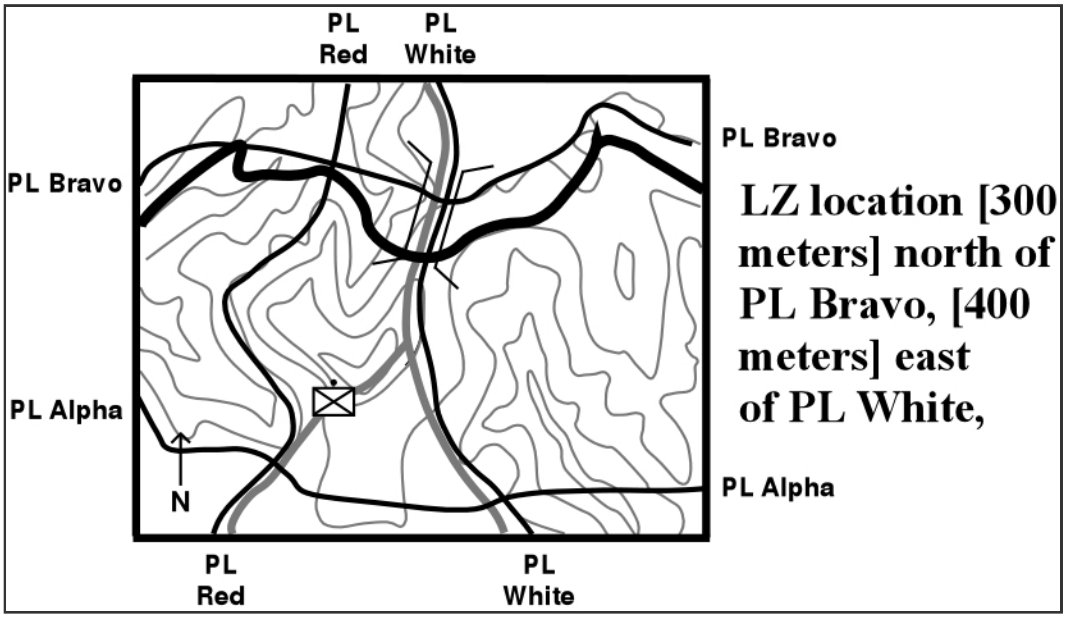

Figure B-7. Phase Line Technique

MARKING

B-37. There are various ways to mark a location or target. The effectiveness of vision systems on helicopters compares to those found on ground vehicles. During the day, the vision systems of the AH-64D and the OH-58D allow accurate identification of targets. During periods of reduced visibility, resolution is greatly degraded, requiring additional methods of verification. This situation requires extra efforts from both the ground unit and aviation element.

B-38. Some U.S. weapons can kill targets beyond the ranges that thermal, optical, and radar acquisition devices can provide positive identification. Both aviation and ground forces may become overloaded with tasks in the heat of battle. Simple, positive identification procedures must be established and known to all.

MARKING FRIENDLY POSITIONS

B-39. A method of target identification is direction and distance from friendly forces. Friendly forces can mark their own positions with IR strobes, IR tape, NVG lights, smoke, signal panels, body position, MRE heaters, chemical lights, and mirrors. Marking friendly positions is the least desirable method of target location information and should be used with extreme caution. Marking friendly positions can be a more time-consuming process than directly marking a target and can reveal friendly positions to the enemy.

MARKING ENEMY POSITIONS

B-40. Target marking aids aircrews in locating the target that the unit in contact desires them to attack. Ground commanders should provide the target mark whenever possible. To be effective, the mark must be timely, accurate, and easily identifiable. Target marks may be confused with other fires on the battlefield, suppression rounds, detonations, and marks on other targets. Although a mark is not mandatory, it assists in aircrew accuracy, enhances the common operational picture, and reduces the risk of fratricide.

MARKING BY DIRECT FIRE

B-41. Direct-fire weapons can deliver a mark. Although this method may be more accurate and timely than an indirect fire mark, its use may be limited by range and the visibility of the weapon's burst effect. Aircraft may be used to deliver a mark. The preferred method is for the aircraft to mark with phosphorous, high-explosive rockets, illumination, or lasers. A burst of cannon fire or a single rocket fired to the left or right of the target as a marking round may be an option. This method may alert the enemy but is a good way to verify the target with reduced risk of friendly casualties. Ground units may also mark targets with direct fire using tracers or M203 smoke rounds.

INFRARED MARKING

B-42. IR pointers and other IR devices can be used to mark targets at night for aircrews who are using NVGs; however, aircrews using other NVDs—such as FLIR or TIS—may not be able to see the mark. Unlike laser designators, these IR devices cannot be used to guide or improve the accuracy of aircraft ordnance. IR pointers may expose friendly units to an enemy with night-vision capability and should be used with caution. Ground units should initiate IR marks requested by the aircrew and continue until the aircrew transmits "TERMINATE" or the weapon hits the target.

MARKING BY INDIRECT FIRE

B-43. Artillery or mortar fires are effective means of assisting aircrews in visually acquiring targets. Before choosing to mark by artillery or mortars, observers should consider the danger of exposing these supporting arms to enemy indirect-fire acquisition systems and the additional coordination required. Marking rounds should be delivered as close to the target as possible, with smoke being the last round. Marking rounds are most effective when delivered within 100 meters of the target, but those within 300 meters are generally effective enough to direct armed aircraft. If the situation requires a precise mark, observers or spotters can adjust marking rounds early to ensure that an accurate mark is delivered. This action may, however, alert the enemy to an imminent attack.

BACKUP MARKS

B-44. Whenever a mark is provided, a plan for a backup mark should be considered. For example, direct fire may be tasked to deliver the primary mark, while a mortar may be assigned responsibility for the backup mark.

SUMMARY

B-45. Table B-1 suggests methods for identifying friendly forces and enemy targets.

Table B-1. Methods of Marking Friendly and Enemy Positions

METHOD	DAY	NIGHT	NVG	NVS	FRIENDLY MARKS	TARGET MARKS	REMARKS
Smoke	Go	No Go	Marginal	No Go	Good	Good	Easy ID. May compromise friendly position, obscure target, or warn of FS employment. Placement may be difficult because of terrain, trees, or structures.
Smoke (IR)	Go	Go	Go	No Go	Good	Good	Easy ID. May compromise friendly position, obscure target, or warn of FS employment. Placement may be difficult because of terrain, trees, or structures. Night marking is greatly enhanced by the use of IR reflective smoke.
Illumination, Ground Burst	Go	Go	Go	No Go	NA	Good	Easy ID. May wash out NVDs.
Signal Mirror	Go	No Go	No Go	No Go	Good	NA	Avoids compromise of friendly location. Depends on weather and available light. May be lost in reflections from other reflective surfaces such as windshields, windows, or water.
Spot Light	No Go	Go	Go	No Go	Good	Marginal	Highly visible to all. Compromises friendly position and warns of FS employment. Effectiveness depends on the degree of ambient lighting.
IR Spot Light	No Go	No Go	Go	No Go	Good	Marginal	Visible to all NVGs. Effectiveness depends on the degree of ambient lighting.
IR Laser Pointer (below .4 watts)	No Go	No Go	Go	No Go	Good	Marginal	Effectiveness depends on the degree of ambient lighting.
IR Laser Pointer (above .4 watts)	No Go	No Go	Go	No Go	Good	Good	Less affected by ambient light and weather conditions. Highly effective under all but the most highly lit or worst

Table B-1. Methods of Marking Friendly and Enemy Positions

METHOD	DAY	NIGHT	NVG	NVS	FRIENDLY MARKS	TARGET MARKS	REMARKS
							weather conditions. IZLID-2 is the current example.
Visual Laser	No Go	Go	Go	No Go	Good	Marginal	Highly visible to all. High risk of compromise. Effective, depending upon degree of ambient light.
METHOD	DAY	NIGHT	NVG	NVS	FRIENDLY MARKS	TARGET MARKS	REMARKS
Laser Designator	Go	Go	No Go	Go	NA	Good	Highly effective with precision-guided munitions. Restrictive laser-acquisition cone and requires LOS to target. May require precoordination of laser codes. Requires PGM or LST equipped.
Tracers	Go	Go	Go	No Go	No Go	Marginal	May compromise position. May be difficult to distinguish mark from other gunfire. During daytime use, may be more effective to kick up dust surrounding target.
VS-17 Panel	Go	No Go	No Go	No Go	Good	NA	Easy to see when visibility is good. Must be shielded from the enemy.
IR Paper	No Go	No Go	No Go	Go	Good	NA	Must be shielded from the enemy. Affected by ambient temperature.
AN/PAQ-4C IR Aiming Light	No Go	No Go	Go	No Go	NA	Good	Effective to about 600 meters.
AN/PEQ-2A IR Aiming Light, Pointer, Illuminator	No Go	No Go	Go	No Go	NA	Good	Effective to about 1,300 meters. Can illuminate the target.
Chem Light	No Go	Go	Go	No Go	Good	NA	Must be shielded from enemy observation. Affected by ambient light. Spin to give unique signature.
IR Chem Light	No Go	No Go	Go	No Go	Good	NA	Must be shielded from enemy observation. Affected by ambient light. Spin to give unique signature.
Strobe	No	Go	Go	No Go	Excellent	NA	Visible to all. Affected by

Table B-1. Methods of Marking Friendly and Enemy Positions

METHOD	DAY	NIGHT	NVG	NVS	FRIENDLY MARKS	TARGET MARKS	REMARKS
	Go						ambient light.
IR Strobe	No Go	No Go	Go	No Go	Excellent	NA	Effectiveness depends on ambient light. Coded strobes aid acquisition. Visible to all with NVGs.
Flare	Go	Go	Go	Marginal	Excellent	NA	Visible to all. Easily seen by aircrew.
METHOD	DAY	NIGHT	NVG	NVS	FRIENDLY MARKS	TARGET MARKS	REMARKS
IR Flare	No Go	No Go	Go	No Go	Excellent	NA	Easily seen by aircrews with NVGs.
Glint/IR Panel	No Go	No Go	No Go	Go	Good	NA	Not readily detected by enemy. Effective except in high ambient light.
Combat ID Panel	Go	No Go	No Go	No Go	Good	NA	Provides temperature contrast on vehicles or building.
Chemical Heat Sources, MRE Heater	No Go	No Go	No Go	Go	Poor	NA	Can be lost in thermal clutter. Difficult to acquire. Best to contrast a cold background.
Briefing Pointer	No Go	Go	Go	No Go	Fair	Poor	Short range.
Electronic Beacon	NA	NA	NA	NA	Excellent	Good	Ideal friendly marking for AC-130 and some USAF CAS. Not compatible with Navy/Marines. Can be used as a TRP. Coordination with aircrew essential.
Hydra 70 Illumination	Go	Go	Go	Go	NA	Good	Assists with direct fire and adjustment of indirect fire.

B-46. Table B-2 lists standard brevity terms.

TARGET MARKING BREVITY LIST

Table B-2. Brevity List

TERM	MEANING
Rope	Observer is circling an IR pointer around an aircraft to help the aircraft identify the friendly ground position.
Visual	Observer is sighting a friendly aircraft or ground position. Opposite of BLIND.
Blind	Observer has no visual contact with friendly aircraft or ground position. Opposite of VISUAL.
Contact	Observer— 1. Has sensor contact at the stated position. 2. Acknowledges sighting of a specified reference point.
Snake	Aircrew calls to oscillate an IR pointer about a target.
Sparkle	Observer acknowledges— 1. Air-to-surface target marking by IR pointer. 2. Air-to-surface target marking by gunship/FAC-A using incendiary rounds.
Tally	Observer acknowledges sighting of a target, aircraft, landmark, or enemy position. Opposite of NO JOY.
Steady	Aircrew calls to stop oscillation of IR pointer.
Stop	Aircrew calls to stop IR illumination of a target.
No Joy	Aircrew does not have visual contact with the target/bandit/landmark. Opposite of TALLY.

SPECIAL OPERATIONS

B-47. Training at the home station with SOF personnel may not be practical or available. Commanders and staffs must be aware that SOF units are probably in theater, but their activities may not be published. Establishment of a communications link with special operations command or coordination elements is essential to coordinate operations. The Brigade commander should consider an exchange of liaison officers when practical.

B-48. SOF personnel are well-trained in the use of all assets. Their expertise should make the flow of coordination with them simple, but in some instances, the aviation force leader may have to use emergency coordination measures.

OPERATIONS WITH NONTRADITIONAL FORCES

B-49. Commanders must train their staffs and soldiers to be flexible and prepared to conduct liaison with and support elements that are not traditionally included in home-station training. These organizations may include the CIA, DOS, DEA, domestic and foreign police agencies, and indigenous forces. General checklists may be developed to address concerns. Often, these other agencies may not be aware of aviation capabilities. LNOs must be ready to advise and assist the supported element.

CLOSE COMBAT

B-50. Close combat is inherent in maneuver and has one purpose—to decide the outcome of battles and engagements. It is carried out with direct-fire weapons and supported by indirect fire, CAS, and nonlethal engagement means. Close combat defeats or destroys enemy forces or seizes and retains ground. The range between combatants may vary from several thousand meters to hand-to-hand combat. During close combat, attack reconnaissance aircraft may engage targets that are near friendly forces, thereby requiring detailed integration of fire and maneuver of ground and aviation forces. To achieve the desired effects and reduce the risk of fratricide, air-ground integration must take place down to company, platoon, and team levels. Close-combat engagements also require a higher training standard for aerial weapons delivery accuracy.

CLOSE COMBAT ATTACK

B-51. For aviation units, close combat attack (CCA) is defined as a hasty or deliberate attack in support of units engaged in close combat. During CCA, armed helicopters engage enemy units with direct fires that impact near friendly forces. Targets may range from a few hundred meters to a few thousand meters. CCA is coordinated and directed by a team, platoon, or company-level ground unit using standardized CCA procedures in unit SOPs.

B-52. 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. The end state is a detailed SOP between air and ground maneuver units that addresses the CCA situation. This procedure is best suited for units that maintain a habitual combined arms relationship during training and war.

B-53. To prepare for close combat, basic tasks—such as how to find a ground unit's position at night—must be solved during home-station training. Operations in unfamiliar terrain must not be hampered by the question of how to find the unit. It is found by one of the various methods already practiced in training.

DIRECT FIRES CALLED BY THE GROUND COMMANDER IN CLOSE COMBAT

B-54. The AMC and ground unit key leaders must consider the risk to friendly forces before weapon selection and engagement. If friendly forces may be in the lethality zone, the ground leader must be precise in describing the target that he wants aircraft to engage and should warn aircrews of the proximity of those forces. The aviation leader must be aware of his aircrews' skills in delivering fires near friendly forces.

CLOSE COMBAT ATTACK BRIEFING

B-55. The CCA briefing (Figure B-8) follows the joint standard nine-line format with minor modifications for Army helicopters. The briefing provides clear and concise information in a logical sequence that enables aircrews to employ their weapons systems. It also provides appropriate control to reduce the risk of fratricide. Figure B-9 depicts an example of a briefing.

CLOSE COMBAT ATTACK BRIEFING

(Omit data not required. Do not transmit line numbers. Units of measure are standard unless otherwise specified. *Denotes minimum essential in limited communications environment. BOLD denotes readback items when requested.)

Terminal controller: ____________ This is ____________
(Aircraft call sign) (Terminal controller)

***1. IP/BP/ABF or friendly location:** ____________
(Grid, known point or terrain feature)

*2. Heading to target: ____________ (magnetic)
(Specify from IP/BP/ABF or friendly location)

*3. Distance to target: ____________ (meters)
(Specify from IP/BP/ABF or friendly location)

4. Target elevation: ____________ (feet mean sea level)

*5. Target description: ____________

____

***6. Target location:** ____________
(Grid, known point or terrain feature)

7. Type of target mark: ____________ Code: ____________ (day/night)
(WP, laser, IR, beacon) (Actual code)

Laser to Target Line: ____________ degrees

***8. Location of friendlies:** ____________
(Omit if previously given--grid, known point, or terrain feature)

Position Marked By: ____________

9. Egress direction: ____________
(Cardinal direction not over threats)

Remarks (as appropriate): ____________

____
(Threats, restrictions, danger close, attack clearance, SEAD, abort codes, hazards)

Time on target (TOT): ____________

or time to target (TTT): Standby ____________ plus ____________ hack.

Note: When identifying position coordinates for joint operations, include the map datum data. DESERT STORM operations have shown that simple conversion to latitude/longitude is not sufficient. The location may be referenced on several different databases; for example, land-based versus sea-based data.

Figure B-8. Close Combat Attack Briefing

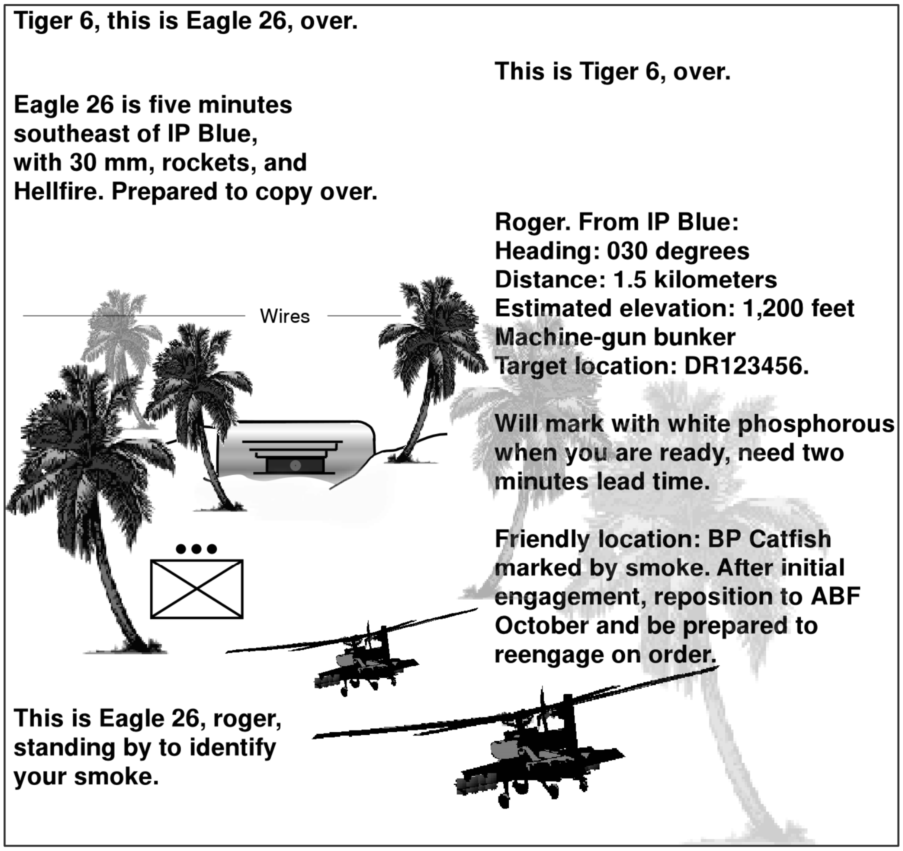

Figure B-9. Example of a Close Combat Attack Brief

B-56. Danger close ranges for armed helicopter weapons are in Table B-3. FM 3-09.32 has additional information. Engagements at ranges danger close or short of danger close require extreme close coordination and positive identification. Crews must take special precautions when delivering direct fires on targets within these ranges but are not prohibited from delivering at ranges short of danger close. Accurate delivery of munitions is essential when engaging at danger close ranges and requires higher crew training standards.

Table B-3. Danger Close Ranges for Helicopter Engagement

WEAPON	DESCRIPTION	DANGER CLOSE IN METERS
2.75" rockets	Rocket with various warheads. Area weapon.	175
Hellfire	Precision-guided. Point weapon.	75
20 mm 25 mm 30 mm	Guns. Area weapons.	150

B-57. Time is a primary constraining factor for coordinating direct fires in close combat. METT-TC dictates how coordination between the commander in contact and the AMC is accomplished. Face-to-face coordination is preferred but is rarely possible in CCA situations.

B-58. In the hasty CCA—to take advantage of targets of opportunity or assist ground units under pressure—coordination is usually accomplished by radio.

ENGAGEMENT

B-59. A potential target may seem lucrative because of its apparent location and activity, but visual acquisition and activity do not mean positive identification. If there is no immediate threat from a specific target and it is not positively identified, aircrews do not shoot until all possible measures to identify are taken. Before the armed helicopter team engages, the target must be confirmed by the aircrew and friendly unit in contact.

B-60. During engagement, open communication and continuous coordination with friendly ground elements are required to ensure the desired effect. Coordination of the direct and indirect fires from all participants produces the most efficient results in the least amount of time, with the least risk to all. This coordination includes CAS and any nonlethal methods that may be employed.

BATTLE DAMAGE ASSESSMENT/REATTACK

B-61. The AMC provides a BDA to the ground commander who determines if a reattack is required to achieve his desired end state. Support continues until the desired effect is achieved.

EMERGENCY COORDINATION MEASURES

B-62. Aviators may be required to assist ground personnel who are not fully familiar with aviation assets. Key personnel who habitually handle coordination for aviation support may become casualties or simply not be available. These situations require close attention, careful communications, and initiative on the part of the aviator to place fire on targets or deliver other support as necessary. An assault pilot may be required to coordinate for an attack mission or call for indirect FS. An attack pilot may have to assist in extracting personnel.

B-63. Pilots must ask appropriate questions of the requestor, with emphasis on positive identification of location. Possibilities include the following questions:

- Where is ground unit's position? What are the GPS coordinates? Are those coordinates verified with another GPS?
- Can the ground unit mark its position with smoke, tracers, or other methods? (If smoke is used, aircrew verifies color after deployment.)
- What assistance does the ground unit need (FS, extraction, or resupply)?
- Where is the target? What are the grid coordinates or the relationship of the target to a readily identifiable natural or man-made feature?
- How far is the target from the ground unit and in what direction? If the observer is not familiar with meters, aircrews ask the observer to try football or soccer field lengths to estimate distances.
- What is the target? Is the target personnel, vehicles, equipment, or buildings? What is the size of the enemy force, and what is it doing?

B-64. Aviators may have to fly helicopters near friendly troops to deliver ordnance onto the target. Factors that can reduce the potential for fratricide include the following:

- Precision-guided munitions.
- Fire support coordination measures.
- Planned or hasty coordination and control measures.
- Knowledge of the ground tactical plan.

- Knowledge of the exact location of friendly troops.
- Knowledge of the exact location of aircraft.
- Positive identification of targets.

B-65. Familiarity between the supported unit and the aviation unit.

Appendix C

Networking the Aviation Brigade

This appendix provides information on how the Aviation Brigade communicates, both externally as part of Army, Joint, Coaltition, and Department of Defense (DoD) networks and internally to provide command and control to Aviation elements. It also describes the roles and responsibilities of the signal assets assigned to Brigade, the means by which the Aviation Brigade communicates via common user systems, combat net radio networks, and aircraft communications as well as some generalized tactics, techniques and procedures (TTP) to ensure effective Command and Control (C2) of aviation ground and flight operations.

SECTION I – OVERVIEW

C-1. The Army's Aviation Brigade, like every other Army element, is communications/data dependent. One of the key future force aviation organizational implications is that there must be links at every echelon to the joint command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) architecture. It is recognized that command, control and communications represent the brains as well as the heart of any warfighting element. It ties together sensors and attack means, prioritizes engagements, provides early warning to forces, and monitors the status and vulnerability of the overall network. The Army's objective communications system, LandWarNet will employ landline, fiber optic cable, computer, radio, cellular phones, and satellite communications links. The multiplicity of communications systems serves twin purposes; it enhances survivability, but it also permits the network to pass information to multiple elements of the force

C-2. Reporting combat information and exploiting that information is fundamental to combat operations. This information and the opportunities it presents are of interest to other maneuver units and higher headquarters staffs. It requires wide and rapid dissemination. Brigade elements frequently operate over long distances, wide fronts and extended depths from their controlling headquarters. Communications must be redundant and long range to meet internal and external requirements. Long range communications can be augmented through the Aviation Brigade's organic signal company. The systems must be in place before they are needed.

C-3. Network-centric warfare will enable the Army and other U.S. forces to achieve an advantage through improved information sharing. The ability to develop and leverage this information advantage and use it to achieve increased combat power is key to the success of the Aviation Brigade. Networking the force into a single virtual infosphere provides the warfighter with a distinct information advantage..

C-4. This appendix discusses the means of transmitting data used by the Aviation Brigade as a part of the Army's LandWarNet. It also describes the internal Brigade communications means as well as responsibilities of the Brigade's organic Signal Company. The LandWarNet pathfinder programs (Airborne Command System, Future Combat System, Distributed Common Ground System – Army, and Global Command and Conrol System – Army) lay the foundation for LandWarNet and were described in detail in Chapter 4 of this manual along with the battle command platforms and command post operations.

C-5. LandWarNet is the Army's contribution to the Global Information Grid (GIG) that consists of all globally interconnected, end-to-end set of Army information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating, and managing information on demand supporting warfighters, policy makers, and support personnel. It includes all Army (owned and leased) and leveraged DOD/Joint communications and computing systems and services, software (including applications), data security services, and other associated services. See Figure C-1.

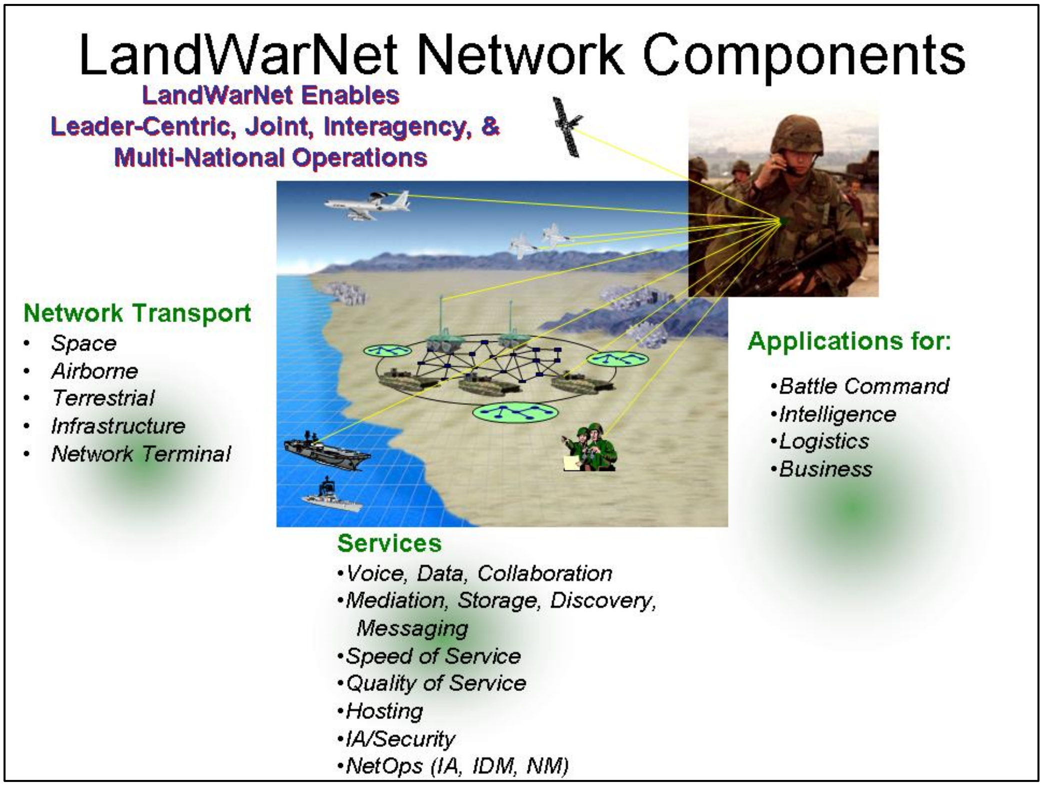

Figure C-1. Objective Force LandWarNet

C-6. The GIG is a globally interconnected, end-to-end set of information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policy makers, and support personnel. The GIG includes all owned and leased communications and computing systems and services, software (including applications), data, security services, and other associated services necessary to achieve Information Superiority. It also includes National Security Systems (NSS) as defined in section 5142 of the Clinger-Cohen Act of 1996. The GIG supports all DoD, National Security, and related Intelligence Community (IC) missions and functions (strategic, operational, tactical, and business) in war and in peace. The GIG provides capabilities from all operating locations (bases, posts, camps, stations, facilities, mobile platforms, and deployed sites). The GIG provides interfaces to coalition, allied, and non-DoD users and systems. See Figure C-2.

C-7. The GIG includes any system, equipment, software, or service that meets one or more of the following criteria:

- Transmits information to, receives information from, routes information among, or interchanges information among other equipment, software, and services.
- Provides retention, organization, visualization, information assurance, or disposition of data, information, and/or knowledge received from or transmitted to other equipment, software, and services.
- Processes data or information for use by other equipment, software, and services.

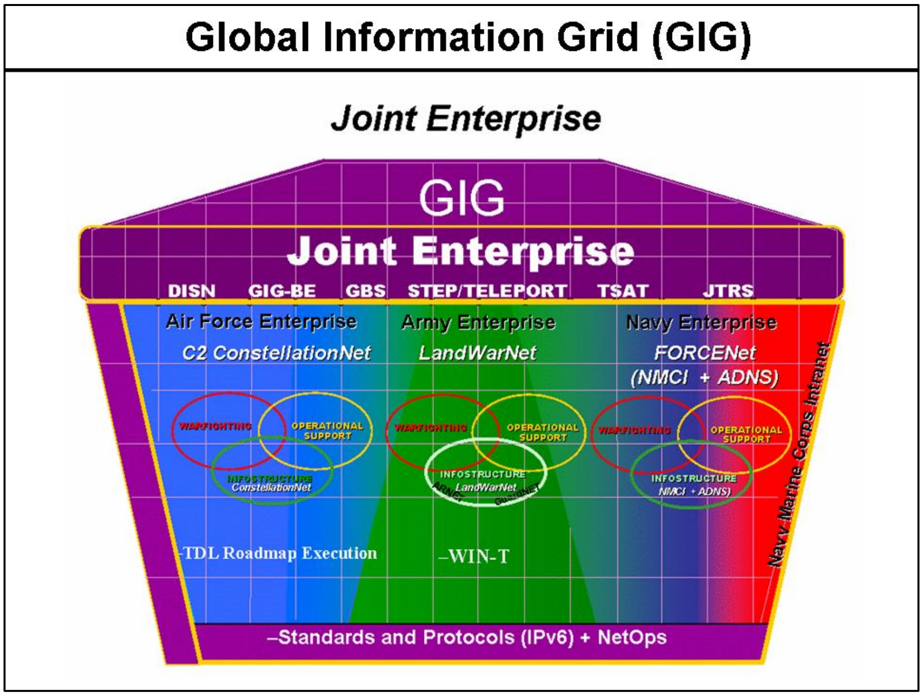

Figure C-2. Global Information Grid

SECTION II – COMMON USER NETWORK SUPPORT

GENERAL

C-8. The Aviation Brigade gains access to LandWarNet via any one of three generations of common user networks; The Army's Mobile Subscriber Equipment (MSE), the interim Joint Network Transport Capability (JNTC) (currently being fielded as an interim communications support package to bridge the Aviation Brigade from MSE to the objective communications package of the Warfighter's Information Network-Tactical (WIN-T) which is to be fielded staring in 2008. Each of these common users systems are described below.

C-9. The legacy Mobile Subscriber Equipment (MSE), a mobile battlefield communications system, currently provides the Aviation Brigade's link with the Army's LandWarNet. It is the backbone of the higher headquarters communications system. It provides for the transport of unclassified and classified video, data and voice traffic for Army elements as well as providing interfaces to coalition forces, Joint forces, sister services, and commercial communications. MSE integrates the functions of transmission, switching, control, communication security (COMSEC), and terminal equipment (voice and data) into one system. MSE provides a switched telecommunications system extended by radio telephone and wire access. Users can communicate throughout the battlefield in either a mobile or static situation. All of the Army's LandWarNet programs currently run over MSE and will be transitioned to the interim Joint Network Transport Capability (JNTC) as that system is fielded.

C-10. The interim Joint Network Transport Capability (JNTC) is a communications transport capability that began fielding to selected units in 2004. It provides common user communications transport for the Aviation Brigade until the objective communications transport is fielded as WIN-T. The Joint Network Transport Capability System will give soldiers more mobile battlefield communications and bandwidth, make it easier for them to talk to US and coalition forces, and improve access to data from military systems worldwide. JNTC will provide voice, voice and data when forces operate out of line of sight. JNTC consists of vehicles equipped with satellite communications and voice-over-Internet Protocol (VOIP) and dynamic IP technologies and systems that connect to military networks. It will give soldiers more mobile communications than Mobile Subscriber Equipment's-Ttri-services tactical terminals but not as much as the Warfighter's Information Network-Tactical system.

C-11. The Warfighter's Information Network-Tactical System will provide a high-speed, high-capacity communications network for the Objective Force. Using wireless systems, mobile computing, advanced networking concepts and personal communications devices, this networked communications capability will be focused on delivering a network that is also warfighter-centric. WIN-T will provide the Objective Aviation Force with robust and continuous interconnectivity, any place, under any conditions and at anytime. It will provide the Aviation Brigade with the ability to see first, decide first and act first.

MOBILE SUBSCRIBER EQUIPMENT ARCHITECTURE - LEGACY

C-12. The Mobile Subscriber Equipment (MSE) network architecture forms a nodal grid system capable of providing multiple communications paths between node centers throughout the Army's area of operation. Multiple paths via line of sight (LOS) radios and tactical satellite links between node centers ensure a high degree of system survivability. Small Extension Nodes (SENs) are connected to node centers to provide communications support to smaller units. MSE employs ground (Line of Sight), tropo-spheric scatter (tropo) and satellite transport. The Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T), if available, can also be used to provide satellite range extension for the MSE network. MSE provides the AVN BDE the ability to maintain connectivity with dispersed aviation units engaged in operational missions.

C-13. MSE is designed to provide a connection between the Aviation Brigade's main CP and higher headquarters as well as providing support to the Brigade's organic units as assets allow. Small extension nodes (SEN) and radio access units (RAU) support provides both MSE telephone and mobile subscriber radio telephone (MSRT) coverage for the AVN BDE and battalion tactical operations centers (TOCs).

C-14. For unclassified data traffic and interfaces to the commercial internet, MSE utilizes links to the Department of Defense's Global Information Grid (GIG) which carries the Unclassified but Sensitive Internet Protocol Routing System (NIPRNET). NIPRNET provides for a trusted interface between the DoD intra-net to commercial Internet systems and the World Wide Web through DoD Information Systems Agency (DISA) designed and maintained gateways called Demilaritized Zones (DMZs). These gateways ensure the DoD network maintains its integrity and provides for guards against computer attack.

C-15. MSE also provides a link to the Department of Defense's (DoD's) secret internet protocol router network (SIPRNET) carried on the GIG. SIPRNET is a worldwide network which allows a secure means to transmit classified data, imagery, and video teleconferencing. SIPRNET can only be accessed by designated secure terminals, and is also available on AKO. SIPRNET is a closed network as of 2004, however actions have been taken to interface SIPRNET with the Department of Homeland Security's Homeland Security Network (HSN).

C-16. For a more complete description of MSE equipment, architecture and operations, refer to Army Field Manual 11-55, Mobile Subscriber Equipment (MSE) Operations.

JOINT NETWORK TACTICAL CAPABILITY SYSTEM – (JNTC) INTERIM

C-17. The Army's Joint Network Tactical Capability System is made up of two major components: the Joint Network Node (JNN) found at UEx/UEy and Brigade/Brigade Combat Team (BCT) levels and the Battalion Level Command Post (CP) Module allocated to battalion level CPs. The Joint Network Tactical Node (JNTC) architecture has three main components: HUB Node, Joint Network Node and Battalion Level Node. The notional Aviation Brigade connectivity using the HUB system is shown below in Figure C-3 which shows how the Aviation Brigade would be supported using JNTC assets to link it to the DoD's Global Information Grid (GIG).

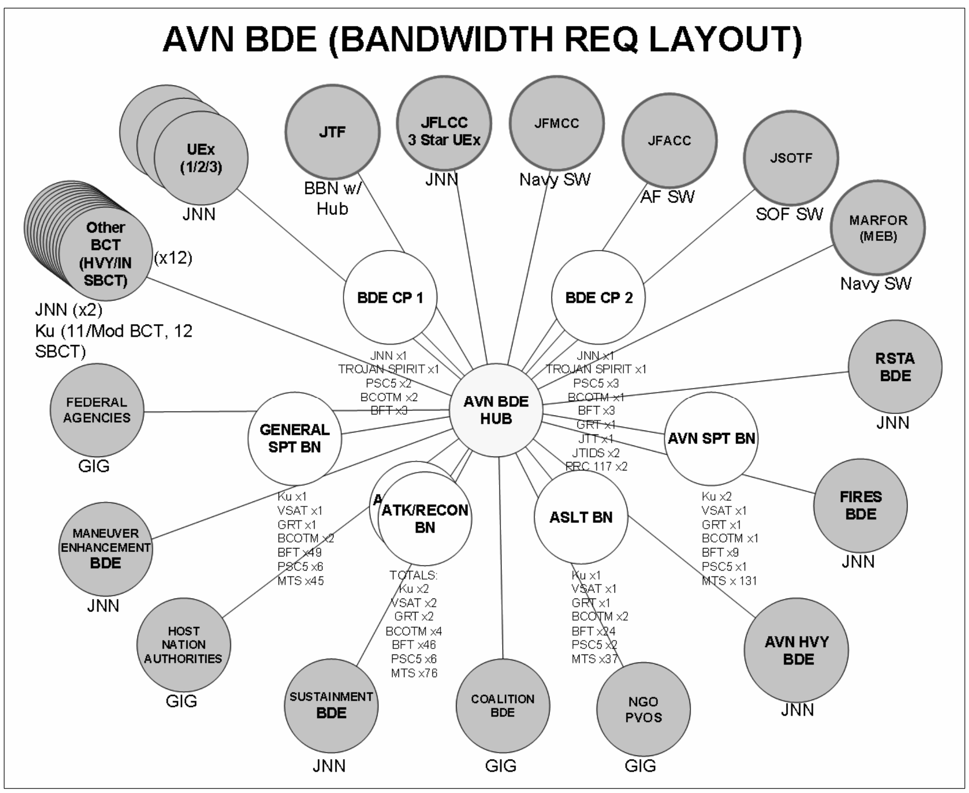

Figure C-3. Avn Bde JNTC (Interim) Connectivity Requirements

C-18. The HUB node is designed to support UEx level forces. The JNN, located at the brigade/BCT level would connect into the HUB using satellite links. However, the HUB node could deployed as general support to a brigade or BCT depending on the mission circumstances. Therefore, depending on mission requirements, the Aviation Brigade could have the robust capabilities as provided by the UEx level HUB node. Figure C-4 below shows a notional HUB network.

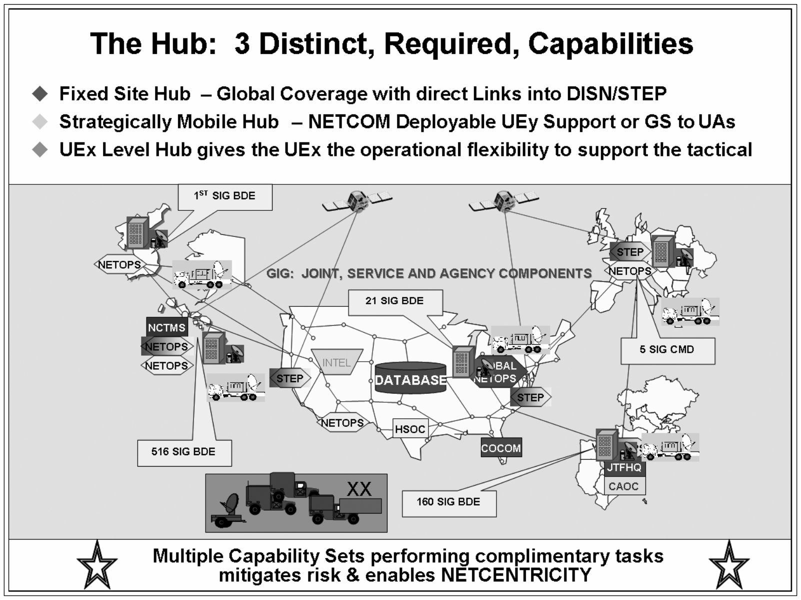

Figure C-4. Notional JNTC HUB Node Network

C-19. The UEx HUB, which could be GS to the Aviation Brigade, consists of one 3.7meter satellite dish which transmits 40-50 Mbps bandwidth and will support 16 time division multiple access (TDMA) nets via 6 frequency division multiple access (FDMA) links.

C-20. The Joint Network Node or JNN will be deployed at Brigade/BCT and UEx level. The JNN is designed to interface with MSE via two simultaneous MSE digital terminal groups (DTGs) supporting voice and data. It connects to a HUB (either tactical or strategically mobile hub depending on the network configuration) for further connectivity/access to the DOD's GIG network. The JNN provides for circuit switched and IP-based Ku-band commercial satellite capability with up to 7mbps in bandwidth.

C-21. The JNN has no transport capability internally to the JNN shelter. It leverages new Ku-band SATCOM equipment along with associated Ku-band (both GMF and commercial services) time division multiple access (TDMA) and frequency division multiple access (FDMA) hubs. The JNN also leverages existing capabilities such as Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T), the AN/TSC 85/93 (MSE generation satellite), and High Capacity Line of Sight (HCLOS) radios for tactical operations center (TOC) to TOC links and reach-back links to wide-area services (such as the GIG) and home station. This satellite based transport provides for improved mobility and range of individual nodes and command post structures.

C-22. The JNN's TACLANE, KIV-7 and KIV-19 Type 1 encryption can support:

- 48 2 wire phone users (SIPR & NIPR)
- 24 IP voice users (SIPR & NIPR)
- 46 IP data users (SIPR & NIPR) (includes 24 data users connected to IP phones)
- Hosts H.323 video conferences and is compatible with the Defense Collaborative Tool Suite (DCTS)

C-23. The JNN will provide Top Secret/SCI tunneling capability from Trojan Spirit, and improves points of presence and mobility in the tactical environment. The JNN is interoperable with USCENTCOM"s CENTRIX network to provide multinational communications support.

C-24. A JNN node is made up of the components as shown below in Figure C-5 and Figure C-6.

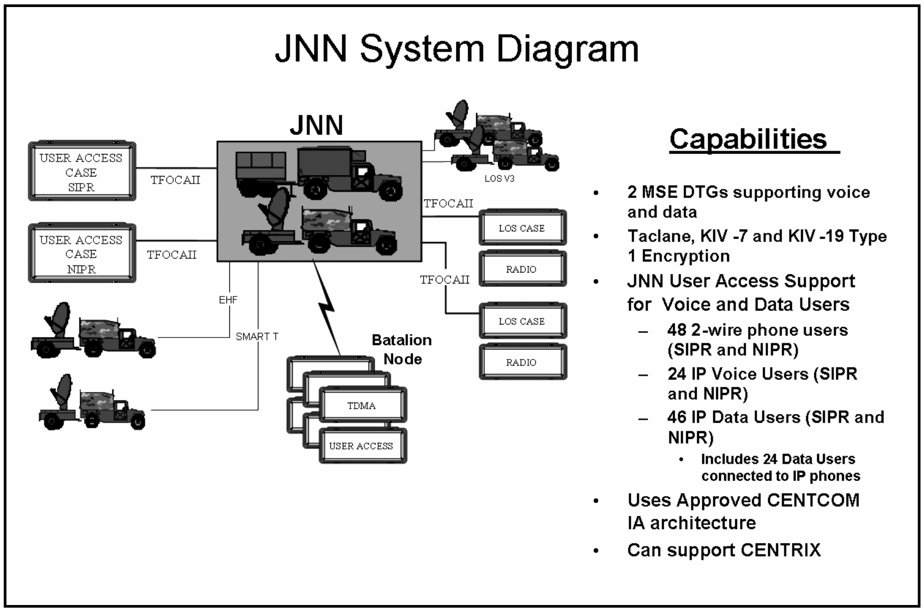

Figure C-5. JNN System Diagram

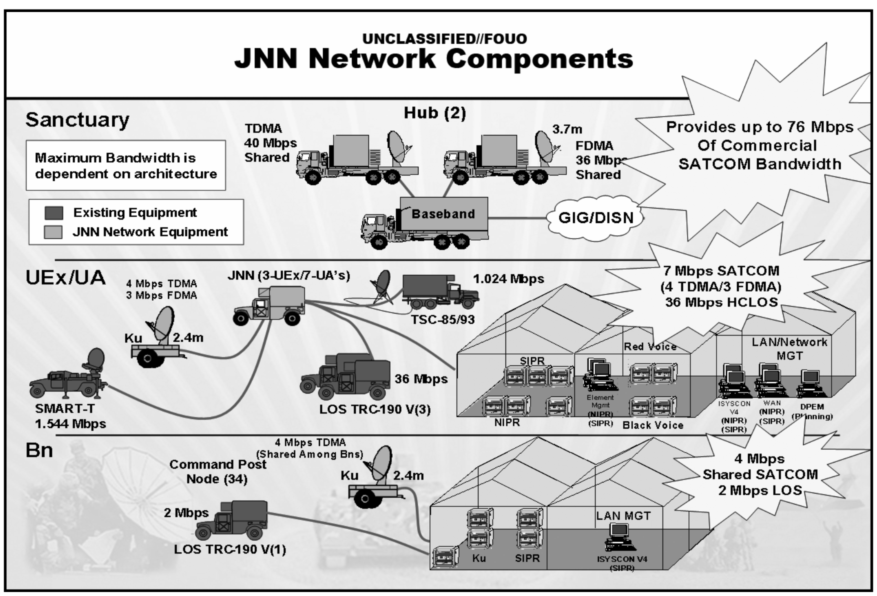

Figure C-6. JNN Components

C-25. The battalion level or small command post (CP) node module is a high mobility multi-wheeled vehicle (HMMWV) mounted system with a trailer mounted 2.4 meter satellite dish. The module contains a transit cased Virtual Private Network (VPN) router and a TACLANE security device and provides hub routers for CP and voice over Internet Protocol (VoIP) phones along with a file server. The Battalion Level CP Module provides 4mbps wideband SIPRNET data along with VoIP phones to the Aviation Battalions and links to the JNN through TDMA satellite architecture. The components of the Battalion level CP node are shown below in Figure C-7.

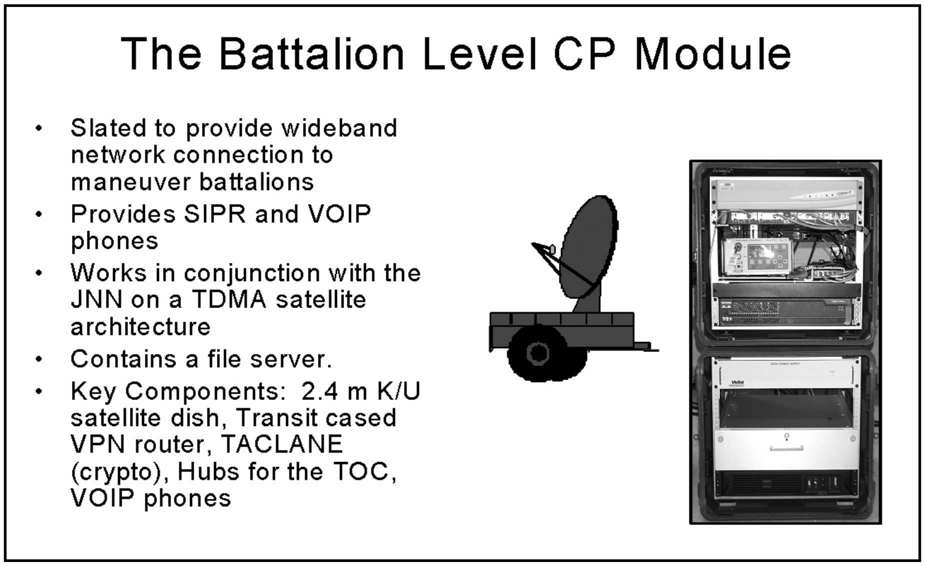

Figure C-7. JNTC Battalion Level CP Module

C-26. For unclassified data traffic and interfaces to commercial internet, JNTC will utilize links to the Department of Defense's Nonsecure Internet Protocol Routing System (NIPRNET). NIPRNET provides for a trusted interface between the DoD intra-net to commercial Internet systems and the World Wide Web through DoD Information Systems Agency (DISA) designed and maintained DMZs.

C-27. JNTC can provide a link to the DOD's secure internet protocol router network (SIPRNET). SIPRNET is a worldwide network which allows a secure means to transmit classified data, imagery, and video teleconferencing. SIPRNET can only be accessed by designated secure terminals.

WARFIGHTER'S INFORMATION NETWORK – TACTICAL (WIN-T) ARCHITECTURE

C-28. Currently in development, (first unit to be fielded in 2006), the WIN-T system is a mission critical system and an integrating communications network that is optimized for offensive joint operations, while providing the Theater Combatant Commander the capability to perform multiple missions simultaneously with campaign quality. It will be a framework, conforming to established standards and protocols for the network while interfacing with and/or replacing equipment in legacy and interim forces. WIN-T is a high-speed and high capacity backbone communications network. It will be focused on moving information in a manner that supports commanders, staffs, function units and capabilities-based formation – all mobile, agile, lethal, sustainable, and deployable. WIN-T will enable them to plan, prepare, and execute multiple missions and tasks simultaneously. WIN-T will provide required reach, reach-back, interoperability and network operations for the Maneuver UA info-spheres and seamlessly interface with Joint Tactical Radio System (JTRS) which extends to the individual warfighter platform level. At the Unit of Employment (UE) level, WIN-T will provide command centers and staff elements with the communications capabilities to link to adjacent UEs, subordinate units of action (Brigades/BCTs), sustaining base, and Joint, Allied, and Coalition forces.

C-29. WIN-T transmission path/gateways will traverse all three layers (terrestrial, airborne and space). It will integrate the three transmission layers into the DoD's GIG infrastructure. WIN-T will transport TS/SCI data by tunneling the TS/SCI data through the WIN-T network. WIN-T will include components such as wireless networks, mobile computing, Joint Tactical Radio Systems (JTRS), personal communications devices, network management, information assurance and information dissemination technologies. By exploiting state-of-the-art communications, land, airborne, and space-based resources, WIN-T will deliver the right information to the right person in the right place at the right time.

C-30. Smaller, low-profile radio systems and antennas will provide increased security and survivability. Precision engagement across multiple boundaries will become much simpler and virtually automatic, based on information dissemination management tools tied to multiple intelligence, surveillance and reconnaissance links with command headquarters.

C-31. WIN-T will be rapidly deployable on C-130 aircraft and able to begin operation immediately when it is off loaded. WIN-T will be soldier friendly, spectrum smart, and optimized for the offense. It will require fewer resources than legacy systems. It will have an open architecture.

C-32. LandWarNet, The Army's objective communication network, is the single embodiment of the numerous capabilities that enables soldiers, leaders, and units, today and in the future, to succeed in the full spectrum of potential operational environments. LandWarNet fuses the Army's warfighting construct into the Joint operational framework and integrates and optimizes the elements of combat power to create a joint, dominant land combat force. This network will deliver the connectivity between joint forces, sister services, and Army echelons down to the soldier. The LandWarNet will permit the Aviation Brigade to establish and maintain secure and seamless connectivity, allow sharing, access and protection of information to a degree that it can establish and maintain an information advantage over its adversaries. This enhanced collaboration enables the Aviation Brigade to improve its information position through processes of correlation, fusion, and analysis.

AVIATION BRIGADE SIGNAL COMPANY

C-33. With a signal company embedded in the Aviation Brigade (Figure C-8), the conventional approach of having a signal battalion as a pool of expertise goes away and all signal services that used to be task organized to support the Aviation Brigade will now reside within their organic signal company. The signal company is commanded by a Signal Corps Captain who is responsible to provide signal and network support for the aviation brigade to enable control of subordinate battalions and to enable it to work for a UEx, UEy, or directly for a Joint Force Command or a multinational headquarters. The Signal Company's technical oversight comes from the Aviation Brigade's S6 who is assigned to the Aviation Brigade Headquarters.

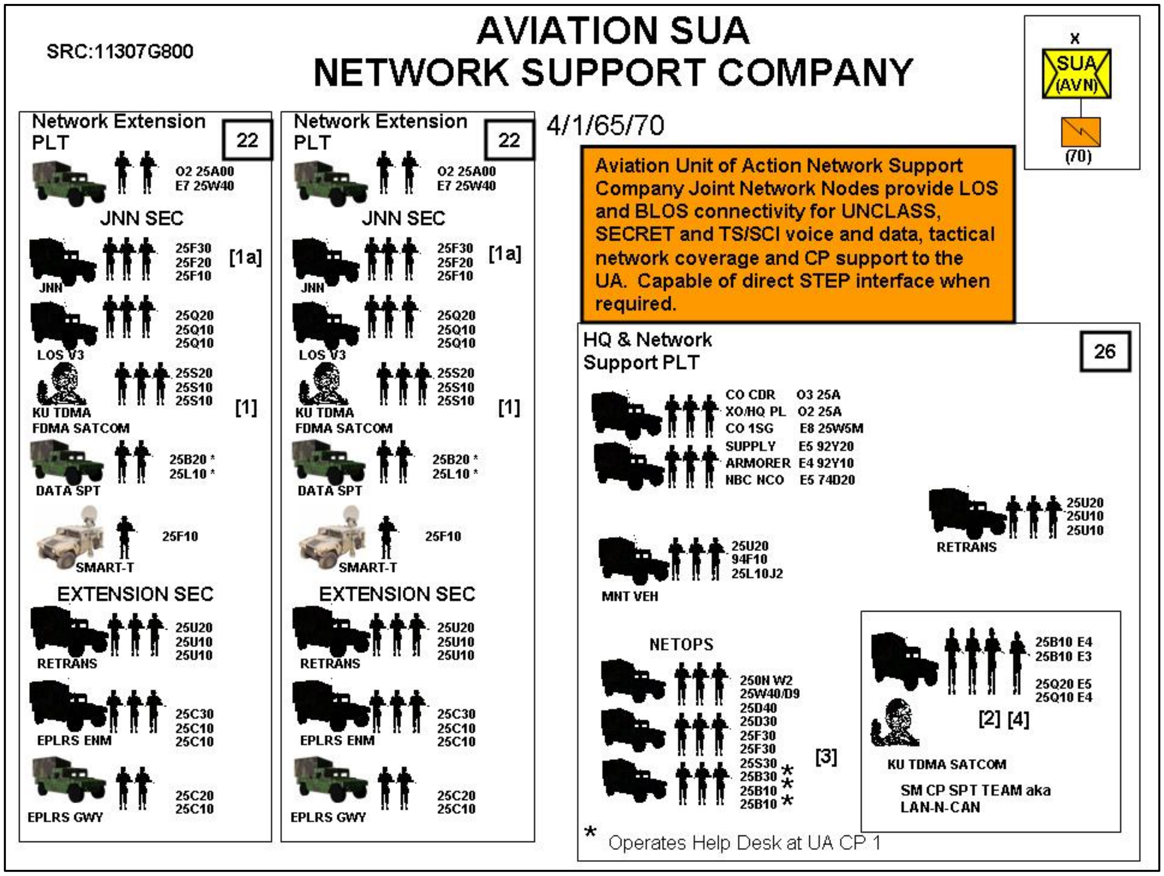

Figure C-8. Aviation ASB Network Support Company

C-34. The responsibility for installing, operating and maintaining the transport means for the Aviation Brigade's internal tactical local area network (LAN) and for providing the Brigade's access to LandWarNet belongs to the Aviation Brigade's organic signal company. User equipment such as the computers found in the TOCs, the VTC suite, the radios in the TOCs or in the aircraft are user owned, operated and maintained. The Signal Company and the S6 assists the user with training, troubleshooting and maintenance. But in reality, if it is electrical, the user assumes the assigned communicators will know everything there is to know about it. Therefore the S6 and the Signal Company must become experts on all communications equipment owned or operated by the Aviation Brigade.

C-35. The Signal Company provides connectivity to Army external elements or joint/multinational elements via a link from the current generation of tactical common user systems (MSE, JNTC or WIN-T). Communications within the Aviation Brigade is provided by the Signal Company by the common user system, both the wide area network (WAN) and the local area network (LAN) switch/router architecture. (Figure C-9).

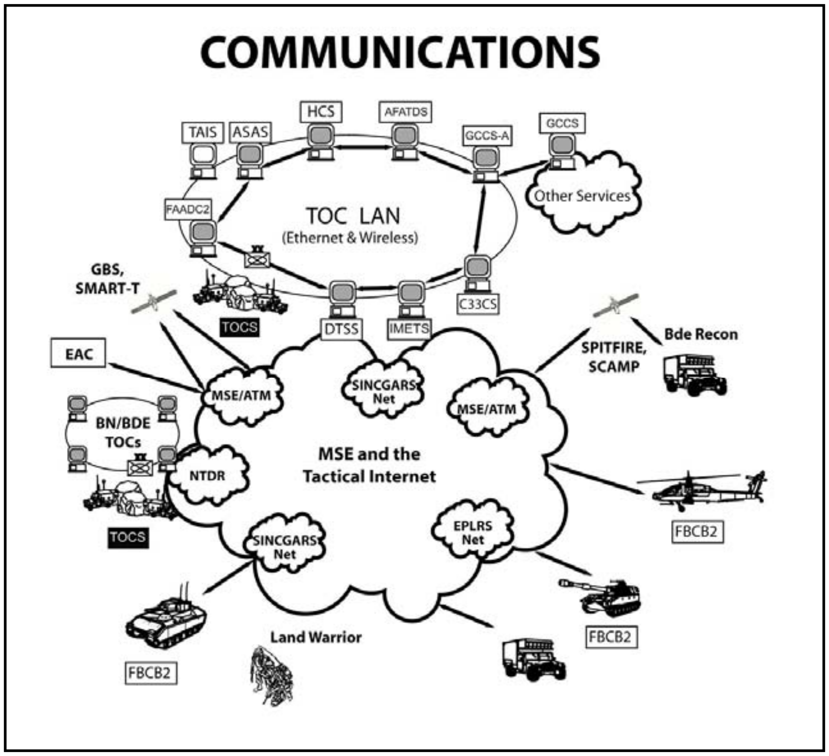

Figure C-9. LandWarNet Programs Networked by the Aviation Brigade Signal Company

C-36. The normal communications means within the command post, assembly area and support areas when the situation permits is via wire. Initially wire is laid on the ground, but when time permits, the wire is buried or installed overhead. Buried wire is preferred to counter enemy instruction and EMP. However, wire should be overheaded when crossing roads, except where culverts or bridges are available. Overhead wire should be a minimum of 18 feet above ground to allow for wheeled and tracked vehicle clearance and should be clearly marked. Wire should be tagged according to the system in the SOP. At a minimum tags should be at the ends of each line. This facilitates reattaching wires when they are pulled or cut. In the vicinity of helipads and airfields over-heading wire should be avoided.

C-37. An alternate means of communications for the systems that run over the LAN and WAN is by use of the organic Aviation Brigade radio assets such as the near term digital radio (NTDR), single channel ground-airborne radio system (SINCGARS), and enhanced position location reporting system EPLRS. (Figure C-10 below)

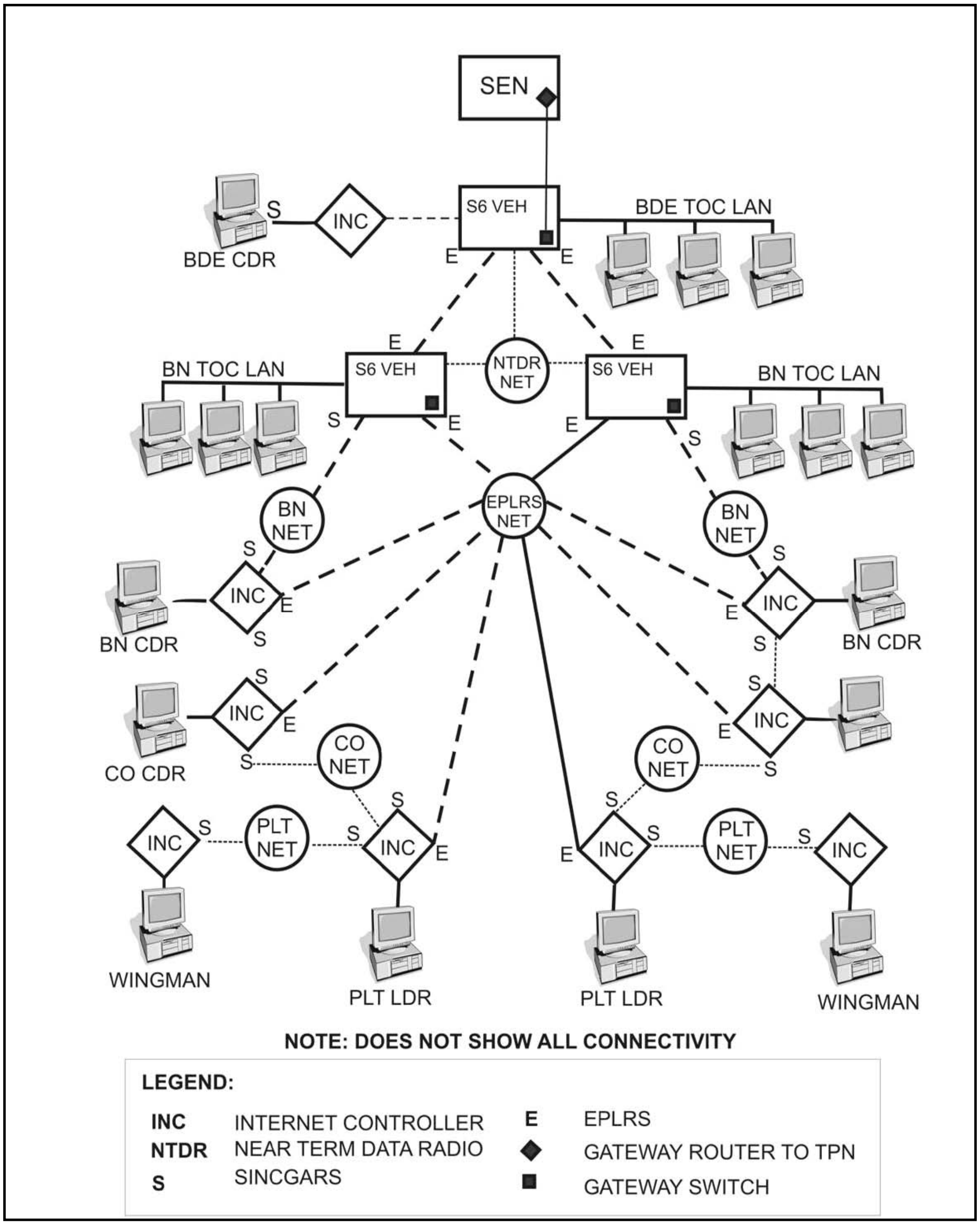

Figure C-10. Example of an ABCS EPLRS Communications Net

C-38. For more detailed information about LAN operations, see FM 24-7, Tactical Local Area Network (LAN) Management.

C-39. Within the Aviation Brigade TOC, the Brigade Signal Company is responsible for providing connectivity for a full spectrum of communications needs to include video teleconference capability via MSE/JNN or satellite. Video teleconference (VTCs) among UEys, UExs and brigades are becoming more common. The Aviation Brigade will be fielded with VTC capability as an excellent method for coordination over long distances with consideration time savings. This equipment is the responsibility of the S3 for the TOC with the installation and troubleshooting of the system falling to the Signal Company and the S6.

C-40. Part of the Signal Company's responsibility is to ensure communications means are available to carry the data the Brigade needs to perform its mission. The complex digital communications systems have to be checked for proper connectivity and functional integration throughout the entire digital architecture before the Aviation Brigade Commander can digitally communicate with confidence. A step-by-step check of the individual and collective functioning of the Army Battle Command Systems (ABCS) (the Force XXI Battle Command Brigade and Below (FBCB2) Systems through the Global Command and Control System (GCCS)) to validate the architecture and troubleshoot the system.

C-41. The S6, in conjunction with the Signal Company will verify the digital systems architecture to ensure there is a plan to communicate with the units in the task organization and higher headquarters. Since our internet protocol based unit addressing system does not allow for dynamic changes of units entering and leaving the task organization, the importance of validation of the digital architecture is the foundation for success. This architecture validation is a system-by-system check done in conjunction with the users' platform-by-platform (vehicles) check to ensure that each individual system has all of the required component parts and they work.

C-42. Once the architecture has been validated, connectivity testing of the upper and lower tactical internet (TI) begins in each of the battlefield functional areas. Every identified problem that is resolved must be retested to ensure that the fix meets the architecture standards which will ensure connectivity and stability. A "fix plan" must be developed to ensure that problems are solved in a fashion that strengthens the digital chain.

C-43. For more detailed description of the responsibility of the S6 and the Signal Area Company, refer to FM 11-43 Signal Leader's Guide.

SECTION III – COMBAT NET RADIO NETWORKS

C-44. Aviation units have more complex communications requirements than ground forces. Greater distances between brigade command posts and subordinate battalions and their widely dispersed aircraft require additional radio systems beyond the normal SINCGARS combat net radio. Retransmission stations may be needed to extend the range of any or all tactical radio nets. These systems must support the larger battle space of AVN Brigades that may conduct simultaneous shaping operations, reconnaissance, and UH-60 A2C2S support in decisive operations and aerial re-supply as part of sustaining operations. The Aviation Brigade employs a number of combat net radio networks to provide command and control to its subordinate elements, to provide and gain information from its higher headquarters or adjacent or supporting forces. These nets and associated equipment is user owned and operated, however the S6 and the Signal Company provide technical support as requested.

C-45. Battalions typically operate a command (C2), operations & intelligence (O&I) and administration and logistics (A&L) networks - all using SINCGARS. Battalions also operate an internal air battle network using Have Quick II. The high-frequency radio is a secondary means of secure tactical communication to overcome SINCGARS and Have Quick II LOS constraints. The AN/ARC-186 VHF-AM radio is normally for administrative ATS but may function as a platoon internal net.

C-46. Aviation maneuver brigades also operate on fire nets.

C-47. Critical higher headquarters radio nets that must be monitored at all times:

- Higher command net. The brigade commander, all brigade CPs and the S3 enter and operate.

- Higher O&I net. The S2 and all brigade CPs enter and operate
- Higher A&L net. The S1 and S4 and the ALOC enter and operate.
- Aviation Brigade staffs must often monitor lower, adjacent, and supported unit radio nets when appropriate. This can be especially valuable when supporting and conducting air assaults and close fires.

C-48. For most tactical nets, the Net Control Station (NCS) is the Aviation Brigade or Battalion Tactical Operations Center. Paragraph five of the Brigade's operations order designates frequencies, transmission security variables, cryptographic variables, and time to open the radio net. When the NCS makes the "all" call, stations respond in a prescribed sequence, usually alphanumeric by call sign or by unit sequence. The NCS acknowledges all stations entering the net, and stations remain in the net until receiving permission to leave the net. The NCS tracks which stations are on the net and maintains a call log. Before changing modes, the NCS makes a call in the present mode of operation announcing the change.

COMMAND NETWORK

C-49. The brigade commander, executive officer (XO), operations officer (S3), and subordinate battalion commanders are the primary users of the secure brigade command network, although the subordinate and supporting combat and C2 units may also operate on this net. The subordinate battalions also operate their own organic Battalion Command Radio Net.

C-50. Because SINCGARS may lack the range necessary to control forward operations, a tactical CP may temporarily operate forward at brigade or battalion level. Ground retransmission stations may be set up to facilitate command net communication. The high frequency (HF) radio is a secondary means of command net communication. Relay of command information is a third option. Figure C-11 below provides a depiction of a typical Aviation Brigade Command Net.

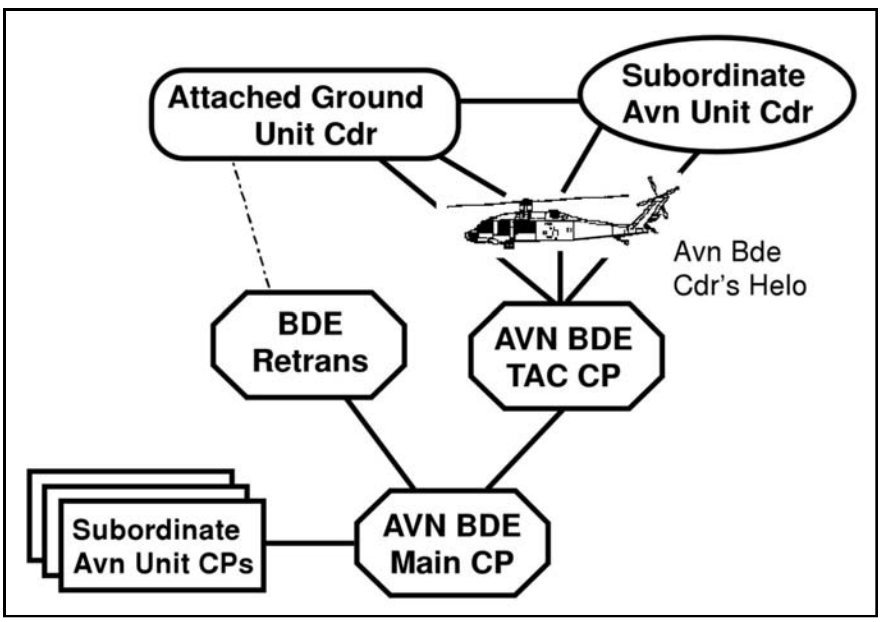

Figure C-11. Command Network

OPERATIONS AND INTELLIGENCE NET

C-51. The brigade and battalion S2s control their O&I networks. SINCGARS is the primary net communications medium. As the Army evolves and digitizes its force communications, these networks will become more automated in reaching back to higher echelons for pertinent information and in forwarding combat information gained by aviation forces. Routine operations and intelligence reports (INTREPs) are sent on this net. It functions as a surveillance net when required. O&I is not normally monitored by the Brigade or subordinate commanders. The net is for details and discussion that leads to analysis. That analysis, when completed, is relayed to the appropriate commander. The unit XO, operating in the TOC, ensures that analysis is done and relayed in a timely manner and by the appropriate means. If the rear CP is used, it also monitors O&I. This allows the rear CP to anticipate critical support requirements and problems. Figure C-12 below provides a depiction of a typical O&I Net.

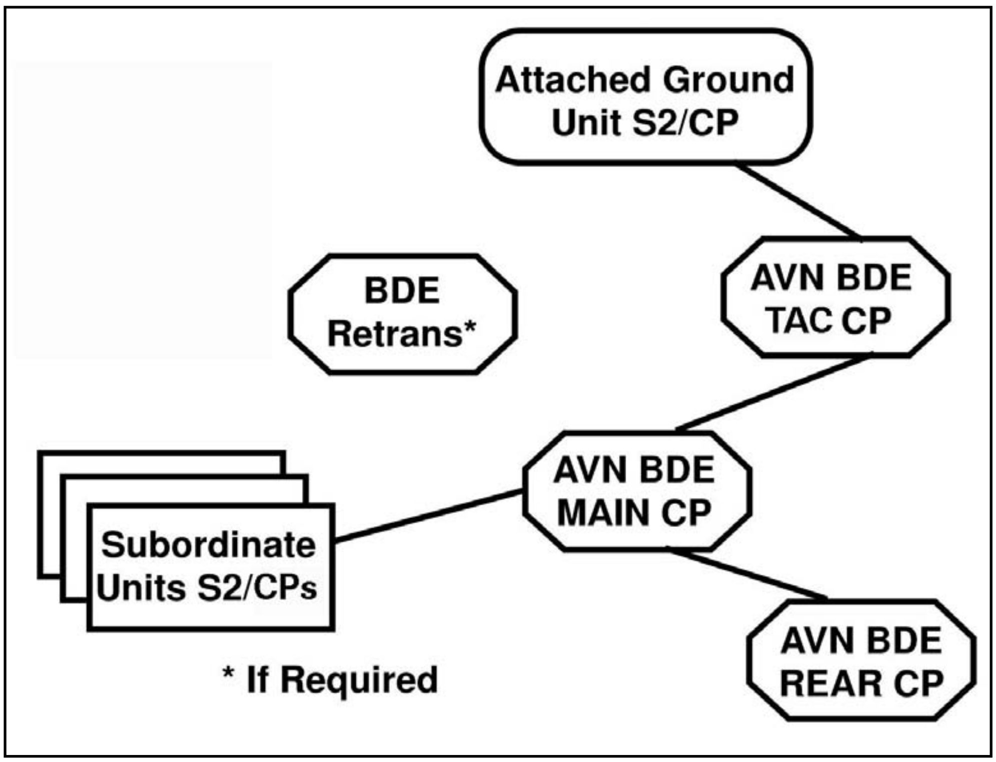

Figure C-12. Operations and Intelligence Network

ADMINISTRATION AND LOGISTICS NET

C-52. The brigade and battalion S1 and S4 control their A&L networks. Units transmit routine supply requests and personnel actions on this net, often employing SINCGARS and MSE/JNN data communications. FARPs operate on the A&L network and, if possible, monitor the command network. If the A&L network is inoperable, the O&I network may serve as an alternative. The A&L net, like the O&I net, normally is not monitored by the brigade or subordinate commanders. The net is for details and discussion that leads to the resolution of administrative and logistical matters. Critical information is relayed to the appropriate commander or discussed on the command net. The unit XO, operating in the TOC, ensures that analysis is done and relayed in a timely manner and by the appropriate means. If the rear CP is used, it also monitors A&L. This allows the rear CP to anticipate critical support requirements and problems (Figure C-13)

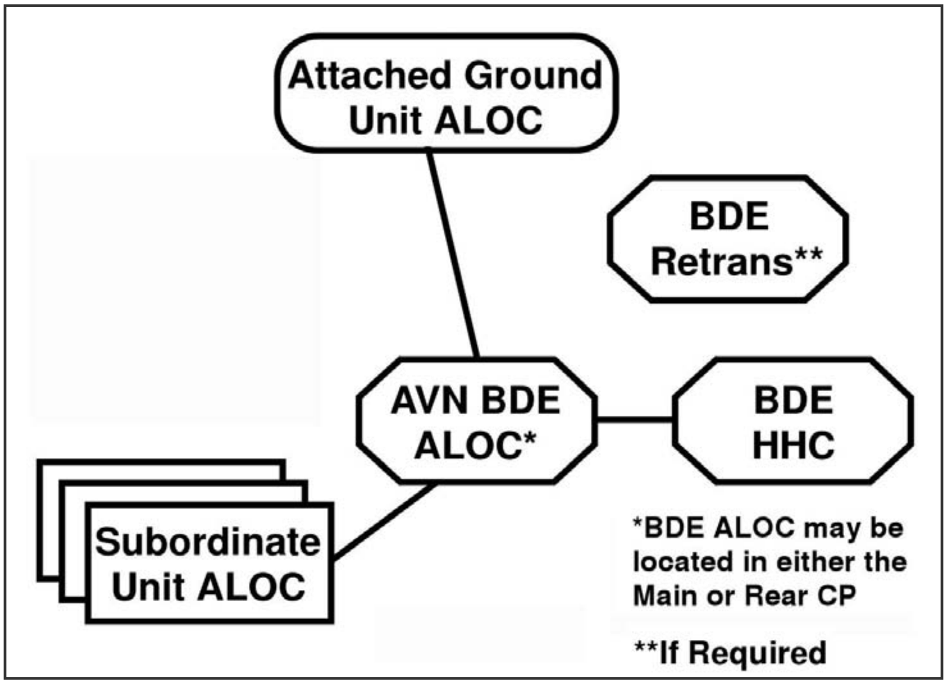

Figure C-13. Administrative and Logistical Network

COMBAT AVIATION NET

C-53. The air mission commander (AMC), air assault task force commander (AATFC), infantry force commanders, and PZ control officer use this secure FM net for air-to-ground communications at the PZ/LZ and to transmit situation reports and mission changes. All aviation forces monitor this net, especially in the vicinity of the PZ/LZ.

FIRE CONTROL NETS

C-54.The FSO operates in the supporting FA command net and in a designated fire direction net to coordinate artillery fires. The USAF ALO, when attached, controls TACAIR through a USAF TACAIR request net (HF/single side band (SSB)) and a UHF/AM air-ground net.

C-55. For more information on radio network operations, see FM 11-24, Combat Net Radio Operations, FM 24-18 Tactical Single Channel Radio Comms Techniques, and FM 24-19 Radio Operator's Handbook. For information on operating single channel radios in the joint environment, see FM 6-02.72 Multiservice Communications Procedures for Tactical Radios in a Joint Environment (2002)

SECTION IV – INTERNAL BRIGADE COMMUNICATIONS SYSTEMS

GROUND-BASED SINGLE CHANNEL AIR-GROUND RADIO SYSTEM (AN/VRC-87, 88, 89, 90, 91, 92)

C-56. The ground SINCGARS is the primary C2 network within the brigade and with UEy/UEx. It is also used for O&I and A&L networks. Some systems require KY-57 for security. Newer SINCGARS-SIP (SINCGARS Improvement Program) radios have data rate adapters and encryption embedded. On vehicle-mounted SINCGARS, the user looks for "/A" after the SINCGARS numerical designation to identify systems with integrated communications security. The Automated network Control Device (ANCD) or AMPS allows loading of SINCGARS and IFF information.

GROUND-BASED HAVE QUICK II (AN/VRC-83 OR AN/GRC-240)

C-57. This ground radio allows communications with Have Quick II UHF-AM airborne radio systems. It includes a portable GPS for aligning time of day (TOD) and a KY-57 for secure communications. It is backward compatible with first-generation Have Quick systems and with non-Have Quick UHF-AM radios. It is compatible with Air Force, Navy, and Marine Corps Have Quick II systems, but LOS constraints may hinder communication with joint systems from the ground.

GROUND-BASED HIGH FREQUENCY (AN/VRC-100)

C-58. The AN/VRC-100, coupled to the KY-100, provides secure communications with airborne HF radios. The VRC-100 and aircraft ARC-220 have virtually identical components packaged differently.

C-59. Because HF radio waves bounce off the ionosphere, short-range HF is difficult to direction find and jam. If jamming does occur in the Automatic Link established (ALE) mode, ALE simply finds a better frequency. If jamming occurs in manual mode, the NCS may not be able to announce a mode switch to all stations. Aircrews that lose HF communications must exhaust other possibilities before assuming that jamming is the problem and switching to the electronic counter-countermeasures frequency-hopping mode without net notification.

C-60. Antenna selection and angle are critical to effective communication using the high-frequency radio. Table C-3 illustrates different antenna configurations and their applications. Only the near-vertical incident skywave antenna (FANLITE) comes standard with the radio system.

Table C-1. Antenna Configuration Effect on Operational Range

Antenna Type	Radiation Pattern	Antenna Takeoff Angle	Value to Operations
32' whip, vertical	Omnidirectional	45 degrees with ground radials installed	Fair at medium range
16' whip, vertical	Omnidirectional	Vertical to 45 degrees	Poor, for mobile use only
Standard FANLITE sloping or horizontal	Near vertical	45 degrees to horizontal	Good at short range
Resonant di-pole, horizontal	Bidirectional	45 degrees to horizontal	Good at medium range
Log periodic	Unidirectional	Where pointed	Very good at long range when pointed on the horizon; very good at short range when vertical
Yagi	Unidirectional	Where pointed	Good at long range when pointed on the horizon; good at short range when vertical

C-61. Besides antenna considerations, frequency selection is another critical variable for effective HF communications. HF radio frequencies for effective short-range (30 to 100 km) communications are usually below 8 MHz. The FANLITE antenna works better and the ground wave is longer at lower HF frequencies. The brigade signal officer must ensure that the higher headquarter's signal officer is aware of optimal aviation HF frequencies.

C-62. At night, the ionosphere begins to dissipate, resulting in less reflection of HF radio waves. When this situation occurs, relay over a longer path may prove effective. A more distant station may receive the HF signal better than a closer one. Ground HF operators should have a list of frequencies and call signs to contact other distant AVN BDEs or other stations that can relay C2 information.

C-63. In the ALE mode, if the radio channel is inactive for a period of time, the radio reverts to the scan mode and another ALE sequence must occur to reconnect. To prevent this situation, stations operating in the ALE mode should sound periodically to retain a good frequency for communication. This "sounding" will ensure that an ALE connection is already in place, thereby saving tens of seconds when a message must be sent. Radios can be set up to automatically sound at a periodic rate. The ground HF radio operator generally can perform this "sounding" to reduce aircrew workload.

C-64. For more detailed operations of the High Frequency Radio System, see FM 6-02.74 (2003) Multi-Service Tactics, Techniques, and Procedures for HF Auto Link Establishment (HF-ALE) Radios.

AIR TRAFFIC SERVICES COMMUNICATIONS

C-65. Air traffic control radios are available for A2C2, limited flight following, and localized control of inbound and outbound aircraft. Radios also permit recovery of aircraft that experience inadvertent IMC. These systems may provide brigade commanders with a backup means of communicating with units, although this should not be their primary mission. Commanders must recognize that these radios emit unique signatures and locating these radios to the brigade TOC must be balanced with knowledge that some enemies can identify and target signature location. Another option available to brigade commanders is employment of better ATS antennas used with other tactical radios.

C-66. The tactical airspace integration system (TAIS) provides fully automated capability to support airspace management UEy and UEx levels. TAIS is fully integrated with ABCS. When used with other ABCS, TAIS provides automated A2C2 planning and airspace deconfliction. The tactical terminal control system (TTCS), AN/TSQ-198, provides tactical ATS capabilities in more austere environments. It can also provide backup communications capabilities at aviation TOCs or in deep or rear areas.

GROUND SATELLITE COMMUNICATION

C-67. Different SATCOM ground systems are available to Aviation Brigades. For effective use, TOC locations must permit LOS between the dish antenna and the geosynchronous satellites. For instance, a TOC location next to a mountain or among tall trees may obstruct SATCOM line of sight. To prevent SATCOM bleed-over (interference between outgoing and incoming signals), at least a 10 MHz frequency separation should exist between outgoing and incoming signals.

C-68. Common SATCOM systems include the PSC-5 Spitfire and the AN/PRC-117F. These systems provide transport of SINCGARS and Have Quick data. The SMART-T is a larger SATCOM system that interfaces with military strategic and tactical relay (MILSTAR) satellites for data transfer at low and medium rates to extend the MSE/JNTC network range.

C-69. Units should avoid over reliance on SATCOM for longer-range communications during large-scale conflict because channels can become oversubscribed. In addition, SATCOM may not be a viable solution in certain latitudes and areas of the world where geosynchronous satellite coverage is sparse.

C-70. For more detailed operations, see FM 6-02.90 (2004) Multi-Service Tactics, Techniques and Procedures for UHF Tactical Satellite and Demand Assigned Multiple Access Operations (UHF TACSAT/DAMA)

PORTABLE HAND-HELD TWO-WAY RADIOS – WALKIE-TALKIE

C-71. The walkie-talkie radio (or “brick”) is non-secure and operates in the 138 to 160 MHz FM range. The Army version (AN/PRC-127) has fourteen available channels, and the frequency is set from an integral keypad. These radios provide personnel with a low-power means of localized communication.

COMMERCIAL TELEPHONE LINES AND CELLULAR TELEPHONES

C-72. In many areas, commercial telephone lines and cellular phones can support non-secure voice and data communications or prompting between parties to attempt communications using secure means. Commercial lines are used when approved by higher headquarters. It is inadvisable to rely on these means because of limited security and availability on the battlefield. To avoid enemy collection efforts, secure devices should be used in conjunction with commercial lines. If a unit is forced to withdraw, and with the approval of higher headquarters, existing wire lines (including commercial lines) are cut and sections removed so the enemy cannot use them.

VIDEO TELECONFERENCE

C-73. Tactical video teleconference (VTC) capability resides in several brigade TOCs, but not yet at battalion level. A VTC provides the capability to communicate visually with audio between several linked VTC stations.

VISUAL AND SOUND COMMUNICATIONS

C-74. Visual card systems, landing lights, hand-and-arm signals, flags, pyrotechnics, and other visual cues can provide simplified communications when radio transmission may not be possible or tactically sound. Visual cues are especially valuable in FARP, sling-load, and ATS operations near assembly areas (AAs). Audio cues are another possibility, such as for alert of chemical attacks, but around operating vehicles and aircraft, audio signals may prove inaudible. Visual and audio signals should be contained in the SOI or SOP. SOPs may establish signals not included in the SOI. Commanders and staff planners carefully determine how sound and visual signals will be used and authenticated. Sound and visual signals include pyrotechnics, hand-and-arm, flag, metal-on-metal, rifle shots, whistles, horns and bells.

MESSENGER

C-75. Ground and air messengers may transport hard-copy messages and larger documents as part of a regularly scheduled shuttle between command posts, logistical trains, and higher and lower headquarters. Messengers are also used during electronic and radio silence. While ground messengers are slower than other means of communications, air messenger service provided by aviation assets provide a rapid capability if preplanned. Aviation messengers may be particularly useful in carrying administrative and logistical messages when enroute to and from rear units. They can be used even if units are in contract and especially when jamming or interception hampers radio communication. During electronic and radio silence, opening and closing flight plans by land lines may be required to control helicopter movements. An alternative to dedicated messengers is delivery with ground and aerial delivery of supplies such as meals delivered to a tactical CP. Messengers may deliver combat plans and orders, written coordination and control measures, graphics, logistics requests and estimates, or other extensive documents that would consume excess time to send electronically. If aviation messenger service is anticipated, it should be part of the Aviation Brigade and higher headquarter's SOPs.

RADIO RETRANSMISSON/RELAY

C-76. The brigade retransmission stations are employed according to the tactical situation to provide FM radio communications between stations too far apart to communicate directly. The brigade can deploy both ground and air retransmission stations. Ground retransmission normally supports the brigade command net. Airborne retransmission has a limited time on station, but can be a valuable asset. Preplanning is essential to the effective use of airborne retransmission. Moving ground retransmission by sling load is an efficient and effective method of emplacing radio retransmission assets. The brigade can insert and re-supply ground retransmission teams into sites inaccessible by ground. Brigade aircraft may carry retransmission equipment, relay equipment, or both. Aircrews also can transmit or relay with onboard equipment.

RANGE EXTENSION.

C-77. The RSTA battalion may be tasked to deploy Unmanned Aerial Vehicles (UAVs) to extend and maintain connectivity for the Network (voice and data) as required due to distance, satellite shortages, or mission requirements.

SECTION V – AIRBORNE COMMUNICATIONS EMPLOYMENT

C-78. This section addresses how aircrews communicate internally and externally with aircraft and ground communication systems.

C-79. SINCGARS is the primary combat net radio. Airborne commanders operate on the command net. Reports are sent on the O&I network. Logisticians and forward area refueling points (FARPs) operate on the A&L net. Have Quick II supports internal communication between aircraft at the company level and provides a means of communicating with any joint air systems that may be participating in the mission. High frequency (HF) communications enhance terrain flight communications with distant CPs. If UH-60 C2 system-equipped or A2C2S aircraft are available, satellite communication (SATCOM) provides another long-distance communication option. Units minimize voice communications by employing brevity codes and digital data communications.

ATTACK RECONNAISSANCE BATTALION (ARB)

C-80. Longbow-equipped units have secure frequency modulation (FM) 1 and FM2 (SINCGARS) capability to simultaneously operate on two nets. One radio can habitually operate for voice and the other for data.

C-81. Have Quick II (UHF) voice mode or IDM data transfer facilitates company and platoon internal communication. Designated aircrews can make reports to battalion on the O&I SINCGARS net, while keeping the company commander aware on an internal Have Quick II O&I net. The HF radio is available as a secondary means of voice or data communication with the battalion. AH-64A units have neither dual secure FM radios nor an IDM capability. These units can employ HF secure data communication as an alternative to FM2 secure/IDM.

C-82. OH-58D aircraft have secure SINCGARS, Have Quick II, and VHF capability. The following is a preferred means of internal battalion communications:

- FM1 (secure) battalion command net (battalion commander, XO, S3, and company commanders).
- FM1 (secure) platoon command net.
- FM2 (secure) digitized O&I network/supported unit/FS net.
- Have Quick II (secure) company command net.
- VHF (nonsecure) coordination net for all elements.
- The FM2 may be designated as a digital situational awarness (SA) network for IDM-transmitted spot reports, situation/status reports, and battle damage assessment reports. These digitized reports are sent via FM2 directly to the battalion and company Force XXI Battle Command – Brigade and Below (FBCB2) equipped vehicles.

ASSAULT HELICOPTER BATTALION (ASB)

C-83. Battalion UH-60 aircraft missions range from single ship air movement to major air assaults involving multiple aircraft. As with other units, the primary combat net radio is SINCGARS, employed for command, and O&I and A&L nets. For intra-aircraft communication, units use Have Quick II. In the absence of a SINCGARS/IDM capability and given typical air assault distances, HF is a secondary and often crucial communications tool for maintaining contact with distant CPs. To minimize voice traffic on air assaults, air mission commanders employ HF ALE data transmission with preloaded short messages for anticipated reports to the rear. These could include:

- Staging phase: arrival passage points, crossing phase line, arrival pickup zone (PZ), executing bump plan, PZ unsecured, executing/arrival alternate PZ, request maintenance, enemy contact, and downed aircraft.
- Air movement phase: arrival start point/release point (RP), reporting airspace control plan 1, executing bump plan, executing/arrival alternate landing zone (LZ), request maintenance, unanticipated enemy contact, downed aircraft, and request for MEDEVAC.
- Single ship air movements can occur at extended distances. Unit CPs can communicate changes in pickup and drop-off points and other en route changes using the high frequency auto link established (HF ALE) mode to assure contact.

GENERAL SUPPORT AVIATION BATTALION (GSAB)

C-84. The GSAB has the UH-60 C2-system-equipped aircraft and eventually will have the A2C2S. Ground brigade commanders and staffs employ the C2 console or A2C2S, as required, without interference from aircrews. Aircrews may be asked to monitor certain SINCGARS nets on aircraft radios and to relay key messages to staff members in the rear. This requirement and distances involved may require aircrews to use HF communication to maintain contact with the command aviation battalion TOC or to relay messages for supported commanders if C2 system HF radios are tied up or ineffective.

C-85. A secondary mission of C2-system-equipped and A2C2S aircraft is C2 of some AVN BDE missions such as operations in deep areas and air assaults. In these missions, the AVN BDE commander and selected staff may employ the C2 aircraft as a tactical CP. Relative proximity to mission aircraft facilitates SINCGARS voice and IDM data transmission between the brigade and battalion commanders. The availability of HF and SATCOM ensures long-distance communications with the UEx and UEy CPs.

C-86. Heavy helicopter missions are frequently single ship long-distance operations and require HF for communications with the battalion TOC. Some units employ multiple CH-47s for air assaults to move artillery, high mobility multipurpose wheeled vehicle (HMMWV), and other key mission equipment. These missions require the organic SINCGARS capability to communicate on assault battalion nets; however, only one SINCGARS is generally available. Have Quick II provides internal communication between CH-47s (Chinooks).

AVIATION BATTALION TASK FORCE

C-87. An Aviation Battalion Task Force forms and deploys for missions that do not require an entire AVN BDE but must support a broad spectrum of aviation missions. The AH-64D, OH-58D, and HH-60L/M have IDM capability for data communications; the AH-64A, UH-60A/L, and CH-47 aircraft do not. All aircraft share SINCGARS, HF, and Have Quick II interoperability with the exception of the OH-58D, which lacks HF capability.

C-88. For some missions requiring extensive digital communications, such as attack, only IDM-capable OH-58D and AH-64D aircraft may participate. On the other hand, OH-58D aircraft may be task-organized with non-IDM AH-64As. During reconnaissance and air assaults, all aircraft may participate. Task force commanders require cross-trained staff personnel and possibly A2C2S aircraft to C2 the task force.

SECTION VI - AIRCRAFT COMMUNICATIONS SYSTEMS CAPABILITIES

AIRCRAFT COMMUNICATIONS OVERVIEW

C-89. This section discusses the capabilities of the following aircraft radios and digital modems:

- Single Channel Ground-Airborne Radio System (SINCGARS) (FM).
- Have Quick II (UHF).
- High frequency (HF).
- VHF
- Transponder; modes 1, 2, 3, and 4.
- Enhanced position location reporting system (EPLRS).
- Blue force tracker (BFT).
- IDM.
- AN/PRC-112 survival radio.
- AN/APR-186 (VHF).

C-90. The section also discusses airborne facilitators—such as the UH-60 C2 aircraft and joint systems—that can aid aviation units in relaying communications. It further discusses challenges to mission communications.

SINGLE CHANNEL GROUND-AIRBORNE RADIO SYSTEM

C-91. The SINCGARS is the common battlefield radio system employed by Army ground and aviation forces. It provides secure or plain voice communications over the VHF-FM frequency range of 30.000 to 87.975-MHz at 25-KHz intervals. Its frequency-hopping mode of operation counters enemy jamming efforts. Earlier radio models require the KY-58 to provide secure communications. The SINCGARS-System Improvement Program (SIP) has embedded encryption, an automated GPS interface, and improved data capability for faster data communications. However, even the airborne SINCGARS-SIP requires KY-58 interface for cipher text communications. SINCGARS is a LOS system with limited range at terrain flight altitudes.

C-92. Army aviation's component of SINCGARS is the AN/ARC-201 compatible with other service SINCGARS radios to include the AN/ARC-210 and AN/ARC-222 radios used by other services and Army HH-60L/M air ambulances.

C-93. Aircraft SINCGARS are filled using the automated network control device (ANCD). The AMPS, when available, provides simplified setup of SINCGARS and other radio systems. The combat training centers have noted common problems with time drift and the need to perform over-the-air rekeying as missions progress.

HAVE QUICK II

C-94. The AN/ARC-164 is a common UHF-AM radio employed by joint aircraft. It provides AVN BDE subordinate units with a means of communicating internally on company battle nets. It also allows interface with sister-service aircraft during JAAT and other joint flight operations. Its frequency-hopping mode of operation counters enemy jamming efforts. Like SINCGARS, it is a LOS system with limited range at terrain flight altitudes.

C-95. The AMPS, when available, provides simplified setup of Have Quick II time of day (TOD) and word of day (WOD) for AH-64D and OH-58D aircraft.

C-96. Units must use Have Quick II in the frequency-hopping mode during training to ensure effective communication during actual operations. WOD loading is not difficult, but TOD can be problematic if aircraft lack a Have Quick II/GPS interface. Aircraft without GPS interface can request and accept a GPS TOD from other unit aircraft. In addition, on long operations beyond four hours, the TOD begins to drift. A single aircraft, such as the UH-60 C2 aircraft, are then designated as the base point for TOD updates as unit aircraft begin to drop out of the net because of drifting TOD.

HIGH FREQUENCY RADIO

C-97. The AN/ARC-220 HF radio system is an nap of the earth (NOE), long-range radio system that provides voice and data communication beyond the range of SINCGARS and Have Quick II systems. It operates in the 2 to 29.999-MHz frequency range in 100-Hz steps on 20 preselectable channels, for a total of 280,000 possible frequencies. Aircraft not equipped with a 1553 data bus have an additional control display unit for operation of the radio.

C-98. The system has an NLOS range of at least 300 km. The 30 to 100 km range often is the most challenging distance in which to maintain effective communications.

C-99. ALE reduces aircrew workload and improves connectivity. In this mode, the caller enters the desired radio address and presses the microphone key. The radio then sounds on the preprogrammed frequency set listening for the best signal. When found, both radios tune to that optimum frequency and a connection occurs. One shortcoming of ALE is that third parties do not hear message traffic. If passive listening is necessary and all parties on the net need the same information, the net control station (NCS) chooses the manual or electronic counter-countermeasure frequency-hopping mode. When stations do not rely on each other's reports to perform their mission, ALE is the preferred mode.

C-100. Aircrews can communicate using secure voice or secure data. In data mode, the system can create, edit, and store up to 10 formatted and free text messages of up to 500 characters each. It interfaces with the KY-100 to provide secure communications and with the AN/VRC-100 ground radio in aviation ground TOCs.

C-101. Secure voice is the primary method of operation for the HF radio in ALE, manual, and frequency-hopping modes. In poor conditions—such as low magnetic flux number, night operations when the ionosphere dissipates, and thunderstorms—aircrews should employ secure data at 300 bits per second. Data transmission increases aircrew workload during flight; the radio stores up to 10 messages in memory, allowing the crew to preload a set of anticipated messages before flight.

C-102. For identical messages with changing location, it often is easier to edit in the new location in an existing memory message than to initiate a whole new entry. In addition, a reduced workload results when commanders use the control display unit's feature permitting HF transmittal of current position with one button press.

C-103. If brigade units have not used HF radios habitually in training before operations, the brigade S3 should direct HF radio exercises before operations to ensure that units use HF to its best advantage.

VERY HIGH FREQUENCY RADIO

C-104. The AN/ARC-186 is an administrative VHF-AM radio primarily used to communicate with Air Traffic Service (ATS). Normally, it operates in the 116 to 151.975 VHF-AM frequency range. In wired and configured aircraft, it can back up the SINCGARS radio in the same 30 to 89.975 MHz frequency range. It generally lacks a KY-58 interface to provide secure FM communications, and it has no frequency-hopping mode compatible with SINCGARS. The AN/ARC-186 is a LOS radio system with limited range at terrain-flight altitudes but greater range at administrative altitudes normally associated with ATS communication.

TRANSPONDER

C-105. The transponder enables the helicopter to identify itself automatically when properly challenged by friendly surface and airborne radar equipment. The range of the receiver-transmitter is limited to line of sight transmission. With its frequency of operation in the UHF band range is dependent on altitude.

IMPROVED DATA MODEM (MD-1295/A)

C-106. The MD-1295/A is a digital transfer modem that allows equipped aviation forces to exchange complex battlefield information in short, coded bursts. Digital calls for fire are processed through the IDM. The IDM has a preplanned product improvement that will incorporate software for processing Joint Variable Message Format (JVMF) messages, allowing interoperability with Army Common User Networks and FBCB2.

C-107. A number of joint systems incorporate IDM for data interoperability. The JSTARS common ground station (CGS), located in brigades and UEx CPs, also has IDM capability.

AN/PRC-112 SURVIVAL RADIO

C-108. This small radio, carried in aircrew survival vests, enables downed aircrews to be located by aircraft equipped with the AN/ARS-6 Pilot Locating System. It receives short, periodic bursts from the ARS-6 and responds with its own coded reply to allow secure location of aircrews. An AM voice mode allows unsecured communication on guard, on 282.2 MHz, or on two additional UHF channels. The PRC-112A radio has upgraded voice communication security that scrambles voice communication for greater security. Both the PRC-112 and -112A permit voice contact with nearby aircrews if aircraft radios are damaged on impact.

ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

C-109. EPLRS provides a computer controlled communications network which transmits digital information to support tactical operations on the battlefield. EPLRS provides two major functions; data distribution, and position location and reporting. It is a secure, jam-resistant, near real-time data communications support system for the five battlefield functional areas of the Army tactical command and control system (ATCCS). Because of the real-time unit positioning data supplied by EPLRS, accurate battle management capability increases. This allows the battle commander to not only move forces forward, but to also quickly and accurately counter opposition moves. This information greatly enhances the C2 of tactical units by providing commanders with the location of friendly units, a dynamic representation of the FLOT and abbreviated SITREPs for conditions and identification of adjacent equipped units.

BLUE FORCE TRACKER (BFT)

C-110. BFT, a component of the FBCB2 system, is an efficient tool to assist the commander with his situational understanding, airspace deconfliction, and C2. As a C2 tool, BFT allows the commander to track the locations of his aircraft and provides an alternative means of over-the-horizon communications to meet this challenge. It also fills the communications gap by providing the capability to pass text messages between stations. Code words and similar short text transmissions are easily passed to supplement, or even replace, radio calls.

C-111. In planning, BFT enhances C2 by enabling the Common Operating Picture (COP) to be readily shared between headquarters and between aircraft. Graphic control measures such as PZs, flight routes, ROAs, LZs and FSCMs can be developed, plotted, and shared with other BFT-equipped units as a computer-graphics overlay file. These graphics can be downloaded to each BFT station, whether stationary or aircraft- or vehicle-mounted, to enable viewing by the crews.

UH-60 COMMAND AND CONTROL CONSOLE

C-112. UH-60 aircraft equipped with the AN/ASC-15B C2 console provide users with in-flight common operational picture and communications access. The modified console provides SINCGARS, Have Quick II, HF, VHF-AM, and satellite communication. Systems run off aircraft power and internal aircraft antennas. The aircraft has just one SINCGARS 201 radio but has three AN/ARC 210 multimode radios capable of operation on SINCGARS FM, UHF, or VHF frequencies. This permits the capability to simultaneously operate the command network and monitor the O&I or higher headquarters command networks. It provides operators with a means of choosing between either active SINCGARS communication or retransmission. Retransmission of Have Quick II and VHF-AM is also possible with the system.

C-113. Forward in the aircraft, the console contains radio sets, console controls, and six internal communication system (ICS) boxes. In the rear, four additional ICS boxes and a map board allow up to 10 personnel to monitor the console's radio systems. The C2 console's lights are compatible with NVG. It is the supported unit's responsibility to provide a trained console operator. The crew chief is not trained to perform this function.

C-114. The C2 console can operate in the ground mode. In this configuration, the console can remain mounted on the aircraft or can be dismounted. In the ground mode, the C2 console requires generator power and external antennas. It requires four trained personnel an hour to remove the console from the aircraft. Figure C-14 shows the aircraft configuration.

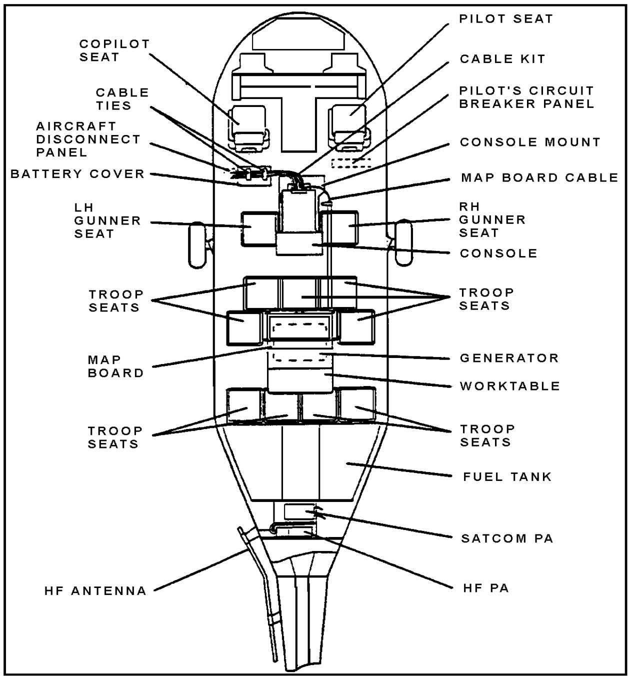

Figure C-14. UH-60 C2 Aircraft Configuration

AIRBORNE RELAY

C-115. Some operations in deep areas have the priority to justify communications relay as a means of overcoming difficulty in communicating. If allocated, the C-12 may perform HF relay or even SINCGARS and Have Quick II relay if the threat permits flight within range of those radio systems. The AWACS, E-8 JSTARS, C-130 airborne battlefield C2 center, EA-6, airborne forward air controllers, participating deep JAAT and air interdiction, or other joint aircraft may be available to relay HF, Have Quick II, and in some cases, SINCGARS communications. EPLRS capabilities on the A2C2S aircraft allow automated relay of data communications. In addition, future UAVs may have retransmit mission capabilities for FM command nets. Table C-2 illustrates the potential for relay with higher-flying aircraft if coordinated by staff members in advance.

Table C-2. Joint Aircraft Potentially Interoperable for Communications or Relay

COMMS/ RELAY CAPABLE	C-12	E-3 AWACS	E-8C JSTARS	C-130 ABCCC	EA-6B	FAC	AI/ JAAT	UAV
SINCGARS		X	X	X	X	X		X
Have Quick II	X	X	X	X	X	X	X	
High Frequency	X	X	X	X	X	X	X	
EPLRS		X	X	X			X F16 Block 30	
Improved Data Modem			X		X		X F16C F16D	

AIRCRAFT COMMUNICATIONS CHALLENGES

C-116. The primary challenge to aircraft communication is the combined effect of terrain-flight altitudes and operational distances between aircraft and their CPs. The HF radio is the primary materiel solution to the NOE communications requirement and the need to communicate over greater distances. However, for best connectivity, units must employ the HF radio's ALE mode that does not permit the normal monitoring of nets by all stations. In addition, unlike SINCGARS, only a single HF radio is available on most aircraft. These constraints relegate the role of HF to a secondary communications system available when other communications are impossible.

C-117. Army aircraft share common radio systems and have communications interoperability. One exception is the OH-58D that lacks HF capability because its small size limits HF antenna effectiveness. The AH-64A and CH-47D also have just a single SINCGARS radio. This situation prohibits commanders/staffs from simultaneously monitoring both the command and O&I nets. It also inhibits routine data communication. Table C-3 compares Army aircraft communications capabilities.

Table C-3. Aircraft Communications Interoperability

Tactical Aircraft Communications	AH-64D	AH-64A	OH-58D	UH-60A/L	CH-47D	HH-60L/M
AN/ARC-186 VHF-AM/FM	X	X (same antenna for VHF-AM and FM 2 commo	X	X	X	
AN/ARC-201 VHF-FM (SINCGARS)	X (2)	X (1)	X (1 or 2)	X (2)	X (1)	X (2)
AN/ARC-220 (High Frequency)				X	X	X
AN/ARC-164 (Have Quick)	X	X	X	X	X	X
AN/ARC-222 VHF-AM/FM						X
MD-1295/A (Improved Data Modem)	X		X			X

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Appendix D
Urban Operations

Like so many urban battles, the battle of Hue was filled with ambiguity and uncertainty. The North Vietnamese Army (NVA) and Viet Cong attacked as part of the surprise Tet Offensive in 1968. Two NVA regiments overran the city, systematically executing thousands of inhabitants. The U.S. and South Vietnamese response was awkward and piecemeal. The Americans rapidly shifted three Marine Corps battalions from ongoing combat missions, and eventually, 13 South Vietnamese battalions were committed. The Americans followed with the commitment of the 3rd Brigade, 1st Cavalry, and a battalion task force of the 101st Airborne as blocking forces to attempt to stop enemy reinforcement and destroy its C2 and logistic links. There was no clear unity of command over the various South Vietnamese and American forces, and the city was never fully isolated by either side. The battle raged for 22 days before the United States and its South Vietnamese allies achieved victory. Casualties were high, as is often the case in urban combat: 1,004 United States, 2,184 ARVN, and more than 5,000 NVA. Throughout the battle, aviation played a critical role in observation, troop movement, gun support, and MEDEVAC.

SECTION I – GENERAL

D-1. Operations in urban terrain follow the same basic planning and execution methodology as in other terrain; however, special planning and consideration of the characteristics unique to urban terrain are essential. Chapter 6. FM 3-06.1 and FM 3-06.11 contain detailed information.

D-2. Whenever possible, aircrews avoid a fight in urban terrain. The optimum choice is to surround, isolate, and bypass a city, ensuring that any troops and resources in that city are rendered ineffective and unavailable to support other enemy operations.

AVIATION'S ROLE DURING URBAN OPERATIONS

D-3. Aviation enhances urban operations by providing:

- Reconnaissance.
- Speed of resupply.
- Rapid troop movement.
- Evacuation of personnel and equipment.
- Cooperative maneuver.
- Precision fires in support of ground forces.
- The combined arms team's ability to quickly and efficiently make the transition to new missions.

AH-64 UNITS

D-4. AH-64D units attack targets with direct fire to destroy enemy troops and equipment. They also assist with ISR and communications, using their advanced suite of sensors and radios. They also perform reconnaissance and security missions in and around urban areas.

OH-58D UNITS

D-5. OH-58D units perform the same functions as AH-64 units.

UTILITY AND HEAVY HELICOPTER UNITS

D-6. UH-60 and CH-47 units conduct air assaults and transport personnel, equipment, and supplies. They are configured with machine guns to aid in the suppression of enemy forces.

ALL HELICOPTERS

D-7. Aircraft can also assist in radio relay and perform as aerial OPs and C2 platforms.

STAGES OF URBAN OPERATIONS

D-8. The four stages of urban operations are assess, shape, dominate, and transition. They may occur in succession or simultaneously.

ASSESS

D-9. In the assess stage (Table D-1), the unit identifies the portions of the urban area essential to mission success.

Table D-1. Missions during the Assess Phase

AVIATION ASSESS MISSIONS	
Lift (Utility/Cargo) Helicopter Units	**Attack/Cavalry Helicopter Units**
Provide CASEVAC	Perform reconnaissance of urban peripheral are to establish enemy strength and disposition.
Conduct air movement of troops and supplies.	Conduct route and area reconnaissance for forces.
Support C2 operations.	Establish initial security of flanks and rear until relieved by ground forces.
Support EW operations.	Perform air security.
Support NEO	Provide suppressive fires in support of ground reconnaissance and security elements.

SHAPE

D-10. In the shape phase, units isolate those areas essential to mission success in the offense or avoid isolation in the defense. In the offense, aviation forces attack to isolate the objective, move troops and supplies, enhance C2, conduct reconnaissance, and augment ground forces. In the defense, aviation forces help set the conditions for the main battle and prevent isolation of friendly units (Table D-2).

Table D-2. Missions during the Shape Phase

AVIATION SHAPE MISSIONS	
Lift (Utility/Cargo) Helicopter Units	**Attack/Cavalry Helicopter Units**
Conduct air assaults to the flanks and rear to deny LOCs from the enemy.	Augment ground forces for isolation of urban area.
Provide CASEVAC.	Secure main approach routes into the urban area.
Perform personnel and equipment recovery.	Employ indirect fires and CAS.
Conduct air movement of troops and supplies.	Conduct JAAT.
Emplace logistical resupply points and FARPs.	Perform air assault security.
Support C2 operations.	Attack enemy forces within suburban areas.
Support EW operations and PSYOPS.	Provide suppressive fires in support of ground maneuver and security elements.
Support NEO.	Employ direct fires to destroy key targets and enemy elements attempting to escape or resupply or reinforce the urban area.
Conduct countermobility operations/emplace Volcano mines.	

DOMINATE

D-11. In the dominate phase, units precisely mass the effects of combat power to rapidly dominate the area (Table D-3).

Table D-3. Missions during the Dominate Phase

AVIATION DOMINATE MISSIONS	
Lift (Utility/Cargo) Helicopter Units	**Attack/Cavalry Helicopter Units**
In addition to the missions listed under assess and shape, utility and cargo aircraft may —	In addition to the missions listed under assess and shape, attack reconnaissance aircraft may—
Perform air assault.	Provide security to flanks of advancing ground forces.
Support CA.	Provide suppressive fires in support of attacking ground forces.
	Engage HPTs influencing point of penetration with precision direct fires.

TRANSITION

D-12. In the transition phase, units transfer control of the urban area to other agencies and prepare for follow-on operations. Aviation forces facilitate the transition (Table D-4).

Table D-4. Missions During the Transition Phase

AVIATION TRANSITION MISSIONS	
Lift (Utility/Cargo) Helicopter Units	**Attack/Cavalry Helicopter Units**
Provide CASEVAC.	Provide screen or area security.
Perform personnel and equipment recovery.	Conduct route and area reconnaissance for forces.
Conduct are movement of troops and supplies.	Serve as reserve.
Support C2 operations.	Conduct operations to set conditions for follow-on missions.

SHAPE/DOMINATE

D-13. The lines between shape and dominate phases are rarely crisp. Aviation capabilities allow the commander to more quickly shape the battlefield and move into the dominate phase. There are always sectors of the battlefield that will be in different phases than in other sectors, demanding the application of various techniques by the commander.

D-14. During the operation illustrated in Figure D-1, aviation provides:

- Security by screening the flanks of the operation.
- Reconnaissance of NAIs.
- Direct fire on the enemy from numerous positions.
- Air assault and air movement.

D-15. These actions are conducted in concert with:

- Ground attacks.
- Observation by satellites, UAVs, and other aerial platforms.
- Indirect fires.
- Sister-service CAS.
- Ground elements tasked to control underground avenues of approach such as sewers and subway tunnels.
- MP and other ground elements tasked to control critical points and to screen those people departing and entering the sector for combatants.

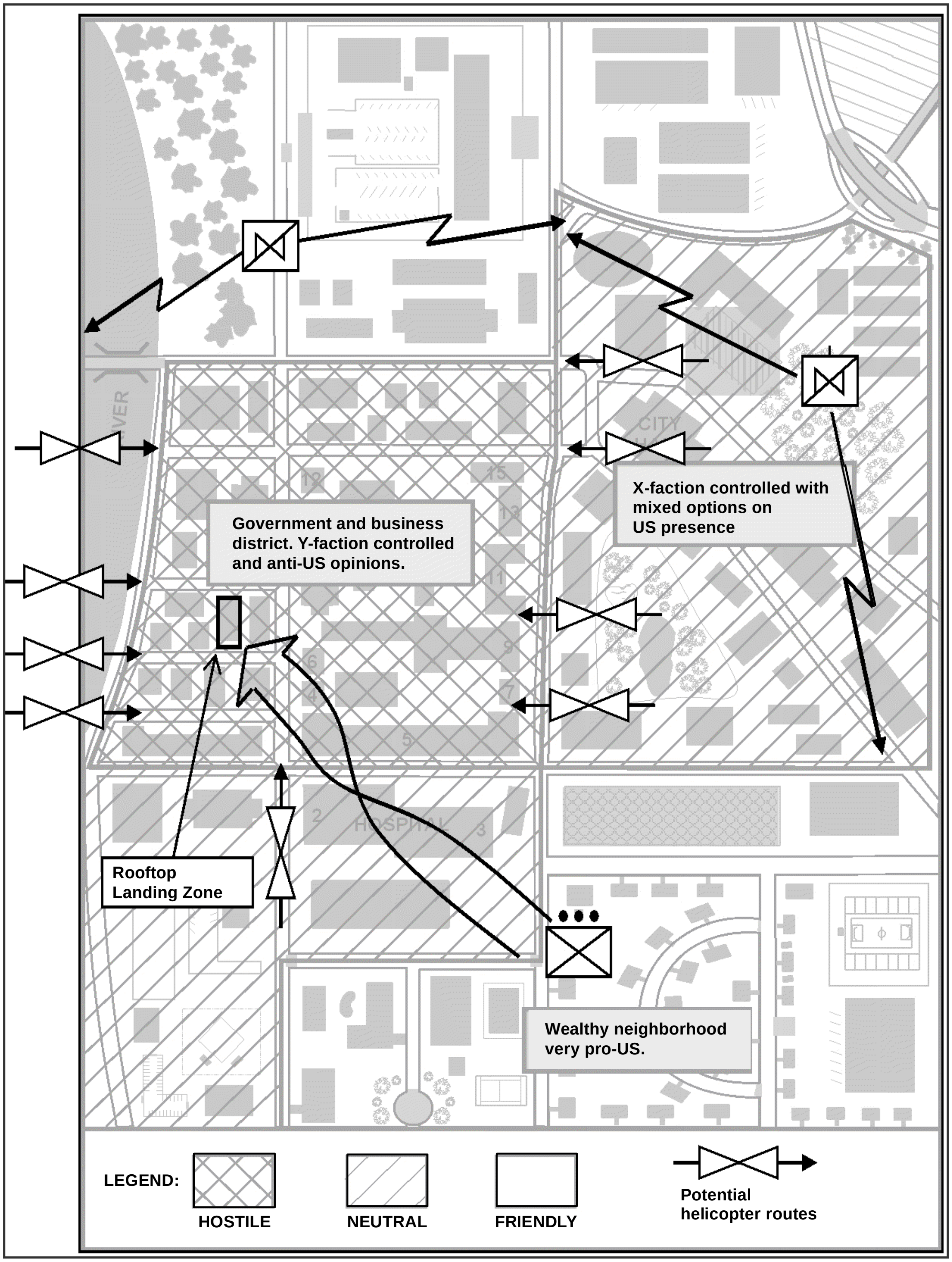


Figure D-1. Example of a Typical Shape/Dominate Mission

SPECIAL CONSIDERATIONS

AVIATION WEAPONS EMPLOYMENT IN URBAN TERRAIN

D-16. When fighting in urban terrain, most targets are fleeting and near the identifying soldier. Few personnel targets will be visible beyond 50 meters, and engagements usually occur at 35 meters or less. Armed helicopter engagements in support of troops that are in such proximity require careful coordination and execution.

D-17. To reduce the risk of fratricide, aircrews must be familiar with minimum arming distances and risk-estimate distances. Falling debris from urban structures can be as deadly as shrapnel. FM 3-09.32 and Appendix B of this manual contain additional information regarding danger close ranges.

D-18. The precision of the Hellfire missile may minimize collateral damage. Because of its accuracy, the use of a Hellfire missile may be appropriate to eliminate such targets as a sniper or machine-gun nest. Selection of the correct type of Hellfire warhead is also critical.

D-19. Though considered an area fire weapon, the 30-millimeter cannon is very accurate and may be employed against a single person or groups. It can penetrate the walls of most conventional structures.

D-20. The 50-caliber and 7.62-millimeter machine gun are both area fire weapons. They penetrate less well than the 30-millimeter, with the 50-caliber having greater effect than the 7.62-millimeter. Both are good for suppressive fires and against troops and other soft targets. Door guns on utility and cargo aircraft provide direct fires to protect the aircraft and crews.

D-21. The 2.75-inch rockets suppress and destroy targets. As currently configured, these are area fire weapons, the accuracy of which is tied directly to crew proficiency. Running or diving fire often yields the best results. Rockets are effective against troops and equipment in open streets and plazas when enough standoff and maneuver room is available. Flechette rounds are effective to clear rooftops. Smoke rounds are available.

HELICOPTER WEAPONS ENGAGEMENT

D-22. Armed helicopters are most effective when the standoff advantage of their weapons systems is employed and vulnerability to ground fires is reduced. Because of target masking in urban terrain, aircrews may have to maneuver close to a target to see and hit it. Continuous movement minimizes exposure time and enhances survivability. If the enemy has established a stronghold in the urban area, the risk to aviation assets dramatically increases. The close infantry battle will become increasingly difficult to support with helicopters.

D-23. As enemy elements seize key features (particularly taller structures), the AD threat escalates. Helicopter movement must be swift and unpredictable. Low slow orbiting or hovering fire is extremely risky in urban terrain.

D-24. Urban terrain is canalized and often provides severely limited fields of fire. Structures tend to limit target views to a narrow corridor along the street or from high angles over the buildings. Enemy forces may occupy buildings or “hug” the near sides of buildings, putting them out of view of armed helicopters. Engagements of rooftop targets can come from all angles. Expect targets to move rapidly from cover to cover and require quick engagement.

D-25. The threat to aircraft is lessened when firing from friendly-controlled areas. Positions should be planned to provide flexibility for aircraft maneuver to maximize cover and multiple firing positions and angles. When forced to fight and fly over areas where the enemy has not been cleared, aviation forces face extremely high risk. Aircrews can expect engagement from the ground and upper floors of buildings. When these conditions exist, it is better to keep the aircraft moving rapidly, making it harder to engage. Aircrews normally conduct running fire engagements from an initial point, engaging the target and returning to a safe area to regroup for another attack. The lead-wingman concept is used for this type of attack. The wingman suppresses the target during and after lead's engagement and "covers his break." Ground units provide suppressive fires to protect the aircraft during their attack.

D-26. Aircrews plan for both hovering fire (Figure D-2) and running fire (Figure D-3). Running fire generally offers better aircraft survivability. If aircrews use hovering fire, they can unmask laterally or vertically from cover.

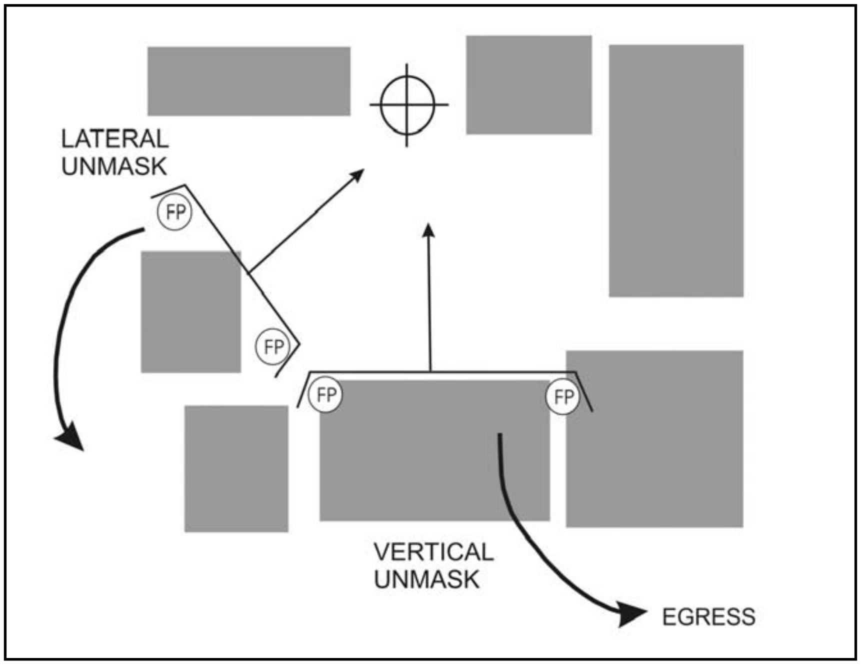


Figure D-2. Example of a Hovering Fire Engagement

GRAPHIC AIDS AND ROUTE PLANNING

D-27. Aircrews have different visual cues and perspectives than do ground forces, thus potentially causing confusion. Common graphics and sketches help alleviate these differences.

NAVIGATION

D-28. Navigation over urban terrain can be more difficult than over natural terrain because most maps do not show the vertical development of urban terrain. Cities are compartmented, causing small navigational errors to have significant effect. High density of structures, variety of geographical references, and similarity of structures can cause confusion. If electrical power is still available, high ambient light levels can create problems with NVD.

NAVIGATION TECHNIQUES

D-29. Effective navigation over large towns and cities requires a variety of navigational systems and techniques. GPS eases the problems associated with navigation and orientation but does not eliminate the need for other navigational methods. Navigation systems may be degraded because of interference induced by buildings and by GPS jammers. Aircrews must closely monitor and cross-check their positions by all available means.

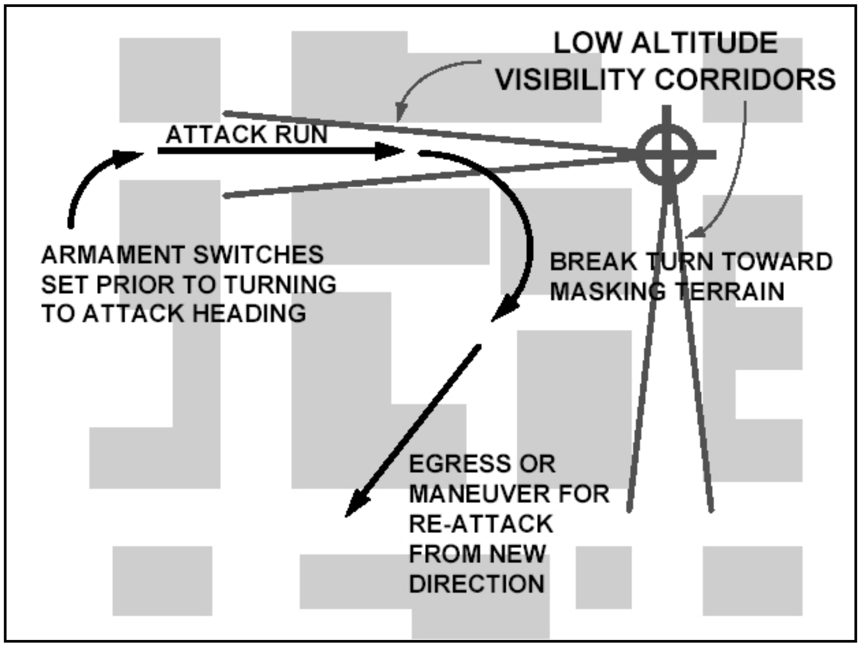


Figure D-3. Example of a Running Fire Engagement

D-30. Natural terrain features—such as rivers, lakes, and hills—are preferable landmarks because they are less likely to change, but they may not be useable during various flight profiles. Man-made features may provide the majority of available navigation aids. Units choose easily recognizable features such as cemeteries, stadiums, cathedrals, and major roads. Highways, rivers, railways, canals, and coastlines provide easily recognizable boundaries and references to assist in maintaining orientation. Prominent rail and highway interchanges are useful as en route checkpoints.

D-31. Selection of key features within an urban area facilitates general orientation and backup navigation. The most prominent vertical structures, such as radio towers and distinctive skyscrapers, are visible from almost all directions in a major city. Use of these features as heading references is an effective method of navigation. However, prominent man-made objects can be destroyed and unavailable for reference. Varied flight routes and times increase survivability by preventing predictability.

D-32. An area sketch (Figure D-4) offers both the ground commander and the aircrew a means of identifying friendly and enemy locations. The sketch is an excellent tool for planning and unit coordination. It is best used for smaller towns and villages but can be applied to an EA or other specific area of a larger city. The area sketch captures natural and man-made features and key terrain in that area and designates a letter or numeral code to each. Buildings and their corners are coded. This gives aircrews an accurate way to target specific buildings and identify friendly locations. Units must ensure that they are using the same area sketch to effect coordination.

D-33. Units may use a network route structure (Figure D-5) of ACPs and air routes (preferably surveyed) to facilitate route planning, navigation, and C2.

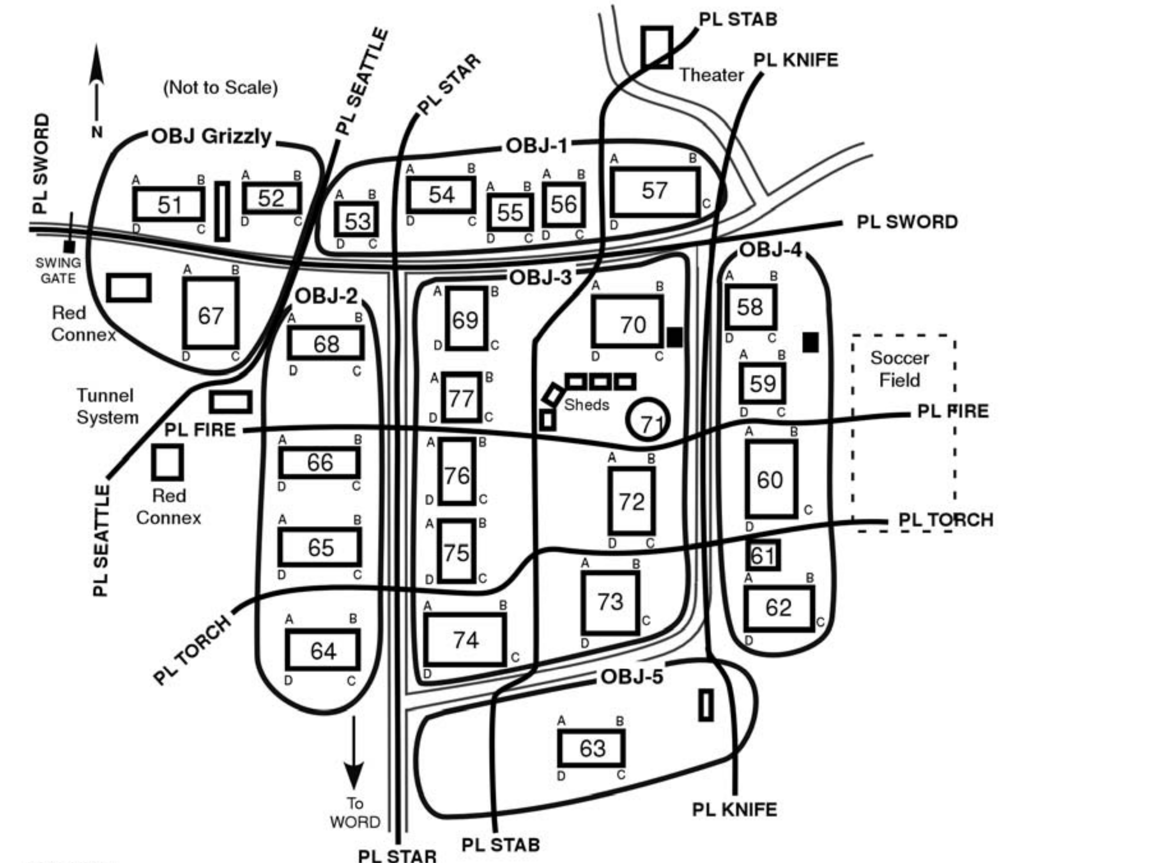
D-34. Maneuver graphics, FS coordinating measures, and airspace control measures further allow aircrews and ground elements to better visualize the urban battle space. It is the responsibility of both the aviation and ground unit to ensure that they use the same area sketch for accurate coordination.

SELECTION AND PREPARATION OF MAPS AND CHARTS

D-35. Units consider all available government and commercial products—ranging from paper maps and charts to digital mapping databases. Commercial maps of a city may be more current and provide better detail than tactical maps. Larger scale maps provide additional detail for accurate planning. Photo imagery supports more accurate assessment of key features. HUMINT sources can provide useful data for map preparation, including confirmation of locations and conditions of structures.

D-36. Shortcomings of tactical maps are that the urban area data are often out of date and the scales are too small to show enough urban detail. Maps with a larger scale than 1:50,000 provide greater detail for mission planning and execution. Maps should be updated with current terrain and structure information. This effort may involve drawing new features by hand. Overhead imagery can be used to update information:

- Some 1:25,000 tactical maps are available.
- Some 1:24,000 and 1:25,000 National Geodetic Survey maps are available for some countries.
- NGA produces 1:12,500 maps for specific urban areas, as specified by the customer.



LEGEND

51 Factory	65 Bank		Generator/Box
52 Warehouse	66 Vet Clinic	- - - -	Fence
53 Private Home	67 Office Building		
54 Town House	68 Gas Station		
55 Private Home	69 Post Office		
56 Church	70 City Hall		
57 Municipal Building	71 Water Tower		
58 Power Station	72 Heath Clinic		
59 Private Home	73 Private Home		
60 Town House	74 Hotel		
61 Radio Station	75 Store		
62 School	76 Fire Station		
63 Private Home	77 Police Station		
64 Private Home			

Figure D-4. Example of an Area Sketch Flight Planning Aid

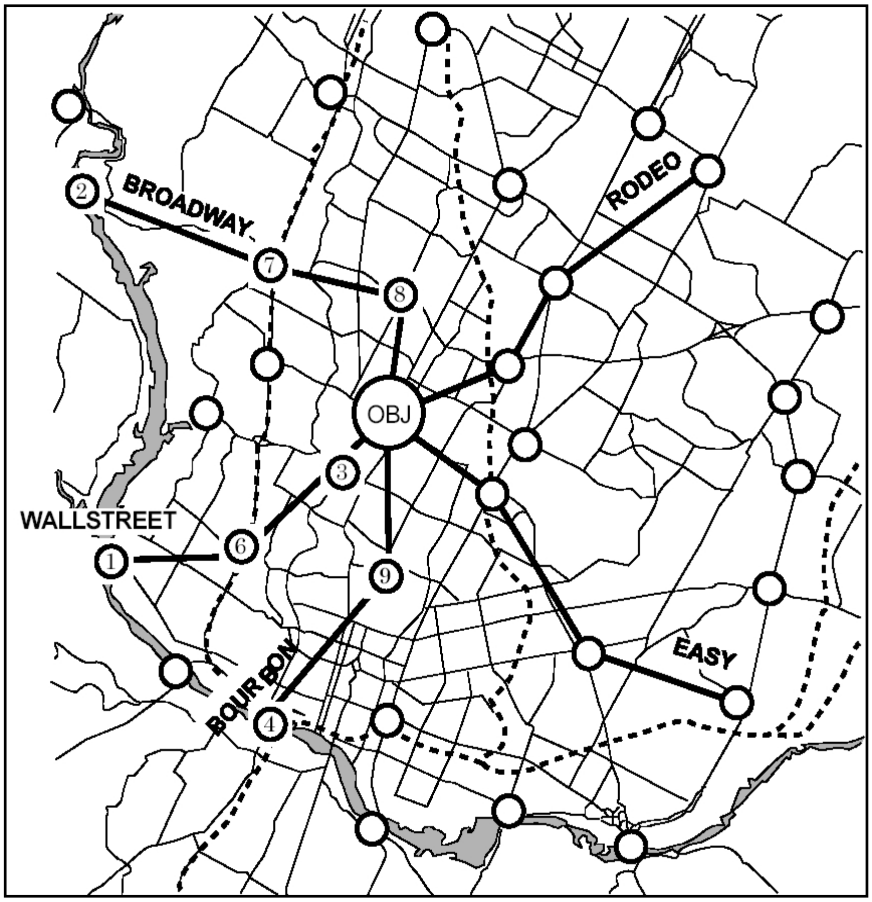


Figure D-5. Example of a Network Route Structure

D-37. Tourist maps are often large scale, depicting the shape of significant buildings and cultural features. A reference grid is usually overlaid on the map. Streets and landmarks may be listed in the margin, with reference to the location within the grid pattern. If military grid coordinates are required for navigation or targeting, the civilian map must be overlaid with the MGRS in the proper datum.

D-38. Noncombatant Evacuation Operations (NEO) Intelligence Support Handbooks (NISH) are also available for every American Embassy (classified secret). The NISH augments planning for NEO or hostage-recovery operations. It contains information such as pre-surveyed LZ listings. Planners must consider currency of terrain information.

TARGETING GRIDS AND REFERENCE TECHNIQUES

D-39. Ground elements generally use a terrain-based reference system during urban operations. Military Grid Reference System (MGRS) coordinates have little meaning at street level. Aviation and ground forces must use common control methods. Possible techniques include urban grid (Figure D-6), objective area reference grid (Figure D-7), and reference points (Figure D-8). These techniques are based on the street and structure pattern, without regard to the MGRS. Using common techniques allows aircrews to make the transition to the system in use by the ground element upon arrival in the objective area. For example, references to the objective or target may include local landmarks such as “The third floor of the Hotel Caviar, southeast corner.” This transition should be facilitated by using a “big-to-small” acquisition technique.

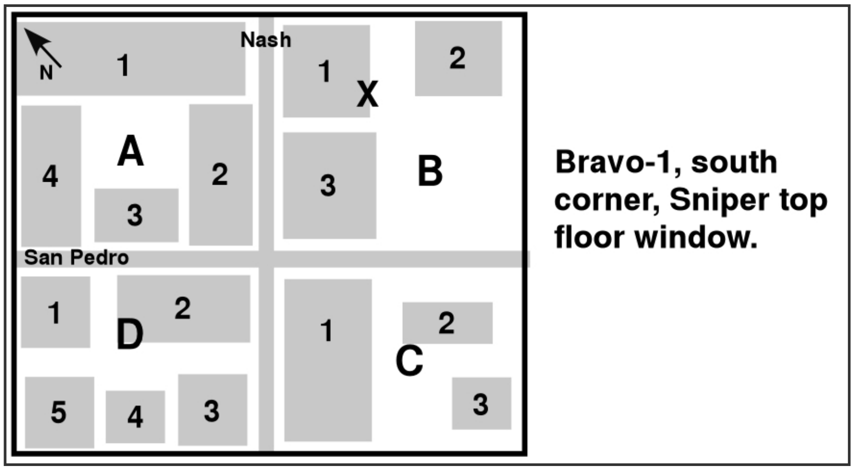


Figure D-6. Example of the Urban Grid Technique

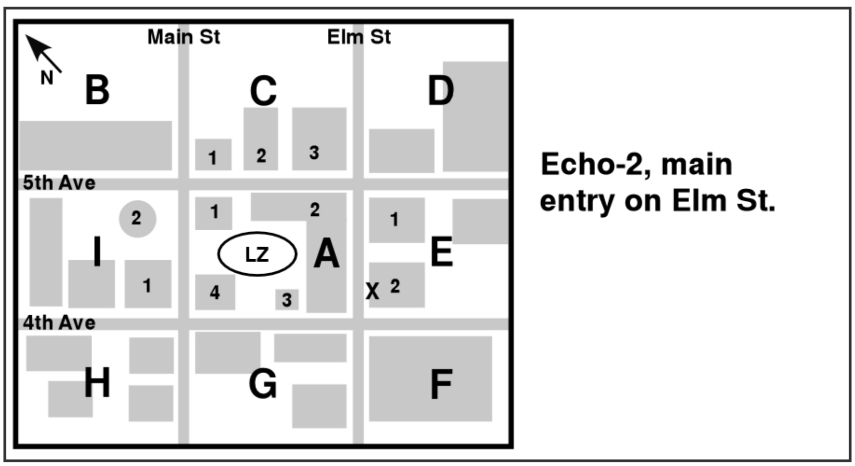


Figure D-7. Example of the Objective Area Reference Grid Technique

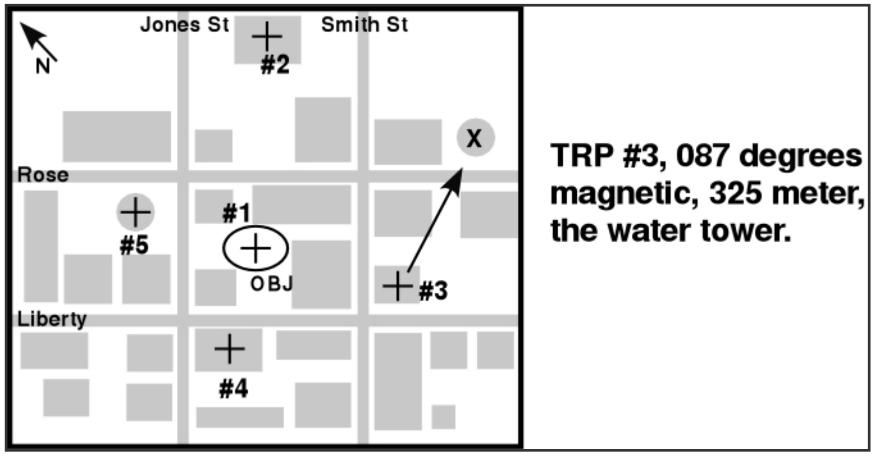


Figure D-8. Example of a Reference Point Technique

CONSIDERATIONS FOR HELICOPTER EMPLOYMENT

D-40. Commanders must identify and assess unique characteristics associated with aviation urban operations. Appendix I covers risk management in detail. Some other considerations follow.

FIRES

D-41. Some special considerations for fires in urban operations include the following:

- Minimum arming range and minimum slant ranges within urban areas limit the use of some weapons.
- Heavy concentration of precision weapon systems along a narrow front may cause coordination problems.
- Even precision weapons can cause fratricide if planning is not precise.
- Multiple flat, polished surfaces in an urban area may degrade laser use.
- Heavily developed urban centers can limit close air support.
- Direct and indirect suppressive ground fire should augment the escort suppressive fires as air-assaulting forces approach intended LZs.
- Operations could be in areas with a high potential for significant civilian injury and collateral damage of property; specific knowledge of weapons effects is critical.
- Wingmen protect firing aircraft while engaged pilots concentrate on targets.

THREAT

D-42. Some special considerations for the threat in urban operations include the following:

- Enemy forces may infiltrate urban terrain and ambush helicopters from positions inside buildings.
- Cover and concealment of urban terrain enable enemy force concentration, increasing the risk of effective small-arms fire.
- RPGs provide significant threat, especially to slow-moving helicopters.
- Portable surface-to-air missile systems are difficult to detect in and among buildings.
- AD ambush zones should be emplaced around or near likely aerial routes, landing sites, or objectives.

- Because LZs may be scarce and, therefore, predictable, air-assault operations in mass may be vulnerable to enemy fires.

WEATHER

D-43. Some special considerations for weather in urban operations include the following:

- Smoke and fire in the built-up area cause obscuration.
- Urban areas directly affect weather, especially wind patterns resulting in gusts and thermals.
- High concentration of man-made materials increases the risk of exposure to toxic industrial materials.

TERRAIN

D-44. Some special considerations for terrain in urban operations include the following:

- Obstacles—such as power lines, towers, and guidelines—may be more numerous and dangerous than in any other environment.
- Buildings limit maneuverability, and engagement ranges are typically shorter, affecting the ability of attack reconnaissance helicopters to employ weapons at desired standoff ranges.
- Buildings may be used to mask friendly helicopter operations.
- Urban terrain masks intelligence and electronic warfare acquisition capabilities.
- Landing and PZs may be severely limited; operations from unstable rooftops may be required. The S2 coordinates with the engineer officer to obtain available architectural plans and blueprints to determine the weight-bearing capabilities of rooftops for use as LZs.
- Vertical development blocking LOS radio communication can severely affect air-ground and low-level air-to-air communication.

Appendix E

Personnel Recovery Operations

SECTION I – GENERAL

E-1. PR is the sum of military, diplomatic, and civil efforts to effect the recovery and return of US military, Department of Defense (DOD) civilians, and DOD contractor personnel. These personnel are isolated or missing while participating in a US Government-sanctioned military activity or missions in an uncertain or hostile environment, or as determined by the Secretary of Defense.

E-2. Anyone in the battlespace can be a PR provider and recipient. With the evolution of a nonlinear battlefield, more personnel, to include civilian contractors, run the risk of becoming isolated or captured. Although DODI 1300.23, published August 2003, prescribes procedures to prepare DOD civilian employees, DOD contractors, and other personnel for entering a theater of operations, a Personnel Recovery Task Force (PRTF) may encounter personnel on the battlefield that have no formal training at all.

E-3. PR is normally a theater responsibility and will be conducted according to theater PR SOP. PR can be unassisted, opportune, component, joint, multinational or multiagency. The executive summary of the PR function describes it as one of the highest priorities within the DOD.

E-4. PR is an issue of national importance. Preserving the lives and well being of U.S. servicemen placed in danger of isolation or capture while participating in government-sponsored activities overseas, is one of the highest priorities of the DOD. We base this high priority on four enduring principles—life, recovery, deny the enemy, and limited resources.

LIFE

E-5. Americans place great value on the sanctity of human life. When the President commits forces overseas, we have a moral obligation to do everything in our power to bring our personnel home safely.

RECOVERY

E-6. By inculcating in the minds of our Armed Forces personnel that if they become isolated we will recover them, we build confidence and a willingness to exert their utmost in times of great stress.

DENY THE ENEMY

E-7. When our Armed Forces possess an effective PR capability, we deny our enemies a valuable source of intelligence and political leverage against our government.

LIMITED RESOURCES

E-8. Our highly trained soldiers, sailors, airmen, Marines, and DOD civilians are a valuable and limited resource, which we cannot afford to lose.

EFFECT OF CAPTURED PERSONNEL

E-9. Isolated, lost, captured, or unaccounted-for personnel can change the perception of an otherwise successful operation, and provide the enemy a powerful bargaining tool. Americans, and the American Congress, are becoming accustomed to the U.S. engaging its adversaries with few or even no American casualties. A televised view of an American being dragged through the streets of a foreign capital like we witnessed in Mogadishu, can turn the tide of our national will, and affect U.S. national policy.

PLANNING

E-10. The rescue coordination center (RCC) within each theater controls all PR events unless superseded by the joint search and rescue center (JSRC). Normally, an AVN BDE designates a subordinate battalion to act as the personnel recovery task force (PRTF) headquarters. Subordinate battalions designate aircraft and aircrews to perform PR functions. These aircraft are not dedicated, as in Air Force CSAR operations, but are designated for the primary mission of PR. Assets may be assigned secondary missions if the tactical situation permits. Each battalion briefs a plan for recovering aircrews that become isolated during daily operations. The brigade must also be prepared to provide PR dedicated assets to an RCC or JSRC, depending on the tactical situation. With the number of deployments worldwide, dedicated CSAR aircraft may not be available and the services will be tasked to provide assets to a joint PRTF.

E-11. Even though PR can be performed by ground units, this appendix addresses the use of aviation assets, specifically helicopters, to affect a recovery. Army Aviation PR is a mission performed by a designated aircrew for the specific purpose of the recovery of personnel when the tactical situation precludes search and rescue assets from responding and when survivors and their location have been confirmed. Mission success largely depends on thorough premission planning, accurate and timely intelligence, verifiable survivor location, flexible and redundant C2, and highly trained PR forces.

SECTION II – OPERATIONS

EXECUTION STAGES

E-12. PR missions are comprised of five stages— preparation, alert, planning, execution, and debrief. PR must be planned, rehearsed, and integrated at all levels before execution during operations

PREPARATION STAGE

E-13. Preparation is broken down into two areas— rescue vehicle preparation and team preparation.

AIRCRAFT

E-14. Normally, two attack reconnaissance aircraft, two utility aircraft, and one C2 aircraft will be designated for a PR mission. The armed reconnaissance aircraft will provide aerial and enroute security while the utility aircraft will be the rescue vehicle (RV) and carry the security team and PR team. The security team aircraft may be omitted when an aircraft performs a precautionary landing (PL) or a vehicle becomes inoperable in a secure area or if ground forces are readily available and provide a security perimeter.

TEAM

E-15. The recovery mission commander (RMC) has overall authority in the selection of the PR team. The team will include a team leader, medic/combat lifesaver, security member and at least one other person to assist in the recovery of personnel. This team will be familiar with authentication procedures.

E-16. The security team will consist of infantry personnel whenever possible. There will be a team leader and enough personnel to secure a small perimeter around the extraction site.

E-17. Each team will be equipped with radios for communicating between teams and with the recovery aircraft. Both teams should have continuity of personnel.

ALERT STAGE

E-18. This stage begins when the unit is notified of a downed aircraft or inoperable vehicle and isolated personnel. Due to the reduced planning time for a mission of this nature, all personnel involved must be alerted even if the command has not officially been assigned the mission. During this stage all personnel involved will report to the PRTF TOC, whether at brigade or battalion level. This will facilitate dissemination of information and organization of planning cells. Final preparation and accountability of personnel and equipment will be completed.

PLANNING STAGE

E-19. Begins after all personnel have been alerted. To facilitate time management, the RMC will assign duties and responsibilities. Furthermore, as much premission planning should be accomplished prior to the alert stage as possible (map graphics, enemy situation, terrain and aviator pickup point analysis, and consideration of medical facilities). Key information needed to plan a rescue mission include:

- The type, number, call sign, and radio frequency of isolated aircraft or vehicle and personnel.
- How or why the aircraft was brought down or the vehicle became inoperable. For example, if a vehicle entered a minefield, the PRTF may want to use an aircraft with a rescue hoist to perform the PR.
- The last known position and intended route of flight or route of travel.
- The names and authenticators of isolated personnel.
- The type and amount of survival equipment on the downed aircraft or in the vehicle.
- Evasion plan of action (EPA) for the isolated personnel.

E-20. Complete copies of EPAs and isolated personnel report (ISOPREP) cards will not be given to recovery crews; furnish only the data necessary to authenticate the isolated personnel.

EXECUTION STAGE

E-21. METT-TC will dictate how the mission is executed. These variables will make each mission unique, but there will be a few common threads. The execution can be broken down into five phases—location/authentication, insertion, recovery, extraction, and return.

LOCATION/AUTHENTICATION

E-22. The location should be narrowed down via radio by the isolated personnel using secure communication or by using the search and rescue DOT (SARDOT) or search and rescue number encrypting graph (SARNEG) procedures. Authentication will be accomplished prior to any vectoring of aircraft or recovery personnel being inserted. Authentication can be accomplished by one or a combination of the following means:

- Challenge and password.
- Number of the day.
- Letter of the day.
- Duress word.
- SARDOT.
- SARNEG.

E-23. Security must be provided to both the PR aircraft and the isolated personnel. In most cases this can be accomplished by maintaining concealment until authentication has been accomplished. At the last possible moment visual signals should be used and verified (Figure E-1).

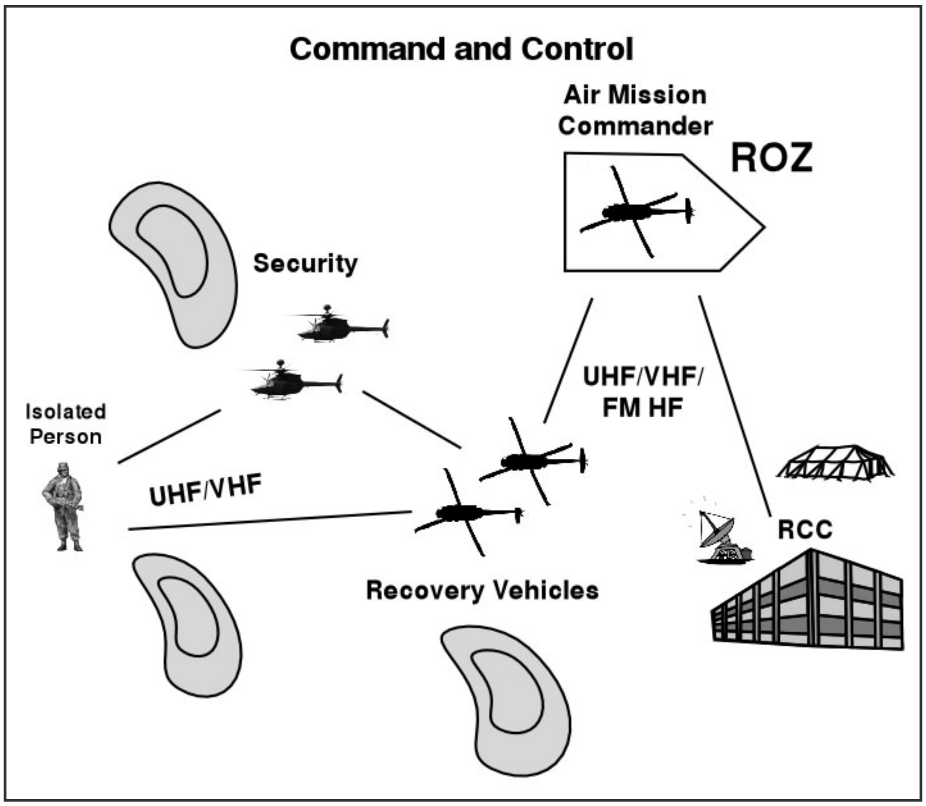


Figure E-1. PRTF Communications Architecture

INSERTION

E-24. After the location is confirmed the recovery vehicle will do an aerial reconnaissance and if deemed suitable, the security team will be inserted. Once the area is secure, the PR team will be inserted and the aircraft will move to laager sites far enough away so as not to bring attention to the recovery site or interfere with ground operations but able to respond for immediate extraction or door gun support if no escort aircraft are available. The aircraft must be in contact with the ground crews at all times. If contact is lost, a predetermined visual signal must be used when ready for extraction.

RECOVERY

E-25. Upon insertion, the security team will set up a perimeter while the PR team identify and prepare the personnel for extraction. The quicker this phase is completed the better. Information about the location and number of personnel is vital. If materiel (aircraft or vehicle) is to be recovered simultaneously the maintenance recovery team will perform the following actions as required:

- Assess repair requirements.
- Repair the aircraft/vehicle or prepare it for a one-time evacuation mission.
- Recommend other means of recovery and prepare the aircraft/vehicle as necessary.
- If not repairable, determine which parts, subsystems, or components can be salvaged and remove them. As a minimum, remove all COMSEC equipment.
- Be prepared to destroy the disabled aircraft/vehicle.

EXTRACTION

E-26. When the call for extraction is made, the recovery vehicle will extract the team and recovered personnel first, while the other aircraft stands by for door gun support. The security team will be extracted last with the attack reconnaissance aircraft providing coverage. This operation may need to be conducted in a seats-out configuration.

RETURN

E-27. This phase begins when the isolated personnel come under the control of US or friendly forces and ends when those personnel are repatriated or returned to duty. Aircraft will return as a flight. Consideration needs to be given to where injured personnel are to be taken. If necessary, MEDEVAC helicopters could preposition to a HA for transloading of injured personnel to provide more comprehensive medical support. All leaders must also account for personnel and equipment prior to departing the recovery site.

DEBRIEF STAGE

E-28. All personnel involved with the mission will be debriefed upon return. The intent of the debrief is to improve operations and evaluate enemy courses of action. The RMC is responsible for debriefing the task force staff and RCC, if required.

TASK ORGANIZATION CONSIDERATIONS

E-29. By standardizing operating procedures across Army Aviation, a PRTF can accept attack or lift support from any organization and execute highly complex recovery missions. The PRTF may also include CH-47s that will carry a maintenance recovery team to assist in recovering the aircraft or vehicles while the UH-60s recover personnel. If vehicles cannot be self-recovered, the CH-47 could slingload an aircraft or vehicle back to a maintenance facility or to more secure locations where repairs can be performed. UAVs can provide important battlefield information to the PRTF by monitoring enemy troop movements, locate LZs/PZs, locate isolated persons, conduct air and ground route reconnaissance, relay communications and enhance overall common operational picture (Figure E-2).

E-30. At every stage of the recovery, the members of the PRTF have to be prepared to interact with joint counterparts and assets that will enhance the probability of mission success. Even an internal recovery mission can quickly become joint if the RCC or JSRC allocated joint assets to the recovery. The on-scene commander (OSC) may be an A-10 and his wingman who happened to observe the isolating incident or received a call from AWACS. The rescue escort (RESCORT) aircraft may be Navy or Marine assets returning from a strike mission and, after aerial refueling, may be able to provide an armed escort capability to the

PRTF as a secondary mission. The PRTF must be prepared and use all these assets as soon as they become available.

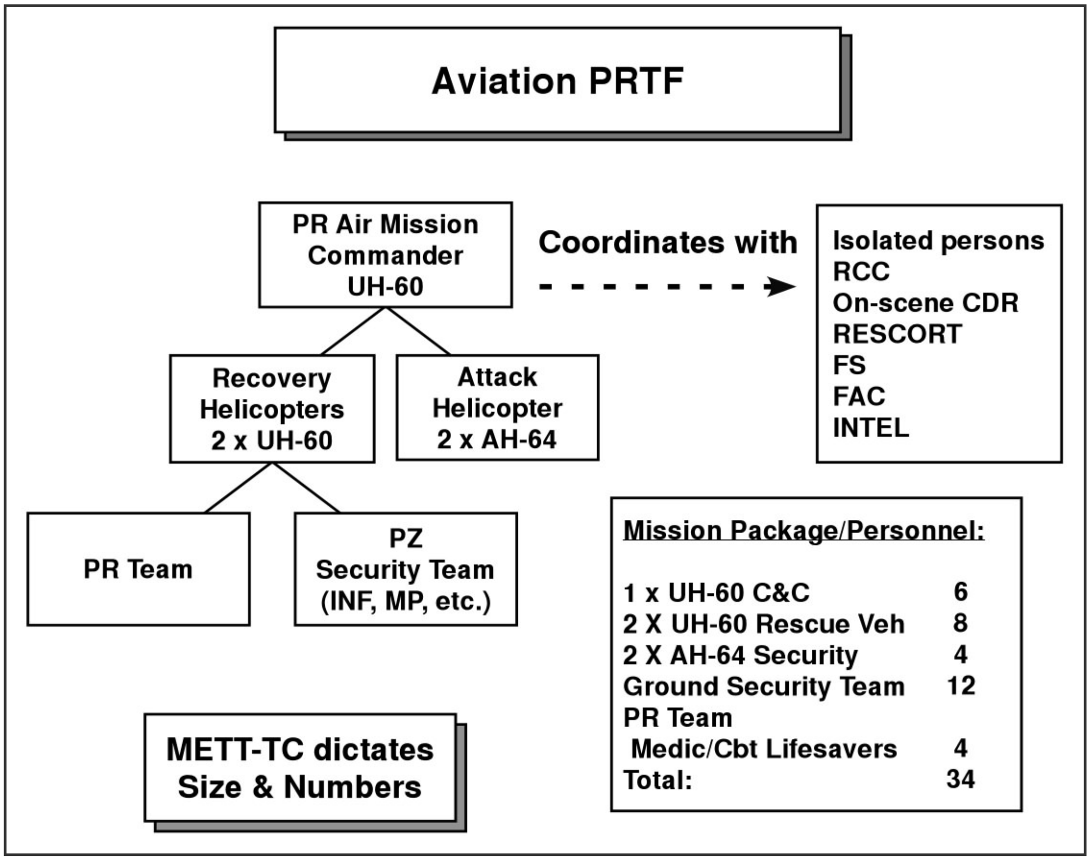


Figure E-2. Task Organization

RESPONSIBILITIES

COMMANDER

E-31. Responsible for assigning properly equipped aircraft and trained crew members to the PRTF.

RECOVERY MISSION COMMANDER

E-32. Responsible for conduct and accomplishment of the mission.

PILOT IN COMMAND

E-33. Responsible for ensuring that his crew is thoroughly familiar, trained and briefed for the mission. He is further charged with ensuring that his aircraft and equipment is operational and capable of completing the mission.

PLANNING AND LAUNCH REQUIREMENTS

E-34. PR missions emphasize detailed planning and the use of assigned and briefed aircrew for the specific purpose of recovering personnel and/or aircraft. Two major requirements or prerequisites for conducting a PR mission are that the location of the survivor must be known, and that there must be a reasonable assurance that the survivor is alive and not in imminent danger of capture. These launch requirements are an absolute minimum. Additional launch requirements would be developed during mission analysis but would largely focus on the threat in the area.

Appendix F

Army Airspace Command and Control

Army Airspace Command and Control (A2C2) elements form a vertical and horizontal channel through which airspace control requirements, plans, orders, and information are coordinated, disseminated, and synchronized with the tactical plan.

The term Army airspace does not signify ownership of any airspace contiguous to the battlefield or any other geographical dimension. Airspace is a joint medium for all friendly combatants. Each joint force component may operate aerial vehicles and weapons systems within the airspace with maximum freedom consistent with priorities, the degree of operationally acceptable risk, and the joint force commander's intent. The executive agent for airspace control is the Airspace Control Authority (ACA) who is usually the Joint Force Air Component Commander (JFACC).

SECTION I – AIRSPACE INTERFACE

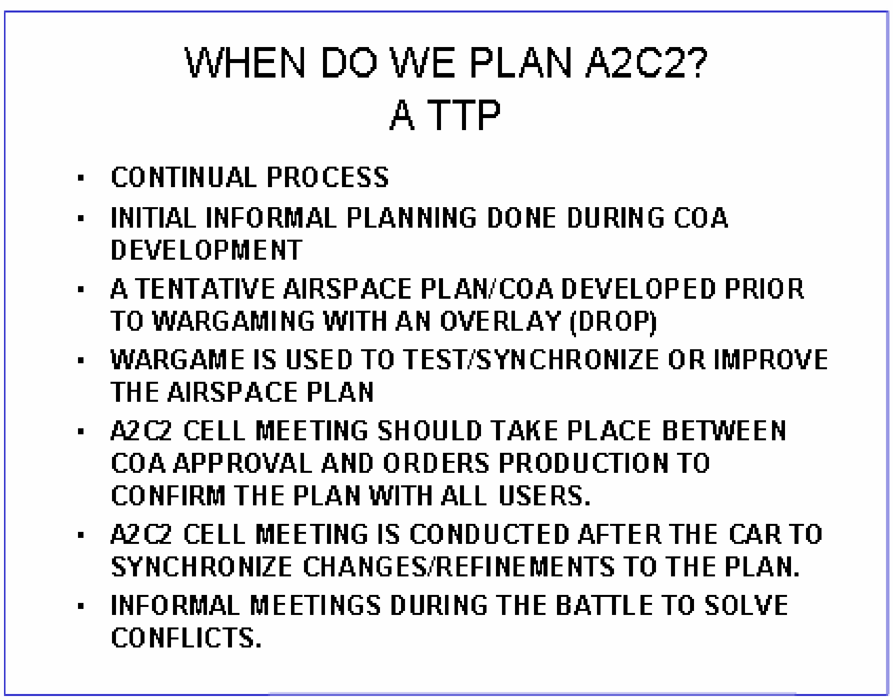


Figure F-1. When do we plan A2C2?

F-1. The A2C2 system is the airspace management component of the Army Air Ground System (AAGS). It outlines the Army's integration of airspace usage and C2 within the framework of the Theater Air Ground System (TAGS). These systems, in whole or in part, are placed in each echelon from maneuver brigade to numbered army. This appendix summarizes these systems and the communication mediums used to accelerate the airspace control authority's objectives. AAGS is the control system for synchronizing, coordinating, and integrating air operations. It provides the means to initiate, receive, process, and execute requests for air support and to disseminate information and intelligence produced by aerial assets.

F-2. AAGS interfaces with elements from other services to function as a single entity in planning, coordinating, deconflicting, and integrating air support operations with ground operations. The Army elements of the AAGS consist of Command Post's, Effects Coordinators, Air and Missile Defense elements, Aviation Elements, the BCT's Air Defense and Airspace Management/Brigade Aviation Element (ADAM/BAE), UEx A2C2 cells, UEy A2C2 Section and coordination/liaison elements.

SIMULTANEOUS USE

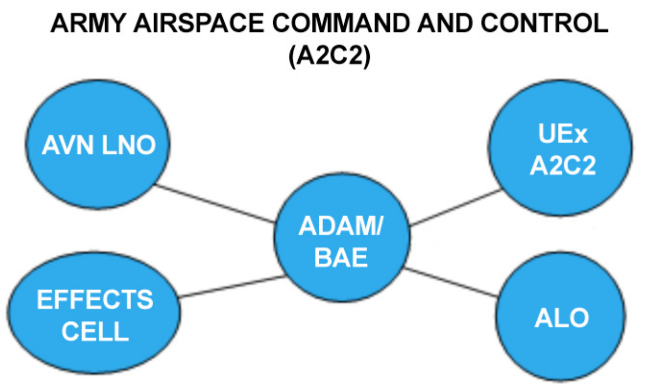
F-3. A2C2 maximizes the simultaneous use of airspace. At decisive moments, commanders are able to exploit all available combat power—synchronized in time, space, and purpose. Potential users of the aerial dimension of the battlefield include not only Army Aviation but also Air Defense (AD), Military Intelligence (MI), maneuver UAVs, Fire Support (FS), and joint and combined air and ground forces.

FRATRICIDE AVOIDANCE

F-4. Effective airspace management and control minimize the risk of fratricide and increase overall force effectiveness. The A2C2 system provides an effective conduit for timely bidirectional communication between the airspace control authority (ACA) and all friendly airspace users. The air tasking order (ATO), published daily by the ACA, directs tactical identification, friend or foe (IFF) use and assignments in each theater, as well as projecting ground combat movements. The ACO notifies appropriate Air-Ground Operations System nodes of the effective times, altitudes, distances, and the controlling agency for all airspace control measures. It may also include fire support coordinating measures, air defense control measures, and any other pertinent airspace information deemed necessary by the Airspace Control Authority to limit fratricide and maximize combat effectiveness.

ARMY AIRSPACE USERS

F-5. A2C2 is the integration by the S/G3 of conflicting airspace requirements from, all airspace users (Air Defense, Fire Support, Military Intelligence, Special Operations units, Airborne, aviation and ground maneuver. These functions involve detailed coordination and integration to enable effective use of close air support (CAS), indirect fire, organic and augmenting Air Defense, tactical fire and maneuver operations (to include Army aviation) as well as UAV operations. Brigade, battalion, and company commanders; Effects coordinators; ALOs; and FACs directly involved in localized combat operations perform A2C2 functions established by higher echelons such as the UEx A2C2 element. However, the ADAM/BAE is the key element at the BCT level for synthesizing and integrating the brigade's airspace for combat operations.



The A2C2 function is a team effort between all Airspace users in the BCT, with the BAE as the lead integrator. The ADAM/BAE is the key element at the BCT level for synthesizing and integrating the brigade's airspace for combat operations.

Figure F-2. A2C2 Staff Coordination

SECTION II – ARMY AIRSPACE COMMAND AND CONTROL STAFF RESPONSIBILITIES

F-6. A2C2 requires a coordinated staff effort to accomplish the functional activity of airspace control. This process—coupled with the near-real-time collection and dissemination of information—increases combat effectiveness by promoting the safe, efficient, and flexible use of airspace.

F-7. The Battlefield Coordination Detachment (BCD) is the ARFOR coordination detachment located at the Joint Air Operations Center (JAOC). The BCD relays and interprets Army needs for air support and deconfliction to the JAOC. The A2C2 element representing the joint forces land component commander is located in the BCD. The A2C2 representatives work within the operations and plans divisions of the BCD. The BCD A2C2 representative, in coordination with the JAOC combat plans division, approves or disapproves notification for Army airspace requests, orders, and recommendations. Additionally, the BCD A2C2 representative provides the current joint forces air component commander's airspace utilization priorities, control measures or restrictions, and all other elements of information necessary for the UEy or UEx to maintain a complete A2C2 picture.

F-8. The UEy contains an A2C2 cell that deconflicts UEy airspace for TACAIR support, Army aviation, unmanned aerial vehicles, Air Defense Artillery, FA, and EW assets. The A2C2 Cell is the primary airspace POC for subordinate UExs and Commands/BCTs/Bdes under the control of the UEy. The A2C2 cell provides support to the A2C2 NCO in the Fires and Effects Directorate. The A2C2 cell supports the G5 in the UEy Main with both deliberate and contingency airspace planning, develops the A2C2 architecture, establishes A2C2 interface into the Joint Interface Network, develops and submits Army requirements for the joint Airspace Control Plan (ACP), and publishes and maintains the

A2C2 annexes to plans and orders. The A2C2 cell is responsible for building the UEx input to the joint airspace control order (ACO) and coordinates with other UEy sections for input to the Air Tasking Order (ATO). The A2C2 Cell is responsible for airspace control activities supporting the UEy and is capable of interfacing directly with the JTF, other components, or Battlefield Coordination Detachment.

F-9. The UEx has two A2C2 cells, one in either TAC. The TAC 1 A2C2 cell supports the G5 with both deliberate and contingency airspace planning, develops the A2C2 architecture, establishes A2C2 interface into the Joint Interface Network, develops and submits Army requirements for the joint Airspace Control Plan (ACP), and publishes and maintains the A2C2 annexes to plans and orders. The TAC 1 A2C2 cell oversees the TAC 2 A2C2 cell and is responsible for overseeing the coordination, integration, and regulation of UEx airspace. TAC 1 A2C2 cell is responsible for building the UEx input to the joint airspace control order (ACO) and coordinates with other UEx sections for input to the Air Tasking Order (ATO). The TAC 1 A2C2 Cell is responsible for airspace control activities supporting the TAC. The TAC 1 A2C2 Cell is the primary airspace POC for subordinate BCTs/Bdes under the control of TAC 1.

F-10. When the UEx is under the control of a UEy, the TAC 1 A2C2 cell will coordinate all planned airspace requirements with the UEy A2C2 cell while keeping the TAC 2 A2C2 cell informed. The TAC 1 A2C2 cell will monitor all of TAC 2's immediate airspace requirements. The TAC 1 A2C2 cell contains personnel required to support the TAC FEC. The TAC 1 A2C2 LNOs to the FEC will assist in the integration of airspace use for both planned and immediate requirements. The TAC 1 A2C2 deconflicts TAC airspace for using TACAIR support, Army Aviation, unmanned aerial vehicles, Air Defense Artillery, FA, and EW assets. The TAC is capable of interfacing directly with the JTF, other components, or Battlefield Coordination Detachment if the UEx TAC is used as an operational headquarters. The TAC AC2C cell has the necessary ground to air communications capability to communicate both digitally and by voice to Army and JIM aircraft.

F-11. The TAC 2 A2C2 Operations Cell is responsible for airspace control activities supporting the TAC. The TAC 2 A2C2 Cell is the primary airspace POC for subordinate BCTs/Bdes under the control of TAC 2. The TAC 2 A2C2 cell coordinates with the UEy TAC A2C2 cell as required. In normal operations the TAC Operations A2C2 cell will coordinate immediate airspace requirements with the UEy A2C2 cell while keeping the UEx TAC 1 A2C2 cell informed. Planned airspace requirements will be submitted to UEx TAC 1 A2C2 cell for integration into the UEx's ACO submission. The TAC 2 A2C2 cell contains personnel required to support the TAC 2 FEC.

F-12. The TAC 2 A2C2 cell will ensure that the TAC's airspace requirements and concept are properly articulated to the TAC 1 A2C2 Plans cell. The TAC 2 A2C2 LNOs to the FEC will assist in the integration of airspace use for both planned and immediate requirements. The TAC 2 A2C2 cell deconflicts TAC airspace for using TACAIR support, Army Aviation, unmanned aerial vehicles, Air Defense Artillery, FA, and EW assets. The TAC is capable of interfacing directly with the JTF, other components, or Battlefield Coordination Detachment if the UEx TAC is used as an operational headquarters. The TAC AC2C cell has the necessary ground to air communications capability to communicate both digitally and by voice to Army and JIM aircraft.

SECTION III – BRIGADE AND BATTALION ARMY AIRSPACE COMMAND AND CONTROL REQUIREMENTS

F-13. The HBCT and IBCT A2C2 team is comprised of the Air Defense and Airspace Management/Brigade aviation element (ADAM/BAE), effects cell, and ALO providing those staff functions within the Brigade to plan and execute A2C2 for the BCT Commander. The combination of AMD and Avn. personnel with their digital equipment provide the BCT with a greatly improved capability to perform A2C2 and maintain a near real-time air picture.

F-14. The Brigade Aviation Officer (BAO) a member of the BAE, is responsible for A2C2 integration of all the elements and ensures de-confliction to facilitate the flexible use of Army Airspace and further mitigate risk to prevent fratricide. All elements of the A2C2 team develop and implement their portion of the plan for inclusion in the BCTs scheme of maneuver, working as a team to de-conflict and synchronize the plan for the best use of Army and Joint Airspace while retaining flexibility for the commander to maximize lethality. The ADAM/BAE is designed to work with a UEx or UEy A2C2 cell but is capable of independent operations when the BCT is employed independent of a UE. The ADAM/BAE is equipped to receive the Joint Air Picture and coordinate digitally directly with the Battlefield Coordination Detachment (BCD) within the Air Operations Center (AOC).

F-15. The ADAM/BAE implements and disseminates the ACOs for Brigade and below; the effects cell provides the same function for the ATO. The ADAM/BAE also developsand disseminates the Air Defense Plan, and provides the air picture and early warning functions. During the planning process the BAE is the principle Brigade staff element that plans the use of Army Aviation and UAVs and then submits air-space control means requests (ACMREQ) to the UEx A2C2 element for synchronization and de-confliction and further processing of air-space control means for inclusion in the ACO.

F-16. When deployed as a separate task force, the brigade may receive tactical air control party (TACPs) and theater airlift liaison officers (TALO) to assist in mission planning for the use of Joint assets. For the ADAM/BAE, airspace management and deconfliction of UAVs present a significant challenge due to their small size, agility, and increasing density, as well as their limited ability to detect, see, and avoid other aircraft. UAVs pose an operational hazard to manned aircraft and like manned aircraft flights, UAV flights are coordinated to ensure deconfliction with other airspace users.

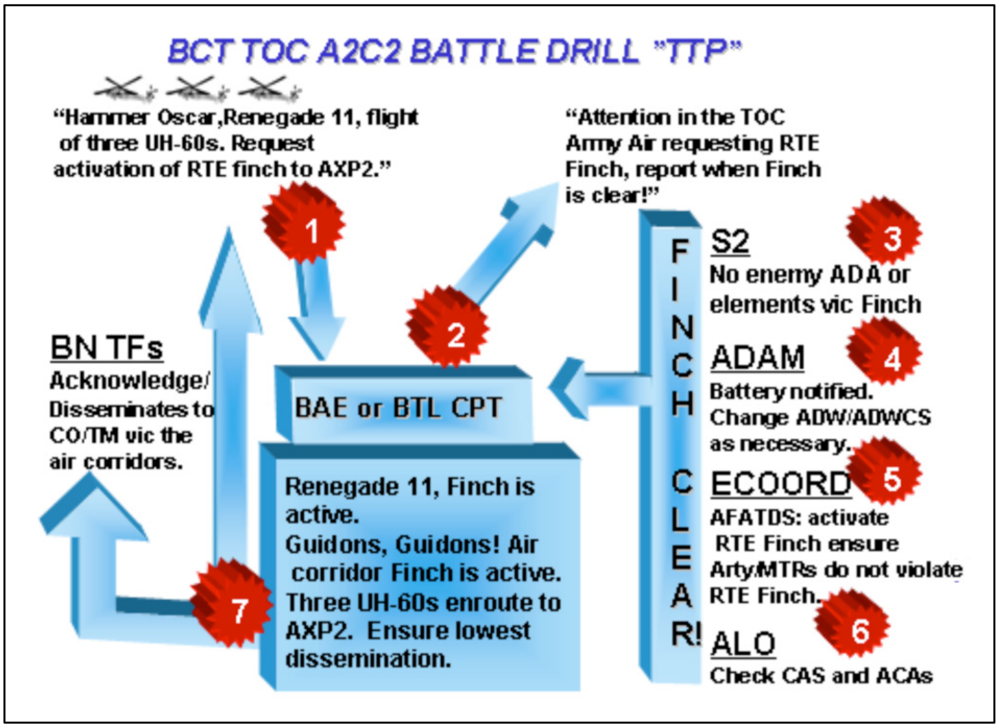


Figure F-3. Example TTP for A2C2

F-17. The Battalion and below have no formal A2C2 element, however the use of attack helicopters, unmanned aerial vehicles and beyond line of sight weapons systems makes it imperative that BN S3 AIRs , BN FSOs, AVN LNOs, augmented ADA, TACPs, and UAV Operators are aware of their impact on Army and Joint Airspace. The battalion S3 has overall responsibility for coordinating, deconflicting and managing all airspace within the battalion AO.

F-18. With the proliferation of UAVs, the battalion S3 or his designated representative, coordinates and deconflicts airspace for all battalion UAV missions. The primary link for airspace management for the battalion is the ADAM/BAE in the BCT. The battalion S3 or his representative submits airspace control means request to the BCT ADAM/BAE for processing and forwarding to the UEx A2C2 Cell. With the subordinate battalions' input, the BCT ADAM/BAEconducts close coordination with subordinate BNs and other airspace users in the BCT AOR during planning and execution of combat operations to ensure synchronization and de-confliction of airspace.

AVIATION BRIGADE ARMY AIRSPACE COMMAND AND CONTROL REQUIREMENTS

F-19. The AVN BDE Staff coordinates with various agencies to ensure deconfliction of airspace during brigade operations. The primary focus for A2C2 is airspace management, friendly aircraft deconfliction, and close coordination with supporting indirect fires, air and missile defense units, brigade combat teams, and Air Force operations affecting the Aviation Brigade. The Aviation Brigade has the responsibility to deconflict airspace for units under its control. See Figures F-4 and F-5 as examples of an AVN BDE A2C2 coordination framework.

F-20. The AVN BDE A2C2 team is comprised of the Brigade S3 Air, the Air Defense and Airspace Management (ADAM) cell, tactical operations officer, effects cell, and ALO providing those staff functions within the Brigade to plan and execute A2C2 for the Aviation Brigade Commander. The combination of AMD and Aviation personnel with their digital equipment provide the AVN BDE with a greatly improved capability to perform A2C2 and maintain a near real-time air picture.

F-21. The Aviation Brigade S3 Air is responsible for A2C2 integration of all the A2C2 elements and ensures de-confliction to facilitate the flexible use of Army Airspace and further mitigate risk to prevent fratricide. All elements of the A2C2 team develop and implement their portion of the plan for inclusion in the aviation brigade's scheme of maneuver, working as a team to de-conflict and synchronize the plan for the best use of Army and Joint Airspace while retaining flexibility for the commander to maximize lethality.

F-22. The Aviation Brigade should develop Airspace Coordination Areas (ACAs) to protect the areas planned for battalion / squadron ABFs or similar maneuver areas. Restricted Operating Areas (ROAs) should be developed to protect areas planned for C2 aircraft, brigade tactical assembly areas, and FARPs or similar maneuver areas as appropriate. Routes and corridors should be developed to protect areas planned for battalion / squadron to maneuver around the battlefield.

F-23. The S3 Air implements and disseminates the ACOs for the Aviation Brigade and below; the effects cell provides the same function for the ATO. The ADAM develops and disseminates the Air Defense Plan, and provides the air picture and early warning functions. During the planning process the S3 Air is the principle Brigade staff element that plans the use of UAVs and then submits air-space control means requests (ACMREQ) to the UEx A2C2 element for synchronization and de-confliction and further processing of air-space control means for inclusion in the ACO.

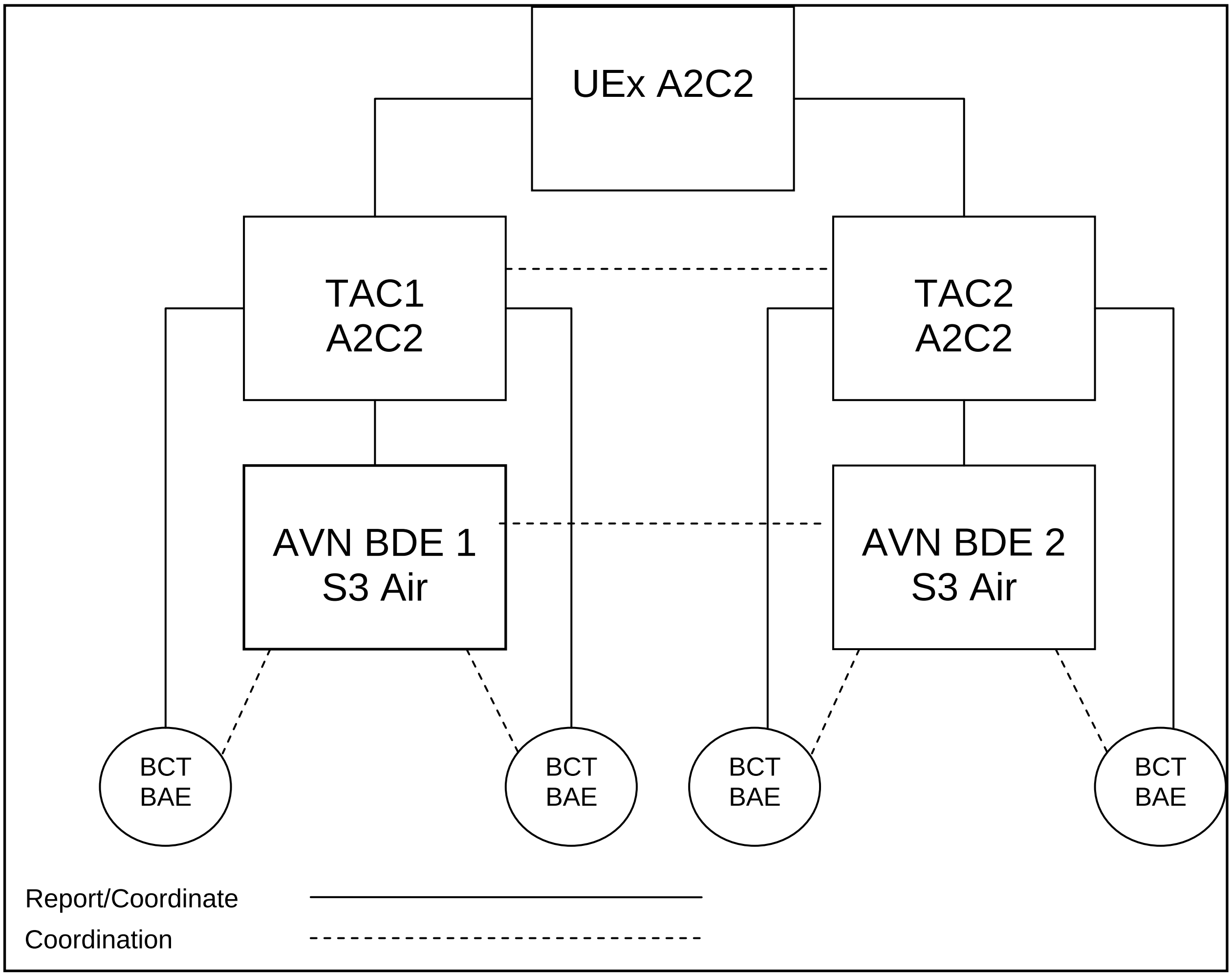


Figure F-4. Aviation Brigade A2C2 Coordination Framework (two AVN BDEs supporting a UEx)

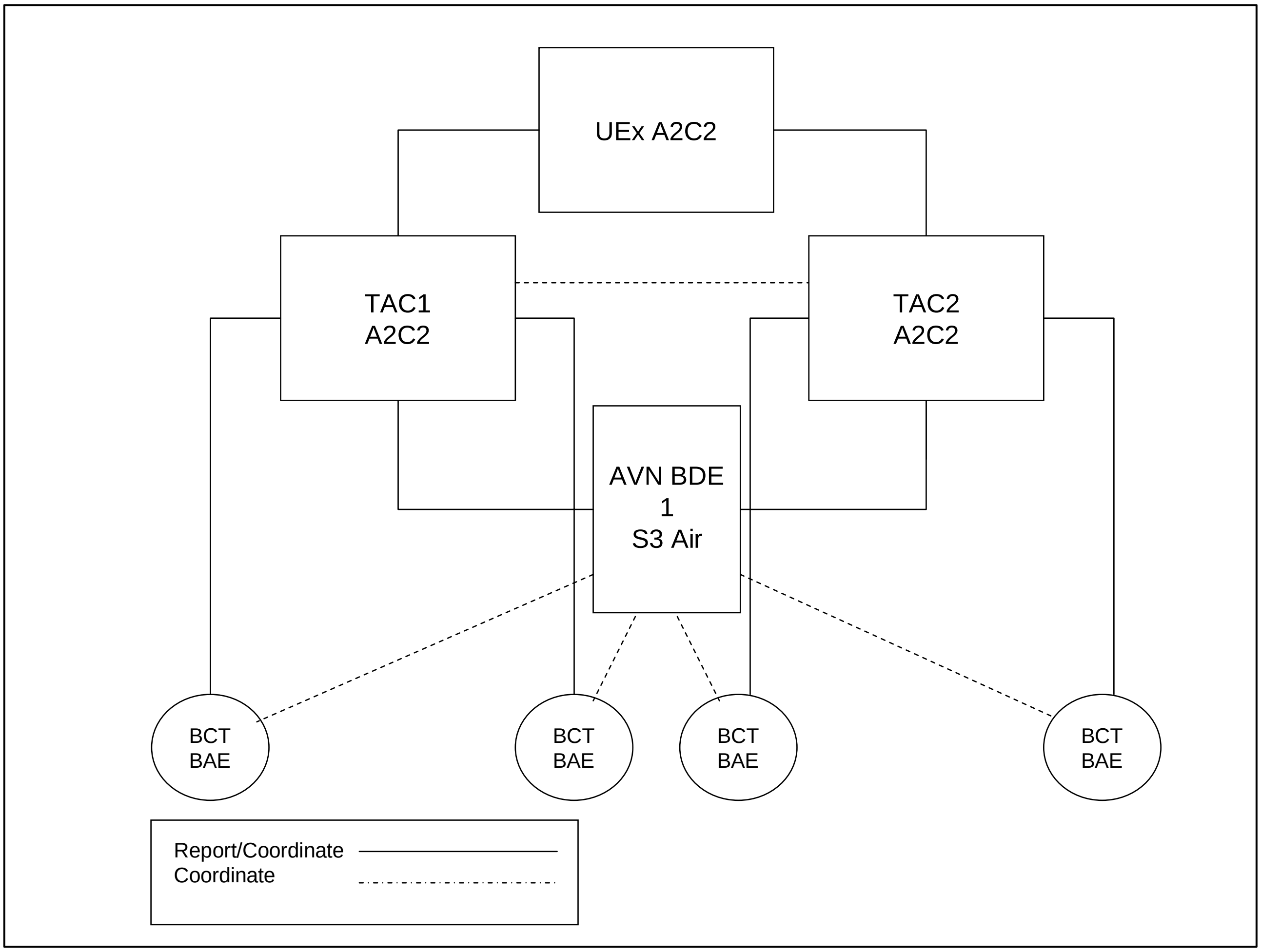


Figure F-5. Aviation Brigade A2C2 Coordination Framework (one AVN BDE supporting a UEx)

SECTION IV – ARMY AIRSPACE COMMAND AND CONTROL MEASURES (SEE FM 3-52)

F-24. Maneuver commanders at all levels exercise A2C2 within their assigned areas through the integration of positive and procedural control. Both methods of C2 are fully compatible and should be used in concert to effectively perform A2C2. Typically many positive and procedural control measures will be directed by higher command authority but some measures are available for subordinate commanders to employ for their own flexibility.

POSITIVE CONTROL MEASURES

F-25. Positive control measures are those which rely on real-time data and electronic means (ex. Radar, AWACS, IFF/SIF, and radios) to identify and communicate with airspace users. Although positive control means provide for the best overall control over airspace users, the tactical situation usually demands a mixture of both positive and procedural control means.

Procedural Control Measures

F-26. Procedural control is a method of airspace control which relies on previously agreed upon and disseminated orders and procedures. Procedural control is accomplished through non-electronic means and may include comprehensive air defense identification procedures, rules of engagement, aircraft identification maneuvers, fire support coordinating measures, and airspace control measures..

High Density Airspace Control Zone

F-27. A high density airspace control zone (HIDACZ) is a defined area of airspace requested by a maneuver force commander, normally UEx and above. The purpose of a HIDACZ is to reserve airspace and to control which users have access to the zone.

Coordinating Altitude

F-28. A coordinating altitude (CA) is a procedural method designed to separate fixed wing and rotary wing traffic.

Restricted Operations Zone/Area

F-29. A restricted operations zone/restricted operations area (ROZ/ROA) is a defined volume of airspace developed for a specific operational mission or requirement. Some typical uses are to restrict air operations over Army Tactical Missile Systems (ATACMS) launch and target areas as well as unmanned aerial vehicle (UAV) launch and recovery areas.

Minimum Risk Route / Low Level Transit Route

F-30. Minimum risk route (MRR) and low level transit route (LLTR) are virtually synonymous and commonly used interchangeably. MRRs/LLTRs are routes (usually recommended by a UEx or UEy commander) that represent the minimum hazard to friendly aircraft transiting through friendly ADs and controlled or restricted airspace.

Standard Use Army Aircraft Flight Route

F-31. A standard use Army Airspace Flight Route (SAAFR) is a route established below the coordinating altitude to facilitate the movement of army aviation assets. SAAFRs are normally located throughout UEy, UEx and Brigade Combat Team (BCT) rear areas and do not require joint approval if below the CA.

Air Corridor

F-32. An air corridor is a restricted air route of travel specified for use by friendly army aircraft and established to prevent friendly forces from firing on friendly aircraft.

Airspace Control Order, Air Tasking Order, and Special Instructions

F-33. The airspace control order (ACO) and ATO are the foundations of airspace operations in the joint environment. Airspace control must effectively allow combat operations without adding undue restrictions or adversely affecting the capabilities of any service or functional component.

AIR SPACE CONTROL KEY DOCUMENTS

F-34. There are several documents critical to planning for and executing airspace control. These documents are the airspace control plan, airspace control order, air tasking order, and air defense plan. A2C2 planners should know these documents.

AIRSPACE CONTROL PLAN

F-35. The ACP is developed by the ACA and approved by the JFC. It summarizes the JFC's guidance on airspace control, defines the joint force airspace control organization, and outlines the airspace control process. This plan may be published either as an annex to the basic OPLAN and OPORD or as a separate document. Because the ACP delineates the airspace control area, planners must address coordination procedures for all airspace users. See JP 3-52 for more details.

AIRSPACE CONTROL ORDER

F-36. The ACO is developed from the airspace control plan. It directs the use of joint airspace and details the approved requests for airspace control measures. The ACO is published on a cyclical basis, depending on the theater. Normally, the ACA publishes and distributes it daily. It may be part of the ATO or a stand-alone document. It may be a perpetual document with published ongoing updates. While the airspace control plan provides general guidance on airspace control, the order institutes airspace control procedures for specified periods. The ACO contains modifications to the ACP guidance and procedures, and it activates or deactivates procedural control measures. The ACO lists, but is not limited to, Airspace Control Measures (ACMs) and procedures used on or over the area of operations (see Chapter 4). It may include FSCMs and standing operating procedures.

F-37. Two important considerations when distributing the ACO are timing and dissemination means. The ACO and ATO cycles interrelate. Whatever publication and distribution means are used, it is critical to mission success that airspace users receive pertinent airspace information as early in the planning cycle as possible. FM 3-52.2 provides additional details on the ACO.

AIR TASKING ORDER

F-38. The ATO is a detailed order developed by the JFACC that describes and directs the overall air operation. This order provides the details for individual sorties to include targets, mission timing, weapons loads, air refueling data, call signs, and special instructions (SPINS). The SPINS are free text formats included as part of the ATO. They contain essential information that highlights, modifies, or supplements data contained in other portions of the ATO. These instructions may also contain data that modifies, changes, or replaces information contained in OPORDs. Such information includes airspace changes, IFF (Identification Friend or Foe) and SIF (Selective Identification Feature) assignments, control agencies, and frequencies. Developing and executing the ATO is a continuous dynamic process. JP 3-30 (formerly JP 3-56.1) and FM 3-52.2 detail this process.

AIR DEFENSE PLAN

F-39. The area air defense commander (AADC)—with the support and coordination of the service and functional commanders—develops, integrates, and distributes the JFC-approved air defense plan. Because air defense and airspace control and management are inherently related areas, the air defense plan and the ACP should be developed together to avoid conflicts. The air defense plan includes:

- Sensor employment.
- Identification procedures.
- Engagement procedures.
- Defensive airspace control procedures (developed with the ACA).
- Weapon control procedures.
- Early warning dissemination.
- Additional information that may discuss
- Location and type of assets to be defended.
- Disposition and capabilities of enemy air and missile forces.
- Disposition and location of friendly air and missile defense forces.
- Geopolitical and other constraints that affect air defense operations.

F-40. In addition to the air defense plan, the AADC publishes a tactical operational data (TACOPDAT) message to establish air defense responsibilities or to provide supplementary air defense orders. This message may be used to report permanent changes to an OPORD or to update missile engagement zones, surveillance and defense sectors, and communication nets. The AADC also will publish an operational tasking data link message to establish relationships, configurations, coordination procedures, and other information necessary to conduct data link operations.

Appendix G

Arming and Refueling Operations

This appendix provides aviation commanders, staff elements, and Class III and V personnel with a comprehensive view of the purpose, organization, and operation of the FARP. It also describes planning considerations for FARP setup and transportation planning for Class III and V products.

SECTION I – INTRODUCTION

PROPONENCY AND APPLICABLE FIELD AND TECHNICAL MANUALS

G-1. The Combined Arms Support Command is the proponent for operations and military occupational specialties (MOS) related to fueling and ammunition operations. This appendix specifies unique procedures that ammunition, arming, and refueling personnel perform in FARP and AA refuel operations.

G-2. This appendix covers information from the rescinded FM 1-104. However, units must refer to FM 10-67-1 for greater detail and applicable checklists. FM 10-67-1 consolidates and supersedes FMs 10-18, 10-20, 10-68, 10-69, 10-70-1, and 10-71. Units ensure that FARP personnel have the most current version of FM 10-67-1 available during FARP operations.

G-3. For ammunition operations, the user should refer to FM 4-30.1.

G-4. Other TMs are cited in this appendix, and these are available at www.logsa.army.mil.

DEFINITION

G-5. A FARP is a temporary arming and refueling facility organized, equipped, and deployed within the aviation unit's AO. FARPs are transitory and support specific mission objectives. Some FARPs do not have attack arming points. However, they do have ammunition for all weapons carried by utility and heavy helicopters. FARPs are task-organized according to METT-TC.

PURPOSE

G-6. FARPs promote increased aircraft time on station by reducing turnaround time associated with refueling and rearming. Units employ FARPs when flight time to unit trains is excessive and mission demands require longer time on station. FARPs also support operations in deep areas or other operations when mission distances exceed normal aircraft range and when target size requires rearming. During exploitation and other rapid advances, FARPs support aviation forces when field trains are unable to keep pace.

G-7. The key to effective FARP support is simultaneous arming and refueling. Ideally, FARPs service each company as a unit, with each aircraft within that unit simultaneously receiving fuel and ammunition.

PERSONNEL

G-8. Personnel allocations for the FARP include MOSs 77F, 89B, 15J, 15X, and 15Y. Petroleum specialists, MOS 77F, transport Class III and fuel aircraft. Ammunition specialists, MOS 89B, transport, unpack, maintain, and account for ammunition. Aircraft armament repairers, MOSs 15J/X/Y, repair fire control systems and arm OH-58D, AH-64A, and AH-64D aircraft, respectively. As required, commanders augment the FARP with other medical, BDA/maintenance teams, and security forces. At UEx or major base camp rapid refueling points supporting stability operations and support operations, the increased operational tempo or density of traffic may require ATS assets.

PLANNING FACTORS

General

G-9. The mission and operational tempo determine FARP supply priorities. Exploiting ARBs may expend Class V faster than Class III. Conversely, reconnoitering attack reconnaissance battalions expend more Class III than Class V.

Distance

G-10. Units often establish FARPs if distances between the fight and the logistics trains exceed 30 km. FARPs that are located too far forward are at risk of artillery engagement and increase turnaround time for slower supply vehicles. However, flight time to and from FARPs positioned too far in the rear reduces available time on station. The threat, availability of cover and concealment, road conditions, availability of higher echelon throughput of Class III/V, and distance to Class III/V distribution points affect how close FARPs can locate to the fight for sustained support.

Threat

G-11. The threat can neutralize aviation force effectiveness by preventing aircraft from rearming and refueling. Therefore, the FARP may be a high-priority target for the enemy. Enemy forces may subject FARPs to NBC, ground, TACAIR, air assault, and artillery attacks. Local sympathizers and insurgents may harass FARP operations.

Displacement

G-12. FARP survivability requires frequent displacement. Few FARP locations will permit rearming and refueling more than three times. A good planning figure for FARP duration is 3 to 6 hours. Units employ more than one FARP for longer missions with displacing silent FARPs waiting to assume the mission at preplanned times. Careful site selection, effective camouflage, and minimum personnel and equipment lead to survivable, mission-capable FARPs.

SECTION II – COMMAND, CONTROL, AND COMMUNICATIONS

COMMAND AND CONTROL

G-13. One of the most difficult aspects of FARP operations is how to command, control, and communicate with other elements in the aviation unit without compromising the FARP.

COMMANDER

G-14. The commander is responsible for overall FARP success. Based on the factors of METT-TC, he decides how FARPs will support missions.

S3

G-15. The S3 formulates a FARP plan that supports the commander's tactical plan. The S3 consults with the S4 and the FSC commander to ensure that the plan is logistically supportable.

S4

G-16. The S4 calculates mission Class III/V requirements and plans supply distribution. He coordinates these needs with higher headquarters.

CLASS III/V PLATOON LEADER

G-17. The FSC Commander is responsible for accomplishing the FARP mission. He assists the S3 in formulating the FARP plan and coordinates fuel and ammunition needs with the S4.

AIRCRAFT CONTROL

G-18. Aircraft control within the FARP is critical to safety and efficiency. The FARP's proximity to the battlefield restricts use of electronic means for positive aircraft control. The most effective control mechanism is a thorough briefing based on a well-written and -rehearsed SOP that outlines FARP procedures for aircrews and FARP personnel. For rapid refueling points in rear areas, offset, low-output nondirectional radio beacons (NDB) may be a low-risk means to identify refuel points. In addition, units may use various signaling methods to maintain procedural aircraft control.

AIR TRAFFIC SERVICES

G-19. ATS use in the FARP is METT-TC dependent. Under some circumstances, ATS units can provide aviation commanders with an extra measure of safety and synchronization.

Air Traffic Services Team

G-20. A tactical aviation control team can manage aircraft flow for faster, safer, and more efficient operations. A team has three soldiers equipped with an HMMWV-mounted TTCS and an AN/TRN-30(V)1 low-power nondirectional radio beacon. This equipment can be set up within 30 minutes. It provides a short-to-medium range NDB and secure-voice VHF and UHF.

VISUAL SIGNALS

G-21. Examples of visual signals include hand-and-arm signals, smoke, signal flags, flash cards, and light signals. Ground guides normally control aircraft movement within the FARP. Because ground guides may direct allied aircraft, they must use standard hand-and-arm signals.

Smoke

G-22. Smoke is not a preferred visual signal, but it has some advantages. It indicates wind direction. Different colors can indicate the current FARP situation and Class III/V availability. Smoke also has disadvantages; its use is day restricted, and it can compromise the FARP location.

Lights and Flags

G-23. Flashlights and light wands provide other types of visual signals. Use flashlights with color-coded disks to relay information. A separate colored disk, easily seen at night, can indicate the FARP situation or supply availability. During the day, signal flags of different colors can serve the same purpose. Sites should be concealed that limit enemy ability to detect FARP light sources. FARP personnel maintain light discipline until aircraft arrive. Personnel use light wands with hand-and-arm signals to mark departure, landing, and arming and refueling points.

G-24. Chemical lights come in several colors, including IR, which only NVDs can detect. Personnel use these in the same manner as flashlights and light wands. An effective technique for lighting the landing area is to dig shallow trenches in the shape of a “Y” and place both chemical and beanbag lights in the trenches. Landing aircrews will see the “Y” at a certain angle from the air, but it will not be visible to the enemy from the ground. Lights should be turned off when not needed.

Signals

G-25. In peacetime, aircrews turn off the anti-collision light to signal the ground crew to begin arming. As an alternate combat signal, aircrews may employ hand-and-arm signals during the day and cockpit navigation lights at night to signal the start of arming. Ground personnel can talk via intercom to the aircrew with the helmet assembly, rearming refueling personnel (HARRP) (CTA 50-900) with communications (HGU-24/P).

TRAFFIC LAYOUT

G-26. Standard marker panels on departure and arrival points improve the control of aircraft. FARP personnel use secured engineer tape, chemical lights, or beanbag lights at night to indicate desired aircraft movement or the location of ground guides. After servicing, the ground guide directs aircraft toward the departure end of the FARP.

CAUTION

If used, properly secure marker panels and engineer tape to avoid foreign object and debris (FOD) damage.

G-27. Figure G-1 shows an example of traffic layout. Figure G-2 shows an example of layout for simultaneous operations.

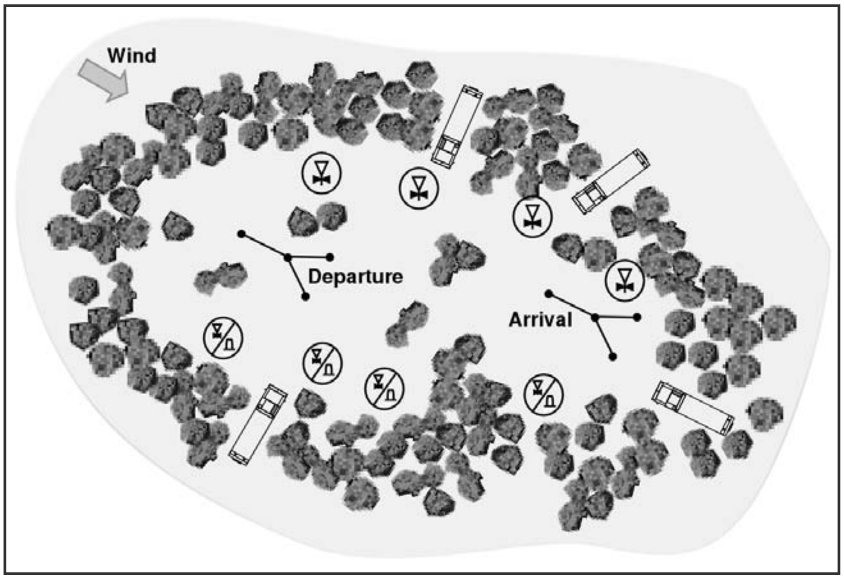


Figure G-1. Example of FARP Traffic Layout

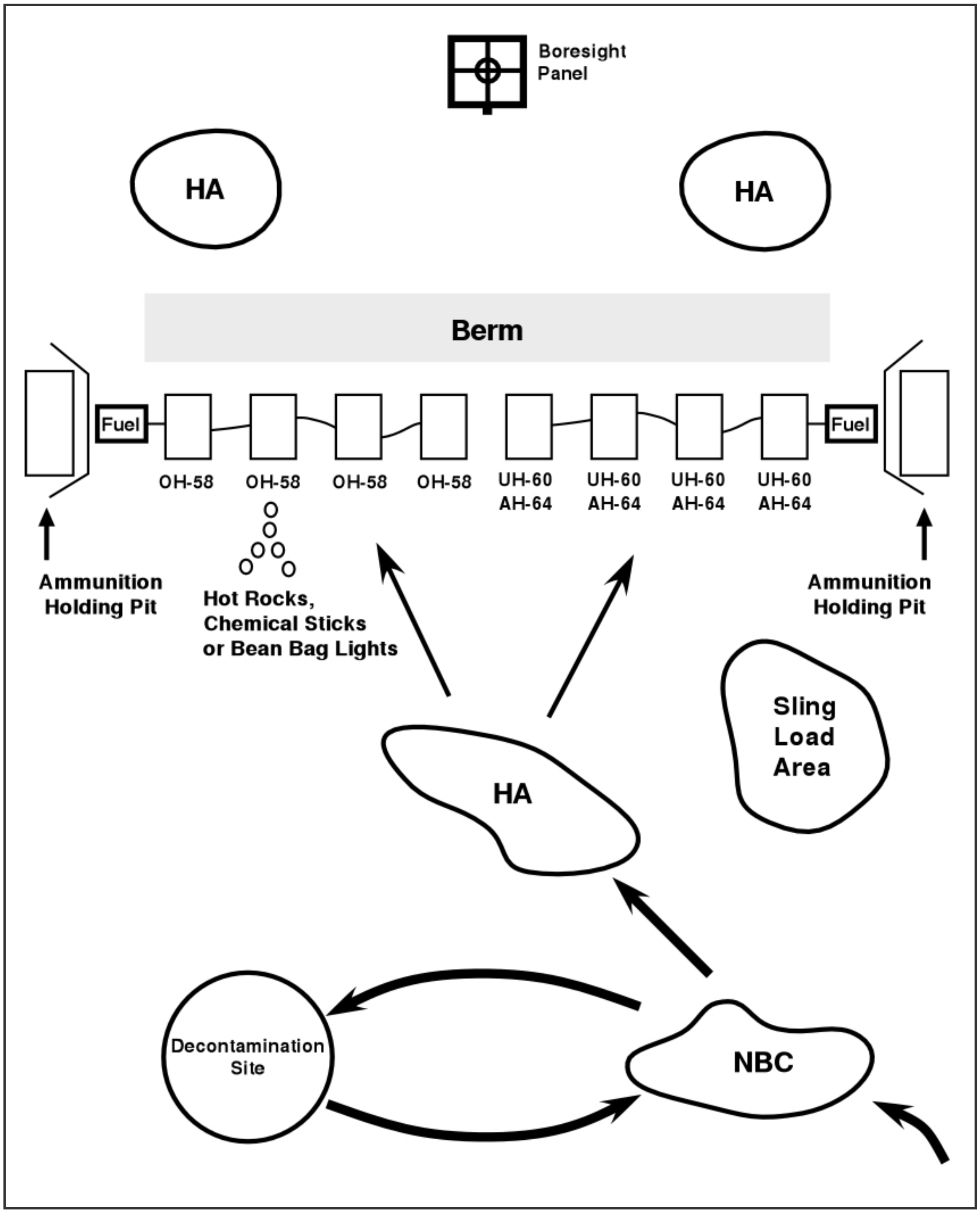


Figure G-2. Example of FARP Layout for Simultaneous Operations

G-28. Maintaining unit integrity during FARP operations improves aircraft control. Units select HAs, ingress routes, and egress routes to improve aircraft control. They involve the unit SO in planning routes in and out of the FARP and establishing checkpoints along the routes.

RADIO COMMUNICATIONS

G-29. FARP personnel avoid radio transmission to reduce enemy capability to detect and target electronic emissions. However, each FARP (active and silent) requires at least two FM radios for monitoring. This allows simultaneous monitoring of both the command and A&L nets. FARP personnel monitor the command net to determine when units are inbound and when the FARP needs to displace. FARPs communicate on A&L to inform the FSC Commander or S4 of their own supply needs.

G-30. Because FM radios are limited by LOS and range, the distance or location of the FARP may prevent FARP personnel from monitoring or transmitting on the designated command frequency. Aircraft retransmission or relay is an option. Critical messages that may require airborne relay include when the FARP:

- Is under attack.
- Relocates or ceases operations.
- Is not operational at the scheduled time.
- Requires resupply.
- Has a change in status.

G-31. Aircrews use radios only after aircraft have left the FARP. This procedure helps prevent the enemy from electronically pinpointing the FARP's location. Aircrews can relay less time-sensitive FARP reports and other communications in person after mission completion.

SECTION III – EMPLOYMENT FACTORS

LOCATION

G-32. FARPs locate as close to the AO as the tactical situation permits. They may locate as far forward as 18 to 25 km, dependent upon METT-TC; behind the FLOT; and within a committed brigade's AO. This distance increases aircraft time on station by reducing travel times associated with refueling. If possible, the FARP remains outside the threat of medium-range artillery.

FORWARD ARMING AND REFUELING POINT MISSION SUMMARY

G-33. The tempo and distances of future linear and nonlinear operations will increase demand for FARPs that support simultaneous operations. Aviation's ability to operate in depth and breadth requires equally mobile, austere, transitory FARPs located near the AO to maintain support. In less-intense operations, stability operations and support operations, FARPs may operate out of airheads or centralized base camps. Such facilities provide the security and hardening that allow FARPs to remain in place longer. In both linear and nonlinear operations, aircraft may have greater dependence on extended range fuel systems (ERFS) that can rapidly deplete available FARP fuel.

MISSION

G-34. FARPs support deep, close, and rear areas (Chapter 3). In many circumstances, vehicle-emplaced FARPs within the close area can also support aircraft returning from deep areas and reaction elements assigned to counter Level III rear threats. Units also may employ air-emplaceable jump FARPs to support rear or deep areas or to reinforce FARPs supporting decisive and shaping operations. The following discussion explains how FARPs support the three basic mission types in the context of decisive, shaping, and sustaining operations (Chapter 3).

Decisive Operations

G-35. Ground and air maneuver forces strike decisive blows. Ammunition palletized loading system (PLS) trucks with mission-configured loads push supplies down to the close area where FARP elements meet them at logistics RPs. When possible, the FSC Commander coordinates for direct delivery to the silent FARP to avoid transloading. Units travel to supply points for fuel or receive throughput from higher echelon 5,000-gallon tankers for transloading. Air-emplaced jump FARPs support limited resupply behind enemy lines and support mobile strikes involving major air assaults.

Shaping Operations

G-36. Mobile strikes, operations in deep areas, special operations, and air assaults characterize these operations. ARBs conduct operations in deep areas using extended-range fuel tanks so that only Class V FARP support may be necessary behind enemy lines. Special operations aircraft also may require Class V support. Air assault mission aircraft often employ extended-range fuel tanks but may need limited Class V support for armed aircraft providing assault security.

Sustaining Operations

G-37. Air-emplaced jump FARPs support UEx reaction aviation forces as they attack Level III rear threats to sustainment. Airheads and base camps support stability operations and support operations and initial deployment aviation needs at intermediate support bases. CH-47D and UH-60A/L aircraft conduct air movement to supplement ground-emplaced FARP activities and emplace jump FARPs supporting aerial resupply of ground forces in shaping operations in deep areas.

ENEMY

G-38. The S2 determines the threat that the FARP is likely to encounter. This determination includes the enemy's capabilities, posture, and weapon systems. For example, a FARP located in the close area may encounter an enemy reconnaissance element. A FARP in the rear area may be the target of enemy SOF. The S2 also determines the type of intelligence-gathering devices and sensors that the enemy has oriented on the proposed FARP location.

TERRAIN AND WEATHER

G-39. A good FARP location allows for the tactical dispersion of aircraft and vehicles. Tree lines, vegetation, shadows, and built-up areas can conceal FARP operations. FARP personnel employ terrain folds and reverse slopes to mask the FARP from enemy observation. They choose locations with masked MSR and ingress/egress routes for both ground and air.

TROOPS AND SUPPORT AVAILABLE

G-40. The FSC Commander must determine if enough troops are available to operate the desired size and number of FARPs. An implied task is the requirement to resupply and set up current and future FARPs. In addition, the proper personnel skills must be available in the proper numbers. For example, the 15J, 15X and 15Y personnel are school-trained to arm and repair weapon systems. Units must cross-train other personnel to fuel aircraft and load weapon systems but cannot cross-train them to perform specific repair functions. Depending on FARP location, security requirements will vary. In most cases, the FARP provides its own security.

TIME AVAILABLE

G-41. Mission duration is a critical planning factor. Longer missions require either multiple FARPs for different phases of the mission or a midmission FARP displacement combined with Class III/V throughput to a new FARP location. Planners must consider driving or flight time to proposed FARP sites. Planners:

- Allow sufficient time for FARP setup.
- Consider how far the FARP is from the supply points, and either plan supply throughput or arrange for a second silent FARP to go active to support the next phase of the mission.

G-42. The FARP supports rearming and refueling operations for a specific mission. When that mission is complete, the air assets make the transition to the rear AA to reconfigure ammunition loads, refuel, and perform required maintenance in preparation for other missions.

Brigade Refueling Points

G-43. Brigades employ refueling points to refuel other unit aircraft. The refueling point services aircraft as quickly as possible, allowing CS missions to continue. Rearming operations are not conducted at this site unless a Level III threat requires it. This practice allows more arming assets forward. Stationary in nature, the brigade refueling point locates in protected rear areas of the AVN BDE assembly area. It is manned and operated by the ASB. It supports organic and transient aircraft. The size and duration of the refueling point operations usually depends on the factors of METT-TC.

EMPLACEMENT

G-44. FARPs can be emplaced by ground or air. The means of emplacement depends on where and when the FARP is to be set up and how much Class III/V that the mission requires. The FARP should be designed so that a trained team can quickly place it into operation. This team should be able to load and move without leaving behind any debris, fuel, ammunition, or equipment; therefore, the FARP employs only those assets that it needs for the mission. Section VII covers FARP emplacement.

GROUND VEHICLE EMPLACEMENT

G-45. FARPs normally emplace using ground vehicles carrying bulk quantities of Class III/V. Ground vehicles also are the primary means of displacing and resupplying the FARP. However, ground-mobile FARPs have several disadvantages. Ground vehicles limit the rapid positioning of FARPs and are subject to road and traffic conditions. Vehicle accessibility limits where FARPs can locate. At mission completion, empty vehicles must return to distant supply points before they are available to emplace a new FARP. Vehicle malfunctions hamper overall mission capability.

AIR EMPLACEMENT

G-46. Emplacing FARPs by air offers three major advantages. The first is that a FARP can move about the battlefield much faster by air than by ground. The second advantage is that nearly every open field becomes a potential FARP site. Third, it is generally more practical, from a threat perspective, to air emplace FARPs in support of shaping operations in deep areas.

G-47. Air-emplaced FARPs also have disadvantages. Aerial emplacement depends on availability of supporting aircraft. If the enemy is advancing and no utility or heavy helicopters are available for FARP displacement, the entire FARP can be lost.

G-48. Aerial resupply of the FARP requires multiple loads to move bulk quantities of Class III/V. This additional air traffic can compromise the FARP location, increasing likelihood of enemy attack. Aircraft that sling load equipment and supplies cannot fly NOE. They are more visible to enemy sensors and missiles. Although materiel handling equipment (MHE) is often essential in a FARP, it may be impractical to sling load rough-terrain forklifts. The absence of MHE can seriously degrade ammunition handling.

COMBINED GROUND VEHICLE AND AIR EMPLACEMENT

G-49. The most efficient use of assets combines ground and air capabilities. When time is critical, the FARE, limited Class III/V, and advance-party personnel can air emplace. Remaining Class III/V products, MHE, and support personnel can move to the site via ground transportation. Aerial resupply of most FARPs occurs only when expenditure rates exceed organic ground transport capability. Heavy or utility helicopters can temporarily augment ground vehicles until supply flow returns to normal.

MOVEMENT PLAN

G-50. FARP movement plans should cover advance parties, march tables, a route reconnaissance, and alternate site locations. Detailed movement planning improves the accuracy of the FARP's operational time. Planning should include load plans for individual vehicles and trailers. Standard load plans do not exist for current equipment because equipment varies in each unit's MTOE. In addition, varying Class V requirements for different missions greatly affect vehicle load plans.

G-51. An advance party/security team, equipped with NBC detection equipment, reconnoiters the planned route and proposed FARP site. If the site is unsuitable, the team explores alternate FARP locations. If the site is usable, the advance party identifies areas for placing equipment. When remaining FARP personnel and equipment arrive, the advance party guides each vehicle to its position.

SECURITY

G-52. FARPs need enough organic security to thwart anticipated threats. Excess security equipment hinders movement. Inadequate security risks valuable assets. The advance party may include Stinger assets, CBRN teams, and crew-served weapons. The lead vehicle employs CBRN attack monitoring and warning equipment. Monitoring equipment locates upwind of the FARP site. Light antitank weapons protect against enemy armored scout vehicles. If available, FARPs should place electronic early warning systems along likely avenues of approach that are not covered by LPsor OPs. Armed helicopters in or near the FARP may act as quick-reaction forces. Units also can employ nonflying soldiers as UH-60-transportable quick-reaction teams.

G-53. The AVN BDE or BN TF coordinates with the brigade responsible for the sector in which the FARP locates and integrates into the air and ground security plan of nearby friendly forces. If a FARP is designated a priority target, UEx AD assets may employ near the FARP. These AD assets may cover friendly ingress and egress routes. Units establish checkpoints that allow positive identification for friendly aircraft using the FARP.

G-54. In the event of substantial attack, personnel execute a scatter plan to include movement to rallying points. These points increase personnel survivability and allow personnel to regain control of the situation.

RELOCATION

G-55. Several guidelines determine the relocation of a FARP. By definition, the FARP should be temporary, not staying anywhere longer than 3 to 6 hours unless it is hardened and located in a secure area such as an airhead. When the battle lines are changing rapidly or when the rear area threat dictates, the FARP must move often. Where air parity or enemy air superiority exists, the FARP must move often.

G-56. A FARP may relocate for any of the following reasons:

- It comes under attack.
- It receives the order to relocate.
- A preplanned relocation time has been set.
- A specific event occurs; for example, when the FARP has serviced a specific unit or a specific number of aircraft.
- A decision or trigger point is reached.

G-57. The message to relocate a FARP is passed in FRAGO format and should contain, as a minimum:

- Eight-digit grid coordinates of the next site and alternate site.
- Time that the FARP is to be mission ready.
- Fuel and ammunition requirements.
- Passage-of-lines contacts, frequencies, call signs, and ingress and egress points.
- Enemy situation at the next site.
- March table or movement overlay.
- A logistics release point (LRP) to the FRAGO.

ADVANCE-PARTY ACTIONS

G-58. The advance party breaks down one section, consisting of one heavy expanded mobility tactical truck (HEMTT) or one FARE. Next, it rolls up and packs hoses and refuels the tanker if fuel is available. The advance party then transports, when possible, enough ammunition for two mission loads per aircraft, rolls up the camouflage nets, and sets up a convoy.

G-59. When the new site is deemed suitable, the advance party:

- Determines landing direction.
- Determines and marks refuel and rearm points, truck emplacements, and ammunition emplacements.
- Sets up equipment.

G-60. Remaining elements break down the FARP in the same way and sequence as described above. When personnel arrive at the new site, they move into new locations, as directed by the advance party, and set up arming and refueling points.

SITE PREPARATION

G-61. FARP personnel:

- Police the FARP site before operational use.
- Prevent rotor wash from injuring personnel or damaging equipment, remove sticks, stones, and other potential flying objects.
- Clear scrub brush, small trees, and vegetation from landing and takeoff areas.
- Predesignate landing, takeoff, and hover areas to minimize accidents and injuries.

- Clear the areas around the rearming and refueling points and the pump assemblies, removing dried grass and leaves to avoid fires.

G-62. Aircraft may sink in wet, snow-covered, thawing, or muddy ground. Reinforce unstable ground with staked, pierced steel planking or other suitable material.

MULTIPLE FORWARD ARMING AND REFUELING POINT OPERATIONS

G-63. The degree of air superiority and the factors of METT-TC determine the number of FARPs and the number of points at each FARP. Multiple FARP operations may be necessary. When feasible, units arrange assets into two or three independent and mobile FARP operations. The ideal situation would include an active FARP, a silent or relocating FARP preparing to go active, and a rapid-reaction air-emplaced jump FARP on standby.

G-64. The active FARP conducts refueling and rearming operations. The silent FARP has all equipment and personnel at the future site, but it is not yet operational. The jump FARP deploys for special, short-notice missions such as rear operations or reinforcement of other FARPs. It is composed of a FARE, 500-gallon collapsible fuel drums, and/or ammunition (as the mission dictates). The jump FARP is transported and emplaced by ground or air and employed when dictated by time or geographical constraints. It allows uninterrupted support during FARP emergencies.

G-65. When employing multiple FARPs, it is important to coordinate resupply. If Class III/V throughput occurs at a designated time, active FARPs stop receiving supplies and silent FARPs start receiving them. If properly timed, the active FARP expends all of its supplies just as a silent FARP becomes active. If time permits, FARP personnel transport unused Class III/V to the new site. Otherwise, they camouflage supplies and pick them up later. FARP personnel destroy supplies only as a last resort. TM 750-244-3 provides guidance on asset destruction.

G-66. A typical ground-emplaced mobile FARP can rearm and refuel eight aircraft simultaneously. It consists of eight rearm/refuel points. The silent FARP is identically configured and prepared to assume operations.

DAMAGED OR DESTROYED ASSETS

G-67. If attacked, FARP personnel vacate the FARP site. The nature of the compromise determines what can be salvaged. The refueling equipment is most critical. Without HEMTT tankers or FARE systems, refueling aircraft will be difficult. Higher echelon, less-mobile 5,000-gallon semitrailers may need to replace destroyed HEMTT tankers.

G-68. FARP personnel replace damaged or destroyed equipment quickly to avoid mission disruption. Report personnel injuries, and damage to vehicles, equipment, and supplies to the FSC commander. If assets are unavailable in the unit, emergency support may be available from other brigade sources. This support could range from borrowing equipment to using another battalion's FARP. Units inform aviation elements of any changes in the status of the FARP sites, to include alternate arming and refueling instructions.

G-69. Planners prioritize essential equipment or products before the mission starts. Inform all FARP personnel of the priorities. For example, keeping Hellfire missiles from the enemy would be a high priority because the missiles are expensive and in short supply.

SECTION IV – REFUELING OPERATIONS

G-70. This section discusses the FARE, the advanced aviation forward area refueling system (AAFARS), site layout, support equipment, personnel refueling requirements, and refueling methods.

FORWARD AREA REFUELING EQUIPMENT

G-71. The FARE system (NSN 4930-00-133-3041) consists of a pump assembly, a filter/separator, hoses, nozzles, grounding equipment, and valves. Other support equipment includes fire extinguishers, grounding rods, waste cans, 5-gallon water cans, absorbent material, fuel source, and the fuel sampling kit. The pump has two hose connections and is rated at 100 gallons per minute (GPM). When two hoses are used, the actual flow rate may be under 50 GPM. The fuel source is usually 500-gallon collapsible drums. Other fuel sources include 600-gallon pods; 1,200-gallon tank and pump unit (TPU); 3,000- or 10,000-gallon collapsible tanks; 2,500-gallon HEMTT tanker; 5,000-gallon semitrailer; railroad tank cars; and USAF cargo-plane fuel tanks.

ADVANCED AVIATION FORWARD AREA REFUELING SYSTEM

G-72. AAFARS will replace the FARE system. The AAFARS is a four-point refuel system providing a minimum of 55 GPM at each refuel point. A distance of 100 feet separates each refueling point. The primary fuel source is the 500-gallon collapsible drum although, like the FARE, the system is compatible with other fuel sources. The key AAFARS function is to simultaneously refuel four helicopters in tactical locations using center point refueling (D-1), closed-circuit refueling (CCR), or open-port nozzles. The system interfaces with existing U.S. Army, Air Force, Navy, and Marine Corps aircraft and is interoperable with NATO and other allied-nation refuel equipment.

FORWARD AREA REFUELING EQUIPMENT SITE LAYOUT

G-73. Skilled, experienced personnel can set up a FARE within 15 minutes of site arrival.

G-74. FARE system setup should exploit terrain features, achieve maximum dispersion, avoid obstacles, and accommodate the aircraft type that the FARP will service. When planning the layout, personnel must consider the minimum spacing required between aircraft during refueling. The spacing depends on the type of aircraft and rotor sizes. Proper spacing reduces the possibility of collision and damage caused by rotor wash. The minimum rotor hub-to-rotor-hub spacing for the CH-47 is 180 feet. Spacing for other helicopters is 100 feet.

G-75. If the area has a prevailing wind pattern, FARP personnel orient the refueling system so that helicopters land, refuel, and take off into the wind. Figure G-3 shows a FARE setup under various wind conditions. Refueling points should be laid out on the higher portions of sloped sites, not in hollows or valleys. Fuel vapors are heavier than air and flow downhill. In addition, fuel sources should be downwind of the aircraft's exhaust to reduce explosion hazard. These considerations apply to any FARP setup with the FARE, 5,000-gallon tanker, or HEMTT.

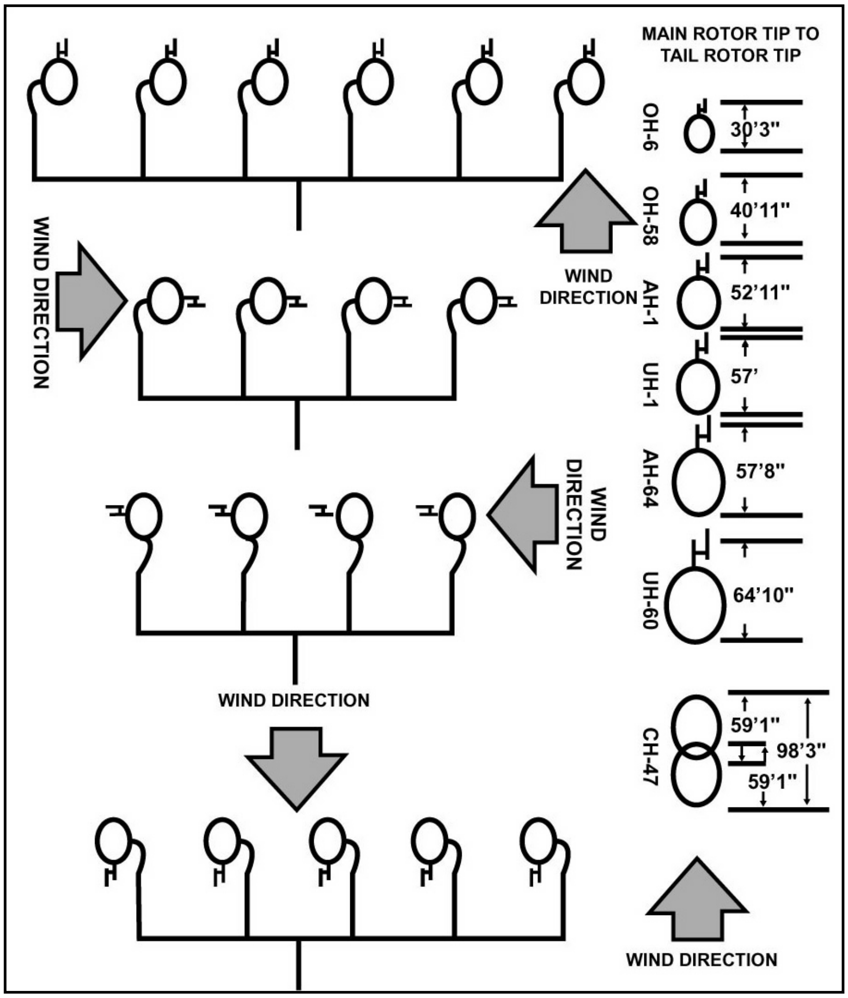


Figure G-3. Example of FARE Setup Under Various Wind Conditions

G-76. The FARP layout in desert, dust, and snow environments should not require hovering where wind and rotor wash may cause brownout or whiteout. Special considerations are necessary when aircrews operate with night vision devices (NVD).

SUPPORT EQUIPMENT

G-77. FARE or FARP personnel perform the following procedures:

- Locate a fire extinguisher at each refueling nozzle and at the pump and filter assembly.
- Place a water can at each refueling point; the water enables operators to wash fuel from skin and clothes and dirt from fuel nozzles.
- Place a waste fuel pan next to each nozzle to contain fuel spillage.

PERSONNEL REFUELING REQUIREMENTS

G-78. During refueling, one person stays next to the main emergency fuel shut-off valve and monitors refueling. At each refuel point, one person refuels the aircraft while another remains outside the aircraft's main rotor disk and monitors with a suitable fire extinguisher where he can see both the pilot at the controls and the refueler with the nozzle. Each rearming/refueling point has one supervisor, one refueler, and two rearming personnel. Additional personnel may be supplemented from existing assets, depending on METT-TC.

REFUELING METHODS

G-79. Units conduct hot or rapid refueling while aircraft engines are running and rotors are turning. Cold refueling occurs when aircraft engines have been shut down. In a field environment, units normally use the hot refueling method. There are two types of hot refueling—open-port and CCR.

OPEN-PORT

G-80. Units open-port refuel with an automotive type of nozzle, inserted into a fill port of larger diameter. It is not as fast or as safe as CCR. The larger port allows fuel vapors to escape. In addition, dust, dirt, rain, snow, and ice can enter the fill port during refueling, risking fuel contamination. Spills from overflowing tanks also are more likely. Units should use the open-port rapid refueling method only during combat or vital training. In these cases, the unit commander makes the final decision. Units conduct simultaneous arming and open-port refueling activities only when the combat situation and benefits of reduced ground time outweigh the risks.

WARNING

As aircraft move through the air, they build up static electricity. Static electricity also builds up on refueling equipment as fuel passes through the hoses. The refueler must ground the aircraft, fuel nozzle, and pump assembly to prevent sparks and explosions. Static electricity buildup is greater in cool, dry air than in warm, moist air.

CLOSED-CIRCUIT

G-81. CCR is accomplished with a nozzle that mates with and locks into the fuel tank. This connection prevents fuel spills and vapors from escaping at the aircraft fill port and reduces the chances of fuel contamination.

SECTION V – AMMUNITION AND ARMING OPERATIONS AND TRAINING

AMMUNITION OPERATIONS

G-82. This section discusses ammunition and arming operations, aircraft flow and mix, and training.

AMMUNITION STORAGE

G-83. The ready ammunition storage area (RASA) contains the ammunition to support aircraft arming. Ready ammunition is that quantity required to support the mission beyond one load. The RASA requires separate areas for the assembly and disassembly of rockets, aircraft flares, and malfunctioned ammunition. AR 385-contains more information.

G-84. The basic load storage area (BLSA) contains the specific quantity of ammunition required and authorized to be on hand at the unit to support 3 days of combat. A basic load includes a variety of ammunition such as small arms, grenades, and mines, in addition to aircraft-specific ammunition.

AMMUNITION SAFETY PROCEDURES

G-85. All personnel must observe required safety procedures to prevent the accidental firing of ammunition or propellants. Improper handling or stray electricity may cause ammunition to explode and result in loss of life, serious injury to personnel, or serious damage to equipment.

G-86. Fin protector springs effectively short-circuit igniter leads, preventing accidental ignition. Armament personnel:

- Install shorting wire clips and fin protectors on all rockets immediately after unloading aircraft launchers or when rockets are not in a launcher.
- Ensure a sufficient quantity of clips and protectors are at each rearm pad; keep them after arming aircraft.
- Secure these clips and wire protectors to prevent foreign object damage.

G-87. Armament personnel must assemble rockets according to the instructions in TM 9-1340-222-20. They retorque unfired rockets remaining in aircraft launchers after a mission. Dropped complete rockets, rocket motors, or fuze-warhead combinations may cause the fuze or warhead to function prematurely. They return dropped crated or uncrated rockets to supporting ammunition supply points.

G-88. In base camp or semi permanent training facilities, units should build barricades around the RASA, BLSA, and rearm pads. Barricades should be at least three-feet thick to effectively reduce hazards from a fire or an explosion. Rocket motors may go off, so point rockets away from aircraft, personnel, and built-up areas and towards berms, barricades, and open spaces.

G-89. Armament personnel cover ammunition to protect it from the weather. In high temperatures, covers must not create excessive ammunition heating. Dark covers placed directly on ammunition pallets can create temperatures up to 180 degrees Fahrenheit.. These high temperatures can damage missile systems. Select light-colored covers to shade ammunition and allow air circulation.

G-90. Armament personnel should follow these procedures:

- Do not stack rockets; the weight will damage bottom layers. If unpacked, store rockets on racks built at the site.
- Do not place rockets directly on the ground; place rockets on a drop cloth or wooden pallet that allows air to circulate.
- Secure rockets to keep them from rolling downhill.

G-91. For maximum safety, armament personnel:

- Minimize the amount of ammunition stored at the RASA and the rearm pads.
- Limit the RASA to 2,000 pounds of net explosive weight (NEW) per cubicle.
- Do not exceed the following limits:
- Limit each rearm pad to the ammunition required to fully arm one aircraft plus the rocket quantities for a second load; this practice facilitates exchanging the missile and rocket launchers if the mission dictates.
- Store ammunition for a second aircraft off the pad, properly covered—and pointed away from aircraft, personnel, and other ammunition.

G-92. Table G-1 shows common items used during helicopter rearm operations. Table G-2 shows minimum safe distances between rearm points, RASAs, and activities not ammunition-related.

Table G-1. Common Items, Helicopter Rearm Operations

ITEM	NET EXPLOSIVE WEIGHT
Hellfire missile	34.4 pounds
Rocket, 2.75-in, HE (H489 or H490)	10.0 pounds
Rocket, 2.75-in, HE (H488 or H534)	11.0 pounds
Cartridge, 30-mm, HE (B130 or B131)	.058 ounces
Small arms ammunition	None

Table G-2. Minimum Safe Distances (in Feet)

FROM	TO	BARRICADED	UNBARRICADED
Rearm Point	Rearm point	100-180*	100-180*
	Inhabited buildings and unarmed aircraft	400	800
	Public highways	240	480
	POL storage or refuel facilities	450	800
Ready Ammunition Storage Area	Rearm point	75	140
	Inhabited buildings and unarmed aircraft	50	1,010
	Public highways	305	610
	POL storage or refuel facilities	505	1,010
* Distance is based on rotor clearance.			

ARMAMENT PAD SETUP

G-93. Armament pad setup affects overall aircraft turnaround times. During combat missions, before aircraft arrive, armament personnel place enough ammunition on armament pads for at least one arming sequence. They lay out ammunition in loading order. Armament personnel lay out a full ammunition load in case aircraft expend the entire initial load. Figure G-4 shows two typical layouts for major gunnery training facilities or well-prepared base camp helicopter rearm points. In combat, such preparation is impossible. Figure G-5 shows three-dimensional views.

PERSONNEL REQUIREMENTS

G-94. The weight of the ammunition containers and Hellfire missiles requires that at least two people load each aircraft. When a full complement of ammunition types is required, the safest approach is to load the turret system first, followed by the inboard wing stores. Two personnel arm the turret system to ensure link removal and less jamming during uploads. Rocket ammunition requires multiple personnel and tools to remove and prepare it before loading.

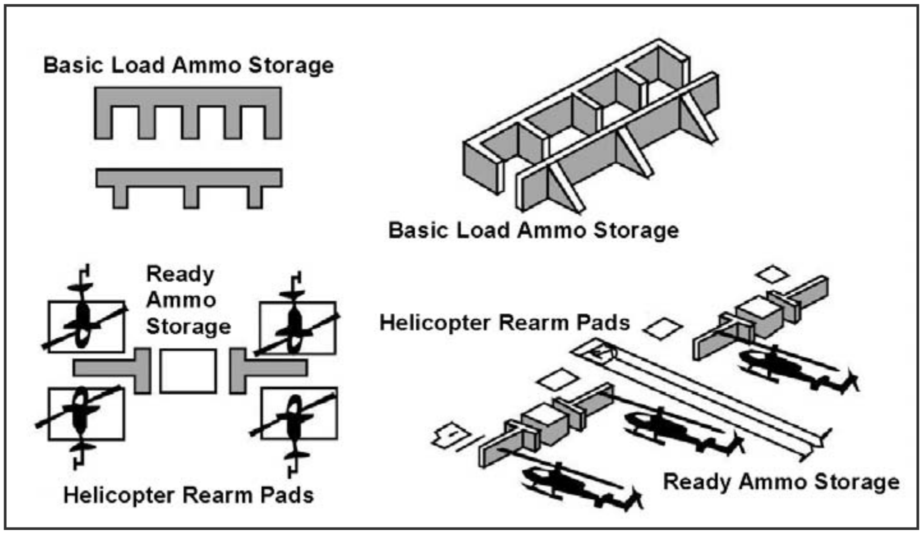


Figure G-4. Typical Layouts for Rearm Points

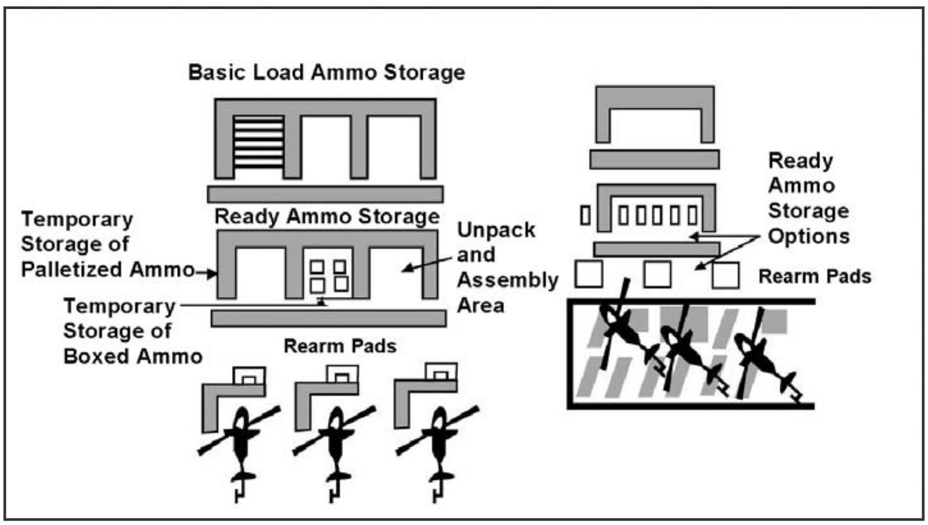


Figure G-5. Three-Dimensional View of a Rearm Point Plan

AIRCRAFT FLOW AND MIX

LIMITATIONS

G-95. Several factors can degrade efficiency and increase turnaround times. These factors include crew size, night operations, NBC environment, weapons and ordnance mix, attrition, and maintenance problems.

Personnel

G-96. For rapid turnaround times, FARPs need sufficient personnel to service aircraft. Each point should be staffed by one supervisor, one refueler, and two armament personnel. Each Class III HEMTT requires one person to man the emergency shutoff valve. Dividing available personnel and equipment into multiple FARPs requires careful planning, or none will be mission capable. Personnel shortages may require aircraft crew members to assist arming and refueling. Turret and Hellfire ammunition requires at least two loaders. During the day, under ideal conditions, a well-trained crew of two can fully arm an AH-64 in 40 minutes. A crew of four reduces time by 3 to 6 minutes.

Night Operations

G-97. When arming turret weapons at night, personnel need NVD or supplemental lighting such as flashlights. In addition, arming times will be three to eight minutes longer at night, especially under low-light conditions.

Nuclear, Biological, and Chemical Conditions

G-98. If chemical protective clothing is worn, refueling times increase by two to four minutes and rearming times by 2 to 6 minutes. Fatigue increases the longer a soldier remains under MOPP conditions. Personnel must drink more water when in MOPP to reduce the possibility of heat injuries.

Weapons and Ordnance Mix

G-99. Weapons and ordnance mix can be a limiting factor. For example, an AH-64 may have a weapons load of two Hellfire missile launchers and two 19-tube rocket launchers. A mission change may require that AH-64s be set up for Hellfire heavy (four Hellfire missile launchers). This change requires removal of two 19-tube rocket launchers and replacement with Hellfire missile launchers. While weapons changes and boresighting are better accomplished in the AA, mission timelines may not permit return to the AA; therefore, equipment and tools to accomplish this boresighting must be at the FARP. In addition, the launchers may need boresighting, which requires special equipment. Such a time-consuming changeover must be in the commander's mission-support decision matrix.

Armament Maintenance

G-100. Aircraft with armament maintenance problems may interrupt the flow of FARP operations. These aircraft should be positioned away from the arming and refueling area to keep the flow of aircraft constant.

Simultaneous Arming and Refueling

G-101. Minimizing aircraft ground time in the FARP is important for two reasons. First, longer aircraft service times mean less time on the battlefield. Second, aircraft are extremely vulnerable on the ground. Simultaneous arming and refueling minimizes ground time; however, they carry their own risk.

G-102. Typically, ARBs and ARSs rotate companies through the FARP to support continuous or phased attacks. This means it is critical to maintain company integrity at the FARP. Otherwise, platoons and teams waiting for open armament/refuel points may not be able to rejoin already serviced aircraft in the battle for another 40 minutes. Meanwhile, other companies begin to arrive at the FARP creating additional backlog and less time on station. When possible, all company aircraft must arm and refuel at the same time.

G-103. Depending on task organization and the number of mission-capable aircraft, FARPs require eight armament/refuel points. This quantity supports simultaneous servicing of most company-sized organizations. Each HEMTT tanker and upcoming AAFARS can service up to four refuel points. Extra refuel hose capacity allows units to cross-level fuel from HEMTT tankers to 500-gallon drums without interrupting aircraft refueling. With sufficient drums in place, as fuel gets low, units can transfer tanker fuel to drums, allowing tankers to go for top off. This practice is a good strategy as the FARP prepares to displace and needs fuel resupply at the next location. An alternate strategy is to initially locate all filled drums at the silent FARP, thereby allowing tankers from the initial location to resupply without a lull in the next FARP's mission.

Terrain

G-104. A four-point FARP requires an area larger than a football field. Finding a single cleared, concealed, level area for eight service points may prove difficult. If terrain dictates, consider splitting away part of the FARP to a nearby area.

G-105. FARPs may be divided into two sections, up to 1 km apart, supporting two to four points each. This layout imposes C2 and security challenges and prevents personnel who finish servicing their aircraft from assisting others a kilometer away. However, it supports company integrity and dispersion, making it harder to target the FARP with artillery. Figure G-6 depicts a FARP split into two areas for dispersion.

Personnel

G-106. A FARP with eight service points theoretically requires at least 10 refuelers—8 to refuel aircraft and 2 manning the emergency shut-off valves. It also requires 12 arming personnel (2 per service point). This requirement can overextend the III/V platoon because there is a need for a second silent or resupplying FARP.

G-107. One solution is cross training personnel to assist in multiple FARP functions. Units can train 89Bs, 77Fs, and copilots to assist in arming functions. At a 50-gallon-per-minute rate, a 77F can finish refueling in as little as six minutes and then assist in arming.

G-108. If in the FARP up to 40 minutes, pilots and copilots may stretch by alternately leaving the aircraft. They can assist some arming functions such as lifting Hellfire missiles and loading rockets. Units also can arrange UH-60 transport of FARP personnel, minus drivers, to newly opening FARPs.

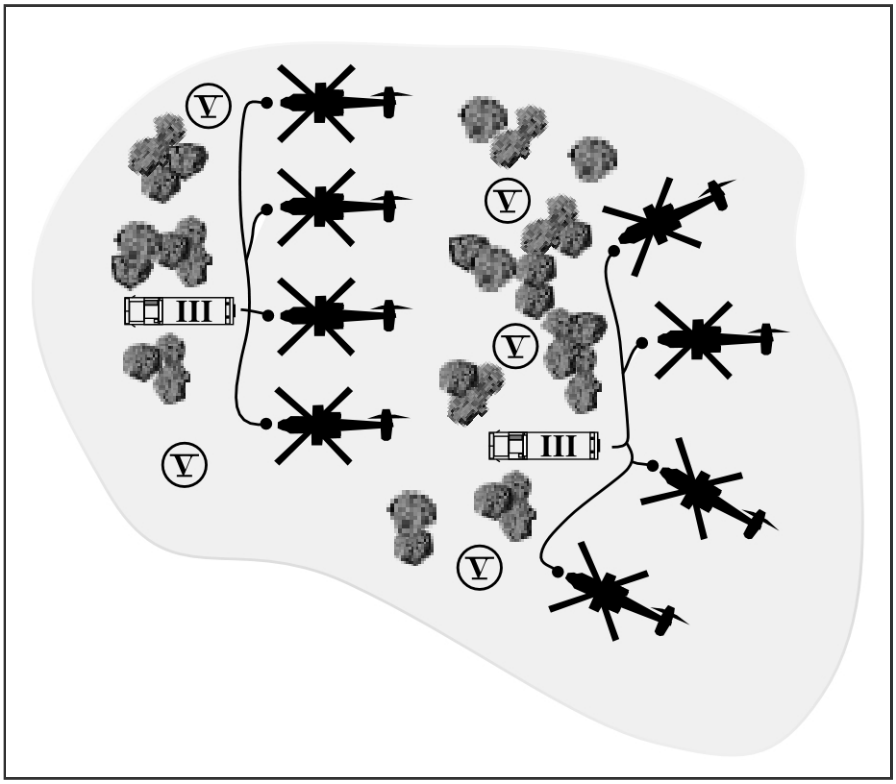


Figure G-6. Example of a Tactical FARP Layout

Equipment

G-109. At least one HEMTT tanker and two FAREs or one AAFARS must support each four-point FARP. More typical would be two HEMTT tankers, given a less-than-routine availability of UH-60 aircraft to transport 500-gallon drums. Even greater numbers of HEMTTs and heavy expanded mobility ammunition trailers (HEMAT) must support each FARP. Again, as with personnel constraints, it is difficult to operate more than one FARP with available equipment. In addition, there is the time-consuming challenge of resupplying HEMTT tankers and HEMATs to support ongoing and future FARP operations.

G-110. A solution may be coordinated throughput of mission-configured loads using PLS trucks from supporting ammunition units. These PLSs reduce MHE needs by hydraulically placing entire pallets onto the ground for manual access to ammunition. The S4 and FSC Commander can coordinate palletized ammunition throughput directly to silent FARP locations and near projected future armament pads.

AIRCRAFT MIX

G-111. If a Longbow unit splits into two platoons or three teams, the FCR aircraft usually is the scout and may have more gun and rocket ammunition. FARP personnel identify the FCR aircraft and direct it to supply points that specialize in loading more of that kind of Class V.

G-112. Scout aircraft may expend little ammunition and may primarily need refueling, which is not as time intensive. They may overwatch until another aircraft completes servicing and can assume the overwatch role.

ATTACK OPERATIONS SUPPORT REQUIREMENTS

G-113. ARBs and ARSs have three primary techniques for attacking the enemy—continuous attack, phased attack, and maximum destruction. FM 3-04.126 covers these in detail. FARP support is planned differently for each attack method.

Continuous Attack

G-114. This is a primary driver for maintaining company integrity in the FARP. In this technique, battalions and squadrons rotate companies through the FARP. Units cannot afford to have a backlog waiting on companies before them.

Phased Attack

G-115. To give the commander more time operating with two companies in the attack, he can operate two FARPs simultaneously. The normal silent FARP can go active to allow servicing of two companies at the same time.

Maximum Destruction

G-116. Units often employ this technique in a target-rich environment. Aircraft may employ extended-range tanks to reach the objective area and return on one fuel load. If the target is large and one ammunition load is insufficient, given one pylon's loss to an extended range fuel tank, units may air emplace a jump FARP with only limited Class V.

G-117. UH-60 aircraft can internally carry at least 15 Hellfire containers in the cargo compartment doorway area, while externally transporting another 9 palletized Hellfire missiles for a total weight of about 4,800 pounds. This capability allows each UH-60 to resupply three AH-64s with eight missiles each. Units also can externally transport three Hellfire pallets (1,800 pounds each) in three separate 10,000-pound slings if UH-60s employ extended-range fuel tanks that would make internal loading/unloading more difficult.

TRAINING

G-118. A successful FARP operation is the final product of a series of progressive, skill-building programs to include the cross training of assigned and attached personnel. Coordinated operations are achieved by integrating team training with programs that emphasize personal skill development. Training progresses as individuals integrate into operational teams.

INDIVIDUAL AND COLLECTIVE TRAINING

G-119. Successful FARP operations result when personnel train to operate as a team. The unit does not limit individual and collective training to just arming and refueling activities. The unit trains FARP personnel in firefighting and rescue procedures according to FM 10-67-1. Commanders train FARP personnel to prepare Class III/V sling loads (FM 4-20.137).

G-120. Every team member should be proficient in day and night land navigation. Because night relocation of the FARP is common, units should emphasize night land navigation skills.

G-121. Team members should have extensive driver training to include operator maintenance procedures. Delivering products to the FARP is as critical as operating the FARP. Team members must also be able to check fuel quality using the visual sample, Aqua-Glo, and American Petroleum Institute gravity-testing methods.

G-122. Commanders train team members in CBRN detection and decontamination. This training must emphasize FARP vulnerability to direct NBC attack and cross contamination from aircraft. It stresses the need for FARP operations in MOPP gear to survive and continue the mission.

G-123. Personnel should be able to identify and know the arming and refueling procedures for each aircraft that will be utilizing the FARP.

SECTION VI – EMPLACEMENT METHODS

G-124. This section discusses ways to accomplish the emplacement of the FARP by ground vehicles, helicopters, Marine, and Air Force assets.

GROUND VEHICLES

G-125. Small, maneuverable, easy-to-conceal ground vehicles, such as the HMMWV, can emplace the FARE platform. The disadvantage is that HMMWVs may not be available or may be needed for other FARP missions.

G-126. The 3/4-ton trailer is an option for FARE transport. Planners should consider bolting the FARE system (pump and filter/separator) to the trailer frame. The trailer is light enough to transport by HMMWV or sling load by UH-60. To complete the FARP package, units can air or ground emplace fuel and ammunition.

G-127. Another HMMWV or 3/4-ton trailer capability is transport of ammunition from the cargo truck to the armament pad. It can also move the 500-gallon collapsible fuel drums around the FARP if the collapsible fuel-drum tow assembly is available.

G-128. The M977 HEMTT and M978 HEMTT tanker are the primary movers of Class III/V supplies to the FARP (Figure G-7). The M977 can carry 22,000 pounds of cargo. Its onboard crane has a 2,500-pound lift capability. The crane enables the HEMTT to load and offload ammunition without other materiel-handling equipment.

G-129. The M978 tanker holds 2,500 gallons of fuel and provides two refueling points. When paired with the Hot Tactical Aircraft Refueling System (HTARS), the M978 can simultaneously refuel four aircraft.

G-130. The M977 or M978 are prime movers for the HEMAT (M989). It carries up to 22,000 pounds of ammunition, four 500-gallon collapsible drums, or two 600-gallon fuel pods. Generally, one armament HEMTT with HEMAT can support up to four OH-58D or three AH-64 aircraft.

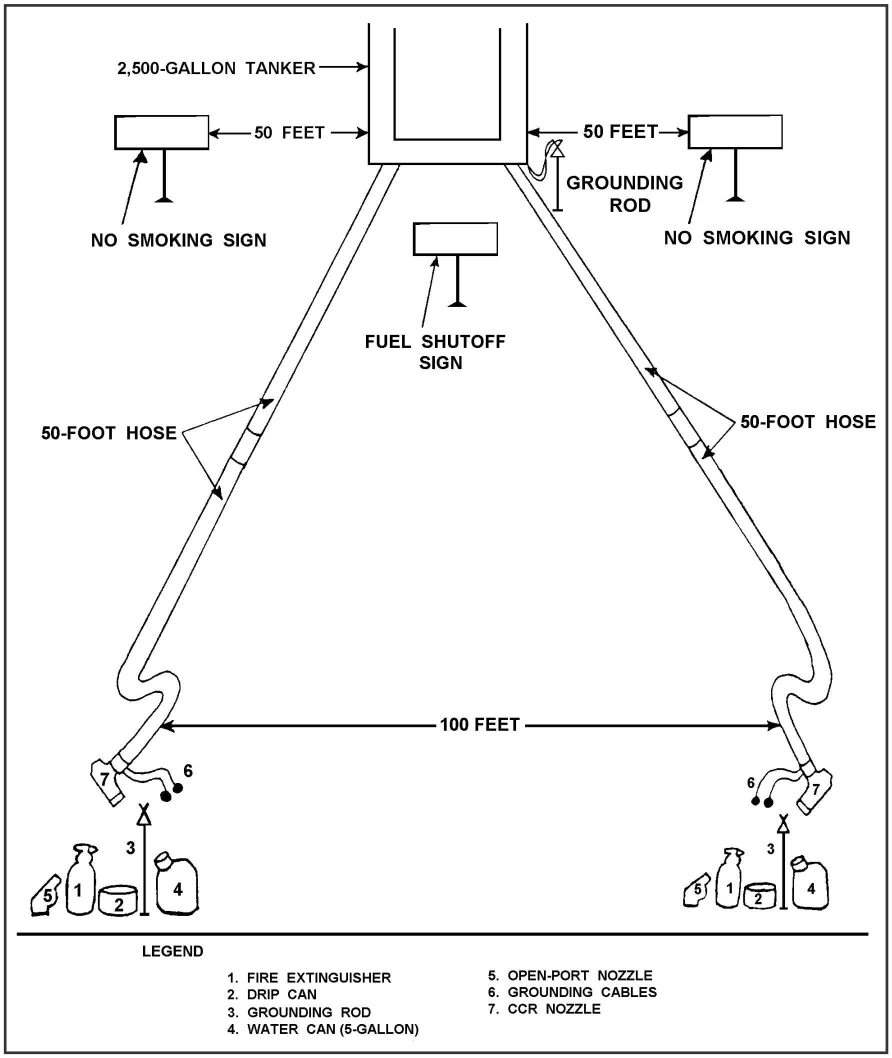


Figure G-7. HEMTT FARP Layout

G-131. The 5-ton truck transports either ammunition or fuel. As a fuel transport, it carries a TPU consisting of two 600-gallon fuel pods and refuel equipment for two fuel points. The 5-ton truck can tow one 1/2-ton trailer for ammunition, a 600-gallon fuel pod, or a 500-gallon fuel drum.

JUMP FORWARD ARMING AND REFUELING POINT

G-132. Two UH-60Ls can deliver an austere jump FARP to its new location. One UH-60L can carry up to two 500-gallon collapsible fuel drums and part of the FARP crew. The other UH-60 internally transports up to 15 Hellfire missiles and can sling load the FARE or the AAFARS, which may mount to a 3/4-ton trailer. If the FARE or AAFARS is trailer mounted, additional Class V transport is feasible if trailer sides are built up with wood to include a cover. In a second lift, the UH-60s can transport two more fuel drums and additional mission ammunition. Aircraft can sling load three Hellfire pallets at once for 27 total missiles.

ADVANCED AVIATION FORWARD AREA REFUELING SYSTEM

G-133. The AAFARS is a two-person portable system. Its components include a 200-GPM diesel-engine pump, a standard element separator, lightweight suction/discharge hoses, and dry break couplings. It can support up to four refuel points. The AAFARS and CH-47 ERFS are shown in Figures G-8 and G-9.

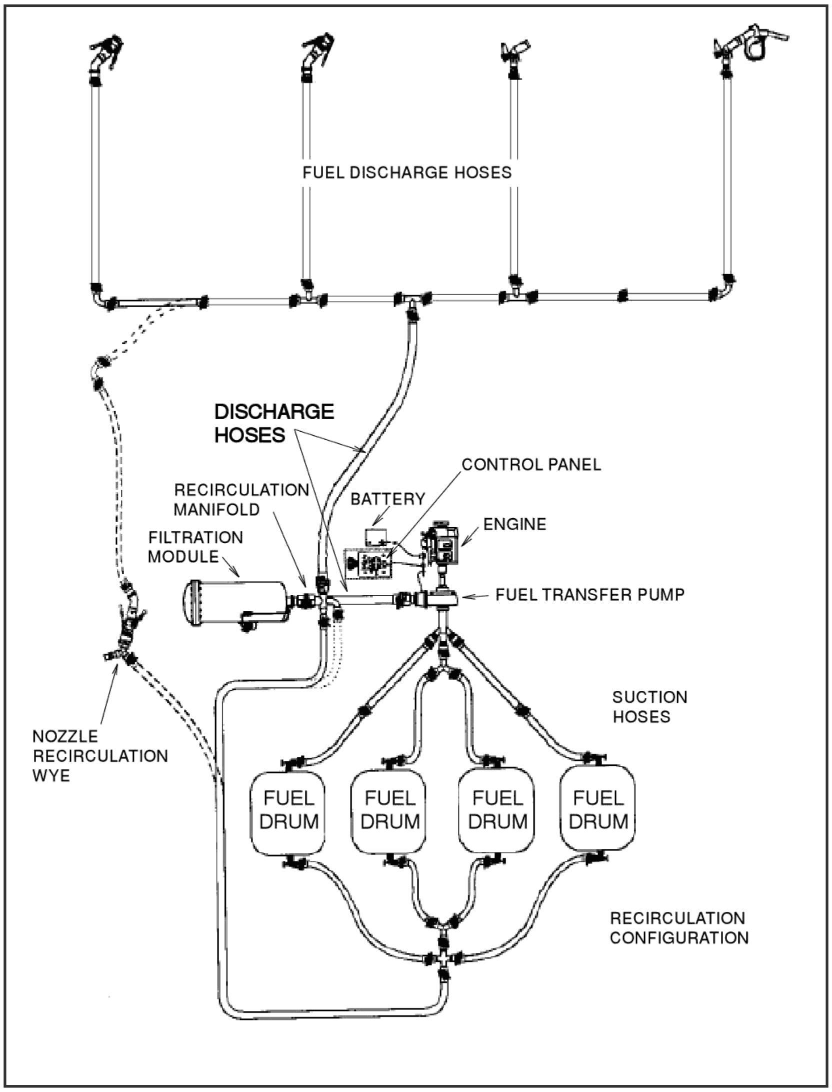


Figure G-8. AAFARS Layout Configuration

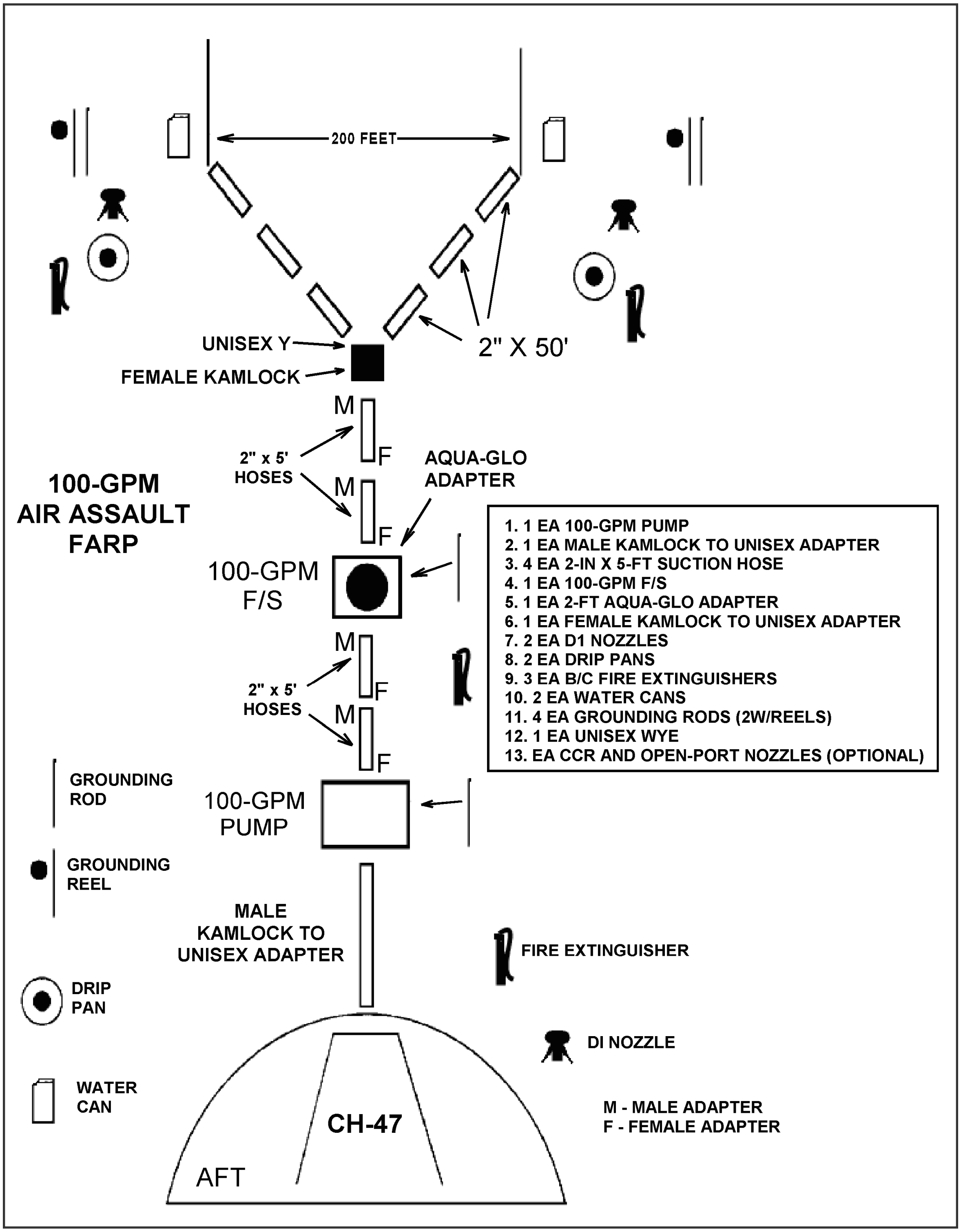


Figure G-9. ERFS Layout Configuration

FAT COW

G-134. The CH-47's ERFS, commonly known as Fat Cow, is a modular, interconnectable system, composed of up to four 600-gallon noncrashworthy tanks, four electrically operated fuel pumps, and a vent system. It mounts on the left side of the aircraft cargo area; exact placement depends on aircraft center-of-gravity limits. This system provides up to 2,320 gallons to refuel other aircraft.

G-135. With the ERFS, space for cargo and passengers is extremely limited. The aircraft can seat four people on each side. Figure G-10 shows the proper placement for remaining required equipment to include the FARE. With a MACOM waiver, units can transport additional FARP or security personnel, as in Task Force Hawk, in which 18 infantrymen provided security.

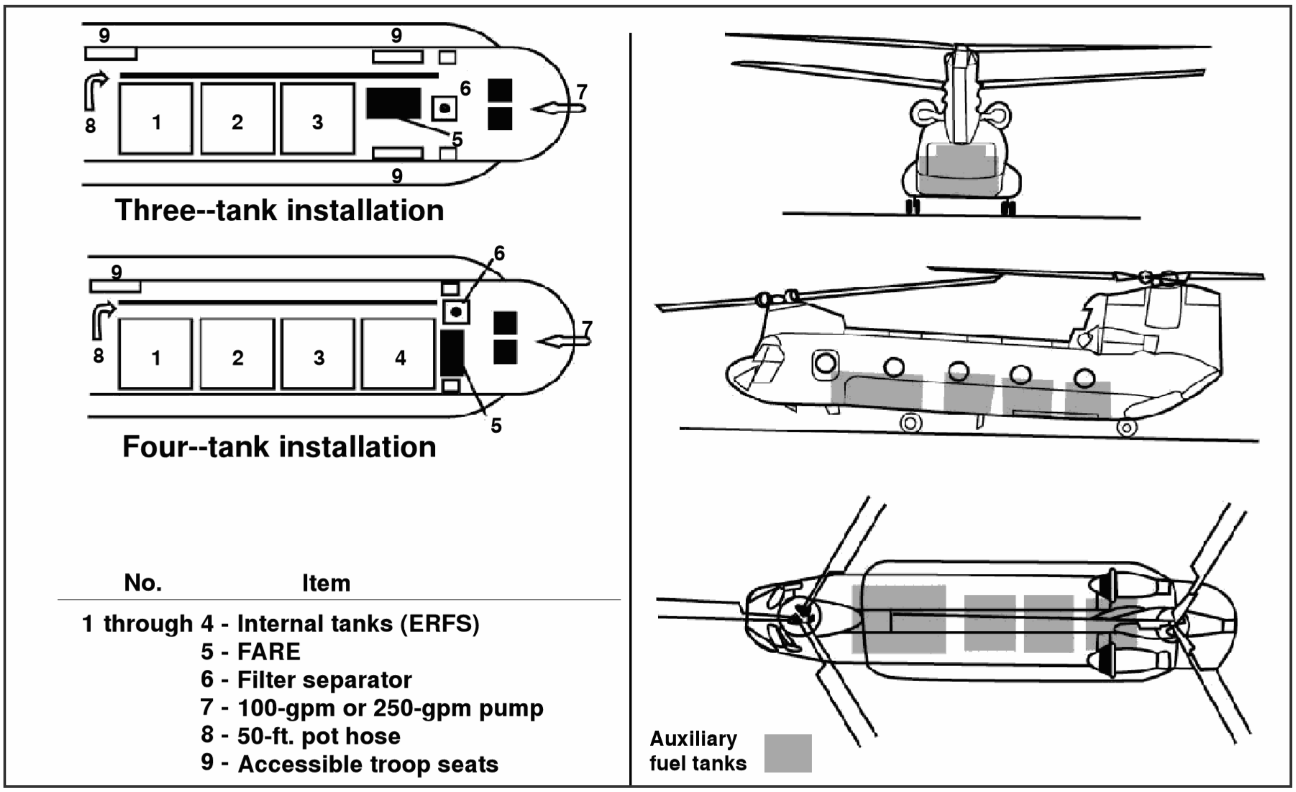


Figure G-10. CH-47 ERFS Equipment and Tank Installation

G-136. After the aircraft lands, FARP personnel can set up two refueling points quickly. Figure G-11 shows how the refueling points may be set up. The actual setup depends on the equipment available.

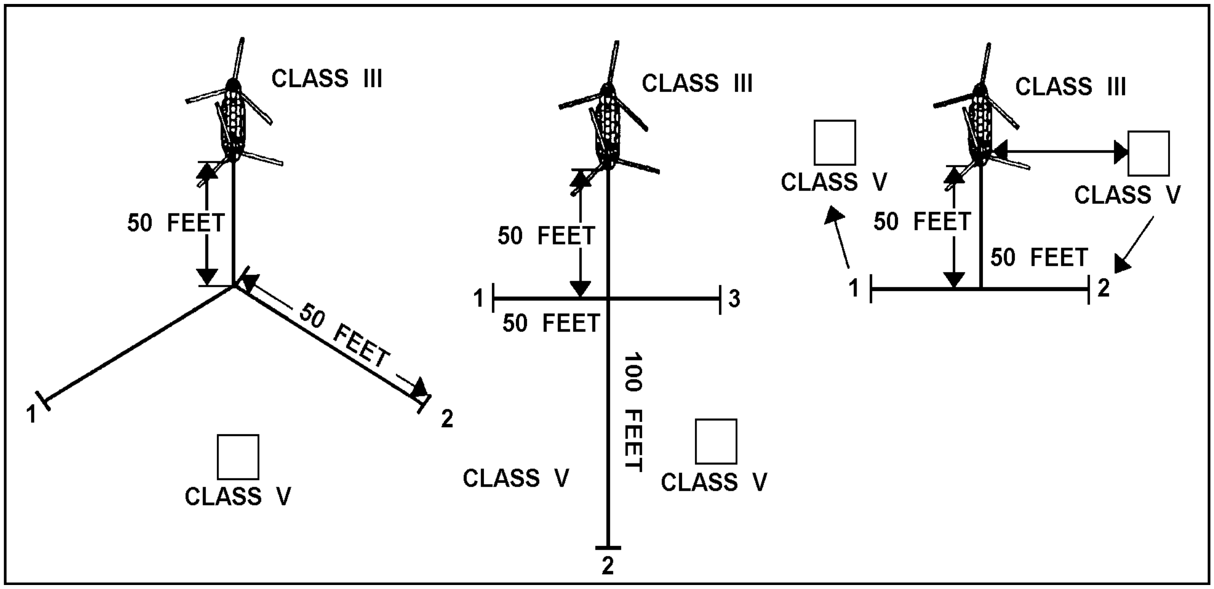


Figure G-11. Refueling Point Setups

G-137. Advantages of the ERFS are the following:

- The system is ready for refueling within minutes after landing; this makes Fat Cow especially useful for operations in deep areas.
- The system displaces quickly; after refueling and packing equipment, the CH-47 takes off, clearing the site within minutes.
- The ERFS may be pressure refueled (a maximum of 35 per square inch and 150 GPM for faster turnaround missions.

G-138. Disadvantages of the ERFS are the following:

- The ERFS is airworthy when installed, operated, and maintained as described in TM 55-1560-307-13&P; however, fuel can leak into the cabin, potentially causing a catastrophic incident during a hard landing or accident.
- Aircraft can carry only essential personnel; these personnel must be seated, wearing a lap belt, unless a MACOM waiver is granted.
- CH-47 door guns provide limited protection; planning should consider escort reconnaissance or attack elements.
- Additional hazards exist if CH-47 rotors turn during refueling.
- Depending on FARP location, the CH-47 may require ERFS fuel.
- CH-47 signature makes operations vulnerable to detection and attack.

UH-60 WET HAWK/FAT HAWK

G-139. UH-60 aircraft may be more readily available and more survivable for many operations in deep areas. Units can internally transport FARE systems and FARP personnel and externally transport 500-gallon fuel drums. (TM 55-1560-307-13&P contains additional information.)

G-140. A Wet Hawk is a UH-60 that provides fuel to another aircraft from its own internal or external fuel tanks via a micro-FARE system. A Fat Hawk is a UH-60 that provides both fuel and ammunition. A Fat Hawk crew can refuel and rearm four OH-58D aircraft in less than 15 minutes without sling loading fuel or ammunition. The absence of an external load increases UH-60 survivability, reduces emplacement time, and limits enemy capability to target the FARP. Normal operations consists of two External Stores Support System (ESSS)-equipped UH-60 aircraft with full crew, three to four POL personnel, a combat lifesaver/medic, security personnel, armament personnel, and armament and refuel equipment to support the mission.

JOINT AIRCRAFT ASSETS AVAILABLE FOR REFUEL/RESUPPLY

G-141. If the brigade or battalion AA is located at an airfield base camp or forward operating base or if an austere airfield is available, units may be able to request joint FW refuel/resupply support.

G-142. Marine Corps CH-53s have a unique refueling capability that can support supply points, operations in deep areas, and other specialized mission applications.

MARINE CH-53 TACTICAL BULK FUEL DELIVERY SYSTEM

G-143. Marine Corps CH-53 units are equipped with the tactical bulk fuel delivery system (TBFDS) that includes one to three 800-gallon internal fuel tanks and a 120-GPM refueling system, allowing transport of 800, 1,600, or 2,400 gallons of fuel. However, the fuel system is tied into the aircraft's main fuel tanks, allowing delivery of additional fuel. Because the CH-53 can air refuel, it can quickly join with a KC-130 at altitudes as low as 500 feet AGL to replenish TBFDS tanks and rejoin the ground FARP or fuel supply location to replenish additional aircraft (Figure G-12).

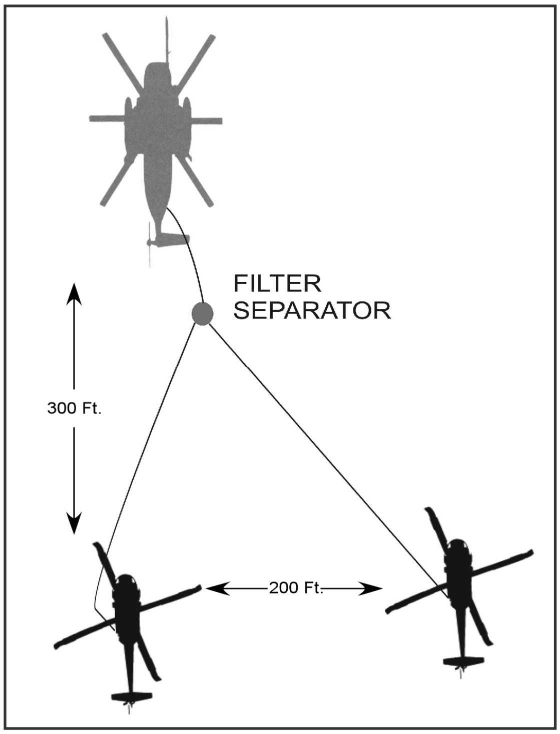


Figure G-12. HTARS Configuration and Additional Components for CH-53 FARP

MARINE KC-130

G-144. The Marine Corps KC-130F/R/T/J models are equipped for airborne refueling but also rapid ground refueling of Marine or, in this case, Army helicopters and ground vehicles. Aircraft refuel from wing fuel and pods mounted under the wings. They also can carry a 3,600-gallon stainless steel tank inside the cargo compartment for additional fuel delivery. Older model KC-130s require this cargo compartment tank for refueling and can only transport 5,588 gallons in wing and wing-pod fuel tanks. The new KC-130J can deliver up to 8,455 gallons from wing pods and wing fuel and an additional 3,600 gallons from the cargo compartment tank. It can also refuel without the cargo compartment tank, allowing palletized ammunition and other supplies to be transported. It has its own pumps and hoses that can dispense up to 300 GPM from each pod (Figure G-13).

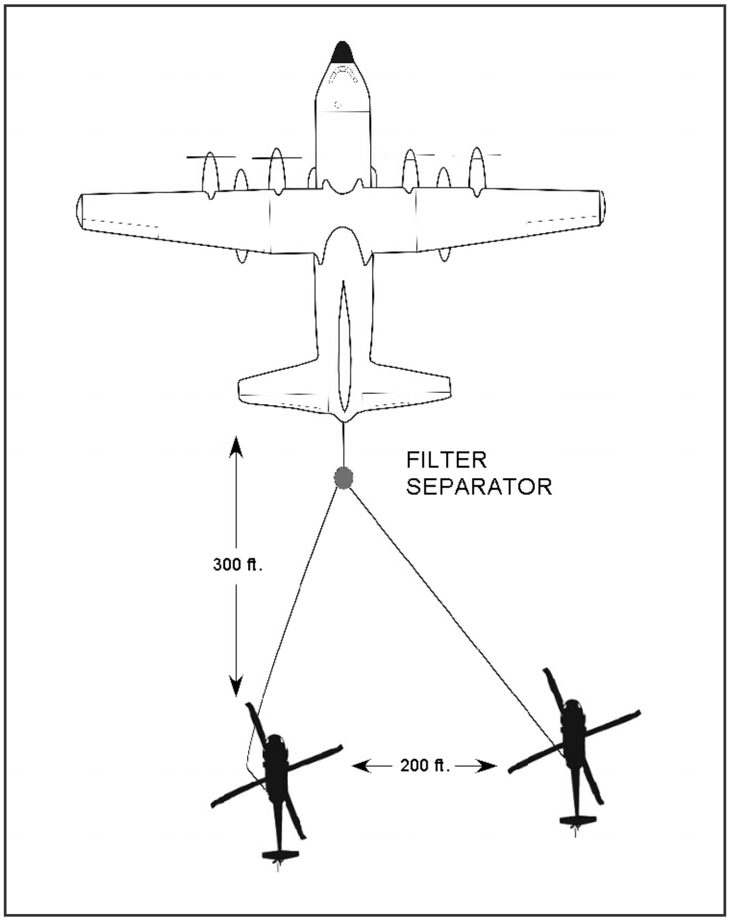


Figure G-13. HTARS Configuration and Additional Components for C-130 FARP

AIR FORCE C-17

G-145. The Air Force C-17 also can function as a tanker providing fuel to ground receivers using HTARS. The receivers can be Army aircraft, trucks, bladders, or other equipment. The C-17 can deliver fuel through either one or both of its single-point receptacles. The C-17 booster pumps defuel the aircraft using the HTARS and additional Army components. Aircraft can defuel at a rate of 520 GPM, depending on the number of booster pumps (Figure G-14).

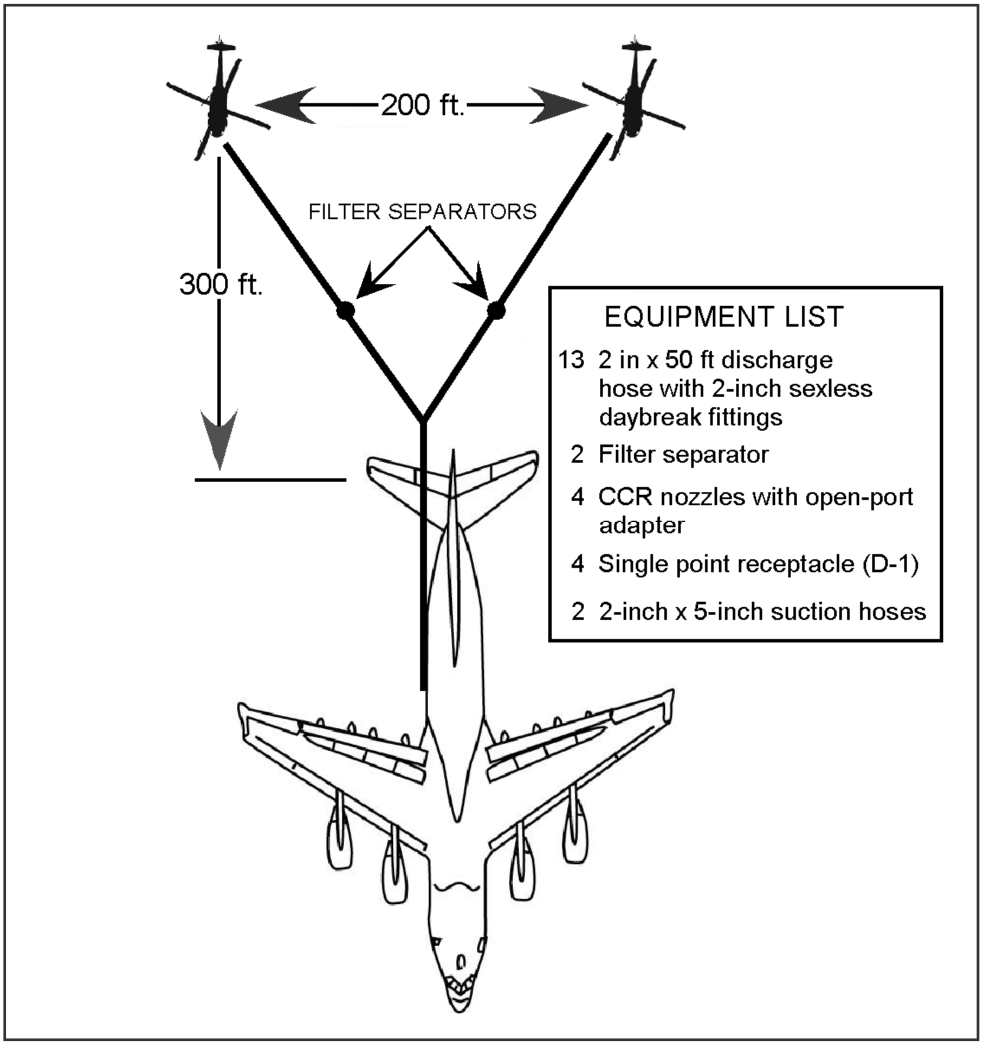


Figure G-14. HTARS Configuration and Additional Components for C-17 FARP

SITE CONSIDERATIONS

G-146. The KC-130 or C-17 can operate from small airfields with limited supporting infrastructure. The airfield runway must be 3,000- to 5,000-feet long and 90-feet wide.

G-147. The KC-130 and C-17 do not require paved runways. Graded and compacted gravel or clay will suffice. However, if KC-130 or C-17 resupply becomes a primary means of resupply for a forward operating base or base camp airfield—such as occurred in Afghanistan—runway repair requirements will increase, dictating engineer augmentation.

G-148. The CH-53 TBFDS does not require a runway but a large relatively flat area similar in size to that required for CH-47 Fat Cow refueling.

EQUIPMENT LAYOUT

G-149. The CH-53 TBFDS has enough hoses to refuel two aircraft or refuel vehicles located 200 feet away. Hoses run out of the cargo compartment in the form of a "V" in the same manner as a CH-47 Fat Cow. The TBFDS uses the standard D-1 nozzle compatible with

Army and other joint aircraft. Army aircraft must approach Marine Corps refueling points hovering at a 45-degree angle with the aircraft fuel port facing the nozzle.

G-150. Marine KC-130s have organic refuel equipment and compatible D-1 nozzles as they perform the same ground mission for Marine helicopters and FW aircraft. Fuel in the wing-mounted external fuel tanks and internal 3,600-gallon stainless steel tank (if installed) can be dispensed for rapid ground refueling. The aircraft external fuel pods use ram-air turbine-driven fuel boost pumps in each pod.

G-151. For the C-17, required equipment includes the HTARS, two 100-GPM filter separators, five fire extinguishers, four water cans, and spill containers. Post operation evacuation of fuel lines requires a 100-GPM pump. FARP or FARE personnel configure the HTARS and additional components as Figure H-19 shows. They lay out the system to achieve minimum safe distance between aircraft.

CONNECTION OF SYSTEM COMPONENTS FOR THE C-17

G-152. Starting at the supply aircraft, FARP or FARE personnel:

- Connect using a single-point nozzle (D-1 type) and perform a locked nozzle check.
- Connect a 2-inch by 50-foot discharge hose to the nozzle, using the sexless dry break fitting.
- Install a T-fitting to the end of the discharge hose.
- Connect a 2-inch by 50-foot discharge hose to both remaining ends of the T-fitting.
- Connect a 100-GPM filter/separator, after these lengths of hose.

G-153. Lay out the remainder of the HTARS into a modified configuration, resulting in two refueling points, separated by at least 200 feet between points and 300 feet from the C-17. At each refueling point, FARP or FARE personnel:

- Connect the applicable CCR or D-1 nozzle.
- Ensure that the sexless fitting valves are in the open position.
- Attempt to manually disconnect the dry break connection after opening each valve. Properly assembled hardware will not disconnect; if it does disconnect, replace the faulty connection.

GROUNDING AND OTHER EQUIPMENT FOR THE C-17, KC-130, OR CH-53

G-154. FARP or FARE personnel:

- Drive a grounding rod into the ground 10 feet from the end of each dispensing hose.
- Loop the dispensing hose back to the ground rod, and hang the nozzle on the ground-rod hanger.
- Connect the clip of the nozzle grounding wire to the ground rod at each point.
- Place a fire extinguisher, a spill container, and a 5-gallon can of water at each point.
- Place a grounding rod at the filter/separator, and connect using the filter/separator grounding wire.
- Place a fire extinguisher at the filter/separators.

OPERATION

G-155. One critical aspect of refueling operation with other service aircraft is that their rules and regulations differ from and supersede the Army's. For instance, Marine doctrine prohibits simultaneous arming and refueling and requires a separation distance of at least 300 feet from separate arming and refueling activities. In addition, while hot refueling is permissible, hot refueling with explosive ordnance on board is not authorized unless approved by Headquarters, U.S. Marine Corps, and Naval Air Systems Command.

G-156. In wartime, attack units may be authorized to refuel while armed. In peace and lesser contingencies, units must dearm, then refuel, then rearm. This restriction effectively requires aircraft to shut down after refueling to preserve onboard fuel. Marine Corps aircraft use JP5 fuel. The Air Force and Army use JP8. This disparity poses no problem for Army aircraft.

G-157. Unless Marine Corps or Air Force regulations supersede the Army's, operate the system in compliance with safety procedures and follow these steps:

- The refuelers guide aircraft into position using coordinated signals; they check with the pilot to ensure that all armaments are on safe.
- Aircrew members, except the pilot, should assist with refueling or as fire guards.
- The refuelers place fire extinguishers near the aircraft and within reach of fuel fill points.
- The refuelers ground the aircraft.
- The refuelers bond the nozzle to the aircraft; they insert the bonding plug into the aircraft plug receiver or attach the nozzle bonding cable clip to bare metal on the aircraft.
- After bonding the nozzle, the refuelers remove the nozzle dust cap and open the fill port.
- The refuelers verify that all valves are open.
- Refuelers signal the refueling supervisor that the point is ready to fuel and open the nozzle and refuel; they do not leave the nozzle at any time during the refueling; they stop the flow of fuel if there is any emergency at the refueling point.
- After the receiving aircraft is full, refuelers shut off the nozzle; disconnect the nozzle from the aircraft; and replace the fuel fill port cover and the nozzle dust cap.
- Refuelers unplug the nozzle-bonding plug and return the nozzle to the nozzle hanger.

G-158. For C-17 refueling, refuelers use a FARE pump to evacuate fuel lines and recover components as follows:

- Close the D-1 nozzle.
- Install the FARE pump 10 feet away from the SPR panel.
- Reverse the flow direction of each filter/separator.
- Start the pump, and run at idle.
- Recover hoses, starting at the refueling point.
- Stop the pump, and disconnect from the tanker aircraft.

ADVANTAGES

G-159. The advantages of the CH-53 TBFDS, KC-130, or C-17 FARP include:

- Ability to deliver bulk fuel to remote areas using small airfields with unimproved runways (no runway for CH-53) and little supporting infrastructure.
- Ability to provide substantial fuel and be set up and operational quickly.
- Useful for selected operations in deep areas using intermediate staging bases or forward operating bases.
- Ability of the CH-53 TBFDS to aerial refuel and rapidly return with additional fuel.
- Ability of joint FW aircraft can also transport ammunition in the cargo compartment for substantial resupply capability.

DISADVANTAGES

G-160. The disadvantages of the CH-53 TBFDS, KC-130, or C-17 FARP include:

- It requires diversion of these aircraft from other valuable missions.
- Because of other priorities and the ACO/ATO process, it may require substantial time to request and get approval for such missions.
- The KC-130 or C-17 requires a 3,000-foot by 90-foot minimum runway for landing; engineer requirements can be extensive if the runway is dirt or clay and the unit anticipates repeated use.
- The aviation unit operating the FARP must transport personnel and equipment to the FARP site; Marine CH-53s or KC-130s may wish to provide their own refuelers/operators.
- Marine Corps' aircraft refueling regulations prohibit simultaneous arming and refueling activities.

SECTION VII – VOLCANO ARMING OPERATIONS

G-161. UH-60 aircraft equipped with the Volcano system require arming in a manner similar to attack reconnaissance helicopters. AHB AVUMs must have crew chiefs, combat engineers, or other trained personnel to load and arm Volcano canisters. This level of training is essential for safe arming operations. If the unit forecasts operations, it should request additional engineer personnel for the duration of the operation.

ARMING LOCATION AND SITE LAYOUT

G-162. Loading and arming can occur in the unit AA or near the rapid refuel point. FM 20-32 specifies that, because of more than 1,200 pounds of explosives in 160 mine canisters on fully loaded Volcano aircraft, loading aircraft should position at least 1,000 meters from CPs, major routes, and nonessential personnel. If positioning proves impractical in combat, units should exercise feasible caution and avoid potential sources of secondary explosions such as fuel storage areas.

G-163. The total weight of the armed air Volcano system is 2,886 kilograms (more than 6,350 pounds). Because fully loaded Volcano aircraft approach maximum gross weight, ground conditions should be firm or steel/wood planking landing pad should be provided. Armed aircraft should avoid refueling near (within 375 meters) other aircraft. Simultaneous arming and refueling is not necessary or recommended. Obstacles should not hinder takeoff at high gross weight.

G-164. Figure G-15 shows an example of a site layout for Volcano arming. As with normal FARP operations, fire extinguishers and grounding rods must be available at the arming point. Arming personnel dig a dud pit where they place damaged or misfired canisters. Personnel store live canisters to the front left and right of the aircraft and spent canisters, to the rear left and right, taking care to avoid the tail rotor. Personnel and vehicles must avoid areas directly adjacent to the M139 dispensers; accidental discharge could strike personnel, and mine arming would occur within 2.5 minutes. If such discharge occurs, the aircraft and loading personnel should reposition at least 640 meters away and loading personnel should notify EOD personnel. That distance extends to 1,000 meters if a fire occurs near the live canisters and personnel are unable to extinguish it in a reasonable time.

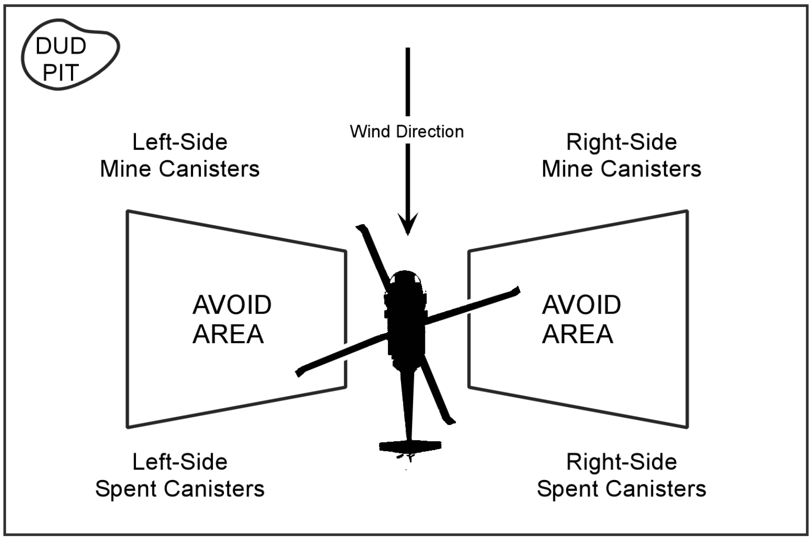


Figure G-15. Example of a Site Layout for a Volcano Arming Point

ARMING

G-165. Each launcher rack functions as a carrier and launcher platform for a 40-mine canister. Aircraft can mount up to four M139 dispenser racks, two on each side of the UH-60. Loaders insert canisters into the 40 keyholes, rows 1 through 4 from bottom to top and columns 1 through 10 from left to right. This loading sequence can be important if the rack carries less than a full load of mines. As loaders insert the mine canisters, a green latch latches the canister to the rack and a red latch arms the canister. The rack has two electric receptacles—one for the power connector and one for the launcher rack cable running to the dispensing control unit.

DISARMING

G-166. After mission completion, aircraft return to the arming point to dearm. The users:

- Discard spent canisters at least 30 meters to the left or right rear of the aircraft at the 4 and 8 o'clock positions.
- Return live canisters to ASPs for future use or repackaging.
- Place misfired canisters in the dud pit and contact EOD.

SECTION VIII – FORWARD ARMING AND REFUELING POINT OPERATIONS

G-167. The FARP provides forward support for tactical operations. Its organization includes the POL and ammunition section and a maintenance contact team.

EQUIPMENT

HEAVY EXPANDED MOBILITY TACTICAL TRUCK FORWARD ARMING AND REFUELING POINT

G-168. The FARP personnel place two HEMTT tankers on-line and retain one in reserve.

FORWARD AREA REFUELING EQUIPMENT/ADVANCED AVIATION FORWARD AREA REFUELING SYSTEM FORWARD ARMING AND REFUELING POINT

G-169. The FARP personnel configure the FARE or AAFARS FARP similar to the HEMTT FARP. They use at least eight points or as needed to support simultaneous refueling of an attack helicopter company or ACT.

FORWARD ARMING AND REFUELING POINT LAYOUT

G-170. The FARP layout for simultaneous rearming and refueling operations will depend on the terrain.

SITE SELECTION

G-171. FARP personnel use tree lines, vegetation, terrain folds, and reverse slopes to mask the FARP. Do not collocate the FARP with the TOC or unit trains. The site must accommodate the number and type of aircraft that need service. Units maintain the minimum spacing prescribed by FM 10-67-1. This manual requires 100 feet between refueling points for all aircraft except the CH-47, which requires 180 feet for aircraft parked side by side. Sites must allow adequate obstacle clearance for safe takeoff and landing. Units designate HAs for waiting aircraft in view of the FARP but not within it.

SECURITY

G-172. FARP personnel:

- Establish a perimeter and prepare fighting positions and range cards.
- Set up crew-served and AD weapons to protect the site.
- Sweep the site for NBC contamination and set up NBC equipment.
- Reconnoiter the site for appropriate refuel and rearm points.

COMMUNICATIONS

G-173. Upon arrival, the FARP NCOIC establishes communications with the TOC, giving the closing report and anticipated time of operation. If possible, he communicates on secure FM from a location other than the FARP. FARP personnel use the FARP radio only under the following circumstances:

- Requesting resupply.
- Reporting that the site is under attack.
- Reporting that the FARP is not operational.
- Reporting a serious FARP incident such as a fire or an aircraft accident.

G-174. Outbound aircraft can relay critical messages from the FARP to the TOC. This reduces the chances of enemy detection by radio transmission.

SETUP

G-175. FARP personnel:

- Determine the refuel and rearm point's positions.
- Break down ammunition into the first standard loads and another load in the RASA.
- Reposition vehicles into final parking location.
- Perform PMCS on vehicles, radios, NBC equipment, weapons, and platoon equipment.
- Camouflage vehicles and equipment.

RESUPPLY

G-176. FARP personnel resupply ammunition and fuel as necessary. After ammunition trucks offload, depending on the FARP's expected duration of operation, vehicles may need to depart for resupply of Class V. HEMTT tankers may transload into other tankers as they become empty or can fill empty 500-gallon drums. This practice allows these vehicles to go for additional Class III at distribution points or logistics RPs. In all cases, personnel diverted to resupply vehicles are not available to assist in arming and refueling. With a silent FARP prepared to assume the mission, the initial FARP vehicles can resupply without disrupting the mission.

AIRCRAFT PROCEDURES

G-177. Unit SOP and orders specify procedures. The following provides recommendations and describes standard signals.

LANDING

G-178. The AMC calls in the blind when 5 km from the FARP. An example call is "T14 (FARP), this is T56 with five on blue." The AMC is telling the FARP that five aircraft are inbound on the Blue route. This alerts the FARP and other aircraft of his intentions. The FARP does not reply unless the area is not safe or secure. Personnel do not use terms that violate OPSEC such as aircraft, inbound, outbound, and FARP.

G-179. Aircraft fly NOE within 3 km of the FARP. Approaching aircraft maintain visual contact with departing aircraft.

POSITIONING

G-180. FARP personnel use standard hand-and-arm signals to assist pilots in positioning aircraft into refueling and rearming points.

WARNING

Exercise the following precautionary measures if wearing the Extended Cold Weather Clothing System (ECWCS) while performing aircraft arming and refueling operations:

a. Fuel handlers wearing ECWCS should ground/bond themselves to the aircraft, truck, or refueling component for several seconds before fuel/defuel operations.

b. Do not remove ECWCS within 50 feet of fueling operations or near flammable vapor-air mixture.

c. Rinse fuel-soaked ECWCS with water before removal.

REFUELING AND REARMING PROCEDURES

G-181. The standard refueling and rearming line consists of eight points and a maintenance point. The unit locates the maintenance point where it will not interfere with normal operations.

REFUELING

G-182. FARP personnel inspect fuel and equipment according to regulations and the unit accident prevention program.

G-183. For hot refueling, FARP personnel:

- Ensure that a 100-foot separation exists between refueling points.
- Ground CCR nozzles to grounding rods, and bond to the aircraft.
- Secure fuel caps and disconnect grounding cables before aircraft takeoff.

G-184. Aircrews ensure that armament systems are on Safe or Off. They stabilize the aircraft at flat pitch and deplane passengers before conducting refueling operations. Although no transmissions are permitted except during an emergency, they monitor all communications. Aircrews turn strobe lights off before refueling and back on before takeoff (day only).

G-185. FARP personnel and crew chiefs wear protective equipment, including eye and hearing protection and gloves, while conducting refueling operations. FARP personnel or crew members man fire extinguishers.

MAINTENANCE POINT

G-186. Units locate the maintenance point where it will not interfere with normal operations. This point should be equipped with the following items:

- One fire extinguisher and a ground rod with cable.
- One standard toolbox.
- Two pallets for downloading rockets and 30-millimeter ammunition.
- Special tools as determined by the maintenance officer in charge.
- Spare parts.

REARM POINTS

G-187. These points should be equipped with the following items:

- One standard toolbox.
- One metric toolbox (AH-64).
- One fire extinguisher and grounding rod with cable.
- One uploader/downloader (AH-64).
- One wing mike cord.
- Two pallets for rockets.

PERSONNEL REQUIREMENTS

G-188. Each FARP should include the following personnel:

- One noncommissioned officer.
- One line SO.
- One officer in charge.
- Three armament personnel (preferred); two armament personnel (minimum) for each rearm pad.
- A contact team (maintenance point only).

PROCEDURES

G-189. FARP personnel arm/dearm aircraft according to the appropriate aircraft operator's manual.

G-190. After turning off all armament switches, the pilot turns off the anti-collision light. The pilot makes no radio transmissions during loading/downloading operations.

G-191. Once the anti-collision light is off, armament personnel ground the airframe, install the wing-store jettison pins, and chock the wheels, as applicable. They plug in their headsets and establish communication with the aircrew. The aircrew assists and monitors armament personnel during loading/downloading operations.

G-192. Ground crews load subsystems inboard to outboard, remaining clear of the front of the systems and back-blast areas. When loading is complete, the ground crew removes all safety pins and moves away from the aircraft.

AIRCRAFT CONTROL AND SAFETY

G-193. Any incident involving a fire or suspected fuel contamination will close the FARP until the SO investigates the incident and authorizes further operations.

FORWARD ARMING AND REFUELING POINT PERSONNEL

G-194. FARP personnel mark refuel nozzles with a red/an orange light source attached to the grounding rod. They mark the landing area with either beanbag lights or chemical lights. Units may also use heated rocks in cans for easier FLIR detection.

G-195. Ground guides guide aircraft into and out of refueling points using white wands or chemical lights other than green. Ground guides do not stand in front of the aircraft weapon system at any time.

AIRCREWS

G-196. Aircrews make no radio transmissions within 100 feet of refueling or arming points. While in the FARP, aircrews place aircraft position lights on steady bright or dim. They turn off lights if required by the tactical situation or if using NVD.

G-197. Aircrews flash aircraft position lights to alert the ground guide when ready to refuel or depart. The pilot signals the refueler to stop refueling the aircraft. Before takeoff, pilots ensure that personnel remove grounding clips and stand clear.

EXTENDED RANGE FUEL SYSTEM (FAT COW) OPERATIONS

G-198. FARP personnel:

- Secure and statically ground all 600-gallon tanks on an asphalt or concrete hardstand that is away from aircraft and ground vehicle operation.
- Empty the tanks before storage (except residual fuel).
- Store ERFS equipment—such as the pump board, fuel lines, and tie-down straps—in the ERFS storage cases provided by the shipping facility.
- Ensure that the storage area is enclosed and well ventilated.
- Drain all fuel supply lines of excess fuel before storage.

INSTALLATION AND OPERATION

G-199. TMs 1-1520-240-10 and 55-1560-307-13&P cover installation, operation, and PMCS of ERFS. Crew chiefs defuel aircraft according to TM 55-1560-307-13&P and the unit SOP. When the ERFS is installed on the aircraft, they enter the following statement on the DA Form 2408-13-1 (Aircraft Maintenance and Inspection Record): “Aircraft allowed operating with ERFS installed according to TM 55-1560-307-13&P.”

G-200. Crew chiefs record all system faults on DA Form 2408-13-1. After removing the ERFS, they reenter all faults on the existing or new DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

MISSION EQUIPMENT

G-201. Equipment requirements are divided between two sections. The unit assigned the mission supplies the aircraft, the ERFS with FARE attachments, one 50-foot suction hose (pot hose), one grounding rod with cable, ground covers, tie-down ropes, and ALSE. The POL section supplies all of the items shown in Figure H-15, one extra 100-GPM pump, one of each type of refueling nozzle, and one 50-foot refueling hose.

G-202. The mission unit personnel install the required number of tanks according to TM 55-1560-307-13&P and Figure H-15. If conducting extended-range missions, they install the ERFS fuel management control panel:

- Hoses and fittings. When possible, personnel use unisex fittings to reduce assembly/disassembly fuel spillage and self-ground connections.
- Pump system. If using the 250-GPM self-contained pump system, exclude the filter separator from the equipment list and place the pump in the 100-GPM mode; the pump's size precludes loading a spare pump.
- Nozzles. Mission unit personnel use the D-1 single-point nozzle on CH-47Ds and CCR nozzles with attachments on other aircraft, unless the D-1 is specified.

SITE SELECTION

G-203. The LZ must be large enough to accommodate FARP aircraft with no less than 150 feet between refueling points. Allow at least 300 feet between each CH-47 conducting ERFS refueling. This layout allows 150-foot separation between supported aircraft refueling points.

SITE LAYOUT

G-204. For daytime operations, FARP personnel designate landing points and mark them with standard visual signals and markers. For night operations, they designate landing points and mark them with chemical lights or tactical Y. FARP personnel:

- Set up refueling points and equipment as Figure G- shows.
- Place the extra 100-GPM pump beside the operating pump; for ease of replacement, they place all spares so that they are readily accessible.
- Ground each FARP aircraft to its own grounding point; ground pumps and filter separator.
- Place emergency equipment, such as a 5-gallon water can and fire extinguisher, at the pump station and refueling points.

FIRE EXTINGUISHERS

G-205. Fire extinguishers must have current inspection tags and seals. Authorized fire extinguishers include the following:

- Twenty-pound Halon 1211.
- Twenty-pound (KH CO^3) Purple K.
- Fifteen-pound CO^2.

BLADE ROPES

G-206. Crew chiefs install and secure at least one blade rope per rotor system on ERFS aircraft.

TAIL CONE COVERS

G-207. Crew chiefs install engine tail-cone covers to prevent engine foreign-object damage and keep rotors from turning.

PILOT IN COMMAND

G-208. The PC of the supporting aircraft is in charge of FARP operations. He directs all operations and monitors safety. He ensures that personnel conduct operations according to the SOP.

G-209. The PC's station is at the fuel pump. This position enables him to monitor all phases of the operation and turn off the fuel supply in case of a mishap or an emergency.

COPILOT

G-210. Copilots assist in marshalling, fire guard, and other duties that the PC assigns.

FLIGHT ENGINEER

G-211. The flight engineer is responsible for safely loading the aircraft before the mission and unloading it after the aircraft is shut down. He controls the fuel flow from inside the aircraft. In addition, he is responsible for cutting off the fuel supply from inside the aircraft in case of a mishap or an emergency.

CREW CHIEF

G-212. The crew chief assists with marshalling and fire-guard duties.

PETROLEUM, OILS, AND LUBRICANTS REFUELERS

G-213. Refuelers set up the FARP and conduct refueling operations.

STANDARD FLIGHT EQUIPMENT

G-214. Crew members use standard flight equipment. POL refuelers use safety equipment and clothing as prescribed in the SOP and regulations.

AIRCRAFT POSITION

G-215. A marshaller positions arriving aircraft in chalk order at each refuel point. Aircraft remain in position until all refuel, then reposition together.

FUEL TRANSFER

G-216. Aircrews transfer fuel from the internal tanks in the same manner as when aircraft self-deploy. To maintain aircraft center-of-gravity, complete fuel transfer in the following sequence:

- Four tanks: 4, 1, 3, and 2.
- Three tanks: 3, 1, and 2.

AUXILIARY POWER UNIT

G-217. Aircrews do not operate the aircraft auxiliary power unit during refueling operations.

PREFLIGHT INSPECTION

G-218. Before applying electrical power for system operation, aircrews perform the checks and services listed in the PMCS, Table 2-6, TM 55-1560-307-13&P.

EXTENDED-RANGE FUEL SYSTEM FUEL TRANSFER CHECKLIST

G-219. Aircrews refer to TM 55-1560-307-13&P for the ERFS fuel transfer checklist. See www.logsa.army.mil/etms/find_etm.cfm, and enter the TM number in the applicable place.

AIR ASSAULT FORWARD ARMING AND REFUELING POINT REFERENCE CHECKLIST

G-220. Upon arrival at the site, the FARP personnel follow these procedures:

- Position the CH-47 so that refueling aircraft can land into the wind.
- Start unloading and setting up equipment.
- Check the FARP system under pressure for leaks.
- Take a fuel sample using Aqua-Glo test procedures.
- Record the fuel-sample reading.
- Commence refueling operations.

G-221. The aircrew members may assist with the FARP layout unless the PC needs them during the shutdown phase. Aircrews:

- Shut down engines.
- Ensure that the PC observes and directs the FARP site layout.
- Use the PC to conduct a safety and equipment installation inspection of the FARP site.

AQUA-GLO TEST PREPARATION, FUEL SAMPLING, AND FUEL TEST PROCEDURES

G-222. FARP personnel follow the guidance in the most current FM 10-67-1 for inspecting and testing the fuel and equipment. Do not use FM 10-68, which has been rescinded.

G-223. Both documents are accessible on line. See www.logsa.army.mil/etms/find_etm.cfm, and enter the TM number in the applicable place.

SECTION IX – MULTIPLE FORWARD ARMING AND REFUELING POINT OPERATIONS

G-224. The best way to provide 24-hour support is to employ a two-FARP sequence. A schedule that rotates two or more FARPs ensures that one FARP is always active, reduces personnel fatigue, and facilitates efficient resupply.

MISSION

G-225. In this example, the mission is to deploy two FARPs to support continuous attack, making the transition to phased attack of a different target. The S3 designates two primary sites and alternates. The scheduled operational times for FARP 1 are 0800 and 1930. The operational times for FARP 2 are 1400 and 2000. In this example, the transition to phased attack requires one of the FARP teams to further split to allow drivers to travel to supply points and/or throughput LRP.

SUGGESTED SCHEDULE

G-226. Table G-3 illustrates a suggested FARP schedule. It assumes that when one FARP is active, a second silent FARP is inactive. This example also illustrates how a mission change to phased attack would require both FARPs to operate simultaneously.

Table G-3. Suggested FARP Schedule

	Team 1 (Platoon Sgt leads) FARP	Team 2 (Platoon Leader leads) FARP
0800	FARP 1 ACTIVE, Spts A Co	Shuts down old FARP 2; drives to resupply point
0900	FARP 1 ACTIVE, Spts B Co	Drives to resupply point/LRP
1000	FARP 1 ACTIVE, Spts C Co	Arrives at resupply point/LRP; loads/transloads
1100	FARP 1 ACTIVE, Spts A Co	Drives to FARP 2 location
1200	FARP 1 ACTIVE, Spts B Co	Drives to & arrives at FARP 2 location; sets up
1300	FARP 1 ACTIVE, Spts C Co	Continues setup, priority-of-work tasks
1400	Shuts down FARP; drives to resupply points/LRPs	FARP 2 ACTIVE. Supports A Co.; offloads Class V trucks; prepares to go to supply point
1500	Drives to resupply points/LRPs	FARP 2 ACTIVE. Supports B Co; plt ldr prepares to split his team; transloads fuel into empty tankers/drums
1600	Arrives at resupply points/LRPs, loads/transloads	Team 2A: Supports C Co. in FARP 2; Team 2B: takes offloaded trucks/tankers and drives to LRPs
1700	Drives to new FARP 1 location	Team 2A: Supports A Co. in old FARP 2; Team 2B: arrives at LRPs, loads/transloads
1800	Arrives at new FARP 1 location; off-loads/sets up	Team 2A: Supports B Co. in old FARP 2, Team 2B: loaded trucks return to new FARP site
1900	Continues setup, priority of work FARP 1 ACTIVE	Tm 2A: Services C Co. in old FARP 2; tears down, moves to new FARP/LRP; Tm 2B: loaded trucks arrive/set up new FARP
2000	FARP 1 ACTIVE, Spts A Co	FARP 2 ACTIVE. Supports B Co. (phased attack)
2100	FARP 1 ACTIVE, Spts C Co	FARP 2 ACTIVE. Continues offload of Class V
2200	FARP 1 ACTIVE, Spts A Co	FARP 2 ACTIVE. Spts B Co. (phased attack)

SECTION X – EMERGENCY PROCEDURES IN THE FORWARD ARMING AND REFUELING POINT

EMERGENCY PROCEDURES IN TACTICAL SITUATIONS

G-227. In case of fire, aircrews not directly involved fly to their respective HAs. FARP personnel take the following actions:

- Shut down the pump immediately.
- Remove nozzle from the aircraft.
- Attempt to put out small fires with fire extinguishers.
- Move the tanker from the scene, if the situation permits.
- Close all FARE butterfly valves and elbow couplers linked to 500-gallon collapsible drums, if time permits.
- Move to a safe area.
- Notify the TOC at the first opportunity.

G-228. If the FARP site is under attack or under a threat of being overrun, FARP personnel:

- Stop refueling.
- Evacuate aircraft.
- Disconnect FARP aircraft from the system by disconnecting the 50-foot pot hose from inside the aircraft and evacuate the aircraft.
- Defend the FARP area or abandon the system and evacuate as directed.

EMERGENCY PROCEDURES DURING NONTACTICAL SITUATIONS

FIRE IN THE REFUELING AREA

G-229. FARP personnel stop refueling at all points, then:

- Turn off all pumps.
- Close all valves.
- Evacuate aircraft and unnecessary personnel from the area.
- Attempt to fight the fire.
- Notify the higher command.

AIRCRAFT FIRE

G-230. FARP personnel stop refueling at all points, then:

- Turn off all pumps.
- Close all valves.
- Evacuate personnel from the aircraft.
- Attempt to shut down the aircraft.
- Evacuate all other aircraft from the area.
- Fight the fire.
- Notify the higher command.

FUEL LEAKS

G-231. FARP personnel stop refueling at the affected point, then:

- Turn off all pumps.
- Turn off the valves to the leak.
- Repair or replace the affected pieces.
- Open valves and start the pumps.
- Check for additional leaks.
- Proceed with refueling operations.

SECTION XI – LOAD PLANS

G-232. Three primary ground vehicles support FARP operations: the M978 HEMTT tanker, M977 HEMTT cargo vehicle, and the M989A1 HEMAT.

HEAVY EXPANDED MOBILITY TACTICAL TRUCK TANKER

G-233. The HEMTT tanker can carry 2,500 gallons, of which 2,250 gallons are usable. When paired with the HTARS, a HEMTT tanker can simultaneously refuel four aircraft.

HEAVY EXPANDED MOBILITY TACTICAL TRUCK CARGO VEHICLE

G-234. The HEMTT cargo vehicle is equipped with a materiel-handling crane with a 2,500-pound load capacity at a 19-foot boom radius. The 18-foot cargo body can carry 22,000 pounds. When carrying ammunition, this truck will cube out before it weighs out.

HEAVY EXPANDED MOBILITY AMMUNITION TRAILER

G-235. The HEMTT is the prime mover for the HEMAT. The HEMAT can carry 22,000 pounds.

SAMPLE LOAD PLANS

G-236. Table G-4 is the essential load plan key for Figures G-16 through G-17.

Table G-4. Load Plan Key

Load Plan 1		
Item	**Quantity**	**Approximated Weight (lbs)**
30mm Pallet	2	7,472
RF Hellfire Pallet	4	7,200
	Total Weight	14,672
Load Plan 2		
Item	**Quantity**	**Approximated Weight (lbs)**
2.75" Rocket Pallet	2	5,032
RF Hellfire Pallet	3	5,400
	Total Weight	10,432
Load Plan 3		
Item	**Quantity**	**Approximated Weight (lbs)**
RF Hellfire Pallet	2	3,600
30mm Pallet	2	7,472
2.75" Rocket Pallet	2	5,032

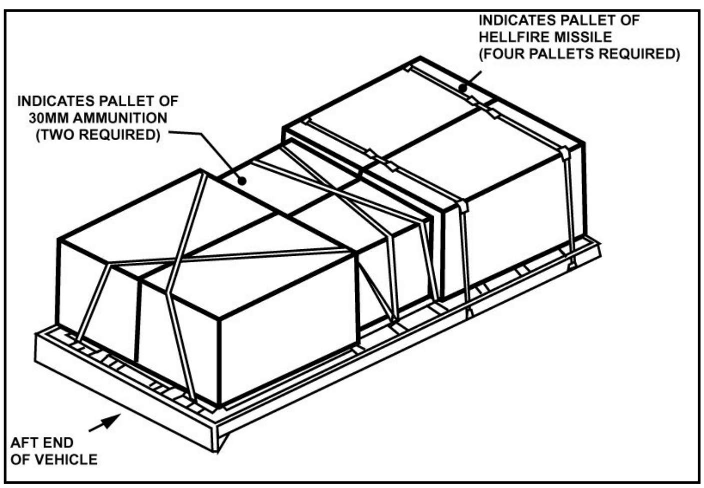


Figure G-16. Load Plan 1

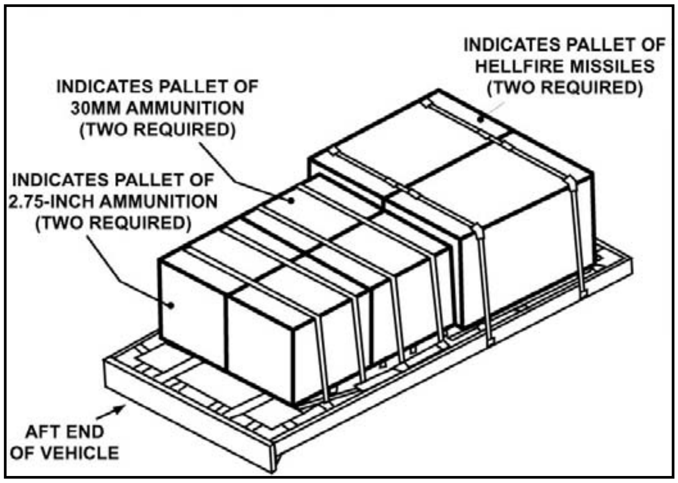


Figure G-17. Load Plan 2

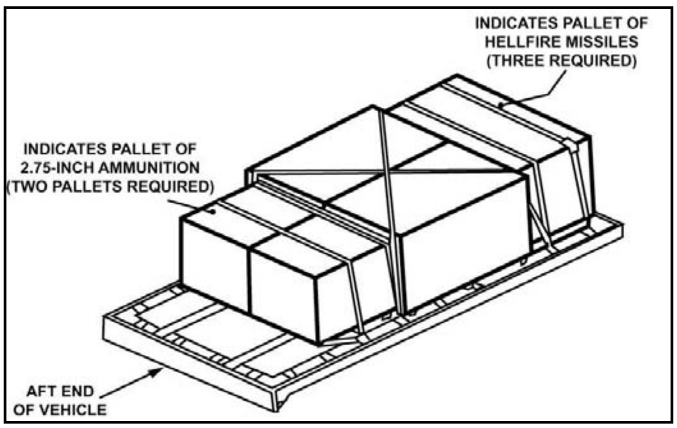


Figure G-18. Load Plan 3

SECTION XII – NIGHT AND SEASONAL OPERATIONS

G-237. This section discusses considerations for night, hot-weather, and winter FARP operations. FARP operations under varied environmental conditions require planning and training. Different environments require different considerations.

NIGHT OPERATIONS

G-238. The establishment of a FARP at night requires special considerations. Movement must be planned in detail and executed in an orderly manner. Delays will occur because of low-light levels. Light discipline is extremely important.

AIRCRAFT INBOUND CALLS

G-239. As with day operations, the AMC contacts the FARP about 5 km out. An example call is "T14 (FARP), this is T56 (AMC) with five on blue." The FARP should remain blacked out until aircraft arrive. Aircrews use a prearranged signal to identify themselves to FARP personnel. Once in the area, the aircraft could transmit a simple, short message. For example, using a single word, such as “Bravo,” is sufficient. “Bravo” would alert FARP personnel that friendly aircraft are nearby and that they can turn on the site-location markers.

FORWARD ARMING AND REFUELING POINT MARKING

G-240. The FARP can be marked in several ways. If aircrews are equipped with NVDs, FARP personnel may use a low-level IR light source. Alternate marking techniques include a flashlight with colored lens, chemical lights, or colored beanbag lights. If the existing light level is high, such as during a full moon, engineer tape or other high-contrast materials that are staked to the ground may suffice.

G-241. During arming and refueling operations, FARP personnel may have to use artificial lights because of the low natural light level. Color-coded, low-intensity light sources may be used to indicate direction, takeoff and landing areas, and pad sites.

NIGHT VISION

G-242. Artificial lights may pose several problems. The FARP will probably be in total darkness until aircraft arrive. When personnel start working with lights, their night visual acuity may be impaired. Personnel will be constantly adjusting from a no-light to a low-light working environment. Each time that the light level changes, personnel may need time for their night vision to readapt.

G-243. The glow from a nearby chemical light can disturb a worker’s vision. Objects may be blurred when looked at closely. Artificial light sources are a problem because they cannot be placed to adequately illuminate the work and leave both hands free.

G-244. NVDs may be the best choice for night FARP operations. However, their use requires extensive training or aircraft turnaround times may increase.

Advantages of Night Vision Devices

G-245. The advantages of NVDs for night FARP operations are the following:

- Passive lighting greatly reduces the enemy’s ability to detect the FARP.
- Aircrews and FARP personnel will be using systems that are compatible, and FARP lighting will not interfere with aircraft night sight systems.
- The same signals, such as hand-and-arm signals and flags, can be used during the day and at night.

Disadvantages

G-246. The disadvantages of NVDs for night FARP operations are the following:

- Objects closer than 10 inches will appear blurred.
- Close workspace around weapon systems may impair the individual’s efficiency.
- NVDs may not be compatible with current NBC equipment.
- The unit may not have enough NVDs to support both aircrew and FARP personnel.

DESERT OPERATIONS

G-247. The desert environment poses many problems for FARP operations. Adequate water supplies should be available. Aircrews and ground personnel will perspire profusely. To prevent heat casualties or extensive dehydration, each individual must drink plenty of water—up to 5 gallons every 24 hours. Other factors include terrain, mobility, communications, flying techniques, high-density altitude, and FARE systems.

TERRAIN

G-248. Deserts may consist of many different types of sand. Sand may be as fine as talcum powder or as coarse as gravel. The type of sand affects off-road vehicle mobility. In many areas, a crust may form on the surface. If the crust is dark-colored, the sand is very coarse. In such situations, the light sand has been blown away, leaving a surface crust that may be hard enough for a helicopter to land with almost no dust signature.

G-249. The flat terrain and poor relief of the desert create serious navigational problems. Therefore, FARPs must be established in easily recognizable positions. The use of offset, low-output NDBs assists in locating FARP positions. Navigation equipment, such as Doppler, also helps.

G-250. The enemy can observe desert activities from as far away as 10 km. From a vantage point of high ground, the enemy can observe activity from as far away as 20 km. The FARP will be a target of opportunity for any enemy pilot who can see it. Without cover and concealment, the FARP must have AD protection.

MOBILITY

G-251. The best ground vehicles for the desert are the 1-1/4-ton truck, 2-1/2-ton truck, 5-ton truck, and HEMTT. Most vehicle trailers are unsuitable for off-road travel except for the HEMAT.

G-252. The easiest and fastest method of establishing a Desert FARP, is to sling load it into position. Two FARE systems oriented into the prevailing wind and set up in a T-formation (Figure G-19) allow adequate separation from the turning rotors. This system can support four refueling points. The FARP should be positioned to facilitate ground vehicle support. This positioning eases the strain of trying to aerially support the FARP.

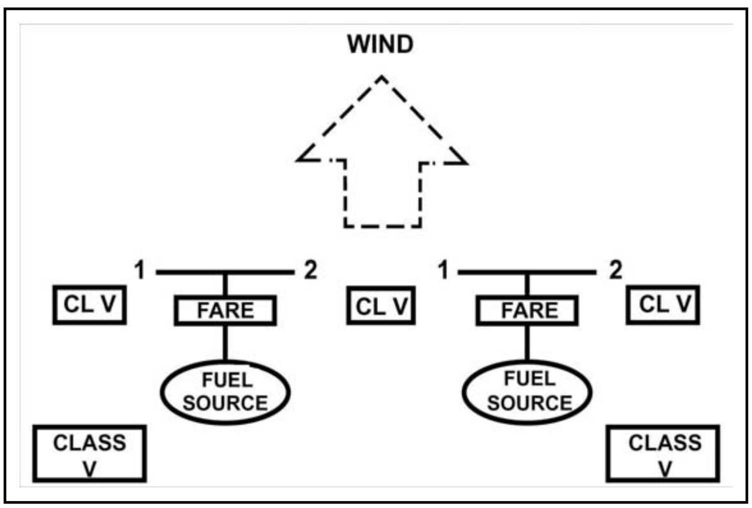


Figure G-19. T-Formation FARE Setup

COMMUNICATIONS

G-253. Electronic communication capabilities will vary from day to day. Communicating with an element more than 25 km away may require a relay station.

FLYING TECHNIQUES

G-254. Aircraft dust signatures are reduced if airspeed is kept above 40 knots. Aircrews should not attempt in-ground-effect hovering. Aircrews should plan and execute approaches to the ground. Correct desert flying techniques help the aircrew to maintain visual contact with the ground.

HIGH-DENSITY ALTITUDE

G-255. High-density altitudes that can degrade aircraft performance will affect most desert operations. In the early morning, when density altitude is lowest, the UH-60 may be able to carry two full 500-gallon collapsible fuel drums. By noon, it may be able to carry only one. An attack helicopter may have to carry less than a full load of ammunition or fuel. Aircrews will require more frequent trips to the FARP. The FARP must be logistically prepared for them.

FORWARD AREA REFUELING EQUIPMENT SYSTEMS

G-256. FARE systems must be dug in or sandbagged. For optimum performance, the fuel source (500-gallon collapsible drum) should be at a level equal to or higher than the pump. All small engine-driven equipment must be protected from blowing sand to prevent mechanical problems. The procedures listed below will help ensure the continued operation of the FARE system. FARE personnel must:

- Replace filter separator elements when they fail or when the pressure differential indicator shows that they must be changed.
- Change or clean oil filters at least every 6 hours.
- Clean small-engine air filters daily with compressed air and replace weekly.
- Run generators continuously for no more than 3 to 6 hours before they replace it.

ADDITIONAL CONDITIONS AND CHARACTERISTICS

G-257. Other conditions and characteristics peculiar to the desert that all personnel should be aware of are listed below:

- All personnel are susceptible to visual illusions (mirages).
- Dust storms restrict the ability to see and breathe.
- Personnel should perform PMCS twice a day.
- Continued exposure to bright sunlight can cause severe eyestrain or sun blindness unless personnel take preventive measures.
- Light can be seen for great distances over flat terrain; a pink filter can be seen more than 5 miles away by someone using an NVD.
- Ground vehicles are easy to identify; silhouettes and shadows are easily detected because they contrast with the lighter natural background.
- In sandy areas, turret weapon systems need frequent cleaning and light lubrication; use of lubricants without proper cleaning causes a buildup of sand in the gear mechanism. This causes weapons to jam; optical sights should be protected from blowing sand that could scar the glass window of the telescopic sight unit.

WINTER OPERATIONS

G-258. The winter battlefield is characterized by low temperatures, fog, and freezing rain, snow, ice, frozen ground, and at times, muddy ground. FARP operations are difficult under these conditions. Detailed planning and training are required to overcome them.

DISPLACEMENT

G-259. Snow, ice, and mud reduce vehicle mobility, complicating ground displacement. Commanders should plan for aerial displacement when possible. If ground displacement is necessary, leaders should allow more time for movement. Breakdown and setup of the FARP take more time on the winter battlefield than in other environments.

PERSONNEL

G-260. Low temperatures make it difficult for personnel to keep warm and function. Wind chill caused by rotor wash can result in cold injuries even when air temperatures are mild. Fuel spilled on bare skin or soaked into clothing has a cooling effect as it evaporates, increasing the probability of cold injury. Personnel handling cold ammunition need mittens or other protection and a lighter pair of gloves when manual dexterity is needed to perform delicate operations. Commanders should ensure that personnel are equipped and trained to function in a cold environment.

FORWARD ARMING AND REFUELING POINT MARKING

G-261. Marking the FARP for aircraft control requires special consideration. Engineer tape is not effective on snow. Marker panels can quickly become obscured by falling snow. Hand-and-arm signals, flashlights, or smoke may be used, depending on weather conditions. Maneuvering aircraft on loose snow surfaces may cause clouds of blowing snow, which can obscure ground guides or other control measures. Blowing snow could cause aircrews to become disoriented and lose aircraft control. Packing the snow or spraying the snow surface with water to form a crust of ice can reduce these problems.

CAMOUFLAGE

G-262. Camouflage can be difficult, particularly where there is complete snow cover. The use of white covers and snow as camouflage is a possible solution. The best solution, however, is to avoid open snowfields when selecting FARP locations. Instead, the FARP should be located near partially wooded or urban areas. FM 20-3 describes camouflage procedures in detail.

ELECTRICAL GROUNDING

G-263. Electrically grounding equipment and aircraft is another problem. Frozen ground makes the emplacement of grounding rods difficult and reduces effectiveness of the electrical ground. To emplace a grounding rod, a hole must be dug, drilled, blasted, or melted and the rod placed in the hole. To ensure the proper flow of electricity, paper or other absorbent material is filled in around the rod and then soaked with salt water.

MAINTENANCE

G-264. Maintenance requirements for aircraft and equipment increase on the winter battlefield. When aircraft icing occurs, FARP personnel may have to deice the aircraft. In cases of extremely thick ice, a Herman Nelson heater or aviation ground power unit may be the only effective deicing equipment available. At times, ammunition can freeze. Deice caps for the Hellfire missiles are available. They are fitted over the seeker to prevent it from freezing. Rocket-pod covers also are available. These covers fit snugly over the rockets, and the rockets can be fired through them. FARP equipment must be "winterized" with additional antifreeze or low-temperature lubricants.

SECTION XIII – PETROLEUM SPILLS

SPILL DEFINITIONS

G-265. Broadly defined, a spill is the release of any kind of a petroleum product or hazardous substance into the environment. Three spill types are small priming spills, small spills, and large spills:

- A small priming spill covers less than 18 inches in all directions.
- A small spill extends less than 10 feet in any direction, covers less than 50 square feet, and is not continuous.
- A large spill extends farther than 10 feet in any direction, covers an area in excess of 50 feet, or is continuous (for example a leaking tank).

G-266. For purposes of reporting to federal, state, and local authorities, an oil spill is defined as any spill that reaches a stream, creek, river, or any other body of water in harmful quantities. In addition, units report any spill that could come into contact with the aqua line of the local water table. Harmful quantities violate applicable water-quality standards or cause a film or sheen upon, or discoloration of, the surface of the water or adjoining shorelines. Harmful quantities also cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

G-267. The information relative to spill size and reportable spills discussed in this section applies only to oil spills, not to hazardous substances. The commander or on-site coordinator is the only person authorized to report spills. He reports all spills of any kind that he deems significant, including any spill that results in fire or explosion.

SPILL DISCOVERY

G-268. The initial component in the spill-response plan is discovery. The primary responsibility of a discoverer is to notify proper authorities, who are trained and equipped to deal with an environmental incident. Upon discovery, the discoverers:

- Stop the source of the spill if properly trained to do so and it can be done safely.
- Begin the notification process.

ASSESSMENT

G-269. During every step of the spill-response process, each responding individual continually assesses the situation. He makes decisions on the next appropriate action to be taken. Upon initial discovery, he reports:

- Time and type of incident.
- Name and quantity of spilled material and rate of release.
- Direction of the spill, vapor, or smoke release.
- Fire or explosion possibility.
- Coverage area of spill and the intensity of any fire or explosion.
- Extent of injuries, if any.
- Status of cleanup.
- Whether spill team is on-site or en route.
- Whether spill team is adequate.
- Estimated time to completion.
- Name of on-scene commander and how to contact him.

G-270. The commander or on-site coordinator determines the appropriate response based on potential risks associated with the spill. He determines whether an imminent or actual threat exists to human health or the environment. He notifies appropriate authorities. For example, the on-scene commander may determine that the spill cleanup is beyond the capability of the functional area activity that created the spill. He then mobilizes the response team to control, contain, and clean up any spilled material if:

- The spill could result in the release of flammable or combustible liquids or vapors, thus causing a fire or gas-explosion hazard.
- The spill could cause the release of toxic liquid or fumes.
- The spill is containable on site but the potential exists for ground contamination.
- The spill cannot be contained on site, resulting in off-site soil or water contamination.

RESPONSE PHASES FOR OIL SPILLS

G-271. Defensive actions begin as soon as possible. Actions are taken to prevent or minimize damage to public health and welfare or to the environment. Some general actions include:

- Eliminating sources of sparks or flames.
- Controlling the source of the discharge.
- Emplacing physical barriers, such as berms or dikes, to deter the spread of the oil.
- Preventing contaminated water discharge into storm drains or the sewer system.
- Recovering the oil or minimizing its effects.
- Placing recovered oil and contaminated absorbents, such as rags, in Department of Transportation (DOT)-approved containers for disposal as hazardous waste (HW).

OIL SPILL CLEANUP

G-272. The responsible unit takes the following actions for each type of oil spill.

SMALL PRIMING SPILL

G-273. The responsible unit posts a fireguard at the spill until vapors dissipate.

SMALL SPILL

G-274. For small spills, the responsible unit:

- Stops operations in the area and posts a fireguard.
- Uses an absorbent cleaning agent; if the fuel spills on concrete or a similar hard surface, after cleaning, place the absorbent material in a closed metal container for later burning.
- Does not use rags to absorb the spill—if aircraft fuel spills. Fuel may spill on the ground or on a hard surface away from operational areas; if so, rope off the spill area until the fuel evaporates and vapors disperse.
- Ceases operations; does not allow personnel in the area until the fuel is vapor-free.

LARGE SPILL

G-275. For large spills the responsible unit:

- Calls the fire department immediately.
- Stops the flow of fuel; after taking all safety precautions, personnel may consider removing aircraft, refueling vehicles, and personnel from the spill area.
- Shuts engines off.
- Blankets large fuel spills with foam.

G-276. The fire chief directs subsequent recovery of fuels. He does not use the area for operations until it is declared free of fuel and fuel vapors.

ADDITIONAL ACTIONS

G-277. If berms or grated trenches did not contain the spill, the responsible unit establishes an area of isolation. The area size depends on the spill's size and the waste removed.

G-278. If the spill produces a toxic vapor cloud, evacuate the area. If large quantities of volatile (toxic or combustible) materials spill, the responsible unit evacuates a downwind area at least 500 feet wide and 1,000 feet long. Contact the Air Weather Service (AWS) for ambient wind speeds and directions. The AWS will assist the fire chief and commander or on-site coordinator by providing toxic corridor computations. The responsible unit should—

- Use pumps or tank trucks to collect as much of the material as possible.
- Use hay or other absorbent material to absorb oil not collected by pumping.
- Dispose of contaminated earth and absorbent material as directed by the environmental officer, commander, or on-site coordinator.

RESPONSIBILITIES AND DUTIES OF ON-SITE COORDINATOR

G-279. The on-site coordinator coordinates plans with the response team, state, and local representatives. He:

- Determines when the area is clean enough for normal service to return.
- Briefs and dispatches a response force to the accident scene and determines the need for additional support teams.
- Locates or relocates the mobile CP, if necessary.
- Receives a briefing from the fire chief or other personnel on actions taken.
- Evacuates and establishes a disaster cordon around the area and establishes an entry control point, allowing only essential personnel in the area.
- Secures the accident scene after the area is declared safe and declares "all clear" following withdrawal, as the situation dictates.
- Coordinates appropriate actions with local civil authorities at the accident scene.
- Coordinates logistics support, as necessary.
- Informs higher headquarters of the situation and actions taken and notifies appropriate agencies if unit personnel cannot sufficiently contain and clean the spill.

RESPONSE TEAM ORGANIZATION AND TRAINING

G-280. Units establish procedures and response teams to manage environmental emergencies. The installation or major subordinate command governs organization and provides training.

TRAINING

G-281. Training includes classroom and emergency-response exercises. Classroom instruction trains response teams in exposure hazards of substances that they may encounter during a spill response. Training exercises focus on actual spill-control and cleanup activities. Team members receive proper hazardous substance response training to:

- Familiarize them with facility layouts and typical oil and hazardous substances.
- Use and maintain breathing apparatuses and other equipment.
- Classify hazardous substances and their characteristics.
- Retain spills and recover spilled substances.

- Dispose of contaminated soil, absorbent material, and recovered pollutants.
- Restore the contaminated area to its former condition.

G-282. Individuals who store, transfer, or employ oil or hazardous substances require some level of hazard training; recommended training includes—

- Spill procedures and safety concerns.
- Reaction and avoidance of exposure to hazardous substance spills.
- Specific safety requirements and procedures of the work assignment.

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Appendix H

Unmanned Aerial Vehicle System Considerations

SECTION I – GENERAL

INTRODUCTION

H-1. UAVSs can operate anywhere on the battlefield to include forward of the FLOT. Like manned systems, they can operate at night and in limited adverse weather conditions, when equipped with the proper sensors. UAVSs are an excellent intelligence asset that provides the commander with near-real-time reconnaissance and battlefield surveillance without major risk to personnel. They also give commanders a dedicated asset that can look throughout the width and depth of his AO. During a mission, new targets may arise and the commander can redirect an aerial vehicle (AV) to a different location within the mission area. In addition to reconnaissance operations some UAVS, such as Hunter, can conduct laser designation and attack operations.

TACTICAL LOCATION OF ARMY UNMANNED AERIAL VEHICLE SYSTEMS

H-2. Some UAVSs, such as IGNAT and Hunter, require improved airstrips for take-off and landing; while Shadow and Raven UAVSs can take-off and landing from un-improved surfaces. In either case, locating the larger UAVS in the vicinity of the AVN BDE generally improves coordination because the UAVS unit has immediate access to the AD status, threat graphics, and weather data. It is also worth noting that UAVS units can operate in single or split-site configurations.

SINGLE-SITE OPERATIONS

H-3. Single-site operations facilitate command, control, communications (C3), and logistics support. However, adding the UAVS unit to a brigade TAA increases the electronic and physical signature.

SPLIT-SITE OPERATIONS

H-4. In split-site operations, the UAVS unit is split into two distinct sites—the mission planning and control site (MPCS) and the launch and recovery (L/R) site. This allows the unit to provide logistics support from a secure area while still providing tactical support at a TAC or forward CP. The disadvantage of split-site operations is the delay in operational support as the AV transits from the L/R to the area of employment.

Mission Planning and Control Site

H-5. The MPCS consists of a ground control station (GCS) along with associated personnel and supporting equipment. It is normally located with the supported unit. The MPCS receives the tasking, plans the mission, takes control of the AV for the actual conduct of the mission, and reports information.

Launch and Recovery Site

H-6. The launch/recovery (L/R) site consists of AVs, L/R systems, GCS, maintenance equipment, ground support equipment (GSE), and supporting personnel. The L/R site receives the mission from the MPCS. It prepares and launches an AV. After the AV has reached a predetermined altitude or location, control of the AV is transferred to the MPCS's GCS at the supported unit's location. For recovery of the AV, the process is reversed.

EMPLOYMENT

H-7. UAVSs significantly enhance the Army's ability to contribute to offensive, defensive, stability operations, and support operations in a joint and expeditionary context across the full spectrum of conflict, thus remain a critical component of the joint team.

H-8. Recent combat operations in Operation Enduring Freedom (OEF) and OIF continue to prove that UAVSs are full-fledged members of the combined-arms team. From supporting CCA, artillery raids, air assaults, and attack reconnaissance helicopter operations, Army UAVSs provide the commander speed, agility, flexibility, and lethality—often under diverse and difficult conditions—throughout the fight.

H-9. Ongoing deployments and combat operations provide keen insights into the broad range of future missions and requirements. The Army is fighting in a distributed manner, on a noncontiguous battlefield, with smaller, more effective units, and at an increased OPTEMPO. UAVS units are incorporated into, and enhance joint and combined arms capabilities at the lowest level. This requires UAVS leaders at all levels to be well versed in battle tasks across Army all BOSs.

H-10. The fundamental support that Army UAVSs most commonly provide are:

- Surveillance: area surveillance in friendly or enemy territory.
- Reconnaissance: near real-time combat information about terrain, friendly unit actions, and the disposition of possible enemy elements.
- Security: reaction time and maneuver space for the main body and area security.
- Targeting: target acquisition (TA), target detection and recognition, target designation, BDA.
- Lethal: engagement of HPTs.
- UAVSs may perform multiple roles in the course of their missions. The supported commander determines the mission statement and he may include many of the above roles in the mission statement, also specifying "be-prepared" contingency roles so that the correct payload is on-board.

CAPABILITIES

H-11. UAVSs currently bring numerous capabilities to Army units. The UAVS provides near-real-time reconnaissance, surveillance, and TA. They can be employed forward of the FLOT, on the flanks, or in rear areas. Employed as a team, UAVSs and manned systems provide excellent reconnaissance and attack resolution. Some AVs can be fitted with laser designators to mark targets and some may be armed. Listed below are just a few of the other capabilities currently provided:

- Support TA efforts and lethal attacks on enemy reconnaissance and advance forces.
- Assist in route, area, and zone reconnaissance.
- Locate and help determine enemy force composition, disposition, and activity.
- Maintain contact with enemy forces from initial contact through BDA.

- Using a map or other grid reference material, UAVS operators can provide target coordinates with enough accuracy to enable an immediate target handover, as well as first-round fire-for-effect engagements.
- Provide or enhance multi-spectrum sensor coverage of the battlespace.
- Provide information to manned systems, thus increasing survivability.
- Reduce or eliminate exposure time of manned systems in high-risk environments.
- Provide extended three-dimensional vantage, both in distance and time, at critical decision points in difficult terrain.
- Perform decoy, demonstration, feint, and deception operations.
- Some UAVSs have an extended mission duration beyond those of manned systems, whose fuel limitation is 2.5 to 3.0 hours.

H-12. In the future, UAVSs will have additional capabilities beyond those currently provided. Listed below are some of those additional capabilities:

- Transfer combat information by relaying voice and data transmissions from aircraft and ground vehicles to the brigade and division TOCs.
- Non-lethal EW capability to the air/ground team.

RISK REDUCTION

H-13. The UAVS provides an airborne targeting and surveillance asset that does not expose personnel to risk.

SYSTEM INTEGRATION

H-14. UAVS use fiber-optic cabling for internal system ground communications, SINCGARS, and MSE for external communications on the battlefield. However, satellite relay and other DOD communications links may be used as they become available.

H-15. AV to GCS communications nets depend on the UAVS being used, the echelon of employment, and the operation being supported. Communication between units uses standard DOD COMSEC equipment and procedures.

DETECTION

H-16. Currently, AVs are extremely difficult for enemy AD systems to detect and engage. Enemy radars are designed to detect much faster moving aircraft and tend to skip over these slow-flying platforms. If detected, the composite airframes provide small radar cross sections. IR-guided surface-to-air missile (SAM) systems have difficulty getting a positive lock on the small power plants and, in most cases, cannot engage them. The low visual and acoustic signatures of AVs make them an attractive platform for stealth reconnaissance. Tactical AVs have less than a 10-percent chance of detection by the unaided human eye when operating as low as 3,000 feet AGL.

SPECIAL CONSIDERATIONS

H-17. Even UAVSs with degraded mission packages can disrupt enemy operations. Enemy concerns about UAVS activity cause frequent movement and tend to lead to increased communications between organizations from which intelligence data can be generated. Frequent movement disrupts the enemy force’s ability to conduct coordinated operations, strains its logistics system, and degrades personnel’s physical and mental endurance.

LIMITATIONS

H-18. The UAVS is less effective in locating enemy forces that are well covered or concealed. Tactical AVs are not well suited for wide area searches; rather, their capabilities are enhanced when they are employed as part of an overall collection plan. Although less detectable, like manned aircraft, they are vulnerable to enemy AD systems and they have weather restrictions.

INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE

H-19. The capabilities of the UAVS expand the planning horizon for the S2 and S3. Conversely, there is the potential for over-reliance on the UAVS at the expense of other collection assets. This can result in an ISR plan that is neither comprehensive nor integrated. Traditional intelligence-gathering assets require as much attention as high-technology equipment. Both should be focused on the CCIR.

H-20. UAVSs contribute to the overall ISR effort. The AV's range and endurance provide commanders with a bird's-eye perspective of his AO, without risking manned aircraft. AVs can fly deep into the AO and are flexible enough to be retasked to provide timely information on other areas. While reconnaissance, surveillance, and target acquisition are primary missions, UAVs also provide substantial support to intelligence collection in support of the IPB effort and BDA.

MANNED AND UNMANNED TEAMING

H-21. UAVSs and manned systems can provide excellent reconnaissance resolution when employed together. The brigade and battalion commanders can use UAVS data to determine the best locations to employ manned air assets. In either case, UAVS support greatly reduces the mission load of the manned aircrews. Without the additional assets that UAVS support provides, extended operations may require commanders to rotate manned aircraft or plan rest and resupply operations to maintain a continuous, limited reconnaissance effort. Frequent training between manned aviation assets and UAVSs maximizes the capabilities of this teaming and assists the commander in selecting the best method of employment in different tactical situations.

H-22. The reconnaissance, surveillance, and TA capabilities of UAVSs make them ideal to support reconnaissance and security missions. Locating high payoff targets such as enemy AD or FA systems is a vital mission for UAVSs. They can confirm the presence and location of high priority targets. UAVSs can cue forces during screen, guard, and cover missions. UAVSs can perform all of the basic tasks of the screen except clearing an area, thus freeing the manned systems for higher priority.

H-23. Maximum use of UAVS and joint assets can significantly reduce the requirements on the commander's internal resources required for security. UAVS units can perform of the basic observation tasks, thus freeing manned systems for higher priority actions, to reduce manned system flying hour requirements, and/or fighter management needs. While TTPs governing Army UAVS operations are emerging, every opportunity to employ UAVSs, including those of other services, should be exploited to enhance military operations.

Appendix I
Risk Management

Risk management is the process of identifying, assessing, and controlling risks arising from operational factors, and making decisions that balance risk cost with mission benefits (FM 100-14). It is the Army's principal risk-reduction process. The intuitive management of risk in conducting military training and operations is old, but its systematic application, as part of Army doctrine, is relatively new. Therefore, this appendix presents a summary of how-to-do-it information based on FM 5.0 (101-5) and FM 100-14. Key risk management terms are defined at the end of this appendix.

SECTION I – APPLICATION

I-1. Risk management is applied to reduce the risk of the full range of METT-TC hazards, including enemy action. It is integrated into the MDMP as indicated in Table I-1.

Table I-1. Risk Management Integrated Into the MDMP

Military Decision Making Process	Risk Management Steps				
	Identify Hazards	Assess Hazards	Develop Controls & Make Risk Decisions	Implement Controls	Supervise & Evaluate
Receipt of Mission	X				
Mission Analysis	X	X			
COA Development	X	X	X		
COA Analysis	X	X	X		
COA Comparison			X		
COA Approval			X		
Orders Production				X	
* Preparation				X	X
* Execution				X	X
* Not part of the MDMP					

SECTION II – RESPONSIBILITIES

I-2. Leaders at every echelon are responsible for risk management.

BRIGADE AND HIGHER HEADQUARTERS

I-3. Every commander, leader, and staff officer must integrate risk management into the planning and execution of training and operational missions. Staff officers assist the commander in minimizing unnecessary risk by increasing certainty in all operations. They use the risk management process to assess their functional areas and make control-measure recommendations to reduce or eliminate risk to support the combat power dynamic of force protection. Examples include the following:

- Applying risk management during the MDMP to identify force-protection shortcomings in the BOS functions.
- Developing and implementing controls for the commanders that support the mission by avoiding unnecessary risk and loss of combat power.
- Providing support to operational requirements and establishing procedures and standards that are clear and practical for each specified and implied task.

COMMANDER

I-4. The commander has overall responsibility. The commander:

- Provides risk guidance.
- Selects hazard-control options.
- Makes the risk decision for COA.
- Enforces and evaluates controls.

EXECUTIVE OFFICER

I-5. The XO has staff coordination responsibility. The XO:

- Supervises risk management integration across the entire staff.
- Ensures that hazard identification and controls are integrated into plans and orders.
- Ensures that the staff monitors and enforces controls during execution.

STAFF OFFICERS

I-6. Staff officers have responsibility in their own functional areas. Staff officers:

- Identify hazards most likely to result in loss of combat power (that is, hazards that are not adequately controlled).
- Develop control options that address reasons for hazards.
- Integrate hazard identification and selected controls into functional area paragraphs, graphics, and annexes of the OPORD.

SAFETY OFFICER/NONCOMMISSIONED OFFICER

I-7. The SO/NCO has coordination responsibility. The SO/NCO:

- Assists the commander and staff with risk management integration during mission planning, execution, and assessment.
- Collects hazard information and controls identified by the staff and uses this information to prepare risk assessment and control measures for all operations.
- Coordinates staff risk management and makes recommendations to the S3.

COMPANY AND LOWER HEADQUARTERS

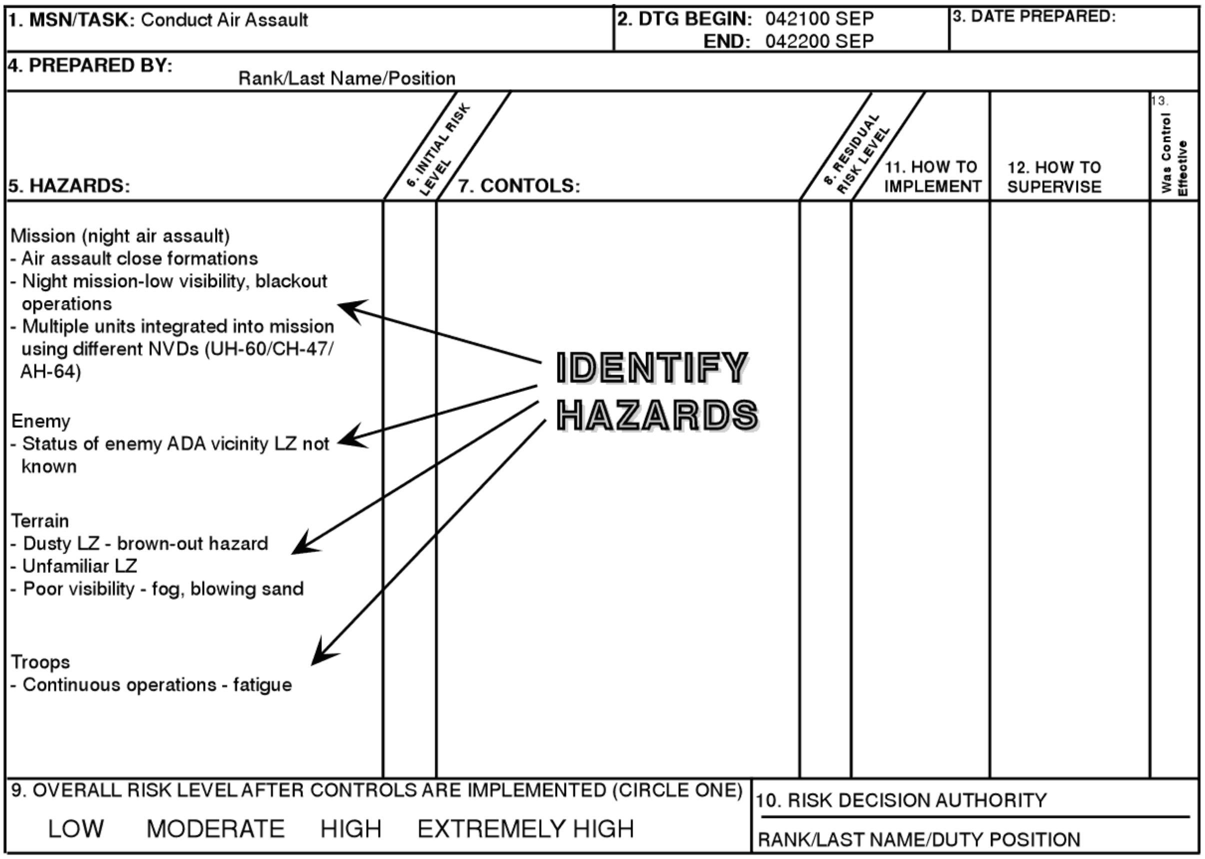
I-8. The commander or leader performs or delegates execution of the risk management process for each step in TLPs (Table I-2).

Table I-2. Risk Management Integrated into Troop Leading Procedures

Troop Leading Steps	Identify Hazards	Assess Hazards	Develop Controls & Make Risk Decisions	Implement Controls	Supervise & Evaluate
1. Receive Mission	X				
-Perform initial METT-T-C analysis	X				
2. Issue a warning order	X				
3. Make a tentative plan	X	X			
a. Make an estimate of the situation	X	X			
b. Conduct a detailed mission analysis	X	X			
c. Develop situation and courses of action:	X	X			
-Enemy situation (enemy COA)	X	X			
-Terrain and weather (OCOKA)	X	X			
-Friendly situation (troops and time available)	X	X			
-Course of action (friendly)	X	X			
d. Analyze courses of action - war game	X	X			
e. Compare courses of action			X		
f. Make decisions			X		
g. Expand selected COAs into a tentative plan			X		
4. Initiate movement				X	
5. Reconnoiter				X	
6. Complete the plan				X	
7. Issue the order				X	
8. Supervise and refine the plan					X

PROCEDURES

I-9. The commander and staff perform the actions listed below. The SO collects the information generated during these actions and enters it on the risk management worksheet (Figure I-1).



1. MSN/TASK: Conduct Air Assault
2. DTG BEGIN: 042100 SEP
END: 042200 SEP
3. DATE PREPARED:
4. PREPARED BY: Rank/Last Name/Position
5. HAZARDS:
6. INITIAL RISK LEVEL
7. CONTOLS:
8. RESIDUAL RISK LEVEL
11. HOW TO IMPLEMENT
12. HOW TO SUPERVISE
13. Was Control Effective

Mission (night air assault)
- Air assault close formations
- Night mission-low visibility, blackout operations
- Multiple units integrated into mission using different NVDs (UH-60/CH-47/AH-64)

Enemy
- Status of enemy ADA vicinity LZ not known

Terrain
- Dusty LZ - brown-out hazard
- Unfamiliar LZ
- Poor visibility - fog, blowing sand

Troops
- Continuous operations - fatigue

IDENTIFY HAZARDS

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)
LOW MODERATE HIGH EXTREMELY HIGH
10. RISK DECISION AUTHORITY
RANK/LAST NAME/DUTY POSITION

Figure I-1. Risk Management Worksheet—Identify Hazards

IDENTIFY HAZARDS

I-10. Collect METT-TC factors for each COA for the mission or task (See Figure I-2).

SOURCES

I-11. Sources include the following:

- Mission order/task instructions.
- CCIR.
- Mission planning systems.
- Tactical SOP.
- Unit accident history.
- Reconnaissance.
- Experience.

- **MISSION:**
  - **- AIR ASSAULT INFANTRY PERSONNEL**
  - **- INSERT NLT 042100 SEP, ROVER BEACH LZ**
  - **- PREPARE TO EXTRACT NLT 042200 SEP, SAME LZ**

- **CONDITIONS**
  - **- ONE COMPANY UH-60, 2 CH-47s, 2 AH-64s**
  - **- LOAD: 14 FULLY EQUIPPED SOLDIERS, 540 POUNDS SPECIAL EQUIPMENT**
  - **- BLACKOUT CONDITIONS**
  - **- LZ: 114 MILES FROM DEPARTURE POINT, 100 YARDS WIDE, SAND/ DIRT/GRASS**
  - **- WX: RESTRICTED VISIBILITY EN ROUTE AND AT LZ (ILLUMINATION, RAIN, FOG, LOOSE SAND)**

- **SITUATION:**
  - **- CREW: FULLY QUALIFIED, EXPERIENCED, SUPERB TEAMWORK**
  - **- MISSION BRIEF AT 041530 SEP (CREW AND PERSONNEL)**

Figure I-2. Example of Mission Factors

REVIEW FACTORS

I-12. Review METT-TC factors to identify hazards most likely to cause loss of combat power. That is, identify those hazards that are not adequately controlled at this or the next lower echelon of command. To do this, answer the questions in the matrix below (Figure I-3) to determine if the hazard needs to be risk managed.

		Adequate	
		NO	YES
Support	- Is the type amount/capability/condition of support adequate to control hazards? - Personnel - Equipment and materials - Supplies - Services/facilities		
Standards	- Is guidance/procedure adequately clear practical/specific to control hazard?		
Training	- Is training adequately thorough and recent to control hazard?		
Leader	- Is leadership ready, willing, and able to enforce standards required to control hazards?		
Unit Self Discipline	- Is the unit performance and conduct self-disciplined to control hazard?		
If all are "Yes," no further action is required. If one or more are "No," risk manage the hazard. (Enter it on the risk management worksheet)			

Figure I-3. Does the Hazard Require Risk Management?

RECORD

I-13. Hazards determined to require risk management are identified to the SO/NCO, who enters them in Block 5 on the worksheet.

ASSESS HAZARDS

I-14. Once a hazard has been identified, it must be evaluated for control.

RISK LEVEL

I-15. Determine the risk level of each hazard that is not adequately controlled. Use Figure I-4 and suitable judgment to select the risk level.

Risk Level:
E - Extremely High
H - High
M - Moderate
L - Low

		HAZARD PROBABILITY				
		Frequent	Likely	Occasional	Seldom	Unlikely
Severity	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Figure I-4. Risk Assessment—Assess Hazards

RECORD

I-16. Provide the risk level for each hazard to the SO/NCO. The SO/NCO enters this information in Block 6 of the risk management worksheet as the initial risk level for each hazard (Figure I-5).

1. MSN/TASK: Conduct Air Assault	2. DTG BEGIN: 042100 SEP END: 042200 SEP	3. DATE PREPARED:
4. PREPARED BY: Rank/Last Name/Position		

5. HAZARDS:	6. INITIAL RISK LEVEL	7. CONTOLS:	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. Was Control Effective
Mission (night air assault) - Air assault close formations - Night mission-low visibility, blackout operations - Multiple units integrated into mission using different NVDs (UH-60/CH-47/ AH-64)	EH	ASSESS HAZARDS				
Enemy - Status of enemy ADA vicinity LZ not known	EH					
Terrain - Dusty LZ - brown-out hazard - Unfamiliar LZ - Poor visibility - fog, blowing sand	H					
Troops - Continuous operations - fatigue	H					

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)	10. RISK DECISION AUTHORITY
LOW MODERATE HIGH EXTREMELY HIGH	RANK/LAST NAME/DUTY POSITION

Figure I-5. Risk Management Worksheet—Assess Hazards

DEVELOP CONTROLS

I-17. Develop one or more controls to eliminate each hazard or to reduce its level of risk. Controls should address the reasons that the hazard needs to be risk managed. Provide controls to the SO/NCO, who enters them in Block 7 of the risk management worksheet (Figure I-6).

1. MSN/TASK: Conduct Air Assault | **2. DTG BEGIN:** 042100 SEP **END:** 042200 SEP | **3. DATE PREPARED:**

4. PREPARED BY: Rank/Last Name/Position

5. HAZARDS:	6. INITIAL RISK LEVEL	7. CONTOLS:	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. Was Control Effective
Mission (night air assault) - Air assault close formations - Night mission - low visibility, blackout operations - Multiple units integrated into mission using different NVDs (UH-60/CH-47/ AH-64)	EH	- Brief all participating crew on formation en route and at PZs and LZs. Conduct full rehearsal. - All crew members will have NVDs to to include all CEs. - Ensure that AH-64 crews have NVGs for CPGs. All participating PCs will attend mission briefing.				
Enemy - Status of enemy ADA vicinity LZ not known	EH	- Request UAV surveillance of LZ from Division.				
Terrain - Dusty LZ - brown-out hazard - Unfamiliar LZ - Poor visibility - fog, blowing sand	H	- All PCs will brief brown-out hazards to crews and rehearse procedure. - Provide photos/video of LZ for mission briefing. Ensure all have current hazard maps of PZ/LZ and route. - Support mission IFR - capable aircraft. Altitude no lower than 200 feet AGL en route. Ensure IMC breakup plan includes attached aircraft.				
Troops - Continuous operations - fatigue	H	- Monitor and enforce crew-rest plan				

DEVELOP CONTROLS

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)
LOW MODERATE HIGH EXTREMELY HIGH

10. RISK DECISION AUTHORITY
RANK/LAST NAME/DUTY POSITION

Figure I-6. Risk Management Worksheet—Develop Controls

DETERMINE RESIDUAL RISK

I-18. After controls are developed, a level of risk may remain.

Risk Assessment Matrix

I-19. For each hazard, use the risk assessment matrix (Figure I-7) and best judgment to determine the level of risk remaining, assuming that the controls are implemented.

Risk Level:
E - Extremely High
H - High
M - Moderate
L - Low

Severity		HAZARD PROBABILITY				
		Frequent	Likely	Occasional	Seldom	Unlikely
Severity	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Figure I-7. Risk Assessment Matrix—Determine Residual Risk

Record

I-20. Provide the residual risk level for each hazard to the SO/NCO, who enters it in Block 8 of the risk management worksheet (Figure I-8).

1. MSN/TASK: Conduct Air Assault		2. DTG BEGIN: 042100 SEP END: 042200 SEP			3. DATE PREPARED:
4. PREPARED BY: Rank/Last Name/Position					

5. HAZARDS:	6. INITIAL RISK LEVEL	7. CONTOLS:	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. Was Control Effective
Mission (night air assault) - Air assault close formations - Night mission - low visibility, blackout operations - Multiple units integrated into mission using different NVDs (UH-60/CH-47/ AH-64)	EH	- Brief all participating crew on formation en route and at PZs and LZs. Conduct full rehearsal. - All crew members will have NVDs to to include all CEs. - Ensure AH-64 crews have NVGs for CPGs. All participating PCs will attend mission briefing.	M			
Enemy - Status of enemy ADA vicinity LZ not known	EH	- Request UAV surveillance of LZ from Division.	M		RESIDUAL RISK	
Terrain - Dusty LZ - brown-out hazard - Unfamiliar LZ - Poor visibility - fog, blowing sand	H	- All PCs will brief brown-out hazards to crews and rehearse procedure. - Provide photos/video of LZ for mission briefing. Ensure all have current hazard maps of PZ/LZ and route. - Support mission IFR - capable aircraft. Altitude no lower than 200 feet AGL en route. Ensure IMC breakup plan includes attached aircraft.	L			
Troops - Continuous operations - fatigue	H	- Monitor and enforce crew-rest plan	L			

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)	10. RISK DECISION AUTHORITY
LOW MODERATE HIGH EXTREMELY HIGH	RANK/LAST NAME/DUTY POSITION

Figure I-8. Risk Management Worksheet—Residual Risk

DETERMINE COURSE OF ACTION RISK

I-21. SOs/NCOs determine the overall risk level for each COA, assuming that the commander selects the controls and they are implemented.

UNIT STANDING OPERATING PROCEDURE

I-22. SOs/NCOs use procedures in the unit's SOP when determining overall risk. If the unit has no such procedures, the COA's overall risk level is the same as the hazard with the highest residual risk. They circle the COA's risk level in Block 9 (Figure N-8).

RESIDUAL RISK CRITERION

I-23. SOs/NCOs analyze the feasibility and acceptability of each COA in terms of residual risk. They score the residual risk criterion for each COA using weights determined by the XO and provide these scores for entry on the decision matrix.

REPORT

I-24. SOs/NCOs present hazards, controls, and risks during commanders' decision briefings. Risk management worksheets may be used for this purpose.

MAKE RISK DECISION

I-25. Commanders make the decisions.

DECISION PROCESS

I-26. Commanders select the COA and decide whether to accept the COA's risk level. They decide what level of residual risk they will accept and approve control measures that will result in that level or a lower level of risk. They obtain the higher commander's approval to accept any level of residual risk that might imperil the higher commander's intent or is not consistent with risk guidance. In Block 10, SOs/NCOs enter the name, rank, and duty position of the commander accepting the COA's risk level (Figure I-9).

1. MSN/TASK: Conduct Air Assault | **2. DTG BEGIN:** 042100 SEP **END:** 042200 SEP | **3. DATE PREPARED:**

4. PREPARED BY: Rank/Last Name/Position

5. HAZARDS:	6. INITIAL RISK LEVEL	7. CONTOLS:	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. Was Control Effective
Mission (night air assault) - Air assault close formations - Night mission - low visibility, blackout operations - Multiple units integrated into mission using different NVDs (UH-60/CH-47/AH-64)	EH	- Brief all participating crew on formation en route and at PZs and LZs. Conduct full rehearsal. - All crew members will have NVDs to to include all CEs. - Ensure AH-64 crews have NVGs for CPGs. All participating PCs will attend mission briefing.	M	Mission briefings Rehearsal - Mission - Crew	IMPLEMENT	
Enemy - Status of enemy ADA vicinity LZ not known	EH	- Request UAV surveillance of LZ from Division.	M	Coordinate w/ div G3 for UAV support		
Terrain - Dusty LZ - brown-out hazard - Unfamiliar LZ - Poor visibility - fog, blowing sand	H	- All PCs will brief brown-out hazards to crews and rehearse procedure. - Provide photos/video of LZ for mission briefing. Ensure all have current hazard maps of PZ/LZ and route. - Support mission IFR - capable aircraft. Altitude no lower than 200 feet AGL en route. Ensure IMC breakup plan includes attached aircraft.	L	Mission briefings Rehearsal - Mission - Crew		
Troops - Continuous operations - fatigue	H	- Monitor and enforce crew-rest plan.	L	Mission brief TACSOP		

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)
LOW MODERATE HIGH EXTREMELY HIGH

10. RISK DECISION AUTHORITY
RANK/LAST NAME/DUTY POSITION

Figure I-9. Risk Management Worksheet—Implement

ISSUE REFINED RISK GUIDANCE

I-27. The S3 develops and issues a warning order that contains the commander's refined risk guidance.

IMPLEMENT CONTROLS

I-28. Based on the commander's decision and risk guidance, the staff determines how each control will be put into effect or communicated to the personnel who will make it happen; for example, FRAGO, OPORD, SOP, mission briefing, or rehearsals. SOs/NCOs enter this information in Block 11 of the risk management worksheet (Figure N-9). The staff coordinates controls, integrates them into the FRAGO and/or appropriate paragraphs and graphics of the OPORD, and confirms understanding by subordinate units during the rehearsal.

SUPERVISE

I-29. The staff determines how each control will be monitored or enforced to ensure that it is effectively implemented; for example, command presence, direct supervision, precombat inspection, precombat checks, SITREP, spot check, radio net monitoring, cross talk, and back brief. The staff provides control supervision methods to the SO/NCO, who enters them in Block 12 (Figure I-10).

1. MSN/TASK: Conduct Air Assault	2. DTG BEGIN: 042100 SEP END: 042200 SEP	3. DATE PREPARED:
4. PREPARED BY: Rank/Last Name/Position		

5. HAZARDS:	6. INITIAL RISK LEVEL	7. CONTOLS:	8. RESIDUAL RISK LEVEL	11. HOW TO IMPLEMENT	12. HOW TO SUPERVISE	13. Was Control Effective
Mission (night air assault) - Air assault close formations - Night mission - low visibility, blackout operations - Multiple units integrated into mission using different NVDs (UH-60/CH-47/ AH-64)	EH	- Brief all participating crew on formation en route and at PZs and LZs. Conduct full rehearsal. - All crew members will have NVDs to to include all CEs. - Ensure that AH-64 crews have NVGs for CPGs. All participating PCs will attend mission briefing.	M	Mission briefings Rehearsal - Mission - Crew	Direct supervision brief backs	
Enemy - Status of enemy ADA vicinity LZ not known	EH	- Request UAV surveillance of LZ from Division.	M	Coordinate w/ div G3 for UAV support	Brief back from Bde S3	
Terrain - Dusty LZ - brown-out hazard - Unfamiliar LZ - Poor visibility - fog, blowing sand	H	- All PCs will brief brown-out hazards to crews and rehearse procedure. - Provide photos/video of LZ for mission briefing. Ensure all have current hazard maps of PZ/LZ and route. - Support mission IFR - capable aircraft. Altitude no lower than 200 feet AGL en route. Ensure IMC breakup plan includes attached aircraft.	L	Mission briefings Rehearsal - Mission - Crew	Direct supervision SUPERVISE	
Troops - Continuous operations - fatigue	H	- Monitor and enforce crew-rest plan.	L	Mission brief TACSOP	Direct supervision Brief backs	

9. OVERALL RISK LEVEL AFTER CONTROLS ARE IMPLEMENTED (CIRCLE ONE)	10. RISK DECISION AUTHORITY
LOW MODERATE HIGH EXTREMELY HIGH	RANK/LAST NAME/DUTY POSITION

Figure I-10. Risk Management Worksheet—Supervise

RISK MANAGEMENT ASSESSMENT

I-30. Evaluation of risks and controls is an ongoing process.

EVALUATE CONTROLS

I-31. Staff members evaluate the effectiveness of each control in reducing the risk of the targeted hazard. They provide a "yes," if effective, or "no," if not, to the SO/NCO, who enters this information in Block 13.

Ineffective Controls

I-32. For each control judged not effective, staff members determine why it was not effective and what to do the next time the hazard is identified; for example, change the control, develop a different control, or change the method of implementation or supervision. They provide this information to safety personnel, who report it during the AAR.

REPORT

I-33. The SO, with the safety NCO, evaluates the unit's risk management performance and reports during the AAR. The matrix below (Table I-3) may be used for this report.

Table I-3. Risk Management Task Standards and Performance Assessment

	GO	NO-GO
Identified the most important hazards.		
* Available facts for each METT-TC factor gathered and considered.		
* Hazard (enemy and accident) most likely to result in loss of combat power identified?		
Assessed risk level of each hazard.		
* Valid method/tool used to assess initial risk levels?		
Developed appropriate control options and determined residual risk.		
* Each control addressed hazard reason(s)?		
* Residual risk level realistic for each hazard?		
* Valid method/tool used to determine the residual risk level for each COA?		
* Residual risk level for each COA entered on decision matrix?		
Made risk decision for selected COA.		
* Valid procedure/guidance used for determining risk decision authority?		
Hazards and controls clearly communicated to responsible unit/leadership.		
* Controls integrated into appropriate paragraphs and graphics of the OPORD/FRAGO and rehearsals?		
Implemented and enforced controls.		
* Effective methods used to supervise/enforce controls?		

SECTION III – DEFINITIONS

I-34. The following terms are defined as they are used in the risk management process.

LEVELS OF RISK

I-35. The levels of risk include extremely high, high, moderate, and low.

EXTREMELY HIGH RISK

I-36. Extremely high risk is the loss of ability to accomplish the mission if hazards occur during the mission. A frequent or likely probability of catastrophic or critical loss exists (FM 100-14).

HIGH RISK

I-37. High risk is the significant degradation of mission capabilities and the inability to accomplish all parts of the mission, or inability to complete the mission to standard if hazards occur during the mission. An occasional to seldom probability of catastrophic loss exists. A likely to occasional probability of a critical loss exists, and a frequent probability of marginal losses exists.

MODERATE RISK

I-38. Moderate risk is the expected degradation of mission capabilities and the reduction in mission capability if hazards occur during the mission. An unlikely probability of catastrophic loss exists. The probability of a critical loss is seldom. The probability of marginal losses is likely or occasional, and the probability of negligible losses is frequent.

LOW RISK

I-39. Low risk expected loses have little or no impact on completing the mission. The probability of a critical loss is unlikely. The probability of a marginal loss is seldom or unlikely, and the probability of a negligible loss is likely or less.

CONDITIONS

I-40. Conditions are the readiness status of personnel and equipment with respect to the operational environment during mission planning, preparation, and execution. Readiness that is below standard leads to human error, material failure, and inadequate precautions for environmental factors, which may cause accidents, fratricide, and mission degradation.

CONTROLS

I-41. Controls are actions taken to eliminate hazards or reduce their risk.

HAZARD

I-42. A hazard is an actual or potential condition that can cause injury, illness, or death of personnel; damage to or loss of equipment or property; or mission degradation.

PROBABILITY

I-43. The levels of probability that an event will occur are the following:

- Frequent: Occurs often, continuously experienced.
- Likely: Occurs several times.
- Occasional: Occurs sporadically.
- Seldom: Unlikely, but could occur at some time.
- Unlikely: Can assume it will not occur.

RESIDUAL RISK

I-44. Residual risk is the level of risk remaining after controls have been selected for hazards. (Controls are identified and selected until residual risk is at an acceptable level or until it is impractical to reduce further.)

RISK

I-45. Risk level is the probability of exposure to injury or loss from a hazard expressed in terms of hazard probability and severity.

RISK ASSESSMENT

I-46. Risk assessment is the identification and assessment of hazards (the first two steps of the risk management process).

SEVERITY

I-47. The level of severity is the expected consequence of an event in terms of degree of injury, property damage, or other mission-impairing factors. These levels are the following:

- Catastrophic: Death or permanent total disability, system loss, major damage, significant property damage, or mission failure.

- Critical: Permanent partial disability, temporary total disability exceeding three months, major system damage, significant property damage, or significant mission degradation.
- Marginal: Minor injury, lost workday accident, minor system damage, minor property damage, or some mission degradation.
- Negligible: First aid or minor medical treatment, minor system impairment, or little or no impact on mission accomplishment.

Appendix J

Planning and Operations Charts

The aviation brigade often operates for extended periods of time in continuous operations. Continuous operations are combat operations continuing at the same high-intensity level for extended periods. Figures J-1 through J-37 provide examples of planning and operations charts that can enhance the capability of leaders to sense the battlefield during extended combat or tactical operations and reduce degradation in performance over time. Brigade and battalion commanders must modify their information requirements based on the mission and unit situation and clearly state what information is required to support situational understanding (SU) and decision-making. The curse of digitization is that the staff can and will overwhelm the commander with interesting but not necessarily relevant information unless the brigade commander clearly establishes his critical information requirements. Long and irrelevant briefings reflect the commander's failure to define his information requirements. See also FM 3-90.3, Appendix H, Planning and Operations Status Charts.

SECTION I – PLANNING OPERATIONS CHARTS

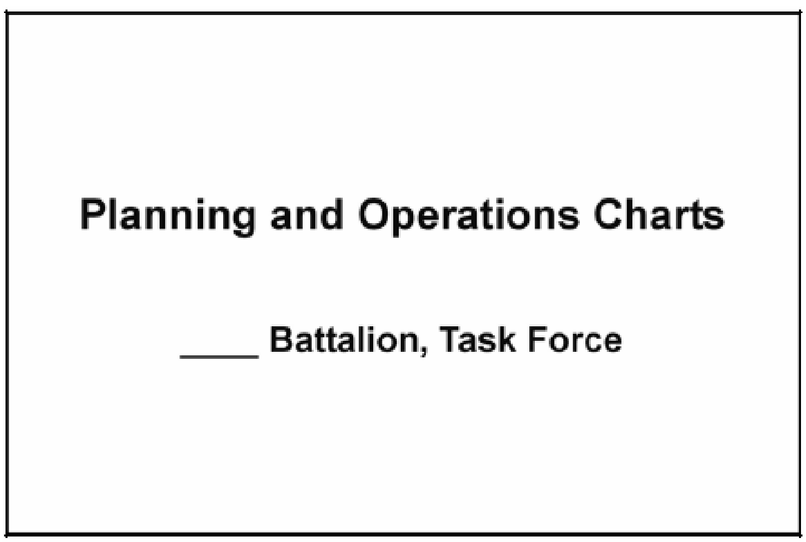


Figure J-1. Cover Sheet

MISSION ANALYSIS BRIEFING AGENDA

1.	AO/AI/BATTLESPACE ORIENTATION	TIO
2.	REVIEW CDR'S INITIAL GUIDANCE	AS3
3.	HIGHER HQ'S MISSION & INTENT 2 LEVELS UP	AS3
4.	INITIAL IPB PRODUCTS	
	TERRAIN & WEATHER ANALYSIS	TIO
	ENEMY COMP/DISP/STRENGTH/CAPABILITIES	S2
	ENEMY COAs (SI TEMP)	S2
5.	RECOMMENDED CCIR	AS3
6.	INITIAL COLLECTION PLAN	AS3/TIO
7.	SPECIFIED/IMPLIED/ESSENTIAL TASKS	AS3
8.	CONSTRAINTS ON THE OPERATION	AS3
9.	CURRENT TASK ORG/COMBAT POWER (TO PLT LEVEL)	AS3
10.	CBT MULT ANALYSIS	AS NEC
	FSO Assets/Issues	
	ENG Assets/Issues	
	ADO Assets/Issues	
	S-1/S-4 Assets/Issues	
11.	RECOMMENDED TIMELINES	AS3
12.	RECOMMENDED RESTATED MISSION	AS3
13.	ISSUE CDR'S GUIDANCE	CDR

Figure J-2. Mission Analysis Briefing Agenda

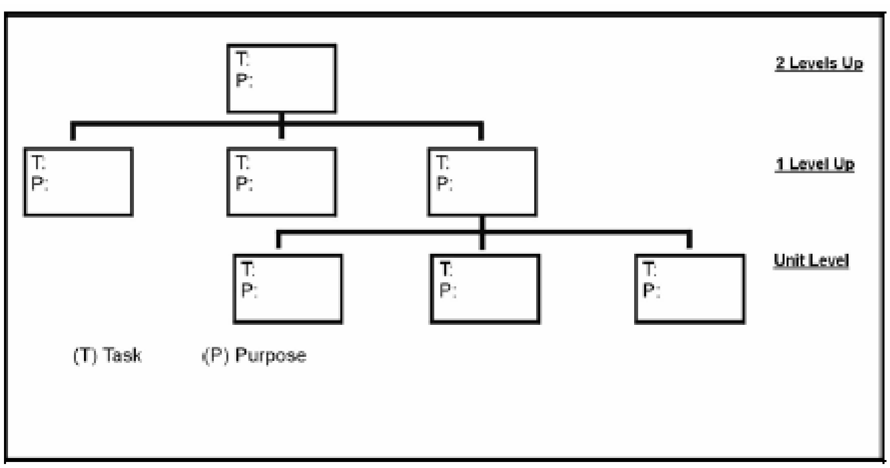
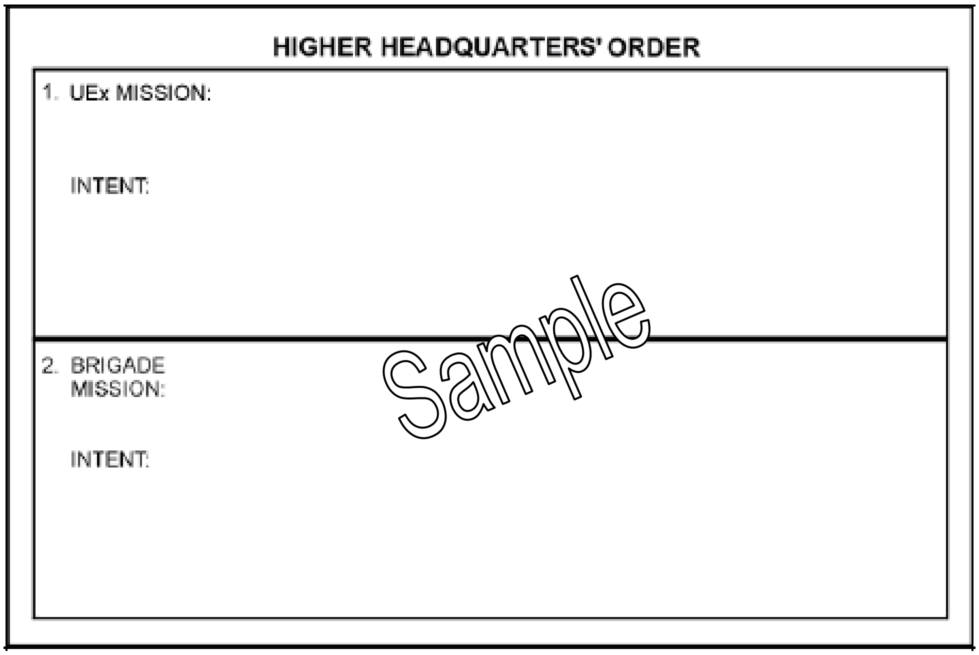


Figure J-3. Higher Headquarters Concept Sketch



HIGHER HEADQUARTERS' ORDER

1. UEx MISSION:

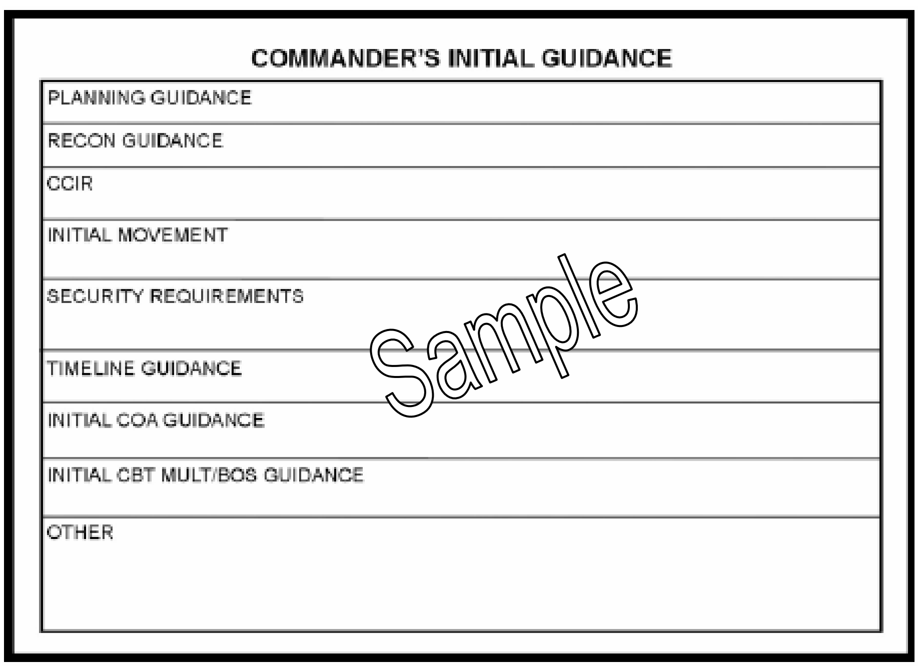
   INTENT:

2. BRIGADE MISSION:

   INTENT:

Sample

Figure J-4. Higher Headquarters Order



COMMANDER'S INITIAL GUIDANCE

PLANNING GUIDANCE
RECON GUIDANCE
CCIR
INITIAL MOVEMENT
SECURITY REQUIREMENTS
TIMELINE GUIDANCE
INITIAL COA GUIDANCE
INITIAL CBT MULT/BOS GUIDANCE
OTHER

Sample

Figure J-5. Commander's Initial Guidance

TERRAIN ANALYSIS WORKSHEET

	EFFECTS/CONCLUSIONS
Maneuver	
Foot	
Wheel	
Mech	
Intel	
Engineer	
Fire Support	
ADA	
CAS	
CSS	
Recon/Surv	
C2	

Sample

LEGEND: (G) POSITIVE (A) MARGINAL (R) NEGATIVE

Figure J-6. Terrain Analysis Worksheet

TERRAIN ANALYSIS WORKSHEET

	OBSTACLES		A o As		KEY TERRAIN		OBS & FOF		COV & CONC	
Maneuver	Friendly	Enemy	Friendly	Enemy	Friendly	Enemy	Friendly	Enemy	Friendly	Enemy
Foot										
Wheel										
Tracked										
ABN/ASLT										
Fire Support										
Engineer										
IEW										
ADA										
CAS (AVN)										
NBC										
C2										

Sample

LEGEND: (G) POSITIVE (A) MARGINAL (R) NEGATIVE

Figure J-7. Terrain Analysis Worksheet

WEATHER ANALYSIS WORKSHEET

	FRIENDLY / ENEMY	EFFECTS (VIS, MOB, SURV)
Maneuver		
Foot		
Wheel		
Mech		
Aviation		
Engineer		
Fire Support		
ADA		
CAS		
Chemical		
Recon/Surv		
C2		

LEGEND: (G) POSITIVE (A) MARGINAL (R) NEGATIVE

Sample

Figure J-8. Weather Analysis

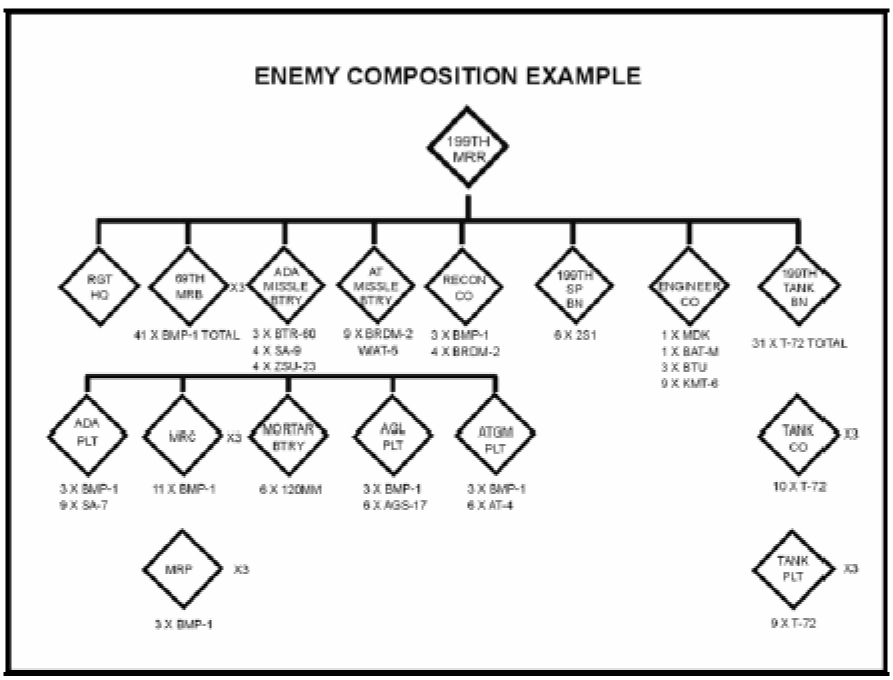


Figure J-9. Enemy Composition

ENEMY DISPOSITION/STRENGTH

Unit ID & Strength / Type	AGAINST BN/BDE		AGAINST BDE/DIV	
	Committed	Reinforcing	Committed	Reinforcing
MRB				
AR Co				
MRC				
AR Bn				
AT Bn				
FS				

Figure J-10. Enemy Disposition/Strength Chart

ENEMY CAPABILITIES

ASSET	CAPABILITIES
ISR	
MANEUVER	
FIRE SUPPORT	
MOB / SURV	
ADA	
NBC	
AVIATION	
EW	

Figure J-11. Enemy Capabilities Chart

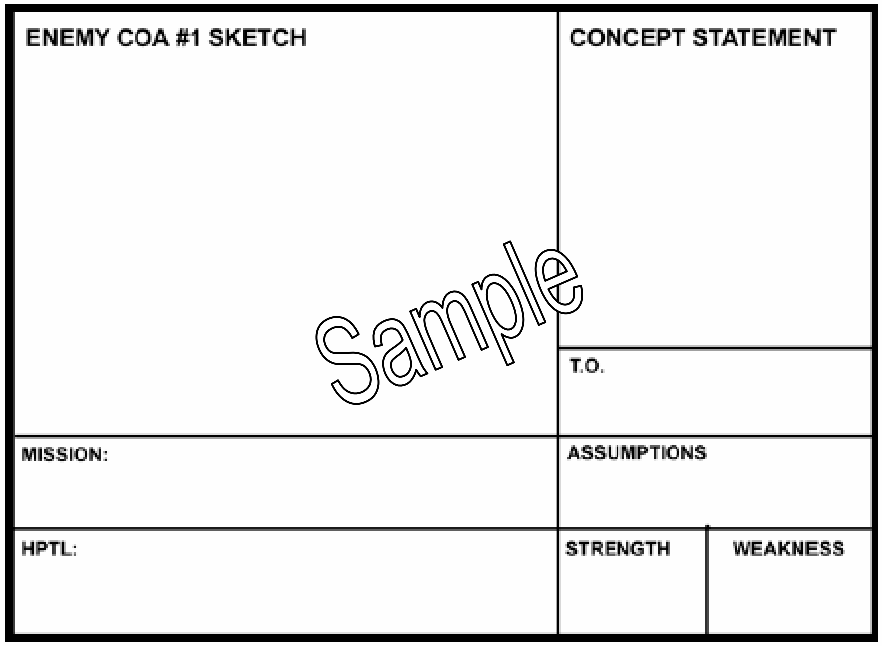


Figure J-12. Enemy COA #1 Chart

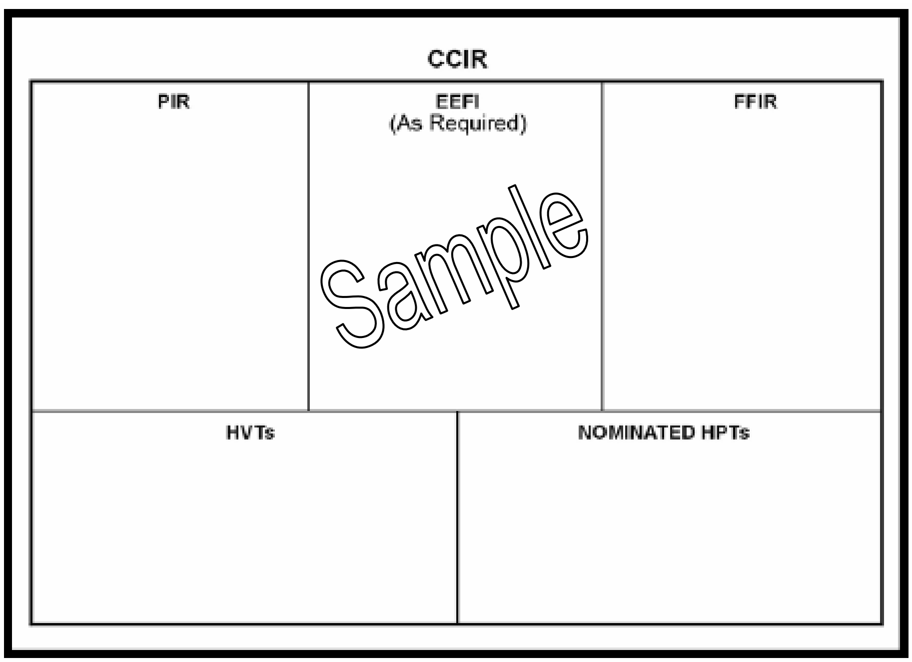


Figure J-13. CCIR Chart

EVENT MATRIX
(W/EVENT TEMPLATE OVERLAY)

NAI #	GRID	NET	NLT	INDICATOR

Figure J-14. Event Matrix

ISR PLAN MATRIX

UNIT & STATUS	NAI	GRID	NET	NLT	INDICATOR	OBS ACTION

Figure J-15. R&S Matrix

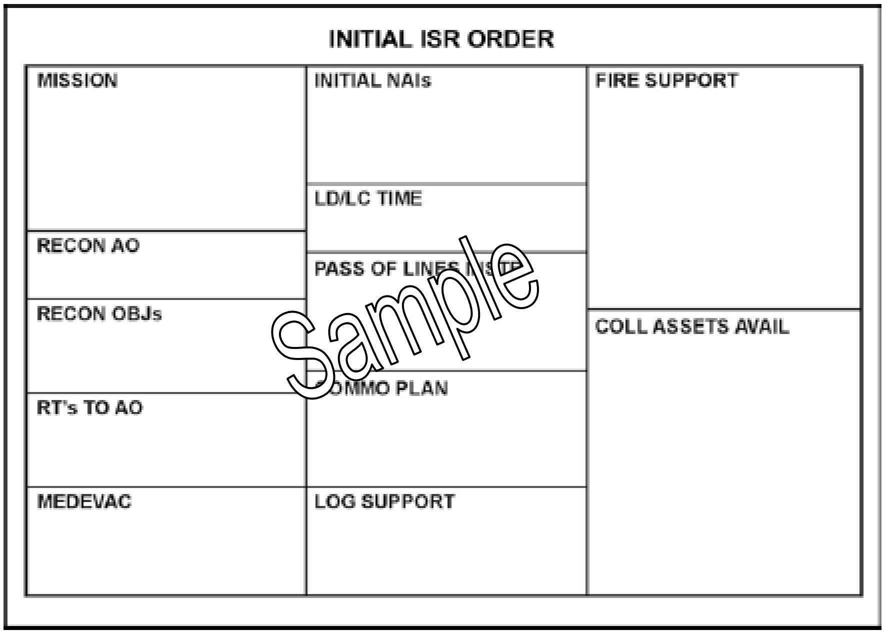


Figure J-16. Initial R&S Plan

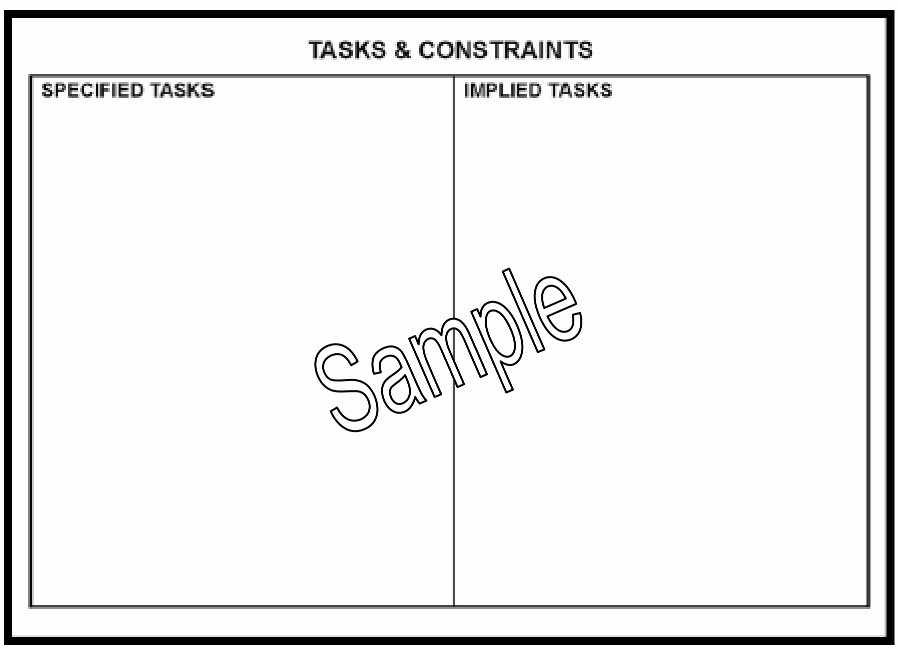


Figure J-17. Tasks and Constraints Chart

TASKS & CONSTRAINTS

ESSENTIAL TASKS	CONSTRAINTS

Figure J-18. Tasks and Constraints Chart

CURRENT TASK ORGANIZATION/COMBAT POWER

TASK ORGANIZATION	TOW		BFV		TANK		SQD		JAVELIN		MRTR		SCT VEH		DS ARTY	
	A	O	A	O	A	O	A	O	A	O	A	O	A	O	A	O

PLT / CO	1	2	3	HQ	PERS	REMARKS

Figure J-19. Current Task Organization/Combat Power

CLASSES OF SUPPLY

CLASS SUPPLY	CURRENT STATUS (DOS)	PROJECTED STATUS (DOS)	CRITICAL SHORTAGES/CONCERNS
I			
II			
III			
III(P)			
IV			
V			
VI			
VII			
VIII			
IX			
OTHER			

Sample

Figure J-20. CSS Status Chart

CSS STATUS

UNIT	ASSESSMENT	MANNING ISSUES	ARMING ISSUES	FUELING ISSUES	FIXING ISSUES
	____%				
	____%				
	____%				
	____%				
	____%				
	____%				

Sample

Figure J-21. Classes of Supply Chart

CLASS III/V USAGE AND PROJECTION

	ON HAND	PROJECTED USE	RESUPPLY BY GAS	CSR	BY UNIT IMPACT
CL III BULK					
CL III PACKAGE					
CL V (Critical or high expenditure)					
5.56 mm					
7.62 mm					
TANK					
BRADLEY					
STINGER					
M109					
MORTAR					

Sample

Figure J-22. Class III/V Usage and Protection Chart

END ITEM STATUS

SYSTEM	CURRENT ON-HAND STATUS	PROJECTED ON-HAND STATUS	REMARKS
M1			
M2			
BSFV			
M109			
M106			
AH64			

Sample

NOTE: Projected on-hand status refers to combat systems available after task organization. Use the blank boxes available for new systems such as attack helicopters or M960s.

Figure J-23. End Item Status Chart

COMMANDER'S GUIDANCE

COA GUIDANCE	MOB/C-MOB/SURVIVABILITY GUIDANCE
CCIR	SECURITY MEASURES
RECON GUIDANCE	CS/CSS PRIORITIES
DECEPTION GUIDANCE	OTHER:
FIRE SUPPORT GUIDANCE	TIME PLAN
	TYPE REHEARSALS

Sample

Figure J-24. Commander's Guidance Chart

COA BRIEF AGENDA

RESTATED MISSION	S3 AIR
HIGHER CDR'S INTENT	S3 AIR
REVIEW CDR'S GUIDANCE	S3 AIR
UPDATED TIMELINE	AS3
UPDATED IPB	S2
REVIEW RCPA	S3 AIR
COA #1	S3 AIR
SIGNIFICANT FACTORS	
HPTLs	
COA #2	AS3
SIGNIFICANT FACTORS	
HPTLs	
UPDATED FACTS & ASSUMPTIONS	S3 AIR
COA ANALYSIS GUIDANCE	CDR/XO

Figure J-25. COA Brief Agenda Chart

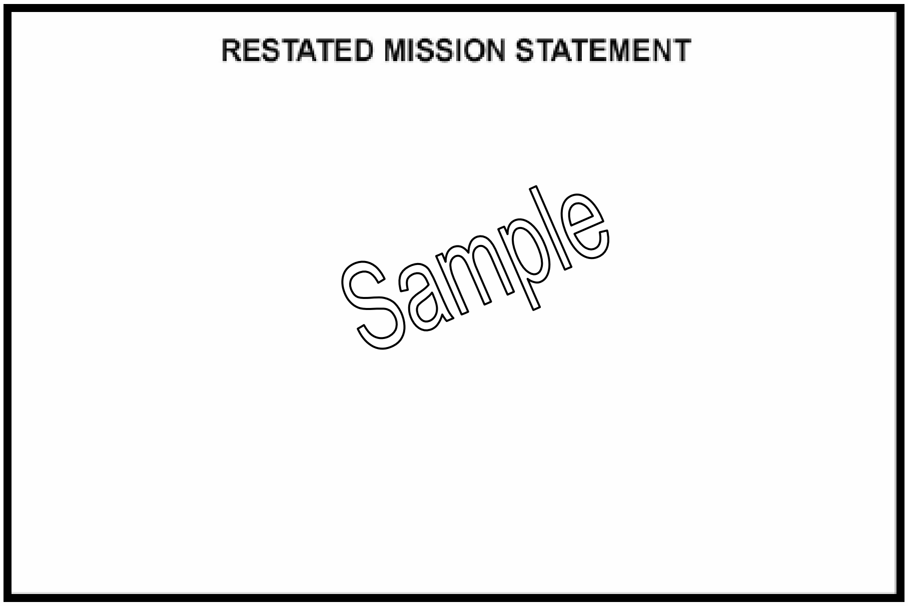


Figure J-26. Restated Mission Statement

RCPA MATRIX

CRITERIA	FRIENDLY FORCES	ENEMY FORCES	SIGNIFICANT FACTORS	TTPs
	STRENGTHS			
	WEAKNESSES			
	STRENGTHS			
	WEAKNESSES			
	STRENGTHS			
	WEAKNESSES			
	STRENGTHS			
	WEAKNESSES			
	STRENGTHS			
	WEAKNESSES			

Figure J-27. RCPA Matrix

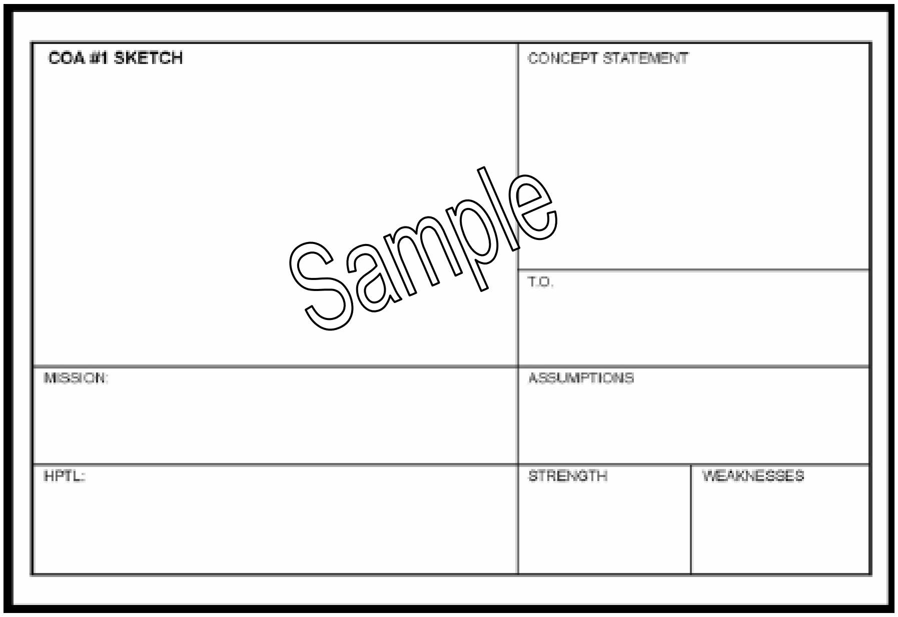


Figure J-28. COA Sketch #1

COA COMPARISION

CRITERIA	WEIGHT	COA #1	COA #2	COA #3
TOTAL				
ADVANTAGES				
DISADVANTAGES				
RISK				

Figure J-29. COA Comparison Chart

DECISION BRIEF AGENDA

INTRODUCTION	AS3
HIGHER CDR'S INTENT	AS3
UNIT MISSION	AS3
UPDATED IPB	S2
STATUS OF FORCES	S1/S4
REVIEW COAs	AS3
TASK ORGANIZATION	
COA STATEMENT AND SKETCH	
ADVANTAGES & DISADVANTAGES	
RISK	
DECISION MATRIX	AS3
RECOMMENDED COA	AS3
UPDATED TIMELINES	AS3
CDR'S DETAILED COA ANALYSIS GUIDANCE	CDR

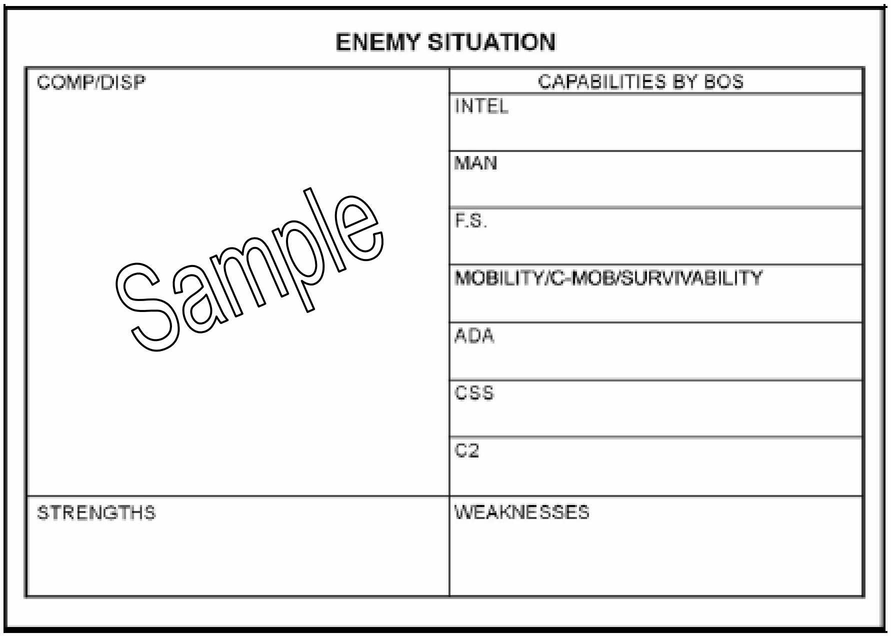
Figure J-30. Decision Brief Agenda

LIGHT AND WEATHER

Sample

DATE					
SR/SS					
MR/MS					
HI/LO					
% ILLUM					
WINDS					
PRECIP					
REMARKS					
BMNT					
EENT					

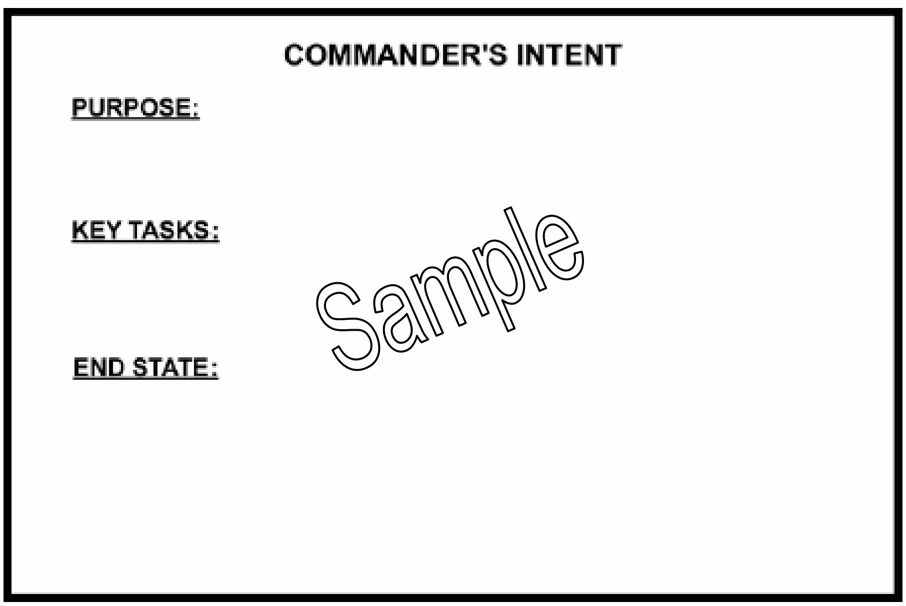
Figure J-31. Light and Weather Chart



ENEMY SITUATION

COMP/DISP	CAPABILITIES BY BOS
Sample	INTEL
	MAN
	F.S.
	MOBILITY/C-MOB/SURVIVABILITY
	ADA
	CSS
	C2
STRENGTHS	WEAKNESSES

Figure J-32. Enemy Situation Chart



COMMANDER'S INTENT

PURPOSE:

KEY TASKS:

Sample

END STATE:

Figure J-33. Commander's Intent

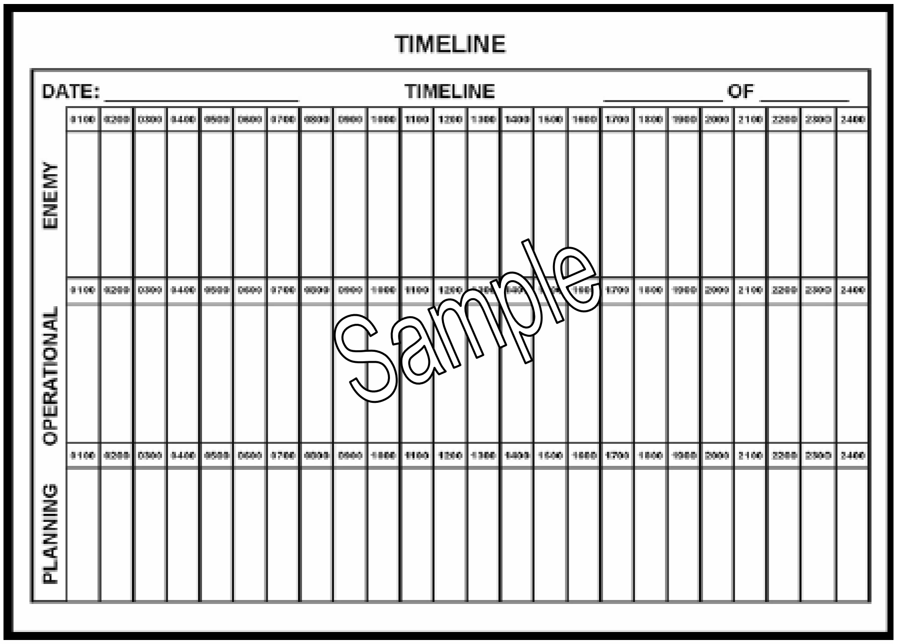


Figure J-34. Timeline

Timeline

Operating Systems

	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600
Assault																
HvyLift																
Attack/ Recon																
Ground Forces																
Pathfinder																
Comms																
Intel																
Fire Support																
Non-lethal Opns																
CSS																
Other																
Decision Pts																

Sample

Figure J-35. Sample Aviation Synchronization Matrix

Unit _____ Date ________ OPORD _______

Page _____Change _____

Line #	EXE	Time	Event	M/X	Net	From	To	Code Word
1	X	2000	FARP # 1 in Place	M	CMD	A26 FSC CDR	Redhawk 03 TOC	Exxon

Sample

•EXE – Executed

•M/X – Mandatory/By Exception

Figure J-36. Sample Aviation Execution Checklist

SECTION II – AVIATION TASK FORCE BATTLE DRILLS

AVIATION
TASK FORCE
BATTLE DRILLS

Figure J-37. Cover Sheet

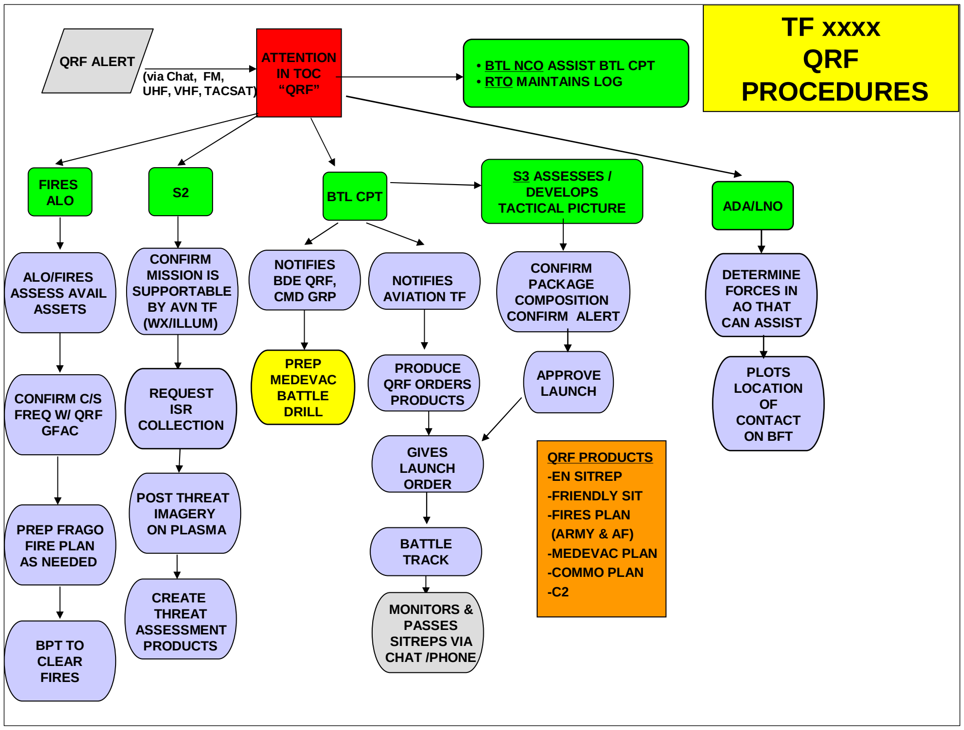


Figure J-38. Unit in Contact Procedures

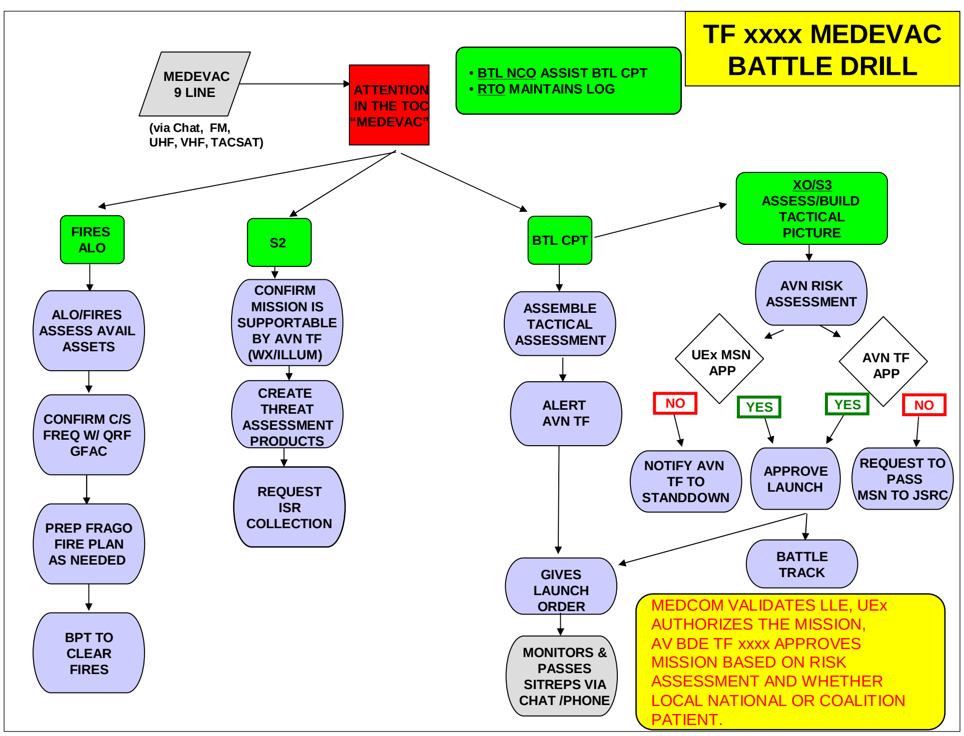


Figure J-39. QRF Procedures

TF xxxx QRF WORKSHEET

A. Location and Status of Friendly Forces

B. Uniform / Identification of Friendly Forces

C. Enemy Location & Strength

D. Mission Task and Purpose (Extract, Reinforce, Medevac*, etc.)

E. LZs (primary / alternate, marking methods)

F. Link up Points (primary / alternate)

G. Supplies needed (Ammo, Water, IVs, Special Equip, etc.)

H. Callsigns and frequencies (FAC if available)

I. Remarks

* For Medevac Include 9 - Line

PASS TO QRF

Figure J-40. QRF Worksheet

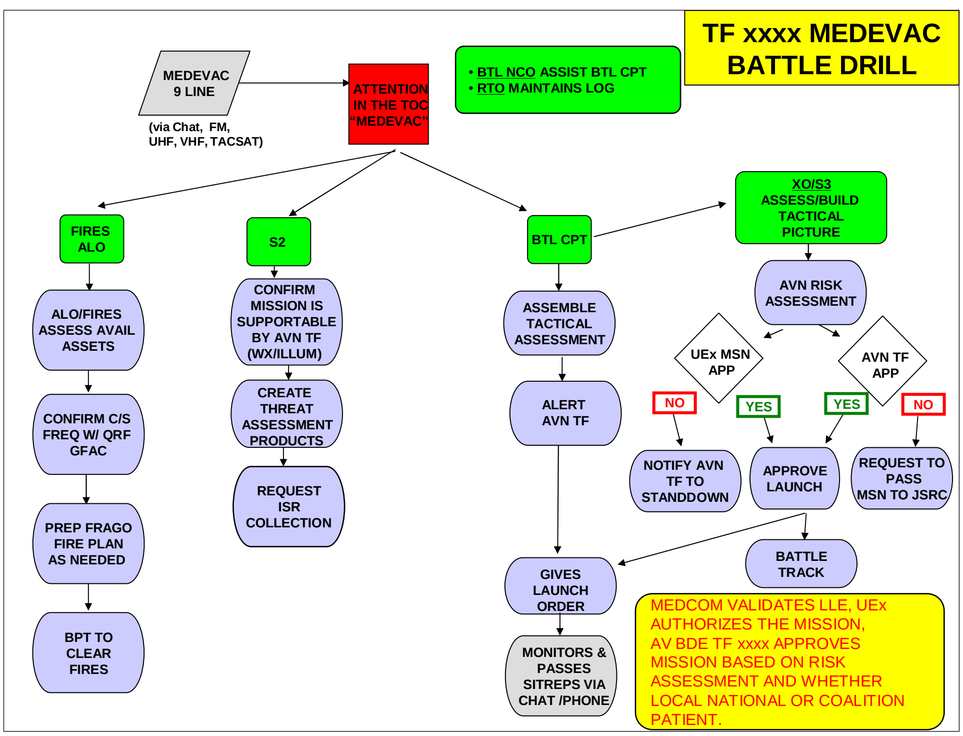


Figure J-41. MEDEVAC Battle Drill

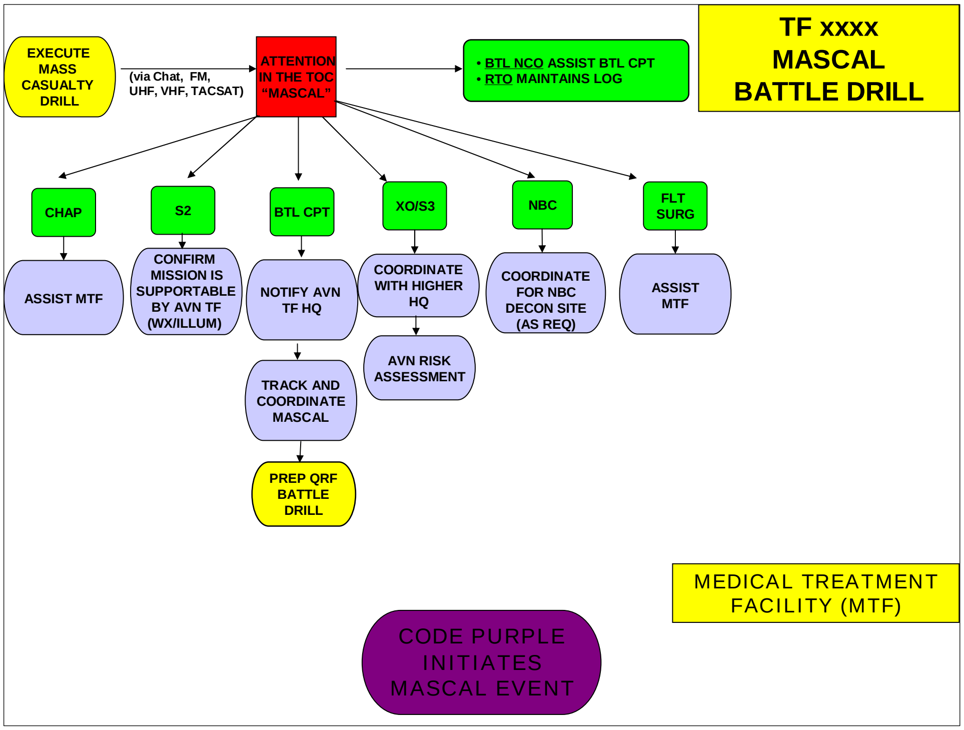


Figure J-42. MASCAL Battle Drill

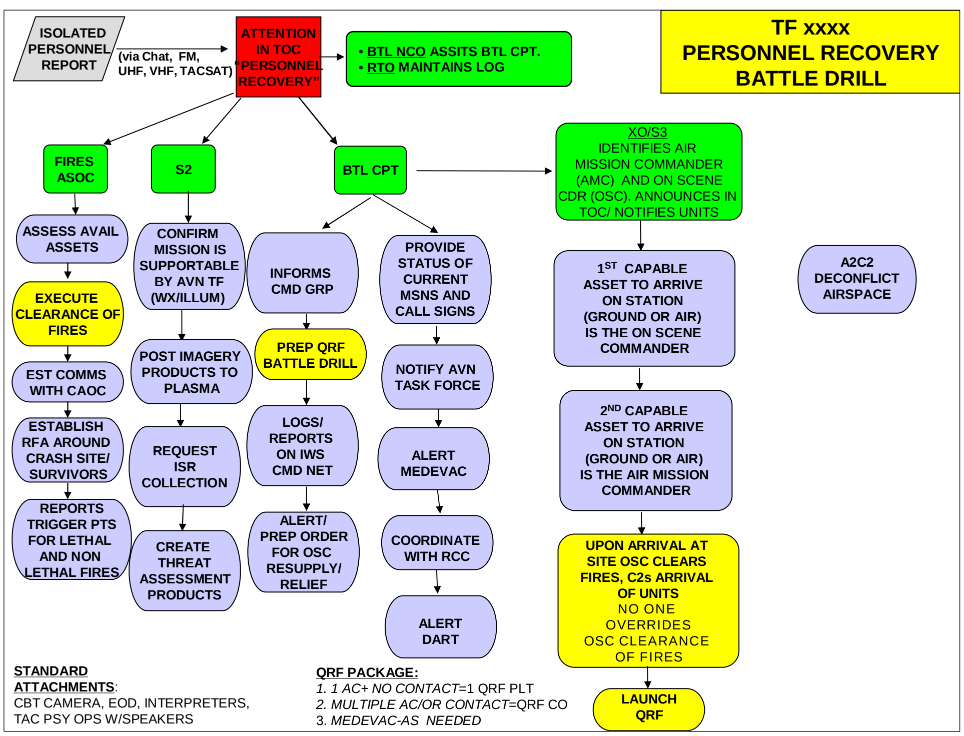


Figure J-43. Personnel Recovery Battle Drill

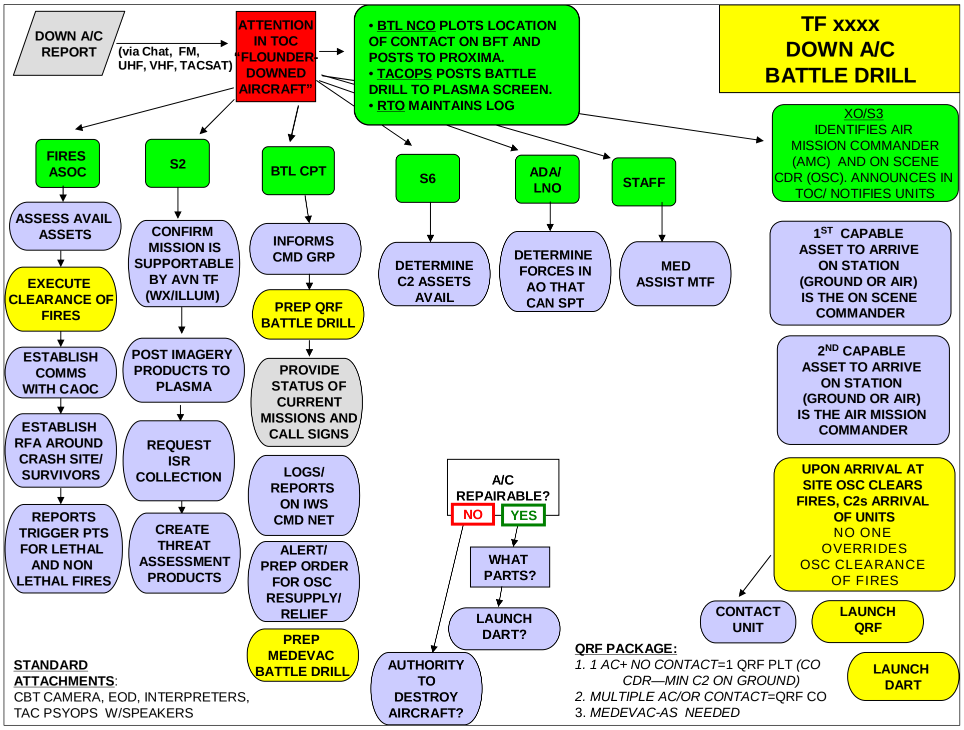


Figure J-44. Down A/C Battle Drill

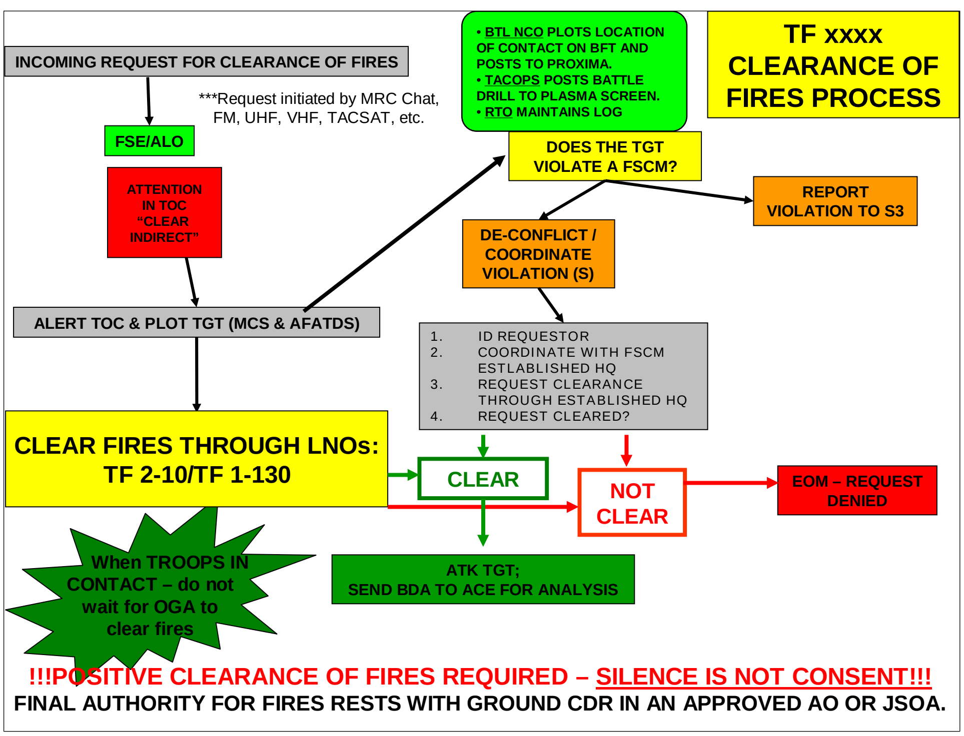


Figure J-45. Clearance of Fire Procedures

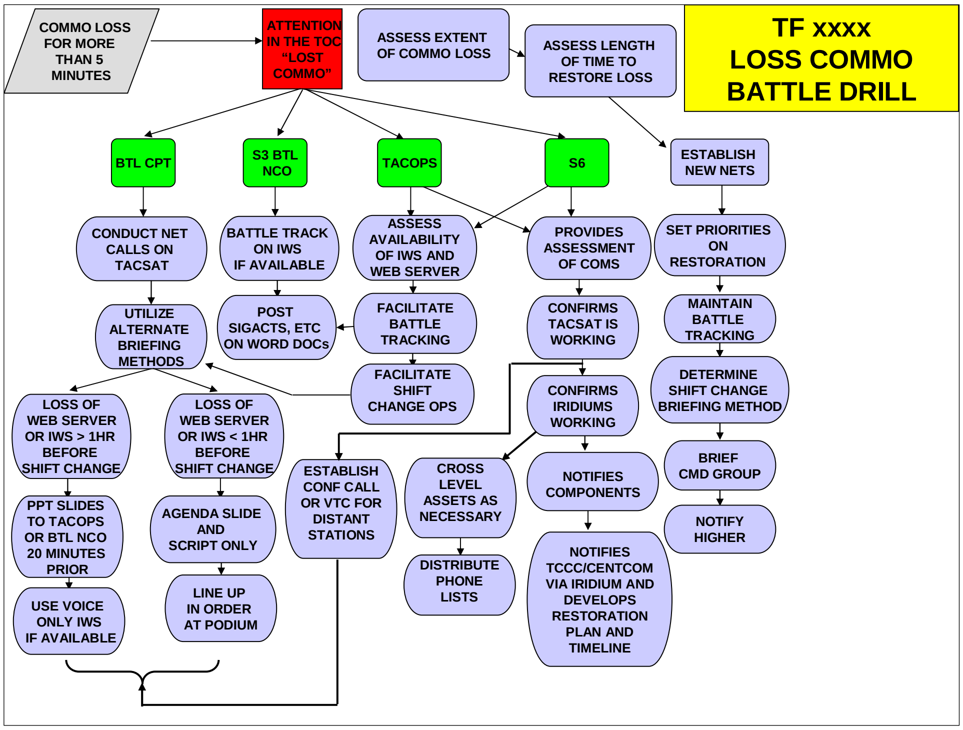


Figure J-46. Loss Commo Battle Drill

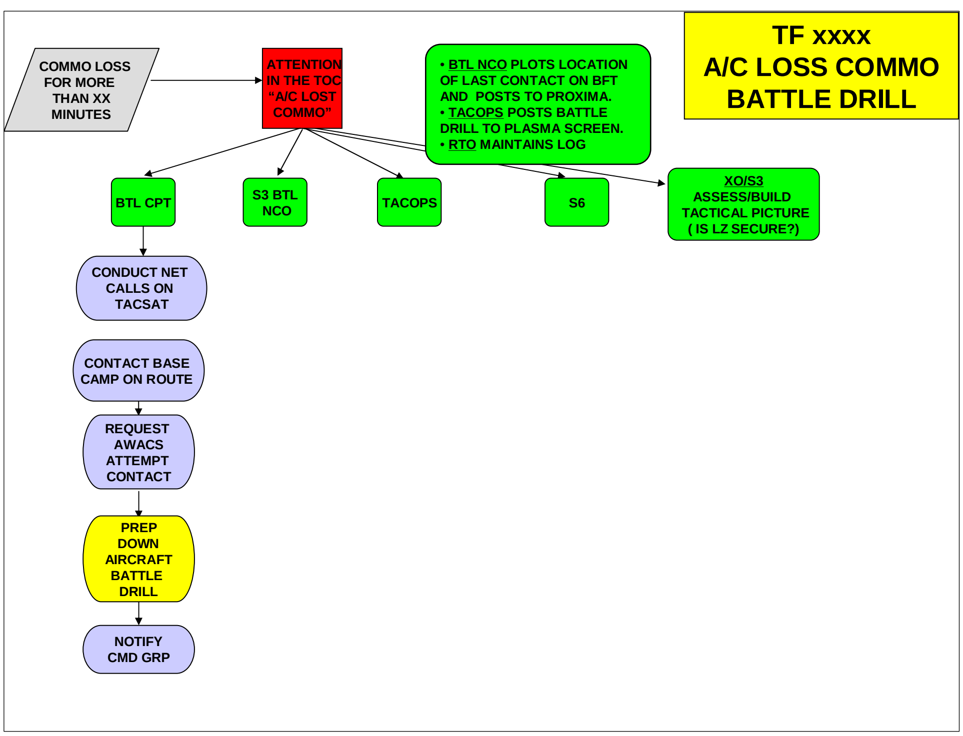


Figure J-47. A/C Loss Commo Battle Drill

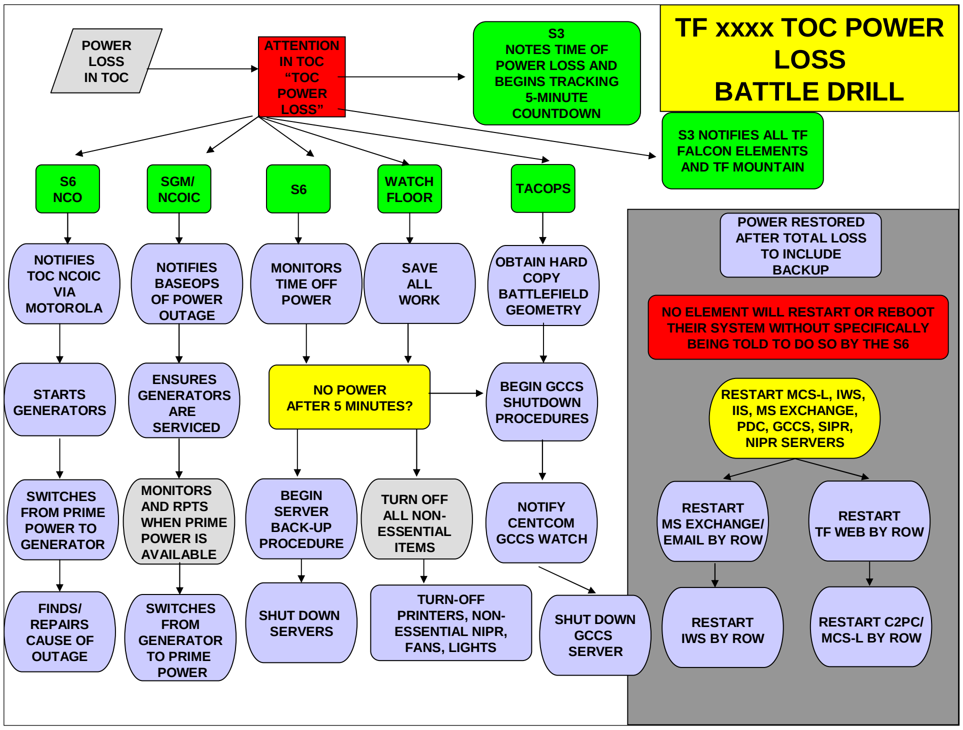


Figure J-48. TOC Power Loss Battle Drill

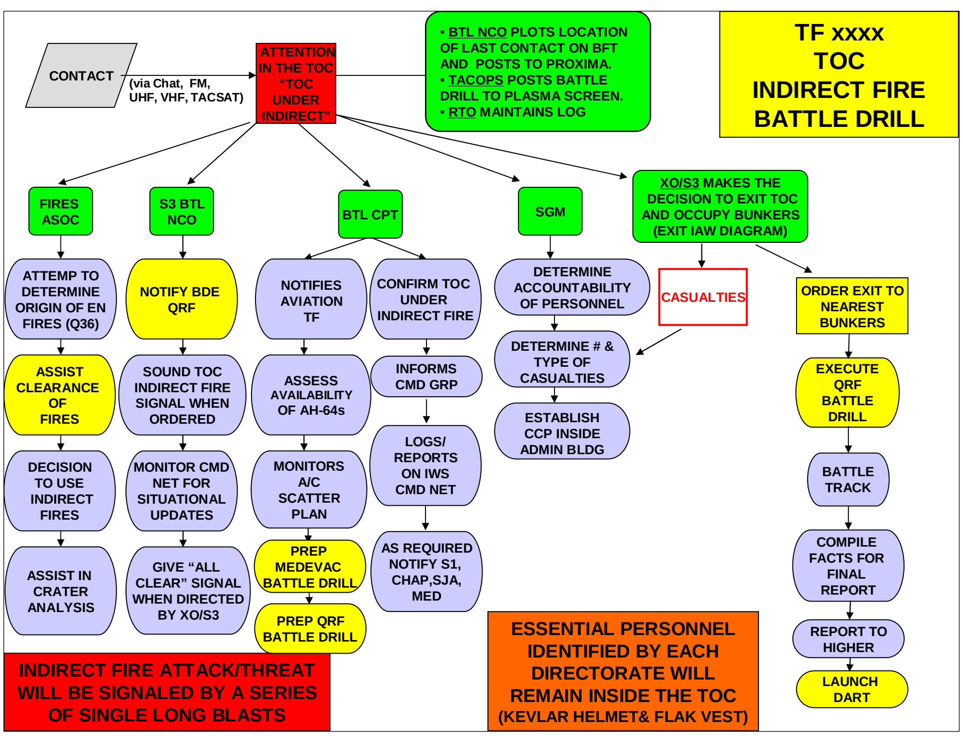


Figure J-49. TOC Indirect Fire Battle Drill

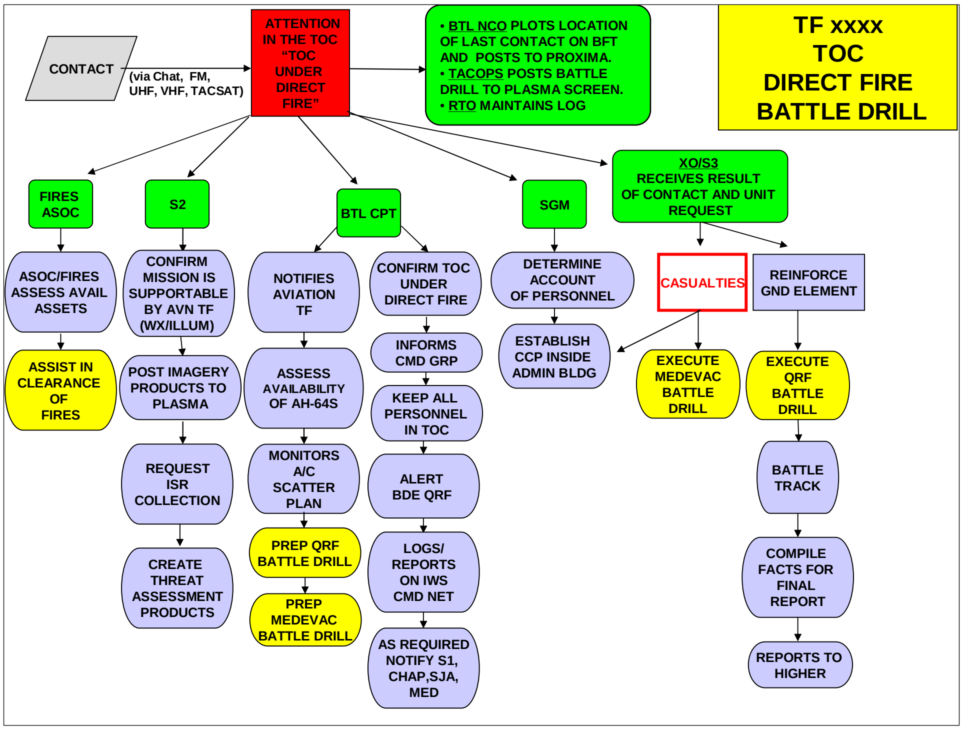


Figure J-50. TOC Direct Fire Battle Drill

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Appendix K

Media on the Battlefield

SECTION I – PRACTICAL CONSIDERATIONS

K-1. Commanders must plan on the media being present throughout their operational area and embedded in unit operations. Modern news reporting provides instant coverage of military operations and can turn minor tactical events into international events with strategic implications. National and international media coverage will result in defense policy decisions at the highest level, profoundly influence external public support, and impact the behavior of all audiences—military and civilian—within the operation's area of interest. Effectively planned, resourced, and executed, media activities can be a force multiplier, leveraging global influence, and enhancing command credibility. Media operations also can be a disaster if they are not planned, resourced, or executed properly. Engaging the media serves the best interests of the Army, your Soldiers, and their families as you share the story of the mission you are executing. Media operations is a related activity to information operations (IO), and therefore, media coverage and IO plans must be mutually coordinated and synchronized to ensure that they are complementary and do not result in IO fratricide—where one message kills another message.

FUNDAMENTALS OF DEALING WITH THE MEDIA

K-2. Supporting media operations fulfills the Army's obligation to keep the American people and the Army family informed. It helps establish confidence in America's Army and its readiness to conduct operations in peacetime and war. Newspapers, magazines, radio, television, and electronic media are independent conduits of information to the world. They provide news, analysis, interpretation, and commentary and serve as a forum for ideas, opinions, and public debate. What appears in the media shapes perceptions, attitudes, and opinions and can have a direct impact on mission success.

K-3. The vast majority of both civilian and military media representatives are committed to providing responsible, accurate, balanced coverage. Although there are exceptions, most media representatives are focused on achieving a credible information presentation. To accomplish this, media representatives investigate issues, ask tough, challenging questions, and pursue verifiable answers. They seek information, interpretation, and perspective on operations. The level of knowledge of military operations will vary among the media, and it will take patience and maturity to share the confidence of your unit operations while ensuring operations security (OPSEC) and translating operational details into a form that is understandable by the media and their audience. Army leaders at all levels need to educate media representatives and support their efforts to provide an accurate, balanced, and credible presentation of timely information.

K-4. The challenge for commanders and personnel supporting media at unit level is to plan and execute tactical operations, safeguard friendly forces while ensuring that the media have the opportunity to get their message out. The need to plan for media coverage in tactical operations derives from the fact that, in most situations, media representatives will be present in an area of operations before the arrival of Army forces and will not leave until the mission is complete. The media will know the area of operations, key personalities, and opinion leaders and, because they are covering the story as it evolves, will have an understanding of, and opinion about, the military, political, and social situation. You can work with the media or have them work against the command message and suffer the consequences. Not engaging the media means that they will tell their story without your input.

K-5. Media representatives will cover the deployment of Army forces, their arrival in the area, and their initial conduct and remain as long as the story is of interest. Some home station media will be interested in deploying with local units and being embedded with them. Commanders should refer all media requests to the Aviation Brigade and UEx public affairs (PA) sections with the full understanding that accredited media will probably be escorted down to battalion level to get the Soldier's story. The UEx commander will only allow embedded media in units that he has confidence will take care of the media and stay on the command message (public affairs guidance (PAG)). Media may build long-term relationships with units and their leaders that endure past current circumstances. Joe Galloway's (United Press International) close ties to the 1st Squadron, 7th Cavalry, from its action in the Ia Drang Valley in Vietnam continues 40 years after the battle.

K-6. There are three types of media that a battalion commander may engage in the operational area:

- Embedded: They reside with a unit for an extended period (defined in Operation Iraqi Freedom as 72 hours or more). Embedded media are governed by ground rules that define working relationships.
- Accredited/registered: They have been vetted by the PA staff at brigade level or above and are normally issued written credentials reflecting coordination to cover units within the command.
- Unilateral: They are media that do not seek military public affairs credentials or registration. Absent credentials, unilaterals are only accorded the access granted to local nationals.

PUBLIC AFFAIRS ELEMENTS

K-7. The austerely staffed PA sections organic to Aviation Brigade and UEx headquarters will nearly always be overwhelmed trying to meet media requirements. More than 65 percent of the total public affairs force and 85 percent of the deployable PA table of organization and equipment (TOE) unit structure is positioned in the US Army Reserve and Army National Guard. These reservists must be seamlessly integrated with the active component and focused on supporting the overall Army goals and objectives. Media operations, therefore, rely on augmentation from units in the field to accomplish the Army battlefield PA mission.

K-8. In headquarters without organic PA sections (battalions and some brigades), the commander is responsible for PA and must plan as well as execute PA operations. The appointment of the right officer or senior NCO to plan for and supervise the execution of the battalion public affairs program is critical to the success of the information operations plan. The DOD Media Guidelines below lay out in general terms the command responsibilities for media operations in the unit area. Regardless of the echelon, the PA section's primary responsibility is to assist the commander in accomplishing his mission.

PUBLIC AFFAIRS GUIDANCE (PAG)

K-9. PAG is the operational tool that guides unit commanders regarding IO plans and policy as well as the command message during major military operations, exercises, and contingencies. On receipt of the warning order, the commander should request PAG from higher headquarters. PAG may be included in alert notification or operational orders.

Commanders must ensure that they understand PAG and adhere to the UExs information plan.

K-10.The essential elements of PAG for operational commanders are:

- References: List the essential documents, messages, or policies on which the PAG is based.
- Information: This paragraph should describe significant or anticipated problems associated with the operation. The information in this paragraph is not for release and will remain classified.
- Public affairs approach: The PAG will recommend the PA approach—either passive or active—the UEx commander will usually make the final decision on the command PA approach.
  - Active approach: This involves efforts made to stimulate public or press interest, such as distributing press releases and advisories. This paragraph also states who will make the initial announcement of the operation, the preferred method, and the preferred time and date. The active approach is recommended whenever media coverage of units is desired (e.g., major training exercises).
  - Passive approach: No action is taken to generate media and/or public interest in an issue or activity, except in response to specific inquiries. If a passive approach is desired, the PAG will specify that the guidance is for response to query (RTQ) only. The PAG also specifies who is authorized to respond for the command. For example: "Only commanding general may RTQ." To de-emphasize an event, it is best to authorize release or RTQ at the lowest possible level.
- Questions and answers (Q&As): This paragraph contains a list of probable Q&As that enable the user to respond to the majority of anticipated questions. They should not be given to media as handouts in their entirety and should be tailored to the situation and unit activities (if they apply).
- Contingency statement: This paragraph contains a statement to be used before the release of the final PAG. For example, as a matter of policy, we do not discuss troop movements or operations until they have been formally announced.

DOD MEDIA GUIDELINES

K-11.The DOD Media Guidelines, issued as Change 3 to DOD Directive 5122.5, provide the following guidelines for coverage of DOD combat operations:

- Open and independent reporting will be the principal means of coverage of US military operations.
- Pools are not to serve as the standard means of covering US military operations. But pools may sometimes provide the only feasible means of early access to a military operation (based on the ability to move and safeguard the media). Pools should be as large as possible and disbanded at the earliest opportunity—within 24 to 36 hours when possible. The arrival of early access pools will not cancel the principle of independent coverage for journalists already in the area.
- Even under conditions of open coverage, pools may be appropriate for specific events, such as those at extremely remote locations or where space is limited.
- Journalists in a combat zone will be credentialed by the US military and will be required to abide by a clear set of military security ground rules that protect US forces and their operations. Violation of the ground rules can result in suspension of credentials and expulsion from the combat zone of the journalists involved. News organizations will make their best efforts to assign experienced journalists to combat operations and then make them familiar with US military operations.

- Journalists will be provided access to all major military units. Special operations restriction may limit access in some cases.
- Military public affairs officers should act as liaisons but should not interfere with the reporting process.
- Under conditions of open coverage, field commanders will permit journalists to ride on military vehicles and aircraft whenever feasible. The military will be responsible for the transportation of pools.
- Consistent with its capabilities, the military will supply PAOs with facilities to enable timely, secure compatible transmission of pool material and will make these facilities available whenever possible for filing independent coverage. In cases when Government facilities are unavailable, journalists will, as always, file by any other means available. The military will not ban communications systems operated by news media organizations, but electromagnetic operational security in battlefield situations may require limited restrictions on the use of such systems.

OPERATIONAL GUIDELINES

K-12. Before accepting media into the operational area, the commander must ensure that:

- Media are not exposed to classified information. If media accompany units on combat operations, there must be agreement on the restriction on the release of operational information. Commanders must consider the friendly forces information requirements (FFIR) as a baseline of what is not releasable.
- Know the definitions:
  - On the record—the reporter uses everything you say and attributes it to you by name and title.
  - Off the record—the reporter should not use anything you say. Go off the record only if the information is vital to the reporter's understanding of the situation. However, some media consider nothing to be off the record.
  - Background—the reporter will use the information but will not attribute it to you. The term "an Army spokesman" may be used based on agreement between you and the reporter.
- Media must agree not to release casualty information and comply with the directives and timelines associated with the release of casualty information (24 hours following the confirmed notification of next of kin).
- Media are safeguarded and not allowed to constitute an operational risk to friendly forces.
- Media understand that violation of the operational guidelines may result in the loss of accreditation and military support (only General Court-Martial Authority can withdraw accreditation).
- Media are debriefed with the reminder of the operational sensitivity of the information that they have been exposed to based on their association with the unit.
- Media dos:
  - Take every opportunity to tell your unit's story.
  - Set the ground rules for the interview and terminate the interview if you feel that the ground rules have been violated.
  - Be ready to answer the questions (who, what, when, where, and why).
  - Discuss only matters of which you have personal knowledge. You may talk about individual responsibility, expertise, and personal experiences. You may also discuss unclassified information about general missions, training, weapons and equipment and transportation. You may use your name and hometown in

interviews, but you also have the option to use only your first or last name or refuse to be identified at all.
  - Approximate numbers of vehicles, aircraft, equipment, and personnel involved in operations. Specific numbers are not authorized for release at unit level.
  - If you can not answer a question explain why, (I don't know….I won't speculate …. I can't answer that because of security concerns).
  - Remember that everything you say is on the record. Once the words leave your mouth, there is no way to get them back in your control.
  - Verify the media's identity and credentials before talking to them.
  - Be cautious about what you say to ensure that your words cannot be twisted into a sound bite or taken out of context.
  - Be ready to report to your higher headquarters the questions asked and the answers provided.
  - Immediately report to higher headquarters any unregistered media you encounter.
  - Stay in your lane, which really means only discuss what you have direct personal knowledge of; don't speculate and make sure that you stay on message as stated in the PAG.
- Media don'ts:
  - Do not lie or attempt to use the media as part of a deception plan.
  - Do not discuss political or foreign policy matters.
  - Do not discuss the rules of engagement (ROE) or rules on use of deadly force.
  - Do not discuss operational capabilities, exact numbers, troop strength, size, location and unit disposition, or future operations.
  - Do not speculate, repeat rumors, or answer hypothetical questions.
  - Do not confiscate camera or sound equipment, film or recording medium, notebook, or videotapes from the media. If you believe that media has captured a sensitive event, immediately report that belief to your commander.
  - Do not allow the media to be armed. It is a violation of The Hague and Geneva Conventions, and media lose their status as noncombatants if armed. Protective body armor is encouraged so that they gain an appreciation for how Soldiers are equipped.
  - Do not allow the media to photograph or interview detainees or prisoners.
  - Do not allow the media to photograph special operations or intelligence personnel or equipment due to OPSEC.
  - Do not allow media to report on ongoing rescue or recovery operations for missing personnel.
  - Do not allow the media to violate operational noise or light discipline (including smoking).

EMBEDDED MEDIA

K-13.Embedding media at battalion level is now routine, so coverage of your operations can be a force multiplier as you gain positive coverage for your community, strengthen local media relations, and improve morale for your Soldiers and their families. Before accepting embedded media, commanders need to know the rules to stay out of trouble.

EMBEDDING RULES

K-14.Transportation. Congress gave DOD stringent guidance on using government aircraft to fly media anywhere. Here are some of the important points from AR 360-1, *Army Public Affairs Program*. Review them before making any commitments to local media:

- Military transportation will not compete with commercial carriers when the public affairs objectives of the proposed travel can be accomplished through the use of commercial carriers.
- Travel or transportation may be authorized in connection with an assignment to cover an Army program or operation when travel is an integral part of the story and is provided on a space-available basis.
- Nonlocal travel by all news media representatives must be approved by OASD-PA.
- All local travel or transportation requests for national media must be brought to the attention of HQDA OCPA.
- Travel or transportation for public affairs purposes must be primarily in the interest of DA or the DOD.
- No commitment of military transportation for public affairs purposes will be made until the request has been coordinated and approved.
- Invitational travel orders covering transportation will be issued by the command with primary interest.

K-15.If you prepare each news media travel request, (local or nonlocal) in accordance with AR 360-1, it will stand up to both congressional and public scrutiny.

K-16.Support. Keep these points in mind as you develop your planning and coordination checklist:

- The deploying unit must agree to sponsor the media when they deploy and while they are in country.
- The deploying unit must agree to provide aircraft seats on the unit's flight to the area of operations in coordination with the supporting USAF command.
- The deploying unit agrees to provide media escorts (to go with them and stay with them). Accredited media will be accorded all courtesies and privileges as equivalent grade of O-4 for messing and billeting. However, media will carry their own bags and provide all of their professional materials and supplies.
- The UEx and UEy headquarters must agree to support the media and coordinate approval from the joint task force public affairs.
- Before any warning or execute orders are ever issued, survey your media and find out who may be interested in going with your unit should they be deployed. Let them know in advance what will be required.
  - Up-to-date visa and passport.
  - Immunizations and statement of medial health.
  - Basic military training (first aid and actions under direct/indirect fire).
  - Personal and professional equipment.
  - Approximate costs, including a return commercial flight if military flights are not available.
  - Signing Hold Harmless and Not to Sue Agreements as well as agreement to reimburse for any lost or damaged Government-issued equipment (helmet, body armor, protective mask, etc.).
  - Signing release from responsibility agreement with each service that provides transportation (Army helicopters, Air Force, Marine Corps and Navy transports).

- Once theater requirements have been confirmed, the UEx should prepare invitational travel orders (ITO) for media who will likely be embedded.
- Have a plan that will ensure coverage of your unit from your embedded media and work with your higher headquarters to market products coming out of theater, ensuring that the media messages support the UEx information plan.
- All unit members must be familiar with PAG, embedding ground rules, the role of embedded media, and what actions to take if classified or sensitive information is disclosed.

K-17.The sample request below for embedded media lays out much of the coordination and support agreements required to gain approval from Department of the Army.

SAMPLE REQUEST

FROM CRD THIRD INF DIV FT STEWART GA//PAO//
HQ DA WASHINGTON DC//SAPA-POPD//
INFO JCS/SECDEF WASHINGTON DC//OASD/PA/DPL//
USCINCCENT MACDILL AFB FL//PAO//
COMUSARCENT-CDRUSATHIRD FT MCPHERSON GA//PA//
USCINCTRANSCOM SCOTT AFB IL//TCPA//
USACOM NORFOLK VA//JO1PA//
UNCLAS

SUBJ: REQUEST FOR APPROVAL OF NON-LOCAL MEDIA TRAVEL TO SWA AND TRAVEL CLEARANCES RMKS/1. THIS HQ PROPOSES TO EMBED MEDIA WITH A DEPLOYMENT OF THE 3D ID SCHEDULED TO DEPLOY TO THE SWA THEATER OF OPERATIONS ON APPROXIMATELY XX MAR ON AN AIR FORCE CRAFT. REQUEST APPROVAL AND THEATER AND COUNTRY CLEARANCES FOR THE NON LOCAL TRAVEL OF THE FOLLOWING NEWS MEDIA FROM FORT STEWART TO SWA AND POTENTIAL RETURN. REQUEST THEATER CLEARANCE FOR NEWS MEDIA REPRESENTATIVES (NMRS) AND MEDIA TRAVEL IN AND OUT OF THE OPERATION SOUTHERN WATCH AREA OF OPERATION.
PERTINENT INFORMATION IS IN NAME/ORGAN/SSAN/PASSPORT NUMBER FORMAT.

Jim Doe COLUMBUS (GA) LEDGER-ENQUIRER/SSN 000-00-000 US PASSPORT 111-11-98
Susan Doe/SAVANNAH (GA) SAVANNAH TIMES/SSN OO1-01-001
US PASSPORT 111-12-98
Steve Smith/CPT/HQ, 2^{D} BDE, 3 ID/ESCORT OFFICER
SSN 111-11-111

2. MEDIA HAVE AGREED TO REMAIN WITH THE UNIT FOR APPROXIMATELY TEN DAYS AND WILL PROVIDE CRITICALLY NEEDED HOMETOWN, FORT STEWART AND ARMYWIDE COVERAGE OF 3D ID TO FAMILIES, THE FORT STEWART CIVILIAN WORK FORCE AND THE AMERICAN PUBLIC. REPORTERS HAVE AGREED TO COVER PORTIONS OF AIR FORCE SUPPORT TO 3D ID UNITS WHILE IN TRANSIT. REPORTERS WILL TRAVEL ON A USAF C5 FROM HUNTER ARMY AIRFIELD TO SWA. REPORTERS WILL STAY WITH THE 3D ID IN BASE CAMP. 3D ID PAO HAS AGREED TO SUPPORT MEDIA TRANSPORT IN AND OUT OF THE BASE CAMP TO COVER FIELD TRAINING AND UNIT OPERATIONS IN THEATER.

3. UNIT COMMANDER AND THE ASSIGNED ESCORT OFFICER HAS ENSURED REPORTERS WILL COMPLETE THEATER SPECIFIC IRT PRIOR TO DEPARTURE. REPORTERS HAVE PASSPORTS, VISAS, ACCREDITATION, IMMUNIZATIONS AND APPROPRIATE CLOTHING AND EQUIPMENT. FORT STEWART PAO WILL PREPARE

INVITATIONAL TRAVEL ORDERS UPON RECEIPT OF TRAVEL APPROVAL. MAJ XXXX, 3D ID PAO, WILL ESCORT MEDIA IN TRANSIT. REPORTERS WILL ACCOMPANY AN MP COMPANY IN TRANSIT.

4. REPORTERS HAVE BEEN BRIEFED THAT DEPLOYMENT DATE MAY FLUCTUATE AND RETURN FLIGHTS ON MILITARY AIRCRAFT MAY NOT BE FEASIBLE. REPORTERS HAVE AGREED TO PAY IN FULL FOR TRANSPORTATION BACK TO THE UNITED STATES.

5. WHEN MEDIA FLIGHT IS APPROVED AND TRAVEL CLEARANCES GRANTED, REQUEST THAT AMC PA GRANT MMO/MEGP STATUS, INCLUDING AUTHORIZATION FOR REPORTERS TO GATHER MATERIAL, FILM, VIDEO AND/OR STILL PHOTO COVERAGE ON AMC MISSIONS IN SUPPORT OF OPERATION XXXXXX. REPORTERS WILL OBSERVE ALL USAF SAFETY REGULATIONS PER DOD INST. 4515.3r. TRAVEL IS ON A NON-REIMBURSABLE, NON-INTERFERENCE WITH MISSION BASIS. MEDIA WILL NOT BE GIVEN ACCESS TO CLASSIFIED INFORMATION OR MATERIALS.

6. FOCUS OF MISSION REMAINS REGIONAL/HOMETOWN NEWS COVERAGE OF 3D ID SOLDIERS PARTICIPATING IN OPERATION XXXXXX WHILE PROVIDING REPORTERS WITH A COMPLETE ORIENTATION ON THE COMPLEXITIES OF MILITARY DEPLOYMENTS, INCLUDING THE TRANSCOM/AMC MISSION. TRAVEL BY MILITARY AIRCRAFT IS AN INTEGRAL PART OF THE STORY AND REPORTERS INTEND TO INTERVIEW CREWMEMBERS, PILOTS, FLIGHT ENGINEERS, AND LOADMASTERS DURING FLIGHTS, AND ALCC GROUND STAFF AT ENROUTE STATIONS. ESCORT OFFICER WILL BRIEF AIRCREW MEMBERS THAT REPORTERS ARE PRESENT AND THAT CONVERSATIONS OR ACTIONS OF THE CREW MAY RESULT IN ARTICLES, PHOTOS OR VIDEO PRESENTATIONS.

7. ACCREDITIED MEDIA WILL IS ACCORDED ALL COURTESIES AND PRIVILEGES AS EQUIVALENT GRADE OF O-4 FOR MESSING AND BILLETING.

8. POC AT THIS HQ IS MR XXXXXX, COMM (404) 464-5686 OR DSN 367-5686.

Appendix L

Field Processing Detainees

SECTION I – PURPOSE

L-1. This appendix provides information to assist in field processing detainees.

SECTION II – GENERAL

L-2. There will be times when US forces capture and detain enemy prisoners of war (EPW) or other individuals who may pose a threat to US personnel and interests.

L-3. Detainee is a term used to refer to any person captured or otherwise detained by an armed force (JP 1-02). AR 190-8, FM 3-19.40, and international law (including the Law of War and the Geneva Conventions) address legal requirements, policy, procedures, planning factors, and responsibilities for handling detainees. The Geneva Conventions Relative to the Treatment of Prisoners of War and Relative to the Protection of Civilian Persons in Time of War are the Geneva Conventions most applicable in detainee operations.

L-4. Detaining personnel carries with it the responsibility to guard, protect, and account for them. All persons captured, detained, or otherwise held in US Armed Forces custody are given humane care and treatment. The inhumane treatment of detainees is prohibited and is not justified by the stress of combat or by deep provocation. Inhumane treatment is punishable under the Uniform Code of Military Justice (UCMJ) and international law. Abuse may detract from mission accomplishment and intelligence collection efforts.

PLANNING FOR DETAINEE OPERATIONS

L-5. Detainee operations are resource intensive and highly sensitive. Holding detainees longer than a few hours requires detailed planning to address the extensive requirements of the Geneva Conventions for proper administration, treatment, protection, security, and transfer of custody of detainees. Commanders responsible for handling detainees should consider:

- Including military police in their task organization.
- Ensuring clear delineation of the interdependent and independent roles of those Soldiers responsible for custody of the detainees and those responsible for any interrogation mission.
- Resources necessary to provide the support required by regulation and law.

FIELD PROCESSING DETAINEES

L-6. Processing begins when US forces capture or detain an individual. Field processing is accomplished in the combat zone and aids in security, control, and initial information collection and in providing for the welfare of detainees.

L-7. Capturing units field process detainees using the method outlined in Table L-1.

Table L-1. 5 Ss and T Method of Detainee Field Processing

Action	Description
Search	Search each captive for weapons, items of intelligence value, and items that would make escape easier or compromise US security interests. Confiscate these items. Prepare a receipt when taking property. **Note**: When possible, conduct same gender searches. When not possible, perform mixed gender searches in a respectful manner. Leaders must carefully supervise Soldiers to prevent allegations of sexual misconduct. Captives may keep the following items found in a search: Protective clothing and equipment (such as helmets, protective masks and clothing) for use during evacuation from the combat zone. Retained property, such as ID cards or tags, personal property having no intelligence value, clothing, mess equipment (except knives and forks), badges of rank and nationality, decorations, religious literature, and jewelry. Private rations of the detainee. Personal items, such as diaries, letters, and family pictures may be taken by MI teams for review, but are later returned to the proper owner. Confiscate currency only on the order of a commissioned officer (AR 190-8) and provide a receipt and establish a chain of custody using DA Form 4137.
Silence	Silence the detainees by directing them not to talk. Gags may be employed if necessary (ensure detainee can breath after application). Silencing the detainees deters escape planning and may aid in intelligence collection.
Segregate	Segregate detainees based on perceived status and positions of authority. Segregate leaders from the remainder of the population. Segregate hostile elements such as religious, political, or ethnic groups hostile to one another. For their protection, normally segregate minor and female detainees from adult male detainees.
Safeguard	Safeguard the captives according to the Geneva Conventions and US policy. Ensure detainees are provided adequate food, potable water, clothing, shelter, and medical attention. Ensure detainees are not exposed to unnecessary danger and are protected (afforded the same protective measures as the capturing force) while awaiting evacuation. Do not use coercion to obtain information from the captives. Report acts or allegations of abuse through command channels, to the supporting judge advocate, and to the US Army Criminal Investigation Command.
Speed to a Safe Area/Rear	Evacuate captives from the battlefield as quickly as possible to remove the captives from danger. Evacuate detainees to a collection point where military police take custody of the detainees. Also deliver all captured documents and other property. Wounded or ill detainees must be provided medical treatment, which may require evacuation to the nearest medical facility.
Tag	Use DD Form 2745 or a field expedient alternative and include the following information: Date and time of the capture. Location of the capture (grid coordinates). Capturing unit. Circumstances of capture. Indicate specifically why the person has been detained. Prepare additional documentation such as a DA Form 2823 if necessary. This information is critical to intelligence collection and detainee classification. List all documents and items of significance found on the detainee. Attach Part A, DD Form 2745 to the captive's clothing with wire, string, or another type of durable material. Instruct the captive not to remove or alter the tag. Maintain Part B and attach Part C to the confiscated property so the owner may be identified later.

L-8. Leaders must strictly enforce policies on photography of detainees and public release of information. Photographing, filming, and videotaping of detainees for purposes other than detainee administration or intelligence/counterintelligence are strictly prohibited.

RESOURCES FOR FIELD PROCESSING OF DETAINEES

L-9. Documenting details surrounding the detention and preserving evidence aid in determining if further detention is warranted, in classifying the detainee, in developing intelligence, and in prosecuting detainees suspected of committing criminal acts. Documentation should answer the six Ws—who, what, when, where, why, and witnesses. Record these details on the DD Form 2745 (Enemy Prisoner of War (EPW) Capture Tag), DA Form 2823 (Sworn Statement), DA Form 4137 (Evidence/Property Custody Document), and locally developed forms. In addition to the information required on DD Form 2745, document the following information to the extent possible:

- Full name, rank, and unit of the Soldier who captured the detention.
- Circumstances surrounding the detention.
- Indicate and describe injuries photograph if feasible). Explain how injuries occurred.
- Thorough description of victims and witnesses. Take statements from these individuals to document their observations and knowledge of the incident.
- Descriptive information for all vehicles or other equipment related to the detention.
- Thorough description of any contraband. Ensure all seized items are recorded on a DA Form 4137 and that a chain of custody is maintained as property is transferred. Photograph contraband if it cannot accompany the detainee; e.g. an improvised explosive device destroyed on site.
- Full name, rank, unit or organization, phone number, and other contact information for any interpreter or other person present during the detention.
- Any information the detainee volunteers.

PERSONNEL

L-10. Consider including MP Soldiers in the task organization for a mission likely to result in detaining personnel.

L-11. Consider including interpreters or linguists to support the operation. These assets can assist greatly in tactical questioning and screening of detainees.

SUPPLIES AND EQUIPMENT

L-12. The following items may be helpful in searching and securing detainees, safeguarding their property, and ensuring the safety of Soldiers:

- Plastic bags may be used to segregate, store, and protect a detainee’s property.
- Permanent markers may be used to annotate identifying information on containers of detainee property.
- Flexi-cuffs (national stock number 8465-0007-2673) may be used to restrain detainees. Employ restraints in a humane manner.
- Flexi-cuff cutters should be used to cut flexi-cuffs. Do not use knives or other cutting devices. Flexi-cuff cutters are designed to prevent injury.
- Latex or rubber gloves should be provided to Soldiers for their protection.
- Goggles with lenses blackened or cloth may be used to blindfold detainees.
- Still and video cameras may be used to document the scenes where individuals were detained, detainee injuries, and evidence.

REFERENCES AND FORMS

L-13. A few references and forms will aid in maintaining required information about the detainees, accountability of property, and proper treatment of detainees. The most important of these items are DD Form 2745, DA Form 2823, DA Form 4137, and AR 190-8. Some of the appendixes of FM 3-19.40 also provide information useful to any Soldiers capturing or handling detainees.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

1SG	first sergeant
A&L	administrative and logistics
A2C2	Army airspace command and control
A2C2S	Army airborne command and control system
AA	assembly area
AAFARS	advanced aviation forward area refueling system
AAFES	Army-Air Force Exchange Service
AAGS	Army air ground system
AAP	air ambulance platoon
AAR	after action review
AATF	air assault task force
AATFC	air assault task force commander
ABC	air battle captain
ABCS	Army Battle Command System
ABN	air battle net
AC	Active Component
ACA	airspace coordination area
ACL	allowable combat load
ACM	airspace control measure
ACO	airspace control order
ACP	air control point
AD	air defense
ADA	air defense artillery
ADE	assistance division engineer
AELT	air evacuation liaison team
AFATDS	Advanced Field Artillery Tactical Data System
AGES	air-ground engagement system
AHB	assault helicopter battalion
AI	area of influence
AIT	automotive information test
ALO	air liaison officer
ALOC	administrative and logistics center

ALSE	aviation life support equipment
ALSO	aviation life support officer
ALSS	aviation life support system
AMB	air mission briefing
AMC	air mission commander
AMCM	air mission coordination meeting
AMDWS	air and missile defense work station
AMO	aviation materiel officer
AMPS	aviation mission planning system
AMSS	Army materiel status system
ANCD	automated network control device
ANVIS	aviator's night vision imaging system
AO	area of operations
AP	anti-personnel
APU	auxiliary power unit
AR	Army regulation
ARAT	Army reprogramming analysis team
ARB	attack reconnaissance battalion
ARFOR	Army forces
ARMS	aviation resource management system
ARTEP	army training and evaluation program
ASB	aviation support battalion
ASE	aircraft survivability equipment
ASET	aviation survivability equipment trainer
ASL	authorized stockage list
ASP	ammunition supply point
ATACMS	Army Tactical Missile System
ATCCS	Army Tactical Command and Control System
ATM	aircrew training manual
ATO	air tasking order
ATP	ammunition transfer point
ATS	air traffic services
AVN BDE	aviation brigade
AVUM	aviation unit maintenance
AWACS	Airborne Warning and Control System
AXP	ambulance exchange point

BAE	brigade aviation element
BAS	battalion aide station
BCC	battlefield circulation control
BCOTM	battle command on the move
BCT	brigade combat team
BDA	battle damage assessment
BDAR	battle damage assessment and repair
BDR	battle damage repair
BHL	battle handover line
BHO	battle handover
BMNT	beginning morning nautical twilight
BOS	battlefield operating system
BP	battle position
BSA	brigade support area
C2	command and control
C3	command, control, and communications
C4I	command, control, communications, computers, and intelligence
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CADRG	compressed ARC digitized raster graphic
CAN	combat aviation net
CAS	close air support
CASEVAC	casualty evacuation (Actions taken by non-medical personnel in an air or ground vehicle.)
CATS	combined arms training strategies
CCA	close combat attack
CCIR	commander's critical information requirements
CCP	casualty collection point
CFL	coordinated fire line
CHS	combat health support
CI	counter-intelligence
CMMC	command materiel management center
CMO	civil-military operations
CMOC	civil-military operations center
COA	course of action
COLT	combat observation laser team
COMMEX	communications exercise

COMSEC	communications security
CONUS	continental United States
COSCOM	corps support command
CP	command post
CS	combat support
CSA	Chief of Staff of the Army
CSH	combat support hospital
CSM	command sergeant major
CSR	controlled supply rate
CSS	combat service support
CSSCS	combat service support control system
CTA	Common Table of Allowances
D3A	decide, detect, deliver, assess
DA Pam	Department of the Army pamphlet
DAAS	Defense Automatic Addressing System
DAPP	downed aviator pickup point
DART	downed aircraft recovery team
DASB	division aviation support battalion
DCU	dispensing control unit
DEA	Drug Enforcement Agency
DFAS	Defense Finance and Accounting System
DISCOM	division support command
DLA	Defense Logistics Agency
DMMC	division materiel management center
DOD	Department of Defense
DOTD	Directorate of Training and Doctrine
DP	decision point
DS	direct support
DSN	defense switch network
DTC	data transfer cartridge
DTED	digital terrain elevation data
DTM	data transfer module
EA	engagement area
EAC	echelons above corps
ECCM	electronic counter-countermeasures
ECM	electronic countermeasures

EEFI	essential elements of friendly information
EMP	electromagnetic pulse
EMS	electromagnetic spectrum
EO	electro-optical
EOD	explosive ordnance disposal
EP	electronic protection
EPLRS	enhanced position location reporting system
EPW	enemy prisoners of war
ERFS	extended range fuel system
ES	electronic support
ESM	electronic support measures
EW	electronic warfare
EWO	electronic warfare officer
FA	field artillery
FAA	forward assembly area
FAC	forward air controller
FARE	forward area refueling equipment
FARP	forward arming and refueling point
FBCB2	Force XXI Battle Command Brigade and Below
FBI	Federal Bureau of Investigation
FCR	fire control radar
FEBA	forward edge of the battle area
FEZ	fighter engagement zone
FF	future force
FFA	free fire area
FFIR	friendly force information requirements
FI	nonrated crew member instructor
FID	foreign internal defense
FLE	forward logistics element
FLIR	forward looking infrared
FLOT	forward line of own troops
FM	field manual
FMC	fully mission capable
FOB	forward operating base
FRAGORD	fragmentary order
FRIES	fast rope insertion/extraction system

FS	fire support
FSB	forward support battalion
FSCL	fire support coordination line
FSCM	fire support coordinating measure
FSE	fire support element
FSNCO	fire support noncommissioned officer
FSO	fire support officer
FST	forward surgical team
GCCS-A	Global Command and Control System—Army
GPS	global positioning system
GS	general support
GSAB	general support aviation battalion
GSAC	general support aviation company
GSE	ground support equipment
GSR	ground surveillance radar
GTC	ground tactical commander
GTN	global transportation network
HAA	heavy assembly area
HAATS	The High-Altitude Army Training Site
HEED	helicopter emergency egress device
HF	high frequency
HHC	headquarters and headquarters company
HICHS	helicopter internal cargo-handling system
HIDACZ	high-density airspace control zone
HIMAD	high-to-medium altitude air defense
HIMEZ	high altitude missile engagement zone
HMMWV	high mobility multi-purpose wheeled vehicle
HPT	high-payoff target
HPTL	high-payoff target list
HQ	headquarters
HSS	health service support
HUMINT	human intelligence
HVT	high-value target
HvyHC	heavy helicopter company
IAW	in accordance with
IFF	identification friend or foe

IFR	instrument flight rules
IIMC	inadvertent instrument meteorological conditions
ILAP	integrated logistics analysis program
IM	information management
IMC	instrument meteorological conditions
IMPIN	implementing instruction
INTREP	intelligence report
INTSUM	intelligence summary
IO	information operation
IP	instructor pilot
IPB	intelligence preparation of the battlefield
IPC	initial planning conference
IR	infrared
ISB	intermediate staging base
ISOPREP	isolated personnel report
ISR	intelligence, surveillance, and reconnaissance
JAG	Judge Advocate General
JEZ	joint engagement zone
JIM	joint, interagency, and multinational
JP	joint publication
JSEAD	joint suppression of enemy air defense
JSHIP	joint shipboard helicopter integration process
JSTARS	Joint Surveillance Target Attack Radar System
LAN	local area network
LD	line of departure
LIPS	logistics information processing system
LLTR	low level transit route
LNO	liaison officer
LOC	line of communications
LOGSA	logistics support activity
LOMEZ	low altitude missile engagement zone
LOS	line of sight
LP	listening post
LPI	low probability of interception
LRSD	long range surveillance detachment
LRU	line replaceable unit

LZ	landing zone
MAC	maintenance allocation chart
MACOM	major Army command
MAST	military assistance to safety and traffic
MCS	maneuver control system
MDMP	the military decision-making process
MEDEVAC	medical evacuation
METL	mission essential task list
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civil considerations
MEZ	missile engagement zone
MI	military intelligence
MILES	Multiple Integrated Laser Engagement System
MLRS	Multiple Launch Rocket System
MMC	materiel management center
MMDF	master maintenance data file
MO	maintenance officer
MOPP	mission oriented protective posture
MP	military police
MRE	meals ready to eat
MRR	minimum risk route
MSB	main support battalion
MSE	mobile subscriber equipment
MSL	mean sea level
MSR	main supply route
MST	maintenance support team
MTF	medical treatment facility
MTOE	modified table of organization and equipment
MTP	mission training plan
MTW	major theater war
MWR	morale, welfare, recreation
NAI	named area of interest
NATO	North Atlantic Treaty Organization
NAVAID	navigational aid
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer

NCOIC	noncommissioned officer in charge
NEO	noncombatant evacuation operations
NFA	no-fire area
NG	national guard
NGA	National Geospatial-Intelligence Agecny
NMC	not mission capable
NOE	nap of the earth
NSFS	naval surface fire support
NVD	night vision device
NVG	night vision goggles
O&I	operations and intelligence
OC	observer controllers
OIC	officer in charge
OP	observation post
OPCON	operational control
OPFOR	opposing forces
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OPTEMPO	operating tempo
ORF	operational readiness float
OSC	objective supply capability
PC	production control
PCC	pre-combat checks
PCI	pre-combat inspections
PEO	peace enforcement operations
PIC	pilot-in-command
PIR	priority intelligence requirements
PKO	peacekeeping operations
PL	phase line
PLL	prescribed load list
PMC	partially mission capable
PMCS	preventive maintenance checks and services
PME	peacetime military engagement
PO	peace operations
POC	point of contact

POL	petroleum, oil, and lubricants
PP	passage point
PSYOP	psychological operations
PZ	pickup zone
PZCO	pickup zone control officer
QA	quality assurance
QCA	quick change assembly
QRF	quick reaction force
RAA	rear assembly area
RAP	rocket assisted projectile
RC	Reserve Component
RETRANS	retransmission
RF	radar frequency
RFA	restrictive fire area
ROA	restricted operations area
ROE	rules of engagement
ROI	rules of interaction
RP	release point
RPG	rocket propelled grenade
RPM	revolutions per minute
RSR	required supply rate
RTD	return to duty
RTO	radio telephone operators
S-1	battalion or brigade adjutant
S-2	battalion or brigade intelligence officer
S-3	battalion or brigade operations officer
S-4	battalion or brigade logistics officer
S-5	battalion or brigade civil-military operations officer
S-6	battalion or brigade communications-electronics officer
SAAFR	standard use Army aircraft flight route
SAAS	standard Army ammunition system
SAILS	standard Army intermediate level logistics system supply
SAL	semi-active laser
SAM	surface-to-air missile
SAMS	standard army maintenance system
SARSS-O	standard army retail supply system-objective

SATCOM	satellite communications
SBF	support by fire
SEAD	suppression of enemy air defense
SHORAD	short range air defense
SHORADEZ	short range air defense engagement zone
SI	standardization instructor
SINCGARS	single channel air-ground radio system
SIP	standardization instructor pilot
SITREP	situation report
SJA	Staff Judge Advocate
SO	safety officer
SOF	special operations forces
SOI	signal operation instructions
SOP	standing operating procedures
SP	start point
SPBS-R	Standard Property Book System-Revised
SPIES	special patrol insertion/extraction system
SPINS	special instructions
SPOTREP	spot report
SSA	supply support activity
SSC	smaller-scale contingency
STAMIS	standard Army management information system
SU	situational understanding
TACFIRE	tactical fire direction system
TACON	tactical control
TACP	tactical air control party
TACSAT	tactical satellite
TAGS	theater air ground system
TAI	target area of interest
TAMMS	the Army maintenance management system
TCIM	tactical communication interface module
TDA	table of distribution and allowances
TESS	tactical engagement simulator system
TF	task force
TI	technical inspector
TIS	thermal imaging system

TLP	troop leading procedure
TM	technical manual
TMMC	theater materiel management center
TOC	tactical operations center
TOE	table of organization and equipment
TOO	tactical operations officer
TOT	time on target
TOW	tube-launched, optically tracked, wire-guided
TPL	target priority list
TRADOC	United States Army Training and Doctrine Command
TSC	theater support command
TSS	target selection standards
TTP	tactics, techniques, and procedures
UA	unit of action
UAV	unmanned aerial vehicle
UE	unit of employment
UHF	ultra high frequency
ULLS	Unit Level Logistics System
ULLS-A	Unit Level Logistics System—Aviation
ULLS-G	Unit Level Logistics System—Ground
ULLS-S4	Unit Level Logistics System—Logistics
UMT	unit ministry team
UN	United Nations
USAAVNC	United States Army Aviation Center
USAF	United States Air Force
USASC	United States Army Safety Center
VFR	visual flight rules
VHF	very high frequency
VIXL	video image crosslink
VMC	visual meteorological conditions
WARNORD	warning order
WEZ	weapons engagement zone
WFZ	weapons free zone
WMD	weapons of mass destruction
XO	executive officer

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