FM 1-114

AIR CAVALRY SQUADRON AND TROOP OPERATIONS

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Air Cavalry Squadron and Troop Operations

Contents

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Page

Preface

The RAS is an organic element of the corps ACR and ACR/L. The DCS is an organic element of the armored, light infantry, and airborne divisions. The ACS is an organic element of the air assault division. The ACT is the basic element of the RAS, DCS, and ACS. The RASs, DCSs, ACS, and ACTs are organized and equipped to perform reconnaissance and security operations in support of the overall scheme of maneuver. In addition, the RASs, DCSs, and ACS each play a vital role in command and control enhancement for their higher headquarters. Successful employment of these units on the modern battlefield depends heavily on the proper use of the tenets of Army operations.

This manual describes the organizational structure of the RAS, DCS, ACS, and ACT; as well as the doctrinal and tactical employment of these units on the modern battlefield. Appendixes A through K provide supplemental material on risk management, aircraft characteristics, OH-58D systems, movement and rapid deployment, assembly area operations, troop order guide, JAAT, ASE, fratricide prevention, environmental concerns and compliance, and air-ground integration. This manual is based on the doctrinal and tactical employment principles outlined in FMs 1-100, 1-111, 17-95, 100-5, 101-5, and 101-5-1. The RAS and DCS represent the smallest combined arms maneuver force on the battlefield. The versatility, maneuverability, and lethality these units bring to the battle can best be understood and used through the application of this manual in conjunction with FMs 17-95 and 17-97. This manual is intended for use by RAS, DCS, ACS, and ACT commanders, as well as a practical tool for ground commanders.

This manual applies to commanders and staffs who will lead, employ, or fight with a RAS, DCS, ACS, or ACT and to soldiers assigned to these types of organizations. It also serves as a reference for flight crews learning to understand and conduct reconnaissance and security operations in the RAS, DCS, ACS, and ACT.

The proponent of this publication is Headquarters, TRADOC. Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, USAAVNC and Fort Rucker, ATTN: ATZQ-TDS-D, Fort Rucker, AL 36362-5263.

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

Chapter 1

Reconnaissance and Security Helicopter Fundamentals

SECTION I—PRIMARY ROLES AND MISSIONS

ESSENTIAL CHARACTERISTICS OF ARMY OPERATIONS

1-1. Army aviation's rapid, terrain-independent air mobility helps create tactical opportunities for commanders at all echelons. These opportunities allow commanders to operate inside the enemy's decision cycle and force the enemy to make decisions that will disrupt its initial plan. The air cavalry provides crucial information by performing reconnaissance and security operations. By effectively using air cavalry, the maneuver commander takes the initiative away from the enemy and conducts combat operations on his own terms. By knowing and integrating the essential characteristics of Army operations, air cavalry can enhance the commander's ability to capitalize on enemy vulnerabilities. These essential characteristics are agility, initiative, depth, orchestration, and versatility.

AGILITY

1-2. Air cavalry greatly enhances the ACR, division, and corps agility because of the outstanding mobility it brings to the battlefield. Agility is the ability of friendly forces to act faster than the enemy. It is the first prerequisite for seizing and holding the initiative. Agility requires flexible organizations and quick-minded, flexible leaders. They must know of critical actions as they occur and act to avoid enemy strengths and attack enemy vulnerabilities. They must do this repeatedly so that every time the enemy begins to counter one action another immediately upsets its plan.This leads to ineffective, uncoordinated, limited enemy responses and to the enemy's eventual defeat. To be effectively agile, leaders must continuously "read the battlefield." They must use the information provided by the air troops as well as other intelligence-gathering efforts, decide on a COA quickly, and act without hesitation.

INITIATIVE

1-3. The aggressive actions of the air cavalry allow the ACR, division, or corps commander to select the time and place of his attack. Through the effective use of FS, CAS, and AHs, the air cavalry assist in taking the initiative. The underlying purpose of every encounter with the enemy is to seize or to retain independence of action. To do this, the commander must reach decisions and execute actions faster than the enemy. These actions include accurate and timely reporting and possibly delivering the initial shock to the enemy.

DEPTH

1-4. Depth refers to time, distance, and resources available to the commander for the mission. Air cavalry is highly mobile, flexible and possesses the capability to report enemy intelligence throughout the depth of the commanders battlespace. This allows commanders to employ friendly forces to counter any enemy combat operation. Momentum in the attack and elasticity in the defense are derived from depth. Knowing the time required to move forces is essential in knowing how to deploy to destroy, disrupt, or delay the enemy. Commanders need adequate space for force disposition, maneuver, dispersion, and must see the whole battlefield. As the range and precision of weapon systems increase, commanders will need to expand their ability to maintain situational awareness throughout the battlespace. The mobility and sensors of the air cavalry provide the commander with the ability to detect the enemy and manipulate the battlefield. The air cavalry provide the reconnaissance, surveillance, and security capabilities to achieve these requirements.

ORCHESTRATION

1-5. Orchestration means to arrange, develop, organize, or combine to achieve a desired or maximum effect. The commander achieves this maximization through an adequate and timely knowledge of both enemy and friendly forces. Orchestration describes the means by which commanders apply the complementary and reinforcing effects of all military and nonmilitary assets to overwhelm opponents at one or more decisive points. Air cavalry provides the commander with invaluable information to visualize the battlefield and to orchestrate his forces successfully. Effective orchestration requires anticipation, agility, mastery of time-space relationships, and a complete understanding of how friendly and enemy capabilities interact. Air cavalry elements must effectively integrate into the brigade, regiment, division, or corps commander's scheme of maneuver to achieve forceful and rapid operations. Air cavalry commanders, like their superiors, must make specific provisions in advance to exploit the opportunities that tactical success creates.

VERSATILITY

1-6. Versatility is the pivot point from which the cavalry commander will accomplish the other tenets. Versatility is the ability of units to conduct different kinds of operations either sequentially or simultaneously and is synonymous with flexibility. It allows for a smooth transition between varying mission combinations and deploying from one area or region to another without degrading performance. Versatility requires competence in a variety of skills. The commander that plans and executes his missions from this perspective will be guaranteed success on the battlefield and in the units ability to react smoothly and accurately to changing mission requirements.

SQUADRON MISSION

1-7. The primary mission of the RAS, DCS (heavy, light, and airborne), and ACS is to conduct reconnaissance and security operations. When appropriately task organized, the unit may participate in other security missions. The air cavalry performs air combat as part of the counter-reconnaissance effort, or to protect the overall force or organic units by providing local security. The air cavalry assists in C^{3}I enhancement; in addition to reconnaissance and security. Through these missions, they provide timely intelligence concerning the enemy, terrain, and weather throughout the AO and early warning against enemy observation or attack. Today's cavalry regiments and squadrons must be able to conduct operations across a wide range (peace, conflict, and war) against threats ranging in size from major regional powers, lesser powers, and terrorist groups to insurgents. Cavalry regiments and squadrons may be among the first units to initially deploy into an area to conduct stability operations, support operations or operations as part of the postconflict phase of some other contingency operation.

TROOP MISSION

1-8. The primary mission of the air troop is to conduct reconnaissance and screening operations. The air troop extends the aerial reconnaissance and screening capabilities of their squadron and supports the squadron's economy of force role during offensive, defensive, rear, and retrograde operations. Through these missions they provide timely combat information concerning the enemy, terrain, and weather throughout the AO and early warning against enemy observation or attack. Air troops augment ground forces when conducting guard and cover operations. Other missions that the air troop normally performs are C^{3}I enhancement, surveillance, counter-reconnaissance, raids, deception, air assault security, convoy security, nuclear aerial and/or nuclear and chemical ground surveys, and assisting in ground unit passage of lines. Air cavalry may be transferred under the OPCON to other forces for specific missions or as part of a JTF.

CAPABILITIES AND LIMITATIONS

1-9. The air cavalry possesses strengths and limitations that must be clearly understood for their effects to be maximized (see Table 1-1).

Table 1-1. Air Cavalry Capabilities and Limitations

	RAS, DCS, and ACS	ACT
Capabilities	Provide combat information. Enhance C^3I. Provide security. Quick reaction over wide area. Rapid transport of tactical forces. - ACR has organic assault helicopter troop. - DCS and ACS must request lift assets. Lines of communication surveillance. Provide target acquisition. Provide limited air assault (RAS only). Conduct aerial resupply (RAS only).	High degree of maneuverability. Demonstrated flexibility in changing battlefield situations. Adds depth in all reconnaissance and security missions.
Limitations	Limited operation in adverse weather or zero visibility conditions. Limited R&S capability at night (OH58A/C and AH-1 only). Limited operation in NBC environment. Limited AA security against level I threat. Little to no AA security against level II threat.	Limited, continuous 24 hour-a-day operations. Limited station time due to refueling requirements results in frequent situation updates as aircraft rotate in and out of the AO.

SECTION II—ORGANIZATIONS

CAVALRY ORGANIZATIONS

1-10. The organization of air cavalry will be reviewed under the following headings:

- RAS of the ACR and ACR/L.
- Armored or heavy DCS
- Light infantry and/or airborne DCS.
- ACS.
- Cavalry troops within a cavalry organization—HHT, ACT, ATKHT (RAS only), AHT (RAS only), and AVUM troop.

REGIMENTAL AVIATION SQUADRON

1-11. The RAS provides the ACR with combat aviation assets. The armored RAS is organized with a headquarters troop, three ACTs, two ATKHTs, an AHT, and an AVUM troop (Figure 1-1). The light RAS is organized with a headquarters troop, four ACTs, an AHT, and an AVUM troop (Figure 1-2). The squadron adds a very responsive, terrain-independent combat power to the regiment. The maneuverability and flexibility of the RAS enhances the flexibility of the regiment. The RAS may operate independently of or in close coordination with the ACS, or it may provide troops to the ACS. The RAS can also expect ground elements for specific missions. When integrated with the regimental artillery the RAS provides the commander with a tremendously flexible capability to shape the battlespace and set the conditions for the regiment's ground maneuver operations.

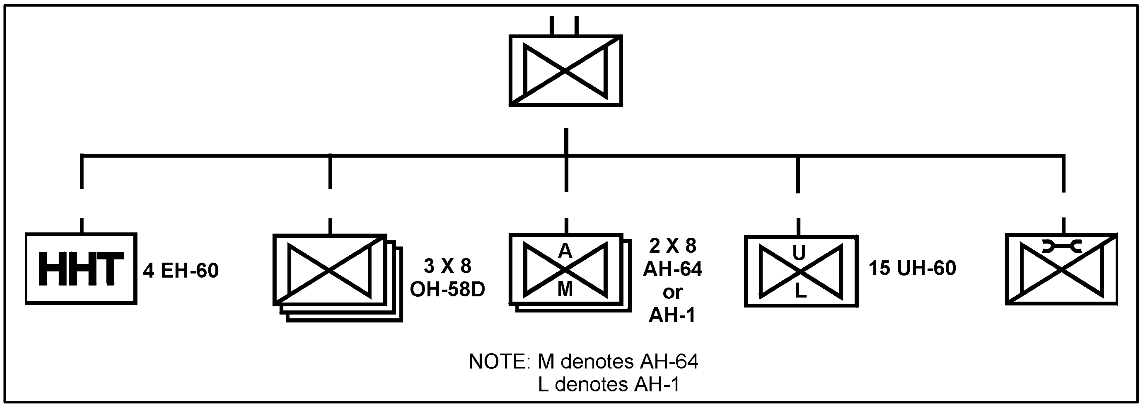

Figure 1-1. Armored RAS

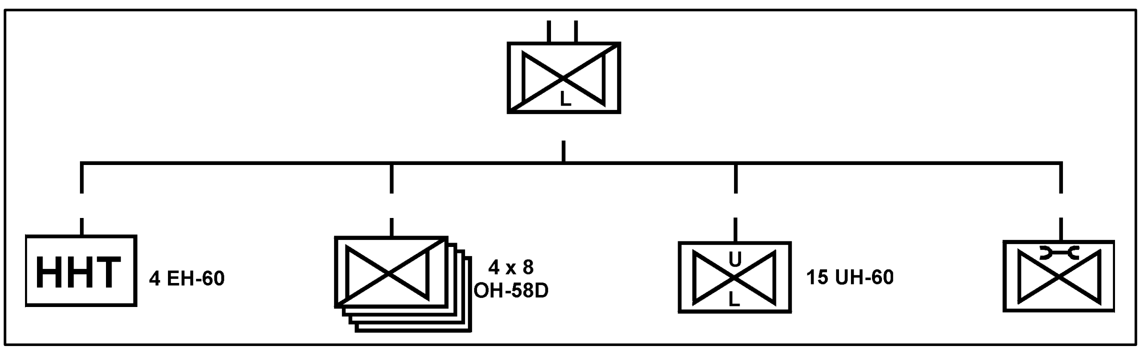

Figure 1-2. Light RAS

DIVISION CAVALRY SQUADRON

1-12. The DCS provides the division with reconnaissance, surveillance, and security assets. The armored DCS is organized with a headquarters troop, two ACTs, three GCTs (M1 and M3 equipped), and an aviation service troop (includes Class III and/or Class V and AVUM support) (Figure 1-3). The light infantry DCS is organized with a headquarters troop, two ACTs, one GCT (HMMWV equipped), and an AVUM troop (Class III and/or Class V consolidated in aviation brigade HHC) (Figure 1-4). The airborne DCS is organized with a headquarters troop, three ACTs, one ground troop (HMMWV equipped), and an AVUM troop (Figure 1-5).

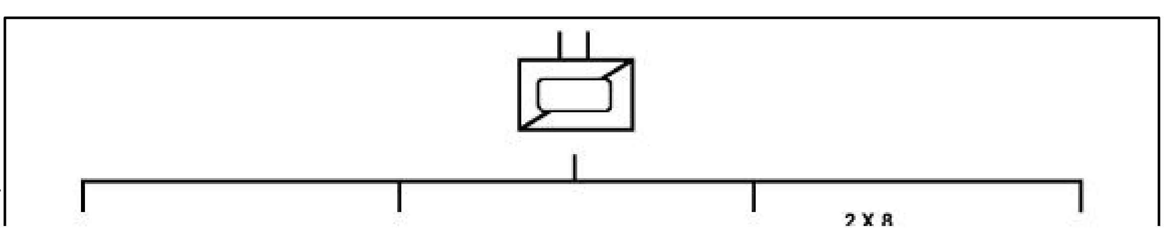

Figure 1-3. Armored Division Cavalry Squadron

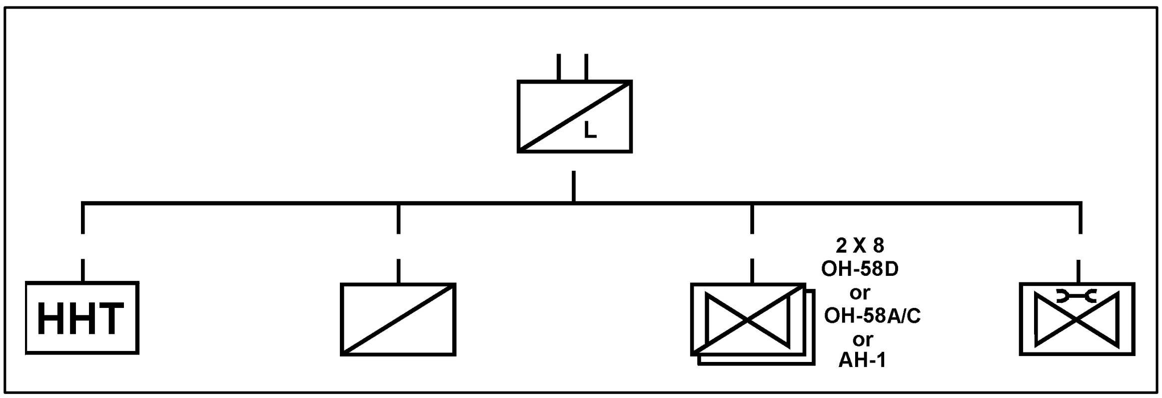

Figure 1-4. Light Infantry Division Cavalry Squadron

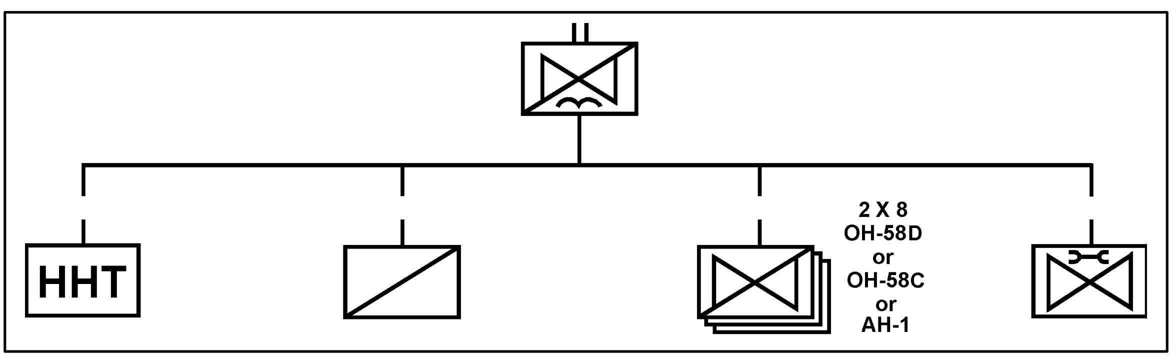

Figure 1-5. Airborne Division Cavalry Squadron

AIR CAVALRY SQUADRON

1-13. The ACS is an extremely responsive and rapidly deployable force that is part of the air assault division. The ACS is equipped with a headquarters troop, four ACTs, and an AVUM troop (Figure 1-6). The squadron is structured light to possess the same strategic mobility as the parent division. When deployed, the squadron possesses a significant mobility advantage over the light infantry battalions of the division.

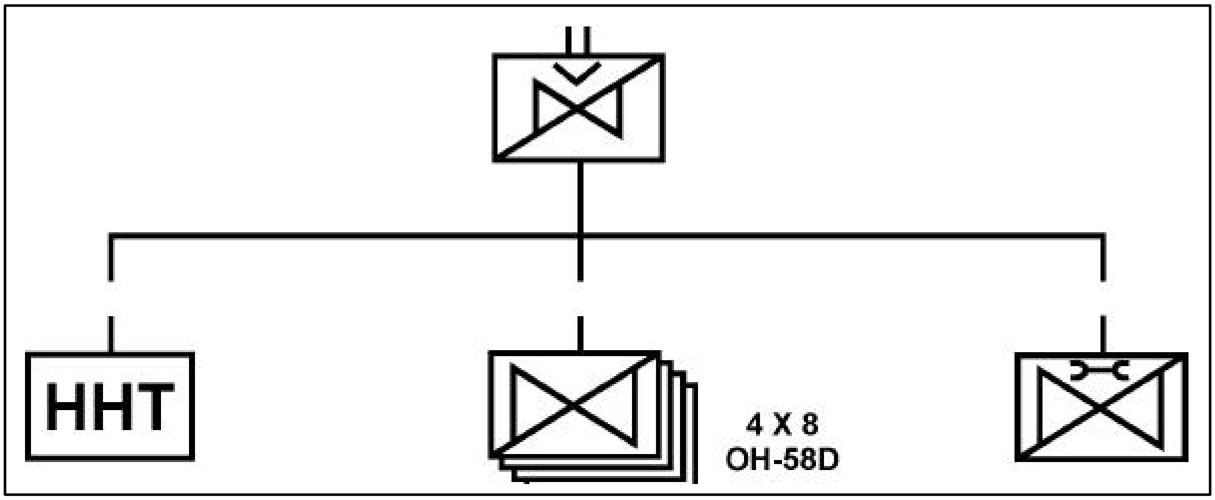

Figure 1-6. Air Cavalry Squadron

TROOP ORGANIZATION

HEADQUARTERS AND HEADQUARTERS TROOP

1-14. The HHT provides C^2 and staff planning for the squadron. The squadron headquarters consists of the commander and his coordinating and/or personal staff. The headquarters troop consists of a headquarters, a supply section, a vehicle maintenance section, a food service section, a medical treatment squad, a Class III and/or Class V platoon (in the RAS), a unit ministry team, and a communications section. In the RAS, a separate CEWI flight platoon provides the ACR with its aerial signal intelligence asset. In the division cavalry, combat electronic warfare and intelligence support is available upon request.

AIR CAVALRY TROOP

1-15. The troop headquarters consists of the commander, the first sergeant, the safety officer, and a vehicle driver (crew chief from one of the aeroscout platoons). The troop commander is overall responsible for the command, control, employment, and maintenance of the ACT. He is assigned an aircraft from one of the aeroscout platoons. The first sergeant coordinates external support such as supply, mess, personnel, medical, and vehicle maintenance. The first sergeant also monitors combat operations. He supervises virtually all operations in the AA. The vehicles assigned to the ACT will vary from unit to unit and are split between the headquarters section and the platoons based on the situation.

1-16. Each platoon consists of four aircraft. Each platoon is led by a lieutenant and includes a flight examiner, an instructor pilot, pilots, platoon sergeant, and crew chiefs.

ATTACK HELICOPTER TROOP (ARMORED RAS ONLY)

1-17. Each ATKHT consists of a troop headquarters, an aeroscout platoon with three AH-64s, and an attack platoon with five AH-64s. The ATKHTs are the primary antiarmor forces of the RAS. They can fix and prevent enemy penetrations, exploit success, and provide long-range direct antiarmor fires. They can also perform reconnaissance and screening missions. ATKHTs are employed the same as the attack helicopter companies discussed in FM 1-112.

ASSAULT HELICOPTER TROOP (RAS ONLY)

1-18. The AHT consists of a troop headquarters and three assault platoons. Each platoon has five UH-60s, totaling fifteen aircraft per troop.

1-19. The AHT provides the ACR and the RAS with CS and CSS by moving troops, supplies, and equipment within the combat zone. It may conduct air assault operations for up to one dismounted mechanized infantry company, conduct LRSD insertions, or augment aeromedical evacuation efforts. In addition, the AHT provides UH-60 aircraft for command, control, and liaison as required by the ACR commander. It also allows the ACR and RAS commanders to support their own extensive Class III, Class V, and maintenance requirements. The AHT is employed the same as the assault helicopter companies discussed in FM 1-113.

AVIATION UNIT MAINTENANCE TROOP

1-20. The AVUM troop consists of a troop headquarters, a quality assurance section, an aircraft maintenance platoon, an aircraft component repair platoon, and a Class III and/or Class V platoon The AVUM troop provides AVUM support for organic squadron aircraft. In the armored DCS, the AVUM provides Class III and/or Class V support.

AIR CAVALRY PLATOON

1-21. The commander organizes platoons to train and fight as a unit under the direction of the platoon leader.

AIR CAVALRY TEAM

1-22. The ACTM is the basic building block of any troop mission and is the "eyes and ears" of the commander. ACTMs can cover wide frontages and add depth to the battle area. ACTMs can also rapidly report information about the tactical situation to provide real time intelligence to the commander. The commander task organizes the troop into ACTMs based on table of organization and equipment, aircraft availability, and METT-T. The ACTM can be any combination of two or more aircraft (OH-58A/C, OH-58D, AH-64A, AH-64D, or AH-1) assigned a mission.

Chapter 2

Battle Command

SECTION I—COMMAND AND CONTROL

COMMAND AND CONTROL PROCESS

2-1. The C^2 system provides the commander with the structure and means to make and convey decisions and to evaluate them continuously. The decisions and higher-level intent are then translated into productive actions. The decisions are based on the information derived from the C^2 process, which consists of the following four steps:

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

MILITARY DECISION MAKING PROCESS

2-2. To effectively accomplish the mission, the commander and his subordinates follow the nine-step, MDMP. The MDMP is discussed in great detail in FM 101-5.

COMMAND AND CONTROL TECHNIQUES

2-3. Effective C^2 is a never-ending process· The commander must develop techniques and procedures that create an expeditious flow of information through the C^2 process· These techniques and procedures should be an essential focal point in the SOP· Effective techniques should create a simple, timely, brief, and clear projection of information· Techniques are discussed in FMs 17-95, 24-1, 101-5, and 101-5-1.

SECTION II—COMMAND AND STAFF RESPONSIBILITIES

SQUADRON COMMANDER

2-4. The commander analyzes and restates the mission, designs the concept of operations, organizes the forces, and provides support to subordinate units. He issues mission orders with sufficient details for his subordinate to plan and lead their units.

2-5. When not in battle, the commander operates from the vicinity of the TOC.

2-6. During battle, the commander positions himself where he can best make decisions during critical points of the battle. He positions himself to follow and influence operations and maintains communications with higher, lower, and adjacent units.

2-7. The commander must know the enemy; his organization, his weapon systems, and how he fights. He must know the terrain over which his unit will fight and the adjacent terrain the enemy may use to support or reinforce. The commander must be aware of the operational limitations of his unit. He ensures air and ground cavalry efforts are fully synchronized to accomplish the mission.

EXECUTIVE OFFICER

2-8. The XO is second in command and the principal assistant to the commander. He directs, supervises, and ensures coordination of staff work except in those specific areas reserved by the commander. During combat operations, the XO is positioned in the TOC and his duties are as follows:

- Directs and coordinates CS and ensures continuous CSS.
- Assisted by the operations sergeant, the XO maintains routine reporting, coordinates the activities of the liaison personnel, and always plans ahead.
- During lulls in the battle, the XO may go to the trains and personally determine the status of CSS operations.
- Remains current on the tactical situation and is prepared to assume command on a moment's notice.

COMMAND SERGEANT MAJOR

2-9. The CSM acts in the name of the commander when dealing with the other NCOs in the unit and is the commander's primary advisor concerning the enlisted soldiers. He is the most experienced soldier in the squadron and keeps his finger on the pulse of the command. He focuses his attention on any function critical to the success of the operation. The CSM assists the commander in the following ways:

- Trains troop first sergeants.
- Monitors NCO development, promotions, and assignments within the squadron.
- Plans and assesses soldier training tasks. Ensures soldier training tasks are identified and trained to support the performance of collective (unit) METL tasks.
- Monitors the level of proficiency of training and morale of subordinate units.
- Provides recommendations and expedites the procurement and preparation of replacements for subordinate units.
- Monitors food service and other logistics operations.
- Conducts informal investigations.
- Assists in controlling squadron movement through a breach in a critical obstacle or at a river crossing.

- Makes coordination for a squadron passage of lines.
- Leads the squadron advance and/or quartering party during a major movement.
- Assists in the CSS effort during the battle when the XO is in the TOC or forward.

ADJUTANT

2-10. The S1 has primary responsibility for all personnel matters. The S1 normally operates from the CTCP collocated with the S4. He shares supervisory responsibility for logistics with the S4. The S1 and S4 must cross-train to enable them to conduct continuous operations.

INTELLIGENCE OFFICER

2-11. The S2 is responsible for collecting and providing current information and analyzed intelligence of tactical value concerning terrain, weather, and enemy for all commanders and the staff to facilitate planning and execution of combat operations. The S2 performs the following functions:

- Converts the information requirements of the commander into PIR.
- Facilitates the IPB process.
- Participates in the development of the decision support template.
- Coordinates intelligence activities in the TOC.
- Frequently updates the XO on the enemy situation.
- Works closely with the FS element and assistant S3 to ensure information is passed throughout the staff.

OPERATIONS OFFICER

2-12. The S3 is responsible for matters pertaining to the organization, employment, training, and operations of the unit and supporting elements. He monitors the battle, ensures the necessary CS assets are provided when and where required, and anticipates developing situations. The S3, assisted by his operations sergeant and assistant, maintains routine reporting, coordinates the activities of liaison personnel, and is always planning ahead. The S3 ensures his soldiers and equipment are organized, trained, and maintained to support the XO in the TOC. The S3 maintains close coordination with the S4 for CSS status.

SUPPLY OFFICER

2-13. The S4 provides logistics information to the squadron commander. He functions as the squadron’s logistics planner. He coordinates with troop first sergeants and XOs about status of equipment and supplies. He coordinates with supporting units and HHQ staffs to ensure logistics support is continuous. The S4 is in charge of the CTCP.

AIR DEFENSE OFFICER

2-14. The ADO, after coordinating with the S2 for the aerial portion of the IPB, provides the commander with recommended AD priorities. The ADO works closely with the ALO, FSO, and flight operations officer to coordinate A^2C^2 matters that have either direct or indirect impact on the regiment or squadron.

AIR LIAISON OFFICER

2-15. The ALO is an Air Force officer who is a member of the TACP. He may serve as a FAC or have additional officers assigned to the TACP as FACs. He advises the commander and staff on the employment of offensive air support, including CAS, battlefield air interdiction, joint suppression of enemy ADs, aerial reconnaissance, and airlift.

AVIATION UNIT MAINTENANCE TROOP COMMANDER

2-16. The AVUM troop commander is responsible for preventive maintenance, repair, and parts replacement for aircraft and aviation equipment. He is also responsible for evacuation of unserviceable modules, components, and end items. He coordinates closely with the S4.

CHAPLAIN

2-17. The chaplain and chaplain assistant compose the UMT. The UMT operates out of the combat trains. The UMT provides pastoral care, counseling, and advice to the commander on matters of religion, morale, and morals.

CHEMICAL OFFICER

2-18. The chemical officer advises the commander on NBC defensive operations, decontamination, smoke and/or obscurants, flame, and NBC reconnaissance operations. The chemical officer, assisted by an NCO, also serves as an assistant operations officer in addition to NBC duties. The chemical officer works directly for the S3 and is responsible for integrating NBC defense into all aspects of unit training.

SIGNAL OFFICER

2-19. The signal officer advises the commander on all signal matters, including the location of CPs, signal facilities, best uses of signal assets, and the use of signal activities for deception. He monitors the maintenance status of organic signal equipment, coordinates the preparation and distribution of the SOI, and supervises the communications security accounting activities.

ENGINEER OFFICER

2-20. The squadron engineer is the commander or leader of the DS, attached, or operationally controlled engineer unit supporting the squadron. Because of his duties, he cannot be at the squadron TOC continuously, but he is in the TOC during planning and is part of the orders group. He is the terrain expert and works closely with the S2 in the IPB process to develop an accurate detailed analysis of the effects of weather on terrain and how these effects impact on the mission. The engineer officer provides the commander and staff information on the enemy's engineer capabilities. In the absence of an engineer unit, the S3 assumes responsibility for engineer functions.

FLIGHT OPERATIONS OFFICER

2-21. The flight operations officer is part of the S3 section and works in the TOC for the S3. He is assisted by an NCO and flight operations specialist. He is the operations expert on Army aviation in the squadron. He assists in planning and managing the integration of air cavalry in the squadron's scheme of maneuver. The flight operations officer's responsibilities include the following:

- Coordinate with the aviation brigade for aviation support.
- Receive A^2C^2 control measures and directives from the aviation brigade or division A^2C^2 element.
- Incorporate applicable A^2C^2 measures into the scheme of maneuver.
- Maintain A^2C^2 overlay in squadron TOC.
- Establish and monitor flight-following net (air traffic control network) for squadron aircraft, when required.
- Maintain squadron flying hour program and monitor fighter management.
- Disseminate A^2C^2 changes to the ACT and the AVUM (F Troop) commander.
- Assist in operations of the S3 section.
- Assist the S3 and the FSO in planning required SEAD and J-SEAD fires.

FIRE SUPPORT OFFICER

2-22. The primary duty of the FSO is to help the commander integrate all fires to support the scheme of maneuver. This includes planning, coordinating, and executing FS. He is also responsible for coordinating with the S3 and the flight operations officer for required SEAD and J-SEAD fires. The FSO coordinates the efforts of subordinate FSOs and maintains digital and voice communications to supporting artillery.

HEADQUARTERS AND HEADQUARTERS TROOP COMMANDER

2-23. The HHT commander serves as the headquarters commandant for the main CP and answers directly to the squadron XO. The HHT commander is responsible for the support, security, and movement of the main CP and for supporting all elements of the HHT. He normally delegates the function of maintenance support to the HHT XO and the function of supply to the HHT first sergeant. Although he is a unit commander, not a staff officer, the squadron HHT commander fulfills a unique role.

LIAISON OFFICER

2-24. LNOs are in the S3 section of the regiment and squadron. They represent the commander at the headquarters of another unit for effecting coordination and for promoting cooperation between the two units. Through personal contact, they facilitate the exchange of information and ensure mutual understanding and unity of purpose before, during, and after combat operations. LNOs operate from the TOC where they are normally briefed and debriefed by the XO or TOC shift leader.

REGIMENTAL SUPPORT SQUADRON COMMANDER

2-25. The regimental support squadron commander is the regimental commander's main CSS operator. He advises the regimental commander concerning supply, maintenance, field and health services, and implementation of the CSS functions throughout the regiment. The regimental support squadron commander has OPCON over all units and elements within the RSA for movement, security, terrain management, and synchronization of sustainment activities. He coordinates and implements plans for assigned rear operations responsibilities within the RSA. He usually works through the regimental XO and coordinates with the regimental S4. He is located in the rear CP.

SQUADRON MAINTENANCE OFFICER

2-26. The SMO is responsible for coordinating all activities including recovery, evacuation, repair, and replacement of combat equipment to sustain the operational readiness of the squadron. The SMO is responsible for all ground tactical equipment. The SMO coordinates and supervises the efforts of the squadron maintenance platoon and exercises staff supervision over unit maintenance in the troops. He also functions as the maintenance platoon leader. The maintenance warrant officer assists the SMO by providing technical assistance and supervision to the maintenance platoon. During combat, the SMO operates from the combat trains or a UMCP. In the absence of the S4, he controls the combat trains.

SURGEON

2-27. The squadron surgeon advises and assists the commander on matters concerning the fighting strength of the command to include preventive, curative, and restorative care. He advises the commander on the combat health support of the command and of the medical threat present in the occupied or friendly territory within the commander's area of responsibility. He determines requirements for the requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies. The regimental surgeon is normally located at the clearing station in the regimental support area. The squadron surgeon and the physician's assistant operate the squadron aid station located in the combat trains. The division cavalry surgeon is also a qualified flight surgeon.

SQUADRON TACTICAL OPERATIONS OFFICER

2-28. The tactical operations officer is part of the S3, in the RAS, and works in the TOC for the S3. He is assisted by an NCO and flight operations specialist. He is the operations expert on Army aviation in the squadron. He assists in planning and managing the integration of air cavalry in the squadron's scheme of maneuver. The tactical operations officer's responsibilities include the following:

- Coordinate with the aviation brigade or regiment for aviation support.
- Receive A^2C^2 measures and directives (air tasking order, air control order, and SPINs) from the HHQ A^2C^2 element.
- Incorporate applicable A^2C^2 measures into the scheme of maneuver.
- Maintain A^2C^2 overlay in squadron TOC.
- Establish and monitor flight following network (air traffic control network) for squadron aircraft, when required.
- Disseminate A^2C^2 changes to the ACT and the AVUM and/or aviation service troop commander.
- Assist in the operations of the S3 section.
- Assist the S3 and the FSO in planning required SEAD and J-SEAD fires.
- Operate the AMPS, and disseminates mission loads to subordinate units.
- Develop, plan, coordinate, and brief EW operations.
- Establish and monitor squadron, regimental, and division command networks.
- Maintain current situation to include current BDA and spot reports and passes reports to HHQ.

AIR CAVALRY TROOP COMMANDER

2-29. The ACT commander has the immediate responsibility for tactical employment of the troop. The troop commander commands and controls all assigned air and ground assets while accomplishing all assigned missions and preserving the combat power of the force.

2-30. To accomplish the mission, the ACT commander interfaces with HHQ and supported units for receipt of missions. Given the complexity of the aircraft systems, extensive coordination requirements, limited planning and rehearsal time, and limited number of AMPS planning stations, the air troop commander should focus on the use of the planning cell concept in mission planning and execution.

2-31. During tactical operations, the ACT commander may command the troop from either the air or from the ground during periods when continuous operations dictate. However, the troop commander has very limited C^2 capability while on the ground.

AIR MISSION COMMANDER

2-32. Designation of an AMC is a command responsibility when two or more aircraft work together as a flight. This responsibility includes ensuring that the aircrews adhere to mission briefing parameters, authorizing deviation from the mission, and handling tactical, administrative and logistics interface with supported units.

2-33. The AMC commands and controls the flight during a tactical mission. The air mission commander will—

- Interface with higher and supported units for receipt of missions.
- Provide detailed guidance to the troop planning cells and reconnaissance crews.
- Choose the team and/or troop COA upon contact with the enemy and controls the execution of the COA.
- Coordinate with GCTs or other maneuver units operating in the ACTs AO.
- Coordinate indirect fires and TACAIR support.
- Coordinate with attack helicopters and/or ground troop commanders for target and/or battle handover.
- Update higher commanders on the current situation and submit required reports.
- Synchronize arming and refueling operations for maximum effectiveness and mission accomplishment.
- Ensure combat information is disseminated properly both during and after the mission.
- Conduct the mission debrief and/or AAR.

2-34. The wide range of responsibilities and tempo of coordination for support and integration of fires demands that the AMC delegate responsibilities among the crew members in the flight based on their individual skills and troop SOP. If not delegated, the complexity of the duties in a combat situation can easily lead to task saturation and significantly reduce the troop's combat effectiveness.

PLATOON LEADERS

2-35. When the ACT conducts tactical operations, platoon leaders may serve as air mission commanders and/or team leaders based on experience. The most senior platoon leader may also serve as the troop XO, and assist in logistics and operational duties of the troop commander.

2-36. During planning, recovery, and AA operations the platoon leader's role focuses on preparation for the next mission. The platoon leader will—

- Ensure that each platoon member is prepared for the mission.
- Monitor the fighter management status of platoon members.
- Interface with the troop maintenance officer and platoon sergeant to verify aircraft status and monitor the maintenance effort.
- Supervise unit movements.

- Advise the troop commander on platoon issues such as aircraft maintenance, personnel status, and CSS requirements.

TEAM LEADERS

2-37. The ACT team leaders are responsible to the troop platoon leader for the tactical employment of the team. Team size is dictated based on the nature of the mission. Team leader selection should be based on tactical experience. The team leader duties include—

- Accomplishing the assigned mission.
- Planning mission at the team level.
- Providing personnel to man and supervising the work of the planning cells.
- Conducting mission brief for team level missions, if directed.
- Providing tactical control of the team, such as determining formations, ASE configuration settings (see appendix H for detailed instructions), movement techniques, assigning and prioritizing tasks, developing the situation, choosing COAs, and method and execution of weapons employment.
- Interfacing with higher and supported units.
- Being prepared to assume responsibility as the platoon leader and/or air mission commander.

FIRST SERGEANT

2-38. The 1SGs executes the squadron's CSS plan at troop level. He ensures the continuous operation of the CP. He coordinates medical, mess, supply, administrative, and personnel support with HHQ and subordinates. He also supervises AA activities and establishing the AA.

MAINTENANCE OFFICER

2-39. The troop maintenance officers coordinate the troop's AVUM in addition to their operational flying duties. The use of a consolidated program with maintenance officers and platoon sergeants dividing work into shifts, maximizes the effectiveness of the work effort, supports the AA security plan, and ensures fighter management cycles for maintainers.

INSTRUCTOR PILOT

2-40. During tactical operations, the troop IPs recommend appropriate TTP for each mission. Additionally, they assist in the crew selection process and act as the commander's SME on employment of aircraft systems and weapons.

SAFETY OFFICER

2-41. The SO monitors all troop operations to ensure safe operation and identify potential hazards. He assists the commander during the risk management process.

AVIATION SURVIVABILITY EQUIPMENT OFFICER

2-42. The ASE officer advises the commander on appropriate ASE techniques and procedures for each mission. He conducts the ASE portion of the risk management process.

PILOT-IN-COMMAND

2-43. The PC is responsible for the operation and security of the aircraft they command. The PC must be tactically, as well as technically, proficient in the units METL.

SECTION III—COMMAND AND CONTROL FACILITIES

TACTICAL OPERATIONS CENTER

2-44. The TOC is the primary C^2 structure for the squadron. It consists of those staff personnel required to conduct continuous current operations and to plan future operations. The squadron XO is responsible for TOC operations. The tactical situation may require the squadron XO to supervise the TOC when the commander and S3 are at the TAC CP. The TOC includes the S2 and S3 sections, communications platoon elements, TACP, FSE, and flight operations section. The TOC monitors operations around the clock and exercises C^2 of the current operation when a TAC CP is not employed. When not operating from the TAC CP, command vehicle, or an aircraft, the commander is normally at the TOC. An efficient method of TOC organization is to operate as three functional cells—operations, support cell, and future plans cell.

OPERATIONS

2-45. TOC personnel monitor and control current operations. Functional positions within the battle cell include a battle captain, an intelligence specialist, a FS specialist, a clerk-recorder, and RTOs. The battle captain (not rank specific) is an experienced member of the S3 section who continuously monitors current operations. He does not command the battle but performs battle tracking and makes operational decisions within his assigned responsibility. He alerts the commander, XO, or S3 to situations that meet the established CCIR or exceed his designated authority to control. The intelligence specialist receives incoming tactical reports and processes the intelligence information. The FS specialist expedites clearance of fires and coordinates for responsive fires. The battle cell remains operational even when the TAC CP has the battle. When communications allow, it monitors the actions of the TAC CP and is always prepared to assume control of the battle if the TAC CP is disabled.

SUPPORT CELL

2-46. The support cell maintains unit status, receives and processes routine reports, and provides routine support to the TOC. The TOC NCOIC supervises this cell.

FUTURE PLANS CELL

2-47. The future plans cell is activated as required to conduct planning for future operations. This cell consists of the tactical operations officer and/or battle captain, S2, FS NCO, NBC NCO, an S3 representative, and also includes all staff members involved in the military decision making process and orders preparation.

2-48. The TOC functions to sustain operations and will control the battle when the TAC CP is not employed. In addition, TOC personnel—

- Plan for future operations.
- Collate information for the commander.
- Provide reports to HHQ.
- Coordinate with higher and adjacent units.
- Coordinate A^2C^2.
- Analyze information for immediate intelligence.
- Acquire CS and CSS and coordinate their functions.
- Coordinate requirements for protection of rear operations.
- Coordinate and direct CS and CSS functions with the tactical and rear CPs to ensure that forward operating elements sustain operations.

2-49. The S3 selects the site for the TOC considering the factors of METT-T and recommendations from the HHT commander and signal officer. This location must allow good communications with HHQ, subordinate troops, and supported units. The TOC should be near suitable vehicular routes. It should also be out of the range of enemy medium artillery and away from prominent terrain features that the enemy could use as target-reference points. The TOC must be able to relocate frequently and operate with minimal electronic signature for extended periods. It must be well camouflaged to enhance survivability. The TOC displaces in either a phased movement or a single movement. The latter method is possible when a full-time TAC CP is employed. Communications with HHQ must be maintained at all times. Set up must be in the following phased manner:

- Battle tracking and/or controlling current battle.
- Security.
- Establish briefing area.
- Establish full TOC set up when situation permits.

TACTICAL COMMAND POST

2-50. The TAC CP cannot operate continuously because of personnel and equipment limitations and future planning requirements. Therefore, it is usually employed only when the operation can be better controlled at a location other than the TOC. The TAC CP is limited in physical size and electronic signature and can displace rapidly and frequently. The flow of the operation and the desires of the commander dictate movement of the TAC CP. The TAC CP is composed of required personnel from the S2 and S3 sections and is normally the responsibility of the commander or S3. An FSO, a TACP, and ATS assets may also be located at the TAC CP. A standard arrangement of the TAC CP may be stated in the unit SOP.

2-51. The TAC CP must maintain communications with the TOC, the troops, and HHQ at all times. The normal mode of communications at the TAC CP is frequency modulation (secured). The TAC CP assists the commander in controlling current operations. TAC CP personnel—

- Control maneuver forces.
- Coordinate JAAT operations.
- Analyze information for immediate intelligence.
- Control and coordinate immediately available FS.
- Communicate CSS requirements (Classes III and V) to the TOC.
- Coordinate with adjacent units and forward AD elements.
- Develop combat intelligence of immediate interest to the commander.

ALTERNATE AND REAR COMMAND POSTS, ASSEMBLY AREAS, AND FORWARD AREA ARMING AND REFUELING POINTS

2-52. The squadron 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 TAC CP, or a subordinate troop headquarters. Provisions for an alternate headquarters are normally established in unit SOPs.

2-53. The rear CP, located with the squadron CTCP, provides the CS and CSS required to sustain the squadron. It may be located in the BSA, RSA, DSA, corps support area, or another area where major organizational support facilities are located. The squadron S1 and S4 sections operate from this area and coordinate all required support with the TOC. The ranking or otherwise designated individual, normally the squadron S4 or S1, is the rear CP commander. The squadron XO monitors the operations of the rear area.

2-54. Troops are located near the TOC in dispersed AAs. This arrangement allows rapid reaction to mission requirements and provides limited security for the TOC. The squadron CTCP serves as the rear CP and consists of HHT support elements, the AHT, and the AVUM. These elements compose the squadron combat trains and are disposed to the rear of the TOC. Although its actual location depends on METT-T, the rear CP is usually collocated with a higher support area. Under some circumstances, the squadron HHT commander can control the squadron field trains and rear CP.

2-55. The HHT establishes FARPs in forward AAs to support combat operations. The location of the FARPs also depends on METT-T. The squadron S3 is responsible for coordinating the location and displacement of FARPs, and the XO is responsible for tracking statuses. Normally, the FARPs consist of Class III and/or Class V (fuel and/or ammunition) support, maintenance support, and medical teams. FM 1-111 discusses FARPs in detail.

ASSEMBLY AREAS

2-56. An ACT will likely be employed to perform reconnaissance of the squadron field trains area or the troop AA before occupation. The following items must be considered when a site is being selected:

- Overall suitability of terrain. (Be aware of man-made obstacles such as radio and/or TV towers and wires. These are critical factors when considering the amount of air traffic in and around the AA.)
- Site security and natural camouflage.
- Space for adequate dispersion of aircraft.
- Openings in the area to position aircraft and vehicles.
- Terrain that facilitates communications and water drainage.
- Access to ground routes to facilitate CSS operations for the squadron.
- Protection from indirect fires by reverse slope positioning and adequate distancing from enemy artillery.

TACTICAL ASSEMBLY AREA

2-57. TAAs are usually used for short time periods, or for specific missions that require the troops to be positioned away from the squadron trains. Only the ACT's assets and a communications capability are located in a TAA. This area may be used if the squadron commander thinks the threat has the capability of identifying where his squadron field trains might be. With the use of threat radar, the area where aircraft land and depart can be identified. Based on threat capabilities, the squadron commander determines if the ACTs will be positioned with the squadron field trains or in the TAA. Since the TAA will have limited personnel for defense, the ACTs will have to use a reactive defense plan. The concentration of the troop's defense efforts will have to move toward the main attack instead of a 360-degree static defense. Armed troop aircraft in the TAA should be positioned so that they may be used in the defense.

FORWARD ASSEMBLY AREA

2-58. The FAA for an ACT is small and is usually occupied for short periods. It is an area where troop elements can shut down before relieving another team or troop on station. This allows the troop to remain close to the battle so that it can react rapidly to changing tactical situations. It also allows the troop to perform limited maintenance without returning to the squadron field trains or TAA. If the troop commander elects to shut down in the FAA he must still maintain communications with HHQ.

2-59. The FAA is usually located near a FARP to hasten maintenance efforts conducted by crew chiefs or contact teams that are collocated within FARPs. The FAA may be collocated with the squadron or a brigade TAC CP. This facilitates the coordination and exchange of information between air and ground elements. However, it increases the signature of the CP and therefore the probability of attack. Therefore, those selecting an FAA close to a CP must ensure that the aircraft signature will be minimized. Otherwise, FAAs should be located away from CPs. Aircrews occupying the FAA will monitor radio traffic to keep abreast of the tactical situation. They can then respond quickly if needed by the ACT commander.

2-60. Activities in the FAA are limited. Aircrews check their aircraft for possible battle damage and take care of personal needs. The FAA is positioned to support the ACT based on METT-T. Primary consideration is given to the vulnerability of the FAA to enemy indirect fires.

2-61. The FAA may also be located in an urban area where aircraft can be hidden behind or in the shadows of large structures. The ACT commander considers air avenues of approach into the FAA. Visual and radar detection by the enemy must be prevented. Varying covered and concealed routes into the FAA will help to ensure that the enemy does not locate the FAA.

SECTION IV—COMMAND AND CONTROL COMMUNICATIONS

PURPOSE

2-62. Communications are essential to cavalry operations. Fundamental to reconnaissance and security is the reporting of combat information. This information is of interest to other maneuver units as well as to corps or division staff and requires widest dissemination possible by eavesdrop or other means. Cavalry frequently operates over long distances, wide frontages, extended depths, and great distances from the controlling headquarters. Communications must be redundant and long range to meet these internal and external requirements. Long-range communications can be augmented through signal support, especially for deep attack or other deep operations.

2-63. Communications, particularly electromagnetic, are subject to disruption. Disruption may result from unintentional friendly interference, intentional enemy action, equipment failure, atmospheric conditions, nuclear blast electromagnetic pulse, or terrain interference. To compensate for these, the commander should—

- Provide for redundancy in means of communication.
- Ensure subordinates understand his intent so they know what to do during communications interruptions.
- Avoid overloading the communications systems.
- Minimize use of the radio.
- Ensure proper signals security and communications security practices are followed.

2-64. All methods of communication should be established in the unit SOPs. Each method listed in the SOP should be practiced during battle drills and during daily flight operations of the unit.

RESPONSIBILITIES

COMMUNICATION RESPONSIBILITIES

2-65. All levels of command gain and maintain communications with the necessary headquarters and personnel. The traditional communications responsibilities are—

- Subordinate to senior. A subordinate unit is responsible for establishing and maintaining communications with a senior unit. An attached unit of any size is considered subordinate to the command to which it is attached.
- Supporting to supported. A supporting unit is responsible for establishing and maintaining communications with the supported unit.
- Reinforcing to reinforced. A reinforcing unit is responsible for establishing and maintaining communications with the reinforced unit.
- Passage of lines. During passage of lines, either forward or rearward, the passing unit is responsible for establishing initial contact with the stationary unit. However, the primary flow of information must be from the unit of contact.

LATERAL COMMUNICATIONS

2-66. Responsibility for establishing (lateral) communications between adjacent units may be fixed by the next higher commander or SOP. If responsibility is not fixed by orders, the commander of the unit on the left is responsible for establishing communications with the unit on the right. The commander of a unit positioned behind another unit establishes communications with the forward unit.

RESTORATION

2-67. Regardless of the responsibility, all units take prompt action to restore lost communications.

MEANS OF COMMUNICATION

2-68. Cavalry uses the full spectrum of communications means.

WIRE

2-69. Wire is normally used for communications within the CP, support areas, and AAs. It is the primary means of communication whenever the situation permits.

MESSENGERS

2-70. Messengers are used between the CP, trains, and higher and lower headquarters. Although ground messengers are slower than other means of communications, air cavalry provides a rapid capability. Aviation messengers may be particularly useful in carrying A&L messages when en route to and from rear AAs. They can be used even if units are in contact and especially when jamming or interception hampers frequency modulation communication.

SOUND AND VISUAL

2-71. Sound and visual signals are in the SOI or the unit SOP. Signals not included in the SOI may be established by SOP. The battlefield will have many sound and visual cues. 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 shot, whistles, and bells.

COMMERCIAL LINES

2-72. Commercial lines are used when approved by HHQ. If the unit is forced to withdraw, and with the approval of HHQ, existing wire lines (including commercial lines) are cut and sections removed so the enemy cannot use them.

RADIO

2-73. Cavalry operations normally depend on radio as the primary means of communication. This is particularly so during reconnaissance and security missions. Network discipline and SOP minimize needless traffic. To avoid detection by enemy direction finding equipment, cavalry uses all other means of communication to supplement the radio. Once in contact, the primary means of communication will be FM voice. Radio communications include electromagnetic communications in FM, HF, UHF, and VHF spectrums. If equipped with properly used SINCGARS radios, the enemy should not be able to DF or jam the unit's radio communications while using frequency hop capabilities.

REGIMENTAL AVIATION SQUADRON AND DIVISION CAVALRY SQUADRON COMMUNICATIONS

INTERNAL WIRE COMMUNICATIONS NETWORK

2-74. When possible, the squadron establishes an internal wire communications network at the main TOC and rear CP. At the main TOC, an internal wire communications network integrates all air and ground troops and the main TOC elements, as shown in Figure 2-1. Because reconnaissance assets laagered forward with the main TOC move frequently, they will rarely establish wire communications. However, the rear CP will normally establish an internal wire communications network, as shown in Figure 2-2.

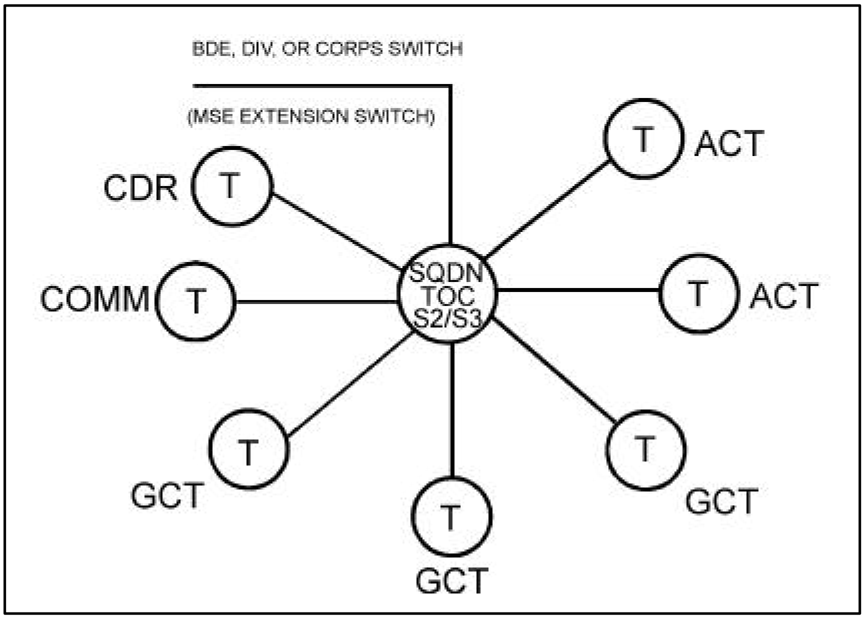

Figure 2-1. Main TOC Internal Wire Communications Network (Armored DCS)

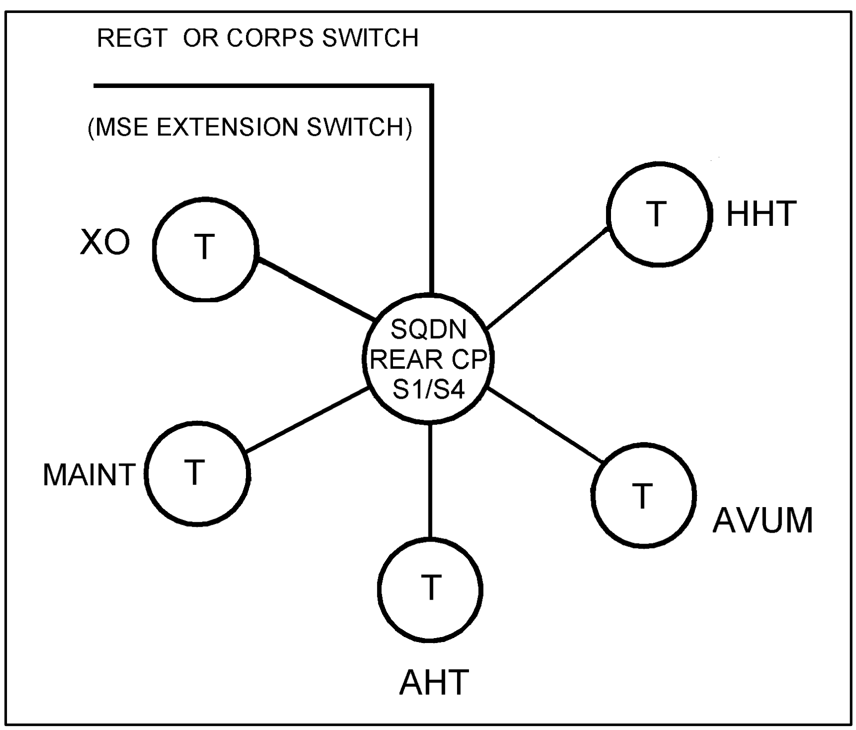

Figure 2-2. Rear CP Internal Wire Communications Network (RAS)

INTERNAL RADIO NETWORKS

2-75. Internal radio networks for the RAS are established and maintained primarily with FM, UHF, and VHF secured radios. The radio and station and/or network should be set as follows: FM#1 Secure - Squadron CMD, FM#2 Secure - Supported Unit and/or FS network and/or O&I, UHF (Have Quick II) - Troop Command, and VHF - Platoon CMD (nonsecure). The squadron commander usually communicates with his troop commanders on the squadron command network, which is FM secured. UHF- and VHF-secured radios are also used as backups for the FM-secured radio. The TOC uses the FM-secured radio to communicate with FARP elements and the squadron trains through the squadron A&L network. Communications may also be maintained with the FARP on the squadron command network. If possible the FARP should monitor the command network. If the A&L network is inoperable, the O&I network may be used as an alternative to communicate administrative and logistic requirements. Table 2-1 illustrates the RAS internal radio networks and Table 2-2 illustrates the DCS internal radio networks.

Table 2-1. RAS Internal Radio Networks

STATION/ NETWORK	SQDN CMD FM	SQDN CMD AM	SQDN O&I FM	SQDN A/L FM	SQDN FS FM	ARTY FS (DIG)	TRP/ CO CMD FM	TRP FS FM
Sqdn Cmd Grp	X		A	A	XI	XI		
Sqdn TAC CP	N	X	X		X			
Sqdn TOC	X	N	N	O	N	X		
Sqdn CTCP	X		O	N				
Sqdn Rear CP	A			X				
Trp/Co Cdrs	X		O	A	A			A
Troop CP	X	X	X	O/A				O/A
Trp/Co Plts					A	A	X	A
Trp/Co 1SG				X			X	
FARP	X			X				
HHT Cdr	X			X				

N - Network control station
X - Enter network.
A - Enter network as required.
O - Monitor.
I - FSO operates on this network.

Table 2-2. Squadron Internal Radio Networks

STATION/ NETWORK	SQDN CMD FM	SQDN CMD HF (AM)	SQDN O&I FM	SQDN A/L FM	SQDN AVN UHF	SQDN FS FM	ARTY FS (DIG)	GND TRP CMD FM	GND TRP FS FM	AIR TRP UHF/ VHF
Cmd Grp	X		A	A		X1	X1			
TAC CP	N2		X			X				
TOC		X	N	N	O	N	N	X		
CTCP		X		O	N					
Rear CP	A			X						
Sqdn Atchs		X		X	X		X			
Air Trp	X		X	A	A	A	X	A	A	X
Gnd Trp Cdr	X		O	A		A		X	A	
Troop CP	X	X	X	O/A		O/A		N	O/A	
Plts							A		X	A
FIST							X	X	X	N
1SG				X					X	A
FARP	X			X						
Trp Atchs									X	A

N - Network control station
X - Enter network.
A - Enter network as required.
O - Monitor.
1 - FSO operates on this network.
2 - When deployed command NCS.

EXTERNAL COMMUNICATION

2-76. The regimental commander normally employs the RAS. The division commander normally employs the DCS. The squadron TOC is primarily responsible for maintaining communications with adjacent and subordinate units. When deployed, the squadron tactical CP may communicate directly with these units. If the situation or terrain prohibits direct contact by the TAC CP, the TOC may act as a communications relay. When his aircraft is airborne, the squadron commander may communicate directly with HHQ, adjacent units, and subordinate elements. Again, the primary means of communication is FM-secured radio. The TOC, TAC CP (if deployed), and squadron commander normally operate command and O&I networks with HHQ. HF radios are also used for communications with HHQ. Other external radio networks may be established with supporting elements such as FA, A^2C^2, and forces participating in JAAT operations. In the division cavalry, the squadron maintains communications with the aviation brigade to transmit CSS requirements and to keep the brigade informed of the squadron situation. When employed by the aviation brigade or another maneuver headquarters, the squadron maintains its command and O&I networks with the brigade's main CP. Table 2-3 illustrates the radio networks required of the RAS in the ACR networks and Table 2-4 illustrates the external radio networks required of the DCS.

Table 2-3. RAS Requirements in the ACR Networks

STATION/ NETWORK	REGT CMD FM	REGT O&I FM	REGT A/L FM	REGT FS FM	REGT CMD AM	REGT Area Common User
Regt Cmd Grp	X	A		A		X
Regt TAC CP	N	X		X	X	X
Regt Main CP	X	N	X	N	N	X
Regt Rear CP	X		N			X
RAS *	X	X	X	X	A	X
Support Sqdn	X	O/A	X	A	A	X
Separate Trp/Co	X	X	A		A	X
ACS Cmd Grp	X					X
TAC CP	X	X		A	A	X
TOC	X	X	A	X	X	X
RS1/RS4		A	X		A	X
Rear CP			A			

N - Network control station
X - Enter network.
A - Enter network as required.
O - Monitor.
* - Enter the A^2C^2 network as required.

Table 2-4. Squadron External Radio Networks

DIVISION CONTROL						
STATION/ NETWORK	**DIV CMD FM**	**DIV REAR CMD FM**	**DIV CMD AM**	**DIV O&I FM**	**DIV ACU**	**DIV A^2C^2 FM**
Cmd Grp *	X	X1		X	X3	
TAC CP *	X2	X2		X2	X3	
TOC *	O/A	O/A1	X	X	X3	X3
CTCP *				O	X3	
Rear CP *						

BRIGADE CONTROL					
STATION/ NETWORK	**BDE CMD**	**BDE O&I FM**	**BDE A/L FM**	**DIV ACU FM**	**AVN BDE UHF**
Cmd Grp *	X	O/A	A		X
TAC CP *	X2	X			
TOC *	O/A	X	O/A		
CTCP *		O	X4	X	
Rear CP *			X4		

X - Enter network.
A - Enter network as required.
O - Monitor.

Notes: 1 - When performing rear operations.
2 - When deployed; otherwise TOC.
3 - Always active.
4 - Network of brigade providing area support.
5 - Division command FM is normally an on-call network.
* - Enter the A^2C^2 network as required.

MOBILE SUBSCRIBER EQUIPMENT

2-77. The MSE system is the ACU voice and data communications system in the corps and division AO. It is the backbone of the corps and division communications system and provides voice and data communications from the corps rear boundary forward to the division maneuver battalion's main CP. This includes the RAS. The MSE integrates the functions of transmission, switching, control, COMSEC, and terminal equipment (voice and data) into one system. MSE provides the user with a switched telecommunications system extended by mobile radiotelephone and wire access. Users can communicate throughout the battlefield in either a mobile or static situation. The MSE consists of five functional areas—area coverage, wire subscriber access, mobile subscriber access, subscriber terminals, and system control.

TROOP COMMUNICATIONS

RADIO AND WIRE

2-78. Communications are the key to successful C^2 of the ACT. They are critical to mission accomplishment regardless of the assigned mission. The primary means of communication within the troop and squadron are two FM(SINCGARS), UHF, and VHF radios. The FM1 and/or FM2 SINCGARS radios are generally used to cover a wide array of radio networks. They may be used for digital traffic (situational awareness on the squadron command network), configured as a secure network for voice traffic to the squadron commander, ground cavalry commander, or as a digital TACFIRE network. UHF Have Quick II is the primary network for internal troop operations and for TACAIR. VHF is used as a secondary network for air-to-air communications, and flight following.

2-79. The digital situational awareness network is a radio network designated primarily for the constant transmission of digital information on the battlefield. Digital information traffic along with digital communications shares the network. The squadron AMPS is the network hub at squadron level. Each of the troop AMPS link to the Squadron AMPS using a TCIM. The aircrews link to the network using the ATHS in the aircraft. The squadron AMPS collects SPOTREP, SIT and/or STAT, and BDA reports, and broadcasts updated enemy situation graphics and friendly position graphics. Subscribers can display this information using their company AMPS, aircraft digital map, or HSD.

2-80. To ensure that squadron command directives are met and the ACT is supported by CS and CSS assets, the troop first sergeant monitors both the squadron command network and the administrative and logistics network.

2-81. Logistics and supply operations that demand squadron support are coordinated on the A&L network.

2-82. ACTs have neither the wire nor the field telephone assets to link platoons to a troop network. When the troop is dispersed as in Figure 2-3, lack of wire communications can lead to slow reaction times. To overcome this, a runner can be designated to alert the platoons. In Figure 2-4, troop personnel are closely assembled rather than dispersed. This method should only be used in the squadron field trains area or in a BSA because of the inherent risk of losing those personnel all at once in an unexpected attack.

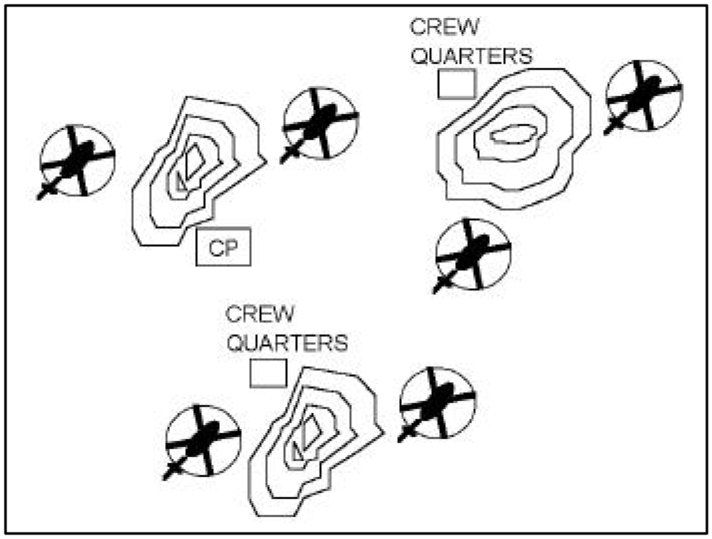

Figure 2-3. Troop Dispersed

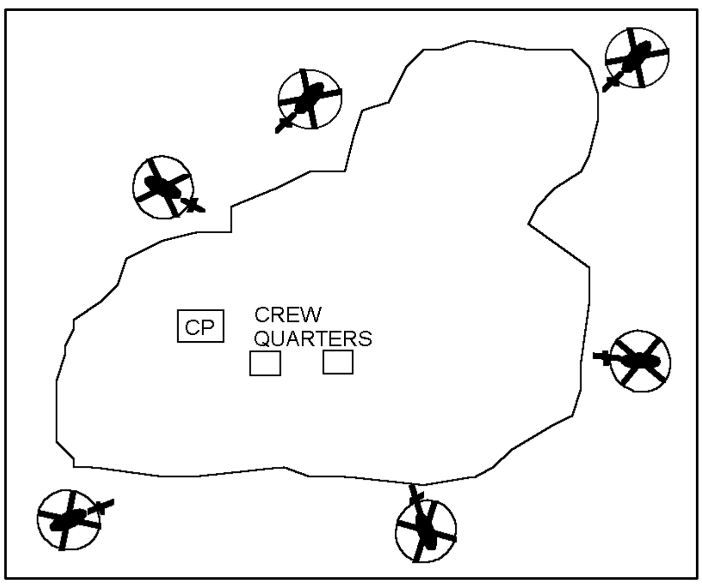

Figure 2-4. Troop Closely Assembled

NETWORK DIAGRAM

2-83. Division of radio networks within the team and/or troop is a critical task. The use of the FM1 for digital situational awareness with the squadron AMPS makes it a critical network to keep clear. This network keeps the squadron battle staff's moving map updated with the locations of all aircraft on the mission as it develops.

2-84. The three major FM users in the squadron must be divided between all aircraft on the mission. The AMC must monitor the squadron command voice network. The team leader normally takes the GCT commander in sector, and one aircraft per team may be designated to link into the TACFIRE network.

REPORTING PROCEDURES

2-85. Managing the flow of information is another critical task. Multitudes of techniques exist for this information flow. Digital networks present certain advantages coupled with complex C^2 problems. Squadrons using an AMPS with a TCIM should direct crews to send SPOTREPs, BDA, and SIT and/or STAT reports digitally to take advantage of the AMPS position reporting capability and its ability to instantly portray critical combat information.

2-86. The situation (METT-T) and commander's intent will dictate the routing of digital information.

2-87. Digital traffic is commonly routed through the normal chain of command within the troop prior to being relayed to squadron to keep the team leader and AMC informed on all the combat information. However, depending on the volume of traffic, this technique tends to overload team leaders with routine reading, readdressing, and sending information while trying to perform their own duties in the reconnaissance or screening effort. This also increasingly ties up the digital network with messages being sent and resent during times with large numbers of contacts.

2-88. To reduce traffic on the digital network is to direct crews to report combat information directly to squadron, with a short voice SALT report (brevity is the concern and the reason for not using SALUTE) to the team leader and/or AMC on UHF internal. This keeps the combat information flowing rapidly to the squadron commander and minimizes the possibility of the team leader and/or troop commander's ATHS buffer from becoming overloaded and losing critical information.

2-89. In the event that aircrews conducting tactical operations are unable to transmit digitally to squadron due to LOS limitations, the AMC may elect to act as a digital retransmission, and collect digital reports for resubmission to squadron. This decision may restrict the AMC's ability to maneuver as desired but keeps critical lines of communication open and allows the troop to accomplish the mission.

2-90. Video imagery sent using Video Xlink requires the transmitting aircraft to address the image directly to the squadron AMPS where it will be linked to the spot report icon shown on the moving map display. In a situation where video imagery is required from the troop and direct digital communication is impossible, the only viable means for mission accomplishment may be the establishment of a permanent airborne or ground based retransmission station.

OPERATIONS SECURITY

2-91. All measures taken to deny the enemy information about friendly forces and operations are called OPSEC. The OPSEC concept includes all security measures that allow units to achieve and maintain surprise. OPSEC consists of physical security, information security, signal security, deception, and countersurveillance. Since these categories are interrelated, the ACT commander normally chooses to employ multiple techniques to counter a threat. He analyzes hostile intelligence efforts and vulnerabilities, executes OPSEC countermeasures, and surveys the effectiveness of countermeasures. The troop commander can then counter specific hostile intelligence efforts. Aviation OPSEC is described in more detail in FMs 1-100 and 1-111. Some considerations for OPSEC include—

- Downed aircraft destruction procedures.
- Power settings for FM radio transmissions.
- Radio communications restrictions (digital, KY, SINCGARS).
- Light usage (aircraft lighting, AA light discipline, IR searchlight).
- Staggered departures from TAA and/or FAA.

SECTION V—COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE ENHANCEMENT

LINES OF COMMUNICATION

2-92. The air cavalry provides R&S of lines of communication to ensure their security. Lines of communication include roads, supply routes, relay and retransmission sites, critical signal nodes, microwave facilities, and telephone wire structures and systems. The air cavalry may conduct reconnaissance operations before the establishment of a communications site. Squadron elements may also maintain surveillance of the area or provide a security screen during establishment of the site. The air cavalry conducts route reconnaissance missions to maintain surveillance of specified roads and supply routes. It conducts surveillance on a periodic basis or for a specified time to keep the route open and update information about the route. The air cavalry performs the same type of surveillance for telephone or power line structures to prohibit or decrease the likelihood of sabotage.

MESSAGE AND DOCUMENT DELIVERY

2-93. The electronic transmission of messages and documents may not be possible because of nuclear weapons or munitions employment or enemy jamming operations. The air cavalry may be used to deliver messages and documents in these cases or when radio listening silence is imposed or equipment is inoperable. Messages include combat plans and orders, written coordination and control measures, and graphics. Documents delivered include critical reports or reports essential for sustaining combat operations. They also include public affairs materials required to sustain public understanding and support for the Army's continued operations.

PERSONNEL AND EQUIPMENT TRANSPORTATION

2-94. When necessary, squadron elements provide transportation for commanders so that they can easily see the battlefield and thus more effectively control their units. This task is usually conducted in conjunction with normal squadron operations. The air cavalry can help effect vital liaison between the units. Squadron elements may be employed to verify unit locations or even their existence. For example, if the regimental commander loses communications with a subordinate squadron, he may ask the air cavalry commander to verify the squadron's location and status. The air cavalry can also serve as an additional supervisory link for the execution of plans and orders. Command aviation assets of the regiment or corps do most of the C^3I enhancement discussed above. However, because the air cavalry frequently operates forward and is familiar with the area, it may often be tasked with C^3I enhancement functions.

2-95. The air cavalry is capable of inserting and resupplying ground retransmission teams into inaccessible sites. Air cavalry aircraft may carry retransmission equipment, relay equipment, or both. Aircrews can also perform the retransmission or relay mission with onboard equipment while airborne. In this role, the air cavalry is integrated to facilitate movement of the main TAC CP for the regiment or corps. During a CP move or as a contingency, the air cavalry may provide alternate TOC or CP facilities for the regiment or corps.

SECTION VI—DIGITAL COMMUNICATION SYSTEMS

DIGITAL SYSTEMS AND EQUIPMENT

2-96. This section contains brief descriptions of current aviation digital systems that will be fielded to or will interface with both the regimental air squadrons and divisional cavalry squadrons.

OH-58D KIOWA WARRIOR

2-97. OH-58D KWs will have the following improvements installed:

- Embedded GPS and/or INS. Embedded GPS and/or INS is identified by the acronym EGI. The EGI replaces the current Doppler and/or AHRS combination and provides increased navigation accuracy.
- IMCPU. The IMCPU provides a new digital map display on the MFD.
- IDM. The IDM is the KW's link to the digital battlefield. It replaces the ATHS of the current KW and allows digital data to be transferred over aircraft radios using VMF. The KW can operate in the tactical internet and FS network.
- SINCGARS SIP radio. The SINCGARS SIP radio replaces the FM1 and FM2 radios and the associated DRA in the current KW. The SINCGARS SIP radio provides faster data communication in a jamming or high noise environment. The SINCGARS SIP incorporates secure capabilities via embedded KY-58s.

- VIXL. The VIXL provides the KW with the capability to send and receive still frame images over one of the FM radios. The VIXL consists of a circuit card installed in the IMCPU. VIXL ground stations will consist of an AMPS with a TCIM and a SINCGARS radio. The ground stations will be used to provide VIXL images in TOCs on the ground.
- IMSP. The IMSP is a direct replacement for the existing MSP in the KW. The IMSP provides enhanced targeting through—
  - Improved tracking, lock-on, and reacquisition.
  - TVS) and/or TIS split screen (provides TV and TIS images on the same display page).
  - Auto cue (detects and highlights moving targets).
  - Multiple target tracking (tracks up to six targets within the system FOV).

AH-64D LONGBOW APACHE

2-98. The Longbow system consists of an integrated millimeter wave FCR mounted on top of the AH-64 Apache's main rotor mast. Additionally, the mast-mounted sensor contains the RFI. The RFI detects threat AD system radars. The LBA is able to detect, classify, prioritize, and engage targets with Hellfire missiles without visually acquiring the target.

2-99. The LBA will provide increased data transfer capabilities (such as FCR targets, shot at file, present position, and free text messages) using the IDM.

2-100. The DTM mounted in the LBA is used to quickly upload the mission data and initialize aircraft systems for the mission. When the mission is complete, the DTM retains all mission data to carry back to the AMPS for the debrief. Additionally, the DTM provides the maintenance section with data for troubleshooting—reducing maintenance downtime.

AVIATION MISSION PLANNING SYSTEM

2-101. The AMPS is an automated aviation mission planning and/or synchronization tool designed specifically for the aviation commander. The two levels of AMPS are brigade and/or squadron and troop level. Each level provides the automated capability to plan and synchronize aviation missions.

2-102. The functions of AMPS can be broken into three areas—tactical planning, mission management, and maintenance management functions. The tactical planning function includes planning tasks normally performed at the brigade and/or squadron level, such as intelligence data processing, route planning, communication planning, navigation planning, and mission briefing and/or review. The mission management function can be associated with planning that occurs at the troop and/or platoon level. These tasks include aircraft performance planning, weight and balance calculations, flight planning, fighter management planning, and OPORD and/or OPLAN changes. The troop and/or platoon will also be capable of mission briefing and/or rehearsal. The maintenance management function is provided primarily for the unit level maintenance section. This section will permit postmission downloading of LBA and KW aircraft data for maintenance personnel.

2-103. AMPS data may be saved onto a DTC that is used to upload mission data to the host aircraft (LBA and OH-58D KW) via the data transfer module. The data created at squadron level are given to the troop level for detailed troop and/or platoon planning. Printed (hard copy) output products include weight and balance forms, strip maps, flight plans, OPORDs, route navigation cards, and communications cards.

2-104. AMPS map data bases are created from ADRG CD-ROM and DTED media available from the NIMA. The maps contained on the CD-ROMs are digitally cut and pasted for a particular AO and stored for ready access on the magneto optical drive disks or the AMPS hard drive. Databases of different AOs or various scale maps can be maintained and organized on disks.

NOTE: DTED levels are identified as 1 through 5. At DTED Level 5, AMPS does not have sufficient storage or processing power for detailed terrain analysis.

2-105. AMPS can be used for detailed terrain analysis, for example, intervisibility LOS between a battle position and an EA. Using the perspective view feature, pilots can gain a feel for prominent terrain along the route to be flown.

2-106. AMPS is an additional automation tool that the aviation commander and staff have to manage battlefield information. AMPS is not a C^2 system. It is a mission planner that applies the technical capabilities of modern aircraft to the tactical situation on the battlefield. AMPS and MCS are complimentary systems. MCS receives and transfers enemy locations, friendly locations, preplanned artillery locations, and forecast weather to AMPS. AMPS applies the technical characteristics of the aircraft (speed, range, and payload) to give the commander mission alternatives. AMPS also provides the digital transfer device to move this information to the onboard computers to initialize systems on selected aircraft. At the end of a mission, the mission history is downloaded to AMPS. Postmission products such as enemy locations and battle damage assessment can be provided to MCS to update the tactical situation. AMPS will also be used (with a TCIM) to view VIXL imagery sent from the KW.

AVIATION TACTICAL OPERATIONS CENTER

2-107. The AVTOC is mounted on a HMMWV with a SICP-RWS, and high mobility trailer. It is used by the ATF in planning and controlling its forces on the digitized battlefield. It is an integrated system of ATCCS workstations, AMPS, and other brigade and below C^2 equipment and includes a suite of radios and modems. The communications suite includes VHF AM, UHF AM, VHF FM SINCGARS-SIP, Have Quick II, SATCOM, and HF NOE communication radios. The AVTOC staff receives and correlates information from combined arms and joint sources.

IMPROVED DATA MODEM

2-108. The IDM is used on the LBA, the OH-58D KW, and in the AVTOC. The IDM is a modem that passes targeting or situation awareness information to and from airborne or ground platforms (digital and analog). The IDM contains two modems, which support 4 links, and one generic interface processor used for LINK and/or MESSAGE processing (link formats include TACFIRE, VMF, and AFAPD). The IDM provides a demonstrated interoperable capability between the US Air Force, Army, and Marines in pursuit of joint digitization of the battlefield. The IDM provides digital connectivity that was previously not available. The IDM can operate simultaneously analog, digital, and secure digital (KY-58 or KY-100). It is further hardware and software expandable.

MANEUVER CONTROL SYSTEM AND/OR PHOENIX

2-109. The Army has developed and is currently upgrading a computer-aided C^2 system to support the maneuver commander and his staff. The system, designated the MCS/P, will be the information system for the force level commander and his staff. It will provide automated C^2 support to enhance the quality and shorten the duration of the decisionmaking cycle. The MCS/P will integrate the maneuver function with the C^2 systems of the other four major functional areas (FS, AD, IEW, and CSS) as they become available. It will assist in managing information and in executing the commander's concept of operations. The MCS/P will provide automated assistance in coordinating plans, disseminating orders and guidance, and monitoring and supervising operations.

2-110. The MCS/P is the keystone of the future ABCS that will provide automated C^2 from echelons above corps down to the platoon level. As we move toward the 21st century, the Army will continue to pursue advanced technology and operational concepts that will give our soldiers an information advantage over potential adversaries.

ENHANCEMENTS TO RECONNAISSANCE OPERATIONS

2-111. The main objective of reconnaissance operations is to gather information on a particular location, area, route, and enemy. If available, national assets can cue and focus aviation reconnaissance, saving time and effort. With the IDM, the OH-58D KWs are able to send timely and accurate data to each other and digital reports via secure voice to the commander in the AVTOC. The IDM and/or SINCGARS SIP allows digital communication with IDM equipped platforms and Appliqué, which will enable communication with the AVTOC and C^2V. VMF messages may be transmitted using the IDM.

2-112. The EGI increases navigation accuracy and target designation and/or location accuracy. Navigation accuracy is within 16 meters.

2-113. When developed and fielded, HF radios will provide long range and NOE voice only communications capability of at least 300 km.

2-114. The robust sensor capabilities of the OH-58D KW greatly aid it in its mission as an armed reconnaissance aircraft. The IMSP provides improved tracking via split screen target track in both TIS and TVS modes. It is able to track up to six targets simultaneously. Target detection is aided by moving target detection and automatic reacquisition of targets lost due to obstruction.

2-115. With VIXL, the KW transmits still video images to the commander (via an appropriately equipped AMPS) at any time during the mission. These images are supplemented with supporting voice and/or embedded message comments on NAI, TAIs, EEI, PIR, and CCIR. The KW can act as a photograph and/or HUMINT source with which the commander can clarify his picture of the battlefield. Unlike UAVs, the KW can provide the ability to immediately maneuver and develop the situation with direct and indirect fires. VIXL is used when near real-time images are required for decision support. When immediate images are not required, and imagery will be reviewed at a later time, a more efficient method is for the KWs to video tape the areas of interest. VIXL-use criteria should be part of mission planning and crew briefing.

2-116. The ASAS-RWS should be used to receive any possible enemy locations, these locations should then be sent to the aircraft to conduct the reconnaissance. The ground commander should coordinate with the aviation commander to have areas of interest reconnoitered. The aircraft then pass this information to the commander in the AVTOC or C^2 aircraft and ground commander by voice over secure communications. SPOTREPs and SITREPs should be sent to the commander every 10 to 15 minutes regardless of the situation. A report of "no enemy contact" or "continuing mission" can be just as informative as a report of positive enemy locations.

2-117. The position of the commander is METT-T dependent. If enemy contact is likely, the commander may be in the C^2 aircraft to readily employ the air assets and receive and/or send information to HHQ. If enemy contact is not likely, the commander may remain in the AVTOC and develop the situation of the reconnaissance as reports are received.

2-118. To sustain the reconnaissance over long periods of time, FARPs must be established and moved frequently to support the operations. With the AMPS new FARP locations are graphically viewed for favorable ground conditions and proper concealment. After the locations are determined, the new grid locations are passed to the aircraft conducting the reconnaissance. The LBA and KW can plot the new locations in the aircraft to appear on the aircraft's map display to assist with navigation. Coordination with FARP and CTCP personnel is conducted via the Appliqué.

2-119. Reconnaissance objectives and/or missions should be tape recorded for subsequent review and analysis.

2-120. If available, UAVs may be used to precede (focus), complement (simultaneous), or confirm (follow-on) aircraft reconnaissance efforts.

ENHANCEMENTS TO SECURITY OPERATIONS

2-121. During security operations, the digitized aviation force has some distinct advantages. However, these must be weighed against the factors of METT-T. Sensor and long range communications capabilities allow greater dispersion, which equates to survivability, stealth, and greater coverage. These must be weighed against factors such as with greater distance soft targets may go undetected. Passage of lines coordination may also be complicated by the dispersion of multiple teams rather than the coordinated movement of platoon or troop formations. However, digital connectivity aids ground and/or air situation continuity.

2-122. The increased lethality and sensor capabilities of the LBA may reduce the number of assets required to provide security over a given area. Dispersion will be limited by LOS radios and/or FCR coverage (overlapping coverage). KWs used in the security role have non-LOS radios for communications over extended ranges; however, dispersion will also be limited by sensor connectivity. In either case, the ATF is not able to hold terrain with its organic assets, but can dominate a larger area given the same number of assets than a nondigitized force. Decreased reliance on visual detection and the ability to leverage theater assets for enemy detection, cueing, and tracking shifts security operations from terrain orientation to force orientation.

ENHANCEMENTS TO CLOSE OPERATION

AH-64D IN THE CLOSE BATTLE

2-123. AH-64D attack units would attack lead or second echelon units that are moving through the deep area or have arrived at the close area. The AH-64 units may be assigned different EAs than the ground units to best coordinate the fires of the total combined arms team and destruction of the enemy force.

2-124. As a reconnaissance asset, the FCR will allow LBA AMCs to quickly and accurately pinpoint the location of vehicles for the ground commander. Once ground forces are located and positive communication with the ground forces commander has been established, the attack unit can orient on the enemy force for the attack. In the close battle area of the battlefield where the helicopter is vulnerable to the large number of threat systems, the RF missiles will enable attack aircraft to be unmasked for a minimum amount of time. This greatly enhances their survivability. The full potential of the Longbow system can not be realized in close battle if opposing forces quickly become mixed and identification of friend or foe becomes a major concern,

2-125. The LBA with radar and RF missiles can be used in close proximity to friendly forces when the aircrew can achieve positive IFF by linking the EO sensors and confirming visually. The LBA can still fire the SAL HF missile, which would be most appropriate when friendly and threat vehicles are in close proximity to one another. Also, RF missiles should only be fired with a TADS confirmation of the target if there is any doubt as to the identification of the friend or foe.

2-126. One method of employment when IFF is not quickly or easily confirmed would be to use the FCR to detect and track the enemy force and continuously report the situation to the ground commander.

AH-64D IN REAR OPERATIONS

2-127. Rear area operations are particularly susceptible to varying levels of attack. The threat could be a Level-I raid into a supply area where LBA ground targeting would be of limited value because of the chaotic situation and intermingling of friendly and enemy forces. On the other extreme the threat could be a break through element in an area isolated from friendly forces. In this situation a LBA unit could rapidly strike the armor formation. The FCR is also of great value in locating enemy en route to their objectives.

Chapter 3

Employment

SECTION I—TASK ORGANIZATION

GENERAL

3-1. This chapter describes the employment of the RAS, DCS, and their associated ACTs in the execution of their primary missions—reconnaissance and security operations. In addition to conducting reconnaissance and security operations, the squadron enhances and conducts special-purpose, JAAT, and air combat operations. It also assists in the passage of lines.

REGIMENTAL AVIATION SQUADRON

3-2. The RAS operates under the control of the ACR and, in special situations, could be placed under OPCON of corps, TF, or division headquarters. It is normally employed at the squadron level but may be assigned missions below squadron for specific operations and periods.

3-3. The squadron commander task-organizes the squadron for employment as required for combat operations. Reorganization may be based on METT-T. The RAS is normally employed with organic assets but may receive and operationally control other combined arms assets.

3-4. An ACT may be placed under OPCON of a ground squadron. This method is most effective when a habitual relationship is established.

DIVISION CAVALRY SQUADRON

3-5. DCSs are organic to armored (heavy), light infantry, air assault (identified as an ACS) and airborne division aviation brigades. The squadron may be placed under OPCON to corps, brigade, or other maneuver headquarters. The aviation brigade commander may also employ it. The squadron is normally employed at the squadron level but may be assigned missions below squadron for a specific mission or time.

3-6. The structure of the squadron varies, depending on the organization to which it is assigned and METT-T. The squadron primarily conducts reconnaissance and security operations.

AIR CAVALRY TROOP

3-7. The ACT consists of two platoons of four OH-58D KWs each. Based on possible employment methods, aircraft crews must maintain proficiency in cavalry and attack roles.

3-8. Based on a 75-percent availability rate for planning, the ACT will have six aircraft operational. Considering the factors of METT-T, the troop commander can organize in several ways. The troop can either be divided into ACTMs of two aircraft or by platoons.

3-9. Teams of two use the wingman concept. The lead aircraft is primarily responsible for the reconnaissance and the wingman for the protection of the aircraft conducting the reconnaissance or security mission. Relief on station is conducted by another team. The following situations favor using teams of two:

- Close terrain that does not allow full standoff capability.
- Threat that is mostly dismounted.
- Widely separated NAIs or other reconnaissance objectives.

3-10. Using platoons allow for a wider frontage to be covered. Aircraft still maintain contact with other platoon members and provide mutually supporting fields of observation. The platoon leader rotates individual aircraft to and from the FARP. The following situations favor the use of platoons:

- Open terrain that makes use of standoff capability.
- Threat that is mostly mechanized or armor.
- Wider frontages with multiple NAIs.
- Greater than 1.5 hour employment periods.

ATTACK HELICOPTER TROOP(ARMORED RAS ONLY)

3-11. In the ATKHT, the commander will command from an aircraft positioned forward where he can effectively control his unit and see the battlefield. Based on a 75-percent availability rate for planning, the ATKHT will have six aircraft operational. Considering the factors of METT-T, the troop commander can organize in several ways. The troop can either be divided into various team mixes (three teams of two or a heavy and/or light team with 4/2 aircraft) or by platoons. The ATKHT normally operates with two platoons for ease of C^2.

3-12. Before an engagement, the ATKHT commander or his representative conducts final coordination with the air and/or ground commander or S3. Preferably, such coordination should be conducted face to face. The ATKHT performs its mission in the same way as the AH company in an ATKHB, as discussed in FM 1-112.

3-13. ATKHT can be assigned missions to perform reconnaissance tasks. These tasks are performed in the same manner as an ACT.

ASSAULT HELICOPTER TROOP (ARMORED AND LIGHT RAS ONLY)

3-14. The AHT of the RAS provides the squadron commander with a highly mobile, flexible, and responsive force. This unit can conduct a wide variety of CS and CSS missions. The AHT provides the ability to conduct limited air assaults, air movement of critical supplies using external and internal loads, CASEVAC, aerial mine warfare (VOLCANO), DART, and C^2 operations. The

AHT commander organizes his assets on a mission-by-mission basis. Rarely will the AHT operate as a whole, and often elements of the AHT will be under the DS of a squadron to conduct missions.

3-15. The Armored RAS and divisional GSAB have 4 EH-60 Quickfix helicopters assigned. The 4 EH-60s in the armored RAS are organic to the HHT. During combat these aircraft will normally be under operational control of an MI company and will receive missions directly from that company. The EH-60 Quickfix gives the commander the capability to direction find, monitor selected frequencies, and jam.

EMPLOYMENT CONSIDERATIONS

3-16. The ACR, division, or corps commander and squadron commanders have a number of options available to them when employing ACTs. Options of employing troops in attack or R&S mode must be weighed carefully against the METT-T requirements. Some possible options followed by advantages and disadvantages are noted below (these listed options are not all inclusive)(see Table 1-1, below).

Table 3-1. Employment Advantages and Disadvantages

<table>
<tr><th></th><th>R&S</th><th>Attack</th><th>Combination of Attack and R&S</th></tr>
<tr><td>Advantages</td><td>24-hour operations.
Best benefit gained from acquisition systems.
Supports ground commander R&S tasks.
Provides greatest reaction and maneuver space.
High concentration of air cavalry throughout sector.
Optimal Class III and/or Class V support.</td><td>24-hour operations.
Dedicated counterattack force.
Maximum offensive operations.</td><td>Provides HHQ with multi-level attack and R&S capability.
Provides same advantages as attack and R&S with reduced aircraft availability on 24-hour basis, 1 day and/or 1 night.</td></tr>
<tr><td rowspan="2">Disadvantages</td><td>Limited counterattack capability.</td><td>No dedicated R&S which is their primary mission.
No ground commander support of R&S tasks.
Limited early warning and reaction time provided by aviation.
Increased III and/or V usage based on attack missions.
OH-58D has limited firepower and crew protection compared to AHs.</td><td>Limited 24-hour operations.
Smaller sector of attack and R&S coverage.</td></tr>
<tr><td colspan="3">NOTE: Sustained 24-hour operations greater than 72 hours is impacted by maintenance and fighter management.</td></tr>
</table>

SECTION II—RECONNAISSANCE OPERATIONS

PURPOSE

3-17. The primary missions of air cavalry are to conduct reconnaissance and security. Reconnaissance is a mission undertaken to obtain information about the activities and resources of an enemy or about the meteorological, hydrographic, or geographic characteristics of a particular area. Reconnaissance is a focused collection effort that produces combat information. Reconnaissance is performed before, during, and after other combat operations to provide information used by the squadron or ground force commanders to confirm or modify the plan.

3-18. ACTs gather and report the information on which the squadron commander or ground force commander bases plans, decisions, and orders. Reconnaissance missions are divided into four categories—route, zone, area, and reconnaissance-in-force. ACTs may be assigned any combination of the four categories of reconnaissance. In most mission profiles, integration of ground and air cavalry provides mutual reinforcement. For example, ground cavalry may reinforce air cavalry if the terrain offers concealment from aerial observation. The distance the ACT operates from the supported unit (i.e., ground cavalry unit, main body, or both) is a function of METT-T but generally is forward enough to provide the ground commander time to maneuver before enemy direct fires can be brought into effect.

3-19. A primary consideration is the ability of ACTs to maintain communication with their ground counterparts and squadron headquarters. The flow of information between ACTs and ground troops increases the efficiency of the reconnaissance and survivability of each asset. When ACTs operate with or without ground troops, they maintain communications with the squadron's TOC (digital and voice), or the controlling maneuver commander's TOC.

3-20. Reconnaissance missions focus on reconnaissance objectives and set strict criteria for engagement and developing the situation in conjunction with ground forces and supporting fires. Supporting fires include indirect fire (troop mortars, DS and GS artillery) and TACAIR. Nonlethal SEAD and EW assets should also be considered and employed whenever available. These assets support the ACT during reconnaissance operations. Their availability is essential to the success of ACTs.

FUNDAMENTALS

3-21. The air cavalry conducts reconnaissance according to six fundamentals. These fundamentals are as follows:

- Orient on the location or movement of the reconnaissance objective. The objective may be a terrain feature, a locality, or an enemy force. Air cavalry must orient on the objective and position itself to retain freedom of maneuver.
- Report all information rapidly and accurately. Information that initially appears unimportant may become valuable when used with other information. Knowing that an enemy force is not in one location

can be just as important as knowing it is in another. Reconnaissance reports must be relayed in a timely manner for the information to be useful to the commander.

- Retain freedom to maneuver. Air cavalry must move to survive. It obtains information by stealth, when possible, but fights as necessary to accomplish the mission. Overwatch, suppressive fire, cunning, and constant awareness of the tactical situation to the flanks help retain freedom to maneuver. The air cavalry commander maneuvers his elements to avoid decisive engagement. Once engaged, the air cavalry will lose some of its capability to continue the reconnaissance. Therefore, air cavalry engagements during reconnaissance operations consist only of those actions required to prevent decisive engagements and to continue the reconnaissance mission.
- Gain and maintain enemy contact. Contact reduces the enemy's ability to achieve surprise. Once contact is made, it is not voluntarily broken; orders must be received to break contact. The air cavalry may be the first friendly element that establishes contact with the enemy. Once the air cavalry establishes contact, it reports the information immediately. The air cavalry commander should be continually updated on the tactical situation. The air cavalry may maintain visual contact from a great distance, or it may engage with organic and/or attached AH fire. The degree of contact desired is determined before the mission begins.
- Ensure maximum reconnaissance forces forward. The maximum number of intelligence-gathering assets and their capabilities are involved in the reconnaissance effort. Air cavalry is most valuable when it is providing essential battlefield information. To do this, it must be positioned as far forward as METT-T factors allow. It operates at a distance supported by CS and CSS assets.
- Develop the situation rapidly. When the enemy situation is vague or unknown, the air cavalry deploys to gather information for the supported commander. Immediately on gaining enemy contact, it deploys to cover, maintains observation, and reports and develops the situation. It develops the situation based on the tactical order, unit SOP, or the directions of the commander.

PLANNING CONSIDERATIONS

3-22. The air mission commander verifies the location of the FARP, active times, and Class III and/or Class V availability during mission planning. The squadron S4 and III and/or V platoon leader are responsible for all FARP operations in support of the ACT’s mission. Refueling and rearming times and the requirement to maintain continuous operations dictate the FARP’s location. The air mission commander must maintain close coordination with the squadron and possibly other aviation brigade elements in the area, to ensure that the location of the FARP supports the reconnaissance mission. When possible, FARP operations should be part of the mission rehearsal.

3-23. ASE and/or EW considerations must be part of the mission planning process to minimize risks while accomplishing the mission. Detailed instructions are contained in Appendix H.

CAPABILITIES

3-24. Air cavalry's ability to conduct reconnaissance is a function of the enemy situation (especially enemy ADA and direct fire systems), terrain in the AO, weather conditions, and the logistics support availability.

3-25. An ACT can reconnoiter two routes simultaneously. It can conduct a zone reconnaissance on 8-10 kilometer-wide zone (terrain dependent). An ACT can conduct a zone reconnaissance at a rate of 10 kilometers per hour (terrain dependent).

METHODS OF RECONNAISSANCE

3-26. The three methods of reconnaissance at the ACT level are aerial, reconnaissance by fire, and dismounted. The air mission commander and/or team leader may use any method or combination of methods to accomplish the reconnaissance mission under the considerations of METT-T, and the higher commander's intent and guidance. Aerial reconnaissance may also include conducting coordinated reconnaissance forward of a GCT. When conducting reconnaissance forward of ground troops, coordination must take place to prevent fratricide.

AERIAL RECONNAISSANCE

3-27. The ACT uses this technique in most of its reconnaissance efforts. It is characterized by—

- The need for rapid reconnaissance.
- The use of aircraft TIS and/or TVS systems to acquire targets and/or reconnaissance objectives at the maximum standoff distance.
- Use of onboard video imagery to acquire the combat information.
- Low probability of enemy ADA threat.
- The need to clear the area forward of the ground cavalry to accelerate the reconnaissance tempo.
- The requirement to maintain reconnaissance over extended distances. (Circumstances and/or terrain may preclude the use of ground cavalry to execute missions, forcing the air cavalry to maintain a presence in an AO.)

RECONNAISSANCE BY FIRE

3-28. When conducting reconnaissance by fire the troop and/or team places direct and/or indirect fire on positions the enemy is suspected of occupying. If using the OH-58D with ordnance for direct fire, more FARP rotations are required. The intent of the action is to cause the enemy to disclose his presence by moving or returning fire. The commander may use reconnaissance by fire when—

- Situation meets strict engagement criteria.

- Time is critical.
- Encountering obstacles that could be overwatched by an enemy.
- An enemy position is suspected.
- Enemy locations are known.

3-29. The technique has advantages and disadvantages. It is more advantageous with a poorly disciplined enemy that will likely react when engaged. The disadvantages of reconnaissance by fire are the obvious loss of surprise, exposing the location of the firing element, and the possibility of becoming decisively engaged. Requires more frequent FARP rotations.

3-30. Once the decision is made to employ this technique, the weapons should be used in the following priority: indirect fire, machine gun and/or rockets, (Hellfire) missiles. The limited organic firepower in an ACT emphasizes the use of indirect fire as the primary means of engagement.

DISMOUNTED RECONNAISSANCE

3-31. The ACT commander may direct aircrews to conduct dismounted reconnaissance in extreme circumstances when information is required on a specific reconnaissance objective. This technique is time intensive, can place the aircraft in a vulnerable position, and does not make the best use of aircraft systems.

AIR CAVALRY RECONNAISSANCE TECHNIQUES

3-32. The ACT uses four basic techniques to conduct a reconnaissance mission. These techniques are—

- Observation. Observation is continuous and is performed by all aircrews. Aircrews constantly apply the three basic visual search techniques—stationary, motive, and sidescan. Crews integrate the MMS into their observation technique for its TVS and/or TIS and its ability to cover the dead space to the aircraft's rear. Aerial observation techniques are used to detect, identify, locate, and report combat information as described in TC 1-209 (ATM]. Aircrews use terrain flight techniques and airspeeds to evade detection and accomplish the mission.
- Maneuver. Aircrews use low-level, contour, and NOE terrain flight modes based on the probability of enemy contact and available terrain. Troop movements are conducted using traveling, traveling overwatch, and bounding overwatch movement techniques.
  - Traveling. The traveling technique is used for moving aircraft in formation rapidly on the battlefield when enemy contact is unlikely, or when speed is required to evade the enemy. It requires all aircraft flying in formation to move at the same relative speed.
  - Traveling overwatch. The traveling overwatch technique is normally used when aircraft are conducting a reconnaissance when speed is essential and enemy contact is possible. It requires the lead aircraft to move constantly and a trail aircraft to move as necessary to maintain an overwatch position.

  - Bounding overwatch. The bounding overwatch technique is also normally used when conducting reconnaissance and enemy contact is expected. It is the slowest movement technique and requires the overwatching and bounding aircraft to occupy successive positions that offer observation and fields of fire. Each aircraft bounds separately while the other aircraft overwatches the movement. Length of the bound depends on the terrain, visibility, and the effective range of the overwatching weapon system.
- Overwatch. Overwatch includes both observation and suppression. The overwatching aircraft, in its concealed position, continues to observe the area as well as the moving or bounding aircraft. Primarily, the overwatching aircraft enhances the survivability of the bounding aircraft by alerting the team member of an enemy sighting or suspicious activity. If the enemy is contacted, the overwatching aircraft assists by providing suppressive fire if needed.
- Reporting. Reports of direct visual observation are the most important and timely combat information available. Therefore, reports must be accurate, concise, and timely. Reports of no enemy sightings are as equally important as actual enemy sightings.

3-33. When tasked to conduct reconnaissance operations the ACT can split its area into team zones depending on METT-T. Use of waypoints on the HSD to visually define the reconnaissance zone simplifies the reconnaissance effort. Use of the MMS to prepoint NAIs at maximum standoff and overwatch team and/or troop members adds depth to the zone.

3-34. When an ACT conducts a zone reconnaissance to a screen in nonrestrictive terrain, the troop can operate up to 10 kilometers forward of ground troops due to the quality of communications, target acquisition capability MMS, and onboard armament of its aircraft. Close coordination and continuous communication between forces is critical to preventing the possibility of fratricide.

3-35. Because of its ability to conduct long range observation, the ACT is placed forward, and if possible, to the flanks of ground elements, adding depth to the commander's zone. To increase operational tempo, the ACT focuses its reconnaissance effort on areas that impede ground cavalry movement (battalion avenues of approach or likely enemy reconnaissance and/or infiltration routes).

ACTIONS ON CONTACT

3-36. Actions on enemy contact are a series of steps the troop takes when it encounters an enemy force or situation that warrants or demands action. Actions on contact are important because they allow the troop to maintain its tempo of operation by rapidly developing the situation and taking action before the enemy can gain the initiative and force the troop to react. At troop, platoon, or team level, actions on enemy contact consist of the following four steps:

- Deploy to cover and report.

- Maintain contact and develop the situation.
- Choose a COA.
- Recommend or execute a COA.

3-37. While the team that makes contact executes actions on contact, the AMC must continue to maneuver the remainder of the troop to ensure a clear picture of the enemy situation across the entire troop front. The following steps demonstrate the actions taken by the team in contact and the corresponding actions at the troop level:

Deploy to Cover and Report

3-38. **Team Action.** The team that makes initial contact with the enemy immediately deploys to terrain that affords them both cover and good observation. If necessary, the team returns fire to suppress the enemy, and then deploys to a covered position and reports (digital).

3-39. **Troop Action.** All other team leaders monitor the contact report. The AMC assesses the information and maneuvers to a position to monitor the action. However, the troop must not lose focus on the reconnaissance mission.

Maintain Contact and Develop the Situation

3-40. **Team Action.** The team in contact further identifies the threat. The team maneuvers to determine the enemy's size, composition, and orientation, and the exact location of weapon systems. The team may also use reconnaissance by fire to determine the enemy's tactical intentions. The reconnaissance-by-fire technique should, however, be conducted with indirect-fire assets when possible to avoid revealing the aircrew's position. The ACT and/or AMC needs to establish indirect and/or direct fire control measures to control fires. To determine if the enemy can be supported by any other forces, the team should search for enemy flanks and all adjacent terrain. They identify good counterattack routes into the flanks or rear of the enemy. Once the team leader determines the extent of the situation, he forwards a follow-up spot report (digital).

3-41. **Troop Action.** The AMC will most likely tell the team not in contact to continue its reconnaissance to a designated LOA to develop the situation across the entire troop front. By doing this, the troop can determine if there are any other enemy forces in the area that will affect the situation. The team not in contact will establish hasty OPs along the LOA oriented on likely enemy locations or avenues of approach.

Choose a Course of Action

3-42. **Team Action.** Once the enemy situation has been developed, the team leader selects the best COA within the commander's intent, concept of the operation and the team's capabilities. Resuming the mission as soon as possible is normally the main criteria for COA selection. The possible COA may be—

- Hasty attack. The team leader can conduct a hasty attack if the target meets the engagement criteria for the mission and the team possesses sufficient combat power to defeat the enemy quickly. In most cases the team does not have the capability to defeat an enemy in prepared positions and is normally under specific instructions not to become decisively engaged.

- Bypass. If the team chooses to remain undetected and continue the reconnaissance mission, the team may maneuver to bypass the enemy. The team leader must receive the AMC's permission (either verbally or as stated in the OPORD) to bypass any elements. Unless directed otherwise, the team leader should leave an aircrew in contact with the enemy until conducting a BHO.
- Hasty screen. If the team cannot conduct a hasty attack and cannot bypass, it establishes a hasty screen and maintains contact through observation. The team concentrates on maintaining contact with the enemy and fixing it in place with indirect or possibly direct fire until additional support comes from the troop or other unit.
- Support by another team. The team in contact may support a BHO for a hasty attack by another team or an ATKHT, if available.

3-43. **Troop Action.** The AMC must approve or disapprove the recommended COA, based on its effect on the troop and squadron mission. The overriding considerations in selecting a COA are the intent of the squadron commander and the troop's ability to complete the mission with minimum losses. The decision to conduct a hasty attack requires the AMC and/or team leader to conduct hasty attack planning. This planning should consist of the following:

- Select an ABF or SBF position.
- Define the EA.
- Define the target.
- Determine the method of engagement.
- Establish criteria for success.
- Establish a trigger point.
- Divide the EA for troop and/or team level fire coordination and establishing control measures for direct and/or indirect fire planning.
- Coordinate for CAS, JAAT, and artillery.
- Plan the BHO.
- Coordinate the change to CSS requirements, i.e., adjust weapons loads, adjust relief-on-station rotation.
- Deconflict direct and indirect fires with ground troops.

ROUTE RECONNAISSANCE

3-44. A route reconnaissance is conducted to obtain information about a specific route and all adjacent terrain from which the enemy could influence movement along the route. The reconnaissance may be oriented on a road, an axis, an air route, or a general direction of advance or attack. The squadron normally does not conduct a route reconnaissance. The route reconnaissance is usually conducted as part of a zone reconnaissance. The mission is best accomplished by employing ACTMs with ground cavalry teams. ACTMs and ground cavalry teams gather information about the designated route and all adjacent terrain from which an enemy could engage friendly forces with direct fires. ACTMs begin the operation and reconnoiter adjacent terrain to the front, flanks, and rear providing early warning, uncover ambushes, and provide overwatch so that the ground cavalry team can concentrate on conducting a reconnaissance of the route. The ACTM may periodically dismount to physically inspect key terrain, if the situation allows. Command of the route reconnaissance will normally be assigned to the ground force because they do not rotate crews like aviation, instead they remain on station. Further information on route reconnaissance is in FM 5-170. Figure 3-1 shows the troop graphics for a route reconnaissance.

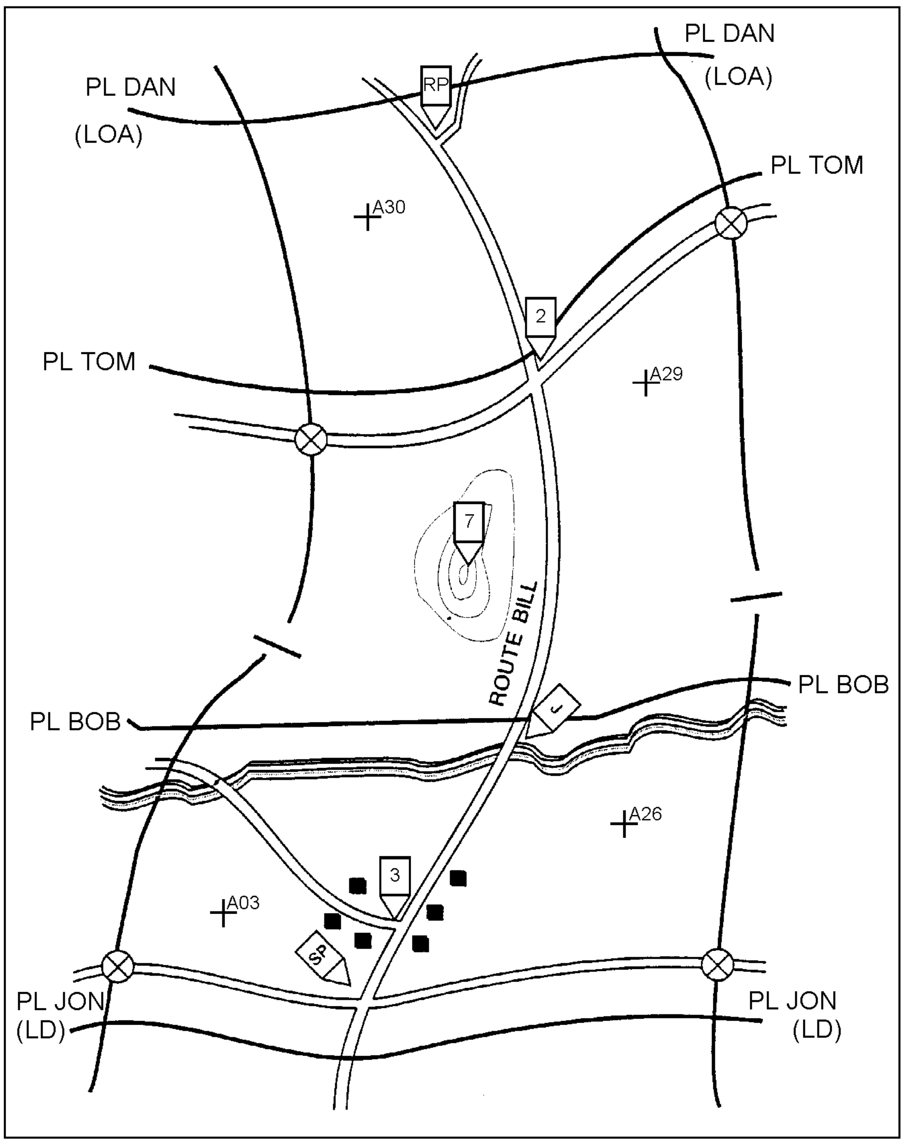

Figure 3-1. Troop Graphics for a Route Reconnaissance

3-45. The following critical tasks are for a route reconnaissance:

- Reconnoiter all terrain the enemy can use to dominate movement along the route.
- Reconnoiter all terrain within the zone, assist scout platoon(s) with built-up areas.
- Locate sites for constructing hasty obstacles to impede enemy movement.
- Reconnoiter all defiles along the route for possible ambush sites and locate a bypass.
- Locate a bypass around built-up areas, obstacles, and contaminated areas.
- Find and report all enemy that can influence movement along the route.
- Report route information.

3-46. Before conducting a route reconnaissance, the air cavalry element must know certain information about the route. This information includes—

- Critical tasks to be accomplished by ACTM and scout platoon, when used. Any tasks that may be deleted during the reconnaissance are identified.
- Task organization. Any reinforcements, especially engineers, and their relationship to the troop are identified. Supporting artillery relationships are also defined.
- SP, RP, and designation of the route.
- Mission to be performed 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 information on the route and enemy situation.
- Any constraints or restrictions.
- 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.

3-47. When time is not available, scout platoon assets are not available, or the mission does not require detailed information, cavalry assets may have to conduct a hasty route reconnaissance. In this case, information gathering is limited to the type of route (X--unlimited or all weather, Y--limited or fair weather, or Z--poor weather) and obstacle limitations (maximum weight, height, and width). The commander may also identify certain additional information that must be gathered.

3-48. ACTM(s) and scout platoon(s) 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 work sheet. This method ensures completeness and simplicity and reduces map clutter.

3-49. The use of the AVTR or Video Xlink to record areas of interest along the route provides superior combat information to the requesting headquarters. If the AVTR is used, planning must be conducted to return the 8mm tape to the requesting headquarters and crews must use a standardized video reconnaissance technique to clearly associate terrain with the targets portrayed on the video image. If phototelesis (the sending of real time or still frames of video) is used, the squadron AMPS operator may print the video image and transmit the image by fax or courier to the using headquarters.

3-50. The principles of an air route reconnaissance are the same as for a route reconnaissance except that 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, and other natural and man-made features.

ZONE RECONNAISSANCE

3-51. A zone reconnaissance is a directed effort to obtain information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, and enemy forces within a zone defined by boundaries. The boundaries of a zone are restrictive, unlike those of an area reconnaissance, which are permissive. ACTMs require permission from the ground commander to extend their reconnaissance outside of the zone’s boundaries. It is the most time-consuming of the reconnaissance missions. The purpose may be to find the enemy or suitable avenues of approach for the main body. A zone reconnaissance is normally conducted when information on cross-country trafficability is desired or when the enemy situation is in doubt. Every route within the zone must be reconnoitered unless otherwise directed. The zone to be reconnoitered is defined by lateral boundaries, a LD, and an objective or LOA.

3-52. Certain tasks must be accomplished during a zone reconnaissance unless specifically directed otherwise by the commander. Based on time and the commander's intent, the cavalry commander may direct the reconnaissance towards specific information only. The following critical tasks are for a zone reconnaissance:

- Find and report all enemy forces within the zone.
- Reconnoiter specific terrain within the zone and assist scout platoon(s) with built-up areas.
- Report reconnaissance information.
- Reconnoiter all terrain within the zone and assist scout platoon(s) with built-up areas.*

* The commander, time permitting, may also direct the ACTM to accomplish this critical task.

- Find suitable covered and concealed air avenues of approach.*
- Determine significant adverse weather.*
- Locate a bypass around built-up areas, obstacles, and contaminated areas.*
- Inspect and classify all bridges, overpasses, underpasses, and culverts within the zone.*
- Locate fords and crossing sites near all bridges in the zone.*
- Locate all mines, obstacles, and barriers in the zone within its capability and assist ground cavalry units in their clearance.*

3-53. The squadron, depending on time and the commander's intent, normally conducts a zone reconnaissance by employing ACTMs in concert with scout platoons. The ACTMs can perform the zone reconnaissance with or without support from scout platoons. The ATKHTs or OPCON AH company, if available, can be held in reserve or if time is critical they can support the zone reconnaissance effort using their onboard sensors (TIS, FLIR, FCR, and video recorder). The commander assigns boundaries between elements to specify zones of responsibility. Sectors should be near easily recognizable terrain features such as roads, streams, and prominent structures. After establishing zones, the unit designates an 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 reconnaissance 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 troop sector into another).
- Points that ease movement, lateral coordination of fires or positions, passage of lines, or logistics support.

3-54. Troops 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. Figure 3-2 shows the graphics for a RAS zone reconnaissance. Figure 3-3 shows the graphics for a division cavalry troop zone reconnaissance.

* The commander, time permitting, may also direct the ACTM to accomplish this critical task.

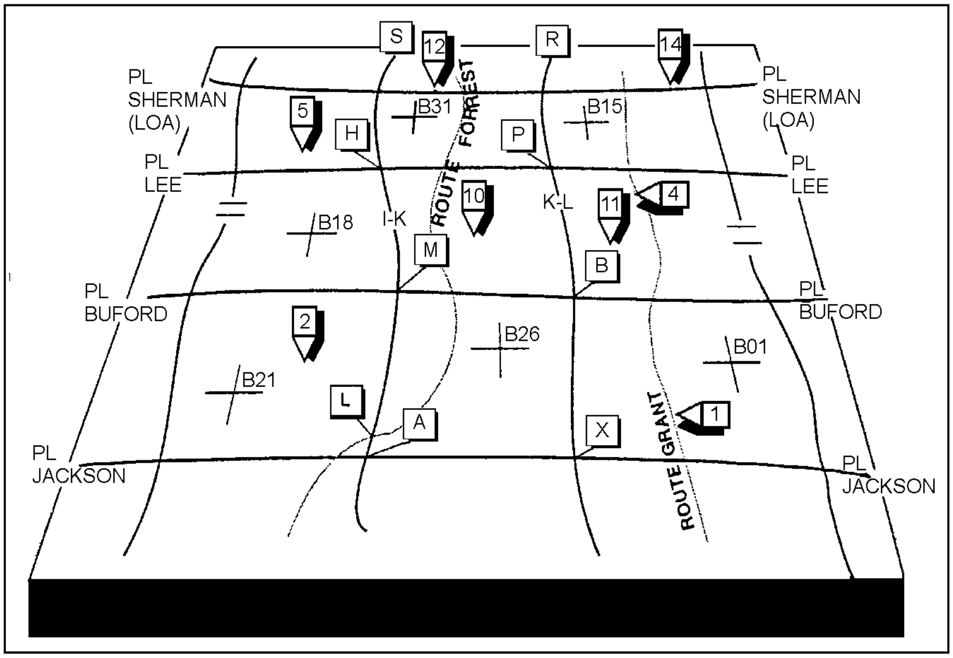

Figure 3-2. Graphics for a RAS Zone Reconnaissance

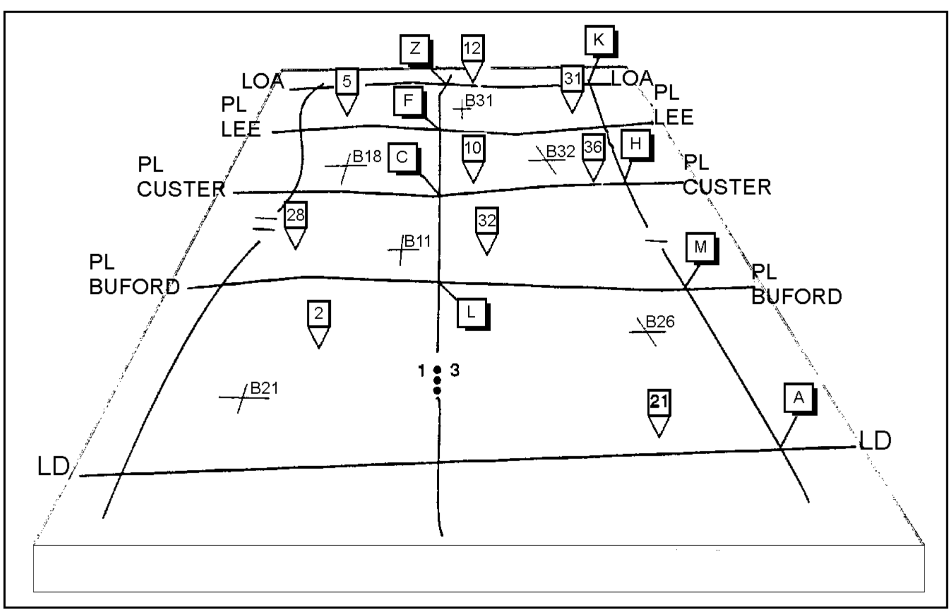

Figure 3-3. Graphics for a Division Cavalry Troop Zone Reconnaissance

3-55. If enemy contact is made, ACTMs maintain contact, report, and develop the situation. Reconnaissance forces may be instructed to bypass, engage and destroy, or maintain contact until an AH or ground maneuver unit arrives to engage. The squadron may direct specific engagements and/or bypass criteria for the ACTs. To ensure continuity of effort, the squadron designates the forward movement of the operation and tells each element what to do after mission completion. If the squadron is not given a follow-on mission, the ACTMs should be assigned objectives on dominant terrain to maintain surveillance and ensure enemy situation in zone remains as reported. In addition to reporting significant activities in the zone, the ACTMs report all appropriate control measures (PLs, checkpoints, contact points).

3-56. Generally, when working with a ground troop, the ACT will perform a well coordinated zone reconnaissance forward of the ground troop and will reconnoiter terrain not assessable to the ground troop. If time is critical, the ACTM may perform the zone reconnaissance alone with the understanding that the combat information obtained will be less detailed.

3-57. The air mission commander uses multiple teams to conduct a zone reconnaissance. Team leaders are assigned the responsibility for planning the reconnaissance within the team sectors. Team leaders select the method of reconnaissance, the mode of terrain flight, and movement technique based on the IPB with specific emphasis on hazards to navigation and enemy ADA. Starting with the LD, the teams reconnoiter each zone in a systematic manner based on terrain, number of aircraft in the team, and the width of the zone

3-58. Zones are divided into troop and/or platoon zones. Boundaries designate areas of responsibility when more than one troop and/or platoon are deployed abreast. PLs assist in controlling movement to ensure that reconnaissance elements remain abreast.

3-59. Before departing on the mission, the team leader selects significant checkpoints for examination and plans a route between the checkpoints, using terrain and vegetation to conceal the aircraft movements. The team leader also coordinates to ensure any specific tasks for support of the ground force commander are integrated into the reconnaissance plan. Specific tasks that may be assigned to an ACT while working with ground forces may include—

- Reconnoitering terrain not easily accessible to ground vehicles.
- Rapidly checking key points in zone.
- Locating and reporting the flanks of enemy forces encountered by air or ground scouts.

- Locating, reporting, and bypassing obstacles and enemy positions.
- Providing security on the far side of obstacles while ground forces reconnoiter and clear them.

AREA RECONNAISSANCE

3-60. The purpose of an area reconnaissance is to gather intelligence or to conduct surveillance of a specified area. The target may be key terrain, a farm, a bridge, a ridgeline, a wooded area, a proposed AA, an LZ, or other features that will be critical to an operation. The specified area to be reconnoitered is designated by boundary lines enclosing the area. METT-T will determine the movement technique the reconnaissance element will use to reach the area and the method by which the area will be systematically reconnoitered. The ACTM also reconnoiters dominant terrain outside the specified area from which the enemy can influence friendly operations.

3-61. During a area reconnaissance, the following critical tasks apply, unless directed otherwise:

- Reconnoiter specific terrain within the area and dominant terrain outside the specific area from which the enemy can influence friendly operations.
- Report reconnaissance information.
- Find and report all enemy within the area.
- Reconnoiter all terrain within the area and assist scout platoon(s) with built-up areas.*
- Determine significant adverse weather.*
- Locate a bypass around built-up areas, obstacles, and contaminated areas.*
- Inspect and classify all bridges, overpasses, underpasses, and culverts within the area.*
- Locate fords and crossing sites near all bridges in the area.*
- Locate all mines, obstacles, and barriers in the area within its capability and assist ground cavalry units in their clearance.*

3-62. The squadron commander first considers the factors of METT-T. Rapid movement to the objective is important, but the main consideration usually is security. Avoidance of known enemy locations and enemy 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. The commander treats the assigned area like a zone reconnaissance. The area is enclosed in a boundary. Upon completion of the reconnaissance, the squadron departs the area on a different route.

3-63. The primary difference between a zone and an area reconnaissance is the nature (restrictive versus permissive) of the boundaries. A zone reconnaissance has restrictive boundaries that define the ACTM mission area. Because of this, a zone reconnaissance does not have an implied task to reconnoiter dominating terrain that is outside of the zone. The boundaries of

* The commander, time permitting, may also direct the ACTM to accomplish this critical task.

an area reconnaissance are permissive and allow the ACTM greater freedom in selecting their ingress and egress routes. The squadron may move to and reconnoiter one large area or several small, air cavalry dispersed areas. It may also assign this mission to one or more ACTs. An area reconnaissance may be performed behind friendly lines or deep behind enemy lines. Emphasis is normally placed on reaching the objective area quickly. The squadron usually moves over several routes to reduce mission execution times.

3-64. The squadron commander may divide the area into troop zones with designated objectives for each respective unit. The flanks of the overall objective area are secured first, reconnaissance efforts may then be focused inward. ACTMs may establish a screen on the flank to provide security for the ground reconnaissance forces. ACTMs may have to dismount and physically reconnoiter a specific area. Figure 3-4 shows the graphics for an area reconnaissance.

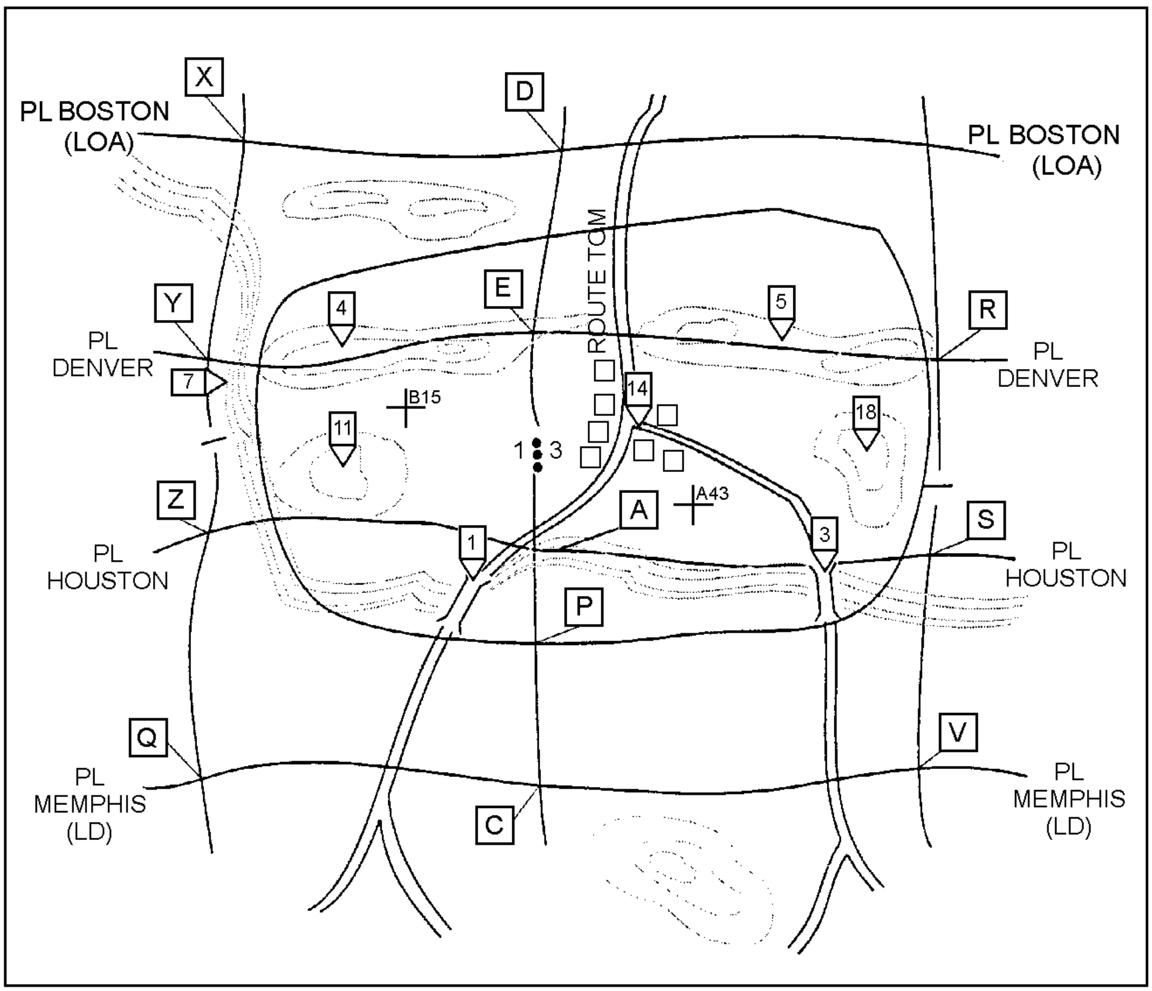

Figure 3-4. Graphics for an Area Reconnaissance

3-65. Long range observation should be used whenever possible to reduce the enemy's ability to determine the reconnaissance objective. If a flyover is required in a hostile environment, crews must be able to collect the desired information rapidly while flying over an area only once, if possible, but never from the same direction twice.

RECONNAISSANCE IN FORCE

3-66. A reconnaissance in force is a limited objective operation. It is conducted by a larger than squadron force to obtain information and to locate and test the enemy's disposition, strength, and reaction. As the name implies, a reconnaissance in force is an action to develop battlefield intelligence and to reduce uncertainties about the enemy. Initially, as part of the force, the squadron conducts a zone reconnaissance to update the force commander. The squadron may also screen the movement of the force. If enemy contact is made, squadron assets continue reconnaissance to find weaknesses or to develop the situation. The augmenting forces must have the firepower, mobility, and agility required for this role.

3-67. Reconnaissance in force mission is assigned when limited information about the enemy is available. It is also assigned when the commander desires more specific information on the enemy, and when this information cannot be gathered by any other means.

3-68. The C^2 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 are integrated and coordinated throughout the entire effort. Engineer assets in a mobility role may augment squadron elements. Armor, infantry, and cavalry units make up the main force, and FA assets provide flexible DS to the force. AD assets may also augment squadron forces to enhance the overall AD effort of the force. When enemy contact is established, squadron elements direct and secure movement of the main force. They call for and adjust fires and assist engineer and AD forces in support of the main force.

LANDING ZONE AND/OR PICKUP ZONE RECONNAISSANCE

3-69. An LZ and/or PZ reconnaissance is an <u>area reconnaissance</u> performed to determine the suitability for air assault operations of a designated area. Principal concerns are determining if enemy forces are present and in a position to bring direct fires onto the LZ and/or PZ, while evaluating the physical characteristics of the area. This reconnaissance is often performed as a subtask during air assault security missions. An LZ and/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, time of the air assault, and the number and type of aircraft in each lift. ACTMs evaluating the LZ and/or PZ should create a sketch of the area with pertinent information included (Figure 3-5). While conducting the reconnaissance, ACTMs evaluate and make recommendations of the following tactical considerations:

- Mission. CTMs evaluate whether the LZ and/or PZ will facilitate the unit's ability to accomplish the mission from or at that location.
- Location. Will the LZ and/or PZ meet the commander's intent for distance from the objective?
- Security. Recommendations are made on the force that will be required to provide security during the air assault.

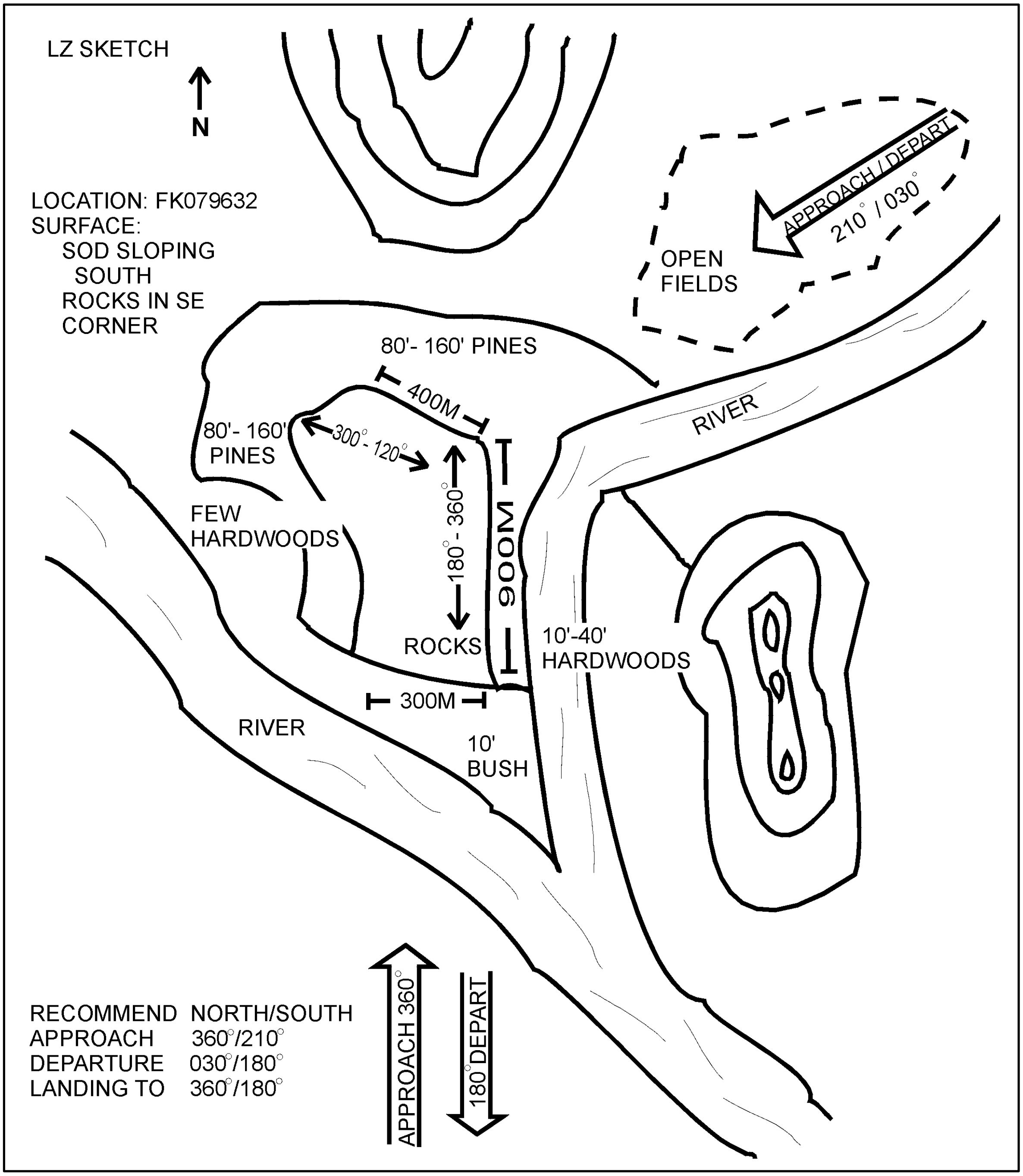

Figure 3-5. Landing Zone and/or Pickup Zone Sketch

- Technical characteristics of the LZ and/or PZ. These characteristics include—
  - Size of the available landing area.
  - Obstacles and hazards in the landing area and vicinity.
  - Ground slope of the landing area.
  - Surface condition of the landing area.
- Specific Requirements. If the ACTM can determine specific requirements, recommendations are made on the following additional technical requirements:
  - Approach and departure directions.
  - Landing formations.
  - Suitability for heavily loaded aircraft.
  - Number and type of aircraft that LZ and/or PZ can support.
- Meteorological conditions. If meteorological conditions observed during the reconnaissance are expected to be present during the air assault, then ACTMs assess the impact of the following meteorological factors:
  - Ceiling and visibility.
  - Density altitude.
  - Winds.

NUCLEAR, CHEMICAL, AND BIOLOGICAL RECONNAISSANCE

3-70. ACTs may be required to conduct NBC reconnaissance tasks. Ground forces should be the primary assets to conduct NBC reconnaissance missions. Tasks may include chemical agent detection, radiological monitoring, and survey operations. NBC reconnaissance may be an implied task during all reconnaissance operations. The purpose of an NBC reconnaissance is to locate the boundaries of contamination or routes around or through a contaminated area or both. This information is used to plan future operations and is vital to the success of friendly operations. Normally, an entire troop does not conduct an NBC reconnaissance, ACTMs are assigned this mission. NBC reconnaissance operations are resource intensive and require extensive planning, to include the decontamination of aircrews and aircraft. Commanders must be aware of the capabilities and limitations of aircraft in conducting NBC reconnaissance. An assessment must be made to determine if aviation assets must be used for NBC reconnaissance.

CHEMICAL AGENT DETECTION

3-71. Chemical agent detection will probably be the most frequent NBC reconnaissance task required of air cavalry elements. Before moving into or occupying an area, unit commanders are concerned with enemy activity and the presence of chemical hazards. The squadron is specifically tailored to accomplish both tasks simultaneously. When determining the presence or absence of chemical agents, the squadron gathers information to answer the following questions:

- Is a chemical agent present?

- If an agent is present, what type is it?
- Where was the agent first detected?
- What are the boundaries of the contaminated area?
- Is a clean route available through the area?

3-72. Before conducting an NBC reconnaissance, the troop commander ensures that the equipment is available and properly prepared. Equipment normally used by the reconnaissance element for chemical and biological reconnaissance includes an automatic alarm, CAM, M256 detector kit, M9 paper, M272 water test kit, and M34 sampling kit. Equipment normally used by the element for radiological reconnaissance include radiacmeter, IM-174 or AN/VDR-2 and dosimeter, IM-93 or pocket radiac, AN/UDR-13. The commander also determines areas of priority. These areas include possible movement routes and unit locations. Finally, the commander designates an area to which the reconnaissance element can return for decontamination.

3-73. During NBC reconnaissance planning, the squadron or troop commander designates areas of responsibility and determines distances between checkpoints. (The distance between each checkpoint depends on the factors of METT-T.) The reconnaissance team initially conducts checks at 500-meter intervals. The team concentrates on areas where chemical agents collect such as low spots, valleys, and sheltered locations. It uses the M256 kit to detect vapors and M9 paper to check liquids. When time is critical, the team uses samplers or detectors only when necessary. Upon detecting a chemical agent, the reconnaissance team marks the area and then moves back to a clean area. It moves laterally a predetermined distance and direction, usually 500 meters, and then moves forward again. The team follows this procedure until it reaches the unit boundary or finds a clean route through the contaminated area.

3-74. The manner in which the information is reported depends on how urgently the information is needed. If time is critical, the information is transmitted by radio using the NBC 4-report format. If time is not critical or if radio assets cannot be used, the information is recorded and carried back to the unit. DA Form 1971-2-R (Chemical Data Sheet - Monitoring or Survey) is used to record and transfer reconnaissance information. FM 3-3 describes reporting procedures in detail. Figure 3-6 shows a completed DA Form 1971-2-R.

RADIOLOGICAL MONITORING

3-75. The ACS is responsible for conducting radiological monitoring in its AO to determine the presence and intensity of residual radiation hazards. The radiation may be from fallout or NIGA areas. The IM174/PD radiacmeter or AN/VDR-2 radiac set is used to monitor radiation. The procedure is outlined in FM 3-3-1. Figure 3-7 shows an example of a completed DA Form 1971-R (Radiological Data Sheet - Monitoring or Point Technique) and Figure 3-8 shows an example of a completed DA Form 1971-1-R (Radiological Data Sheet - Route or Course Leg Technique [Ground and Aerial Survey]).

CHEMICAL DATA SHEET MONITORING OR SURVEY For use of this form see Fm 3-3 proponent of this form is USACMLS	DATE 14 July 86	PAGE NO. 1	NO. OF PAGES 1

UNIT B Co 2/31 Inf	MONITOR OR SURVEY TEAM MEMBER (Print Name) SP/4 Moyer
MONITOR OR SURVEY TEAM NUMBER #B2	
MAP USED Karlbodt	

LOCATION/TIME OF TEST OR INDICATION	TYPE DETECTOR USED			AGENT DETECTED
	PAPER	ALARM	KIT	
NV521678/1006003		✔		NERVE
NV521678/1006003	✔			V.
NV521678/1006003	✔			V.
NV521678/1006003	✔			V.
NV521678/1006003	✔			V.

REMARKS

DA FORM 1971-2-R
JUNE 96

SAMPLE

Figure 3-6. An Example of a Completed DA Form 1971-2-R

NOTES:

(1) A nuclear weapon was detonated. Continuous monitoring is initiated. Monitor awaits arrival of fallout in open areas.

(2) Fallout arrives. Monitor reads 1cGyph, notes, and reports it to the unit NBC defense team.

(3) Monitor enters the shelter. No dose rate is noted inside because of the shielding. Dose rate must build to equal the CF before a dose rate of 1cGyph is apparent.

(4) Dose rate on the outside now equals CF. (Of course, the monitor does not know the CF at this time.) Monitor reads 1cGyph on the inside. The dose rate continues to build. OD must reach 40 before ID will reach 2 (as in this example).

(5) The dose rate builds. The OD now equals 40. (This can be seen once the CF is applied to all previous readings.)

(6) The dose rate continues to build and starts slowing the rate of increase.

(7) The dose rate is almost the same as the previous reading. This indicates peak or near peak. The dose rate is measured every five minutes now. The dose rate levels off. It appears that no more fallout will arrive. Decay now takes over. The peak reading is reported to the unit NBC defense team.

(8) The decrease is noted. At this point, a collection of CF data is possible. The monitor notes the continuing decrease in dose rates. An OD of 180 is taken. The monitor reports a peak of 10 (shielded) at 1005 hours and the data for the CF (OD =180 and ID=9). The unit NBC defense team calculates a CF of 20 and applies this data to the peak reading.

(9) The monitor continues to take readings at 30-minute intervals until dose rates decrease below 1cGyph or he is told to stop.

RADIOLOGICAL DATA SHEET-
MONITORING ~~OR POINT TECHNIQUE~~

For use of this form, see FM 3-3; proponet of this form is TRADOC

DATE	PAGE NO.	NO. OF PAGES
10 January	*1*	*1*

~~SURVEY PARTY OR~~ MONITORING UNIT DESIGNATION: *Co. B/1-11 INF*
MONITOR (Print name): PFC I.M. Observer
MAP USED: *Series V259 1:50,000*
~~TYPE OF VEHICLE OF~~ OTHER SHIELDING: *Foxhole*
INSTRUMENT TYPE: *IM - 174B/PD*

READING NO	LOCATION	TIME	DOSE RATE (cGyph)	DO NOT USE*	READING NO	LOCATION	TIME	DOSE RATE (cGyph)	DO NOT USE*
1	*AY123456*	*0600*	0 (1)		16	*AY123456*	9		
2		*0615*	0		17		9		
3		*0630*	0 (2)		18		10 (7)		
4		*0645*	1 (3)		19		10		
5		*0700*	0		20		10		
6		*0715*	0		21		9		
7		*0730*	0		22		10		
8		*0745*	1 (4)		23		9 (8)		
9		*0800*	1		24		9		
10		*0815*	1 (5)		25		8 (9)		
11		*0830*	2		26		7		
12		*0845*	2 (6)		27		5		
13		*0900*	3		28		6		
14		*0915*	5		29		5		
15		*0930*	7		30		5		

REMARKS TOB 0555 $CF = \frac{180}{9} = 20$

*DO NOT USE. For control party only

CORRELATION FACTOR DATA

LOCATION	READING NO.	DOSE RATE (cGyph) Inside	DOSE RATE (cGyph) Outside	CF*	LOCATION	READING NO.	DOSE RATE (cGyph) Inside	DOSE RATE (cGyph) Outside	CF*
AY123456	*24*	*9*	*180*	*20*					

DA FORM 1971-R, SEP 86 Replaces DA Form 1971 R. 1 Jan 63, which is obsolete

Figure 3-7. An Example of a Completed DA Form 1971-R

Radiological Data Sheet--~~Route o~~r Course Leg Technique (~~Ground~~ and Aerial Survey) For use of this form, see FM3-3-1; the proponent agency is TRADOC.	Date: 20 JULY	Page No.: 1	No. of Pages: 1
Survey Party Designation: B-2-9	Monitor (Print Name): PFC FARES		
Map Used: BIERHOFFEN 1:50,000	Aircraft or Vehicle Type: UH-1	Instrument Type: AN/VOR-2	

~~Route or~~ Course Leg Designation	CK-CE	CE-CB	CB-CD
Time at Start of Leg or Route	0950Z	0950Z	0950Z
~~Time Rroute Completed (for Ground)~~ ~~Or~~ Survey Height (for Aerial)	200FT	200FT	200FT
D~~istance o~~r Time Interval Used	10 SEC	10 SEC	10 SEC

Remarks

TIME OF BURST 2007302
N=1.2
CK-CE= AGCF= 3-8
NR = 2.767
OCF = 10.5.5
CE-CB= AGCF= 3.8
NR =2.884
OCF =10.959
CB-CD= AGCF= 3.8
NR = 3.123
OCF = 11.867

* Times of start ans stop are reported for each route or portionof route completed at one time by ground survey. If a route is done in parts, use a seperate column for each part.
** Do Not Use--for control party use only.

Reading No.	Dose Rate (cGyph)	Do Not Use**	Reading No.	Dose Rate (cGyph)	Do Not Use**	Reading No.	Dose Rate (cGyph)	Do Not Use**
1	12	126	1	2	22	1	0	0
2	12	126	2	2	22	2	0	0
3	11	116	3	2	22	3	1	12
4	10	105	4	3	33	4	2	24
5	9	95	5	3	33	5	3	36
6	8	84	6	3	33	6	3	36
7	8	74	7	3	33	7	3	36
8	6	63	8	4	44	8	3	36
9	5	53	9	4	44	9	2	24
10	5	53	10	5	55	10	1	12
11	5	53	11	5	55	11	1	112
12	4	42	12			12	1	12
13	4	42	13			13		
14	4	42	14			14		
15	3	32	15			15		
16	3	32	16			16		
17	2	21	17			17		
18			18			18		
19			19			19		
20			20			20		

Air-Ground or Vehicle Correlation Factor Data

Location	Height (Feet) (Air Only)	Dose Rate (cGyph) Inside Air	Dose Rate (cGyph) Outside Ground	CF **
BF	200	5	19	3.8

DA Form 1971-1-R, JAN 93

Figure 3-8. An Example of a Completed DA Form 1971-1-R

SURVEY

3-76. Both nuclear and chemical surveys are conducted. Nuclear surveys are conducted to determine the extent and intensity of contamination. Chemical surveys are conducted to determine the size of a contaminated area. Surveys provide information on which future operations are based. Surveys in the covering force area or forward of the FLOT are not normally performed unless the information is critical and the loss of survey assets is acceptable. The squadron and the NBC center (division, corps, area support group, and theater level G3s) coordinate all survey missions. A group composed of a control team and one or more survey teams conducts a survey. The control team is normally formed at squadron level, and survey teams are formed at troop level. The control team controls and directs the survey teams or troops. In radiological surveys, only the minimum number of personnel is exposed to radiation. The control and survey teams may perform aerial and ground radiological surveys. FMs 3-3, 3-3-1, and 3-19 describe in detail nuclear and chemical surveys.

SECTION III—SECURITY OPERATIONS

PURPOSE

3-77. Security operations are conducted to gather information about the enemy and to provide early warning, reaction time, maneuver space, and protection for the main body. Security operations are characterized by reconnaissance to reduce terrain and enemy unknowns, gaining and maintaining contact with the enemy to ensure continuous information flow, and providing early and accurate reporting of information to the protected force. Security missions include screen, guard, cover, and area security missions.

3-78. Security operations are defined by both the degree of protection offered to the main body and the physical characteristics of the operation.

Screen

3-79. The primary purpose of a screen is to provide early warning to the main body. Based on the higher commander’s intent and the screen’s capabilities, it may also destroy enemy reconnaissance and impede and harass the enemy main body with indirect and/or direct fires. Screen missions are defensive in nature and 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.

Guard

3-80. 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 he expects contact or has an exposed flank that requires greater protection than a screen provides.

Cover

3-81. 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.

Area Security

3-82. Area security is a form of security that includes reconnaissance and security of designated personnel, airfields, unit convoys, facilities, main supply routes, lines of communications, equipment, and critical points. An area security force neutralizes or defeats enemy operations in a specified area. It operates in an area delineated by the headquarters assigning the area security mission. 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.

FUNDAMENTALS

3-83. The squadron conducts security operations according to the five security fundamentals. These fundamentals are briefly discussed below.

ORIENT ON THE MAIN BODY

3-84. A security force operates between the main body and known or suspected enemy units. The air mission commander maneuvers the troop to positions to provide screening support to the main body commander's scheme of maneuver. The screen should be positioned to remain between the main body and the enemy force. This distance should be based upon the relative vulnerability of the main body and the expected enemy rate of advance. As a rule, main body required preparation time multiplied by the expected enemy rate of advance in kilometers per hour equals the minimum distance to emplace security. If this distance cannot be achieved, additional combat power and an extensive obstacle plan may be required.

PERFORM CONTINUOUS RECONNAISSANCE

3-85. A security force performs continuous reconnaissance to gain all possible information about the enemy and the terrain within the assigned AO. (For information concerning the doctrinal frontages and/or distances of ground cavalry units in conjunction with security operations, refer to FM 17-95, FM 17-97, and FM 17-98.) An ACT operating independently will normally operate on an 8- to 10-kilometer front based on METT-T.

PROVIDE EARLY AND ACCURATE WARNING

3-86. Early warning of enemy activity includes accurate reports about the enemy's size, composition, location, movement, and special equipment. This gives the main body commander the time and information needed to seize the initiative and choose the time and place to engage the enemy.

PROVIDE REACTION TIME AND MANEUVER SPACE

3-87. Air cavalry security force elements operate as far from the main body as possible and according to METT-T. It fights using its organic firepower and screens within range of the main body artillery to maximize its ability to employ long-range indirect fire to gain time and maneuver space for the main body commander to concentrate combat power. During cover operations, the covering force may be out of the main body's artillery range.

MAINTAIN ENEMY CONTACT

3-88. Once gained, contact is maintained to ensure a continuous flow of combat information. Contact is never broken unless specifically directed by the commander.

PLANNING CONSIDERATIONS

3-89. The main body commander should give the security force commander the following critical items of information to facilitate planning:

- Dimensions of the security mission (normally depicted on graphic overlay).
- Minimum reaction time required. This allows the security force commander to determine if the depth of the security zone is sufficient to accomplish the mission and determines how long the security force must delay before falling back to successive PLs.
- Minimum sized enemy force that must be detected. This allows the commander to determine required density of the screen.

3-90. The squadron commander follows general planning principles in preparing for a security mission and determines the troop or troops required to perform the mission. He specifies the area of the security and the time the security must be effectively established with battalion-size avenues of approach into the identified area. The depth of the area should provide enough distance for the main body to react in minimal time. The squadron must not establish its initial security too close to the main body, but within range of the main body artillery. During cover operations, the covering force may be out of the main body's artillery range. The initial screen also follows advantageous terrain for observation of avenues of approach. It is delineated by a PL and is located behind critical control measures such as CFLs and FSCLs. Passage points and routes through stationary units are also coordinated.

3-91. Consideration must be given when assigning air cavalry its own terrain. ASE and/or EW considerations must be part of the mission planning process to minimize risks while accomplishing the mission. Detailed instructions are contained in Appendix H. Limited visibility conditions and weather may affect air cavalry's ability to cover a zone and/or sector. On the other hand, there are times when ground cavalry is limited by mobility, terrain, vegetation, or time, and air cavalry is the only asset capable of conducting the mission.

3-92. The squadron commander, in conjunction with the main body commander, must determine the width and depth of the security and establish a rear boundary between the main body and the security force. The squadron may initially assume responsibility for the area between the main body and the security force. The squadron 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 near their positions. Cavalry units MUST carefully plan and coordinate their subsequent rearward movement and passage of lines.

3-93. Unique requirements posed by the mission may require assets not organic to the screening unit. The squadron may need AHs, ground assets, and/or CS assets to effectively perform the mission.

3-94. Fires are planned, and the emplacement of man-made obstacles is coordinated to impede the enemy's advance. The combination of fires and natural and man-made obstacles allows the squadron to impede enemy lead elements, maintain contact, and avoid decisive engagement. The squadron may also continue reconnaissance forward to identify enemy second echelon and follow-on forces. Upon contact, the squadron focuses its effort on the destruction of enemy reconnaissance elements by direct and indirect fires before the enemy can penetrate the initial screen line.

SCREEN

PURPOSE

3-95. The primary purpose of a screen is to provide early warning to the main body through the communication of real-time combat information. This gives the protected force reaction time and maneuver space to orient to meet the threat. The screen provides the protected force with the least protection of any security mission. Air cavalry screens 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 not performed forward of a moving force because that would be an advance guard or zone reconnaissance. Based on the higher commander's intent, the squadron and ACTs may be required to impede and harass the enemy with organic and supporting fires and, within its capabilities, destroy or repel enemy reconnaissance elements without becoming decisively engaged. See figure 3-9 for screen locations.

Critical Tasks for Squadron Screen Missions

3-96. Critical tasks of the squadron conducting a screen mission are as follows:

- Provide early warning of enemy approach.
- Maintain continuous surveillance of all battalion-size avenues of approach into the sector.
- Gain and maintain enemy contact and report enemy activity.
- Destroy, repel, or suppress enemy reconnaissance units (within capabilities) without becoming decisively engaged.

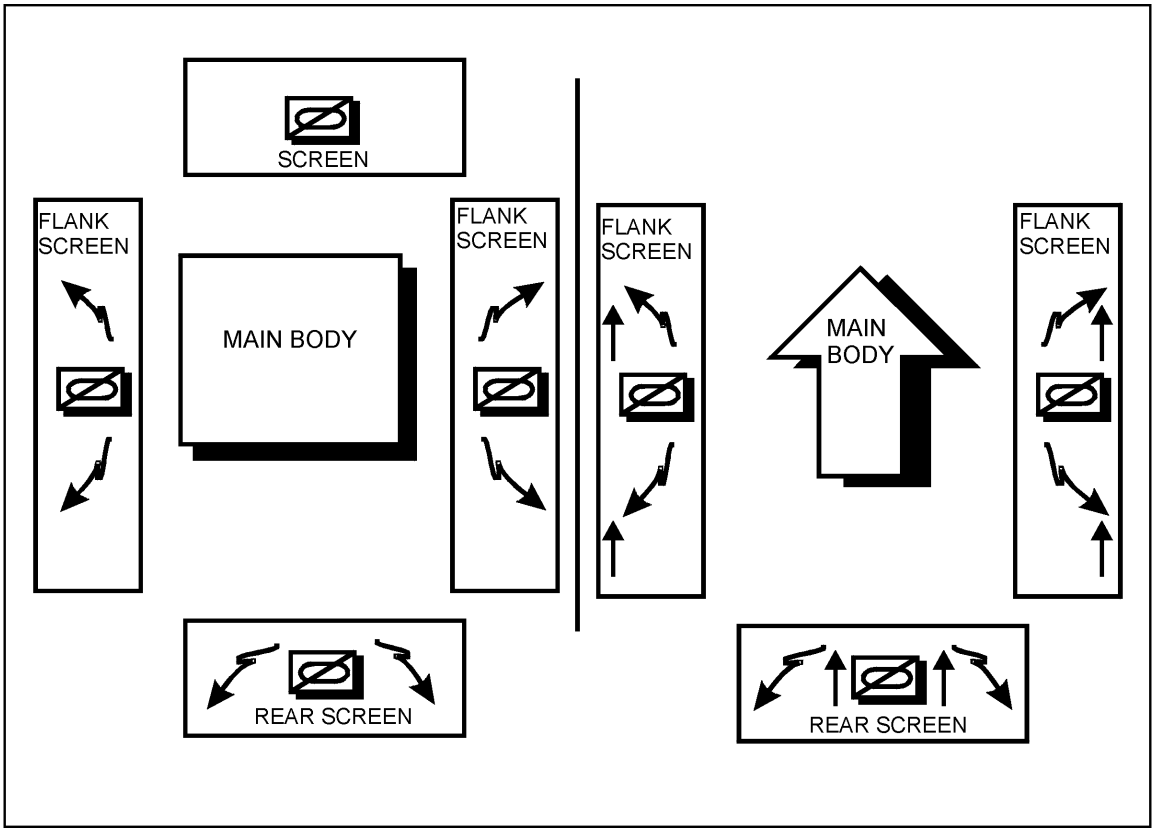

Figure 3-9. Screen locations

- Impede and harass the enemy with indirect fires.
- Guide reaction forces.

Critical Tasks for the Air Cavalry Troop

3-97. The critical tasks for the ACT conducting a screen mission are as follows:

- Maintain continuous surveillance of all battalion-sized avenues of approach into the sector.
- Destroy or repel all enemy reconnaissance elements within capabilities and as directed by higher commander.
- Locate the lead elements of the enemy order of battle and determine their direction of movement.
- Maintain contact with the elements, report their activities, and harass the enemy while displacing.

Air Combat Operation

3-98. Though not a specific critical task, the air combat operation is an implied task during security operations. To be effective, security operations must prevent interdiction by enemy air and ground maneuver forces.

CAPABILITIES

3-99. Air cavalry is ideally suited for screen missions due to its superior mobility, day and/or night target acquisition ability, and long range digital and/or voice communication capabilities. ACTs may conduct screen operations independently or as an integral part of a larger unit's task organization. When participating in guard and cover operations, ACTs normally screen or conduct zone reconnaissance as part of a larger force's guard or cover mission.

SQUADRON PLANNING CONSIDERATIONS

3-100. Squadrons normally perform a screen with organic assets. However, attachments such as engineers, MI assets, or artillery are sometimes needed. For division cavalry, DS artillery will be required when the squadron is operating out of main body artillery range. In the RAS, a ground troop may be attached to assist the air assets in screening a vulnerable part of the regiment. When a brigade is conducting independent operations, an air or GCT from the DCS may be OPCON or attached to screen in support of the brigade's operations. When this occurs the troop should receive DS artillery.

3-101. Squadrons can screen broad areas to the front, to the flanks, or to the rear of a stationary main body or to the flanks or rear of a moving main body. It must impede and harass the enemy with organic and supporting fires and, within its capabilities, destroy or repel enemy reconnaissance elements without becoming decisively engaged.

OFFENSIVE ENGAGEMENTS

3-102. To exploit enemy vulnerabilities and weaknesses, the squadron may maneuver to the flanks and rear of the enemy to conduct offensive engagements. It may also use this employment principle to perform other security tasks as well as special-purpose and JAAT operations.

TROOP PLANNING CONSIDERATIONS

3-103. The ACT commander plans his concept using the following critical considerations:

Aircraft Rotation

3-104. Based on the rotation method selected by the SCO, the troop commander determines methods of rotating aircraft to sustain an aerial screen. He must consider all aspects of the mission—time required for the mission, aircraft availability, the use of AHs, relief on station.

ACTM Organization

3-105. The troop commander organizes ACTM s based on the SCO's guidance, likelihood of enemy contact, size of assigned sector, duration of the mission, and aircraft availability. If large frontages or several avenues of approach need to be covered, the troop commander may break the unit down to teams instead of platoons. When augmented with AHs, they may remain immediately available in a FAA or task organized into the platoon and/or team elements, to use their onboard sensors.

COORDINATION

3-106. The troop commander ensures the location of AHs, FARPs, supporting fires, and FAAs are known by all aircrews. The commander coordinates his concept closely with the ground commander. He must pay particular attention to OP locations, artillery positions, and ground scheme of maneuver. Coordinating the air passage of lines when operating forward of ground troops is essential.

DISPLACEMENT TO SUBSEQUENT SCREEN LINES

3-107. As the enemy situation threatens the security of the screening force, the squadron and/or troops report and request movement to the next screen line. Staggered movement off the screen line allows the commander to identify the flanks and rear of attacking forces. The screening force commander usually decides when to move from a screen line. However, the main body commander decides when the screening force may move behind the rear boundary PL. Prompt, accurate reporting is essential to prevent decisive engagement. Maximum use is made of surveillance, acquisition, and aircraft sensors.

POSITIONING OF COMMAND AND CONTROL AND COMBAT SERVICES SUPPORT ASSETS

3-108. The commander positions himself to where he can best control the screen. Normally this is at a vantage point from which he can move freely, maintain communications with both higher and subordinate commanders, and best influence the battle. In the RAS, the SCO typically performs this function in his aircraft. In the DCS the SCO normally commands from the TAC CP, TOC, or a C^2 designated aircraft. Combat trains are normally positioned behind masking terrain close enough for rapid response. They are best placed along routes providing good mobility laterally and in-depth. In the DCS and the RAS, FARPs are placed forward to facilitate rapid turnaround of aircraft supporting the screen. CSS assets prepare for extended operations as necessary.

STATIONARY SCREEN

Successive Screen Lines

3-109. Successive screen lines are located one behind the other on the battlefield and provide the screening force maneuver space. A stationary screen is accomplished by establishing successive screen lines. These lines enable the screening element to observe the identified avenues of approach throughout the squadron's AO. Avenues of approach are not split between units. The ACTM should be assigned no more than three battalion-size avenues of approach. A screen line may consist of OPs placed along a PL overwatching avenues of approach into an area. OPs may be mounted or dismounted from both air and ground assets. If the factors of METT-T dictate, ground scouts of the regiment and/or squadron may dismount from their vehicles and establish OPs. If OPs are used, air and ground reconnaissance forces actively patrol between them. Patrols reconnoiter areas that cannot be observed from an OP.

Initial Screen Line

3-110. The most secure method of establishing an initial screen line is to conduct a zone reconnaissance from the rear boundary to the initial screen line. When squadron units reach the general trace of the screen line, they reconnoiter and refine it. They also select positions for good observation and fields of fire. Reconnaissance elements seek to remain undetected while reporting enemy forces and engaging them with indirect fires at maximum range. Fires are planned along with both natural and man-made obstacles to impede the enemy's advance. The combination of obstacles and coordinated fires allows the squadron to impede enemy lead elements, maintain contact, and avoid decisive engagement. This gives the main body reaction time and maneuver space to effectively engage the enemy. The squadron may also continue reconnaissance forward to identify enemy second echelon and follow-on forces. Upon contact, the squadron focuses its efforts on the destruction of enemy reconnaissance elements by direct and indirect fires before the enemy can penetrate the initial screen line.

3-111. As enemy pressure threatens the security of the screening force, or the movement of the main body dictates, the squadron or ACTs report and request to move to the next screen line. Reconnaissance elements rapidly move from a screen line while maintaining visual contact with the enemy. 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 procedure is repeated as necessary. Figures 3-10 and 3-11 illustrates the RAS and DCS graphics, respectively, for screening operations of a stationary force. The main body commander decides when the screen force is no longer necessary and allows the screening force to conduct follow-on missions. Therefore, the screen force commander must be prepared to conduct guard operations. Maximum use is made of surveillance, target acquisition, and night observation equipment.

3-112. The ACT conducts a screen for a stationary force when the main body commander is preparing for future tactical operations. During reconstitution activities or planning and preparation phases, the main body commander may remain stationary. The ACT may be assigned screen operations when ground forces are preparing for defensive or offensive operations before actual movement begins. Initial occupation of a unit BP may also require screening activities.

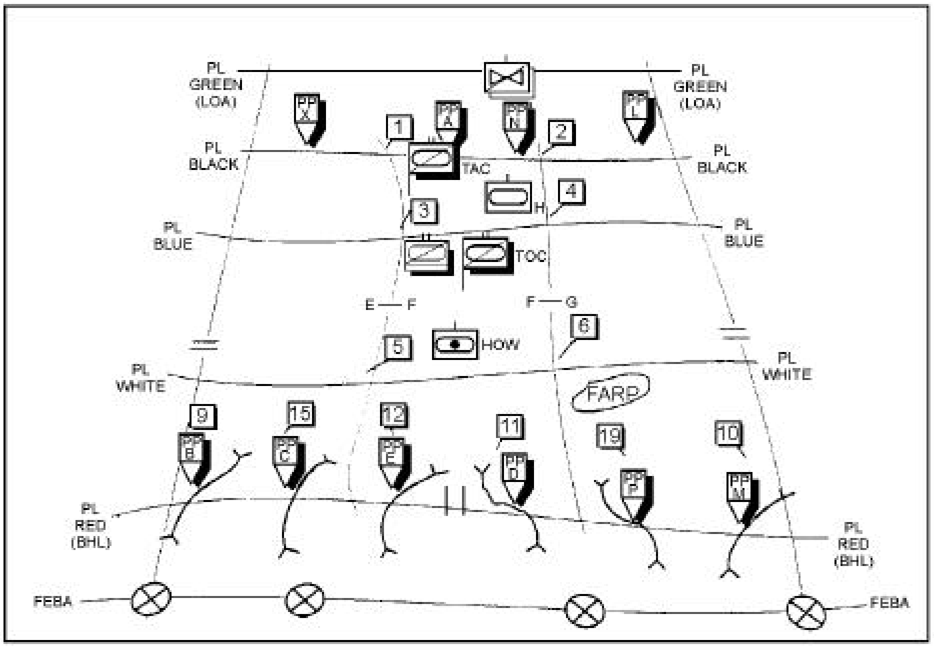

Figure 3-10. RAS Stationary Screen Graphics

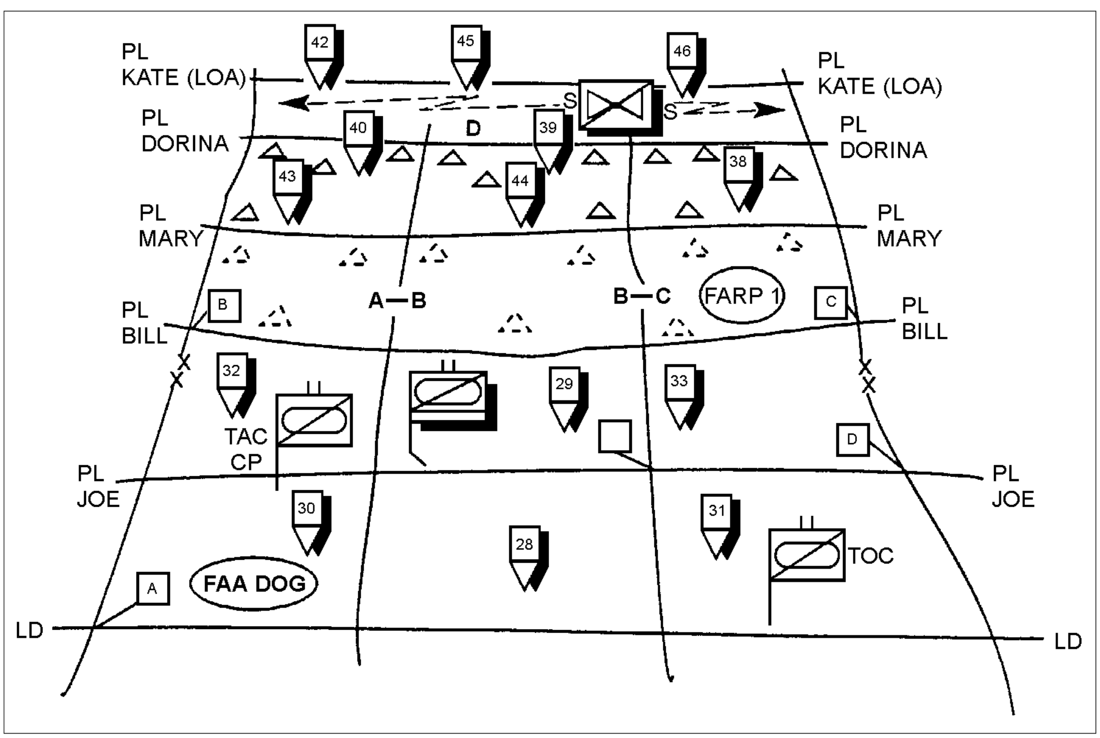

Figure 3-11. DCS Stationary Screen Graphics

Task Organization

3-113. The ACTM is task organized by the air mission commander to accomplish its screen mission. The AMC assigns teams to occupy the screen and establishes a troop or team rotation to maintain continuous surveillance. If the troop requires relief on station from elements from another troop, the AMC coordinates with the relieving unit to determine the technique to be used. ACTMs relieve each other by aircraft, by team, or by troop. In each case the AMC for the screening troop links up with the incoming air mission commander and communicates the current friendly positions, enemy situation, and plan for relief. When the squadron AMPS is used to maintain a situational awareness net, the relieving troop should arrive with updated graphics requiring less time to conduct handover.

Initial Contact

3-114. When contact is made the ACTM responds by immediately reporting and maintaining contact. Spot reports from the ACTM update the squadron commander on the tactical situation. This gives the main body commander time to maneuver the ground units to engage the enemy. If directed, the ACTM may use indirect FS or organic fires to destroy or repel the enemy's reconnaissance elements.

Cover and Concealment

3-115. ACTMs make maximum use of cover and concealment and employ supporting fires to harass and impede enemy elements. Each screen is situated to maximize the ACTMs ability to maintain observation of the battlefield. Team leaders work together to ensure that FOVs overlap to prevent 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.

MOVING SCREEN

3-116. A moving screen is conducted when the main body is moving either in the attack or in retrograde. The squadron commander determines the technique of screening a moving force based on METT-T, the maneuver force commander's intent, and the squadron's orientation. The maneuver force 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 HHQ graphics (operations overlay and control measures). The two types of moving screens are flank and rear.

Flank Screen

3-117. The moving flank screen is the most difficult screening mission. Elements screening on the flank of a moving force move on a route parallel to the axis of the main body movement. The squadron commander defines the area to be initially screened and subsequent screen lines. He designates the last line as the squadron rear boundary. Squadron elements occupy a series of OPs on the screen line parallel to the route of advance. A ground reconnaissance troop is well suited for this mission. The forward element maintains contact with the forward element of the lead elements on the near flank of the main body. The main body and the screening unit must maintain contact at all times. When operating with ground troops in a moving flank screen mission, ACTMs are well suited to maintain contact with the main body and to perform reconnaissance forward of the ground units. When maintaining contact with the main body, the ACTM must be aware of the distance of the ground troops from the main body to prevent the over extension of the screen.

3-118. The most forward OP is positioned abeam of the rear of the leading battalion and/or TF and the subsequent OPs are arrayed along the length of the main body. 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), and continuous (similar to traveling). The most secure technique is one in which aircrews move from the trail OP to the most forward OP and works best when the main body is moving slowly. The successive bounds method is shown in Figure 3-12. 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 alternate bounds method is shown in Figure 3-13. The screening force may move continuously, using a technique similar to a hasty zone reconnaissance in-depth along the main body's flank. This method is the least secure and least preferred. The continuous method is shown in Figure 3-14. When operating with ground troops in a moving flank screen mission, ACTs are well suited to maintain contact with the main body and to perform reconnaissance forward of the ground units.

3-119. An ACT screening to the flank of a moving unit plans a line of OPs and prepares to occupy each, in turn, as the main body advances. If possible, the ACT reconnoiters out to the maximum range of supporting fires. Except for these procedures, the mission is planned and conducted the same as a stationary screen.

Rear Screen

3-120. Screening the rear of a moving force is essentially the same as a stationary force. As the protected force moves, the squadron 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. ACTMs may assume the screen during ground troop movement. 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 squadron executes the screen mission the same as a stationary screen.

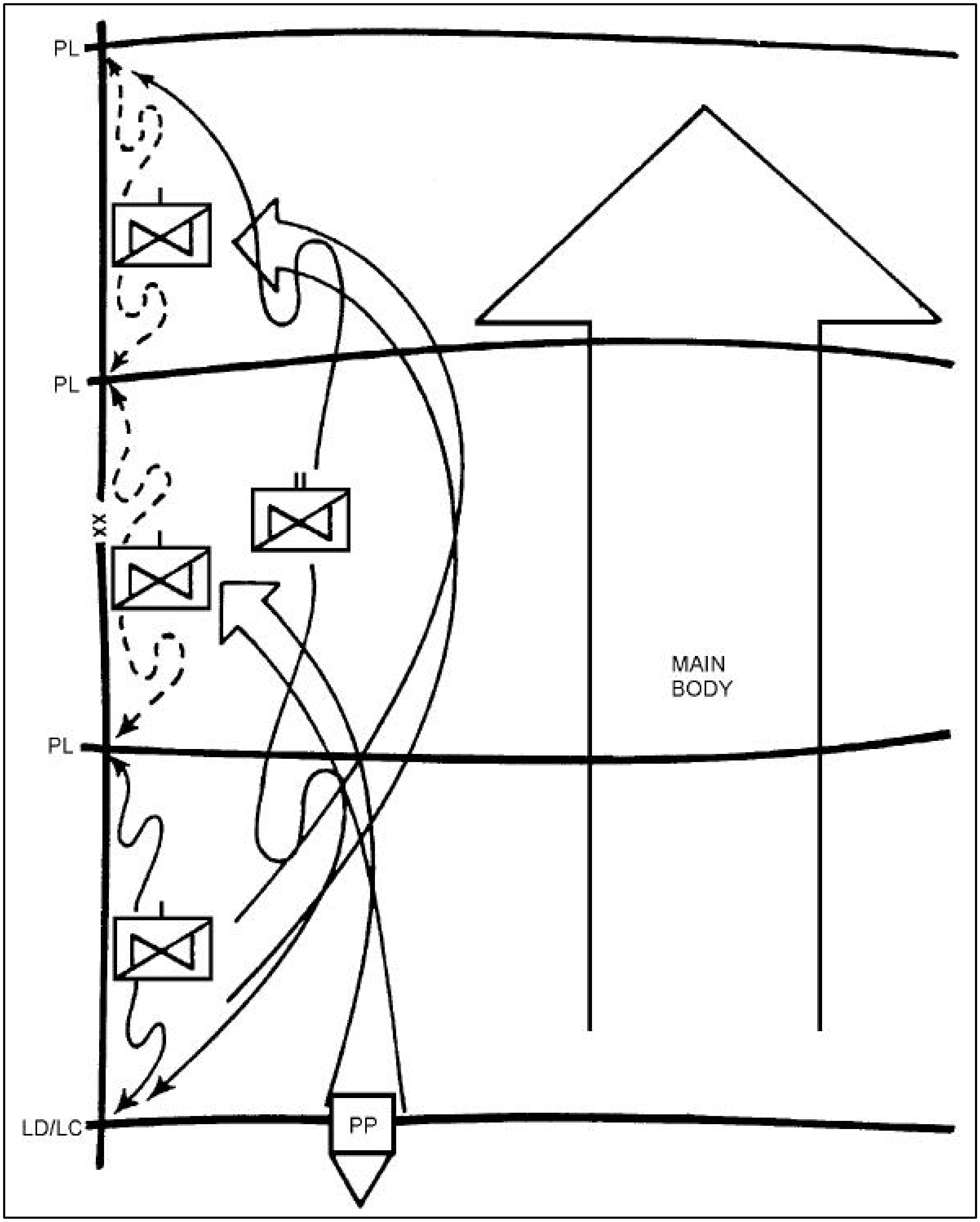
PL
PL
XX
PL
LD/LC
PP
MAIN
BODY

Figure 3-12. Bounding Overwatch or Successive Bounds Method of Maneuver

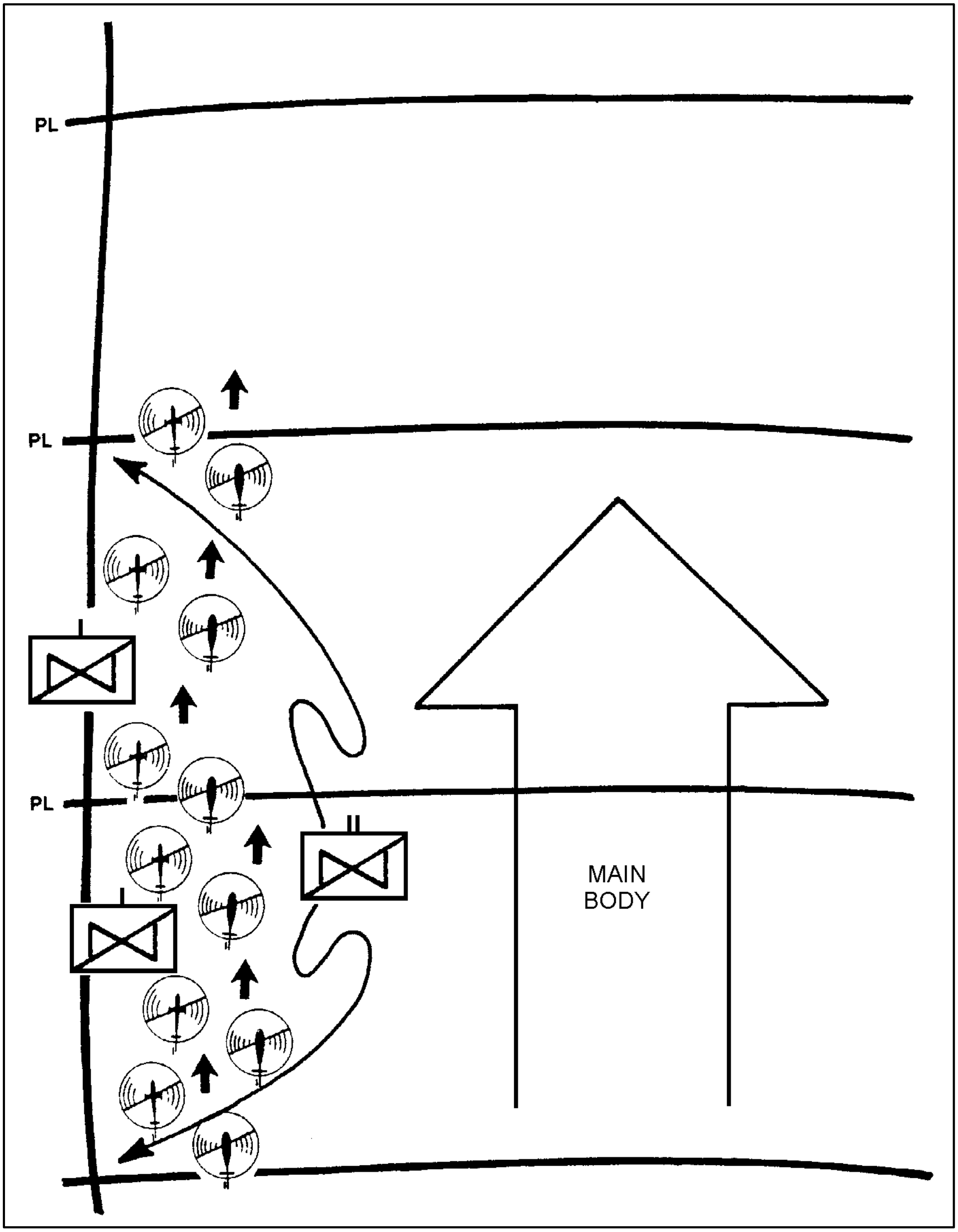

Figure 3-13. Traveling Overwatch or Alternate Bounds Method of Maneuver

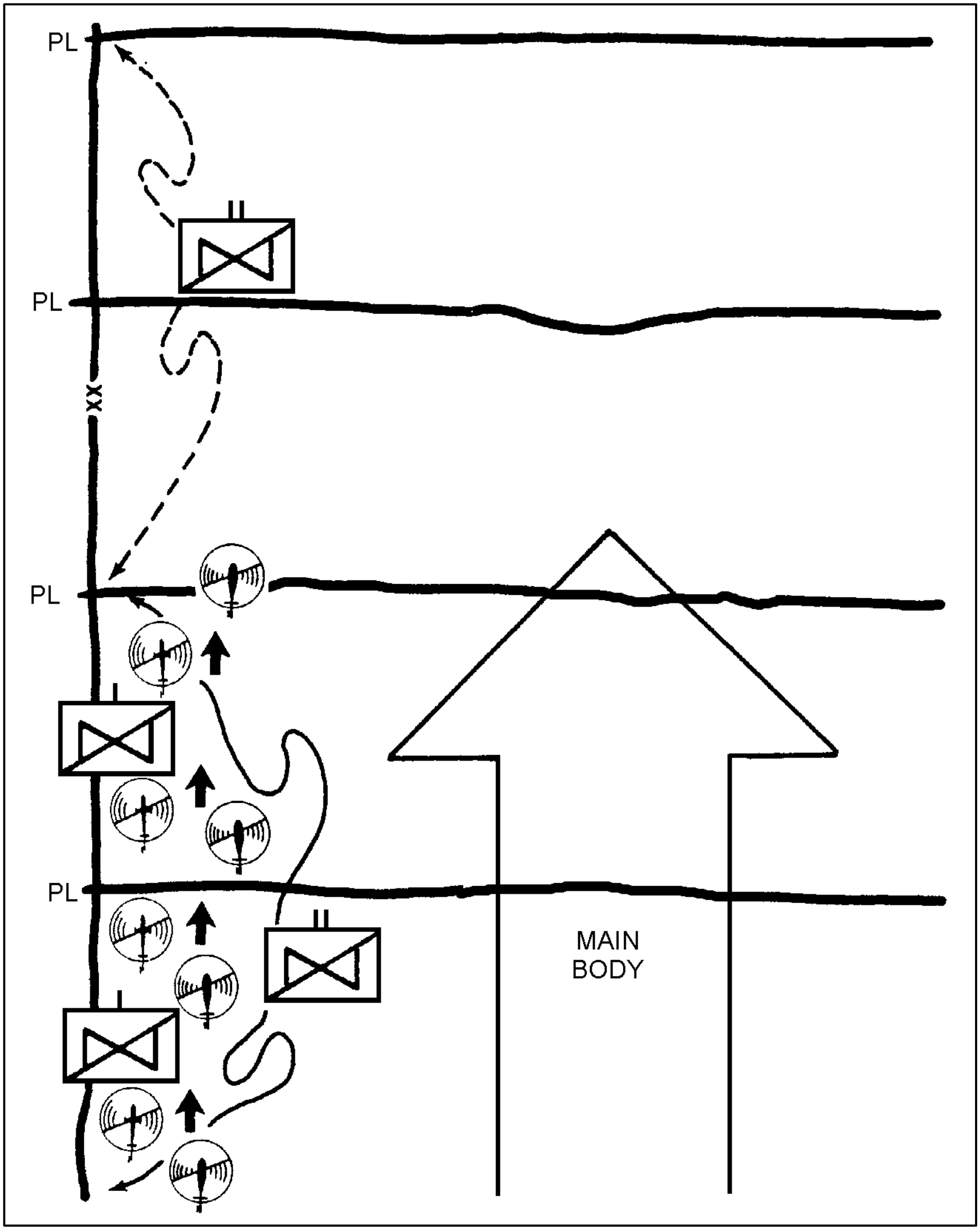

Figure 3-14. Traveling or Continuous Method of Maneuver

REAR AREA OPERATIONS SCREEN

3-121. During rear area incursions conducted by enemy forces, squadron elements may conduct a screen. The purpose of this operation is to maintain contact with and contain the enemy while friendly units maneuver to engage and destroy the rear threat. In this role, squadron forces may guide friendly quick-reaction forces and/or assist in the attack and destruction of the enemy force. Figure 3-15 shows the squadron conducting a screen during a rear area operation.

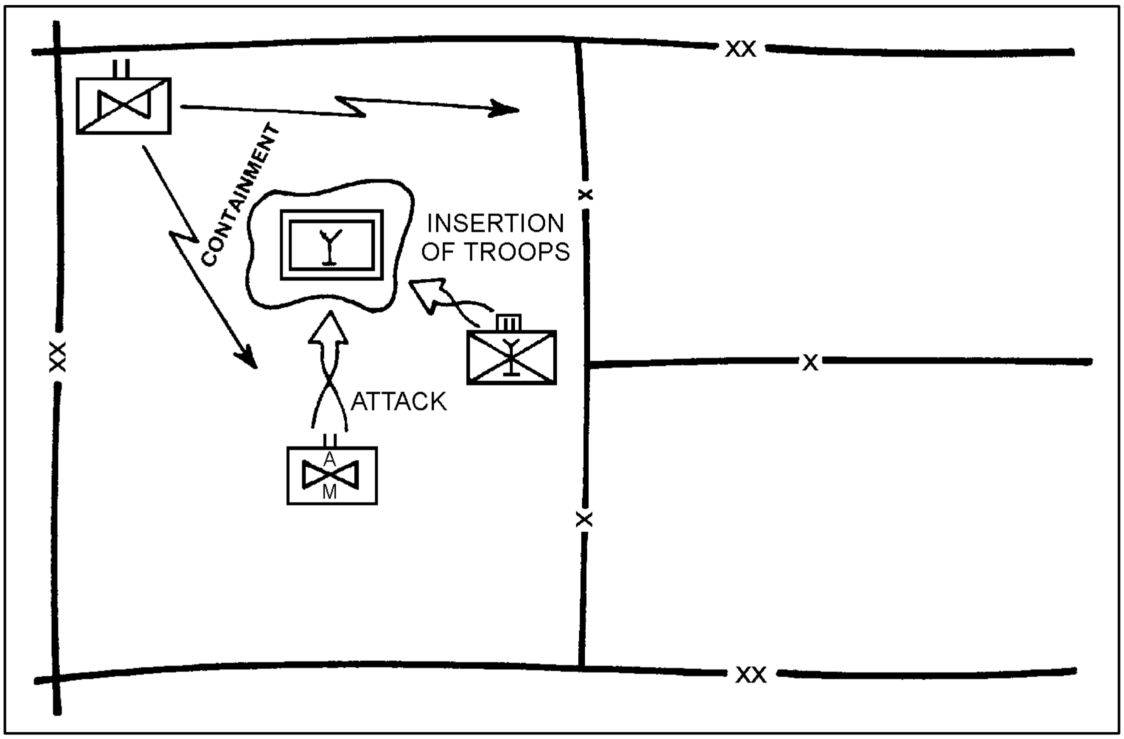

Figure 3-15. Squadron Conducting Screen During Rear Area Operation

SCREENING AGAINST ENEMY AIRCRAFT

3-122. The ACT may operate as a screening force with the mission to alert the squadron and engage approaching enemy aircraft. It is positioned on the flanks and forward of other aviation and ground units conducting operations. The ACT establishes a screen along probable air avenues of approach. It maintains surveillance of these air avenues similar to the way it maintains surveillance of ground avenues of approach. Reports of incoming aircraft would alert all assets in the area to take appropriate action. To effectively maintain an aerial screen requires the air cavalry unit to be linked with the AD warning system to maintain situational awareness of incoming enemy aircraft.

3-123. To be successful in a screen against the enemy, the ACT should fight as a unit, using maneuver and making the most of available weapons. The troop should also observe the principles of air combat operations. These principles include—

- Avoiding detection.
- Seeing the enemy first.
- Recognizing the enemy.
- Fighting unpredictably.

GUARD OPERATIONS

PURPOSE

3-124. A guard operation protects the main body from enemy ground observation, direct fire, and surprise attack. A guard force reconnoiters, screens, attacks, defends, and delays to destroy enemy reconnaissance elements and to disrupt the deployment of enemy first echelon forces. It accomplishes all the tasks of a screening force. A guard operation is normally conducted within the range of friendly artillery. The squadron may serve as the guard force headquarters, or it may operate under another maneuver headquarters. The guard mission is not normally assigned to an air squadron unless it is augmented from the regiment, division, or corps with ground assets. The intent of the main body commander in assigning the mission determines the nature and extent of attachments required. ACTs within the squadron perform zone reconnaissance, screen, or hasty attack missions. Ground troops within the squadron perform the same missions but also conduct movement to contact, defend, and delay missions. The guard mission requires the squadron to fight the enemy. A guard mission may be conducted to the front, rear, or flanks of the main body.

MISSIONS

Stationary Guard

3-125. A stationary guard is performed when the main body is not moving. It may be conducted to the front, rear, or flanks of the main body but is normally conducted to the front. As part of a stationary guard, the squadron deploys forward of a designated PL, usually within friendly artillery range, and conducts reconnaissance and screening operations. The main guard force does not displace behind the designated PL without the permission of the main body commander. A PL designating the rear of the squadron's area is farther from the main body than the effective range of enemy direct fire weapons (roughly 4,000 meters). The squadron conducts a zone reconnaissance from the rear to the BPs or OPs, reconnoiters the BPs or OPs, and establishes a screen line. It provides reaction time for the main guard force and, consequently, the main body. The squadron determines the enemy's disposition, destroys enemy reconnaissance elements, and assists the main guard unit in forcing the enemy to deploy. It also disrupts the enemy's forced deployment and guides main body reaction forces for the counterattack. Figure 3-16 shows a squadron conducting a stationary flank guard.

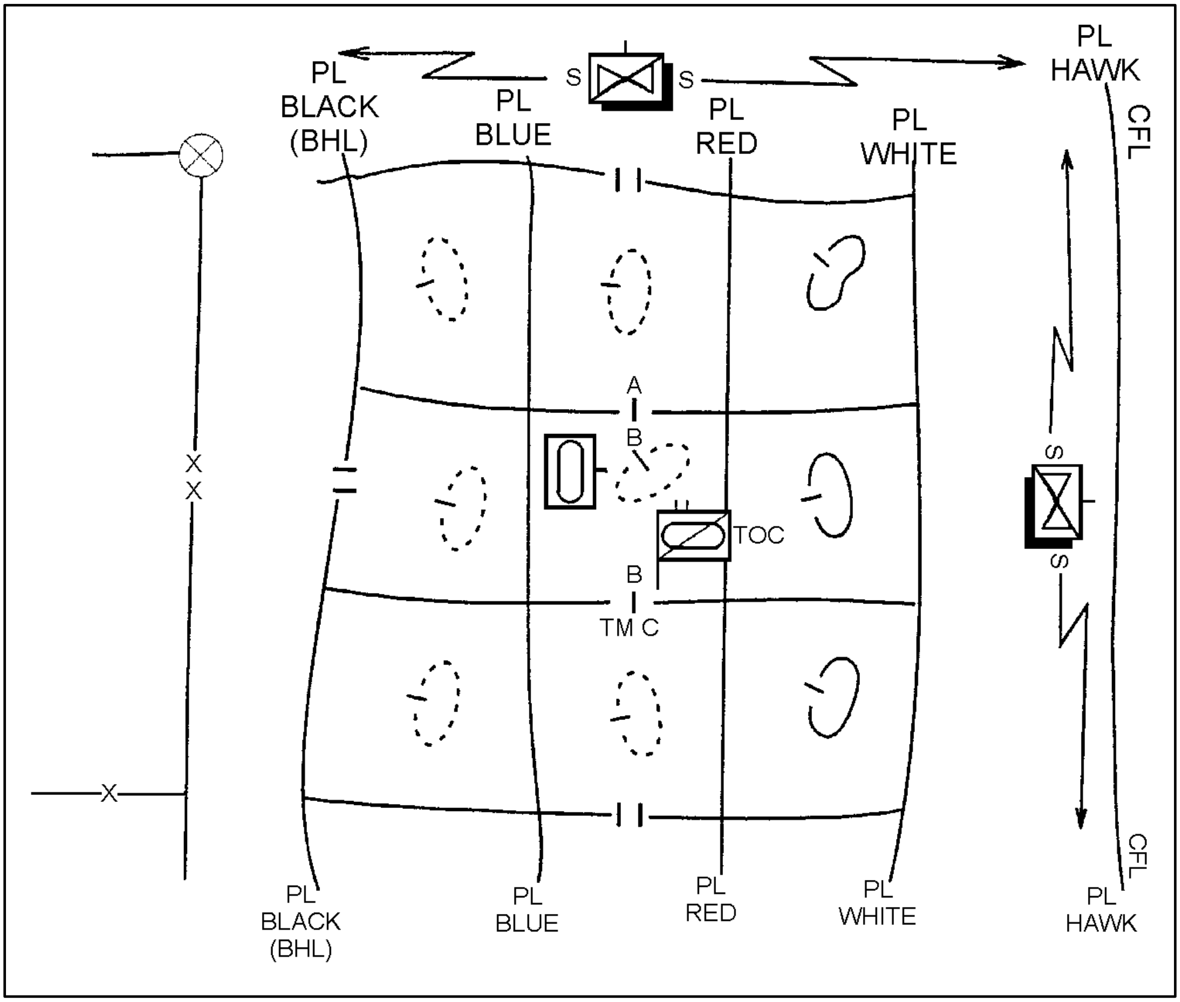

Figure 3-16. Squadron Conducting a Stationary Flank Guard

3-126. **Advanced Guard.** An advance guard force is offensive in nature. It finds and defeats enemy units along the axis or route of advance and prevents surprise and premature deployment of the main body. The squadron, augmented by brigade, regiment, or division, is given the overall advance guard mission. As a member of an advance guard, the air cavalry deploys forward in a zone or a route reconnaissance.

3-127. **Flank Guard.** As a flank guard, the squadron performs the same tasks as it does for a stationary force. However, 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. The guard force orients on enemy battalion-sized avenues of approach. Flank guard activities are primarily reconnaissance oriented. Air cavalry can be integrated as part of the guard force by screening between and in front of BPs as they are established. Air cavalry 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 cavalry flank guard force to concentrate on its BP tasks.

3-128. **Rear Guard.** The squadron performs the same tasks for a moving force as it does for a stationary force. During the advance of the main body, the rear guard detects and defeats enemy units that threaten the rear of the protected force. It 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 squadron's primary role is to screen the guard force as it delays, while the main body advances. Air cavalry screens forward or between BPs and may reconnoiter the area between the rear guard and main body.

Moving Guard

3-129. Moving guard operations may be conducted to the front, flank, and rear of the main body.

3-130. **Advance Guard.** An advance guard for a moving force develops the situation to the front along specific routes or axes to prevent surprise or premature deployment of the main body. It plans as in a zone or route reconnaissance but will usually have a more lenient engagement criteria. An advance guard must have artillery coverage. The main body is normally in a movement to contact. The advance guard develops the enemy situation by fighting to gain intelligence. Air cavalry is expected to plan its part of the mission the same way it would a zone reconnaissance. Primary emphasis is on early development of the enemy situation in the area of the main body’s route or axis of advance.

3-131. **Flank Guard**. As a flank guard, the squadron performs the same tasks for a moving force as it does for a stationary force. However, the flank guard for a moving force advances systematically to a series of BPs. It moves along a designated route parallel to the main body's axis of advance and clears the area between its route of advance and the main body. Flank guard activities are primarily reconnaissance-oriented. During a flank guard, air cavalry can be used to screen between the guard force and the main body. It can also be used to screen forward of the guard force during the movement to BPs. In both situations air cavalry uses the techniques for a movement to contact forward of a moving force (a zone reconnaissance moving to successive screen lines). Figure 3-17 shows the squadron with augmentation conducting a flank guard for a moving force.

3-132. **Rear guard**. The squadron performs the same tasks for a moving force as it does for a stationary force. However, it must periodically move rearward to stay within the range of the main body’s artillery.

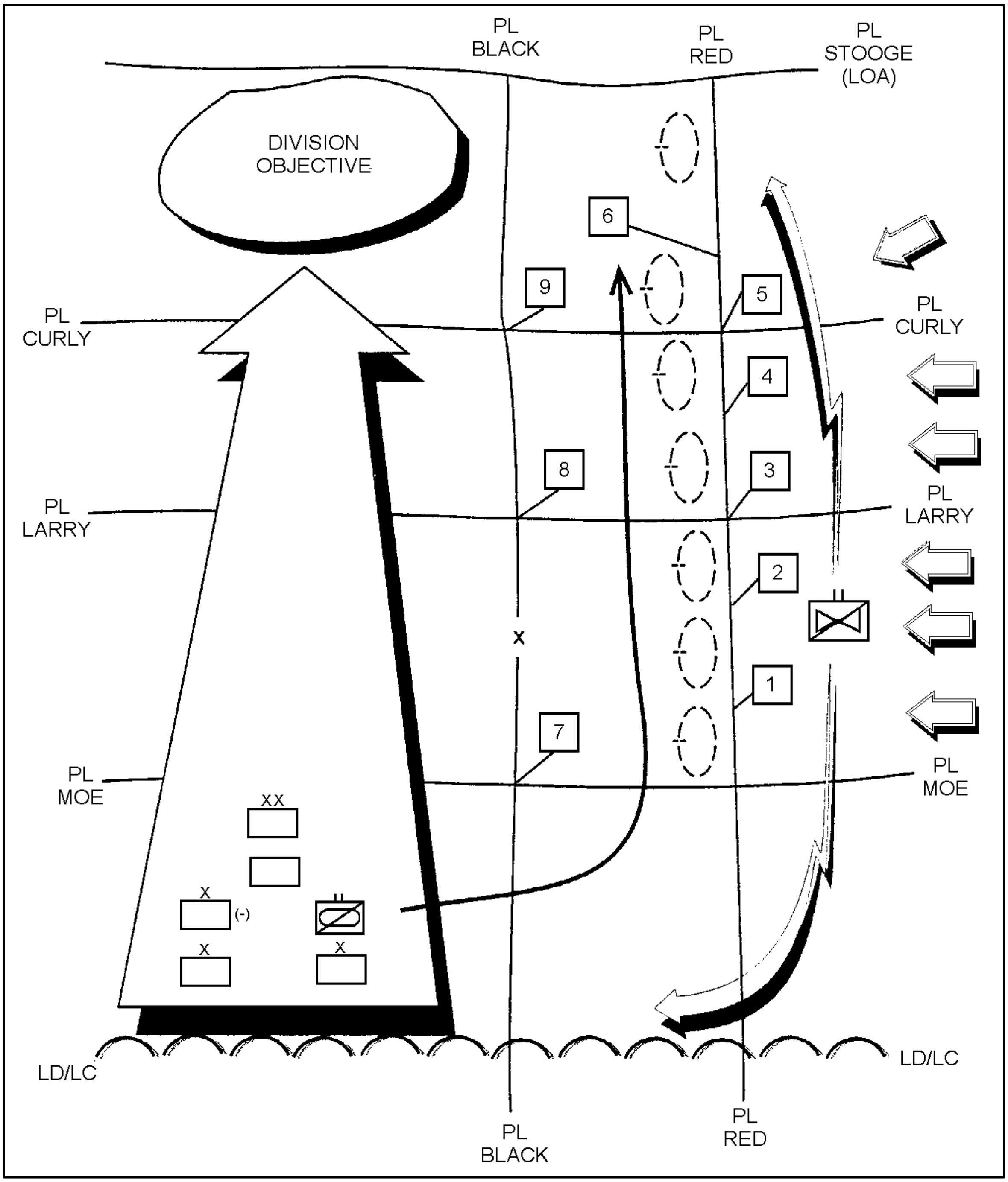
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Figure 3-17. Squadron (Augmented) Conducting a Flank Guard for a Moving Force

AIR CAVALRY SQUADRON AND AIR CAVALRY TROOP CRITICAL TASKS

3-133. The following tasks are critical tasks performed by the ACS or ACT:

- Perform reconnaissance along the main body's axis of advance.
- Maintain continuous surveillance of enemy battalion-size avenues of approach.
- Maintain contact with the lead combat element of the main body.
- Reconnoiter the zone between the main body and the guard force BPs.
- Destroy or repel enemy reconnaissance and security forces.
- Defeat, repel, or fix enemy ground forces before they engage the main body with direct fire.

PLANNING CONSIDERATIONS

3-134. The commander assigning the guard mission must indicate the type and level of protection required. 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 units' 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 from designated FA units. 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. The guard force commander may direct movement to successive screen lines. Troops within the squadron will often have different missions. For example, one troop may screen a less vulnerable zone while the remaining troops screen an area with critical avenues of approach.

COVERING FORCE OPERATIONS

PURPOSE

3-135. The covering force accomplishes all 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. A covering force is tactically self contained and capable of operating independently from the main body. The covering force mission is normally assigned to the ACR.

REGIMENTAL AVIATION SQUADRON

3-136. The RAS is an integral part of the ACR's covering force operations. On the nonlinear battlefield, a successful covering force may continue attacks into vulnerable enemy flanks and rear areas in one sector while the battle is handed over in another sector. The ATKHT is well suited for raids into enemy rear areas to disrupt follow-on forces, facilitating the complete destruction of the enemy's first echelon. The covering force operation is conducted as a zone reconnaissance to fully develop the situation. The RAS is tailored to augment the ACR and accomplish this task. It may be required to destroy enemy reconnaissance and advance guard units and to force enemy first echelon elements to deploy. The covering force also locates and breaches the defenses of a deploying or deployed enemy force. The covering force may not bypass an enemy force without the permission of the covering force commander. Adequate close support for the covering force is one FA battalion per maneuver squadron or TF. Organic FA assets consist of one FA battery per armored cavalry squadron. The covering force develops situations earlier, fights larger enemy forces longer, and defeats more enemy forces than a guard force. The two basic types of covering forces are offensive and defensive.

OFFENSIVE COVER

3-137. An offensive cover force operates to the front and flanks, preventing surprise and establishing contact with the enemy's main body. They also protect the main body from detection or engagement by enemy security forces bent on stopping the momentum of the attack.

Offensive Covering Forces

3-138. Offensive covering forces perform the following functions:

- Deny the enemy information about the size, strength, composition, and objectives of the main body.
- Develop the enemy situation to determine enemy strengths and disposition.
- Destroy enemy reconnaissance and security forces.

Advance Covering Force

3-139. The RAS's role as part of an advance covering force is to conduct a zone reconnaissance or movement to contact in concert with the armored cavalry squadrons to develop and influence the situation. The RAS will augment the armored cavalry squadrons in the reconnaissance and may conduct a screen. The RAS, as an integral part of the covering force, assists in locating and penetrating the security and forward defensive zones of an enemy force deployed or deploying to defend. It also assists the covering force in destroying enemy reconnaissance and advance guard units and in forcing first echelon regiments of a moving enemy force to deploy. As the covering force headquarters, the ACR may be reinforced with such assets as AHs, air assault forces, FA, TACAIR support, engineers, AD, TFs, and CS units. An advance covering force conducts movement to contact boldly on a broad front. The distance it operates forward of the main body depends on the intentions and instructions of the main body commander. This distance also depends on the terrain, the enemy's location and strength, the main body's rate of march, and the ACR's advance.

3-140. While conducting covering force operations, the ACR normally retains a reserve. The reserve force may be attached infantry or tank assets and may include elements of the RAS. The reserve force may be centrally located, ready to deploy anywhere in the squadron zone, or located in the most dangerous part of the zone. It may be positioned to support the commander's tactical scheme of maneuver by executing a mission such as attacking a vulnerable flank identified earlier by an ACT. The reserve must be prepared to attack, counterattack, or occupy BPs. When the covering force can advance no farther, the reserve defends and assists in the main body units' passage of lines. Enemy flanks and gaps are actively sought and immediately reported and exploited. The RAS may guide main body units as they attack through and around the covering force. Figure 3-18 shows the RAS as part of an advance covering force.

3-141. Air cavalry normally reconnoiters forward of advancing ground squadrons and battalions. Upon enemy contact, the air cavalry reports the enemy location to the ground unit in that zone and maintains contact. Once contact is made, the situation is rapidly developed. Air and ground scouts call in supporting artillery fires, and the enemy force is fixed and destroyed by fire and movement. The covering force will not bypass enemy forces without the permission of the main body commander.

Flank Covering Force

3-142. The flank covering force normally covers only one flank of the main body. As part of a flank covering force operation, the RAS may conduct flank screening or guard operations (when augmented). Tasks differ in the scope of operations and the distance from the main body. The main body commander specifies how and when a covering force will assume a flank covering force mission.

DEFENSIVE COVER

3-143. A defensive covering force operates to the front, flank, or rear of the main body. As part of a defensive covering force, the RAS may conduct reconnaissance and screening operations and act as a rapid-reaction force for counterattacks and reinforcements.

Defensive Covering Force

3-144. A defensive covering force forces the enemy to deploy into attack formations. It identifies, disrupts, and destroys enemy follow-on forces. It deceives the enemy about the location of the FLOT or FEBA and forces it to deploy first and second echelon elements prematurely. It destroys AD elements of enemy first echelon forces. The defensive covering force determines the strength of the enemy and the location of its main attack. It destroys enemy reconnaissance, advance guard, and first echelon elements. It also reinforces the terrain with barriers and obstacles to slow the enemy's advance.

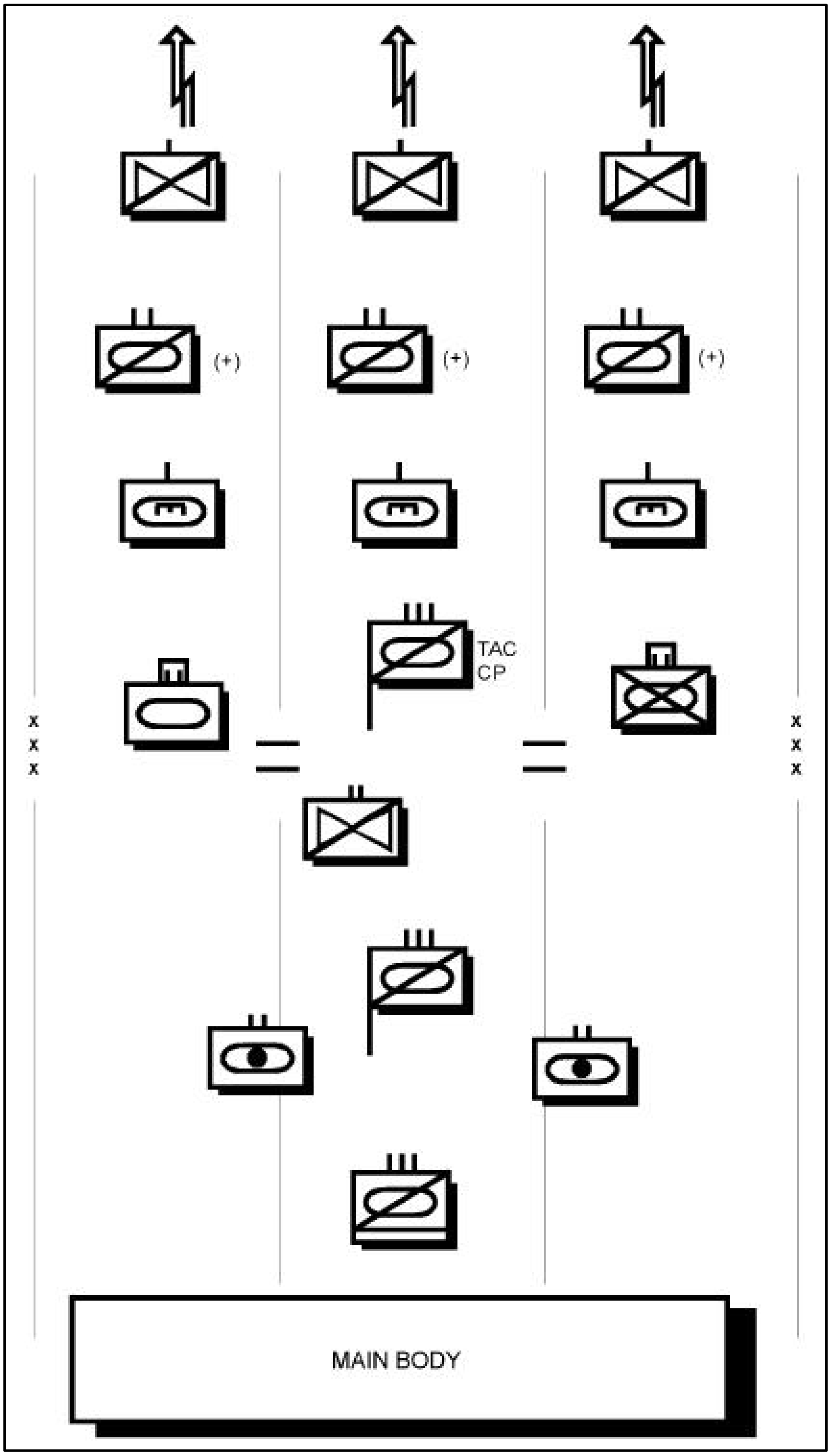


Figure 3-18. RAS as Part of an Advance Covering Force

Rear Covering Force

3-145. A rear covering force for a unit moving away from the enemy first deploys behind forward maneuver units of the main body. Then it defends or delays. This line may be behind the main body's forward brigades or divisions, depending on available space and whether the main body is already disengaged. Usually, the RAS deploys behind forward brigades or divisions. Troops establish passage points; assist with the withdrawal of the main body, if necessary, and prepare to reorient in any direction.

AIR ASSAULT SECURITY OPERATIONS

Air Assault Operations

3-146. Air assault operations are conducted to rapidly disperse and concentrate forces at the critical time and place to influence the tactical situation. These forces can be extracted quickly and employed in a different area. Air assault forces can quickly bypass forward enemy units and achieve surprise in a swift, violent, and bold operation to deceive, destroy, and disrupt. Air assault operations are directed primarily toward destroying enemy personnel and equipment and disrupting C^2. They also obtain information about enemy installations, units, and activities and force the enemy to concentrate in more than one area. Air cavalry assets are a key element in air assault operations. The aviation brigade and the AATF commanders must integrate air cavalry assets into the scheme of maneuver. ACTs are normally employed as part of a squadron mission to conduct reconnaissance, screening, or overwatch operations during all five phases of an air assault operation. These phases are staging, loading, air movement, landing, and ground tactical.

3-147. **Staging Phase.** Air cavalry assets may conduct screening operations to provide early warning and limited security while friendly troops form on or near the PZs. If enemy forces are close by or contact is likely, the cavalry may conduct special-purpose operations, such as feints or demonstrations away from the staging areas or PZs.

3-148. **Loading Phase**. ACT reconnoiters PZs before the arrival of assault helicopters. Once the PZ is cleared, air cavalry elements may screen a vulnerable flank or likely avenues of approach.

NOTE: Ground troops are also well suited to participate in providing security in the first two phases of an air assault operation.

3-149. **Air Movement Phase**. Air cavalry elements normally precede the AATF along the air route. They conduct a route reconnaissance followed by an area reconnaissance of the LZs and possibly the objective, depending on the factors of METT-T. Air cavalry assets penetrate the FEBA or FLOT at a time interval dictated by the mission and conduct or assist with an air passage of lines. Along the route, they locate enemy AD weapons and radars and suppress those systems or develop a bypass route for the AATF. Air cavalry assets also provide pertinent information about a route that poses a threat to flight, including all natural and man-made obstacles. Although AHs normally provide en route security or overwatch, air cavalry assets may perform this mission. This is accomplished by a moving flank or security or by occupying BPs along the route. Air cavalry assets provide early warning of the enemy's approach and can then engage the enemy with organic weapon systems or through adjusting indirect fires. They may also be assigned responsibility for the recovery of all downed aircrews throughout the operation.

3-150. **Landing Phase**. Air cavalry assets perform the same tasks during the landing phase as it does during the staging and loading phase. They may occupy BPs to overwatch the LZs as well as the objective.

3-151. **Ground Tactical Phase**. As the ground force moves toward and seizes its objective, air cavalry assets may again conduct reconnaissance and screening operations. They can rapidly reconnoiter the ground route to the objective as well as the objective itself from stand-off ranges. Air cavalry assets can also screen the main body's movement to the objective and provide close in FS on the objective from BPs. Air cavalry assets can also provide overwatching fires during the extraction.

Fire Support

3-152. Planned fires along the route of flight support aircraft flying past areas of known or suspected enemy positions. These fires should be intense and of short duration because of aircraft speed past specific locations. They are planned on areas and scheduled at times when flights are endangered. Fire plans may cover PZs, LZs, flight routes, and suspected enemy avenues of approach to LZs. FS plans include lethal SEAD, nonlethal SEAD, and smoke to protect formations from enemy detection. Plans should ensure the friendly FS elements do not use ordnance that obscures aircrew vision, especially during NVG missions. Whenever possible, operations should take advantage of the coordinated effects of all elements of the combined arms team. Coordinating and synchronizing actions with USAF support packages provides greatly enhanced effects and increases survivability.

3-153. Available FS is used to suppress or destroy enemy weapons. FS is provided by TACAIR, FA, mortars, and NGFS. Support may consist of smoke (rocket fired or projectile or canister delivered), chaff (air dropped), or other countermeasures for SEAD operations. On-call fires are planned along the flight route to ensure rapid adjustment on targets of opportunity. Requests for FS are made through the squadron FSO. TACAIR may be coordinated directly if the FAC is on station. The FS request used is frequently of an immediate nature.

AREA SECURITY

3-154. An area security force performs screen, guard, or cover to protect forces within a specified area. The area is delineated by the headquarters assigning the area security mission.

3-155. It is commonly employed around an airhead or lodgment following airborne, air assault, or other forced entry operations. It is also used extensively in stability operations and support operations and will become the norm for operations on the nonlinear, noncontiguous battlefield. Area security should be used to provide early warning to any isolated force that cannot tie its flanks into a friendly unit.

3-156. A screen is established, integrating OPs, ground surveillance radar, and patrols. If available, tanks and antiarmor weapons systems are placed on restrictive or highly restrictive terrain and high-speed avenues of approach. Likely enemy DZs or LZs are identified and kept under observation. Air cavalry assets are integrated into the R&S plan.

3-157. Route security is performed to provide early warning and reaction time to forces moving along, or dependent upon, a route or line-of-communication. ACTs within the regiment or squadron could conduct any of the following missions:

- Screen.
- Zone, area, and limited route reconnaissance.
- Hasty attack.

3-158. Convoy security is a variation of route security that is performed when conducting security for the entire route is not feasible. This may be because of the length of the route, strength of enemy forces, or the limitations of available security assets. The integration of air and ground forces during convoy security operations works best. Air cavalry may conduct limited route reconnaissance in conjunction with a zone reconnaissance forward of the scout platoons that are better suited for the escort element. Air cavalry may additionally conduct a flank and rear screen as the convoy moves along the route. Finally, AHs (RAS) or armed scouts make an excellent quick reaction force in the event of an ambush.

SECTION IV—OFFENSIVE OPERATIONS

MOVEMENT-TO-CONTACT

3-159. A movement-to-contact gains initial ground contact with the enemy or regains lost contact. Cavalry performs the movement to contact like a zone reconnaissance. Unlike a zone reconnaissance, the effort focuses on finding the enemy force, developing the situation early, and preventing the premature deployment of the main body following the cavalry. Terrain reconnaissance is conducted as necessary to support the intent of locating the enemy. As a result, movement-to-contact proceeds much faster than a zone reconnaissance.

3-160. The ACR, when conducting a movement-to-contact as an independent force, task organizes to provide a security force (forward to the main body and to the flanks and rear), an advance guard, and a main body. The ACR may assign the movement-to-contact mission to the RAS during the conduct of offensive operations, advance guard, advance covering force, or a regimental movement to contact. The RAS may assign movement-to-contact to its troops during the conduct of any of these missions.

3-161. The DCS, conducting a movement-to-contact as an independent force, organizes itself similarly with security forces, an advance guard, and a main body. The DCS facilitates speed and mobility by using air cavalry to reconnoiter forward of the ground troops or to screen along exposed flanks. The DCS frequently performs this mission when serving as the advance guard during a division movement-to-contact. The squadron assigns this mission to troops during a squadron advance guard or movement-to-contact.

3-162. The movement-to-contact terminates when the unit reaches the objective or limit of advance without enemy contact or upon contact with an enemy force. The squadron gains contact with the smallest element possible. This is normally ground scouts or ACTMs performing reconnaissance for their troop. Actions on contact occur rapidly at platoon and troop level to defeat the enemy force within its capability and prevent unnecessarily deploying other squadron assets. Should the enemy prove to be too strong, the cavalry establishes a hasty defense, delays, or conducts close reconnaissance as appropriate within the intent of the higher commander. Follow-on main body forces then deploy, conduct battle handover, and assume the fight.

3-163. Using direct and indirect fires and CAS, the ACTMs harass and impede enemy elements to preclude their influence on the main body. The ACT commander can direct ground elements to the vicinity of enemy units and can support those ground elements with fires. If ATKHTs (ACR only) or ATKHB are employed, the ACTMs maintain contact with the enemy and coordinate a target handover with the ATKHT or ATKHB. If the main body is directed to bypass the enemy after initial contact, air cavalry is ideal in the economy of force role. With its organic fire power, air cavalry can maintain surveillance and contain small forces until follow-on elements arrive to destroy them.

3-164. If the DCS is well forward of the division, a FARP may move with the squadron to reduce aircraft turnaround time. In the ACR, the RAS establishes its FARPs far enough forward to support deployed air cavalry assets.

SEARCH AND ATTACK

3-165. The search and attack technique is best used when the enemy is operating in small teams using “hit and run tactics,” over a large area in a generally decentralized manner. It is used to locate and destroy enemy forces, conduct area denial, and information collection. The major portions of the search and attack can be broken down into the find, fix, and finish elements.

3-166. The find portion obviously breaks down into a specified type of reconnaissance mission. The specified tasks for the reconnaissance will be dependent on the exact size and composition of the current enemy. The reconnaissance is specifically focused on the enemy force location and composition, it is not focused on the destruction of the enemy. Depending on the enemy force, the reconnaissance can be completed by any type of unit that is habitually trained in reconnaissance missions. Stealth of the reconnaissance force is of great importance. If the reconnaissance force is able to locate the enemy force without being detected, it allows the commander time to develop the situation properly with the fixing and the finishing elements.

3-167. The fix portion may be accomplished in a variety of methods. The most common task would be to block an enemy element from moving along his most likely avenue of departure from the area. This task can be accomplished by mounted or dismounted forces, aviation forces, or by mines and obstacles that are covered by fire. The key to the fix portion of the operation is to ensure your fixing unit is appropriate for the type of enemy force in question, and has the capability to react to the enemy in unanticipated locations.

3-168. The finishing portion may be accomplished by any maneuver force with the combat power to destroy the enemy force in question. The key to success for this portion of the mission is the ability to bring the finishing forces' combat power to bear on the enemy at the key time when he has been located by the finding force, and his egress has been halted by the fixing force.

3-169. The search and attack mission should not be assigned any lower than the squadron level. The squadron has the assets to C^2 the different aspects of this mission and also has the combat power to apply to accomplish the desired results. The squadron must tailor the subordinate troops' tasks to clearly define their role in the operation. The troops must clearly understand their role as that of reconnaissance to locate, or attack to destroy. The squadron may find itself in the position of conducting one of these subordinate roles in a regimental level search and attack mission.

3-170. The effective search and attack operation is conducted with a great deal of cross talk and coordination between the subordinate elements. Sufficient graphic control measures from the controlling headquarters are essential to the close coordination between the subordinates. The subordinate unit commanders must keep abreast of the current activities and the locations of the other elements to ensure they have their units in the proper location and mission posture to deal with enemy contact when it is made. The clear situational awareness is extremely important due to the fluid environment in which this mission will be conducted.

HASTY ATTACK

3-171. A hasty attack is an attack for which a unit has not made extensive preparations. It is conducted with the resources immediately available to maintain the momentum or to take advantage of the enemy situation. The objectives are to overwhelm the enemy quickly and seize the initiative. Speed is paramount. If momentum is lost, the hasty attack can fail. An attack with speed, audacity, and boldness can offset the lack of thorough preparation.

3-172. The hasty attack depends on timely and accurate information as well as speed. When contact is made, commanders must immediately evaluate their chances of success. Situational information must be passed to HHQ. Possible courses of action include enveloping or bypassing enemy forces or reinforcing the attack.

3-173. When the attack begins, the air cavalry commander employs direct and indirect fires to develop the situation. The air cavalry supplies battlefield information and situation updates on which the commander can base immediate decisions concerning the attack. It provides suppressive fires for a maneuvering ground element and security to the attacking force through early warning. If additional firepower is needed, the air cavalry facilitates the sequencing of the ATKHB into the battle.

3-174. When planned ATKHB assets arrive, the air cavalry returns to its reconnaissance and security missions. It continues to provide information about alternate attack routes and aerial or ground envelopment routes.

3-175. The air cavalry commander can orchestrate all the FS assets used in a hasty attack, as well as assist ATKHB assets. In the hasty attack, air cavalry primarily provides information to the commander and then orchestrates firepower and maneuver.

DELIBERATE ATTACK

3-176. A deliberate attack is usually necessary when the defender is well organized and cannot be turned or bypassed. A deliberate attack is planned and carefully coordinated with all concerned elements based on thorough reconnaissance, evaluation of all available intelligence and relative combat strength, analysis of all COAs, and any other factors affecting the situation. It has a scheme of maneuver and an integrated FS plan. In the initial phase of the attack, both sides employ all firepower, to include FA and armor. Due to the vulnerability to accurate ground fires, commanders must plan to use maximum standoff ranges, and hours of darkness, when engaging well established enemy defensive positions. Cavalry units seldom conduct deliberate attacks on their own. The security efforts of air cavalry are oriented towards protecting the attacking force from flank and rear area attacks in an economy of force role. This may be the air cavalry's most critical contribution. It allows the ground commander to mass all his forces in the deliberate attack. Surveillance of possible enemy LZs is included in the security role.

3-177. A commander's IPB will determine how the attack is planned and initiated. Because the primary attack route could be modified before the attack begins, situational development is essential. After the initial phase of the attack begins, air cavalry can identify weak points. As the attack continues, immediate reports from air cavalry enable the main body commander to direct his attack at the most vulnerable points. If a feint becomes more successful than the main attack, the air cavalry commander relays this information to the supported commander and can direct forces to the newly defined main attack area.

3-178. If the initial phase of the attack succeeds and friendly forces breach the enemy defenses, the air cavalry moves through the penetration and outward on the flanks where the enemy is weak and fragmented. The air cavalry also locates counterattacking enemy forces, C^2 centers, logistics centers, and other priority targets. After these have been located, the air cavalry employs indirect fires to destroy them. When ATKHB assets are available, the air cavalry commander identifies and hands over the targets to the attack elements. The air cavalry then resumes its reconnaissance of other targets in the area.

3-179. An attack at night or during limited visibility provides several advantages to the attacker. Surprise and deception are enhanced and opportunities that are impractical during daylight conditions may succeed. Concentration and movement of forces are more difficult to detect and remain concealed longer. The availability of air cavalry assets is carefully weighed during consideration of these attacks. Air cavalry assets are more survivable at night due to the reduced effectiveness of enemy direct fire weapon systems. Planning for night attacks begins as early as possible to allow for daytime preparation and to incorporate sleep plans. The plan is kept simple to facilitate execution. Control measures at night are usually more restrictive than those used during daylight conditions. Route reconnaissance and marking of the direction of attack facilitate rapid execution.

ATTACK POSITION

3-180. The attack position is the last covered and concealed position an attacking force may occupy before crossing the LD. It may also be a PZ, HA, or an AA.

RAID

3-181. A raid is an attack into enemy-held territory for a specific purpose other than to gain or hold terrain. It usually ends with a planned withdrawal when the assigned mission has been completed. A cavalry squadron or troop may be assigned the raid mission or it may provide reconnaissance and security for the raiding force. Air cavalry forces seldom accompany a ground force as it moves to the objective. These units usually link up at the objective. Air cavalry missions during a raid include—

- Reconnoitering air routes for raiding aircraft.
- Screening air assault elements en route to objectives.
- Provides area security while air assault forces board aircraft for the withdrawal.
- Controlling preparatory fires on objectives before air assault forces arrive.
- Screening raid forces while at the objective by identifying enemy reinforcement attempts.
- Providing local security for AH units as they engage targets in the objective area.

EXPLOITATION AND PURSUIT OPERATIONS

3-182. Exploitation and pursuit operations are conducted to destroy the enemy's forces or their ability to resist. Exploitation and pursuit operations are characterized by speed of execution, combined arms operations, and decentralized C^2. The ACR is well organized and equipped to conduct exploitation and pursuit. DCSs may participate in exploitation and pursuit operations as part of a larger force. As such, the DCS will normally perform reconnaissance or security missions in support of the main exploiting or pursuing force.

EXPLOITATION FORCE

3-183. By maintaining constant pressure on and contact with the fleeing enemy, air cavalry allows the ground exploitation force to advance rapidly. It provides continual reports about escaping enemy forces, enemy reinforcements, and heavily and lightly defended areas. Air cavalry moves ahead of the lead elements in the exploitation to gather information that the ground commander uses to direct his assets. Key intelligence includes information about artillery positions, abandoned vehicles, supply installations, CPs, and signal installations. After identifying these locations, air cavalry suppresses and isolates them while waiting for stronger forces to arrive and destroy them. Air cavalry units should have indirect artillery assets available. The air cavalry commander coordinates with ATKHB leaders in moving their assets into battle. After ground forces penetrate the enemy's defenses, many tasks in an exploitation are similar to those in a movement-to-contact. The air cavalry commander's main concern during an exploitation is that his elements may outrun their support. Timely relocation of FARPs is critical to sustained operations. FARPs may be best located with the exploiting ground forces.

PURSUIT FORCE

3-184. The pursuit force is organized into two elements—direct pressure force and encircling force. The direct pressure force conducts a series of hasty attacks to maintain attack momentum and to inflict maximum casualties. Armor heavy forces are ideally suited for this role. The encircling force moves swiftly to cut off the retreating enemy. It advances parallel to the enemy's line of retreat to reach key bridges, road intersections, and mountain passes ahead of the enemy. Air cavalry may be organized as part of the direct pressure force. In this role, it secures the force from flank attack by reinforcements. When air cavalry precedes the direct pressure force, it provides intelligence information to support hasty attacks. Air cavalry also maintains contact with isolated enemy strongpoints until ground elements can attack and destroy them.

3-185. The air cavalry is usually part of the encircling force. In this role, it maintains contact with the fleeing forces to identify locations that can be used to block the enemy's retreat. If air assault forces are used to establish these blocking positions, air cavalry reconnoiters the air routes, LZs, and strongpoints. It may also provide en route security for the air assault force. When armor forces attempt to encircle the fleeing force, air cavalry conducts hasty route reconnaissance to expedite the movement of ground forces to blocking positions. Throughout the operation, air cavalry employs direct and indirect fires to further disrupt and destroy the enemy. Air cavalry assets provide continual reports about any changes in the enemy's direction of movement, location, or disposition. It also assists in directing AH units into BPs to complete the enemy's destruction.

PREASSAULT FIRES

3-186. PAF is a special purpose raid conducted to set favorable conditions for airborne or air assault operations. Preassault fires normally are initiated with an area reconnaissance of the DZ or LZ and the initial assault objectives. This confirms or denies enemy presence and detects any threat forces that could endanger the friendly assaulting force prior to their assembly. Following the reconnaissance, ACTMs occupy SBF positions to overwatch the DZ and/or LZ and conduct hasty attacks against observed enemy forces. Engagement priority is normally ADA suppression to protect the assault force aircraft, followed by the destruction of threat mortars and/or artillery that could disrupt the assembly of the assault troops.

3-187. Timing of the PAF mission is critical. ACTMs must be given adequate time in the area prior to the assault so that they can detect and engage the enemy. If the ACTMs are employed too early, the element of surprise may be lost. Fuel must either be airdropped with the assault force or air landed, so fuel is normally the major limiting factor in the amount of time the aircraft can devote to PAF. The RAS commander should employ the AH-64 ATKHTs in the PAF role due to their extended range capability and heavier weapons load. If the DCS is assigned this mission, the KWs must be forward deployed within appropriate range of the objective. Fat Hawk UH-60 (Black Hawks with ERFS and fuel pumps) can be used to extend the operational range of the KW.

3-188. Communications during PAF from the ACTM to the force commander must be planned with redundant capabilities. ACTMs should also be able to communicate with any special operation forces, long-range surveillance teams, overwatching the DZ and/or LZ. During airborne operations, ACTMs will provide a critical countermortar role following the assault until counterfire radars (Q36, Q37) can be air landed. Enemy mortars are located through crater analysis and a thorough IPB. IPB identifies probable mortar positions and tasks ACTMs to orient on these areas during a reconnaissance mission.

BATTLE HANDOVER

3-189. A BHO is a coordinated operation between two units that transfers responsibility for fighting an enemy force from one unit to another in the close-in battle. It is designed to maintain continuity of the combined arms fight and protect the combat potential of both forces involved. BHO is usually associated with a passage of lines. BHO may occur during both offensive and defensive operations. A clear SOP allows units to quickly establish the necessary coordination to preclude a loss of momentum in the attack. The control measures used are simple and standardized. In the conduct of air and ground operations, the air and ground troop commanders often pass an enemy force in contact to another. BHO governs this process in terms of close coordination, FS, and mutual understanding of responsibilities. No method of communication is better than face-to-face contact. Whenever the situation permits, face-to-face, air-to-ground, and air-to-air linkups between individuals should be made. There are innumerable benefits to landing next to your relieving counterpart, getting out and showing that person, on a map, the battlefield situation that you gathered.

PASSAGE OF LINES

3-190. A passage of lines is an operation in which one force moves either forward or rearward through another force to gain or break contact with the enemy. The squadron frequently conducts a passage of lines as a part of reconnaissance, screening, and air assault security operations. The passing force is particularly vulnerable during a passage of lines as personnel may be overly concentrated, stationary fires may be temporarily masked, and the passing unit may not be properly dispersed to react to enemy actions. Reconnaissance and coordination are critical to ensure the passage is conducted quickly and smoothly. If a unit must pass laterally through another unit, movement is conducted as a forward passage. A passage of lines is often necessary because the factors of METT-T do not permit one unit the freedom of bypassing another friendly unit. Hence, the units must pass through each other. A passage of lines may be conducted to—

- Envelop an enemy force.
- Pursue a fleeing enemy.
- Continue an attack or counterattack.
- Pass forward or withdraw reconnaissance units.
- Pass forward or withdraw a covering force or MBA forces.

3-191. Air cavalry frequently conducts a passage of lines as a part of reconnaissance, screening, and air assault security operations. It may assist the passage of lines of the GCTs.

3-192. When air cavalry is involved in a passage of lines, timely and specific coordination before the operation is essential. The most desirable method is a face-to-face exchange of information. As a minimum, the exchange of information should include—

- Period of time required for the passage.
- Locations of passage points along the FEBA or FLOT.
- Disposition and scheme of maneuver of friendly units.
- Enemy situation in sector, to include air activity.
- Types and numbers of aircraft to make passage, if applicable.
- Methods of communication, to include frequencies and nets, visual and backup communications, and recognition signals.
- Control of friendly supporting fires, to include restrictive FS coordination measures and AD weapon control status.
- Friendly unit locations.
- ADA weapon and/or control status.
- Alternate passage lanes.
- Contingency plan if stationary and/or passing units are attacked during passage.

3-193. Forward passages of lines are normally executed during offensive operations to continue an attack; to conduct a penetration, an envelopment, or a pursuit; or to pass another unit. In the defense, a forward passage of lines may be used to counterattack one unit through another.

3-194. During an air assault operation, coordination may be accomplished at the air mission briefing. After coordination, the commander begins troop leading procedures, issues orders, and allows time for subordinate planning and preparation. C^2 elements participating in the passage may also be collocated for more effective coordination. In an air assault, collocation will not be possible. During a passage of lines, air cavalry may conduct a reconnaissance of the passage points, initiate and maintain liaison, and conduct screening operations. During reconnaissance operations for preparation for a forward passage of lines, air cavalry covers routes to, through, and beyond the area of passage. It also includes existing unit locations and proposed positions. Care must be taken not to compromise unit locations and intentions during passage.

3-195. When air cavalry returns from a reconnaissance or security mission, it performs a rearward passage of lines in the same manner as other maneuver units. The squadron must ensure contact is maintained with the enemy during a rearward passage of lines. Contact points should be located along the designated passage PL. This allows the stationary unit to provide overwatching fires. Contact points should be at easily identifiable terrain features such as road junctions or towns.

3-196. Either at the contact point or at the stationary unit's TOC, stationary unit personnel brief passing unit personnel on all pertinent information. The squadron's plan of how the passage will occur is exchanged at this contact if it has not already been delivered or transmitted. The squadron normally passes CSS assets first and CS, TOC, and combat forces last. Squadron elements are responsible for overwatch of the designated PL. This is essential so that elements do not get cut off.

3-197. The squadron commander or S3 prepares a tentative plan for the passage of lines and analyzes METT-T and the higher commander's intent. The squadron commander or S3 places additional emphasis on the factors listed below.

Organization

3-198. When possible, unit integrity is maintained to provide better C^2.

Order of Movement

3-199. An order of movement is prescribed based on the number of passage points and degree of security required. The enemy situation and the terrain also influence the order of movement and the priorities on who moves when.

Security

3-200. Squadron elements assist in a passage of lines by screening between the enemy and the passing force to provide early warning and limited protection. Noise, light, and radio discipline must be enforced. The air reconnaissance squadron may occupy a screen line or serve as the controlling element for a divisional or brigade passage of lines.

Command and Control

3-201. The techniques of C^2 depend on the number of passage points. Ideally, multiple passage points are established to facilitate decentralized control. Commanders of units involved in the passage of lines must decide how they can best influence the action and then position themselves accordingly.

BATTLE HANDOVER LINE

3-202. BHL is the location where the stationary force assumes control of the battle. It must enable the stationary force to engage the enemy with direct fire systems. The BHL should be portrayed on the overlay as a PL. The BHL is also the place where the moving force assumes control of the battle in a forward passage of lines.

FEINT

3-203. A feint is a limited attack to divert an enemy's attack or to deceive the enemy as to the friendly force's intentions. Doctrinally, brigade and smaller units conduct feints before or during a main attack to deceive the enemy. To succeed, the feint must appear as a serious attack. Additional feints are conducted to cause the enemy to reveal its defensive posture and disrupt its decision making cycle. These feints reduce the resistance that the attacking force will encounter. The squadron normally conducts reconnaissance and screening operations during a feint. However, the situation may require the squadron to engage targets more aggressively than normal with or without augmentation. The squadron may have to develop the situation more thoroughly in the objective area to compensate for the lack of reinforcements. The squadron screens the flanks and rear of the force conducting the feint, or it moves to join operations in the main attack area. The RAS can assist in feint operations by having the AHT execute false insertions. However, the force commander must assess the risks and determine whether reconnaissance assets will be employed in this role.

DEMONSTRATION

3-204. A demonstration serves the same purpose as a feint, but it differs in that it does not involve contact with the enemy. The objective of a demonstration is to deceive and confuse the enemy as to the real intentions of the attacking force. For a demonstration to succeed, the enemy must observe the demonstrating force's operation and be deceived by it but not actively engage the force. The nature of a demonstration allows for the use of decoys, simulations, and tactically inoperable equipment to portray additional strength. Squadron's will normally employ heavy volumes of indirect fires and an increase in air traffic to perform a demonstration. It may also be used to provide security for a demonstrating force or to conduct reconnaissance to assess the enemy reaction. Air cavalry's principal role in a demonstration may be to be seen and heard conducting operations in a given area. The AHT of a RAS, in conjunction with an ACT, may simulate an air assault operation. A DCS will seldom conduct a demonstration as a whole unit. The force commander should assess the risks for this operation as he would for a feint.

SECTION V—DEFENSIVE OPERATIONS

DEEP OPERATIONS

3-205. Deep operations to destroy the enemy are feasible missions for the AH-64 but are strictly limited when such a mission is assigned to the OH-58D KW. See FM 1-112 for information on AH deep operations. The following discussion of METT-T will show that, though capable of performing limited deep operations, the OH-58D KW has limitations that planners must be aware of when selecting feasible targets.

MISSION

3-206. The commander of a corps, division, or RAS may consider the use of OH-58D KWs to conduct limited deep operations against enemy forces.

ENEMY

3-207. Consideration of the enemy unit's size, strength, location, disposition, activity, equipment, and probable COA is made by planners within the decide, detect, deliver, and assess process. Planners must consider potential and criticality factors when targeting. They must consider the enemy force's and/or unit's current or future contribution to the close battle. Attacking this force and/or unit will impede the enemy's ability to concentrate forces, control operations, or support his operations at critical times.

TERRAIN

3-208. Planners must consider the enemy force's and/or unit's present or future location and timing in that location to determine its vulnerability to AHs during targeting.

NOTE: The conditions that maximize effectiveness and minimize risk for deep operations are terrain that supports engagements from standoff ranges and darkness.

TROOPS

3-209. Collective capabilities and limitations of KW units are discussed below.

Firepower

3-210. Table 3-2 depicts the TOE authorized quantities of weapons systems components for a KW troop of eight aircraft.

Table 3-2. Authorized Weapons System Components

WEAPON	QTY Per Troop
Launcher, guided missile aircraft (Hellfire)	6
Launcher, rocket aircraft 2.75-inch 7-tube M260	9
Launcher, guided missile aircraft XM292 (ATAS)	9
Machine gun .50 cal: XM296	7

Self-protection

3-211. KW aircrews use 2.75-inch rockets or .50 cal machine gun to engage close-in targets or unexpected contacts for protection of themselves or their wingman. The crew of a "heavy missile" KW relies upon its wingman solely for this critical support. As a result, a “mix” of rockets and .50 cal should always be used by KWs when conducting deep operations where such instances of close-in enemy targets or unexpected contact is likely.

Survivability

3-212. Table 3-3 compares and contrasts survivability aspects between the Apache and KW.

Table 3-3. Survivability: KW to Apache

FACTOR	KW TO APACHE
ASE	Less robust package
Signature (radar, IR, visual)	Smaller (MMS great advantage)
Systems	Fewer redundant
Speed	Slower
Ballistic Protection	Less for aircraft systems and crew

Range

3-213. Ninety knots is the planning airspeed for a KW that is loaded (gas and ammunition) which yields a combat radius of approximately 150 km with a 10-minute station time and 20-minute fuel reserve. A Fat Cow (CH-47 with extra fuel and pumps carried internally) or Fat Hawk (UH-60 configured with auxiliary fuel tanks and FARE equipment) in the vicinity of the FLOT could increase the distance of a KW unit's attack. See FM 1-111, Appendix J for details on FARP operations.

TIME

3-214. Unlike the Apache, the KW can not carry an external fuel tank to extend its mission duration, time on station, or combat radius for the attack.

COMBINED KIOWA WARRIOR AND APACHE DEEP OPERATIONS

3-215. A technique of task organizing KWs and Apaches for a deep operation provides commanders with an extremely flexible, robust, and comprehensive attack package. KWs are well suited for target acquisition, designation, security, and final engagement and/or BDA of EAs.

CLOSE OPERATIONS

3-216. Air cavalry conducts close operations in two separate areas—the security area and the MBA.

SECURITY AREA

3-217. As in a movement to contact, air cavalry provides security for the main body by screening the covering force. As part of the covering force, air cavalry may be tasked to screen the entire division front. In this role, air cavalry is employed as an integral part of the cavalry squadron. A zone reconnaissance is conducted during movement to the initial screen. If the division occupies a broad front, air cavalry assets will be limited in their time on station due to the larger area to be covered. Therefore, air cavalry must have long range indirect fire assets available to rapidly respond in order to impede and harass the enemy. During the screening mission, air cavalry continually passes spot reports concerning the enemy's movement, location, and disposition. Roles of air cavalry in the security area include the following:

- Provide security for the air assault movement of light infantry forces.
- Orchestrate CAS, artillery, and AHs in JAAT operations.
- Orient assets on high-speed avenues of approach and areas not sufficiently covered by ground elements.
- Develop intelligence for a hasty attack and secure the attacking forces with a screening operation.
- Conduct aerial route reconnaissance for ATKHB when they are maneuvering to attack follow-on elements.
- Operate within the squadron and/or regiment in an economy of force role to free ground units so they can mass in other areas of the battlefield.
- Screen the flanks of the division and/or corps to maintain contact with friendly forces and prevent the enemy from conducting flank attacks.
- Provide overwatch for moving ground elements. This is essentially a screen mission designed to gain reaction time and maneuver space).

MAIN BATTLE AREA

3-218. The decisive battle is fought in the MBA. Security force elements will have developed the situation to slow the enemy and buy time for the main body. The BHO is critical and includes a passage of line and a shift of responsibilities from the security force to the main battle commander. This handover must occur quickly and efficiently to reduce vulnerability. The principal duty of air cavalry is to provide security during the handover phase as it helps to ensure an orderly handover. Specific air cavalry missions may include the following:

- Secure the flanks and rear of the main body.
- Orchestrate JAAT operations within the MBA.
- Act as a rapid reaction force to counter enemy penetrations.
- Counter nemy airborne operations into the MBA.
- Maintain lines of communication and supply in the MBA by conducting reconnaissance and security along the routes.
- Conduct air combat operations.

REAR OPERATIONS

3-219. Air cavalry gives commanders a highly mobile and lethal combat force able to respond to enemy incursions in the rear areas. As the commanders most mobile means to gain and maintain contact, air cavalry units might be tasked as part of a tactical combat force able to respond to enemy incursions.

3-220. As the battlefield becomes less linear, rear area operations must be anticipated. Rear battle planning should be included in all tactical plans. Rear combat operations rarely come in places of our choosing. Information can be confusing, even contradictory, as to the location and size of the enemy force. Commanders must be prepared to move rapidly to positions from which they can assess and act.

3-221. Even though enemy and friendly lines may not be clearly discernible, rear operations will occur in and around base clusters, logistics sites, and storage facilities. From a battle command viewpoint, it will be fought much like a close battle. The possibility of fratricide during rear battle places a premium on all control measures. However, the fluid nature of the rear battle does not lend itself to static control measures. Based on the enemy COAs and friendly response, contingency control measures can be developed and distributed as part of the planning process and activated as appropriate, based on the situation. This planning should include air routes, indirect fires reference points, and location of known or planned ground unit locations.

3-222. The variety of possibilities that may be encountered does not allow for any one way to conduct rear operations. The situation will dictate how air cavalry can best be employed.

SECTION VI—RETROGRADE OPERATIONS

PURPOSE

3-223. A retrograde operation is an organized movement to the rear or away from the enemy. It may be forced by the enemy or voluntarily done. The three types of retrograde operations are delay, withdrawal, and retirement. The basic reason a squadron conducts a retrograde operation is to improve a tactical situation or keep a worse one from occurring. Air troops normally assist the squadron in conducting this operation. FM 17-95 contains further details on retrograde operations. A retrograde operation may be conducted to—

- Gain time.
- Preserve forces.
- Shorten lines of communication.
- Reposition forces on the battlefield.
- Avoid combat under undesirable conditions.
- Draw the enemy into an unfavorable position.
- Permit the withdrawal of a force for use elsewhere.

DELAY

3-224. A delay is normally conducted as part of a defensive battle. The intent of a delay is to gain time. The destruction of the enemy is of secondary importance. The integration of air cavalry is crucial to a successful delay operation. The firepower and mobility of air cavalry units allow the squadron to bolster any delay through filling gaps within the squadron, providing depth during the movement of ground troops, and helping the commander see the entire battlefield. However, integrating all combined arms and an extensive obstacle plan enhances effectiveness of the delay. The delaying force must simultaneously—

- Preserve the force by not becoming decisively engaged.
- Preserve freedom to maneuver.
- Maintain operational coherence.
- Cause the enemy to deploy and react to successive attacks.
- Maintain contact with the enemy.

3-225. Air cavalry accomplishes several of the missions identified above during their normal reconnaissance and security missions. Air cavalry compliments the ground elements by controlling long-range fires as the friendly elements disengage and move to alternate or successive positions. They maintain surveillance of high-speed avenues of approach to ensure that the delaying force is not bypassed or encircled. Sometimes, the organic firepower of ACTs is not enough. When this happens, the squadron will ask for additional firepower in the form of ATKHBs.

3-226. In regimental cavalry, the aviation squadron provides a fourth maneuver squadron. During delay operations, the RAS may be assigned its own sector (with augmentation), may operate in conjunction with the ground under control of the RAS commander, or have its air troops placed under

OPCON of the ground squadrons. Additionally, the attack troops provide the regiment with a highly mobile reserve force.

3-227. Assault helicopters are often used to move light infantry forces to alternate and successive positions. Air cavalry supports these operations by conducting an aerial route reconnaissance. They also provide security for the air assault forces and conduct PZ and/or LZ reconnaissance and security missions.

WITHDRAWAL

3-228. Commanders conduct withdrawals to extract subordinate units from combat, adjust defensive positions, or relocate the entire force. A withdrawal occurs when a force in contact with the enemy frees itself for a new mission. The force may withdraw to continue the defense in-depth or to perform a different mission. There are two types of withdrawal—under enemy pressure and not under enemy pressure.

3-229. Under enemy pressure, the unit depends on fire and maneuver to break contact with the enemy force and then withdraw.

3-230. Not under enemy pressure, the unit depends on speed of execution and deception. If the unit is not under attack, the withdrawal is not under pressure.

3-231. Air cavalry performs the same missions during a withdrawal operation as they would during a delay. In addition to performing reconnaissance and security operations, air cavalry provides the force commander with battlefield intelligence in the form of spot reports. They assist the ground forces in passage of lines and BHO and can provide the ground forces with a highly maneuverable antitank capability. Air cavalry can also coordinate FS and CAS. Air cavalry assets may also be included in deception and security operations in support of the withdrawal.

RETIREMENT

3-232. Retirements are rearward movements conducted by units not in contact. Retirement is when a unit not in contact moves away from the enemy. Movement to the rear is conducted in an orderly fashion. Retirement may be the continuation of a withdrawal. Air cavalry assists retiring units by providing reconnaissance and security. Air cavalry should use the same planning considerations for a retirement that they would for a withdrawal. Contingency missions, such as screens or route reconnaissance, can be assigned to air cavalry units if contact with the enemy is made.

Chapter 4

Stability Operations and Support Operations

SECTION I—GENERAL

OPERATIONAL CONCEPT

4-1. Stability operations and support operations are activities in peacetime and conflict that do not necessarily involve armed clashes between two organized forces. Stability operations and support operations activities are outlined in FMs 17-95, 100-5, 100-20, 71-100, 1-100 and 1-111.

4-2. Air cavalry squadrons may deploy under the control of their parent unit or as the aviation element of another HHQ. These HHQ may include another brigade, division and/or corps headquarters, an ARFOR headquarters, or a JTF headquarters. When deployed with the regiment or an aviation brigade, the squadron will normally consist of only its organic assets and draw support from the brigade and/or regiment. When not deployed with a higher aviation headquarters, the squadron can act as an ATF headquarters but must be task organized with significant attachments of CS and CSS elements.

4-3. During some operations, squadrons can expect to work with government, host nation, or international agencies. These agencies may not have the military style chain-of-command to which soldiers are accustomed. Prior coordination and flexibility are key to mission success. Chain of command, support responsibility, reporting requirements, and the authority to approve specific actions must be clearly understood by all parties prior to initiating the mission.

4-4. In stability operations and support operations, the majority of missions are often focused on the efforts of CS and CSS units. These units will frequently be the main effort, while combat units become the supporting effort. For example, air cavalry could provide route security for a government agency transporting critical medical supplies.

4-5. Stability operations and support operations require accurate intelligence on terrain, facilities, and potential hostile forces to be successful. These operations require in-depth situational awareness at all levels of command and restraint in the application of combat force. Extensive force protection measures to minimize the vulnerability of friendly forces are necessary due to the politically sensitive nature of most stability operations and support operations. Air cavalry's ability to collect timely intelligence through reconnaissance and protect the force by performing security operations gives them a key role in stability operations and support operations.

4-6. The majority of missions given to air cavalry squadrons during stability operations and support operations will either conform to or build upon their standard reconnaissance and security roles. Generally, the major differences in unit operations during stability operations and support operations will be in the C^2 relationships between the squadron and its HHQ and the greater requirement for restraint in potentially hostile situations.

PRINCIPLES OF STABILITY OPERATIONS AND SUPPORT OPERATIONS

4-7. Army doctrine is based on the principles of war. Stability operations and support operations also have principles that guide commander's actions. The six principles of stability operations and support operations are—

- Objective. Direct every military operation toward a clearly defined, decisive, and attainable objective. Military objectives must be in line with political objectives to accomplish the operational or strategic goals.
- Unity of effort. All elements must work toward efficiently accomplishing the common objective.
- Legitimacy. Sustain the willing acceptance by the people of the right of the government to govern or of a group or agency to make and carry out decisions.
- Perseverance. Prepare for the measured, protracted application of military capability in support of strategic aims.
- Restraint. Apply appropriate military capability prudently.
- Security. Never permit hostile factions to acquire an unexpected advantage.

4-8. The application of each principle will vary depending on the specific operations. Commanders must understand these principles, as they may be designated as ATF commanders in stability operations and support operations. These principles are explained in-depth in FM 100-5.

EMPLOYMENT GUIDELINES

4-9. There are several key employment guidelines provided in FM 1-111 for the aviation commander to consider in the planning process. The current ACS doctrinal roles and missions as outlined in this manual also apply in the stability operations and support operations environment. The air cavalry commander will have to tailor his mission and assets as the situation requires.

4-10. The unit should expect a wide variety in the tempo of operations and plan accordingly. A staff must be able to adjust rapidly to many different operational considerations. The unit must plan ahead and have developed contingency plans for numerous situations not normally addressed in the unit's METL. These can be identified and trained for at home station with STX. Some subjects that should be addressed are civilians on the battlefield, media relations and public affairs, and defense against terrorism.

4-11. The operational conditions of stability operations and support operations frequently require the integration of specialty personnel with the aviation unit staff, including civil affairs, psychological operations, SJA, and special forces personnel. Besides the specialty staff personnel, the units may be required to operate with infantry, armor, artillery, engineer, CSS, or a combination of these assets. Whatever the composition, the unit must have a fully integrated staff that can coordinate and plan operations. Liaison officers from the squadron to other units and from supporting units to the squadron will be critical.

4-12. The A^2C^2 process, civil and military laws, airspace restrictions, radio frequency usage, ground convoy clearances, aircraft operating time restrictions, flight clearances, refueling procedures, and product disposal procedures vary in almost every country in the world. The aviation unit commander must be prepared to adapt his unit to the host nation operating environment or operational considerations. Serious complications can develop when host nation requirements are not met by the force, possibly resulting in restrictions on the unit or even mission failure. In some situations, Army aviation conducting stability operations and support operations may be required to be included on the air component commander's air tasking order to ensure situational awareness and reduce the possibility of fratricide.

4-13. The squadron commander must clearly understand the ROE and be prepared for them to change at any time during an operation. All personnel should be briefed on the ROE prior to every mission. For ROE assistance, the unit commander should consult with the SJA representative. The aviation unit commander should plan for an SJA representative to deploy with the force.

SECTION II—TYPES OF OPERATIONS

CATEGORIES OF OPERATIONS

4-14. The two categories in which a cavalry squadron could expect to be employed are stability operations and support operations. During stability operations, the squadron would primarily perform its METL related tasks and be prepared for the potential escalation to full-armed conflict. During support operations, the squadron would use the capabilities of its combat systems to increase the effectiveness of the overall effort. Again, squadrons must be prepared for renewed hostilities or civil disorder. The RAS can expect to perform the same missions as the DCS, but the flexibility of its AHT leads to additional air movement, utility, and general support missions that the RAS may be tasked to perform. In addition, many of these missions will be performed as an integrated piece of the overall U.S. military capability—often in conjunction with forces from other nations, other U.S. agencies, nongovernmental organizations, and United Nations forces. Therefore, leaders should familiarize themselves with basic joint operational procedures and terms.

STABILITY OPERATIONS

4-15. There are seven types of operations that have some potential to result in armed conflict, therefore involving air cavalry combat capabilities.

SHOW OF FORCE

4-16. A show of force is a mission carried out to demonstrate U.S. resolve in which U.S. forces deploy to diffuse a volatile situation that may be detrimental to U.S. interests. It may take the form of combined training exercises, rehearsals, forward deployments of military forces, or introduction and buildup of military forces in a region. Air cavalry assets (mobility, flexibility, agility, and firepower) make them ideal for employment in such operations. Typical missions would include area and route security, screen, and tactical demonstration.

NONCOMBATANT EVACUATION OPERATIONS

4-17. NEO relocates threatened civilian noncombatants from locations in a foreign country or host nation. NEO may be conducted in a peaceful, orderly fashion or may require forcible means. Noncombatants may be evacuated by a ground maneuver force or by using aviation. KWs can conduct reconnaissance to aid in locating noncombatants and provide security for all stages of their assembly and movement.

COUNTERDRUG OPERATIONS

4-18. The U.S. military has the lead role in detection and monitoring of drug trafficking activities outside U.S. territory and plays a major supporting role to the interagency community involved in counterdrug operations. Air cavalry may be used to support interdiction efforts by monitoring and detecting drug movements, locating production facilities, and reconnaissance of suspected drug production areas at night under FLIR, TIS, and NVDs. The Posse Comitatus Act restricts active duty military units from performing certain reconnaissance functions when these operations are conducted within CONUS. SJA augmentation may be required.

SUPPORT FOR INSURGENCIES AND COUNTERINSURGENCIES

4-19. U.S. forces may directly support a host nation's counterinsurgency operations.

COMBATING TERRORISM

4-20. Combating terrorism includes the full range of offensive measures taken to deter, prevent, and respond to enemy activity. Air cavalry conducts area security of key locations and route and/or convoy security along critical LOCs to detect or deter enemy activity.

PEACE ENFORCEMENT

4-21. These operations are conducted in support of diplomatic efforts to restore peace between hostile factions. Since peace enforcement implies the use of force or its threat to coerce hostile factions to cease hostilities, a squadron assigned to support these efforts must be prepared to apply combat power to restore order, separate warring factions, and return civil order and discipline. Air cavalry units can expect R&S missions and security missions to protect the U.S. and allied forces involved, in addition to tightly controlled applications of force.

ATTACKS AND RAIDS

4-22. The Army conducts attacks and raids to create situations that permit seizing and maintaining political and military initiative. Attacks by conventional air, ground, and aviation forces independently or in conjunction with SOF are used to destroy high value targets or demonstrate U.S. capability or resolve. Aviation forces will conduct these attacks and raids with attack or assault helicopter units, or both, often with air cavalry reconnaissance and security elements.

SUPPORT OPERATIONS

PEACEKEEPING OPERATIONS

4-23. These operations support diplomatic efforts to maintain peace in an area of potential conflict. Peacekeeping differs from peace enforcement in that it is conducted with the consent of all parties involved. Air and ground assets are normally employed in screening a demilitarized zone.

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF

4-24. When disaster relief, refugee assistance, or damage control missions are conducted outside OCONUS they are categorized as humanitarian assistance operations. These missions can be performed in response to foreign or international agency requests for immediate help. Air cavalry elements may be employed to augment C^2 requirements, search for casualties, assess damage, and prevent looting and disorder. The requirements for force protection and security should not be disregarded because hostile factions within a country may oppose these efforts.

MILITARY SUPPORT TO CIVILIAN AUTHORITIES

4-25. These are humanitarian assistance and disaster relief missions that are conducted in CONUS. The squadron's effort with those of the civilian authorities requires effective coordination and liaison.

Chapter 5

Combat Support and Combat Service Support

SECTION I—COMBAT SUPPORT

FIELD ARTILLERY

5-1. The FA system provides close support to maneuver forces, SEAD, counterfire, fire for deep operations, and interdiction, as required. SEAD fires are designed to facilitate the maneuver of air assets. Normally, the DCS is supported by the artillery assets of its parent division and the RAS is supported by the organic artillery of the regiment and/or units from the corps artillery.

5-2. FA delivery systems include cannons, rockets, and missiles. These systems can provide fires under all conditions of weather and in all types of terrain. They can shift and mass fires rapidly without having to displace. The extended ranges of rockets and missiles enable the commander to attack in-depth. A variety of cannon munitions provides increased flexibility in attacking targets. FA units are usually as mobile as the units they support. It is critical to operations that ACTs and ACTMs maintain a current and accurate location on FS assets, routes, and OPs versus gun target lines. FA units also have the following limitations:

- A firing signature that makes the unit vulnerable to detection by enemy target acquisition assets requiring FS assets to frequently conduct survivability moves.
- Limited self-defense capability against ground and air attacks.
- Limited ability to destroy armored, moving targets.

5-3. The link to effective artillery support for the troop and squadron is the FSO. The digital FM connection between the KW, the FIST, and the supporting artillery is critical.

MORTARS

5-4. Mortars are organic to heavy DCSs, regimental squadrons but not organic to light DCSs. Mortars are indirect fire weapons organic to the maneuver troops. Mortars provide a responsive and accurate indirect fire capability. They are ideal weapons for attacking targets on reverse slopes, in narrow ravines, and in other areas difficult to strike with low-angle fires. Mortars are also ideal weapons against dismounted troops in the open. They are most effective in suppression, smoke or obscuration, and illumination missions. Suppression missions force the enemy to button up or move to less advantageous positions. Obscuration missions can place smoke directly on the enemy to obscure its vision or between the enemy and friendly forces to conceal movement. During illumination missions, special rounds are used to illuminate the enemy. This illumination allows a daytime engagement capability during periods of limited visibility. Mortar support for the ACT will often be required on short notice or in an immediate reaction situation. This support needs to be coordinated directly with the appropriate GCT.

PLANNING

5-5. Mortar fires are planned in the same manner as FA. They are planned on all known or suspected enemy locations. These locations include areas in front of the objective, on the objective, and beyond the objective. Targets are also planned along the most likely enemy avenues of approach. If time allows, planning is detailed, closely coordinated, and disseminated.

COORDINATION

5-6. The RAS commander or S3 and the regimental FSO normally accomplish coordination. The situation may dictate that the RAS coordinate directly with the nearest GCT that can provide the mortar support. FS coordination measures and a communications net are established during the coordination process. A quick-fire net is also established to allow the troops to directly request and adjust immediate FS.

EMPLOYMENT

5-7. Mortars are best employed to support a squadron operation with immediate suppression or immediate smoke or both. These employment roles will most likely occur during reconnaissance and screening operations. Factors to consider during employment are the locations of the mortars and the locations of squadron assets conducting these operations. Range limitations may frequently preclude the use of mortars for the needed FS. However, mortars should always be considered if available and within range.

NAVAL GUN FIRE SUPPORT

5-8. NGFS can provide large volumes of immediately available, responsive FS to land combat forces operating near coastal waters. NGFS provides close supporting, deep supporting, preparation, counterfire, reconnaissance, SEAD, defensive, protective, obscuration screening, and countermechanized fires. Naval surface ships may be assigned one of two FS missions, DS, or GS. Ships assigned the mission of DS provide fires for a committed maneuver battalion. Ships assigned the mission of GS provide fires for a committed maneuver brigade or larger unit. Naval gunfire liaison sections, which are organic to Marine artillery battalion and regimental headquarters and ANGLICO sections, which may be attached to Army and allied headquarters from the maneuver company and/or troop to division level, advise and assist ground commanders with the coordination of NGFS.

SUPPRESSION OF ENEMY AIR DEFENSES

INTRODUCTION

5-9. SEAD is an essential part of all operations employing Army aviation or other Service specific assets. It is the activity that neutralizes, destroys, or

to enable TACAIR operations to be successfully conducted. It increases the probability of success and reduces the loss of friendly air power. Before a

the SEAD effort required to accomplish the mission. In some cases, SEAD may take priority over squadron close support artillery missions.

Suppressive Fires

5-10. SEAD requires an integrated air and land force effort to locate and suppress enemy surface -ADs. The location and detection effort is continuous and is emphasized during actual attacks on a critical portion of

close to the FLOT, suppression is achieved primarily by fires from division direct and indirect fire systems. Threat combat formations are characterized

systems are not located near the FLOT, but they are able to cover this area. HIMAD systems are a threat to friendly aircraft that must climb to higher

Planned fires

Specific FS units are designated to engage preplanned AD targets. -priority basis for a limited time. Suppressive fires are routinely planned against known and suspected SA -8, and SA
according to a time schedule), or they may be on call. Planned enemy AD targets may be engaged as part of preparations or counterpreparations,

a coordinated air-to
schedules artillery fires. The FSO considers the type of mission to be flown, the tactics to be used by the aircrew, and the locations of enemy AD systems.

of friendly weapons.

5-12.
known, some suppression assets should be immediately available to pilots or observers. Units to support this effort are designated before the operation

immediate SEAD fires when aircraft are used in the area.

5-13.
opportunity. Because of the mobility and small size of most AD targets, aircrews use observed fire techniques and engage targets immediately upon

detection. Fire is adjusted on these targets by forward observers, attack or scout helicopter pilots, and USAF pilots either directly or through the TAC(A). Commanders may order the forward observer to locate and bring under attack enemy AD systems in the vicinity of the target just before the arrival of friendly aircraft.

FIRE SUPPORT

5-14. The potential of FS as a combat multiplier can be realized only through meticulous planning and thorough coordination at all levels. This is especially true of SEAD operations in which the squadron FSE must continually plan to use any and all available assets in a FS role (except mortars due to limited range and/or effect). With coordinated SEAD operations, the commander can protect his assets and fully exploit the capabilities of the air cavalry assets.

CLOSE AIR SUPPORT SUPPRESSION OF ENEMY AIR DEFENSES

5-15. Tactical fixed-wing and rotary-wing aircraft may be threatened by highly active and accurate threat ADs. AD suppression sorties and EW missions are conducted to enhance the survivability of tactical aircraft. The squadron must give high priority to SEAD when being supported by tactical aircraft. SEAD is initiated when the squadron calls for FA suppressive fires.

5-16. Effective SEAD will depend on the timely and accurate intelligence of positions and types of enemy weapons. Priority targets for SEAD should be enemy AD systems or sites in the immediate target area. The squadron commander's area of responsibility extends from his FLOT to the limits of observed fire. During the actual air strike, an artillery check-fire need not be imposed. Instead, the ALO, TAC(A), or individual controlling the strike can ascertain the intended attack track of the aircraft. He can then impose an airspace coordination area or shift fires to suspected or actual enemy AD sites. The weapons control status for AD systems should be changed to <u>at least weapons tight</u> during the air strike to reduce the probability of attack by friendly AD fire. Direct fire of organic weapons on the enemy generally will not affect the attack of the target by friendly aircraft.

ELECTRONIC WARFARE SUPPRESSION OF ENEMY AIR DEFENSES

Contributions

5-17. EW SEAD contributes significantly to the battlefield by reducing the enemy’s ability to destroy friendly air resources. Typically, AD is a structured activity that is rigidly controlled and assigned target priorities through redundant communication links from AD commanders located in remote C^2 posts. Suppression is accomplished by destructive means, disruptive means, or a combination of the two.

5-18. **Destructive Suppression.** Destructive suppression is used to destroy surface-to-ADs or personnel. Its affects are cumulative and friendly aircraft attrition is steadily reduced. But large demands are placed on combat power when destructive means are employed alone. Therefore, destructive means must be integrated and used with disruptive means, such as jammers, which generally are reusable resources.

Disruptive Suppression.
degrade, deceive, delay, or neutralize surface-to-air defenses or personnel. There are two types of disruptive suppression—active and passive. Active

and avoidance or evasive flight maneuvers and/or profiles. Passive suppression includes camouflage, IR shielding, warning receivers, and

5-20.
Disruptive means complement destructive ones, and are best used to—

-
- Assist destructive ground-based and airborne suppression systems in
- Temporarily degrade or neutralize enemy AD systems when
- Sustain suppression effects achieved by destruction, once the threats

5-21. During EW SEAD operations, Army and Air Force suppression systems

system, the complexity of the suppression requirement, and the mission

unity of effort. The following is a list of suppression capabilities:

and observed and unobserved fires, jammers, unmanned aerial

- The Air Force has visual and sensor target acquisition, attack fighters,

FIRE SUPPORT COORDINATING MEASURES

reduce requirements for coordination or to restrict firing into certain areas.

Permissive measures are those that reduce requirements for coordination

measure is used, the graphic display contains the title (abbreviation) of the
-time group.

additional information.

RESTRICTIVE MEASURES

Restrictive Fire Area

fires that exceed those restrictions will not be delivered without coordination

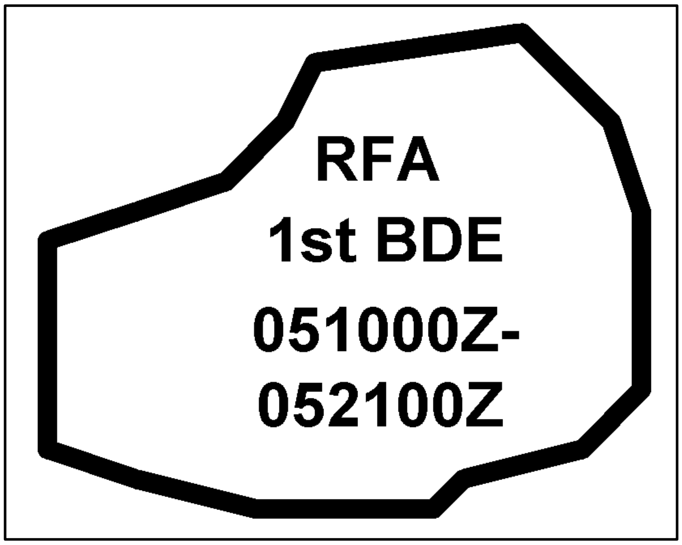


Figure 5-1. Restrictive Fire Area

No-fire Area

5-24. The NFA (Figure 5-2) is an area into which no fires or their effects are allowed. The two exceptions to the NFA are when the establishing headquarters allows fires on a mission by mission basis; or when a friendly force is engaged by an enemy located within the NFA, and the commander returns fire to defend his force.

Figure 5-2. No-Fire Area

No-fire Line

5-25. The NFL (Figure 5-3) is a line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops.

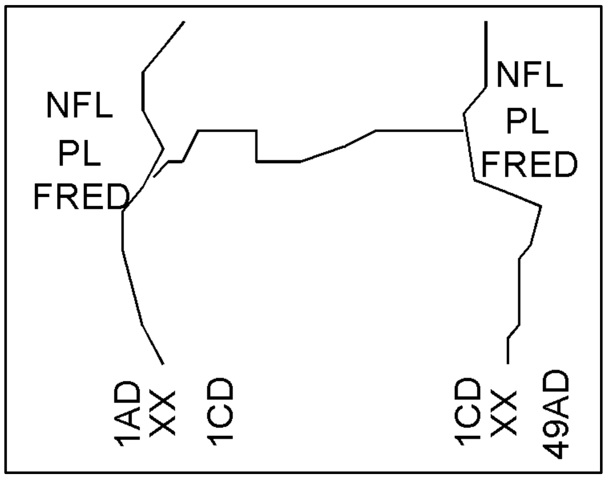


Figure 5-3. No-Fire Line.

Restrictive Fire Line

5-26. The RFL (Figure 5-4) is a line between converging friendly forces that prohibits fires, or the effects of fires, across the line without coordination with the affected force.

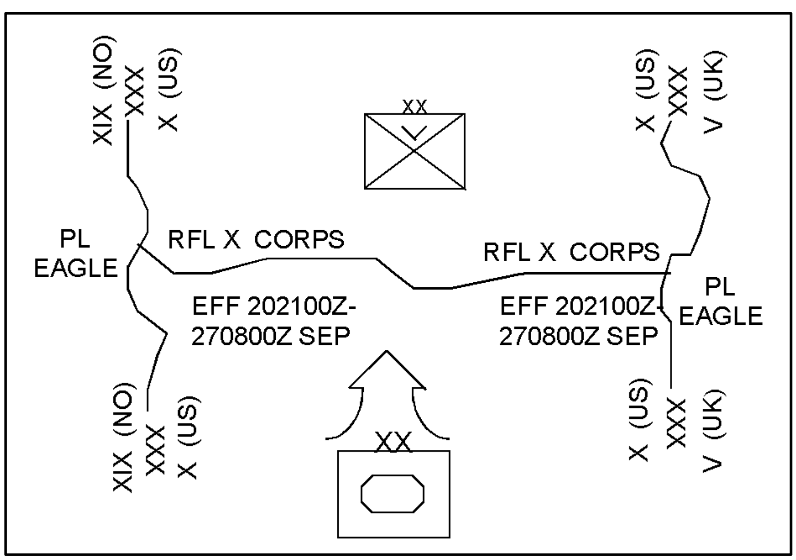


Figure 5-4. Restrictive Fire Line

Airspace Coordination Area

5-27. Informal ACA (Figure 5-5) is normally used for immediate air strikes, and can be established at battalion or HHQ. Informal ACA can be established by using lateral, altitude, or timed separation. They are usually in effect for a very short period of time.

5-28. Formal ACA (Figure 5-5) is a three-dimensional block of airspace that provides lateral and altitude separation between aircraft and other FS assets, and is established by brigade or HHQ.

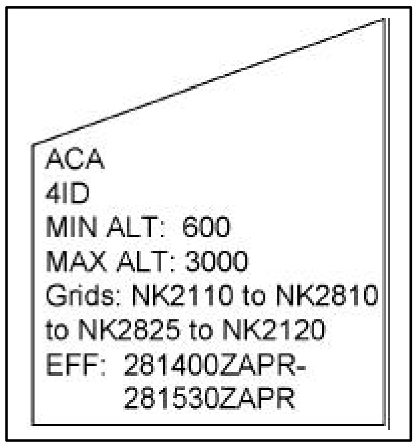


Figure 5-5. Airspace Coordination Area

PERMISSIVE MEASURES

Coordinated Fire Line

5-29. The CFL (Figure 5-6) is a line beyond which conventional (both direct or indirect systems) may fire at any time within the boundaries of the establishing headquarters without additional coordination.

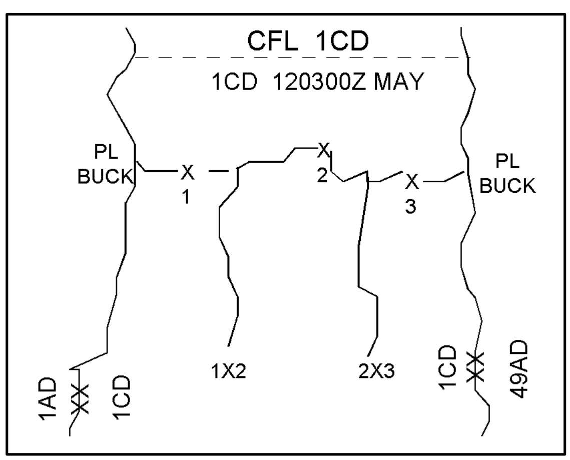


Figure 5-6. Coordinated Fire Line

Fire Support Coordination Line

5-30. The FSCL (Figure 5-7) is a line established and adjusted by the appropriate land or amphibious force commander (in the Army usually the corps commander; in amphibious operations usually the CLF after coordination with the CATF) within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide, both in the air and on the ground. Supporting elements may attack targets beyond the FSCL, providing the attack will not produce adverse effects on, or to the rear of, the line that may affect current tactical operations.

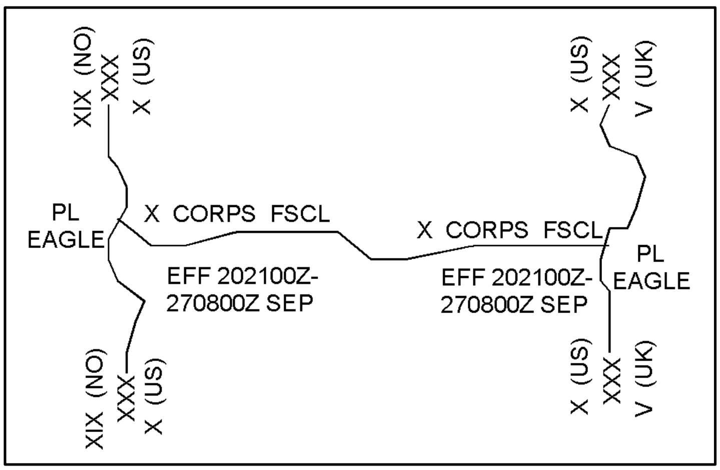


Figure 5-7. Fire Support Coordination Line

Free-fire Area

5-31. An FFA (Figure 5-8) is a specific, designated area into which any weapon system may fire without additional coordination with the establishing headquarters.

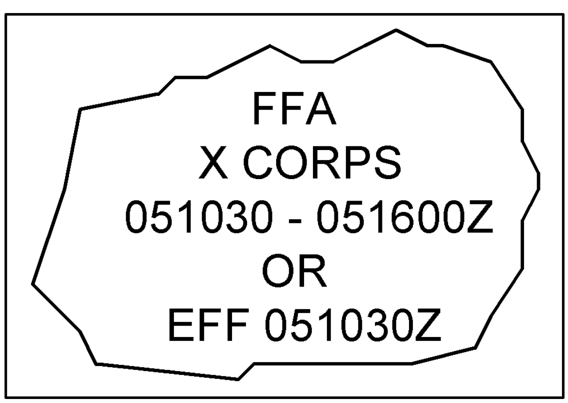


Figure 5-8. Free Fire Area

CLOSE AIR SUPPORT

5-32. CAS missions are air strikes against hostile targets that are close to friendly forces. These missions require detailed integration with the fire and maneuver of supported forces to increase effectiveness and avoid fratricide. The USAF plans, directs, and controls CAS missions through the TACAIR control system. CAS missions are executed based on preplanned or immediate requests. Requests should be preplanned if at all possible so that the delivery system and ordnance can be matched with the target. The firepower of both surface-based weapons and CAS aircraft should be integrated effectively to achieve the desired concentration of fire on targets.

PREPLANNED REQUESTS

5-33. Preplanned requests are those for which a requirement can be foreseen. They 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.

5-34. Requests from the troop level are forwarded to the squadron TOC over the command net or by other means. When a request is received at the TOC; the S3, FSO, and ALO review it to determine the suitability of the target and to consider potential airspace conflicts. The S3 may recommend that the target be attacked with another system. As a minimum, he will integrate the request with the squadron FS plan. The S3 adds the request to the file of preplanned requests, eliminates duplications, consolidates remaining requests, and assigns priorities. He then forwards the consolidated request to the aviation S3 air or corps G3 air over the O&I net or RATT communications. The evaluation and integration process is repeated at the corps TOC. From there, the targets are assigned to the USAF.

IMMEDIATE REQUESTS

5-35. Immediate requests are from supported ground commanders to fulfill urgent, unforeseen requirements. Details of the mission are generally coordinated while aircraft are held on airstrip alert or are airborne.

5-36. Immediate requests originating at troop level are forwarded to the RAS TOC over the command net or by other means. The squadron S3 evaluates each request and then passes it to the regiment, division, or corps for execution. The regimental or aviation brigade TACP transmits the request directly to the ASOC at the division or corps TOC over the USAF air request net. The TACP at each intermediate Army echelon monitors the transmission. Each intermediate TACP coordinates the request with the S3 or G3 and the FSCOORD at their level to determine approval or disapproval of the request. Silence by an intermediate TACP indicates approval by the associated Army echelon unless a disapproval is transmitted within a specified time stated in the unit SOP. (Normally, the time is 10 minutes.) If any echelon above the initiating level disapproves the request, the TACP at that echelon notifies the ASOC and the initiating TACP, giving the reason for the disapproval. The ASOC passes a copy of the request to the corps G3 air, who is collocated in the TACAIR support element, for coordination with the FSCOORD. When the request is approved, the ASOC orders the mission flown. Response to immediate requests may involve launching general alert aircraft, using ground or air alert sorties, or diverting airborne aircraft from other missions.

GROUND AND AIR ALERTS

5-37. Either a ground or an air alert may be requested, using planned or immediate communication channels. Planning for either of these options can improve the responsiveness of TACAIR to the needs of the ground commander. CAS assets on air alert close behind the FEBA may be able to respond to a preplanned request within 5 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, including the type of CAS aircraft available, will dictate the best option. Commanders must be aware that immediate CAS requests will not necessarily provide the timeliest response.

CLOSE AIR SUPPORT TARGET ACQUISITION AND TARGETING

TARGET ACQUISITION

5-38. TAC(A) and fighter pilots can acquire targets as well as control or attack Army-acquired targets. Squadron S3 personnel must work closely with the ALO to ensure that acquired targets not suitable for air attack are attacked by other means if appropriate.

TARGETING

5-39. To be effective, CAS must be employed against targets that present the most immediate threat to the supported force. Almost any threat encountered inside the FSCL and near the FLOT may be suitable for CAS targeting, but the indiscriminate use of CAS may needlessly increase the attrition of attack aircraft and increase the chances of fratricide. No single category of targets is most suitable for CAS application. Mobile massed armor formations, however, present the most immediate threat to friendly ground forces and thus are prime candidates for air attack.

CLOSE AIR SUPPORT CAPABILITIES AND LIMITATIONS

CAPABILITIES

5-40. CAS capabilities include high-speed and long-range support, versatile weapon and ammunition mixes, and accurate delivery. AV-8, A/OA-10, F-14, F-16, and F/A-18 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 of time to ground units and static positions. Key employment guidelines and capabilities are provided in Joint Publication 3-09.3.

LIMITATIONS

5-41. CAS aircraft are limited by resource scarcity and delivery restrictions caused by limited visibility, adverse weather, and/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

5-42. A TACP advises the ground commander and his staff on the integration of CAS with ground operations. The TACP also coordinates and directs close air strikes. It includes an ALO and a TAC(A). The squadron should be supported by either an ALO or a TAC(A).

5-43. A TACAIR strike is normally controlled by a TAC(A), but it may be controlled by a qualified TACAIR C^2 specialist or similar military service skill. In an emergency, an air strike may be controlled by a qualified Army person designated by the supported ground commander. When this occurs, the ground commander must assume responsibility for the safety of the troops. When ordnance is a factor to the safety of friendly troops, the aircraft’s axis of attack should be parallel to the friendly forces. The person controlling the air strike locates and describes the target and identifies friendly positions. The commander then relays this information to the pilots using any means available. Although most fighter aircraft have FM capability, the ground commander may have to relay this information through an Army aircraft that has both FM and UHF capabilities.

ENGINEER SUPPORT

PLANNING CONSIDERATIONS

5-44. Combat engineer assets are not organic to ACSs. Engineer support is provided by the regimental engineer company to the RAS and by the division's engineer brigade to the DCS. The RAS may receive engineer support for a specified mission or time. The RAS usually receives this support during route reconnaissance, covering force operations, or guard operations. The engineer platoon leader serves as the RAS engineer and advises the commander on the use of engineers and their equipment. For division cavalry, they will also usually receive an engineer platoon to support similar type missions. When planning engineer support, the commander should consider that the engineers will accompany the lead elements and be employed as far forward as possible.

FUNCTIONS

5-45. When required, engineer units provide the squadron with countermobility, survivability, and sustainment engineer support and need to be incorporated into the perimeter defense plan. Engineer units can also perform infantry combat missions, if necessary. Air cavalry's air mobility negates the need for much ground mobility engineer support.

Countermobility Engineer Support

5-46. Countermobility engineer support enhances and complements the effectiveness of the ACTMs. Part of the countermobility task is to disrupt enemy attackers or turn them into selected areas such as EAs. These operations canalize the enemy into EAs, degrade its ground mobility, and increase its time in the killing zone. They also ensure that maximum combat power is massed on enemy concentrations. The AHT of the RAS has the capability to support these operations through the emplacement of aerial delivered minefields, i.e., Volcano installed on UH-60s (see FM 1-113).

Survivability Engineer Support

5-47. Engineer survivability operations protect semifixed positions of air cavalry from enemy observation and direct and indirect fires. The engineers provide this protection for CPs, FARPS, and maintenance facilities. They can also build revetments for helicopters.

Infantry Combat Mission

5-48. When engineers perform infantry combat missions, their ability to accomplish specialized missions is significantly degraded. The infantry mission is one of last resort. Air cavalry must provide its own perimeter defense; perimeter defense is not an engineer function. FM 5-100 contains detailed information about engineer combat operations.

AIR DEFENSE PLANNING AND EMPLOYMENT

5-49. The squadron commander establishes priorities for AD within the squadron's area of responsibility. If the squadron is augmented with attached AD assets, the senior AD officer or NCO will be the squadron AD officer or NCO. The commander will analyze his AO, the terrain, and the probable numbers and types of enemy aircraft to be expected. He will designate likely fixed and rotary wing air avenues of approach leading into his AO. The commander must balance his analysis of the threat against the available AD weapons supporting his unit. After the commander establishes the priorities, the AD officer and the S3 determine the specifics of AD weapon allocation and what positions will be occupied. The S3 continues to coordinate and supervise the activities of the supporting AD force throughout the operation.

AIR DEFENSE ACTIVE AND PASSIVE MEASURES

5-50. Air cavalry units must be protected from threat air assets. The threat will control some of the airspace above the battlefield some of the time. Air cavalry will attempt to engage and destroy threat aircraft with their air-to-air systems, vehicular-mounted weapons, and small arms and supporting AD systems. This direct engagement and destruction of threat aircraft is known as active AD. At the same time, air cavalry must take measures to avoid observation by threat pilots. The measures taken to avoid detection are known as passive AD.

ACTIVE AIR DEFENSE

5-51. Air cavalry units have a limited AD capability. The small arms of the squadron or troop can destroy an attacking aircraft or disrupt its attack. FM 44-8 explains the use of small arms in the AD role.

PASSIVE AIR DEFENSE

5-52. Target detection from the air is difficult. Threat pilots may or may not be required to see and identify a target to attack it. However, the effectiveness of high-performance aircraft is greatly reduced when units take advantage of terrain for cover and concealment.

5-53. When a unit is stopped, it should—

- Occupy positions that offer cover and concealment.
- Wipe out vehicle track marks around stationary positions just after movement.
- Avoid silhouetting vehicles against the skyline or against an area of a different color.
- Rotate air guards frequently because scanning for long periods dulls visual perception skills.
- Disperse vehicles. Dispersion not only makes detection difficult, it ensures that a single aircraft on a single pass can attack only one vehicle.
- Post air guards in dismounted positions to provide warning of approaching aircraft. Air warning signals, visual and audible, must be specified in the unit SOP.
- Place camouflaged coverings on the windshields and headlights of ground vehicles and on the canopies of aircraft. Exposed vehicles should be thoroughly camouflaged.
- Open hoods of the vehicles to break up silhouettes and allow for more rapid cooling of the engines to counter enemy IR devices.
- Establish a “scatter plan” from the AA if attacked by enemy air or artillery.

5-54. When a unit is moving, it should—

- Maintain communications security.
- Use covered and concealed routes when available.
- Rotate air guards frequently because scanning for long periods dulls visual perception skills.
- Post air guards on vehicles to provide warning of approaching aircraft.
- Specify air warning signals, visual and audible, in the unit SOP.
- Turn vehicles 90 degrees to the direction of attack, if attacked. Aircraft normally attack parallel to the movement of the convoy and this countermeasure will quickly get vehicles out of the line of fire.
- Add aircraft for convoy security to provide additional protection from enemy air attacks.

INTELLIGENCE

5-55. Intelligence enables the commander to see the battlefield. The commander's ability to visualize the battlefield directly influences the effectiveness of maneuver and FS and the protection of the force. Properly analyzed intelligence will aid in graphically depicting the enemy, weather, and terrain to support the timely and effective employment of CS assets.

5-56. The squadron S2 is the expert on the enemy, weather, and terrain. Accurate intelligence, sound assessments, and target development can reduce many uncertainties about the battlefield. The IPB process is the principal tool the S2 uses to analyze the enemy, weather, and terrain. FM 34-130 contains detailed information on the IPB process. DS engineer topographic teams, directed by the corps G2, provide the terrain products. The weather team, attached to the regiment, provides the weather products. The squadron can overcome terrain obstacles, but the weather can adversely affect squadron operations. Therefore, direct weather support is required at the regiment and division. The regiment or division relays weather information to the squadron. The weather team can reduce many of the uncertainties in planning combat operations. This team is more critical to aviation maneuver forces than any other force on the battlefield. The forward area limited observation program, pilot reports, and forward observers are other sources of observed weather information.

5-57. The S2 section of the squadron provides graphic displays of doctrinal, situational, event, and decision support templates. The decision support template is important because it translates intelligence estimates and the OPLAN into graphic form. While the S2 may be responsible for coordinating the development of the decision support template, the S3 has overall responsibility for the template. This template is a total staff effort to assist the commander in synchronizing assets and making timely decisions through the war-gaming of friendly and enemy COAs. The commander can use the template to confirm or deny enemy COAs, exploit assailable enemy flanks and select high-value targets for engagement. He can also interdict critical points that will force the enemy to abandon a COA. Further explanation of the decision support template is in FM 34-130.

5-58. Collection management by the S2 is based on intelligence requirements not answered by the IPB process. R&S planning must be thorough. The plan must be continuously updated as the situation changes. The great distances traveled by squadron aircraft require the S2 to continuously interface with the regimental S2 and the support element in the corps TOC. The S2 can then better predict enemy actions in selected areas of interest. Periodic R&S adjustment of high-value targets will ultimately give the commander a time-phased picture of the battlefield. It will also give him viable options for using critical assets in a timely manner.

5-59. GSR, remote sensors, UAV, or other MI assets may be placed OPCON or attached to the squadron to enhance reconnaissance and security capabilities. The S2 incorporates these assets into the R&S plan and recommends employment methods to the commander.

ELECTRONIC WARFARE

5-60. EW employs electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum while retaining its use for friendly forces. Both friendly and enemy forces depend on electronic devices and are vulnerable to actions that adversely affect their use of these devices. EW techniques also locate critical enemy units and CPs by identifying communication and noncommunication emitters. Successful integration of electronic deception or jamming can enable the commander to degrade, influence, or possibly destroy the enemy's C^2 systems at critical times and places.

5-61. The squadron may receive EH-60 (Quick Fix) assets on a mission basis to perform the direction finding or jamming task. The EH-60 is effective against communication devices but not against radar systems. When CEWI platoon assets are employed, mission profiles vary from far forward at low altitudes to standoff locations at high altitudes. The exact altitude and standoff ranges will vary, depending on the mission and the AD threat. The CEWI platoon is frequently employed in a direction finding or an electronic countermeasure role. An air assault operation across the FLOT is an ideal opportunity to integrate CEWI assets with RAS elements. Screening operations may require the use of EW aircraft along with reconnaissance forces. The three functional areas of EW are EW support measures, electronic countermeasures, and electronic counter-countermeasures.

ELECTRONIC WARFARE SUPPORT

5-62. These support measures involve the interception, location, and identification of enemy forces. The CEWI platoon provides combat information for the S2 to meet the commander's requirements for FS, maneuver, and force security. EWS are the primary sources for electronic attack actions by the S3. The S2 must establish priorities for electronic attack plans, orders, and requests. He continuously coordinates the operations of regiment or division MI resources through the regiment or division tactical operations center support element and the battlefield information control center.

ELECTRONIC ATTACK

5-63. These countermeasures involve actions taken to prevent or reduce the effective use of the electromagnetic spectrum by hostile forces. The squadron S3 plans and coordinates EW operations. He primarily directs electronic attack actions in jamming and deception roles. With the limited resources available, the S3 must extensively plan those necessary electronic attack targets. Along with the S2 and FSO, the S3 establishes target priorities. Electronic attack actions are taken against targets that will degrade the enemy's ability to respond effectively. Electronic attack tasking and requests are similar to those discussed in paragraph 5-62.

ELECTRONIC PROTECTION

5-64. These actions are taken to retain effective friendly use of the electromagnetic spectrum. The S3 coordinates with the C-E officer in establishing the EP to protect friendly C-E operations. Training in the proper employment of the emitters and the emitter design is necessary for effective EP. FM 34-1 provides details about IEW.

COUNTERINTELLIGENCE

5-65. Counterintelligence supports those actions necessary to protect the force; for example, the OPSEC needs of the command. Counterintelligence will support actions that counter the hostile intelligence threat; safeguard the command from surprise; deceive enemy commanders; and counter enemy sabotage, subversive, and terrorist activities. FM 34-60 contains more information on counterintelligence.

AIR TRAFFIC SERVICES

FUNCTIONS

5-66. The corps aviation brigade structure includes ATS battalion that provides the personnel and equipment to establish, operate, and maintain ATC facilities. ATS elements interface with aircraft in flight and with A^2C^2 elements at CPs to provide ATS to aircrews that are conducting tactical operations. ATS support includes navigational assistance, flight-following assistance, air threat warnings, weather information, artillery advisories, and airfield and landing site terminal control. ATS units also interface with host nation airspace cells and sister services during joint and combined operations.

SYSTEM

5-67. ATS personnel operate a network of equipment located at FOCs, FCCs, approach and departure control facilities, and airfield control towers. They also operate NAVAIDs to provide for the control and coordination of air traffic within the corps area. FM 100-103 explains the specific operation of these facilities.

REAR OPERATIONS

5-68. ATS units provide continuous ATC service in the rear operations area. They also provide emergency and routine weather and air-warning information to aircraft in flight. An FOC or one or more FCCs will be established to extend the communications coverage between the rear operations area and the aircraft handed over to other FCCs that provide support to the tactical operations area.

TACTICAL OPERATIONS

5-69. Restrictions and constraints will be kept to an absolute minimum. Freedom of movement by Army aircraft is necessary, based on mission requirements, throughout this area. The required flexibility and potential density of traffic make individual reporting neither feasible nor desirable. However, an FCC will be established and operated by ATS elements to coordinate information reflecting weapon intensity and aviation activity in the division areas. The division FCC provides ATC service for Army aircraft within the division area and serves as a point of access into the A^2C^2 system.

It provides a primary communications link between the terminal facilities of the division airfields, other airfields, the division TOC, and the flight operations center. The FCC provides a liaison with associated AD fire units that provide low altitude radar coverage over the division and beyond the FLOT. Through voice and data link, this information is forwarded via AD, Army aviation, and Air Force systems to aircraft operating in and forward of the division area.

REGIMENTAL AND SQUADRON AIRSPACE MANAGEMENT

5-70. At regimental and squadron levels, ATS elements cannot manage airspace using positive control methods. They will use procedural control methods. At these levels, airspace management and FS coordination functions are closely interwoven. These functions involve detailed coordination and integration of tactical fire and maneuver operations. Therefore, those individuals directly involved in the conduct of localized combat operations perform airspace management functions as part of the corps airspace control system. These individuals include squadron and troop commanders, FS coordinators, air liaison officers, and forward air controllers. Although commanders will communicate directly with Army aviators to accomplish tasking and coordinate tactics and techniques, ATS elements will make every effort possible to provide advisory information or other needed assistance. For example, ATS elements may establish passive landing sites or nonprecision passive navigation systems.

SECTION II—COMBAT SERVICE SUPPORT

FUNDAMENTALS

5-71. CSS is the support provided to sustain combat forces, primarily in the fields of administration and logistics. The effectiveness of the RAS and division cavalry is directly proportional to the effectiveness of its weapons systems and soldiers who operate them. In spite of operations in logistically bare areas, the nonlinear battlefield, and austere environmental conditions, logistics support of the air cavalry must be anticipated and pushed as far forward as possible. This chapter describes the CSS system for the RAS, division cavalry, and aviation troop with regard to planning, organization, and coordination.

COMBAT SERVICES SUPPORT OPERATIONS FOR THE REGIMENTAL AVIATION SQUADRON

5-72. RAS CSS operations are conducted primarily through the HHT, AVUM troop, and AHT. The RSS normally provides CSS (except AVIM) for the RAS. Because the regiment has an organic support squadron, it does not usually require augmentation. However, COSCOM may provide backup DS teams and may throughput Class III(A) to the regiment. The corps AVIM battalion provides the regiment with an AVIM company, backup AVUM, repair parts, and armament systems support. The units of the corps personnel group and finance group are the primary providers of personnel service support for the RAS. Units include the personnel services company, finance support unit, replacement company, and postal company. The RSS of the ACR coordinates with these units for any support the RAS needs. The COSCOM is tailored for flexibility and provides support consistent with the mission. FMs 1-111, 63-3, and 100-10 describe COSCOM operations in detail.

COMBAT SERVICES SUPPORT OPERATIONS FOR THE DIVISION CAVALRY SQUADRON

5-73. Division cavalry CSS operations are conducted primarily through the HHT and AVUM troop. The armored DCS receives support from the DASB. In squadrons assigned to light infantry, air assault, and airborne divisions, CSS is provided primarily by FSSE from the DISCOM. The support relationship established with division influences the location of the SSA. In squadrons assigned to light infantry, air assault, and airborne divisions the field trains normally are collocated within the DSA or aviation BSA. In the heavy division, the squadron will normally fall under the OPCON of the division commander and be located in a position where it can be best supported by both ground and air CSS operations. This is frequently well forward in the vicinity of a maneuver brigade’s BSA. The squadron receives AVIM support from the DASB or DISCOM. The DASB (armored division) or DISCOM (light infantry, air assault, and airborne divisions) provides AVIM support for the AVUM troop including allied shops support, backup AVUM, aircraft recovery support, and aviation Class IX repair parts.

COMBAT SERVICES SUPPORT OPERATIONS IN THE AIR CAVALRY TROOP

5-74. The air troop lacks the capability to transport or store Classes I, II, III, V, VI, and VIII; the troop must coordinate pick up of these items. The AVUM troop assists the ACT with receiving and coordinating CSS. The first sergeant is the ACT logistician. Additionally, the commander will usually assign a warrant officer as the ACT supply officer as an additional duty. With the commander's guidance, they will coordinate the troop’s supply needs. Additionally, they will receive assistance from the Class III and/or Class V platoon sergeant and flight operations officer in forecasting Classes III(A) and V(A). Requests are then forwarded through normal supply channels. The air troops of the DCS and ACS, in conjunction with the AVUM troop, must work together to ensure CSS operations work.

SUPPLY CLASSES

CLASS I

5-75. The normal basic load of MREs for the RAS and DCS is a three-day supply. The RAS S4 consolidates ration requests from subordinate troops and sends them to the regimental S&T troop. The S&T troop then consolidates all squadron requests and sends them to the RMMC. The RAS S4 requests replenishment of the Class I basic load through the RMMC. In the RAS, regimental food service personnel draw rations from the regimental S&T troop Class I point in the RSA using supply point distribution. The consolidated food service section in the squadron HHT then prepares and distributes the food according to unit SOP.

5-76. Subsistence for DCSs in the light infantry, air assault, and airborne divisions is provided by the FSB. HSCs of the FSB or the HSC of the MSB provide Class I or ration breakdown points.

5-77. In the armored division cavalry, ration requests are sent from the squadron through the DASB to the DMMC or FSB with area support responsibility. The DASB supply platoon coordinates for delivery based on feeder reports and operates a Class I break point and distributes rations to the squadron.

WATER

5-78. For the RAS, water is located at the Class I distribution point. The S&T troop of the RSS is responsible for water potability and distribution, to include the establishment of water points. Squadrons draw water from the nearest water point, using supply point distribution. Water is delivered forward on the troop supply trucks as part of the LOGPAC.

5-79. For the division cavalry, water is supplied to the division by the MSB S&S company (armored divisions) or MSB HSC (light infantry, air assault, and airborne divisions). These water points are normally in the DSA and in each BSA. Resupply at the squadron level is similar to the RAS.

CLASSES II, III (PACKAGED), IV, AND VII

5-80. The RAS receives its Classes II, III (packaged), IV, and VII supplies from the S&T troop of the RSS. In the armored division cavalry, these supplies are provided by the DASB in the Aviation BSA, a DASB supply platoon, area supporting FSB or the DMMC. In the light infantry, air assault, and airborne divisions, these supplies are provided by the MSB HSC in the DSA or by the forward HSC in the BSA on an area basis.

5-81. Requirements for Classes II, III (packaged), IV, and VII supplies, flow from the RAS through the RMMC to the COSCOM MMCs. Normally, RAS elements are forward and send requirements to the field trains (S4).

CLASS III (BULK)

5-82. In the ACR, the S&T troop of the RSS receives, temporarily stores, issues, and distributes Class III (bulk) fuel supplies. The petroleum storage and issue section of the S&T troop in the RSA operates Class III distribution points. The S4 forecasts fuel requirements for the squadron during the planning process and transmits this request to the Class III section of the regimental MMC. COSCOM may throughput Class III(A) bulk directly to the RAS.

5-83. In the division cavalry, the air troop commanders in conjunction with the Class III and/or Class V platoon sergeant and flight operations officer forecast Classes III(A) and V(A) and submit to the S4. These forecasts and reporting times are established in the division SOP. Depending on the support relationship in effect, the forecast is submitted through the aviation brigade S4 or DASB supply platoon and/or FSB, to the MSB, or directly to the DMMC. In the light infantry, air assault, and airborne divisions, MSB

HSC in the DSA or by the forward HSC in the BSA on an area basis, receives, temporarily stores, and issues Class III (bulk).

5-84. Emergency aerial resupply of fuel is accomplished using collapsible 500-gallon drums. In the RAS, the AHT may be used to deliver fuel from the S&T troop Class III point to squadron trains, troop trains, or direct to the FARP. In the division cavalry, this type of utility helicopter support is requested through the aviation brigade headquarters from the GSAB (armored divisions), assault battalion (light infantry and airborne divisions), or command aviation battalion and/or medium helicopter battalion (air assault division).

CLASS V

5-85. In the ACR, the S4 initiates Class V and V(A) requests. The ACR or corps ammunition officer authenticates the requests. If an emergency shortage of ammunition occurs, the corps can use PLS or stake and platform trailers to deliver ammunition by throughput distribution directly to the squadrons combat trains. It may also arrange for aerial resupply. The Class III and/or Class V platoon and the AHT are the primary RAS assets that handle and transport Class V. Cross-leveling Class V(A) supplies within the ACR may be necessary to meet emergency requirements.

5-86. For the division cavalry, the DAO, located in the DMMC, performs ammunition management for the division and exercises staff supervision over all ATPs. Division or higher commanders determine the ammunition basic loads based on the situation and availability.

5-87. The majority of aviation ammunition is usually issued at an ASP. To meet the needs of the squadron, the S4 must coordinate through the DASB support operations and DAO to route ammunition from COSCOM directly to an ATP providing area support or to a temporary ATP in the FLE. The aviation brigade may have a supporting ATP for some operations that can be used by the squadron to reduce turnaround time. The S4 must ensure that he coordinates for the movement of any Class V(A) in area supporting ATPs. In the light infantry, air assault, and airborne divisions, the forward HSC ATP in the BSA, or DS ammunition company ATP on an area basis provide the ammunition requested.

CLASS VI

5-88. Class VI supplies consist of Army and Air Force Exchange Service items for sale to troops and other authorized individuals. This class of supply should not be confused with the ration supplement (sundries) pack. The sundries pack contains items necessary for the health and welfare of troops, such as essential toilet articles. It is made available in theaters of operation for issue through Class I channels. The S1 submits requests for support through administrative channels when an Army exchange facility is not available.

CLASS VII (MAJOR END ITEMS)

5-89. Class VII items are not stocked in squadrons. Major end items are issued on daily battle loss reports by formal requisition. The COSCOM may deliver large items to the RAS or division cavalry. For aircraft, the nondivisional HESC may stock replacement aircraft. These aircraft are generally command regulated and released at the direction of the corps commander.

CLASS VIII

5-90. In support of the RAS, the medical troop of the RSS establishes a regimental medical supply section distribution point.

5-91. For the DCS, the DMSO, which is part of the MSB medical company, is responsible for providing medical supply and unit level medical maintenance support. Supplies are distributed to the supported medical units using the supply point distribution method. Request for Class VIII is forwarded to the DMSO and the Class VIII supplies are forwarded to the squadron at the forward medical company providing area support.

CLASS IX

5-92. The AVUM troop maintains the aviation PLL for the RAS. Requests for PLL replenishment are submitted to the AVIM SSA, which maintains the regimental ASL for Class IX(A). The SSA either issues the part or forwards a request to the COSCOM MMC.

5-93. In the division cavalry, a PLL is maintained in the squadron by each ground troop, HHT , and the AVUM troop and/or aviation service troop. These PLLs are continuously reconstituted from the ASL in the ASB.

MAPS

5-94. For the RAS, the RMMC maintains required stockage levels of unclassified maps. The S&T troop stores the maps. The RMMC directs the issue of maps, using established automated procedures for Classes II, III (packaged), and IV. Requirements are computed under the staff supervision of the G2 (S2 if ACR level), who establishes issue priorities. The RAS S2 submits classified map requirements through the regimental S2.

5-95. In DCSs, the DMMC maintains required stockage levels of unclassified maps. The squadron S2 submits classified map requirements through the aviation brigade S2.

FORWARD AREA ARMING AND REFUELING POINT

5-96. The FARP is the focal point of the ACTs forward support (see FM 1-111). The squadron normally places one FARP with the squadron's combat trains for C^2, support, and protection. The organic firepower of the AVUM troop's FARP is limited to small arms (M16, M203, SAW, AT-4 and .50 cal). A second FARP is placed forward as close to the AO as the situation permits. Keeping a FARP forward increases the total time on station by reducing the travel times associated with arming and refueling. The forward most FARP is normally placed outside the range of enemy medium artillery. This FARP may be placed in the vicinity of a forward AA, but is normally established as a separate site to reduce the signature and simplify aircraft flight patterns. If the FARP is placed outside the squadron's assigned AOs, the S4 must coordinate the location with the affected brigade. Every open field becomes a potential FARP site. A good location allows for tactical dispersion of aircraft and conceals FARP operations. Tree lines, vegetation, shadows, built-up areas, terrain folds, and reverse slopes should be used to mask the operation from enemy detection. See Figure 5-9 for an example of a FARP setup. Once activated, forward deployed FARPs must be moved frequently to increase survivability particularly when within range of indirect fire systems.

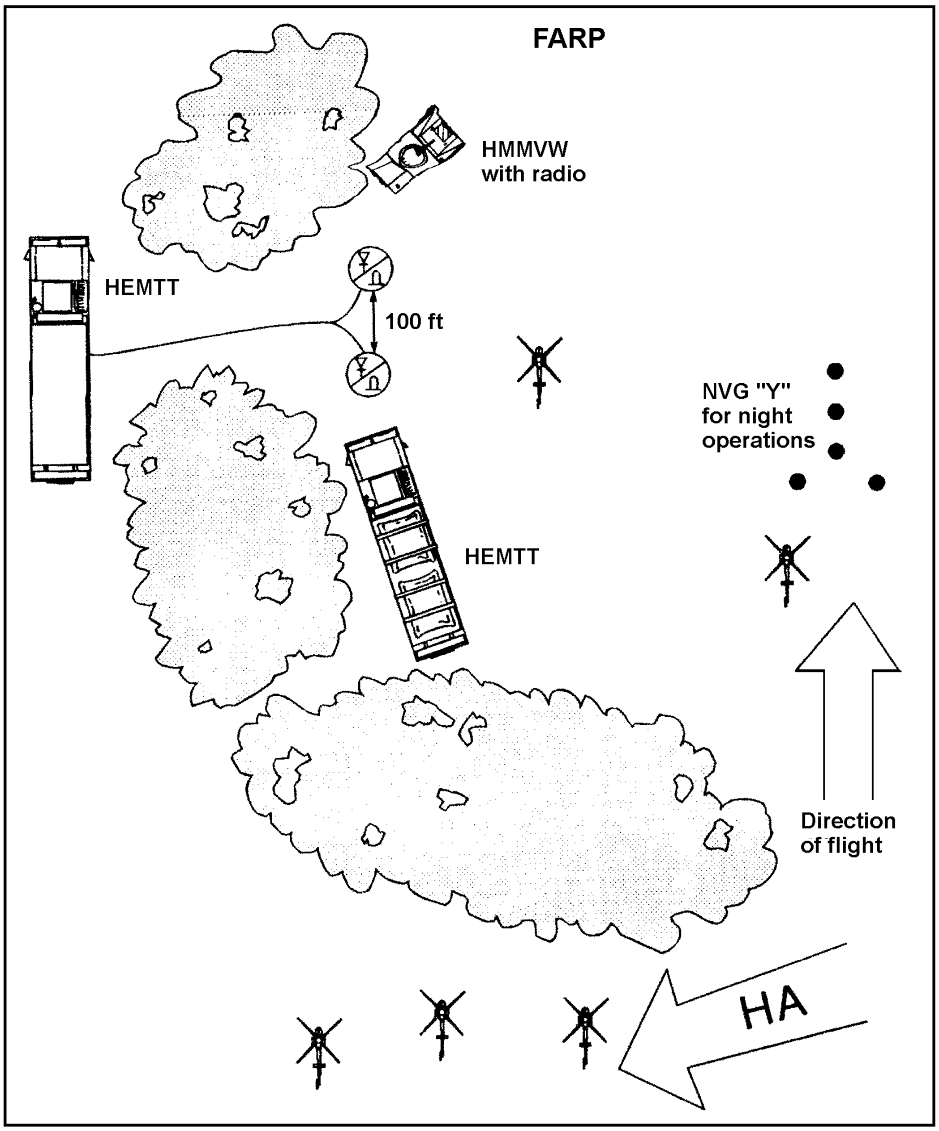


Figure 5-9. Example of a FARP Setup

5-97. The FARP is task organized to meet the aviation mission requirements and to provide support in the forward area. Figure 5-10 depicts a FARP collocated with the flight operations center in a FAA. It is composed of aviation Classes III and V assets and can include a maintenance contact team. The AVUM troop and/or aviation service troop commander assembles this team, as required, from assets of the troop. Organizing this contact team is balanced against the requirements of maintenance in the rear where more extensive work can be accomplished. This contact team focuses on BDA and quick repairs. The ACT commanders can combine their crew chiefs to provide a contact team forward at the FARP as well as to support in the rear AA. Movement and resupply of the FARP is conducted by ground or aerial means. When time is critical, air delivery is the most advantageous.

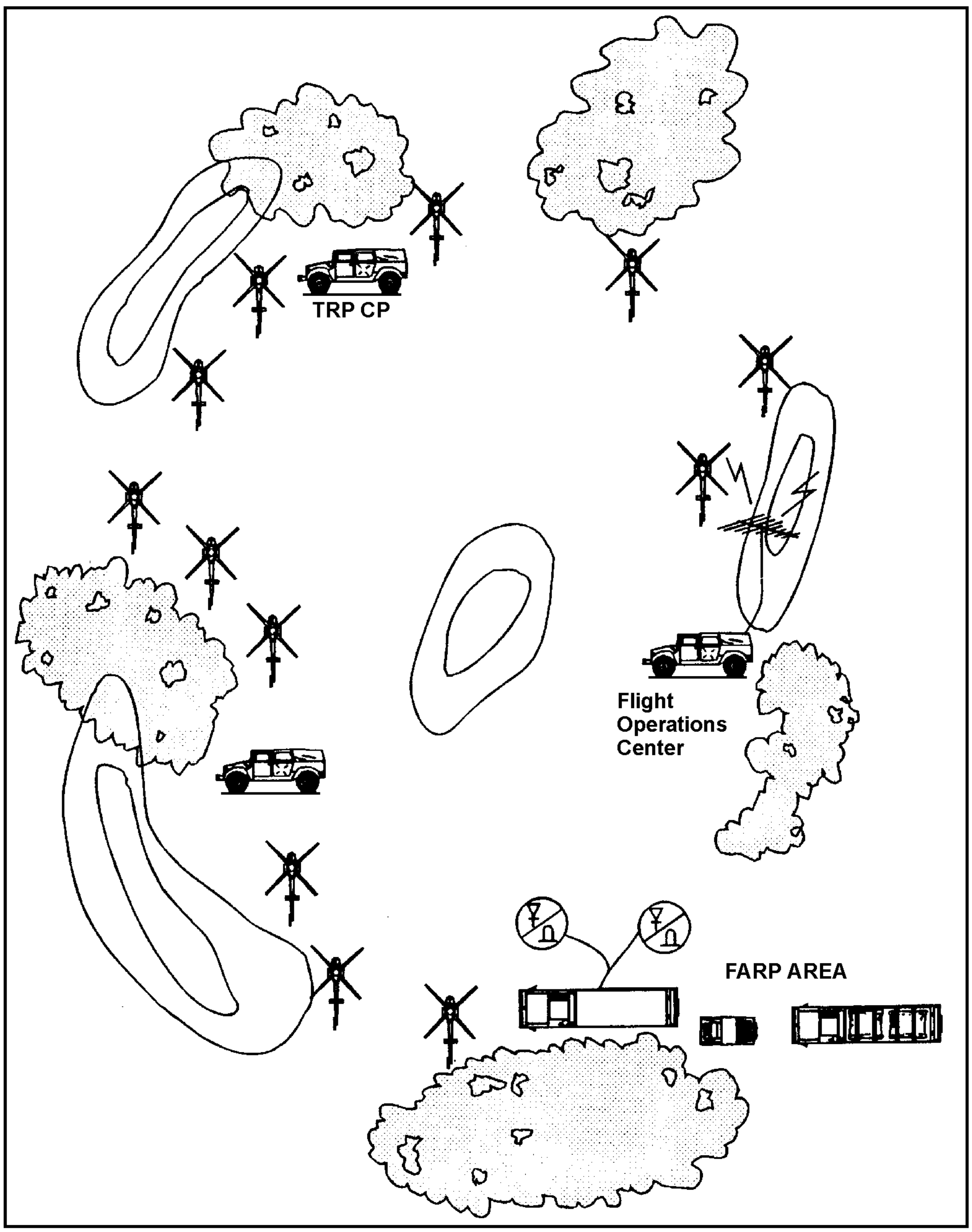


Figure 5-10. FARP collocated with flight operations center in FAA

VEHICLE AND OTHER GROUND EQUIPMENT MAINTENANCE AND RECOVERY

MAINTENANCE SUPPORT

5-98. The RAS and DCSs have an organic unit maintenance element. However, the large number of aircraft, ground vehicles, and other critical pieces of equipment necessitates additional maintenance assistance from outside the squadrons (such as DS, GS, and depot) to sustain operations.

UNIT MAINTENANCE

5-99. The operator and/or crew and organizational maintenance personnel perform unit maintenance. It includes scheduled and unscheduled unit level maintenance repair and PMCS. As a rule, the operator and/or crew of the using unit primarily performs PMCS. The purpose of PMCS is to improve the operational readiness of equipment by preventive maintenance and early diagnosis of problems.

DIRECT SUPPORT MAINTENANCE

5-100. They provide extensive maintenance support to the squadrons including component repair and repair parts supply (ASL) support. DS maintenance for the RAS is furnished by the maintenance troop of the RSS. DS maintenance for the DCS is furnished by the DASB in the DISCOM. The light infantry, air assault, and airborne division's DCS receive maintenance support from the MBA's maintenance companies in the DSA, or by the forward maintenance company in the BSA on an area basis.

GENERAL SUPPORT MAINTENANCE

5-101. GS maintenance is characterized by an extensive component repair capability. This level of maintenance is normally found at theater army level.

DEPOT MAINTENANCE

5-102. AMC depots or activities, contractors, and host nation support personnel perform depot maintenance in support of the supply system. Depot tasks are outlined in AR 750-1 and also in a memorandum of understanding when they are performed in the theater of operations.

RECOVERY PROCEDURES

5-103. The recovery manager coordinates recovery operations with the overall repair effort to best support the commander's priorities and the tactical situation. The HHT has vehicle recovery capability. FM 9-43-2 describes the technical aspects of vehicle recovery operations.

AVIATION MAINTENANCE SUPPORT STRUCTURE

5-104. The three levels of aviation maintenanceare AVUM, AVIM, and depot (see FM 1-500).

AVIATION UNIT MAINTENANCE

5-105. The AVUM and/or aviation service troops, along with crew chiefs in the ACTs of the RAS and DCSs, perform AVUM level maintenance. The general concept is for crew chiefs assigned to specific aircraft to perform daily servicing and inspections. Crew chiefs also perform common “remove and replace” aircraft repairs. Scheduled maintenance (other than daily inspections) and the more time consuming operator level repairs are normally done by the AVUM and/or aviation service troop organic to the squadron.

5-106. Most of the RAS AVUM troop is located in the RSA. The divisional cavalry AVUM and/or aviation service troop is located in the SSA forward with the field trains or RSA.

AVIATION INTERMEDIATE MAINTENANCE

5-107. The RAS is supported by a nondivisional AVIM company located at the corps level. The AVIM company provides intermediate shops, maintenance, Class IX ASL, ORF aircraft, and repairable exchange support for the RAS. The AVIM unit also provides backup AVUM and backup recovery support for the squadron.

5-108. The armored DCS is supported by the AVIM company in the DASB. This AVIM company provides the same support as the nondivisional AVIM, but normally does not maintain ORF aircraft. The light infantry, air assault, and airborne divisions are supported by a separate AVIM, under the DISCOM.

DEPOT

5-109. The military industrial base in CONUS fixed-base facilities generally provide depot level aviation maintenance support. The nondivisional AVIMs under a SRA normally perform some depot maintenance in theater.

AIRCRAFT RECOVERY OPERATIONS AND BATTLE DAMAGE ASSESSMENT AND REPAIR

5-110. The owning aviation unit is responsible for aircraft recovery and BDAR. The AVUM troop recovery team is normally located at the combat trains (FARPs) or with the troop in the field trains in a DCS. The AVUM troop assesses the recovery requirements and, if aerial recovery is necessary, contacts the supporting AVIM and aviation brigade for support. Aircraft recovery operations are those that move inoperative aircraft systems or components from the battlefield to a maintenance facility. In some cases, only portions of inoperative or damaged aircraft may be recovered. Supported AVIM companies have a backup recovery and BDAR capability.

More detailed information on aircraft recovery can be found in FMs 1-500 and 1-513.

Appendix A

Risk Management

GENERAL

A-1. Tough, realistic training conducted to standard is the cornerstone of Army warfighting skills. An intense training environment stresses both soldiers and equipment, creating a high potential for accidents. The potential for accidents increases as training realism increases. Thus realistic training poses a serious drain on warfighting assets. Commanders must find ways to protect their soldiers and equipment from accidents during realistic training to prepare for war. An accidental loss in war is no different in its effects from a combat loss; the asset is gone. Commanders must compensate for the numerical advantages of the threat by protecting their combat resources from accidental loss. How well they do this could be the decisive factor in winning or losing. Commanders and staffs can use this appendix as a guide for managing risk as it applies to their organization and mission.

CONCEPT

A-2. Risk management is a tool leaders can use to make smart risk decisions in tactical operations. It allows leaders to execute more realistic training scenarios not otherwise possible because of the high probability of accidents. Risk management is a commonsense way of accomplishing the mission with the least risk possible. It is a method of getting the job done by identifying the areas that present the highest risk and taking action to eliminate, reduce, or control the risk. Risk management thereby becomes a fully integrated part of mission planning and execution.

RESPONSIBILITIES

A-3. Risk management is not complex, technical, or difficult. It is a comparatively simple decision making process--a way of thinking through a mission to balance mission demands against risks. Once understood, risk management is a way to put more realism into training without paying a price in deaths, injuries, or damaged equipment or all three. Risk management is not limited to training scenarios. It is performed during actual combat as well as in peacetime. Leaders must learn to assess risks during training events and apply the same techniques during combat actions. During combat, risks may be taken but only after they are evaluated and weighed as they are during training.

COMMANDER

A-4. The commander is responsible for effectively managing risk. He must—

- Willingly determine the proper balance that will achieve optimum, not just adequate, performance from their command.
- Select the best risk-reduction options provided by the staff.

- Accept or reject residual risk, based on perceived benefits.
- Train and motivate leaders at all levels to effectively use risk management concepts.

EXECUTIVE OFFICER

A-5. The XO as director of the staff, ensures integration of risk management in all aspects of staff planning, directing, coordinating, and controlling to support force protection. In the risk management process, each staff officer must—

- Recommend appropriate control measures.
- Use risk management to assess his or her functional area.
- Recommend appropriate control measures to reduce or eliminate risk.
- Integrate selected risk control into plans and orders.
- Recommend elimination of unnecessary safety restrictions that diminish training effectiveness.

TROOP LEADERS

A-6. Troop leaders must review control measures for feasibility. They must report risk issues beyond their control or authority to their seniors for resolution. Troop leaders must recommend changes to improve synchronization of their operations in support of the higher commander's plan. They must use the risk management process to identify, assess, and control hazards for their mission.

MANAGEMENT PROCEDURES

STEP 1, MAJOR EVENTS

A-7. Identify the major events that are expected to occur during the operation and the hazards associated with all specified and implied tasks. A recommendation is to list major events chronologically and display them in a flow chart. This process will aid in the detection of specific risks associated with all specified and implied tasks. The staff reviews and expands, as appropriate, the list of hazards and major events during the war game. The objective is to reflect the total operation from the preparatory actions until the operation is completed or the next phase of operations is under way. This procedure helps to ensure that all significant hazards have been identified, and the staff can determine the appropriate force protection measures.

STEP 2, ASSESS HAZARDS

A-8. By assessing hazards and evaluating battlefield-framework synchronization, the staff can figure out the level of risk associated with a given hazard and decide where and when control measures are appropriate to protect the force.

A-9. Risk assessment matrices provide a simple analysis method of subdividing an operation into its major operational events to discover areas where the staff might eliminate or reduce risk. Each unit should develop its own risk assessment matrix with applicable major operational events similar to the one shown in TC 1-210. Units can use the risk assessment matrix alone or with other analysis techniques. The matrix is nearly always more effective than intuitive methods in identifying the extent of risk. When using a risk assessment matrix, the risk assessor must—

- Review each situation to ensure he has evaluated all significant areas of concern, even if the matrix does not include them.
- Use the matrix to analyze risk and target areas of concern for risk-reducing techniques.
- Review individual areas of concern before recommending options. If an area of concern is off the scale in a particular situation, a higher decision level may be required than the risk gauge suggests.

A-10. Another technique the risk assessor can use is the METT-T risk assessment procedure. Leaders can subjectively decide the likelihood and extent of accidental loss based on this type of analysis. When using the METT-T format, the risk assessor must—

- Determine the mission's complexity and difficulty.
- Assess the enemy situation and identify specific hazards.
- Consider all aspects of the terrain as well as weather and visibility.
- Determine the supervision required and evaluate the experience, training, morale, and endurance of units and their equipment.
- Determine the time available for planning and executing the mission.

STEP 3, MAKE DECISIONS AND DEVELOP CONTROLS

A-11. Make risk acceptance decisions by balancing risk benefits against risk assessments. Complete a preliminary hazard analysis of these events. The preliminary hazard analysis is the initial examination of the hazards of an operation and their implications. It is normally based on the mission analysis and database review and takes place before the details of an operation have been completely defined. The objective of the preliminary hazard analysis is to define, at the earliest possible point in the operational life cycle, the hazards that can be expected. With proper controls, leaders can detect and eliminate unnecessary safety restrictions that impede the realism or effectiveness of training. Check for residual effects before implementing risk reduction options. Visualize what will happen once the option has been implemented. Sometimes reducing one risk will only introduce others. AR 385-10 provides a convenient list of actions that commanders and staff can use as an aid in ranking options. The staff must—

- Identify hazards and assess risk.
- Focus on critical events first.
- Eliminate unnecessary risks.
- Reduce the amount of mission essential and prudent risks by applying controls.
- Develop control options which synchronize the operation that eliminate or reduce risks.
- Recommend options for the commander's decision.

STEP 4, IMPLEMENT CONTROLS

A-12. Integrate specific controls into plans, OPORDs, SOPs, training performance standards, and rehearsals. Knowledge of risk controls, down to the individual soldier, is essential for the successful implementation and execution of these controls.

STEP 5, SUPERVISE

A-13. The commander must enforce controls and standards. Leaders monitor, follow up, verify, and correct or modify, as appropriate, controls that the commander imposes on his subordinates. Monitoring the effects of risk reduction procedures is very important, especially for new and untested procedures. Only by seeing the character of operations can leaders fully appreciate risk implications. When monitoring operational activities, leaders must—

- Avoid administrative intrusions on their subordinates' time.
- Go where the risks are and spend time at the heart of the action.
- Analyze and think through issues, not just watch.
- Work with key personnel to improve operational procedures after the action. (Leaders must not hesitate to assess imminent danger issues on the spot.)
- Fix systemic problems that are hindering combat effectiveness.
- Capture and distribute lessons learned from mishaps and near misses for future use.

RULES OF RISK MANAGEMENT

A-14. Leaders must also balance the cost of risks with the value of the desired outcome. They must consider and manage risks in making such decisions using the following three general rules:

- Never accept an unnecessary risk. The leader who has the authority to accept or reject a risk is responsible for protecting his soldiers from unnecessary risks. If he can eliminate or reduce a risk and still accomplish the mission, the risk is unnecessary.
- Make risk decisions at the appropriate level. The leader who must answer for an accident is the person who should make the decision to accept or reject the risk. In most cases, he will be a senior officer, but small unit commanders and first-line leaders might also have to make risk decisions during combat. Therefore, they should learn to make risk decisions during training.
- Ensure that the benefits of a prudent risk outweigh the possible cost of the risk. Leaders must understand the possible risk and have a clear picture of the benefits to be gained from taking that risk.

Appendix B

Aircraft Characteristics

GENERAL

B-1. Basic information on weapon systems, air transportability, helicopter dimensions, and communications have been provided, in Tables B-1 through B-4, to assist in the planning of operations.

Table B-1. Weapon Systems

Aircraft Type ***	Hellfire or *TOW	Air-to-Air Stinger	2.75” (70mm) Rockets	.50 caliber machine gun (rounds)	20mm cannon (rounds)	30mm Chaingun (rounds)
AH-1 ****	8 TOW		76		750	
AH-64A**	16 Hellfire		76			1,200
AH-64D**	16 Hellfire/ Hellfire II	4	76			1,200
OH-58D** ****	4 Hellfire	4	14	500		
RANGE	**Hellfire** 8 km max **TOW** 3750m max	5+ km max	8 km max	2 km max	2 km max	4 km max

NOTES: *The AH-1 uses the TOW missile, as its armor engagement weapon, instead of the Hellfire missile.
**Aircraft has a laser for target designation and an ATHS.
***Numbers in each column indicate the maximum load for each system. The total amount of ordnance carried will vary based on METT-T and selected weapon configuration.
****One weapon system per side for Hellfire and/orTOW, ATAS, and 2.75-inch rocket.

Table B-2. Air Transportability

Aircraft Type	C-130		C-141		C-17		C-5	
	Rapid Deploy	High Density	Rapid Deploy	High Density	Rapid Deploy	High Density	Rapid Deploy	High Density
AH-1	1		3	4	4	6	7	12
AH-64	N/A		2**		4**		6***	
CH-47	N/A		N/A		N/A		2****	
OH-58A/C	2	3	4	6	7	7	10	13
OH-58D	2	3	4	6	7*	7	10	13
UH-1	1		2	4	4	6	6	11
UH-60	N/A		2**		4**		6***	

NOTES: *3 with MMS on, 4 with MMS removed.
**Remove stabilator, fold blades (main and tail),fold pylon (UH-60 only), drop main rotor head, fairing steps and antennas.
*** Remove stabilator and fold blades (main and tail).
****Remove forward and aft blades, aft pylon, and forward transmission package.

IMPORTANT: High-density column represents significant aircraft disassembly, so as to reduce the aircraft to minimal size for transport.

Table B-3. Helicopter Specifications

Aircraft Type	Height	Fuselage Length	Weight (pounds)	Rotor Diameter	Airspeed (knots)	Endurance (hours or KMs)
AH-1	13'7.7" over main rotor	45'8" *Overall 53'1"	10,000 max 7,500 empty	44'	190 max 120 cruise	**Combat radius is 100 KM.
AH-64A	15'3" over main rotor	49'1" *Overall 57'8"	21,000 max 11,500 empty	48'	164 max 120 cruise	**Combat radius is 150 KM. Combat radius w/ 230-gallon tank is 300 KM.
AH-64D	16'1" over main rotor	49'1" *Overall 57'8"	23,000 max 12,000 empty	48'	176 max 120 cruise	**Combat radius is 150 KM. Combat radius w/ 230-gallon tank is 300 KM.
CH-47D	18'7.8" over aft pylon	50'9" *Overall 98'10.7"	50,000 max 24,000 empty	2 - 60'	170 max 130 cruise	2.5 w/o external fuel (225 KM) 4.0 w/external fuel (350 KM)
OH-58C	9' 7" over main rotor	32'2" *Overall 40'11.8"	3,200 max 2,400 empty	35'4"	120 max 100 cruise	2.0 normal 1.5 worst case
OH-58D	12'10.6" over main rotor	33'0.4" *Overall 41'2.4"	5,200 max 3,500 empty	35'	125 max 100 cruise	2.0 normal 1.5 worst case
UH-1	14'8.2" over tail rotor	41'5" *Overall 57'0.7"	9,500 max 7,400 empty	48'3.2"	124/112 max roof/nose 100 cruise	2.5 w/o auxiliary fuel 6.0 w/ auxiliary fuel
UH-60 **A** – UH-60A **L** – UH-60L	16'10" over tail rotor	50'7.5" *Overall 64'10"	**A**-20,250 max **L**-22,000 max 11,000 empty	53'8"	193 max 130 cruise	2.5 w/o external fuel (225 KM) 5.0 w/ external fuel (450 KM)

NOTES: *The word "overall" in the length column refers to distance from the most forward tip of the forward facing rotor blade to the farthest aft portion of the aircraft (such as, the most aft tip of the rear facing rotor blade on a CH-47).
**Endurance figures are based on an average weapons configuration and will vary, depending on specific weapons configurations and loads.

Table B-4. Number and Type of Radios

AIRCRAFT TYPE	FM	VHF	UHF	HF
AH-1	1	1	1	
AH-64A	** 1 (2)	** 1 (0)	1	
AH-64D	2	1	1	
CH-47D	*** 0, 1, 2	*** 2, 1, 0	1	1
OH-58C	2	1	1	
OH-58D	2	1	1	* 1
UH-1	2	1	1	
UH-60	2	1	1	

NOTES: *The HF listed above is not currently installed but the wiring and mounts exist.
Configuration is 2 FM and 0 VHF **OR 1 FM and 1 VHF.
***Configuration is 2 FM and 0 VHF **OR** 1 FM and 1 VHF **OR** 0 FM and 2 VHF.

AH-1 COBRA

B-2. The AH-1 Cobra is a single-engine, tandem-seat, two-bladed attack helicopter. Its crew consists of two rated aviators. The pilot occupies the rear cockpit and the copilot-gunner occupies the front cockpit. The AH-1 is essentially a daytime weapons platform due to the inability to fire and track the TOW missile at night. Some Cobras have been modified with a terminal night sight called C-NITE (Cobra night). This system allows the gunner to thermally track the TOW missile at night through the TSU. See FM 1-112 for a detailed explanation of the aircraft.

AH-64A APACHE

B-3. The AH-64A is a twin-engined, tandem-seat, four-bladed attack helicopter. With its crew of two rated aviators, the pilot occupies the rear cockpit and a copilot-gunner occupies the front cockpit. The aircraft has day, night, and limited adverse weather fighting capabilities. The aircraft is equipped with a LRF/D. The LRF/D is used to designate for the firing of a Hellfire missile and provides range to target information for the fire control system. See FM 1-112 for a detailed explanation of the aircraft.

AH-64D LONGBOW APACHE

B-4. The AH-64D is a variant of the AH-64A. The AH-64D is designed to provide increased effectiveness over the existing capabilities and greatly reduce the limitations of the AH-64A. The AH-64D has the following improvements: FCR, RF Hellfire (fire and forget) missile system, digital communications, glass cockpit with MFDs and other significant features. Day, night, and limited adverse weather fighting capabilities of the AH-64A are significantly enhanced in the AH-64D. The addition of the M299 Launcher and AGM-114L Longbow Hellfire II missile with fire-and-forget capability enhance combat effectiveness and survivability of the aircraft and crew. See FM 1-112 for a detailed explanation of the aircraft.

CH-47D CHINOOK

B-5. The CH-47D is a twin-engine, tandem rotor helicopter designed for transportation of cargo, troops, and weapons during day, night, visual, and instrument conditions. The maximum single load that can be suspended as a tandem load from the forward and aft hooks is 25,000 pounds. Troop seating arrangements for up to 31 fully equipped ground troops or 24 litters is provided in the CH-47D. See FM 1-113 for a detailed explanation of the aircraft.

OH-58A/C KIOWA

B-6. The OH-58A/C is a single-engine, single-rotor, two-bladed observation helicopter. The crew consists of the pilot, pilot and copilot, pilot and gunner, or pilot and observer.

OH-58D KIOWA WARRIOR

B-7. The OH-58D is a single-engine, single-rotor, four-bladed armed reconnaissance helicopter. The crew consists of two rated aviators. The pilot occupies the right seat while the CPO occupies the left seat to operate the systems. See appendix C for a detailed discussion on the KW.

UH-1H IROQUOIS

B-8. The UH-1H is a single-engine, single-rotor helicopter. Primary mission capability of the helicopter is air movement of supplies and personnel. Secondary missions include stability operations, support operations, air assault, and C^2 operations under day, night, visual, and instrument conditions. The aircraft has an external load capability of 4,000 pounds. The aircraft can carry up to 11 combat-loaded troops. See FM 1-113 for a detailed explanation of the aircraft.

UH-60A/L BLACK HAWK

B-9. The UH-60A/L is a twin-engine, single-rotor helicopter. Primary mission capability of the helicopter is air assault and air movement. Secondary missions include stability operations, support operations, CSAR, C^2 platform, CASEVAC, and Air Volcano (mine setting) during day, night, visual, and instrument conditions. The UH-60A has an external load capability of 8,000 pounds and the UH-60L is 9,000 pounds. The aircraft can carry 11 troops with seats installed, 16 troops with seats removed and carrying rucksacks, and 20 troops with seats removed and not carrying rucksacks. See FM 1-113 for a detailed explanation of the aircraft.

Appendix C

OH-58D Systems

SECTION I—SYSTEMS DISCUSSION

CREW INTERFACE

C-1. The crew interfaces with a fully integrated glass cockpit. Master controller processor units correlate individual system information before displaying it on the MFDs. The crew can select various displays, referred to as pages, on the MFDs. The primary pages available are vertical situation, horizontal situation, MMS, communication, and weapons. The system also has a series of pages known as built-in test and fault detection and location for maintenance purposes.

DATA TRANSFER SYSTEM

C-2. The DTS consists of a ground station, data transfer module, and data transfer receptacle in the aircraft. Before a flight, the AMPS can load up to three separate sets of mission data. The AMPS can be upgraded to enhance its capabilities to send and receive SPOT/SITUATION reports and still picture video (VIXL) directly from the aircraft to the AMPS via the SINCGARS radio and the TCIM. During the flight, the operator can store data in the data transfer module. After the flight, the ground station can retrieve the data. Data include mission identification, waypoints, targets, flight plans, battlefield graphic, radio frequencies/settings, and IFF. The module also has a limited flight data recorder function that can be useful in incident/accident investigations.

VIDEO TAPE RECORDER

C-3. The VTR is an 8-millimeter system and will record the page selected on the left multifunction display and all cockpit audio. It records for a maximum of two hours per tape. The crew can review the video recording in the cockpit. On completion of the mission, commanders, staff, and intelligence personnel can use the video recording for a detailed analysis. This VTR is extremely useful in reconnaissance and security operations. It is also a useful training aid for mission debriefings.

ANVIS DISPLAY SYMBOLOGY SYSTEM

C-4. The ADSS consists of a small, lightweight ODA and an electronics interface. The ODA mounts directly to the AN/AVS-6 NVD. The ADSS provides basic flight information to include vertical situation, airspeed, barometric and radar altitudes, headings, torque, MMS orientation, and waypoint direction. This allows the crew to maintain outside orientation without being forced to scan inside the cockpit for basic flight instruments.

MAST-MOUNTED SIGHT

C-5. The MMS is used only for targeting, not for flying the aircraft. The MMS sensors are approximately 6 feet above the pilot's eyes. This allows the crew to view an area while keeping the aircraft masked. The MMS houses the TIS, TVS, LRF/D, and optical boresight assembly. Camouflage, ambient weather, age and/or condition of sensors, and the type of terrain are major factors that affect MMS range capabilities.

THERMAL IMAGING SENSOR

C-6. Like a FLIR, the TIS sees IR energy (heat) and can detect radiation differences of less than 2 degrees Celsius. The output is displayed on the MFD as a monochromatic green picture when the MMS TIS page is selected.

TELEVISION SENSOR

C-7. The TVS picture displayed in the cockpit is monochromatic green; the crew cannot distinguish colors. The TVS is generally a day-only sensor. However, because of its low light level capabilities, the TVS can be used at night to look into areas with artificial illumination. For example, the TVS can effectively look inside a lighted aircraft hangar at night. This capability should not be confused with the light amplification capabilities of NVG. The TVS can see through light obscurants, such as haze, but not into thick smoke as with the TIS.

LASER RANGE FINDER/DESIGNATOR

C-8. The laser performs four basic functions—ranging, navigation update, target position location, and designation. It is hazardous to vision out to a range of 23 kilometers.

VIDEO IMAGE CROSS LINK

C-9. Some KW aircraft may have the capability to send real-time video or still frames of captured video, to a remote station such as AMPS. Free text data can be added to this image to explain or enhance the displayed information. Each image will be time stamped via EGI clock.

WEAPON CONFIGURATIONS

C-10. The KW has two universal weapon pylons, one on each side. The four primary weapon systems are the .50-caliber machine gun, 70-millimeter rockets, and the Hellfire and Stinger missiles. The .50-caliber machine gun can only be installed on the left side of the KW. The other weapon systems can be mounted on either or both pylons. Weapon mixes are extremely flexible to accommodate METT-T (Figure C-1).

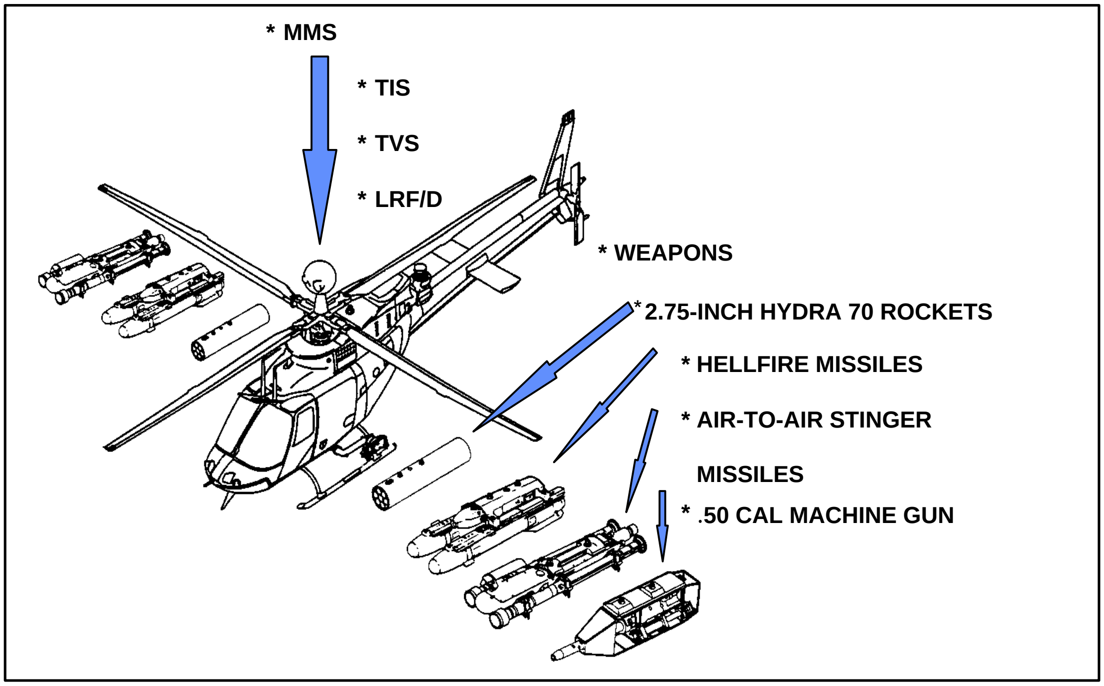


Figure C-1. Weapon Mixes (One Weapon System Per Side)

.50-CALIBER MACHINE GUN

C-11. The .50-caliber machine gun uses standard military linked .50-caliber ammunition. Its maximum effective range is 2,000 meters. The basic load of .50-caliber ammunition is 500 rounds. Some aircraft are equipped with an AIM-1 laser for targeting. The AIM-1 laser is very small self-contained IR laser mounted on the gun that is visible only with NVGs out to a range of about 1000 meters depending on illumination.

2.75-INCH ROCKETS

C-12. The KW can carry one or two rocket pods, for a maximum of 14 rockets. The three primary warheads used are high-explosive, flechettes, and multipurpose submunitions. The pilot can aim the rockets either through the multifunction display or heads-up display.

AIR-TO-AIR STINGERS

C-13. The KW can carry two ATAS missiles on either pylon, for a maximum of four missiles. The ATAS has a minimum arming range of less than 1,000 meters and a maximum range in excess of 5 kilometers. The pilot can lock onto a target with either the pilot display unit, which is a heads-up sight, or through the ATAS page on the pilot's MFD.

HELLFIRE MISSILES

C-14. The Hellfire is a laser-guided, point-detonating missile. The KW can carry two of these missiles on each pylon, for a maximum of four missiles. The crew guides the missile using laser energy. The minimum engagement range is 500 meters, and the maximum range is 8,000 meters, depending on missile model launch modes.

COMMUNICATIONS

C-15. The KW has two FM radios, one UHF radio, and one VHF radio. Provisions for an AN/ARC-199 or AN/ARC-220 HF radio with TSEC/KY-75 or TSEC/KY-100 are in place; however, HF radios are not installed in most KWs. The KW has two TSEC/KY-58s; one is dedicated to the FM 1 radio, and the other can be used for the UHF, VHF, or FM 2 radio. A planned upgrade to the FM SINCGARS radio will contain an embedded KY-58 that will allow the remaining KY-58s to be used for the UHF and VHF radios. The crew can switch between the UHF, VHF, and FM 2 radios in the secure mode anytime during flight. The UHF is Have Quick II capable. The SINCGARS FM radios are FH capable.

AIRBORNE TARGET HANDOVER SYSTEM

C-16. The ATHS transmits digital data to users via secure or unsecure existing radio links. It can communicate with artillery TACFIRE and BCS nets and will be compatible with the Air Force improved data modem. It has preformatted reports, such as SIT/STAT, SPOT, Artillery, BDA, and CAS, and requests for reports. Target location information from the MMS and navigation systems is automatically placed in the ATHS for target handovers and reports.

RETRANSMISSION

C-17. Retransmission can be accomplished with FM or HF radios. For example, the crew can receive on FM-1 and retransmit automatically on HF or FM-2.

NAVIGATION

C-18. EGI uses GPS signals to provide accurate position reporting. The system can operate on UTM grid or latitudinal and longitudinal coordinates.

AIRCRAFT SURVIVABILITY EQUIPMENT

C-19. The KW has an integrated ASE suite. It includes the AN/ALQ-144, AN/APR-39, AN/AVR-2, and AN/APX-100.

AN/ALQ-144

C-20. The AN/ALQ-144 is an IR missile jammer. It sends out an IR signal that confuses the guidance system on hostile IR-seeking missiles.

AN/APR-39

C-21. The AN/APR-39 is a radar warning system. The KW can be equipped with either the AN/APR-39 or the AN/APR-39A(V1). The A version has an improved display and expanded processing capabilities.

AN/AVR-2

C-22. The AN/AVR-2 is a laser detection set. It provides a laser warning to the crew through the AN/APR-39 display. If the aircraft is being lased, the crew also receives a caution message and an audio tone.

AN/APX-100

C-23. The AN/APX-100 transponder has Modes 1, 2, 3(A/C), and 4. The crew can change transponder information through the COMM page on the multifunction display.

SECTION II—GENERAL INFORMATION

DEPLOYABILITY

C-24. Because of its rapid deployment capability, the KW can be quickly integrated into armed conflict. This aircraft can be unloaded from all USAF transport aircraft (C-130 to C-5) and operational in 15 minutes. Unloading and reassembly can be done on a blacked-out dirt airstrip at night. When loading for high density lifts the tailboom must be removed from the KWs, reassembly under these circumstances will take considerably longer.

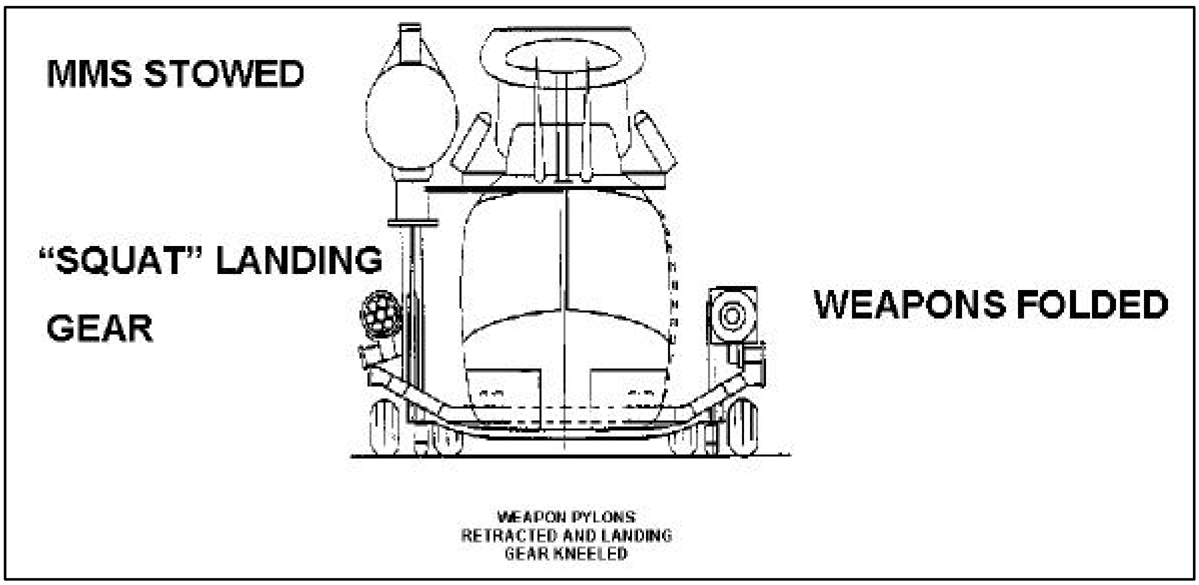


Figure C-2. OH-58D with Deployable Landing Gear

AVIATION MISSION PLANNING SYSTEM

C-25. The AMPS is a planning and/or battle synchronization tool that automates aviation mission planning tasks. The mission planner uses the AMPS to develop a mission through a logical progressive sequence of operations. These sequences of operations aid the mission planner in preparing essential tasks. Upon the completion of the mission plan, the mission planner initiates a transfer of the premission data to the DTS that downloads the data to the DTC. The DTC is removed from the DTS and transported to the aircraft where the information is downloaded into the aircraft s systems. Upon completion of the mission, the DTC is transported back to the AMPS and inserted into the DTS. This allows the postmission data obtained during the flight to be transferred into the AMPS for mission analysis.

LASER GUIDED MUNITIONS

COPPERHEAD ARTILLERY PROJECTILES

C-26. The KW may be the most effective target lasing system for the cannon launched guided projectile (Copperhead) because of the MMS and the aircraft's maneuverability. Copperhead ranges are 3 to 16.1 kilometers from the gun tube. The KW crew can designate moving or stationary targets out to 10 kilometers. Designation ranges depend on the type of target, ambient conditions, and MMS performance. The maximum separation angle from the gun-target line is 45 degrees.

LASER GUIDED BOMBS

C-27. The USAF, USN, and USMC all employ laser-guided bombs. Because the laser code for these munitions are set on the ground prior to take off, the designator will be required to change his code to match that of the bomb. Therefore, greater coordination and longer lasing times are necessary. The CAS aircraft may ask for a laser spot to verify the target prior to dropping bombs. The spot is detectable by CAS aircraft to 20 km. The CAS aircraft will also generally call for spot on based on altitude and range to the target to ensure final guidance of the munition.

Appendix D

Movement and Rapid Deployment

FUNDAMENTALS

D-1. If scheduled to refuel every 150 nautical miles, the squadron can self-deploy aircraft, personnel, and equipment from CONUS stations to almost any place in the world, which allows other transport assets to be used more efficiently. Units that plan, train, and validate their movement plans greatly increase their chances of success. The more knowledgeable personnel are of movement plans and operations, the more efficient the move becomes. Detailed unit movements information is found in the manuals referenced in paragraph D-10.

D-2. Unit deployment training is necessary if the squadron is to move in the most efficient manner. If it cannot move within its operational requirements, whether it deploys from CONUS or 3 km on the battlefield, the success of the mission is jeopardized.

D-3. The squadron is only as effective as its logistics support. Equipment used to support and sustain the unit is organic. To facilitate rapid response, effectiveness, and sustained operations, logistics support must be transported using the unit's organic equipment. Therefore, units must be organized with the necessary assets to transport their logistics support in a single move.

D-4. The unit must give careful consideration to prestocking shipping containers for aircraft components and covers. This ensures that items are available and precludes delays in unit deployment. As units prepare to on- and/or off-load aircraft and equipment; ground-handling equipment should be available to save time. Fulfilling the requirement for tools and test equipment at the ports of embarkation and debarkation also results in more effective unit movements.

RESPONSIBILITIES

COMMANDERS

D-5. Commanders are responsible for the movement of their unit personnel and equipment. They also—

- Appoint a unit movement officer (and train him).
- Supervise the operations of subordinate units.
- Establish policies for rail, air, and sea lines of communication.
- Ensure compliance with directives, policies, and regulations.
- Review and validate movement plans, SOPs, and load plans frequently.

- Coordinate with other headquarters for technical data and logistics support.

STAFFS

D-6. Staffs ensure compliance with the commander's directives and develop unit movement plans. They also—

- Plan and supervise unit movement training.
- Make recommendations for improvement to the commander.
- Establish training programs for unit movement personnel.
- Determine and coordinate logistics support requirements.
- Ensure compliance with directives, policies, and regulations.
- Ensure that subordinate unit movement plans, load plans, and SOPs are accurate and current.

UNIT MOVEMENT PERSONNEL

D-7. Unit movement personnel plan and conduct unit moves. They also—

- Develop unit movement plans, SOPs, load plans, and ensure the DEL maintained in the TC ACCIS is reviewed and current.
- Conduct unit movement training.
- Ensure that proper support and logistics requirements are requested.
- Validate movement plans.
- Inspect and inventory equipment before and after a unit movement.
- Ensure proper preparation of personnel and equipment before a unit movement.

PLANNING AND PREPARATION

D-8. The squadron must plan and prepare to arrive at a designated location in the AO and begin battlefield missions. Modes of movement and deployment are designated in orders. These orders are delivered in several formats such as an OPORD, a FRAGO, or a movement order. Because of the complexity of unit movements, the movement order is preferable. Movement orders provide detailed information such as transportation support, movement tables, and clearance numbers. The least preferred format is the FRAGO. The information below will assist planners in preparing movement directives and SOPs.

MOVEMENT DIRECTIVE

D-9. The movement directive, published by DA, is the basic document that directs units to prepare to and move from home stations. The two types of moves are administrative and tactical. In an administrative move, enemy contact is not likely and units relocate to secure areas and ports of embarkation. The S4 has staff responsibility for administrative movements. A tactical move, however, requires a combat-ready posture and organization during all phases even though the purpose of the move is to relocate only.

The G3 or S3 has staff responsibility for tactical moves. Movements are categorized as follows:

- Category A is a move from a home station with all the equipment authorized for that unit.
- Category B is a move from a home station with essential equipment only.
- Category C is a move from a home station with less than essential equipment. (The movement directive will specify what equipment to take.)

MOVEMENT INSTRUCTIONS

D-10. Movement instructions provide details for the execution of a movement. They are issued to implement the movement program and represent accepted procedures.

MOVEMENT ORDER

D-11. The movement order directs the movement of personnel and prescribed equipment from one location to another within a stated period.

MOVEMENT PLAN

D-12. The movement plan provides up-to-date logistics data. These data reflect a summary of transportation requirements, priorities, and limiting factors incident to the movement of one or more units or special grouping of personnel by highway, marine, rail, or air transportation. Movement plans are covered in FM 101-5.

LOAD PLAN

D-13. The load plan is a preplanned method for loading personnel and equipment for transport.

DEPLOYMENT

D-14. The ITO, in coordination with the UMO, must clear unit cargo and equipment with the USTRANSCOM TCC by providing advance data before actual movement to the POE can begin. This procedure allows the TCC to coordinate movement and reception planning within the POE. Advance data are maintained within the Army's TC ACCIS. Priority must be given to ensuring predeployment maintenance of the DEL to allow timely and accurate transmission of these data by the UMO in conjunction with the ITO requirements for deployments and transportation as specified in the DTR and MILSTAMP.

D-15. Command authorities may determine that selected squadrons should self-deploy, and these units must be prepared for that eventuality. Because airlift and sealift assets are limited, selected squadrons should plan to self-deploy. UH-60 and AH-64 aircraft will be equipped with the necessary fuel, ALSE, and navigation and communication systems needed to conduct self-deployment operations. They will move from CONUS stations to designated departure points where the preparation of the aircraft will occur. Prestationed ground and aerial support and maintenance teams provide stopover point assistance. When self-deployed flights arrive at destination points, ferry equipment will be removed and arrangements made for its return and reuse. Self-deployment applies only to aircraft transferred when other transportation assets are not provided, and these aircraft may provide the transport of a small amount of equipment and/or personnel. The command structure must integrate self-deploying aircraft and crews into the theater of operations. This will expedite the availability and effectiveness of these aviation assets at their operational area.

AIRLIFT

D-16. An airlift is an operation executed according to prepared plans designed to ensure air transport of supplies. The movement plan requires that the squadron be able to package and document both equipment and personnel. The mobile capability of the on- and off-load, and tie-down equipment. Therefore, the squadron must be trained not only in mission accomplishment but also in the skill and execution of airlift deployment. Emergency situations require rapid response by the armed forces; air movement fulfills that requirement.

D-17. The MAC provides the strategic air assets necessary to move personnel and materiel during emergencies or for operational necessities. Although MAC aircraft are located around the world, they are limited in number and availability. Equipment accepted on MAC aircraft must be within specified space and weight limits.

D-18. The unit movement officer is the key to exercising the unit's movement and loading plans. He supervises and conducts training and maintains updated movement data. Because operational requirements may exceed the airlift capacity, the unit movement officer also plans for the use of other types of transportation to conduct the air movement. Detailed information on unit movement planning is in FM 55-9.

D-19. Specific planning and support requirements for each unit vary. In an emergency, little time is available for planning. Therefore, the unit movement officer routinely identifies requirements and develops and validates exercise plans to preclude difficulties.

RAIL MOVEMENT

D-20. The division or installation transportation officer or DISCOM movement control officer assists movement officers' plan and identify unit rail-loading requirements. He provides training material and current procedures for transporting equipment as well as other information to minimize planning time.

D-21. When available, rail shipment is used to move heavy and outsized items to the POE. Rail shipment can damage sensitive aircraft components; therefore, this type of equipment must be airlifted.

D-22. As with other forms of movement, the aviation unit is responsible for internal administration and preparation of unit assets for rail movement. Plans and SOPs will address all rail requirements such as loading, tiedowns, organization, and specific safety provisions. Rail movement plans are completed as required by the controlling transportation agency.

D-23. The information in FM 55-20 will assist the unit movement officer in planning and preparing equipment for rail transport. This manual also provides background information on special movement requirements imposed by foreign countries.

SEALIFT

D-24. Because of the many types of merchant vessels, units can perform only minimum sealift planning and training. Planning and training is limited to on-site surveys and data about the out-loading installation, POEs and PODs and, to a limited extent, vessels that are likely to be employed. The deploying unit will have to prepare accurate cargo-loading movement data. However, HHQ should provide guidance and assistance in sealift planning (See FORSCOM Reg 55-1).

ROAD MARCH

TYPES

D-25. The movement of troops from one location to another is inherent in any phase of a military operation. A common form of troop movement is the road march. Road marches may be tactical or nontactical, depending on the enemy situation.

Tactical Movement

D-26. When contact with the enemy is possible, a unit will conduct a tactical movement. For example, if troops move forward to participate in combat operations, the movement is tactical. The S3 plans tactical movements.

Nontactical Movement

D-27. If contact with the enemy is unlikely, a unit will conduct a nontactical movement. Movement in the COMMZ to reposition laterally or to ease future operations is nontactical. The S4 may plan nontactical movements.

ORGANIZATION

D-28. March columns are organized to maintain unit integrity. In a tactical march column, all elements use the same route for a single movement and are under the control of a single commander. A large column may be composed of a number of subdivisions.

D-29. **Seria**l. A serial is a major subdivision of a march column. For purposes of planning, regulation, and control, it is organized as a single unit under one commander. A squadron is usually comprised of one serial.

D-30. **March Unit.** A march unit is a subdivision of a serial and is normally a squad, section, platoon, or troop. It moves and halts under the control of a single commander, using oral and visual signals. A radio is used only when no other means of communication can be used. March units of the main body are composed of individual units, any attachments, the battalion main CP, and the battalion trains. POL vehicles required for refueling during nontactical marches may move ahead of schedule to establish a forward refueling point.

D-31. March columns, regardless of size, are composed of four elements. These elements are the reconnaissance party, the quartering party, the main body, and the trail party.

PLANNING PROCESS

D-32. Tactical road marches require extensive planning. Commanders and staffs use the estimate process to determine how to best execute a move from one point to another. Road-march planning consists of three concurrent steps. These steps are to determine requirements for the move, analyze organic and nonorganic movement capabilities, and establish unit movement priorities. During movement planning, the squadron commander and staff must consider the following:

- Enemy situation and capabilities, terrain conditions, and weather.
- Organization of the squadron.
- Security measures to be taken before the movement, during movement, and at the destination.
- Assembly of the march units.
- Loading of personnel and equipment.
- Actions at the destination.

D-33. When the squadron prepares for a tactical road march, the sequence of planning for the march (if time permits) is the following:

- Prepare and issue an oral warning order as early as possible to allow subordinates time to prepare for the march.
- Prepare an estimate of the situation, analyze routes designated by the brigade, and specify the organization of the march serial.
- Prepare and issue the march order.
- Prepare detailed movement plans and AA plans.
- Organize and dispatch reconnaissance and quartering parties as required.

PLANNING FACTORS

D-34. Planners apply movement formulas to known distance, rate, and time data to derive information necessary to prepare a time schedule. The time schedule requires departures and arrivals of march elements.

Time and Distance Relationships

D-35. Relationships between time and distance are the basis for march planning. Planners determine how far the column is to travel (distance) and how long it will take to make the move (time). They must also know how much space (length of column) the column will occupy on the route and the distance (road gap) or time (time gap) that separates march columns and their elements. Each term used for distance has a corresponding term for time. The length of a column in kms has an equivalent PST in minutes; the road distance in kms or miles has a corresponding time distance. Relationships between time and distance in the average rate of march are shown in Figure D-1.

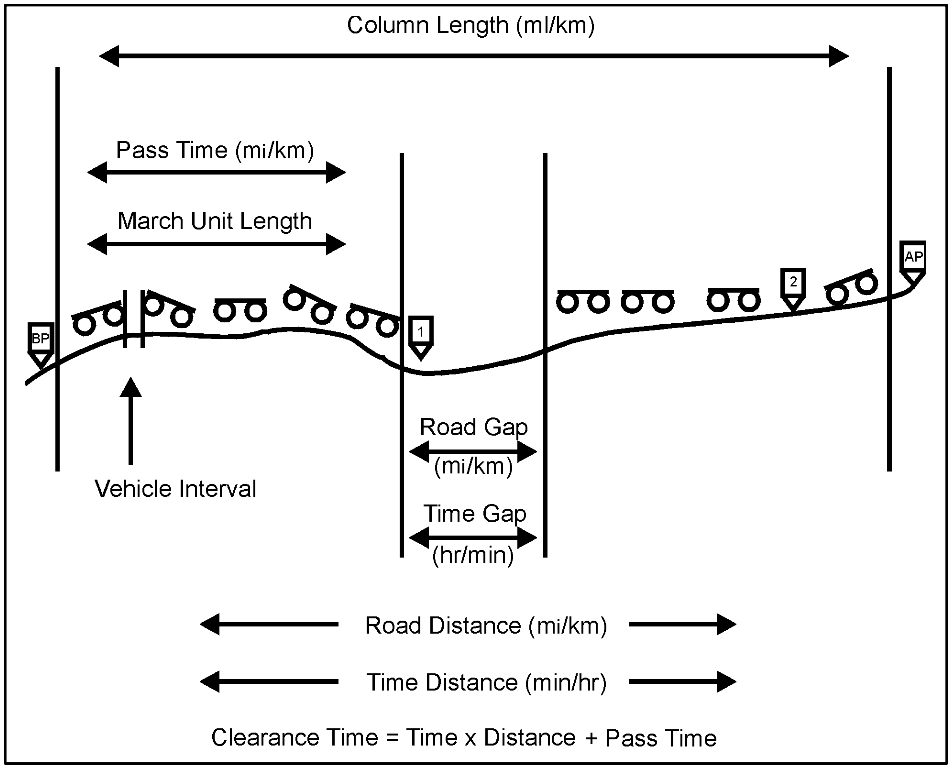


Figure D-1. Time and Distance Relationships

Distance Factors

D-36. Distance factors include vehicle interval, column gap, traffic density, column length, and road gap. These factors are defined below.

D-37. **Vehicle interval** is the distance between two consecutive vehicles of an organized element of a column.

D-38. **Column gap** is the space between two organized elements following each other on the same route. It can be calculated in units of length (road gap) or in units of time (time gap) as measured from the rear of the leading element to the front of the following element.

D-39. **Traffic density** is the average number of vehicles that occupy 1 mile or 1 km of road space, expressed in VPM or VPK.

D-40. **Length of a column** is the length of roadway occupied by a column, including gaps in the column measured from the first vehicle to the last vehicle.

D-41. **Road gap** is the distance between two march elements. It is the length aspect of the column gap. Since a road gap is more significant when the column is moving than when the column is halted, it becomes a factor of time rather than distance.

Rate Factors

D-42. Speed, pace, and rate of march are rate factors. The definitions of these factors are listed below.

D-43. **Speed** is the velocity of a vehicle at a given moment as shown on the speedometer (in KMPH or MPH).

D-44. **Pace** is the regulated speed of a column or element. It is set by the lead vehicle or an individual in the lead element to maintain the prescribed average speed.

D-45. **Rate of march** is the average number of miles or kms traveled in any given period. It includes short periodic halts and other short delays. The rate of march is expressed as miles or kms traveled in an hour.

Time Factors

D-46. Time is expressed in hours or minutes. The following terms are used to describe time factors:

D-47. **Pass time** (or time length) is time required for a column or its elements to pass a given point on a route.

D-48. **Time space** is time required for a column or its elements to pass any given point on a route plus any additional time (safety factor) added to the PST.

D-49. **Time gap** is time measured between vehicles, march units, serials, or columns as they pass a given point. It is measured from the trail vehicle of one element to the lead vehicle of the following element.

D-50. **Time lead** is time measured between individual vehicles or elements of a column, measured from head to head, as they pass a given point.

D-51. **Time-distance** is time required to move from one point to another at a given rate of march. It is the time required for the head of a column or any single vehicle of a column to move from one point to another at a given rate of march.

D-52. **Road clearance time** is total time required for a column or one of its elements to travel the road distance and clear a point along the route or the RP. Road clearance time equals the column's PST or time space plus time distance.

MOVEMENT FORMULA APPLICATION

This paragraph implements portions of STANAG 2041.

D-53. Distance, rate, and time are the basic factors for movement computations. If the march planner knows two of these factors, he can easily

determine the third by dividing or multiplying one by the other. The movement formulas areas follows:

- Determine rate by dividing distance by time: $R = \frac{D}{T}$.
- Determine distance by multiplying rate by time: $D = R \times T$.
- Determine time by dividing distance by rate: $T = \frac{D}{R}$.

D-54. The march planner must determine time-distance, PST, arrival time, and completion time. The procedures for determining these factors are given below.

D-55. **Time-distance**. TDIS is determined by dividing distance to be traveled by rate of march, as shown in Figure D-2. TDIS does not include time for long delays or extended scheduled halts. A TDIS table (Table D-2) is a valuable tool to the march planner. It provides a listing of factors used to calculate the time required to travel certain distances at specified speeds. Travel rates are expressed in speeds and corresponding rates of march. Travel factors are derived from rate of march, which includes time for short, periodic halts and other minor delays that might occur.

$$\text{TDIS} = \frac{\text{DISTANCE (miles or km)}}{\text{RATE OF MARCH (mih or kmih)}}$$

EXAMPLE: Determine TDIS of a serial traveling 135 km at a speed of 24 kmph (rate of march 20 kmih)

$$\text{TDIS} = \frac{135\text{ (km)}}{20\text{ kmih}} = 6.75\text{ hours} \qquad \begin{array}{r} 0.75\text{ (fraction)} \\ \underline{\times 60}\text{ (minutes)} \\ 45.00\text{ (minutes)} \end{array}$$

TDIS = 6 hours and 45 minutes

Figure D-2. Time-distance Formula

Table D-2. Time-distance Table

SPEED (miles/kmph)	RATE OF MARCH (miles/kmph)	MINUTES TO TRAVEL 1 KILOMETER	MINUTES TO TRAVEL 1 MILE
10 mph 16 kmph	8 mih 12 kmih	5	7.5
15 mph 24 kmph	12 mih 20 kmih	3	5
20 mph 32 kmph	16 mih 25 kmih	2.4	3.75
25 mph 40 kmph	20 mih 32 kmih	1.84	3
30 mph 48 kmph	25 mih 40 kmih	1.5	2.4
35 mph 56 kmph	30 mih 46 kmih	1.3	2
40 mph 65 kmph	33 mih 53 kmih	1.13	1.8

D-56. **Pass time**. PST for a serial is determined by adding march unit PSTs together, including time gaps between march units (Figure D-3).

$$\text{PST} = \frac{\text{NO OF VEH} \times 60}{\text{DENSITY} \times \text{SPEED}} + \frac{\text{N0. OF VEH}}{25} = \text{TIME GAPS (Min)}$$

EXAMPLE: Determine PST of a serial of 150 vehicles organized into 6 march units of 25 vehicles each, traveling at a speed of 24 kmph, with a density of 15 VPK or VPM, and using a 2-minute time gap between march units.

$$\text{PST} = \frac{150 \times 60}{15 \times 24} + \frac{150}{25} + (2 \times 5) = \frac{9{,}000}{360} + 6 + 10 = 25 + 6 + 10$$

PST = 41 minutes

NOTES: 1. Round off fractions of minutes to next higher minute.

2. EXTAL is allocated based on 1 minute per 25 vehicles added to serial PST. EXTAL is equitably added to PST of each march unit in the serial.

Figure D-3. Pass Time Formula

D-57. **Arrival Time**. In march planning, the RP is normally designated as the terminal point of movement. Arrival time at the RP is determined by adding TDIS and any scheduled halts to the start-point time (Figure D-4).

	HOURS	MINUTES
SP TIME	08	00
TIME-DISTANCE	06	45
SCHEDULED HALT	01	00
	15	45
ARRIVAL TIME IS 1545 HOURS		

Figure D-4. Arrival Time Formula

D-58. **Completion Time**. Completion time is calculated by adding PST to the arrival time or by adding to the start-point time the distance, PST, and any scheduled halts.

MARCH ORDER

D-59. The march order format is the same for tactical and nontactical movements. The march order is prepared either as an annex to an OPORD, a separate OPORD, or a FRAGO. Figure D-5 shows an example of an OPORD for a road march.

D-60. The march order should include, as a minimum, a strip map. A strip map is a sketch of the route of march. It is normally included as an annex to the march order. Figure D-6 shows an example of a strip map. The amount of detail on the strip map depends on its intended purpose and the unit level at which it is prepared. The map should identify critical points, start-point and release-point times and locations, order of march, maximum catch-up speed, distances to be maintained between vehicles and units, AA locations, and instructions on future operations. In designating distance (interval) or density, the planner must know its effect on column length and the time required to move.

D-61. The march order also contains a statement of the enemy situation, the weather, and visibility conditions. It should also contain the following (if applicable):

- Road restrictions and information derived from route reconnaissance.
- Actions on enemy contact (ground and air).
- Actions at halts and actions for disabled vehicles.
- Actions in the AA.

- Procedures for resupply, maintenance, and feeding.
- Location of leaders and a communications plan.

D-62. Much of the information needed to conduct the march should be in the unit SOP. Only exceptions to the SOP should be stated in the march order.

(Classification)

Copy no __ of __ Copies
112th Air Cav Squadron
GAY (GL645745)
211600Z Aug 19

EEL

OPORD 31
Reference: Map, JOG, NH 16-2, 1:250,000, 1st Edition.
Time Zone Used Throughout the Order: ZULU

Task Organization: Annex B (Road Movement Table).

1. Situation.
   a. Enemy Forces. Current INTSUM.
   b. Friendly Forces. Aviation Brigade moves 221000Aug to AA vicinity FARGO (GN7512).

2. Mission. 112th squadron moves to AA vicinity FARGO (GN7512); SP (GL6672) 221159 Aug; closes on the AA by 221930 Aug.

3. Execution.
   a. Concept of Operation. Annex A (Route Overlay). I intend to close AA during daylight. BN conducts a motor march, in six march units via Route RED, first march unit crossing SP at 221159 Aug and last march unit clearing the RP, vicinity FARGO, by 221830 Aug.
   b. March Unit 1:
   c. March Unit 2:
   d. March Unit 3:
   e. March Unit 4:
   f. March Unit 5:
   g. March Unit 6:
   h. Coordinating Instructions.
      (1) Annex B (Road Movement Table).
      (2) Quartering party assemble at Main CP at 220900 Aug.
      (3) Vehicle density: open column; 12 vehicles per kilometer.
      (4) Rate of march: 24 kilometers per hour.
      (5) Time gap: Five minutes between march units.
      (6) Vehicle bumper markings will be covered.

4. Service Support.
   a. Supply. Each man draw two MREs at breakfast for noon and evening meals on 22 Aug.
   b. Services. Trail party TF control.

(Classification)

Figure D-5. Sample Format for a Road Movement Order

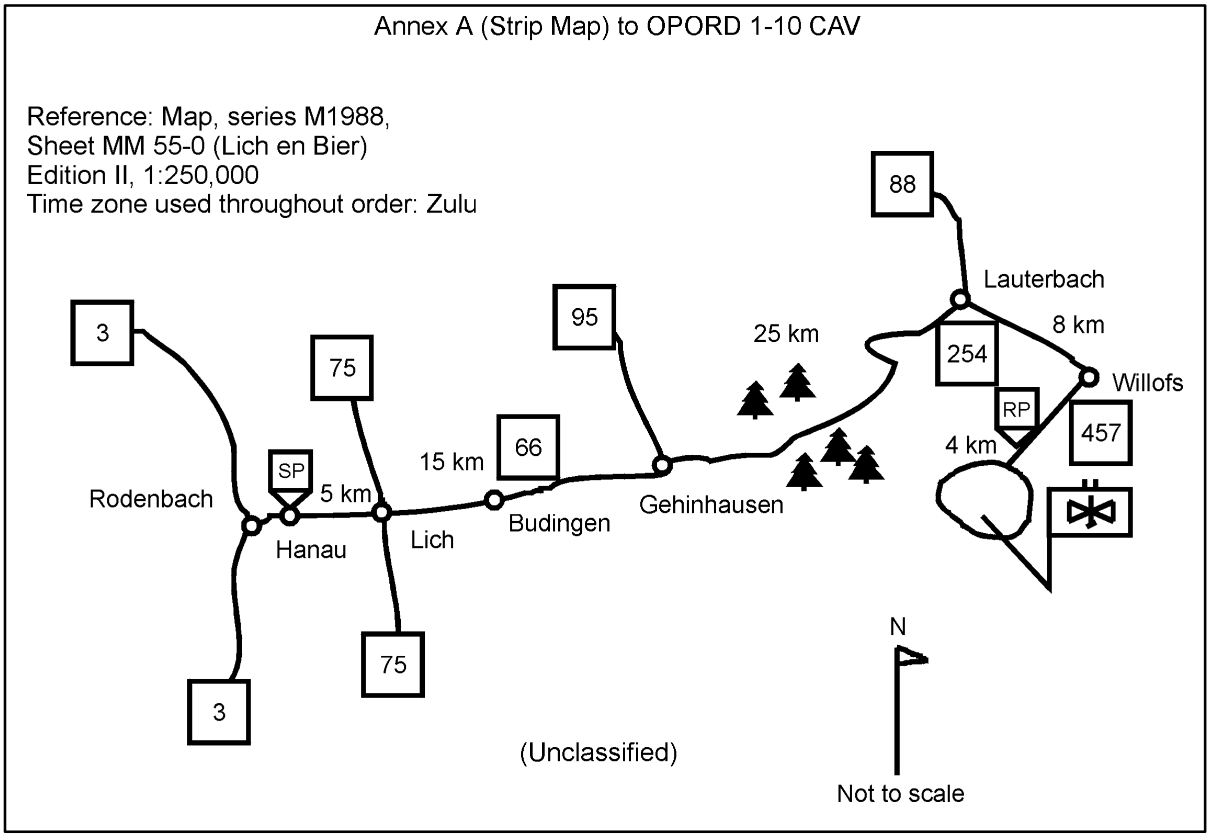


Figure D-6. Strip Map

ROAD MOVEMENT TABLE.

D-63. A road movement table is normally an annex to a movement order as shown in Figure D-7. It is a convenient means of transmitting to subordinate units time schedules and other essential details of the move. It is particularly useful when the inclusion of such details in the OPORD would make the order complicated or unduly long. Road movement tables consist of two parts. The first part contains data paragraphs that reflect information common to two or more march elements. The second part contains a list of serials or march units along with all other necessary information arranged in tabular form.

D-64. The march planner must know the times at which serials and march units arrive at and clear critical points. Other information in the road movement table includes serial or march unit number, date of move, units involved, number of vehicles, and load class of the heaviest vehicle routes to be used. A remarks section should reflect any details not covered elsewhere.

(Classification)

Annex B (Road Movement Table) to OPORD 31
Reference: Map, JOG, NH 16-2, 1:250,000, 1st Edition.
Time Zone Used Throughout the Order: Zulu.

General Data:

1. Average Speed: 24 kilometers per hour.

2. Traffic Density: 12 vehicles per hour.

3. Halts: 1545-1645, meal and fuel; all others SOP.

4. Critical Points: Route RED.
   a. SP: BOLL WEEVIL (GL6672).
   b. RP: FRAGO (GN7512).
   c. Other critical points: COLUMBIA (GL6979), NIAGARA (GL6893), and BOSTON (GN7106).
   d. Route Classification: 10X50.
   e. Route Restriction: None.

5. Main Routes to SP: NA.

6. Main Routes to RP: NA.

(Classification)

Figure D-7. Sample Format for a Road Movement Table

MARCH PROCEDURES

Reconnaissance Party

D-65. A squadron, augmented by engineer and other CS assets, conducts a route reconnaissance to determine travel time, capacities of underpasses and bridges, and locations of ferries and fords. Route reconnaissance confirms and supplements data from map studies, HHQ, and air reconnaissance.

Quartering Party

D-66. The quartering party consists of the quartering parties of each of the companies. The commander dispatches a quartering party to reconnoiter the new area and guide march elements into position.

Main Body

D-67. Before starting a march, each march unit of a serial reconnoiters its route to the SP and determines the exact time required to reach it. The movement order states the time that the serial will arrive at and clear its SP. The serial commander then determines and announces the times for march units of his serial to arrive at and clear the SP. Arrival time at the SP is critical. Each march unit must arrive at and clear the SP on time; otherwise, movement of other elements may be delayed.

D-68. During the movement, march units move at the constant speed designated in the order, maintaining proper interval and column gap. Elements in a column of any length may simultaneously encounter many different types of routes and obstacles. As a result, different parts of the column may move at different speeds at the same time. This can produce an undesirable accordion-like action or "whip effect." The movement order gives march speed, rate of march, and maximum catch-up speed to ensure safety and to reduce column whipping. March units report crossing each control point as directed by the march order. During the move, air and ground security are maintained.

Trail Party

D-69. The trail party is normally made up of elements of the HHT maintenance platoon and is the last unit in a TF serial. The squadron movement officer leads the trail party. Its function is to recover disabled vehicles. If a vehicle cannot be repaired or towed, the vehicle and its crew are moved off the road into a secure area. Crewmembers are given sufficient food and water and left with the vehicle. When vehicles are left behind, the BMO reports their locations and the reason they were left behind to the TF S4. Once the trail party completes the road march, maintenance priority becomes recovery of disabled vehicles. A tactical road march is not complete until all march units and vehicles arrive at their destination.

MARCH TECHNIQUES

Close Column

D-70. In a close column, vehicles are spaced about 20 to 25 meters apart during daylight hours. At night, vehicles are spaced so that each driver can see the two lights in the blackout marker of the vehicle ahead. A close column is normally used for marches during the hours of darkness under blackout driving conditions. This method of marching takes maximum advantage of the traffic capacity of the route but provides little dispersion. Normally, vehicle density is about 30 VPK along the route.

Open Column

D-71. In an open column, the distance between vehicles is increased to provide greater dispersion. The distance between vehicles varies from 50 to 100 meters, but may be greater if required. An open column is normally used during daylight. It may also be used at night using IR lights, blackout lights, or passive night-vision equipment. Vehicle density varies from 10 to 15 VPK.

Infiltration

D-72. During a move by infiltration, vehicles are dispatched individually, in small groups, or at irregular intervals at a rate that will keep the traffic density down and prevent undue massing of vehicles. Infiltration provides the best possible passive defense against enemy observation and attack. It is suited for tactical marches when sufficient time and road space are available and when maximum security, deception, and dispersion are desired.

CONTROL MEASURES

Critical Point

D-73. Critical points on a route are those points used for reference in providing instructions, places where interference with movement might occur, or places where timing might be a critical factor. The route reconnaissance report or a map study should provide the march planner with information to designate critical points along the route of march and distances from one critical point to another. At designated critical points, guides or signs may be used to ensure the smooth flow of traffic. The convoy commander may want to be present at the passing of some critical points. The SP and RP are two critical points that are always designated. Using the checkpoint symbol, critical points are designated by number, letter, or code word. The march planner must ensure that designations for critical points do not conflict with those of checkpoints.

Start Point

D-74. SPs provide all units of a march column a common point for starting their movement. When units use more than one route, each route has a SP. The SP is a place along the route of march that is easily recognizable on the map and on the ground such as a road intersection. An SP should be far enough from AAs to allow units to organize and move at the prescribed speed and interval when they reach the SP. No element of a march column should be required to march to the rear or through another unit to reach the SP.

Release Point

D-75. RPs provide all units of the march column a common point at which to reestablish control of their parent unit. The RP should be on the route of march and easily recognizable on the map and on the ground. Units do not stay at the RP. Guides meet units as they arrive at the RP and lead them to the AA. Multiple routes and cross-country movement from the RP to AAs enable units to disperse rapidly. No unit should be required to countermarch or pass through another unit to reach its new position.

Strip Map

D-76. Copies of the strip map should be reproduced and distributed to all key personnel. The strip map should contain the SP and RP, restrictions, and critical points and the distances between them.

SECURITY

D-77. During the march, units maintain security through observation, weapons orientation, dispersion, and camouflage. Commanders assign sectors of observation to their personnel so that there is a 360-degree observation. Weapons are oriented on specific sectors throughout the column. The lead elements cover the front, following elements cover alternate flanks, and the trail element covers the rear. Security is also maintained during halts.

D-78. Scheduled halts are planned along the march route for maintenance and rest or to follow higher level movement orders. At scheduled halts, vehicles and soldiers move to the side of the road while maintaining march dispersion. Local security is set up immediately, and drivers perform operational maintenance checks. However, the unit is ready to move at a moment's notice.

D-79. Unscheduled halts and actions may be caused by unforeseen developments such as obstacles, traffic congestion, or equipment failure. If a halt is necessary, the march column's first priority is to establish security. Each unit forms a hasty perimeter defense.

D-80. To minimize the squadron's vulnerability to enemy air attack, AD must be planned and AD security measures implemented. The convoy commander must effectively integrate his ADA assets into his fire plans and ensure that all passive and active AD measures implemented at company level are planned and used.

D-81. Each vehicle in a motor march has an air guard to provide air security. However, specific vehicles may be designated as air guard vehicles to conduct air rather than ground observation.

D-82. Obstacles that are reported by an aeroscout platoon should be bypassed if possible. If obstacles cannot be bypassed, the lead march unit goes into a hasty defense to cover and overwatch. If engineers are available to assist, the lead march unit can breach the obstacle. As the lead march unit breaches the obstacle, the other march units move at decreased speed or move off the road and monitor the battalion command net.

D-83. If the TF comes under attack by enemy indirect fire during the road march, the unit in contact continues to move. The remainder of the TF attempts to bypass the impact area (Figure D-8).

D-84. If the TF is attacked by hostile aircraft during the march, the march unit that is attacked moves off the road into a quick defensive posture and immediately engages the aircraft with all available automatic weapons. The rest of the convoy moves to covered and concealed areas until the engagement stops.

D-85. Ambushes are fought without delay. If the convoy is ambushed, the march unit in the kill zone increases its speed, fights through, and reports the ambush.

D-86. Disabled vehicles must not obstruct traffic; they are moved off the road and their status is reported immediately. Security is established and guides are posted to direct traffic. If the operator repairs the vehicle, he rejoins the rear of the column. If the operator cannot repair the vehicle, trail party maintenance elements recover it.

D-87. Messengers and visual signals are the preferred means of communication during road marches. Because the enemy has radio direction-finding equipment, the radio is used only in emergencies and when no other means of communication can be used. Road guides can also be used to pass messages from one march unit to a following march unit. Because of the need

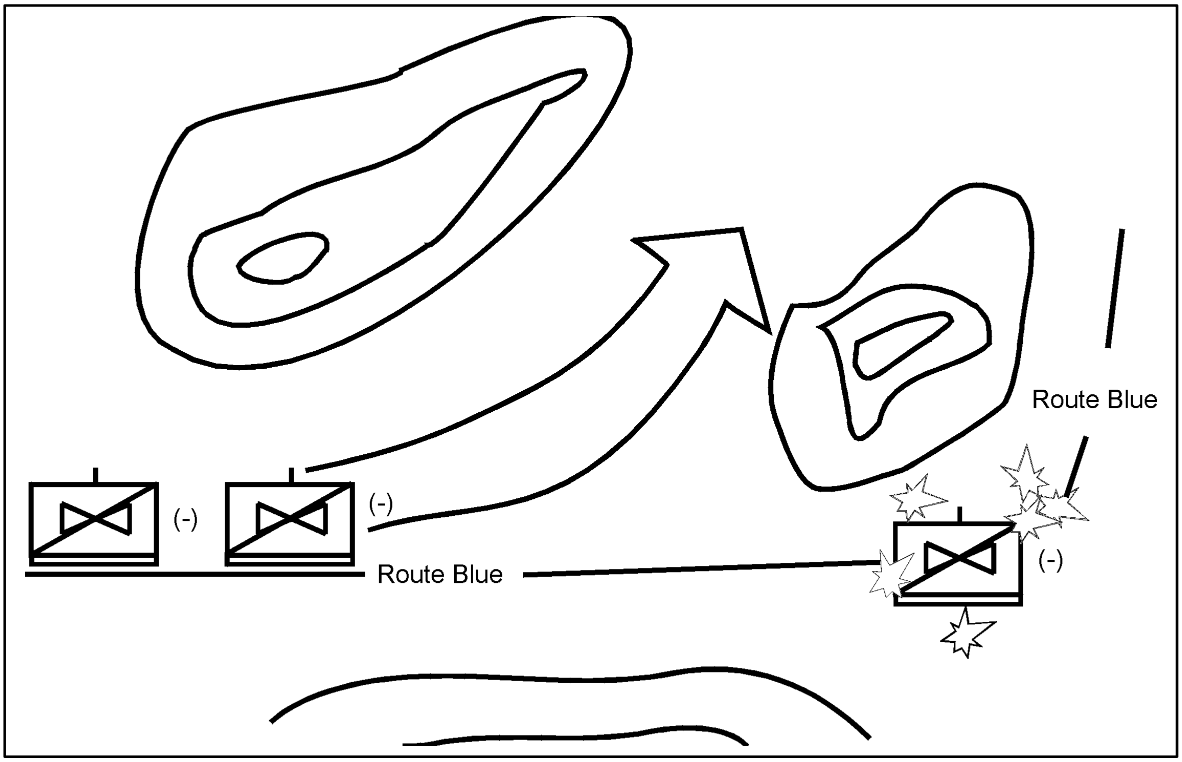


Figure D-8. Actions Under Indirect Fire

for radio silence, road guides are used to control the speed of march units and the intervals between them.

D-88. Restrictions are points along the route of march where movement may be hindered or obstructed. These points can include bridges, intersections, ferries, and bypasses. The march planner should stagger start times, adjust speeds to allow for restrictions, or plan to halt the column en route until the restriction is passed.

D-89. Units must be able to operate under limited visibility conditions caused by darkness, smoke, dust, fog, heavy rain, or heavy snow. Limited visibility decreases the speed of movement and increases difficulties in navigation, recognizing checkpoints, and maintaining proper interval between units. To overcome C^2 problems caused by limited visibility, convoy commanders may position themselves just behind lead elements. More restrictive control measures, such as additional checkpoints, PLs, and use of a single route, may become necessary.

D-90. The convoy commander also plans for an NBC attack. Some measures he takes are given below.

D-91. He ensures that protective and decontamination materials are properly distributed and their location known to the entire march unit.

D-92. He ensures that the proper MOPP level is maintained, based on the threat and the temperature level. Personnel may start out in modified MOPP 3 (according to FM 3-4) to avoid having to stop to change into MOPP 3 or MOPP 4 from a lower level of MOPP. However, when a high threat of CG agent use exists or when agents have been used on the battlefield, aircrews fly in MOPP 4.

D-93. He ensures that chemically or biologically contaminated areas are avoided if possible. If contaminated areas must be crossed, personnel will—

- Use MOPP 4.
- Cover as much equipment as possible.
- Avoid moving through underbrush.
- Stay on hard-surfaced roads.
- Avoid low areas.
- Avoid moving early or late in the day.
- Stagger vehicles in the column.
- Decrease speed to reduce dust or mud.
- Increase vehicle interval.
- Scrape the surfaces of dirt roads to clear them of contamination.

D-94. He ensures that nuclear contaminated areas area avoided, if possible. If nuclear contaminated areas must be crossed, personnel will—

- Wear modified MOPP 3 gear.
- Avoid stirring up dust as much as possible.
- Ensure that the IM-174 or AN/VDR-2 radiacmeter is used.
- Wet roads to minimize fallout dust, if feasible.

TRAINING

D-95. There are no special training requirements for unit movement personnel; however, some specialized courses are available. The Joint Military Packaging Center, Aberdeen Proving Grounds, Maryland, trains soldiers to prepare hazardous cargo for transport. Although not a training requirement, individuals who certify that hazardous cargo is properly prepared for shipment must be designated on orders to sign DD Form 1387-2, Special Handling Data/Certification. In addition, the US Air Force conducts the MAC airload planner courses, which trains unit movement officers to plan movements using USAF assets.

UNIT MOVEMENT REFERENCES

D-96. At a minimum, UMOs should maintain current copies of the following references for unit movements planning and execution:

- AR 55-29
- AR-55-113
- AR 55-162
- DOD 4500.9-R Part III

- Joint Pub 4-01.3
- FM 1-111
- FM 1-564
- FM 55-9
- FM 55-15
- FM 55-30
- FM 55-65
- TM 38-250
- TM 55-625
- TM 55-2200-001-12

Appendix E

Assembly Area Operations

DESIGNATION OF ASSEMBLY AREAS

ASSEMBLY AREAS

E-1. An AA is a location where the squadron and/or troop prepares for future operations, issues orders, accomplishes maintenance, and completes resupply activities. Regardless of the type of AA the unit will occupy, the commander and staff must adher to certain principles to ensure the survivability of the unit. AAs are usually located in the corps or division rear area and in or near the aviation brigade AA. Heavy division cavalry troop may establish an AA in the vicinity of the squadron field trains rather than near the aviation brigade AA. Aviation AAs are usually located out of the range of enemy artillery and should be large enough to ensure adequate dispersion of units. An AA must provide—

- Security.
- Concealment.
- Accessibility to MSRs.
- Air avenues of approach.
- Proximity to friendly units.
- Suitable ingress and egress routes.

FORWARD ASSEMBLY AREAS

E-2. A squadron and/or troop occupies FAAs for extended periods while awaiting orders to execute missions. FAAs are located near the controlling headquarters to improve C^3I and response times. The FAA should be located out of range of enemy medium artillery. Limited maintenance personnel may be located in the FAA as contact teams jump forward to repair aircraft. Considerations for selecting FAAs are the same as those for selecting AAs.

ASSEMBLY AREA RESPONSIBILITIES

E-3. In all cases, the commander must designate who is responsible for the selection, occupation, and securing of the unit AA. Responsibilities for the AA are listed below. The commander may decide to assign these responsibilities to other people.

E-4. The squadron S3 performs the following AA duties:

- Selects future main CP sites.
- Selects site for the TOC within the main CP.
- Develops a R&S plan in conjunction with the S2.
- Establishes a “jump”, or temporary, TOC if necessary until the TOC is established at the main CP site.

- If directed by the commander, develops plans and orders for moving the AA.
- Plans for air routes and conducts airspace management for the air routes to the new AA.
- Plans for fires to support the AA move.
- Develops a plan for reconnaissance of the movement routes and new AA location.
- Plans, and requests support if necessary, for MEDEVAC assets to assist during the move.
- Coordinates with higher or adjacent units for land to establish an AA.
- Requests engineer support to assist in AA improvement.
- Coordinates and requests AD support for the AA.

E-5. The squadron XO performs the following AA duties:

- Establishes timelines for AA moves.
- Develops triggers, based upon a decision support template (developed by the S2), for displacement of the AA.
- Conducts a rehearsal of AA moves and occupations.

E-6. The CSM performs the following AA duties:

- Assists the S3 and S4 in the development of movement orders.
- Supervises the break down of the AA.
- Leads the quartering and/or advanced party, as directed by the commander.
- Supervises the establishment of the new AA.

E-7. The squadron S4 performs the following AA duties:

- Develops plans and orders for moving the AA, if directed by the commander
- Develops march tables for the vehicle convoy to the new AA.
- Selects the location for the CTCP.

E-8. The HHT commander and/or 1SG performs the following AA duties:

- Organizes the march serials, designates serial commanders, and conducts convoy briefings.
- Leads the quartering and/or advanced party, as directed by the commander.
- Selects locations for future AAs in conjunction with the S3.
- Conducts a reconnaissance of proposed AA sites.
- Selects emergency displacement AAs.

E-9. The squadron S2 performs the following AA duties:

- Develops an event template and DST for the AA, which results in DPs necessary for planning and executing AA displacement.
- Develops NAIs in the vicinity of the AA and assists the S3 in developing an R&S plan for the AA.
- Tracks the enemy situation in relation to the displacement DPs, and informs the commander when the enemy reaches the selected DPs.

- Assists the HHT Commander and S3 in selecting new AAs by conducting a threat and terrain analysis of the proposed AA location.

E-10. The communications-electronics officer, usually an NCO by MTOE, performs the following AA duties:

- Analyzes potential AA sites and determines their suitability in terms of providing communications for the squadron.
- Establishes a retransmission, if required, to assist during unit moves.
- Analyzes potential AAs for their proximity to MSE nodes.

ASSEMBLY AREA OCCUPATION

ASSEMBLY AREA

E-11. The AA is a squadron position. It is chosen based upon the mission of the squadron, a map reconnaissance, and a physical reconnaissance of the selected area. Once as AA has been selected and coordinated, it is occupied when the unit receives the order to move to and occupy the new AA. Occupation of the AA should be well planned and rehearsed. Occupation of an AA is a four-phase operation—

- Phase 1: Reconnaissance.
- Phase 2: Quartering Party and/or Advanced Party Operations.
- Phase 3: Main Body Arrival (Air and Ground).
- Phase 4: AA Improvement.

FORWARD ASSEMBLY AREA

E-12. The FAA is a squadron position occupied by squadron aircraft, the squadron TAC, and a minimum number of ground vehicles. Individual troops may also establish individual FAAs. Planning for the occupation of the FAA is not as detailed as that required for the occupation of an AA. However, because the squadron may remain in the FAA for several hours, the commander and his staff must consider security and camouflage. Occupation of the FAA is a three-phase operation—reconnaissance, main body arrival, and security.

Reconnaissance

E-13. An initial area reconnaissance (including NBC) of the FAA and the surrounding terrain is conducted. Upon completion of the area reconnaissance, a brief to the squadron commander or S3 is conducted. The new position is kept under constant observation until the main body arrives.

Main Body Arrival

E-14. Each troop arrives at the FAA as a separate unit and lands in its predetermined area. Normally, the squadron staggers the arrival of its troops by allowing several minutes to elapse between each arrival. The FAA is designed to disperse the squadron while at the same time allowing the squadron to observe all of the high-speed avenues of approach into the FAA.

Security

E-15. Security of the FAA is based on the ability of the squadron to detect threats and react to them by moving the aircraft to another location. Crews will complete a through-flight inspection of their aircraft immediately after the FAA security has been established. Squadron aircraft must be prepared for rapid departure. The priority of tasks for each troop is to—

- Establish local security.
- Establish wire communications with the TAC CP.
- Complete through-flights of aircraft.
- Continue to plan missions.

ASSEMBLY AREA RECONNAISSANCE

AREA RECONNAISSANCE

E-16. An area reconnaissance of the AA location and the surrounding terrain should be accomplished as soon as possible after the AA site has been selected. This area reconnaissance may be conducted by air or ground. If the reconnaissance is conducted by air, the aircraft should land and allow the reconnaissance party to physically walk and observe the layout of the terrain. Items to be looked for during the AA reconnaissance include suitability of the area, NBC contamination (if in a suspected NBC area), enemy activity, and concealment.

ROUTE RECONNAISSANCE

E-17. A route reconnaissance of the convoy routes should be conducted prior to the movement to the new AA location. The commander may elect to use squadron aircraft to conduct this reconnaissance. The purpose of this reconnaissance is to verify the suitability of the convoy route, locate any areas along the route that will cause delays for the convoy, determine if there is traffic on the route, and look for enemy in the area that can influence the convoy. The route reconnaissance should be conducted prior to the quartering party movement. The commander may elect to conduct continuous reconnaissance along the route during the duration of the convoy.

QUARTERING PARTY AND ADVANCED PARTY OPERATIONS

E-18. The quartering party consists of the quartering party and the advanced party. The quartering party conducts the initial occupation of the AA, which includes a reconnaissance for security and NBC contamination if it is suspected. The advanced party conducts an initial set up of the AA and prepares the site for the arrival of the main body. The quartering party and advanced party may move together or be separated by a time interval. If they move together, the advanced party will stop at a designated point outside of the new AA and wait for the quartering party to finish their operations and then the advanced party will occupy the new AA. The CSM, HHT commander, HHT 1SG, or others as designated by the commander normally lead the quartering party and advanced party. Specific responsibilities are listed below.

QUARTERING PARTY

Reconnaissance

E-19. NBC reconnaissance should be conducted if NBC contamination is suspected or likely. Prior to movement the S2 should be consulted to determine the likelihood of NBC contamination in the new AA.

Security

E-20. Security at this point may consist of establishing OPs along the most likely enemy avenues of approach.

ADVANCED PARTY

E-21. The advanced party conducts their operations after completion of the quartering party reconnaissance. The advanced party—

- Establishes security.
- Establishes communications with the TOC in the AA.
- Determines the locations of the TOC, ALOC, troop elements, and FARP.
- Confirms suitability of the area.
- Clears any safety hazards from the area.
- Establishes internal wire communications to the troop areas.
- Clears and marks aircraft parking positions.
- Establishes LP/OPs and dismount point.
- Emplaces M8 alarms.

MAIN BODY ARRIVAL (AIR AND GROUND)

E-22. The main body of the squadron should arrive in two parts, beginning with the ground vehicles and followed by the aircraft.

GROUND ARRIVAL

E-23. Members of the advanced party meet the ground vehicles when they arrive. The advanced party guides the ground vehicles along a selected route to each troop's position. The priority of tasks upon closure of the main body is to—

- Establish security. (The type and amount of security is dependent on the factors of METT-TC, and may range from establishing LP/OPs along the most likely enemy avenues of approach to full perimeter security. The CSM must consult with the S2 to determine the threat and establish security that will meet that threat.)
- Reestablish the TOC. (Communications should be established with HHQ as soon as possible after occupation of the AA. **Note:** Communications with HHQ must never be lost. The advanced party must establish communications with HHQ before breaking down and moving the TOC.)
- Emplace camouflage netting.

- Establish individual fighting positions and survivability positions.
- Establish crew served weapons fighting positions.
- Establish a dismount point.
- Coordinate with adjacent units for security. Ensure that coordination and communications with adjacent units are established if the adjacent unit is within range of the squadron's direct fire weapons systems.
- Develop R&S plan. (The S2 develops NAIs and the S3 develops a plan to keep the NAIs under observation.)
- Submit sector sketches to the squadron. (Troops submit sector sketches for incorporation into the squadron security plan.)
- Establish a QRF.
- Conduct accountability of all personnel and weapons.

AIR ARRIVAL

E-24. Squadron aircraft should arrive after the ground portion of the main body. During AA movement, the squadron must consider and make provisions for maintaining communications with the squadron aircraft located at the previous AA site. When the aircraft arrive they should be positioned in a predetermined location selected by the advanced party. The location of the aircraft should provide the maximum concealment possible. The aircraft should not park too close together. Upon arrival, aircrews should complete a postflight inspection, report any problems to the commander, and assist in the establishment of the AA.

ASSEMBLY AREA IMPROVEMENT

E-25. The AA is continuously improved as time allows. Some key areas that require improvements are field sanitation, ground obstacles, camouflage, and maintenance and living conditions. Continuous camouflaging must be conducted to reduce the radar, heat, noise, electronic, and visual signatures of the squadron.

ASSEMBLY AREA SECURITY

E-26. Security of an AA is a difficult task for all aviation units. Limited personnel make this a challenging, but not impossible, task. The squadron and/or troop can accomplish the basics of AA security, which leads to force protection.

OBSTACLES

E-27. All roads leading into the AA that are not necessary for AA operations should be blocked with obstacles and covered with overlapping fields of fire. Obstacles may be natural or man-made. Assistance in emplacing obstacles may be necessary. The squadron may have to coordinate with higher for engineer assistance in planning, preparing, executing, and completing tasks in defense of the AA (see FM 5-100).

OBSTACLE DEVELOPMENT

E-28. Engineer support can construct, repair, and maintain tactical obstacles, defensive positions, and logistics field sites within the AAs. Protected positions can be prepared for CPs, aircraft parking, FARPs, and maintenance facilities (see FMs 5-100-15 and 5-71-100).

FIGHTING POSITIONS

E-29. The squadron and/or troop establishes crew served fighting positions that cover the most likely enemy avenues of approach. The fighting positions should be continuously occupied. Range cards must be prepared and present, so that new guard shifts are aware of their responsibilities in securing the AA.

LISTENING POSTS AND/OR OBSERVATION POSTS

E-30. The squadron may establish LP/OPs in the vicinity of the AA. The purpose of these locations is to provide early warning to the squadron of anyone approaching the AA. LP/OPs should be placed along the most likely enemy avenues of approach and far enough away from the AA to provide adequate warning to the squadron of impending attack. The LP/OP must maintain communications with the TOC.

DISMOUNT POINT

E-31. The squadron may establish a dismount point to control the flow of traffic in and out of the AA. If engineer support is available, the remainder of the AA may be blocked (berms may be established around the AA). The dismount point controls traffic flow in and out of the AA, and raises suspicion on any vehicle that is approaching the AA from a direction other than the dismount point.

INDIRECT FIRE

E-32. The squadron may plan indirect fire in the vicinity of the AA. Final protective fires are established to protect the squadron during a displacement due to enemy attack. The LP/OPs may also have responsibility for FS targets within their area. When planning indirect fire for the AA, the commander must develop an observer plan.

ASSEMBLY AREA RECONNAISSANCE AND SURVEILLANCE PLAN

E-33. The S2 and S3 work together to establish an R&S plan for the squadron. The S2 does a thorough analysis of the area and develops NAIs. The S3 develops a plan for reconnaissance of those NAIs. The reconnaissance plan may consist of aerial reconnaissance by squadron aircraft, or it may consist of ground reconnaissance by LP/OPs or ground vehicles.

DISPLACEMENT ASSEMBLY AREAS

E-34. The squadron must establish locations for both the ground vehicles and aircraft to scatter to in the event of an emergency displacement. These areas may not be the same place. As soon as possible after arrival at the AA site, scatter locations must be selected. All squadron aircrews and vehicle drivers must know the location of the scatter site and the route to get to the site. Strip maps should be prepared for each vehicle and aircraft, and a sketch of the emergency displacement plan should be located in the TOC.

FRIENDLY AIR DEFENSE ARTILLERY

E-35. Coordination should be made with friendly ADA units that may be in the vicinity of the AA. These units may be able to provide the aviation unit with area AD coverage of the AA. If not, the squadron can request from higher for AD assets to cover critical squadron assets. Additionally, coordination should be made with friendly ADA units to ensure they are aware of the presence of friendly aircraft in the area. These ADA units may be able to assist in checking IFF equipment by interrogating squadron aircraft as they depart and arrive at the AA.

ASSEMBLY AREA DISPLACEMENT

E-36. A squadron is most vulnerable while occupying AAs. If the squadron comes under artillery, air, or ground attack, it will conduct an emergency displacement. The two types of plans for displacement are the surprise and early warning displacement. The displacement plan is part of the security for the AA and must be established as soon as possible after occupation of the AA. Displacement plans for each troop will consist of the direction and route for leaving the AA, location of HAs, and alternate AAs. Areas to which the squadron will displace must be coordinated for through HHQ. Once established in the AA, the unit should conduct a rehearsal of the displacement to ensure all procedures are understood by the squadron elements. See figure E-1 for an example of a troop scatter plan.

SURPRISE DISPLACEMENT

E-37. In the event of a surprise attack, the squadron will conduct an immediate displacement. Aircraft will depart individually if the situation allows. For survivability, it may be necessary for the flight crews to remain in their individual fighting positions or survivability positions until the immediate threat has passed before executing the displacement. Upon departing the AA, the aircraft move to the designated holding area or scatter site, conduct a reconnaissance, establish security, and establish communications with the TOC or command group, and transmits a situation report to the commander.

EARLY WARNING DISPLACEMENT

E-38. An early warning displacement occurs after thorough planning has been accomplished.

E-39. During initial set-up of the AA, the S2 develops an event template and a DST for AA displacement. The DST results in DPs that the squadron commander can use as triggers for AA displacement. Once the DPs are determined, the S2 and S3 determine the best method for tracking the enemy situation in relation to the selected DPs.

E-40. Based upon the DPs established by the S2, the commander designates REDCON levels for the squadron. As each DP is reached, the squadron upgrades their readiness level and conducts sequential preparations for displacement. As the DPs are reached, the squadron gets more prepared to move, so when the enemy reaches the DP that calls for the AA to displace, the squadron is already prepared to move. Establishing REDCON levels ensures that the squadron is ready to move immediately when required and ensures that essential equipment is not left behind during the displacement.

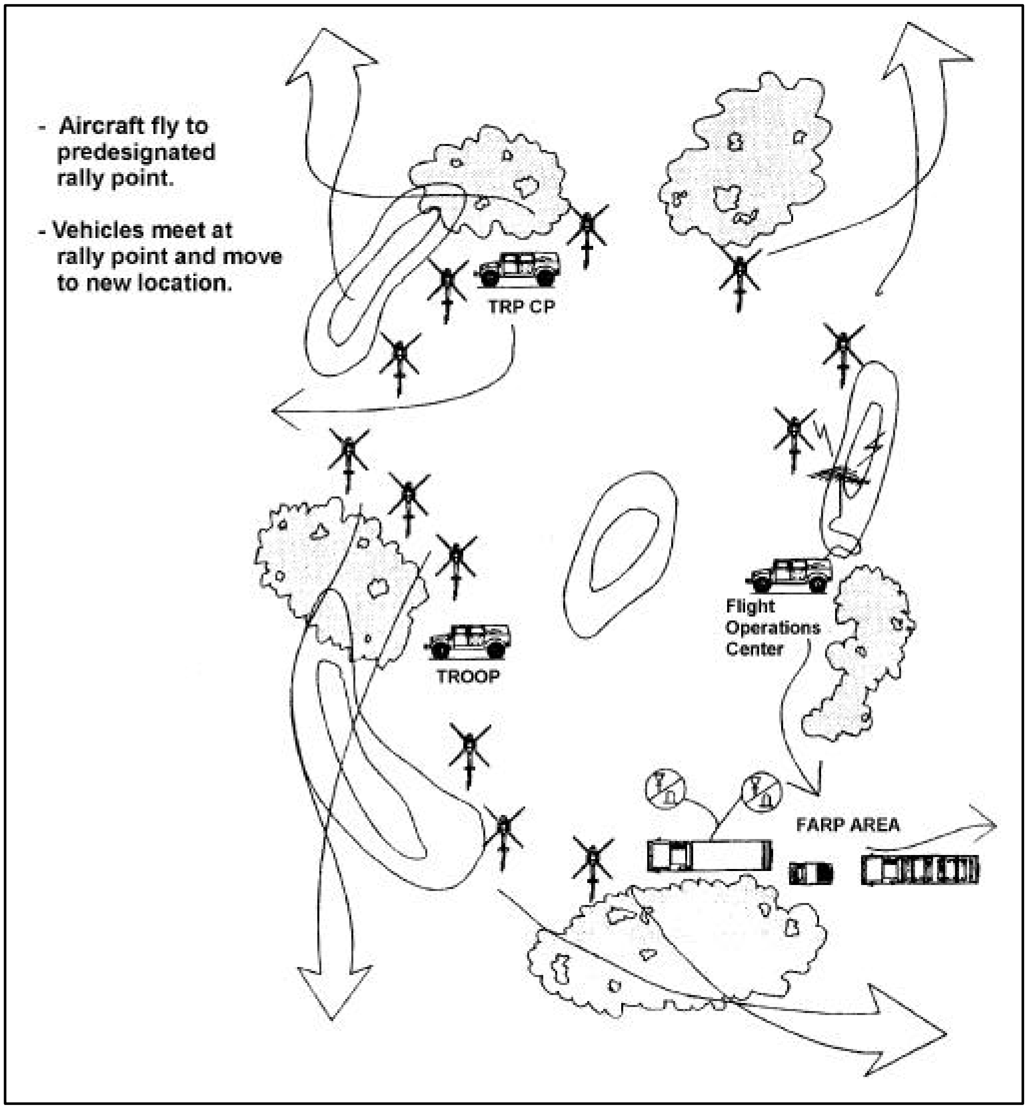


Figure E-1. ACT Scatter Plan

Appendix F

Troop Order Guide

SECTION I—OPERATIONS ORDER

PURPOSE

F-1. This guide is a tool to enable ACT commanders to develop and brief OPORDs that are clear, concise, sufficient in detail, and provide necessary guidance to accomplish the mission.

F-2. Time is the commander's greatest constraint. Repetitive training within the troop will allow a well trained group to produce a detailed order in a timely manner. The commander must determine the level of detail required for the order to provide sufficient information and accomplish all troop-leading procedures.

F-3. The commander's primary focus is the development of his intent and the synchronization of the scheme of maneuver. It is essential that the commander delegates and provides clear planning guidance (WARNORD) and priorities, along with supervision (troop-leading procedures). This process begins with the first WARNORD from HHQ. During this process, personnel must continuously pull and refine information from HHQ as they prepare the products that support the OPORD.

F-4. A written order allows subordinates to focus their efforts during the presentation and provides better clarity than only a verbally presented order. A written order allows subordinates a reference for team and crew planning.

F-5. This guide provides a five-paragraph orders format, planning considerations, and doctrinal references to assist the commander in developing a detailed order in a time constrained environment.

PRESENTATION TECHNIQUES (BEFORE THE ORDER)

F-6. Visualization is the key to orders presentation. It can be as basic as a sketch of the AO or as detailed as a terrain model with training aids. These aids include large sketches of key events (actions on the objective, engagement areas, zones or routes), troop drill diagrams, pictures of enemy equipment, the enemy order of battle, and threat array.

F-7. The order must be organized and follow the standard five-paragraph OPORD format—it is a time proven method and is doctrine. This format should be included in the troop SOP. A preformatted order allows subordinates to easily follow the commander's presentation and allows the commander to clearly organize his order for presentation. All crews in attendance should have the current operational graphics available at the order. Ideally the commander should provide the attendees with a hard copy of the order. This can be accomplished by using carbon paper copies of the order format, the AMPS word processing function, or a computer.

F-8. The troop five-paragraph order is presented with SITTEMP (with information from the event template—enemy time lines, NAIs, TAIs and DPs), maneuver graphics, and FS graphics. If applicable, the mission briefer will brief CSS graphics and obstacle graphics. Additional items may include sketches, matrices and knee board cards (communication card, maneuver and/or actions on the objective sketch, and route card).

F-9. The presentation will begin with a roll call and distribution of supporting products, then hold all questions until the end. Do not start the order until all products and presentation materials are ready. Finally, be positive, portray confidence and avoid repetition.

TASK ORGANIZATION

TASK ORGANIZATION FOR COMBAT

F-10. Task organization for combat includes all combat elements, CS elements attached, OPCON, or in DS. ACTs may receive ground scouts OPCON for limited duration missions. ACT may be attached or placed under OPCON to another unit. Formal task organization begins after COA analysis is complete. The commander task organizes subordinate units to maximize the capabilities of subordinate commanders to accomplish their assigned tasks. Task organization further facilitates flexibility and synchronization. It allows the commander to tailor forces to—

- Adapt to conditions imposed by METT-T.
- Further the commander s intent and concept, support the scheme of maneuver, and follow his commander s guidance.
- Weight the main effort by providing additional combat or combat support units; by establishing priorities of fire, protection, or effort; or by using combat multipliers such as lethal and nonlethal fires.
- Allocate resources with minimum restrictions on their employment.

DOCTRINAL DEFINITIONS—COMMAND RELATIONSHIPS

Attach

F-11. Attach 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 formation, unit, or organization receiving the attachment has the responsibility to provide the attached units with sustainment support above its organic capability. However, the parent unit will normally retain the responsibility for transfer and promotion of personnel.

Operational Control

F-12. OPCON is transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. OPCON is inherent in combatant command and 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.

PRESENTATION TECHNIQUES—TASK ORGANIZATION

F-13. Air cavalry is expressed as ACTMs, lead, or wingman teams. Attack is expressed in ACTMs or heavy and light attack teams, lead, or wingman teams. The task organization of the parent unit should be outlined. This provides subordinates with an understanding of the higher units organization for the mission and provides a higher degree of friendly situational awareness.

PLANNING CONSIDERATIONS

F-14. Often capabilities, limitations, and CSS requirements are not identified for attachments.

F-15. The composition of the parent unit for the operation is not clearly defined, nor is the effective time of the relationship identified.

F-16. Attachments typically are not present for the OPORD brief or for planning, which results in a lack of integration and synchronization. Linkup coordination must be conducted immediately upon notification of the command relationship.

F-17. Typically, attached or OPCON units and/or personnel are not familiar with the troop SOP. Commanders should develop an attachment extract from the SOP covering key elements of maneuver, C^2, and CSS operations.

F-18. When placed under OPCON or attached to a higher unit, the troop should immediately begin liaison. This will assist the gaining unit with identifying capabilities, limitations, and special requirements for employment and allow the troop to begin concurrent or parallel planning.

F-19. LNOs are typically junior officers and are not equipped with adequate information on the status of the unit, communications, transportation, weapons danger areas, status of battalion or squadron CSS assets, (FARP locations and status) and commander's guidance for employment. LNOs must be experienced, informed, self-sufficient, and well-equipped. An LNO handbook will assist LNOs during the planning phase of the linkup.

SECTION II—OPERATIONS ORDER BRIEF (PREPARATION INSTRUCTIONS)

SITUATION

ENEMY FORCES

Location of Enemy Forces and Recent and Significant Activities

F-20. The enemy situation in the AO will be briefed. The most updated information on current and suspected enemy locations and recent activity will be given. The locations of enemy forces that may be encountered throughout the depth of the battlefield (TAA, FARP, en route, objective area, and egress) will be highlighted. The squadron S2's situational template will be refined to include locations of individual formations, vehicles, and weapons ranges. Enemy reconnaissance and security forces throughout the AO will be included.

Presentation Techniques: Location of Enemy Forces Paragraph

When developing and briefing the enemy situation, the first point of departure is the S2s SITTEMP. The commander refines these products down to the individual formation and vehicles with relation to time and terrain.

A terrain model or sketch with enemy forces depicted helps aircrews visualize how the enemy will appear during critical events (actions on the objective or engagement area).

Diagrams of various formations or doctrinal templates shows the time and space relationships of enemy forces as they are arrayed on the battlefield.

Using troop and squadron symbols to depict enemy locations does not provide sufficient detail.

Strength and Composition

F-21. The enemy forces will be discussed in terms of type and numbers. The numbers of vehicles and weapons systems that can be faced through the depth of the battlefield will be highlighted.

Presentation Techniques: Strength Paragraph

The level of threat doctrine training at the troop level will determine the level of detail required in the OPORD. Identify the enemy order of battle. If not given by higher, turn the percentage into numbers of vehicles per battalion. Example: the 33rd GMRR is at 80-percent strength and consists of 4 MRBs with 10 T80s and 28 BMPs per battalion, organized into three MRCs of 3 T80s and 8 BMPs. This gives the troop pilots an idea of the mass of enemy vehicles to be faced and assists with computing the battlefield calculus to meet the mission criterion. In addition, pay particular attention to combat support and CSS vehicles and their locations on the battlefield to reduce the risk of misidentification as combat maneuver elements. An enemy battle book is quick reference tool that details enemy force descriptions. Ensure this portion is included in the written portion of the order for future reference.

Type of Equipment

F-22. The types of equipment (vehicle type, weapons, ranges, capabilities, and limitations) that are known or can be expected in the AO will be highlighted. This information will be linked with paragraph F-22 to show the time, space, and formation relationship on the battlefield. EXAMPLE: CRPs are platoon size elements composed of 1 T80 and 2 BMPs and operate 15 minutes (3-5 kms) forward of the AGMB along possible avenues of approach. T80s are equipped with a 125mm main gun, which has a max effective range of 2500M APFSDS and 4000M for the AT-8. The BMP is equipped with a 73mm main gun with a max effective range of 800M and the AT-3 with a max effective range of 3000M. The T80 is thermal equipped with a max acquisition range of 3 kms and the BMP has a passive night capability with an 800M acquisition range. The weapon range arcs should be reflected on the SITTEMP for visualization.

Presentation Techniques: Types of Equipment Paragraph

The level of detail is proportional to the level of training in your unit. Some units include pictures and descriptions of vehicles in their SOPs or battle books. If the unit SOP or battle book does not address this information, present it during the order.

Capabilities

F-23. The enemy's capabilities and vulnerabilities will be described. It is especially important to highlight enemy vulnerabilities. These weaknesses are what should be exploited to defeat the enemy. Enemy echelons, formations, and reinforcements will be identifed to include reserves and combat multipliers (NBC, air, EW, obstacles, indirect fires, and guerrilla activities).

Presentation Techniques: Capabilities Paragraph

A good visual technique to highlight enemy capabilities is to describe the enemy in terms of echelons and time lines. The use of a time line (event template or event matrix) can help subordinates visualize the enemy in terms of time and space, it additionally assists with identifying the various opportunities for contact. This can be accomplished for both offensive and defensive operations (such as list movement, LD, set and insertion times). Offense: Division and regimental reconnaissance, insertions (air and ground), CRP, FP, FSE, AGMB, MRR main body and trail echelons. Defense: Division and regimental reconnaissance, ambushes, COP, CSOP, obstacles, MRPs, MRC and reserves. The troop EW officer is an excellent subject matter expert on threat AD systems.

Probable Courses of Action (PCOA, the SITTEMP)

F-24. The enemy's task and purpose (terrain and/or force oriented) and how this will effect the enemy's COA will be determined. Ensure the task and purpose for each enemy maneuver and combat support element is clearly understood and integrated with terrain. Example: The forward detachment will seize (terrain oriented) the pass complex located at NK 3040 (task) to allow the AGMB to establish firing lines vicinity NK 3340 to fix the BCTs northern armor TF (purpose). The enemy's most probable COA will be refined with respect to the troop AO and his reaction to the troop scheme of maneuver. Avenues of approach and mobility corridors and how this terrain will influence the enemy's COA (changes in formations, fire and maneuver, establishing firing lines, defend, develop kill sacks, engagement areas, and direct fire execution.) will be described. Where, when, and why he will use combat multipliers (NBC, obstacles, indirect fires, EW assets, smoke, and air assets) to shape the battlefield to support his task and purpose will be identified. Other factors to be considered are dismounted threat, air (rotary and fixed wing), reconnaissance (mounted and dismounted), repositioning forces, counterattacks, reinforcements, and the conditions and/or triggers for their execution.

Presentation Techniques: Probable COA Paragraph

It is critical that your subordinates clearly visualize how the enemy will fight through the depth of time and space on the battlefield. A technique for presenting this information is using a terrain model, sketch (by phase or engagement), or a SITTEMP on the map (least preferred). A brief description of the PCOA in the order is essential for further reference. This is the most important portion of the enemy situation brief, cover it in detail in the verbal order. If time permits include the enemy s most dangerous COA.

Weather and Terrain

F-25. **Weather.** The weather data portion can be included in the written order or posted in the CP. Common weather data include weather forecast (wind speed and direction, temperature high and low, humidity, visibility, percent illumination, precipitation, pressure altitude and electro-optical forecast), BMNT, end EENT and moonrise and/or moonset. The expected effects of weather on both the enemy and friendly COAs will be briefed. The effects of weather on mobility, observation, lasers, munitions employment (Hellfire and/or Copperhead), smoke, chemicals and other air operations will be briefed.

F-26. **Terrain Analysis.** The OCOKA format will be used to describe effects of terrain on both friendly and enemy forces. The terrain in the AO to allow subordinates to visualize the battlefield will be described. The first choice for terrain analysis is to walk or fly the terrain for the battle. This is seldom feasible for aviation units. The alternatives are to use the AMPS terrain analysis function, the Terra-Base program, the terrain function in the ASAS, MICRODEM terrain software, or least preferred—a map analysis. ASAS, MICRODEM, and Terra-Base provide three-dimensional products. Enemy and friendly avenues of approach, BPs, ABFs, OPs, EAs, key terrain, air routes, and any other terrain that may impact the mission will be analyzed. Terrain analysis provides trafficability, factors, line of sight, look down angle, range to targets, and intervisibility for weapons employment, observation, and threat direct fire systems. A map reconnaissance should be conducted with the smallest scale maps (1:24,000 or 1:50,000) available to provide an additional level of detail. Specialized maps from the engineer battalion topographic section can provide detailed analysis on intervisibility lines and terrain trafficability. Aerial imagery maps from national intelligence assets are another source for terrain analysis. Once the analysis is complete, it must be visually presented to the aircrews in the form of a terrain model, sketches, the AMPS fly-to function, three dimensional print outs, and/or a MCOO.

Doctrinal Definitions: OCOKA (FM 34-130)

1. **Obstacles**: Obstacles are man-made and natural terrain features that stop, impede, or divert military movement. Identify the existing and/or reinforcing obstacles and hindering terrain that will reduce or eliminate the advantages of firepower and mobility. This can be done by developing the MCOO highlighting unrestrictive, restrictive, and highly restrictive terrain.

2. **Cover and concealment**. Cover is the protection from the effects of direct and indirect fires. Concealment is protection from ground and air observation.

3. **Observation and fields of fire**. Observation involves the influence of terrain on reconnaissance, surveillance, target acquisition, and communication capabilities. Fields of fire involves the effects of terrain on weapons, sensor, and communications effectiveness. The effects of weather and battlefield obscurants should be factored.

4. **Key terrain**. Key terrain is any feature or area the seizure or control of which offers a marked tactical advantage. Look for key terrain that dominates avenues of approach or objectives for direct fires and observation. AD positioning must be factored when determining key terrain. Intervisibility lines that prevent long range fires and observation may be considered key terrain. Terrain that prevents line of site communications may be considered key terrain for aviation units.

5. **Avenues of approach**. Routes by which a force may reach key terrain or an objective. These include both ground (mounted and dismounted) and air approaches (rotary- and fixed-wing). Using the information from the MCOO, discuss mobility corridors in which different types of units can deploy. Avenues of approach are identified by the size of the unit.

Presentation Techniques: Terrain Analysis

Numerous tools can be used to assist the aircrews with terrain visualization. During the orders brief, a 1:50,000 map (with MCOO, if available) should be used to orient everyone to the AO. Prior to issuing the order (if time is available), all aircrews should use the AMPS terrain function or hard copy three dimensional products to review routes and actions on the objective. During the paragraph three briefing in the order, a detailed sketch of the EA or actions on the objective area should be used. During the rehearsal, a terrain model of the routes and actions on the objectives should be used. The EA or objective area should be expanded to allow for the level of detail required for terrain visualization. Terrain relief should be depicted as accurately as possible, with key terrain being identified. These tools also assist with presenting the enemy's most probable COA. Electronic hard copy products may be provided to each aircrew to assist with team orders and planning.

FRIENDLY FORCES

Mission of Next Two Higher Commanders

F-27. The mission will be stated two levels up. The written order will include the next higher intent (squadron).

Intent of the Next Two Higher Commanders

F-28. The intent will be stated two levels up. A bullet format will be used to emphasize the next higher intent (squadron) in the written order.

Presentation Techniques: Higher Commander's Intent

During the presentation of the order read the commander s intent verbatim. In your written order, depending on the length, summarize the intent in bullet format.

Scheme of Maneuver of Next Higher Commander

F-29. This is a brief description of the big picture to include the squadron and any supported higher unit.

Presentation Techniques: Scheme of Maneuver Next Higher Unit

The scheme of maneuver for the next higher unit will be stated and included in the written order. Sketches of the squadron scheme of maneuver and any higher supported units provide subordinates with a clear picture of the next higher maneuver plan. Start with a brief overview of the big picture (higher supported unit, such as brigade, division or corps), then go into detail on the squadron plan (such as main effort, supporting effort, DPs, actions on the objective). A sketch is often better than words. You will emphasize any safety or fratricide issues and control measures from the squadron scheme of maneuver that may influence the troop plan.

Essential Missions

F-30. These are missions issued by the higher unit commander that are essential to the operation.

- Mission of the unit to the left.
- Mission of the unit to the right.
- Mission of the unit to the front and rear.
- Supporting or reinforcing units available. (This should include all combat multipliers available [CSS, ADA, MI, ATC]. When discussing these elements describe the specific command relationships and roles.)

Presentation Techniques: Other Unit Missions

Include the missions and locations of any forces operating in the squadron AO. Pay particular attention to friendly ADA, scouts, COLTs, LRSD, SOF, ground maneuver, artillery position areas, CAS ACAs and other aviation forces. Friendly situational awareness is essential for fratricide prevention. These forces should be depicted on the terrain model and operations map, with locations (grid coordinates) provided to the aircrews. Continuous battle tracking in the troop CP will assist with maintaining a current estimate on the friendly situation.

ATTACHMENTS AND DETACHMENTS

F-31. Any attachments or detachments for the troop and the effective time (unless this has been given in the task organization portion of the order) will be listed.

Planning Considerations: Situation Paragraph

One of the most common problems commanders have with the situation paragraph is that they simply restate the squadron information provided. Commanders do not refine the S2's SITTEMP, use it in developing COAs or during the orders presentation. Commanders must consider the entire threat spectrum, not just AD. More than half of the aircraft losses are due to other than AD systems, such as chemical, indirect fires, and direct fires. Commanders and aircrews fail to realize how the enemy will fight and react to contact. A detailed analysis of the enemy will answer the following questions:

What does the enemy have?

Where is the enemy?

Where will the enemy go?

Where can we kill him?

When will he be there?

What does he have that can kill me?

What will he do on contact?

One of the most common problems commanders have with the situation paragraph is that they simply restate the battalion or squadron information provided. Commanders do not refine the S2's SITTEMP, use it in developing COA (intelligence must drive the maneuver plan) or during the orders presentation. Commanders must consider the entire threat spectrum, not just AD. More than half of the aircraft losses are due to other than AD systems, such as chemical, indirect fires, and direct fires. Commanders and aircrews fail to realize how the enemy will fight and react to contact.

A detailed analysis of the enemy will answer the following five questions:

Where is the enemy?

Where is the enemy going?

Where can we engage or acquire the enemy?

When will the enemy be there?

What does the enemy have that can hurt me?

Detailed analysis of the enemy situation will cause the scheme of maneuver to become apparent. Commanders often spend most of their time on paragraph three, with little consideration of the enemy or friendly situation. This usually results in paragraph three becoming a scheme of movement instead of a plan to maneuver in concert with other maneuver and CS forces on the battlefield. Commanders seldom brief the friendly situation in sufficient detail to provide a clear picture of the battlefield environment. This typically results in chance encounters with friendly units and often results in fratricide. Painting a clear picture of the enemy and friendly forces (to include vehicle types) in relation to the terrain is the key to developing a fully synchronized and effective maneuver plan to achieve the higher commander's end state.

MISSION

F-32. The OPORD will state clearly and concisely the essential tasks and purpose (who, what, when, where and why) for the mission. It will include on-order missions, but will not include "be prepared" missions.

Doctrinal Definitions: Mission Statement (FM 101-5)

State the form of operation, task and purpose, that clearly indicates the essential actions to be taken and the reason therefore. State the primary task assigned to an individual unit, or force. It contains the elements of who, what, when, where and why, but does not specify how.

Planning Considerations: Mission Statement

Often commanders do not understand how to identify the unit's task and purpose. Instead they use nondoctrinal terms, resulting in confusion or contradiction of the task given by the higher commander. Commanders have difficulty in translating task and purpose into who, what, when, where, and why. The "what" is the essential task and form and the "why" is the purpose (see following tables for doctrinal terms). Commanders do not develop a concise statement that details only the essential tasks to be accomplished by HHQ. Commanders often place "be prepared" missions in the mission statement, which adds confusion to the priority of the assigned tasks by HHQ for planning and execution. According to FM 101-5, "be prepared" missions are stated in the concept of the operations paragraph.

Examples: Attack: A Troop, as the main effort (who), conducts a deliberate attack (what or form of tactical operation) along Air Axis Snake at 010001Jan 97 (when) to fix the AGMB (what or task) vicinity EA Viper (NK 1234) (where) to allow B and C Troop to destroy the 1st Echelon MRBs of the 173d MRR in EA Cobra (NK1133) (why).

Some commanders confuse the form of tactical operation with the doctrinal task. For instance, in the above example, most commanders leave out "to fix the AGMB." The result is the troop task is not fully identified.

Security: NLT 010001 Jan 97 (when) D Troop (who) conducts a zone reconnaissance (what or form of operation) to clear Axis Jack (what or task) of division reconnaissance from PL Custer to PL Maverick (where) to enable the Squadron to occupy BP 1 and 2 (why). On order (when) screen (what or form of tactical operation) PL Maverick (where) to destroy (what or task) enemy regimental reconnaissance forces to prevent direct observation of the squadron forward defensive positions on PL Custer (why or purpose).

Doctrinally Correct Terminology for Intent and Mission Statements (FM 101-5)

Doctrinal Forms (1st Half of the "What")				
All Operations	**Reconnaissance**	**Security**	**Offense**	**Defense**
Demonstration Feint Display Ruse Passage of Lines Tactical Combat Force	Area Zone Route Reconnaissance in force	Screen Guard Area Cover Flank Guard Advance Guard Rear Guard	Attack Counter-attack Deliberate Hasty Main Spoiling Supporting Encirclement Exploitation Follow and assume Follow and support Infiltration Insertion Linkup Movement to Contact Advance to Contact Meeting Engagement Pursuit Raid Show of force Support Force Penetration Envelopment	Mobile Area In Sector In Battle Position In Strong Point Deliberate Hasty Reverse Slope Relief In Place

Doctrinal Task (second half of the "what")			Purpose (to..., the "why")		
will or to...			to...		
Attack by Fire	Defeat	Occupy	Prevent	Cause	Support
Attrition	Classify	Reconnaissance by Fire	Divert	Envelop	
Block	Destroy	Retain	Enable	Surprise	
Breach	Displace	Rupture	Deceive	Cause	
Bypass	Disrupt	Secure	Deny	Protect	
Canalize	Fix	Seize	Open	Allow	
Clear	Interdict	Support by Fire	Envelop	Create	
Contain	Isolate	Withdrawal	Surprise	Influence	
The doctrinal task plus the doctrinal form equals the "what" in the mission statement.					

EXECUTION

F-33. The OPORD will state clearly and concisely the execution of the mission.

> **Presentation Techniques: Paragraph Three**
>
> Techniques for presenting paragraph three to subordinates are a sand table, sketch, map, or a combination. Due to the large AO for aviation units, it is seldom feasible to brief the order from a position that overlooks the battlefield. This fact further highlights the need for effective terrain analysis and visualization. An accurate sand table with supporting visualization tools (sketches, AMPS and Terra-Base) facilitates a clear briefing.

INTENT

Commander's Intent

F-34. The single most important thing a commander must communicate to his unit is his intent. The commander's intent is a concise statement of what the force must do to succeed with respect to the terrain and the enemy and the desired end state. It provides a link between the mission and the concept of the operation by stating the key tasks. The key tasks, along with the mission, are the basis for subordinates to exercise initiative when unanticipated opportunities arise, or when the original concept is no longer valid. It is mandatory for all orders. The mission and commander's intent must be understood two levels down.

F-35. The following guidelines are for developing and issuing the commander' intent:

- The intent must be framed in the context of the higher and supported commander's intent.
- Key tasks are defined in the commander's intent. These tasks are those that must be performed by the force, or conditions that must be met, to achieve the stated purpose of the operation. They are not tied to a specific COA, rather they are fundamental to the force's success. The operation's tempo, duration, and effect on the enemy, and terrain that must be controlled, are examples of key tasks.
- The commander's intent no longer contains the "method" by which the force will achieve the end-state. The method is the concept of the operation.
- Acceptable risk is no longer defined in the commander's intent. Risk is addressed in the commander's guidance and is addressed in all COAs.
- If purpose is addressed, it does not restate the "why" of the operation. Rather, it is a broader purpose that looks to the broader operational context of the mission.
- The intent statement must be prepared personally by the commander. When possible, he delivers it, along with the order personally. This enhances subordinate understanding and facilitates immediate clarification of any issues.

F-36. Example: The purpose of this operation is to allow the squadron to establish a flank guard on key terrain along PL Horse with sufficient time to allow the establishment of a 5- to 7-kilometer deep security zone to destroy the FSE and AGMB. Our key tasks are as follows:

- Conduct a hasty zone reconnaissance (force oriented) to allow the squadron to move in zone to set the guard not later than 3 hours after LD. We must gain contact with enemy remnants in zone and conduct target handovers with the GCTs for destruction.
- Do not slow our tempo by becoming decisively engaged prior to the screen on PL Maverick.
- Maintain sufficient depth along the screen to prevent observation of the squadron main defense and allow the destruction of regimental reconnaissance, and to gain contact with the FSE. Conduct battle handover with the GCTs as the FSE penetrates PL Horse.
- Contact is gained and maintained with the FSE and BHO is conducted with the GCTs for destruction. Following BHO, the troop reconsolidates in the FAA and is prepared to conduct hasty attacks on platoon size enemy penetrations of PL Custer.

Doctrinal Definitions: Intent Paragraph (FM 100-5)

Its utility is to focus subordinates on what has to be accomplished to achieve success, even when the plan and concept of operation no longer apply, and to discipline their efforts toward that end.

Presentation Techniques: Intent Paragraph

This paragraph can be written in bullet format based on purpose, method, and end state and briefed at the beginning of the execution paragraph. It should be brief and concise enough for subordinates to remember. State your intent using visual aids (sand table, map, and sketch). This will provide subordinates with a picture rather than words alone.

Planning Considerations: Commander’s Intent

Troop commanders have difficulty expressing a clear and concise intent to their subordinates. Commanders fail to use correct doctrinal terminology. Their purpose statement often conflicts with their own mission statement and the higher commander’s intent. End states are often expressed only as the number of aircraft the commander is willing to lose during the battle, instead of outlining the commander’s vision for what he wants his force to look like with respect to enemy, terrain, and future operations.

CONCEPT OF THE OPERATION

F-37. This paragraph is a concise statement of the COA developed in the MDMP. If the operation can be logically broken down into phases, the commander outlines the phase designation, description, start and end times and/or events. Example: Phase I: Occupation of the Screen. This phase begins on order and ends with the occupation of designated OPs. "Be prepared" missions may be included in the concept. These missions should be outlined in the form of task, purpose, and conditions for execution. For clarity, "be prepared" missions instead may be placed in tasks to maneuver units (if it applies to only one subelement) or coordinating instructions (if it applies to two or more subelements).

Maneuver

F-38. The commander must visualize how the battle will be fought. The scheme of maneuver is a clear and concise statement that provides subordinates with a framework in which to operate without further guidance. The maneuver paragraph describes the movement or placement of all subordinate maneuver elements within the troop, their task and purpose with respect to the overall plan. It addresses the battlefield conditions (friendly and/or enemy) associated with higher commander's DPs that will trigger the execution of friendly maneuver events or commitment. This paragraph is briefed in the chronological order of the battle or phases. The plan must be built on flexibility to execute possible branches. Tasks identified in the maneuver paragraph should not be addressed in subparagraphs unless additional clarity is required.

F-39. Offensive schemes include identification of objectives, order of movement, main and supporting effort, reserves (if applicable), passage of lines, movement formations, and movement techniques. They also include flight profiles, holding area operations, direct fire plan, fratricide control measures, ABF, BP, and/or OP operations, and actions on the objective.

F-40. Reconnaissance operations include many of the offensive elements. They also include control measures, critical reconnaissance tasks, bypass criteria, relief on station, target handover, observer plan, and objectives.

F-41. Security operations include many of the offensive and reconnaissance elements. In addition, they include movement to the screen line, actions on the screen, screen displacement and/or repositioning, observer plan, battle handover procedures and/or criteria, counter-reconnaissance force, and critical security tasks.

F-42. Maneuver paragraph is a base scheme of maneuver from which there should be flexibility to provide the commander other options as the battle progresses.

Presentation Techniques: Maneuver Paragraph

A technique to organize this paragraph is to phase the major events in the sequence in which they will occur. Although fires is a separate paragraph, a technique to ensure fires are synchronized with the maneuver plan, is to brief fires with each phase of the maneuver plan. Begin with a broad view of the scheme of maneuver and state the number and description of the phases of the operation. Brief the scheme of maneuver in detail for each phase. The phases should accomplish the troop purpose and have forces arrayed according to the higher commander's end state.

Another technique in development of the maneuver paragraph is to develop a direct fire plan (to include the direct fire sketch) or R&S plan, then develop the scheme of maneuver paragraph. Many commanders have found this to be a more logical method of developing their maneuver paragraph.

This paragraph should be briefed in detail first, then covered again in general terms on a sand table or from a sketch of the AO.

Fires

F-43. The scheme of fires that supports the overall concept of the operation will be stated. How indirect fires will be used to compliment the troop scheme of maneuver will be described. Who is responsible for the initiation of fires (observer plan) and what the TPME (EFSTs) is for each target will be briefed in detail. The text box below shows a discussion on EFSTs. All indirect fires systems (artillery, mortars, CAS) should be addressed to include their locations on the battlefield and expected available times by phase. The following subparagraphs may be used to provide clarity:

- Priority of fires. (Identify the priorities for FA and mortars and the triggers for shifting their priority.)
- Priority targets. (Identify the priority targets (if applicable) for the squadron and troop. State when (event or time) these targets are activated and deactivated.)
- SEAD plan. (Identify the lethal and nonlethal SEAD that will be used during the mission. Cover each target with respect to task, purpose, method, end state and triggers.)
- Target engagement criteria. (Indirect fire engagement criteria establishe priorities and minimum enemy size and disposition for which fires will be initiated. This allows the commander to maximize the availability of firing units and manage artillery ammunition.)
- Target responsibilities (observer plan). (Detail who will initiate calls for fire, who is responsible for which targets and when, who is the alternate observer, which unit will shoot the mission [who do you call], what is the desired effect for each target, and what is the trigger.)
- Fire support coordination measures. (Outline the specific control measures and clearance of fires procedures that will facilitate and restrict fires on the battlefield. Ensure these control measures are included on the visual aids and that subordinates fully understand when these restrictions are in effect to reduce fratricide [see doctrinal definitions below]).

- Special munitions use. (If applicable, discuss the employment of FASCAM, Copperhead, smoke, and illumination on the battlefield. These have a direct impact on the availability of fires, maneuver, and weapon employment for the troop.)
- CAS. (Although these missions are typically controlled by the squadron ALO or ETAC, the troop may be designated to assist with orienting and supporting CAS on the target. Identify the CAS initial point, ACA locations, time on station, sortie configuration, ordnance, higher commander's intent for employment, initial contact and coordination procedures, restrictions, and marking means.)

Doctrinal Definitions: Fire Support (FM 6-30)

Essential Fire Support Tasks. An EFST is a task for FS to accomplish that is required to support a combined arms operation. Failure to achieve an EFST may require the commander to alter his tactical or operational plan. A fully developed EFST has a TPME. The task describes what effect fires must achieve on an enemy formation's function or capability. The purpose describes why the task contributes to the maneuver plan. The method describes the firing unit, volume of fire, and/or duration. The end state defines what the fires will achieve with the supported friendly force and the enemy formation.

Example: EFST #1

Task: Suppress SA-14 at NK 123456 (AB 1001) as B Troop crosses PP1.

Purpose: Allow B Troop to occupy ABF 1.

Method: 1/ C/1-23 FA, 1 RD per minute continuous suppression from F-1 to F + 2

End State: SA-14 is suppressed and forced to displace, no loss of aircraft as B Troop occupies ABF 1.

Target of Opportunity. Appears during combat, no attack has been preplanned.

Planned Target. Fire has been preplanned. Can be either scheduled or on call. A scheduled target is a planned target to be attacked at a specified time or event. An on-call target is one that is preplanned and fired only when requested.

Target Number. Assigned to each planned target by the FSO. Blocks of alphanumeric numbers (two letters and four numbers) are provided for all fire planning agencies.

Target Group. Consists of two or more targets on which a simultaneous attack is desired by the maneuver commander. The DS battalion is the lowest level unit that will fire a group of targets.

Target Series. A number of targets or groups planned to be fired at a predetermined time sequence to support the scheme of maneuver. A series can be on call or scheduled.

Priority Targets. Firing units lay the guns on priority targets when they are not engaged in active missions. Generally, each FA battery has a priority target. An FPF is an example of a priority target in a defensive situation.

Fire Support Coordination Measures

NOTE: These are measures that facilitate or restrict the attack of targets.

Coordinated Fire Line. Line beyond which all surface-to-surface FS assets may fire without further coordination. A CFL may be established by a maneuver battalion operating independently, but is normally established by brigades and HHQ.

Fire Support Coordination Line. Line beyond which all targets may be attacked by any weapon system without additional coordination, as long as the effects will not effect personnel short of the line. Normally established on recognizable terrain by corps or independent divisions.

Free Fire Area. Area in which any weapon system can fire without coordination. It is normally established on identifiable terrain by a division or higher.

Restrictive Fire Area. An area with specific restrictions. Fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters. An RFA is normally established by a battalion or HHQ.

Restrictive Fire Line. A line which is established between two converging forces. No fires or effects of fires can be executed across the RFL without coordination with the establishing headquarters and the affected force. An RFL is established on recognizable terrain by the HHQ of the converging forces.

No-Fire Area. An area in which no fires or their effect may be delivered except on a mission by mission basis after coordinating with the headquarters establishing the NFA. Fires are allowed if friendly forces are attacked by the enemy and if, in the opinion of the senior soldier on site, there is no time to effect coordination. An NFA is usually established by a division or HHQ.

No-Fire Line. A line short of which artillery or ships do not fire except on request or approval of the supported commander, but beyond which they may fire at any time without danger to friendly troops.

Airspace Coordination Area. A block of airspace allowing relatively safe transit of military aircraft to facilitate the simultaneous attack of targets by both aircraft and indirect fire assets. ACAs are established by brigade or HHQ.

Effects of Fires

Suppression. Fire on or about a weapon system to degrade its effectiveness or performance. The effect of suppressive fires usually lasts only as long as the fires are continued.

Neutralization. Fire delivered to render a target temporarily unusable or ineffective. Experience has shown that 10 percent or more casualties may neutralize a unit. The amount of ammunition required to neutralize a unit will depend on the factors of unit morale, state of training , and degree of protection.

Destruction. Fire puts the target out of action. Thirty percent (Artillery) and seventy percent (Aviation) or more casualties will typically render a unit ineffective. Direct hits are required to destroy targets. This requires a significant volume of fires.

Presentation Techniques: Fire Support

Most of the information listed above can be outlined in a FS matrix generated by the squadron FSO. Although the majority of targets come from top-down, the troop should submit target refinement from bottom-up. The commander can also plan targets by coordinating with the FSO (timeliness being the critical component). The criteria for target development are location, purpose, primary and alternate observer, trigger, communication plan, and a rehearsal.

Planning Considerations: Fires Paragraph

Troop commanders seldom refine targets at their level. They generally brief exactly what they have been given by the FSO and do not discuss how FS is integrated in the troop scheme of maneuver. Observer plans are generally not established with primary and alternate observers. Additionally, the task and purpose of each target is not defined for the observer. Commanders seldom brief the locations of friendly position areas and FS coordination measures, which result in airspace conflicts. Artillery units often are forced into a cease fire status due to aircraft flying in close proximity or over the guns. The higher scheme of fires, priority of fires by phase, target lists, engagement criteria, positioning guidance for observers, special munitions employment, engagement area integration of indirect fires and the relationship of indirect fires and maneuver are seldom briefed in detail.

Intelligence and Electronic Warfare

F-44. Information on the use and location of collection and jamming assets in zone and/or sector will be included. This should include COLTs, LRSD, scouts and other reconnaissance assets in sector and/or zone. Additionally, this paragraph can be used by the troop EWO to discuss ASE passive and active countermeasures to be used on the mission. The EWO identifies the ASE objective, triggers, procedures, and capabilities and/or effects desired on the target. To provide better clarity and continuity, the EWO capabilities portion of the briefing may be done during paragraph one under the enemy situation.

Obstacles, Mines, and Fortifications

F-45. A general picture of the friendly obstacle effort and how it may effect the troop direct fire plan will be described. This paragraph may be briefed in conjunction with the direct fire plan to give subordinates a clear picture of how friendly obstacles will effect the enemy's movement on the battlefield, the use of FASCAM, and identify areas to avoid. When in support of a breach, the commander should identify the elements of SOSR and what effects it may have on the direct fire plan and scheme of maneuver.

SPECIFIC INSTRUCTIONS AND TASKS TO SUBORDINATE ELEMENTS

F-46. All maneuver units or components in the troop according to the task organization paragraph will be listed. This can be delineated as scout weapons teams, heavy and light teams, or platoons. Any additional assets (maneuver) that have been allocated will be included. This paragraph covers any additional tasks (define the purpose with each task) that have not been identified in the maneuver paragraph. If no additional tasks are required, list none. Ensure the task and purpose for each subordinate element is attainable. If the operation is phased, list each task by phase.

Presentation Techniques: Specific Instructions Paragraph

During the confirmation brief, subordinates articulate their specific instructions and identify any limitations that prohibit them from accomplishing their assigned tasks. An execution matrix is useful to communicate this paragraph. Ensure subordinates understand how to read the matrix.

TASKS TO COMBAT SUPPORT UNITS

F-47. If the troop is allocated CS assets (such as ETAC), ensure their specific task and purpose is outlined here, if not already outlined in the maneuver paragraph.

COORDINATING INSTRUCTIONS

F-48. Information or tactical instructions that pertain to two or more elements will be listed. Many of these items can be SOP items. If the unit SOP does not address a specific requirement or procedure it should be addressed in this paragraph. The following instructions may be included:

- Time line. (List all timed events to include PCC/PCI, final inspection time, weather decision time, crank, communication check, take off, LD/SP, SEAD timing, passage of lines, time on the objective, critical event times, time in the BP/ABF, and egress times. Additional times that may be included are resupply times, rehearsals, and confirmation briefs.)
- Order of movement. (Address the order of movement for subelements.)
- Routes. (Detail the ingress and egress routes and alternates.)
- Formations, movement techniques, and flight profiles. (Address only those that have not been addressed in the maneuver paragraph.)
- Actions on contact. (This should be an SOP item, if not address here. Address the seven forms of contact direct fire, indirect fires, EW, NBC, visual, obstacles, air [rotary and/or fixed wing]).
- Control measures. (Identify all control measures not previously briefed. Identify passage of lines procedures and control measures.)
- Aircraft lighting.
- Abort criteria and/or bump plan.
- Engagement and/or bypass criteria and target priorities.
- Reporting requirements. (This includes the components of the CCIR. These are PIRs [critical information on the enemy], EEFI [information if known by the enemy could result in mission failure, such as FARP location], and FFIR [critical information needed by the commander of friendly information, such as weapons and fuel]).
- Air coordination order. (Brief other pertinent data from the ACO that may influence the mission.)

- IMC breakup procedures.
- Rules of engagement.
- Special equipment. (Any special equipment required for the mission [SOP]).
- MOPP level. (Identify the time of various MOPP levels and auto mask criteria. Specify any modifications to MOPP level by higher.)
- ADA weapons control status and/or warning.
- Downed aircraft recovery procedures and/or escape and evasion. (May be covered in paragraph 4. Should cover pickup times, package to be used for DART and any ACO specific information.)
- Fighter management.
- Post mission requirements. (Mission debrief place and time.)
- Force protection. (There are many formats and SOPs for risk assessment. When you determine the format you will use, ensure you identify the safety, fratricide, and operational hazards with control measures implemented.)
  - Risk assessment. (Identify the hazard [by event] that could lead to accidents. Assess the hazard and determine the potential magnitude of the hazard and determine the level of risk. Select controls and make a decision. Risk that cannot be eliminated must be controlled. Implement controls. Control measures must be a part of the OPORD. Leaders must ensure soldiers and aircrews know the potential hazards and control measures to reduce risk. Leaders ensure control measures are fully implemented and those measures that do not work are identified.)
  - Operational risk. (Discuss the areas, events, or points in the battle where the unit is at the greatest tactical risk and describe the measures that are being applied to reduce this risk.)
  - Fratricide risk. (If not covered in detail in paragraph three/five, the measures to reduce fratricide throughout the operation must be identified, enforced, and checked throughout the battle. Vehicle marking, signals, friendly and enemy locations, rules of engagement, and clearance of fires procedures must be fully understood.)

Planning Considerations: Risk Assessment

Many commanders view risk assessment as filling out a number matrix according to the HHQ SOP. Safety officers and commanders seldom identify operational and fratricide hazards and seldom implement controls to reduce the risk. Risk assessment is viewed as an afterthought instead of being a fully integrated portion of the decision making process. OPs for friendly marking and signals along with other fratricide countermeasures lack detail and are not well understood at the subordinate level. Units that have good friendly and enemy situational awareness, as well as clearly defined clearance of fires procedures, seldom have fratricide problems.

Planning Considerations: Execution Paragraph 3

Commanders seldom consider the enemy and friendly situation and the higher commander's intent when developing a scheme of maneuver. Most schemes of maneuver are actually more of a scheme of movement. A good technique to use for developing a scheme of maneuver is action, reaction, and counteraction. Additionally, commanders spend a significant portion of the briefing discussing items that should be SOP. Actions on contact and bypass are seldom covered, while inadvertent IMC procedures are covered in excruciating detail, although it has been covered in previous orders or in the troop SOP. Commanders do not provide sufficient detail, clarity and flexibility in paragraph 3 for subordinates to effectively operate in the absence of the commander.

SERVICE SUPPORT

GENERAL

F-49. This paragraph covers the general friendly situation for CSS operations. It addresses the scheme of support, priorities, and a general picture of how the operation will be supported logistically.

MATERIAL AND SERVICES

Supply

F-50. The specific classes of supply will be addressed as they apply to the troop.

- Class I. The ration cycle and times will be briefed. The basic load required for the mission will be stated.
- Class III. The FARP operations will be briefed. Locations, times active, detailed sketch (confirmed by reconnaissance, if possible), C^2 procedures, priority, routes to and from, arming and refueling pad configuration and procedures, holding areas, lighting, and dirty FARP procedures will be included.
- Class V. Ammunition loads for mission, ammunition available in the FARP, and small arms distribution will be briefed.
- Other classes. These classes of supply will be briefed as pertinent to the mission.
- LOGPAC. LOGPAC times and locations will be briefed.

Transportation

F-51. Information on supply routes and priorities on the route will be included.

Services

F-52. Instructions for the evacuation of KIA in both the AA, FARP and in the battle area will be provided. The location of decontamination points and GRREG points will be discussed.

Maintenance

F-53. Instructions for downed aircraft recovery procedures, maintenance priorities, locations, launch and recovery teams, support in the FARP, and AVUM and/or AVIM support will be provided. Destruction criteria for downed aircraft will be outlined.

Medical Evacuation and Hospitalization

F-54. The location of aid stations and CASEVAC and/or MEDEVAC requirements and procedures will be stated, also include dirty CASEVAC. The location of ground maneuver force ambulance exchange points and aid station locations in the troop AO will be stated.

PERSONNEL

F-55. Instructions for the handling of EPWs, personnel replacements, and any other administrative issues will be provided.

CIVIL-MILITARY OPERATIONS

F-56. Information on civil affairs, host nation support, and psychological operations will be provided. If not already covered as part of the ROE, this must be covered to prevent incidents with the local civilian population.

COMMAND AND SIGNAL

COMMAND

F-57. Any special instructions not covered by SOP will be included. This will also include the location of the commander, platoon leaders, squadron commander and S3, squadron CP, and the succession of command.

SIGNAL

F-58. All communications instructions not included in the SOP will be stated. Items covered include SOI index and edition and/or communication card, listening and silence instructions, challenge and password, IFF procedures, anti-jamming code words with frequencies, special signals, communication plan, (Have Quick, ATHS, and NET responsibilities), and laser codes.

Presentation Techniques: Conclusion of the Order

End the briefing with a GPS time hack to ensure everyone is synchronized. Update the time line and ask for questions. Five minutes after completion of the order, conduct a confirmation briefing with subordinate leaders. Sixty to ninety minutes after the order, conduct back-briefs or at the troop rehearsal subordinate leaders back brief their execution. (Rehearse, rehearse, rehearse.)

Planning Considerations: The Troop Order

Time management is the key to the entire orders process. The time management solution is the effective use of preestablished planning cells and parallel planning. Orders production must be a standard drill that is well trained in field type environments.

Sound SOPs streamline the troop planning process. SOPs should clearly outline the procedures and standard products produced by each cell. They must be well understood, trained, and executed at the subordinate levels.

Develop an orders kit that has all of the necessary tools to produce an order. Preprinted orders formats with carbon paper, alcohol pens, standard drops, enemy battle book, direct fire planning guides, terrain model kits acetate, and necessary tabbed doctrinal manuals will serve as an additional tool to assist the commander with developing a timely and effective order.

BOTTOM-LINE: TRAIN THIS PROCESS ROUTINELY TO STANDARD AT HOME STATION.

OPORD ____________________ **DTG** _________________ **TROOP** ______________

TASK ORGANIZATION:

Aircraft Tail Number	Team	Pilot	Copilot/Gunner	Weapons Load	PRF/Remarks

Time of Attachment: ____

Time of Detachment:____

Support Relationship: Attached OPCON

1. SITUATION:

a. Enemy Forces:

(1) Location of Enemy Forces and Activities:_____________________________________

____

____

(2) Strength and Composition:____

____

(3) Type of Equipment:____

____

(4) Capabilities and Weaknesses:____

____

Figure F-1. Sample Format for a Troop OPORD

(5) Probable Courses of Action:____

____

(6) Weather and Terrain:

Precipitation	Temp Hi/Lo	Winds	Visibility	Moonrise/set	PA
Turbulence	Hazards	Illumination	BMNT/EENT	Electro-Optical	Other

Obstacles:____

Avenues of Approach:____

Key Terrain:____

Observation and Fields of Fire:____

Cover and Concealment:____

Weather and Terrain Effects on the Enemy and Friendly Forces:____________________

____

b. Friendly Forces:

(1) Mission of Next Higher Commander:_______________________________________

____

(2) Intent of the Next Higher Commander:_____________________________________

____

(3) Scheme of Maneuver of Next Higher Commander:_____________________________

____

Figure F-1. Sample Format for a Troop OPORD (continued)

(4) Missions Issued by the Higher Commander Essential to the Operation:

(a) Unit to the Left:____

(b) Unit to the Right:____

(c) Unit to the Front and Rear:_____________________________________

(d) Supporting Units:____

2. MISSION: (who, what, when, where and why) *(Read Twice for Clarity).*

____

____

____

3. EXECUTION:

a. Intent:

Purpose:____

____

Key Tasks:____

____

End State:____

____

b. Concept of the Operation:

(1) Maneuver:____

____

____

Figure F-1. Sample Format for a Troop OPORD (continued)

(2) Fire Support: (Scheme of Fires):____

____

____

(a) Priority of Fires:____

(b) Priority Targets:____

(c) Position Areas:____

(d) FSCMs:____

(e) SEAD:____

____

FIRE SUPPORT MATRIX/OBSERVER PLAN

	Target#_______ Grid__________	Target#_______ Grid__________	Target#_______ Grid__________	Target#________ Grid___________	Target#_______ Grid__________
Trigger					
Observer	Primary/Alternate ______/_______ Location:______	Primary/Alternate ______/_______ Location:______	Primary/Alternate ______/_______ Location:______	Primary/Alternate _______/_______ Location:_______	Primary/Alternate _______/______ Location:______
Purpose					
Engage Criteria					
Munition					
Commo	Call Sign:_________ Freq:_________	Call Sign:_________ Freq:_________	Call Sign:_________ Freq:_________	Call Sign:__________ Freq:__________	Call Sign:_________ Freq:_________
Remarks					

(f) Close Air Support: (Higher Commander Scheme of CAS Support)_______________

____

Figure F-1. Sample Format for a Troop OPORD (continued)

A/C Type/# Sorties	Ordnance	Time on Station	Initial Point	Contact Call Sign/Freq (Who controls CAS?)	Laser Code	Target Information/ Remarks

(3) Intelligence and Electronic Warfare:_______________________________________

____

ASE Execution Matrix

ASE Target and Location	Defeat Mechanism	Trigger	System Setting (If Applicable)

(4) Obstacles, Mines and Fortifications:_______________________________________

____

c. Specific Instructions and Tasks to Subordinate Elements:

____

____

____

____

Figure F-1. Sample Format for a Troop OPORD (continued)

d. Tasks to Combat Support Units:

____

____

____

____

e. Coordinating Instructions:

(1) Time Line:______________________________________

____

____

(2) Order of Movement:________________________________

____

(3) Routes: Ingress Primary:____________________________

Egress Primary:____________________________

Ingress Alternate:__________________________

Egress Alternate:___________________________

(4) Formations, Movement Techniques and Flight Profiles:____________

____

____

Figure F-1. Sample Format for a Troop OPORD (continued)

(5) Actions on Contact: Direct Fire:____

Indirect Fires:____

EW:____

NBC:____

Visual:____

Obstacles:____

Air:____

(6) Control Measures/Passage of Lines:____

____

(7) Aircraft Lighting:____

(8) Abort Criteria/Bump Plan:____

(9) Engagement and Bypass Criteria:____

(10) Reporting Requirements:____

____

(11) Air Coordination Order:____

(12) IMC Breakup Procedures:____

(13) Rules of Engagement:____

____

(14) Special Equipment:____

Figure F-1. Sample format for a Troop OPORD (continued)

(16) ADA Weapons Control Status and Warning:________________________________

(17) DART Procedures:____

(18) Fighter Management:____

(19) Postmission Requirements:____

(20) Force Protection:____

____

____

4. SERVICE SUPPORT:

a. General:____

____

b. Material and Services:

(1) Supply: Class I:____

Class III:____

(**Include FARP Diagram and Sketch)**

Class V:____

(2) Transportation:____

(3) Services:____

(4) Maintenance:____

c. Medical Evacuation and Hospitalization:________________________________

____

d. Personnel:____

Figure F-1. Sample format for a Troop OPORD (continued)

e. Civil-Military Operations:____

f. Miscellaneous:____

5. COMMAND AND SIGNAL:

a. Command:

(1) Location of Commander:_______________(2) Location of Plt Ldrs:_____________

(3) Location of SQDN Cdr:_________________(4) TOC Location:_________________

(5) Succession of Command:____

b. Signal:

(1) SOI:___________(2) Challenge:_____________(3) Password:________________

(4) Listening and Silence Instructions:_______________________________________

____

(5) IFF Procedures:____

(6) Antijam Code Words and Frequencies:

Number	Code Word	Frequency

(7) Communication Plan and Net Responsibilities:_____________________________

(8) Special Signals:____

QUESTIONS // TIME HACK // CONFIRMATION BRIEF // BACK BRIEF // REHEARSAL

Figure F-1. Sample format for a Troop OPORD (continued)

Appendix G

Joint Air Attack Team

This appendix implements portions of STANAG 2404.

PURPOSE

G-1. JAAT is not a mission in itself. It is an engagement technique used to increase the effectiveness of offensive or defensive operations by combining the target acquisition and firepower of fixed-wing aircraft with the target acquisition, designation, and suppression capabilities of Army aircraft. Indirect FA fires or naval gunfire, along with direct fire from ground forces should also be employed to increase the survivability of all JAAT players. The attack may be against a single enemy element or against several enemy elements within a specified area. An ACT is frequently called upon to perform a JAAT while conducting its assigned missions. For an ACT, a JAAT is conducted as a normal attack mission with the additional CS of TACAIR. The addition of TACAIR gives both the ACTM and TACAIR team greater survivability while simultaneously increasing their firepower and complicating the enemy's countering attack. JAAT can be used to support the ground commander's maneuver scheme or can be tasked to support air or maritime commanders' objectives.

G-2. While procedures are in place to help orchestrate a JAAT in which several different types of FS are synchronized, JAATs work best when helicopter pilots and fixed-wing pilots communicate in plain language,"attack pilot to attack pilot." Detailed attack synchronization is sometimes necessary; however, the most valuable attribute of a JAAT is the capability to overwhelm the enemy by applying an enormous amount of firepower in a relatively short amount of time. All coordination measures and communications should ensure this capability is maintained, while minimizing the potential for fratricide and maximizing the survivability of the JAAT participants.

G-3. New systems fielded on helicopters and fixed-wing aircraft enable JAATs to occur any time, day or night, any place on the battlefield. AH-64 systems include NVGs and a FLIR. OH-58D systems include NVGs and a TIS. A/OA-10 pilots are now equipped with NVGs as well as IR pointers and may carry IR and white light flares. Some F-16s are equipped with LANTIRN pods and NVGs. F/A-18 and AV-8 aircraft may be equipped with a FLIR and/or targeting pod and their pilots will usually be equipped with NVGs. The night capability these systems provide make night JAAT operations particularly effective.

COMPOSITION

COMMANDER

G-4. The ground maneuver force commander is responsible for the ground and airspace below the coordinating altitude where the supported commander must synchronize the JAAT into the battle and bring its combined fires into play at the decisive moment. To plan and coordinate the JAAT, ground force commanders use their S3, TACP, FSO, and the squadron commander or his air liaison officer. Air commanders may use the FAC-A, TACP, ASOC, AOC, wing ground LNO, and/or the squadron commander.

ATTACK HELICOPTERS

G-5. The attack helicopter portion of the JAAT consists of OH-58D Kiowa Warriors in the DCS and both the AH-64 Apache and the Kiowa Warrior in the RAS. Except for the additional planning and coordination necessary for a joint operation, the unit will conduct the JAAT operation as they would a normal attack mission. During the JAAT operation, the ACTM AMC will plan the operation, coordinate the attacks in the EA, and provide SEAD for attacking TACAIR and armed helicopters. Although the ACTM will provide suppressive fires against enemy AD, the primary armor killers are TACAIR. The size of the JAAT depends upon the squadron commander's analysis of the factors of METT-T and the number of TACAIR sorties allocated.

TACTICAL AIRCRAFT

G-6. TACAIR that can perform CAS are the USAF A/OA-10 and F-16; USN F/A-18; and USMC AV-8 and F/A-18. However, other TACAIR may be employed. JAATs will normally be formed with USAF participants. However, USN and USMC assets may be available in some cases. The use of TACAIR significantly increases the combat power of the ACT or ACTM by virtue of the large and varied ordnance payloads available.

G-7. The USAF A/OA-10 provides the most flexible support to JAATs and has several advantages over other aircraft. A/OA-10s were specifically designed for and dedicated to the CAS mission. A/OA-10 pilots have trained extensively with Army units in CAS and JAAT employment TTP. Their night attack capabilities have increased due to the fielding of NVGs and associated equipment. The A/OA-10 has extensive loiter and multipass capabilities and can react quickly to a changing attack plan. Other TACAIR assets will not normally possess the extended loiter capability of the A/OA-10 but are very capable due to their LANTIRN or targeting pods, FLIRs, and/or NVGs.

G-8. The use of aircraft other than A/OA-10s may require more coordination between the FAC and the ACT commander as they may not be well trained in JAAT TTP.

FORWARD AIR CONTROLLER

G-9. The FAC (airborne) will handoff fixed-wing aircraft to the JAAT AMC who will control the JAAT from the initial point inbound. The battle captain is the on- scene commander for the execution of the JAAT. The TACAIR flight lead will control employment of the flight. The FAC (airborne) can help locate targets and threats (threat dependent) prior to or during the JAAT mission.

JOINT AIR ATTACK TEAM FIRE SUPPORT

G-10. Indirect FS is used when available and can greatly increase the survivability of the aircraft and the destruction of the enemy. FS is normally used to begin the attack, suppress or destroy enemy AD, force armored vehicles to deploy, and create confusion within the C^2 of the element under fire.

G-11. The squadron commander may use his FSO to conduct FS planning to support the JAAT. The FSO must work closely with the USAF TACP located at a ground maneuver brigade, aviation brigade, division, or corps headquarters so that FS will fit smoothly into the plan. Once the JAAT mission begins, the ACT commander or ACTM AMC works directly with the FSO to coordinate FS.

MISSION PLANNING

G-12. Because each member of the JAAT retains his own C^2 system, mission planning must be a coordinated effort. Constant coordination is required between the ground maneuver commander, aviation commander, TACAIR flight lead/ALO/FAC, and FSO. As elements of the mission change, all members must be informed so that they can adjust their plans accordingly. Success of the JAAT operation depends on the proper synchronization of assets and how well each member of the JAAT understands the operation. JAAT operations may be preplanned, immediate, or spontaneous. Attack helicopter battalions will normally be designated to execute preplanned JAAT. DCSs and RASs can expect to execute immediate or spontaneous JAAT during both reconnaissance and security operations.

PREPLANNED

G-13. A preplanned JAAT operation is used when time is available to request CAS in the normal planning cycle (usually 36 hours). The preplanned request is drafted by the FSO in coordination with the TACP and processed through Army channels to the AOC. The AOC processes the request according to priorities selected by the joint force commander. Approved preplanned JAATs will appear on the ATO with the number of sorties, times, and ordnance.

IMMEDIATE

G-14. An immediate request for CAS is used when time is not available to process the request within the normal planning cycle. An immediate CAS request should be submitted as soon as the need is recognized. For example, if it is 1,000 hours and a JAAT is planned for 2,300 hours, the immediate request for CAS ASAP will be placed to allow TACAIR coordination and planning to begin. Immediate CAS request is transmitted by the appropriate echelon TACP over the USAF air request net directly to the ASOC collocated at the corps TOC. Intermediate level-TACPs monitor these requests and advise their respective commanders. Intermediate echelon commanders may direct their assigned TACP to disapprove the request using the air request net if other assets are available or they otherwise do not support the request. Silence by intermediate-level TACPs for a specified amount of time (normally 10 minutes) is considered approval. Following approval by the corps FSE, the ASOC coordinates with the AOC to fulfill the requirement.

SPONTANEOUS

G-15. A spontaneous JAAT operation occurs when all members of the team are available but no time is available to plan and coordinate. To be successful, spontaneous JAAT operations depend on unit SOPs, training, and communications. A successful JAAT operation is possible anytime pilots are able to coordinate actions by talking with each other. A common JAAT frequency that can be used by the team members is a critical portion of a spontaneous JAAT operation and should be included in SOIs and USAF ATOs. A common JAAT frequency will allow the ACTM to communicate and coordinate its attacks with the CAS aircraft in a minimal amount of time.

SEQUENCING

G-16. A well-orchestrated JAAT operation will normally require a number of radio calls to ensure it is a success. In order to reduce radio traffic to a minimum, a preplanned method of coordinating JAAT activities is often used. Two methods are provided as examples:

JOINT AIR ATTACK TEAM CLOCK

G-17. The JAAT clock (Figure G-1) is the best known and widest used method to control JAAT operations. It is a method of sequencing the JAAT engagement based on time. To initiate the JAAT, the ACTM updates the target information and issues the TACAIR a time hack (3 minutes is the most common) that starts the JAAT Clock. The time hack serves as the TOT for the TACAIR. TACAIR will have ordinance impact or be over the target when the JAAT Clock runs out. The ACTM can employ fires throughout the JAAT Clock, except during a safety buffer (normally 30 seconds) prior to the TOT. This safety buffer ensures that residual ordinance effects of the impacting rounds do not endanger TACAIR. The ACTM employs additional fires as required to suppress the enemy during the TACAIR egress. A reattack can be either immediate or based upon an abbreviated JAAT Clock. An example of a typical engagement follows:

- ACTM AMC coordinates the attack and then calls “3 minute hack...ready, ready, hack. ”
- TACAIR lead responds with “good hack.”
- ACTM AMC engages the target with indirect fires as required to suppress the enemy.
- TACAIR departs the initial point as required to meet the 3 minute TOT.
- ACTM AMC ensures “check fire” on all indirect fires at the required time. This time is calculated by subtracting the required safety buffer

(30 seconds) and the artillery time-of-flight (10 seconds) from the TOT (3:00-0:40=2:20). The AMC may continue to suppress with direct fire weapons using visual separation.

- TACAIR engages the target at the 3-minute mark.
- ACTM issues TACAIR either “reattack” or “return to initial point,” suppresses with direct fire to cover the TACAIR egress.

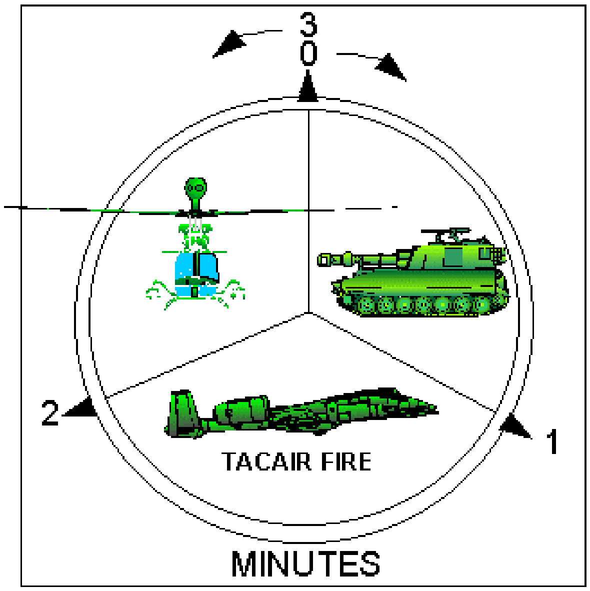


Figure G-1. Joint Air Attack Team Clock

JOINT AIR ATTACK TEAM SEQUENCE CARD

G-18. The JAAT sequence card (Figure G-2) consists of a number of different attack sequences and would be used by all those likely to be involved in a JAAT operation. The option to be used for any specific attack would be broadcast by the JAAT controller giving the letter code, a number, and an H-hour. The letter code refers to the type of attack and the number to the length of time of the artillery bombardment. For example, if the controller orders “KILO 3 at 1232 hours”, the attack will begin at 1232 hours, with an artillery bombardment for 3 minutes followed at 1235 (1232 + 3 minutes) by armed helicopters and then the TACAIR at 1237. The artillery then engages (rounds on target) at 1240, until given “check fire” by the artillery observer. From the single call, all JAAT players can work out their involvement and plan accordingly. The format of the card is variable and can be constructed or amended to meet different situations as required.

	H Hour / min	2 min	3 min		"Check Fire"
K	Arty	Avn	TAC Air	Arty	
I	Arty	TAC Air	Avn	Arty	
J	Arty	Avn	Arty	TAC Air	Arty
N	Arty	Avn	Arty		
M	Arty	TAC Air	Arty		
R	Avn	TAC Air			
T	TAC Air	Avn			

Figure G-2. Joint Air Attack Team Sequence Card

EMPLOYMENT

G-19. Employment of the JAAT depends on the factors of METT-T. The method of employment is decided as early as possible so that attacking assets can be coordinated. The two basic employment methods are sector attacks and combined attacks. Sector attacks allow each element of the JAAT to attack within a specified sector. Combined attacks occur when JAAT elements mass their fires by attacking in the same sector.

SECTOR ATTACKS

G-20. The three types of sector attacks are sector-simultaneous, sector-sequential, and sector-random. Sectors work best when easily recognizable terrains such as roads, rivers, ridgelines, or tree lines are used. Sectoring the target reduces targeting deconfliction and provides each weapons system flexibility in prioritizing the targets within the designated sector.

Sector-simultaneous

G-21. During sector-simultaneous attacks, each element maneuvers to attack within its assigned sector to engage targets simultaneously with other JAAT elements. All aircraft must coordinate ordnance fans to avoid fratricide.

Sector-sequential

G-22. During sector-sequential attacks, each element maneuvers to attack within its assigned sector to attack in a predetermined sequence. This sequence may range from several seconds to several minutes. This option reduces the ordnance fan coordination problem and facilitates covering fire for each preceding element.

Sector-random

G-23. During sector-random attacks, each element maneuvers to attack within its assigned sector and engages targets at will. All elements must coordinate ordnance fans and ensure fratricide avoidance.

COMBINED ATTACKS

G-24. The three types of combined attacks are combined-simultaneous, combined-sequential, and combined-random. Combined attacks usually involve helicopters and TACAIR using approximately the same avenue of approach to the target. Combined attacks typically provide good mutual support between the different elements but require more coordination and are more predictable to the enemy, after the initial attack.

Combined-simultaneous

G-25. During combined-simultaneous attacks, all elements engage targets in the same sector and attack simultaneously. All elements must coordinate ordnance fans and ensure fratricide avoidance. Combined-simultaneous attacks maximize destruction of the enemy and are the simplest to control. This is an excellent control method when FA fires are not available or when elements can use maximum ordinance elevation for deconfliction of airspace.

Combined-sequential

G-26. During combined-sequential attacks, all elements engage targets in the same sector and attack in a predetermined sequence. This sequence may range from several seconds to several minutes. This option reduces the ordnance fan coordination problem and facilitates covering fire for each preceding element. Use of the "JAAT Clock" method is an example of a combined sequential.

Combined-random

G-27. During combined-random attacks, all elements engage targets in the same sector and attack at will. Once again, all elements must coordinate ordnance fans and ensure fratricide avoidance because attacks may inadvertently be simultaneous.

CONDUCT OF OPERATIONS

G-28. After receiving the mission, the squadron will conduct mission analysis in as much detail as time allows. Planning, coordinating, analyzing, and rehearsing are conducted to ensure success.

G-29. Upon departing the holding area, ACTMs move forward to reconnoiter the target area. ACTMs verify BPs, avenues of approach, obstacles, and potential EAs that have not been already identified. If the enemy has already entered the EAs, ACTMs maintain contact and attempt to locate the enemy's AD systems.

G-30. ACTMs should establish contact with the unit providing indirect FS during reconnaissance. This contact should continue throughout the mission, with the ACTMs serving as the FS element on the battlefield during the

JAAT. Careful consideration should be given to using artillery prior to direct fire engagements with AH and TACAIR assets. Obscurants generated by the impacting rounds may interfere with laser range finders and designators, degrading the effectiveness of precision guided munitions.

G-31. In preplanned JAAT operations, the arrival of the armed helicopters should coincide with the arrival of the TACAIR at the initial point. This is the most difficult part of a JAAT operation. The aviation commander must attempt to flow all the assets into the battle in various combinations without piecemealing the force. As the armed helicopter arrives in the BP, the platoons take up their positions and begin their attack according to the commander's scheme of maneuver. A portion of the ACT and/or ATKHT will most likely begin the attack by engaging AD targets identified by the ACTMs during their reconnaissance. The ACTM that is assigned to SEAD and security is determined by the local threat. The remainder of the troop attacks in sector according to squadron and/or troop attack priorities.

G-32. When the TACAIR flight leader arrives in the battle area, he contacts the ALO and/or FAC. He gives the ALO and/or FAC his call sign, mission number, available ordnance, and loiter time. The ALO and/or FAC, ACT commander, or ACTM AMC, if the ALO and/or FAC is not available, passes the target information to the TACAIR flight lead. The ACT commander and/or AMC, the ALO, and the TACAIR flight lead must have good communications.

G-33. TACAIR usually enter the target area in a flight of two. The flight leaves the initial point using low-altitude tactical navigation techniques. This maximizes terrain masking if operating low or in a variety of formations with an altitude stack between aircraft, if the situation permits medium altitude operations. The flight leader contacts the ALO and/or FAC or the ACT and/or ATKHT commander for an update on friendly and enemy activities. In addition to receiving an update on the situation, the TACAIR flight leader should also give an inbound call. This call is expressed in units of time, for example, 30 seconds. The ACT commander and/or AMC uses this call as his signal to lift or shift the fires and coordinate the battle.

G-34. As TACAIR attack, the ACT commander and/or AMC observes their attack. Then directly or through the ALO and/or FAC, the ACT commander and/or AMC adjusts the TACAIRs' subsequent attacks by using cardinal headings and distances from the last impacts. The ACTM can use its lasers to mark targets, the center mass of the target array, and boundaries of the sector or designate targets for USAF delivered precision munitions. The use of lasers increases the speed and security of the attack and reduces the amount of communications necessary between the ACTM and the TACAIR flight.

COMMUNICATIONS

G-35. The communications link between members of the JAAT is critical. The ACTM and the TACP or HHQ must coordinate the frequencies to be used and who will transmit to whom the word of day or “Mickey” before TACAIR arrive at the initial point.

ADVANCED HELICOPTER CAPABILITIES

G-36. The AH-64 and OH-58D give the JAAT the capabilities discussed below.

COMMUNICATIONS

G-37. Communications are the key to effective JAAT operations. The Have Quick radio system on the AH-64, OH-58D, and TACAIR allow jam-resistant, nonsecure frequency hopping communications with ALO/FAC and TACAIR elements. The armed helicopters and the TACP must coordinate the frequencies to be used before the TACAIR arrive at the initial point. Use the TACAIR check-in briefing below (Figure G-3) to coordinate the voice frequencies, digital data frequencies, and laser codes between the TACAIR and armed helicopters.

(Aircraft Transmit to Controller)
Aircraft* ______________________, this is _______________________*
(Controller Call Sign) (Aircraft Call Sign)
1. Identification/Mission Number:* ________________________________*
Note: Authentication and appropriate response suggested here. The brief may be abbreviated for brevity or security ("as fragged" or "with exception").
2. Number and type of aircraft:* __________________________________*
3. Position and Altitude:* ____*
4. Ordnance:* ____*
5. Play time:* ____*
6. Abort Code:* ____*

Figure G-3. Sample Format of a Tactical Aircraft Check-in Briefing

LASER DESIGNATION

G-38. The AH-64A/D and OH-58D laser designator can mark sectors, targets, and enemy positions for TACAIR equipped with proper sensing devices. The FAC is responsible for coordinating the laser code used.

ADVANCED TACAIR CAPABILITIES

COMMUNICATIONS

G-39. TACAIR and FAC aircraft are equipped with jam-resistant, non-secure frequency hopping communications via the Have Quick II radio. They are also equipped with a variety of other communications systems (VHF-AM and VHF-FM, additional UHF radio, and data link) depending on the aircraft participating.

PRECISION MUNITIONS

G-40. Precision munitions offer improved effects on the targeted enemy force. Laser-guided munitions can destroy bridges and other priority targets while allowing TACAIR greater survivability. The IR and optically guided versions of the Maverick missile provide precision hard and moving target kill capability.

FORWARD AIR CONTROLLER

G-41. If the FAC is available to brief the CAS aircraft then the following attack brief is to be used by the AMC:

- Distance and/or direction reference.
- Specific target identification.
- Specific threat identification.
- Specific friendly identification.
- Specific attack restrictions.
- FAC position.
- Final clearance.

BRIEFING

G-42. When briefing the JAAT in the absence of the FAC, the AMC will provide a nine-line brief (Figure G-4) to the TACAIR.

Omit data not required. Do not transmit line numbers. Units of measure are standard unless otherwise specified. *Denotes minimum essential in limited communications. Bold denotes readback items when requested.

Terminal controller:"________________, this is ____________________"
Aircraft Call Sign (Terminal Controller)

Figure G-4. Sample Format of a Tactical Aircraft Briefing Form (Nine-Line)

Appendix H

Aircraft Survivability Equipment

SECTION I—FUNDAMENTALS AND THREAT CONSIDERATIONS

FUNDAMENTALS OF AIRCRAFT SURVIVABILITY

H-1. Tactical helicopters are protected with ASE while operating throughout the battlefield conducting their assigned missions. Aircraft survivability encompasses a vast array of disciplines. There is a tendency to equate ASE as the whole of aircraft survivability. ASE is a portion of EW, which is but one pillar that supports IO and/or IW. FM 100-6 changed EW terminology to the following three functions:

ELECTRONIC ATTACK

H-2. Electronic attack [formerly ECM] is that division of EW involving the use of electromagnetic or directed energy to attack personnel, facilities, and equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. Electronic attack includes actions taken to prevent or reduce the enemy's effective use of the electromagnetic spectrum through jamming, destruction, and electromagnetic deception. Electronic attack includes the employment of weapons using either electromagnetic or directed energy (such as lasers, radio frequency, and particle beams) as their primary destructive mechanism. Electronic attack also includes the employment of weapons using sources of electromagnetic energy as the primary means of terminal weapons guidance for the purpose of damaging or destroying personnel, facilities, or equipment. ASE systems include chaff, flares, radar jamming, and IR jamming.

ELECTRONIC PROTECTION

H-3. EP (formerly ECCM) is that part of EW involving actions taken to protect personnel, facilities, and equipment from effects of friendly or enemy EW actions that may degrade, neutralize, or destroy friendly combat capability. To minimize their vulnerability to electronic attack, EP should be considered for all battlefield systems deriving operational capabilities through the use of the electromagnetic spectrum. Included are optical, electronic, IR, and radar target acquisition, NCTR systems, as well as smart weapons systems' sensors, fuses, guidance, and control components. ASE systems include antenna design, signature reduction, and IR absorbing paint.

ELECTRONIC SUPPORT

H-4. ES (formerly ESM) is the division of EW involving actions tasked by, or under the direct control of, an operational commander. The purpose of this division is to search for, intercept, identify, and locate sources of radiated electromagnetic energy for immediate threat recognition in support of EW operations and other tactical actions such as threat avoidance, homing, and targeting. ES focuses on surveillance of the electromagnetic spectrum in support of the commander's immediate decision making requirements for the employment of EW or other tactical actions, such as threat avoidance, targeting, or homing. ES is normally provided by organic intelligence and sensing devices based on EW technology integrated into other weapon systems, or assets from other echelons capable of providing combat information to the supported command. The purpose of ES is to ensure electronic attack and EP applications receive the input needed to operate effectively. Examples of ES actions are battlefield systems that execute direction finding operations, detect and identify enemy missions or other electromagnetically-measured signatures for immediate exploitation, locate high value targets for electronic attack, and provide threat avoidance information. ASE systems include radar, laser, and IR missile detecting sets.

AIRCRAFT SURVIVABILITY EQUIPMENT TENETS

H-5. The role of ASE is to reduce the vulnerability of our aircraft, thus allowing the aircrew to accomplish their immediate mission and to survive to fight another day. The methodology to achieving survivability is supported by the ASE tenets—a five-fold approach to ensure that Army aircrews are able to accomplish their mission again and again. Sound tactical flight and signature reduction provides the baseline. Warning leads to jamming, and each tenet is sequential starting from the most effective and least expensive to the least effective and most expensive. These five tenets are listed below in the order of least cost and most effective to the greatest cost and least effective.

TACTICS (ELECTRONIC PROTECTION)

H-6. Proper tactics reduce exposure times to enemy weapons. NOE flight not only limits LOS exposure times, but also places the aircraft's radar, IR, and optical signature in a cluttered environment. NOE tactics combined with ASE protection and standoff ranges allow Army aviation to not only survive, but perform its mission on the battlefield. ASE protection is severely degraded when the aircraft is not flown tactically sound (blue-sky background).

SIGNATURE REDUCTION (ELECTRONIC PROTECTION)

H-7. These measures are taken into account by engineering or design changes such as flat canopies, exhaust suppressers, and coating the aircraft with low-IR reflective paint. Signature reduction alone greatly increases survivability. Without signature reduction, ASE effectiveness is degraded and, in some cases, erased. Signature control is also performed by the aviator choosing how much signature to expose to the threat.

WARNING (ELECTRONIC SUPPORT)

H-8. The next step in ASE protection is to provide warning to aircrews when they are about to be engaged, allowing them time to react. Examples of such warning devices are radar, laser detecting sets, and IR missile warning systems.

JAMMING AND DECOYING (ELECTRONIC ATTACK)

H-9. When aircrews must stay on station despite warnings, countermeasures capable of jamming and or decoying the fire control or guidance systems of threat weapons are required. Chaff, flares, and radar and IR jammers provide this type protection.

AIRCRAFT HARDENING (VULNERABILITY REDUCTION)

H-10. Aircraft hardening provides for ballistic tolerance, redundant critical flight systems, and crashworthy features in an attempt to minimize the damage to an aircraft once it has been hit.

THREAT CONSIDERATIONS

H-11. This section is not designed to be system specific in nature, but rather to provide a general knowledge of threat systems that can be applied to specific threats on a case by case basis.

THREAT ENGAGEMENT SEQUENCE

H-12. All weapon systems must complete a series of events, called an engagement sequence, to actually have effect on the target (aircraft). Any step in the engagement sequence that is missed forces the threat to start over again. Weapon systems sensors must—

- Detect.
- Acquire.
- Track.
- Launch and guide (or fire and ballistics).
- Assess damage.

EXAMPLE THREAT SYSTEM

H-13. Five elements required to compute an AAA fire control solution are range, azimuth, elevation, velocity, and TOF. If one of the fire elements is incorrect, the AAA system will not hit the target.

TIME AND SPACE

H-14. The threat must detect, acquire, track (establish fire control solution), and fire at the aircraft. The time of flight of the projectile must be determined. The threat must predict where the aircraft target will be (within a few meters) when its ordinance travels to a point in space and time.

TOOLS

H-15. Tactics, signature reduction, warning, jamming, and decoys are the tools available to preclude a successful threat engagement. If hit you may have to count on aircraft hardening.

ACQUISITION VERSUS TRACK

H-16. The difference between detection and acquisition versus tracking is very important. In detection and acquisition, the threat weapon system does not have refined data to fire at you. The threat weapon system must track the aircraft long enough to determine range, azimuth, elevation, and velocity to predict when and where to fire to hit its target. Indications of search or acquisition activity may indicate to the aircrew time to increase their vigilance (e.g., change mode of flight, actively searching for masking terrain features). Tracking indications alert the aircrew to an immediate action requirement (masking or when terrain is not readily available, ASE decoys and evasive maneuvers).

ENGAGEMENT ENVELOPE

H-17. All threat systems are confined by physics. Each system has a maximum altitude and range in which its projectile will travel. Additionally, all threat systems have a minimum and maximum effective altitude and range. These numbers are computed against a cooperative engagement (nonmaneuvering aircraft, blue sky background, flat terrain, and steady velocity, if any). The effective envelope for a threat system is based upon a 50 percentile. That is, at the maximum (or minimum) effective range (or altitude), the weapon system is able to hit the target one out of two times. As the target gets further into the threat's envelope, the probability of a first shot kill increases. As the target gets further outside the threat envelope, the probability decreases until the target is outside the threats maximum range (or altitude) where it is physically impossible to be hit.

DECREASING THE PROBABILITY OF HIT

H-18. The aircrew has the ability to make the engagement more difficult for the threat. A stationary target for example allows the threat to adjust each shot off the last until it hits the aircraft. A more difficult engagement would be a moving, constant velocity shot. A prediction can be made and if a miss occurs, an adjustment can be made based off the last shot. The most difficult engagement is against a moving target that varies range, altitude, elevation, and velocity. This type of engagement makes prediction impossible because four factors are changing at differing rates.

THREAT WEAPON SENSORS

H-19. There are generally four major types of threat weapon sensors—radar, IR, laser and DEW, and optical and/or EO. These may be man portable or transported by land, sea, or aerial platforms. It is important to determine the actual sensor type and guidance package for each threat and understand their inherent capabilities and limitations. (For in depth information concerning particular threat systems, contact your unit ASE, EWO, or tactical operations officer.)

RADAR

H-20. Direct threat radar weapons require LOS to hit the target. Direct threat radar weapons are either fire controlled AAA or for missile systems command, SARH, active radar homing, TVM, or GAS. Radar weapons must detect, acquire, track, launch and guide (or fire a ballistic solution), and assess damage. Radar systems have trouble with ground clutter. To pick out targets from ground clutter, radar systems can detect movement though the use of MTI, Doppler (continuous wave radar), or pulse Doppler. Modern radar systems can and do track not only the movement of the aircraft itself, but some detect the movement of rotor blades. A few older radar systems had blind speeds (called a Doppler notch) where they could not detect an aircraft flying a specific speed towards or away from the radar. However, not only do modern radar systems cancel blind speeds, but even with older radar systems, an aircraft had difficulty maintaining constant speed and angle to or from the one radar. It also is impossible to be in the Doppler notch of more than one radar. Radar systems can be detected, avoided, decoyed, jammed, and destroyed by direct and indirect fires (self, artillery, and antiradiation missiles).

INFRARED

H-21. All IR direct threat weapons require LOS to be established prior to launch, and the in-flight missile must maintain LOS with the target until impact (or detonation of the proximity fuse). IR missiles require the operator to visually detect the target and energize the seeker before the sensor acquires the target. The operator must track the target with the seeker caged to the LOS until it is determined the seeker is tracking the target and not any background objects (such as natural or man-made objects to include vehicles, the sun, or reflected energy of the sun off clouds). The IR sensor is also susceptible to atmospheric conditions (haze, humidity), the signature of the aircraft and its background, flares, decoys, and jamming. Generally IR systems are—

- Difficult to detect prior to launch (passive sensor).
- Difficult to predict where they may be located (portability).
- Difficult to respond to (short TOF after launched).
- Difficult to hard kill (requires shooting at an in-flight missile).

LASER AND/OR DIRECTED ENERGY WEAPONS

H-22. Laser and/or DEW weapons really fit two distinct categories—laser guided or aided weapons and pure laser and/or DEW weapons. Laser guided or aided weapons are those who use the laser to perform ranging, tracking, or guiding functions for conventional explosive missiles or projectiles. Pure laser and/or DEW weapons use laser and other forms of DEW to inflict damage to the aircraft or its sensors (as a by-product, the aircrews eyes may be damaged). Pure laser and/or DEW weapons are not required to burn a hole in the target to destroy it, although these weapons are reaching that capability. Simply igniting fuel vapor near vents or burning through fuel lines are effective as well as glazing the cockpit glass so the aircrew cannot see out is also effective. Inherently, laser and/or DEW weapons are short duration, hard to detect, extremely hard to decoy or jam, and hard to kill. Fortunately they must rely upon LOS, atmospheric conditions, and are somewhat short ranged at present.

OPTICAL AND/OR ELECTRO-OPTICAL

H-23. Optical and/or EO sensors are used as either the primary or the secondary sensor for all weapon systems. Although they rely upon LOS, they are with very few exceptions, completely passive. They are limited by human eyes, atmospheric conditions, distance, jitter, and in many cases by darkness. The optical and/or EO sensors are most difficult to detect, seldom can be decoyed, can be jammed in the sense of obscurants, but when located can be hard killed.

SECTION II—AIRCRAFT SURVIVABILITY EQUIPMENT SYSTEMS

CATEGORIES

H-24. ASE systems can be categorized in three areas—aircraft signature reduction, situational awareness, and active countermeasures.

AIRCRAFT SIGNATURE REDUCTION

H-25. All tactical helicopters are painted with nonreflective IR absorbing paint. All TACAIR may not have IR suppression systems. OH-58A/C and UH-1 aircraft are equipped with the early version of exhaust suppression that reduces IR signature by diverting hot exhaust gases into the rotor system. The OH-58D (Kiowa Warrior) and AH-1 aircraft are all equipped with an exhaust gas suppression system. This system directs exhaust gasses up and away from the horizontal view of the aircraft, IR missile lock-on ranges are reduced. Reducing the aircraft exhaust gas signature aids the effectiveness of the AN/ALQ-144A IR missile jammer on the OH-58D and AH-1. AH-64 aircraft have exhaust suppression called “Black Hole” that reduces the IR signature and aids in the effectiveness of the AN/ALQ-144A IR jammer on the aircraft. UH-60 and EH-60 aircraft are equipped with HIRSS that reduces the IR signature by suppressing hot exhaust gases. HIRSS aids in the effectiveness of the AN/ALQ-144A IR missile jammer. The radar and IR signatures of tactical helicopters are least when viewed from the front. The maximum IR signature is from the rear quadrants, where as the maximum radar signature is from the side aspects.

SITUATIONAL AWARENESS

H-26. All tactical helicopters are equipped with PW RSDS (such as the AN/APR-39[V]1 and the AN/APR-39A[V]1) that alerts the aircrew of radar activity. AH-1, OH-58D and AH-64 aircraft have additional awareness provided by the AN/AVR-2/2A that alerts the aircrews of laser activity. Aircrews use the cues from the RSDS to change modes of flight (contour or NOE) or increase vigilance (actively seek masking terrain features).

ACTIVE COUNTERMEASURES

H-27. ASE countermeasures are required when masking terrain is not available to buy time until the aircraft can maneuver to masking terrain or outside of threat range. IR threats can be jammed by AN/ALQ-144(V)1. Radar threats can be decoyed by the M-130 with chaff (AH-1 and AH-64 aircraft only).

AIRCRFAFT SURVIVABILITY EQUIPMENT SUITES

H-28. Each aircraft is equipped with a suite of ASE designed to protect each aircraft while performing their unique missions.

OH-58D AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-29. The OH-58D ASE suite (Figure H-1) provides PW radar signal detection for radar directed threats and laser signal detection for laser, laser aided, and DEW threats. Additionally the ASE suite provides omnidirectional IR jamming for IR directed threats. The aircraft signature reduction capabilities include both nonreflective IR absorbing paint and suppressors for hot exhaust gasses.

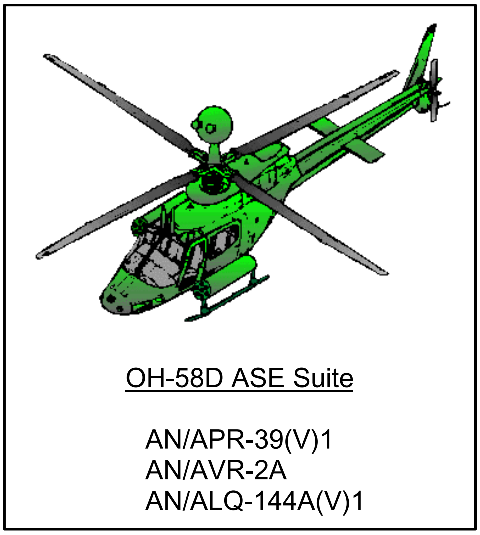


Figure H-1. OH-58D (Kiowa Warrior) ASE Suite

AH-64 AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-30. The AH-64 ASE suite (Figure H-2) provides PW radar signal detection, PW radar jamming, and decoying for radar directed threats, and laser signal detection for laser, laser aided, and DEW threats. Additionally the ASE suite provides omnidirectional IR jamming and decoying for IR directed threats. The aircraft signature reduction capabilities include both nonreflective IR absorbing paint and "Black Hole" suppressors.

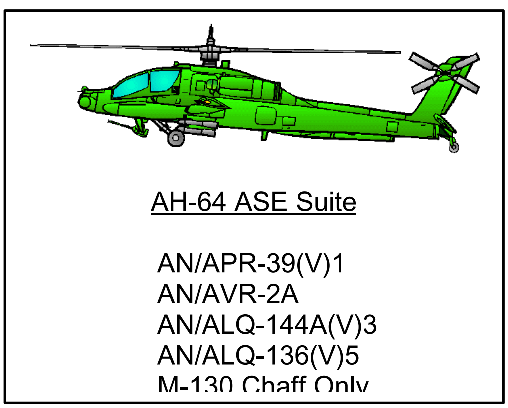


Figure H-2. AH-64 ASE Suite

EH-60 AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-31. The EH-60 ASE suite (Figure H-3) provides PW radar and CW radar signal detection, CW radar jamming, and decoying for radar directed threats. Additionally the ASE suite provides omnidirectional IR jamming and decoying for IR directed threats. The aircraft signature reduction capabilities include both nonreflective IR absorbing paint and HIRSS suppresses hot exhaust gasses.

UH-60 AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

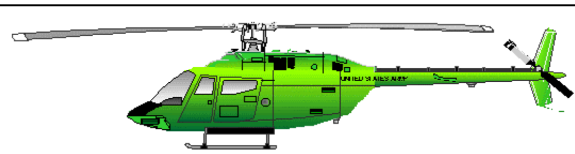
H-32. The UH-60 ASE suite (Figure H-3) provides PW radar and decoying for radar directed threats. Additionally the ASE suite provides omni-directional IR jamming for IR directed threats. The aircraft signature reduction capabilities include both nonreflective IR absorbing paint and HIRSS suppresses hot exhaust gasses.

EH-60 ASE Suite	UH-60 ASE Suite
AN/APR-39(V)2	AN/APR-39(V)1
AN/ALQ-144A(V)1	AN/ALQ-144A(V)1
AN/ALQ-162(V)2	M-130 Chaff Only
AN/ALQ-156(V)2	
M-130 Flare	
M-130 Chaff	

Figure H-3. EH-60 and UH-60 ASE Suites

OH-58A/C AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-33. The OH-58A/C ASE suite (Figure H-4) provides PW radar signal detection. The aircraft signature reduction capabilities include nonreflective IR paint and exhaust suppression on some aircraft.



OH-58A/C ASE Suite

AN/APR(V)1

Figure H-4. OH-58A/C ASE Suite

UH-1 AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-34. The UH-1 ASE suite (Figure H-5) provides PW radar signal detection. The aircraft signature reduction capabilities include nonreflective IR paint and exhaust suppression.

UH-1 ASE Suite

AN/APR(V)1

Figure H-5. UH-1 ASE Suite

AH-1 AIRCRAFT SURVIVABILITY EQUIPMENT SUITE CAPABILITIES

H-35. The AH-1 ASE suite (Figure H-6) provides PW radar signal detection, jamming, and decoying for radar directed threats. The ASE suite provides laser signal detection for laser directed threats. The ASE suite also provides omnidirectional IR jamming for IR directed threats. The aircraft signature reduction capabilities include nonreflective paint and hot exhaust suppression.

AH-1 ASE Suite

AN/APR-39(V)1 or AN/APR(V)1
AN/APR-136(V)1/5
AN/ALQ-144A(V)1/3
M-130 Dispenser (CHAFF)

Figure H-6. AH-1 ASE Suite

AIRCRAFT SURVIVABILITY EQUIPMENT SYSTEM DESCRIPTIONS

H-36. A brief description of each ASE system is provided. Configuration requirements that are available to optimize the ASE system are also provided.

AN/APR-39(V)1

H-37. The AN/APR(V)1 is a passive omnidirectional radar warning receiver. The system provides warning of radar threat to allow appropriate evasive maneuvers. The system is capable of detecting all PW radars in the high (E, F, G, H, I, and J) bands as well as missile guidance radars in the low (C and D) bands. The AN/APR-39(V)1 using audio and visual (strobe) to indicate detection of radar systems. The EID software cannot be reprogrammed in the field.

AN/APR-39A(V)1

H-38. The AN/APR-39A(V)1 RSDS is an upgraded version of the AN/APR-39(V)1 that uses a digital processor, alphanumeric symbology display, and synthetic voice warning to provide the aircrew of radar directed AD threat systems. It provides coverage for C/D and E through M band PW radar. The theater specific EID software is reprogrammable.

AN/APR-39(V)2

H-39. The AN/APR-39(V)2 RSDS is a special version of RSDS that uses a digital processor and alphanumeric display to provide detection of PW radar for SEMA. It provides coverage for C/D and E through J band PW radar. The system has the capability of detecting all PW radar’s normally associated with hostile SAM, airborne intercept, or antiaircraft weapons. The EID software is reprogrammable and specific theater selected before flight.

AN/AVR-2/2A

H-40. The AN/AVR-2/2A laser detecting set is a passive laser warning system provides input to the AN/APR-39A(V)1 to detect LASER energy. The 2A version is also used as sensors for the MILES AGES. The system has a reprogrammable EID.

AN/ALQ-144A(V)1/3

H-41. The AN/ALQ-144A(V)1/3 CMS (Figure H-7) is an active, continuous operating omnidirectional, IR jammer systems for helicopters designed to confuse or decoy threat IR missile systems. The AN/ALQ-144A(V)1/3 CMS is designed to provide jamming of all known threat IR missile systems when operated on an aircraft that has been equipped with low reflective paint and engine exhaust suppressers. The system has specific JPN settings that must be set prior to flight.

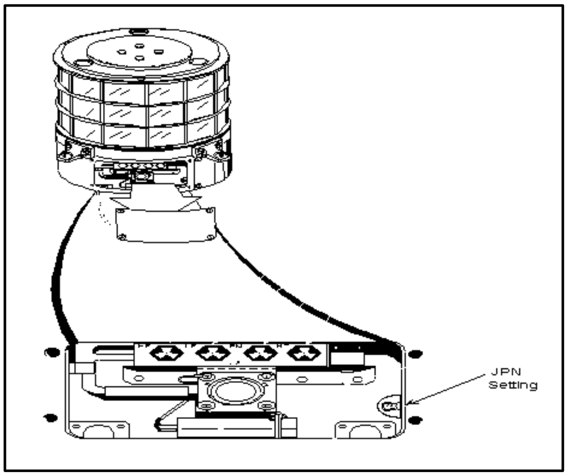


Figure H-7. AN/ALQ-144A Setting

AN/ALQ-136(V)5

H-42. The AN/ALQ-136(V)5 CMS is an active, PW radar jammer designed to confuse or decoy threat PW radar systems. The system jams specific threat systems and operators must know the capabilities and limitations of the AN/ALQ-136(V)5. The system has a training/war switch that must be set prior to flight.

M-130

H-43. The M-130 general purpose dispenser dispenses chaff and flares. The system is operated either manually or automatically through interface with other countermeasure systems. The chaff provides protection against radar directed antiaircraft weapon systems, while the flares provide protection against IR directed missile systems. When dispensing chaff, the M-130 reduces or eliminates the enemy's ability to hit and destroy aircraft by use of radar-controlled, antiaircraft weapons. When dispensing flares, the M-130 reduces or eliminates the enemy's ability to hit and destroy aircraft by use of IR guided missiles. When the M-130 is set to dispense chaff, the electronic control module must be set with the program setting for the aircraft prior to flight.

AN/ALQ-162(V)2

H-44. The AN/ALQ-162(V)2 CMS provides warning and protection against SAMs and airborne intercept missiles that use CW illuminator radar for guidance. The CW signals detected by the system will be validated and jamming will be initiated in conjunction with threat identification given to the aircrew. The specific action taken by the system is determined by warning and jamming thresholds programmed into the system. The system has specific jam settings that must be set prior to flight.

AN/ALQ-156(V)2

H-45. The AN/ALQ-156(V)2 CMS is an airborne radar system that provides protection to the aircraft in which it is installed by detecting the approach of antiaircraft missiles. Upon detection, the missile detector automatically initiates a signal that triggers the M-130 general dispenser system. The dispenser system releases a flare to decoy an IR seeking missile away from the aircraft.

AIRCRAFT SURVIVABILITY EQUIPMENT CONFIGURATION SETTINGS

H-46. Configuration settings for ASE are located on the classified MSEC-BBS sponsored by the ARAT located at Eglin Air Force Base, Florida. Connection to the MSEC-BBS requires an accredited computer, communications software, null modem cable, and a STU-III. The MSEC-BBS must be contacted to ensure each unit has the most current ASE settings for each theater of operations. MSEC-BBS can be reached at DSN 872-2166 or commercial (904) 882-2166 for instructions to gain access.

TACTICAL OPERATIONS OFFICERS AND AIRCRAFT SURVIVABILITY EQUIPMENT AND/OR ELECTRONIC WARFARE OFFICERS

H-47. For ASE to provide effective protection during a mission, configuration settings must be optimized for the threats encountered. The tactical operations officer at the brigade and battalion staff assist the S3 in mission planning for aircraft survivability while accomplishing the mission. TO&E place the tactical operations officer in the aviation troop as a CW3, in the squadron operations as a CW4, and in the regiment and/or brigade as a CW5. The tactical operations officer is identified by the SQI I (e.g., 152DI). The ASE and/or EW officer is a CW2 in the aviation troop. ASE and/or EW officer is identified by the ASI H3 (e.g., 152D0H3). ASE and/or EW officer ensures optimum ASE configuration settings are prepared for each flight. AR 611-112 describes the tactical operations officer position as warrant officers that are qualified to—

- Plan, schedule, coordinate, and brief tactical and nontactical missions.
- Operate the aviation mission planning system.
- Develop, plan, coordinate and brief EW operations.
- Manage flying hour programs and ALSE programs.

SECTION III—OPERATIONAL EMPLOYMENT CONSIDERATIONS

GENERAL

H-48. Aircraft survivability functions must be included throughout mission planning, rehearsal, execution, and recovery operations. Intelligence drives the operations and mission planning begins with the receipt of the situation and mission and continues through completion of mission execution and AAR. From the receipt of enemy situation and mission, it is important to plan and implement aircraft survivability functions.

MISSION PLANNING

H-49. ASE and EW must be considered in all phases of mission planning. The level of planning involved is always predicated on the time, information, and personnel available. OPLANs and OPORDs for military operations are extensive in scope and contain information that act as a baseline for most unit operations.

OPERATIONS ORDER AND/OR OPERATIONS PLAN

H-50. The generation of the OPORD begins upon receipt of the enemy and friendly situation, the mission, and the commander's intent. The EW Annex (Figure H-8) is created to support the OPORD or OPLAN using this information. The enemy and friendly situations are further defined with the emphasis on the EW capabilities each have to find, fix, jam, deceive, disrupt, or destroy each other. Once the situation is clearly defined, the mission is analyzed to evaluate the risk to friendly forces while accomplishing the mission within the prescribed guidelines. After the risk assessment is complete, risk reduction techniques are specified in the execution instructions. These techniques require the commander's approval if the mission constraints need to be altered significantly from the original intent. The next step is to determine service support for EW and command and signal guidance necessary to accomplish the EW phase of the mission.

FRAGMENTARY ORDER

H-51. Once the OPORD (Figure H-9) (and EW Annex) is generated, it becomes the base document. For specific missions, complete OPORDs may not always be required. In these instances, FRAGOs outlining the changes from the basic OPORD are created and issued to affected units. Upon receipt of the FRAGO, the staff planners must evaluate the information available and revalidate the EW Annex. Any changes to the EW Annex must be detailed and disseminated to the aircrews as part of the mission briefing.

SECURITY CLASSIFICATION

ISSUING HEADQUARTERS
LOCATION
DAY, MONTH, YEAR, HOUR, ZONE

ANNEX I (ELECTRONIC WARFARE) TO OPORD XXXX-XX (U)

( ) References: List basic documents required.

1. ( ) Situation

a. ( ) Enemy. Refer to annex B. Provide an estimate of the enemy's communications, non-communications, and EW systems capabilities, limitations, and vulnerabilities including the ability to interfere with the accomplishment of the EW mission stated herein. Determine the ability to detect radar altimeter, Doppler, FM, VHF, and UHF communications, and the ability to interrogate transponder for modes 1, 2, 3A, and 3C. Determine AD EW systems and analyze parameters (i.e., frequencies, PRF, PRI, scan type, wavelength) for use in risk analysis.

b. ( ) Friendly. Provide a list of friendly EW systems available for the mission (i.e., communications, noncommunications, navigation, sensors, countermeasures, Electro-optical systems). Include friendly EW assets that can exploit and disrupt the enemy's usage of the electromagnetic spectrum.

c. ( ) Assumptions. State any assumptions about friendly or enemy EW capabilities and possible COAs that may influence the planning or execution of EW operations.

2. ( ) Mission. State the mission to be accomplished by EW operations to support the mission in the basic plan.

3. ( ) Execution

a. ( ) Concept of operations. Summarize the scope of EW operations and the methods and resources to be used. Include TTP's for the threats that may be encountered.

b. ( ) Tasks. In separate subparagraphs, assign individual tasks to EWOs and crews including instructions and references.

c. ( ) Coordinating Instructions. Place instructions applicable to two or more sub-units in the final sub-paragraph.

1. ( ) Guiding Principles. State or refer to policies, doctrine, tactics, techniques, and procedures that provide guidance to be followed. Establish any additional guidance and authorized deviations from standardized practices. Describe any constraints that may apply to the mission.

This sample EW appendix is unclassified, but when actually accomplished should show proper classification markings of each paragraph.)

Figure H-8 Sample Format for an Electronic Warfare Annex to Operations Order

2. ( ) Special Measures. Provide any special procedure to be used that is not provided elsewhere.

4. ( ) Service Support. Specify support units to provide EW service support. Include verification of threat parameters and ASE settings through the ARAT.

5. ( ) Command and Signal. Provide information on IFF mode settings and mode activation/ deactivation line, ASE configuration settings, Have Quick settings, SINCGARS settings, A^2C^2 frequencies, AWACS contact points, and brevity codes.

Acknowledge:

Name (Commander's last name)
Rank (Commander's rank)

OFFICIAL:
APPENDICES:
DISTRIBUTION:

(SECURITY CLASSIFICATION)

(This sample EW appendix is unclassified, but when actually accomplished should show proper classification markings of each paragraph.)

Figure H-8. Sample Format for an Electronic Warfare Annex to Operations Order (continued)

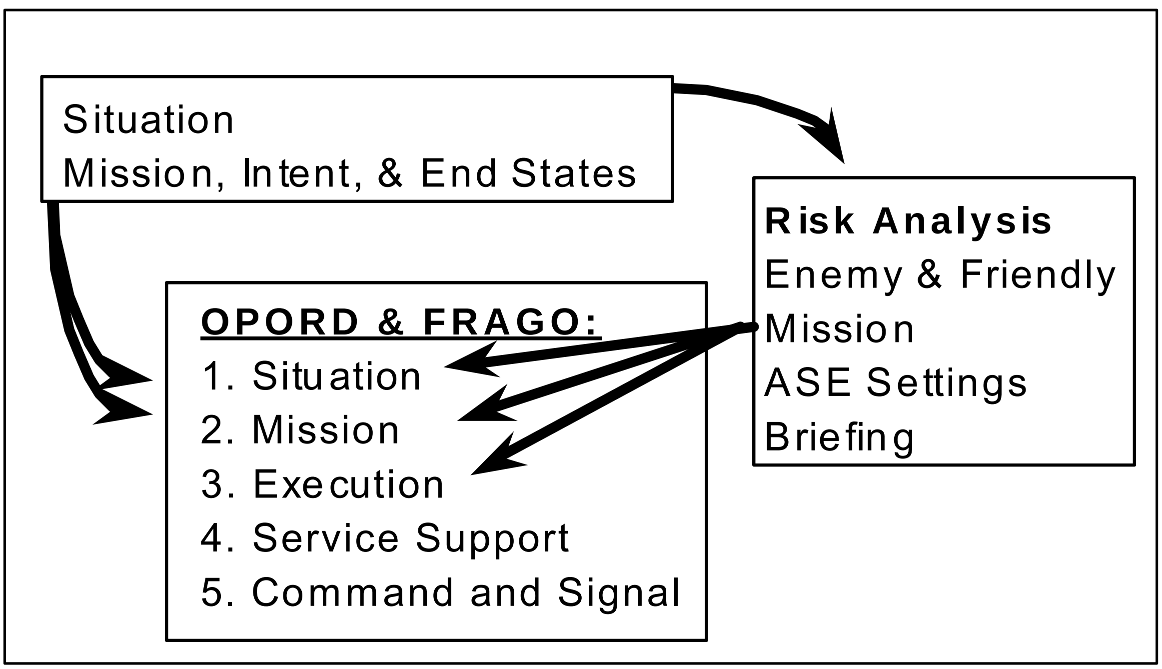


Figure H-9. Operations Order and Fragmentary Order

AIRCRAFT SURVIVABILITY EQUIPMENT CONSIDERATIONS IN RISK ASSESSMENT

IDENTIFY THE RISK

H-52. To perform a thorough risk assessment, detailed information about threat system operating procedures, tactics, system capabilities, and locations must be analyzed to determine the enemy's advantages or disadvantages in the use of EW. The capabilities and limitations of friendly EW systems must be compared to the threats to assess the level of risk associated with the mission. The S2 and the tactical operations officer will identify the following:

- Operating frequencies of radar threats.
- RF threats that can or cannot be detected.
- RF threats radar jamming equipment will affect.
- RF threats that can be decoyed.
- IR threats that may be encountered.
- IR threats that can be detected.
- IR threats that can be jammed or decoyed.
- LASER and/or DEW threats that can or cannot be detected.
- Optical and/or electro-optical threats.

ASSESS THE RISK

H-53. The S2 and tactical operations officer will prioritize the threat systems and optimize ASE settings for the highest priority threats. The level of risk based on the threat's capabilities and limitations, the capabilities and limitations of the ASE, and the mission will be determined (Figure H-10). The highest risk to determine the overall risk to the mission will be used. If the risk due to IR threats is high risk, then the overall mission risk would continue to be high risk. The risk assessment worksheet is used to determine what is causing the highest risks so that controls can be developed to reduce those risks.

MAKE DECISIONS AND DEVELOP CONTROLS

H-54. The S2 and tactical operations officer will determine the optimum ASE configuration settings for each aircraft type and the threats in the mission area.

H-55. Threats that are highly lethal and not countered by ASE are identified, and PIR can be developed and submitted by the S2 to HHQ (for example: The SA-X is very lethal and no organic countermeasures are present. This threat poses a high risk to mission accomplishment. Where is the SA-X located in our AO? The latest time of value for this information is XXXX hours.)

Survivability Risk Analysis

ACFT Type: ______ **Mission:** ______ **Date:** ______

Mission Profile:

	<100' AGL	>100' AGL
Night	Low	Medium
Day	Medium	High

Value: ______

IR Threats:

	Suppressed	Unsuppressed
IRCM	Low	Medium
Non-IRCM	Medium	High

Value: ______

RF Threat:

	Warning	No-Warning
RFCM	Low	Medium
Non-RFCM	Medium	High

Value: ______

E/O Threat:

	Low Visibility & Contrast	High Visibility & Contrast
Masking	Low	Medium
No-Masking	Medium	High

Value: ______

Laser/DEW Threat:

	Warning	No-Warning
Masking	Low	Medium
No-Masking	Medium	High

Value: ______

Highest Value: ______

Overall Risk:

Low
Reevaluate mission profile, ASE, or flight routes. Medium
Reevaluate mission profile, ASE, or flight routes. High

Priority Threats:

IR:	A	B	C	D
RF:	A	B	C	D
E/O:	A	B	C	D
Laser/DEW:	A	B	C	D

ASE Configuration Settings:

ALQ-144A Suppresed: ______ Unsuppressed: ______
ALQ-162 Jam Program: ______
APR-39A(V)1 OFP: ______ EID: ______
APR-39(V)2 Low/High: ______ Theater Position: ______
M-130 Chaff Progam: AH-64: __UH-60: ___EH-60: ______
ALQ-156: ______
IFF:Mode1______Mode2________Mode3A_______Mode3C_____Mode 4_______

R= Infrared
IRCM= IR Countermeasures
Suppressed= IR paint & Exhaust
RF= Radio Frequency
RFCM= RF Countermeasures
E/O= Electro-Optical

Figure H-10. Risk Assessment Worksheet

H-56. Risk reduction techniques will be applied to minimize the risk and enhance the probability of survival. Risk reduction measures include the following:

- Plan mission time earlier or later to take advantage of night operations.
- Use only suppressed aircraft for the higher risk portions of the mission.
- Request escort aircraft to suppress threats.
- Plan SEAD at critical points to reduce vulnerability.
- Prep the LZ/PZ with indirect fires.
- Alter flight routes to avoid known AD areas.
- Develop deception plan to include false insertion.
- Reduce electronic signature (EMCON).
- Reduce formation and/or sortie size.

H-57. The ASE and/or EW mission briefing disseminates information and instructions to the aircrews prior to the mission (Figure H-11). The briefing will alert aircrews to the risks associated with the threats, the optimum ASE settings, and a review of the tactics specific to the mission. These tactics include evasive maneuvers, actions on contact, multiship breakup and reformation procedures, and ROE for countermeasures weapons employment. A sample ASE and/or EW mission briefing is contained herein to assist ASE and/or EWOs in completing this task.

OVERAL RISK: Low Medium High

CAUSED BY: Mission Profile
ASE Suite
Threat

ASE and IFF Configuration Settings:

ASE can detect:

ASE cannot detect:

ASE can jam:

ASE cannot jam:

Primary threats: IR
RF
E/O
Laser/DEW

Risk Reduction Measures:

Changes to Standard TTPs:

QUESTIONS:

Figure H-11. Sample Format for an Aircraft Survivability

Equipment Mission Brief

IMPLEMENT CONTROLS AND SUPERVISE

H-58. Commanders and aircrews must take an active role in reducing risks by implementing the following controls and supervising their implementation:

- Commanders ensure that ASE and/or EW considerations and configuration settings are considered and briefed to all aircrews and maintenance personnel.
- During preflight checks, aircrews ensure that ASE configuration settings are correct.
- During mission, aircrews ensure that IFF codes are activated and deactivated at proper times and locations during flight.
- During AAR, ensure that debriefings are collected from aircrews.
- Aircrews report ASE and/or EW problems to HHQ (ambiguities, false alarms, equipment failures, and short comings.)
- Aircrews collect data and ensure that the data are put into AMPS for the next mission.

SECTION IV—MISSION EXECUTION

SITUATIONAL AWARENESS

H-59. During conduct of the mission, it is important for aircrews to be familiar with the ASE situational awareness displays and the expected threat indications. Some actions must be performed without delay. When the visual indications of a gun or missile is fired at the aircraft, or ASE indications of radar track or launch, the aircrew has but seconds to perform an action to prevent the aircraft from being engaged.

REACTING TO THREAT ENGAGEMENTS

H-60. Three distinct parts of reacting to threat engagements are indication (determine immediate actions), evasive maneuver (when masking terrain is not readily available), and actions on contact (decision to continue or abort mission).

CREW COORDINATION

H-61. Crew coordination must be rehearsed to perform evasive maneuvers. Standardized terminology such as “missile three o’clock, break right” and “breaking right” should be used to avoid confusion. Other times indications do not require evasive maneuvering, such as radar search or acquisition.

MULTISHIP CONSIDERATIONS

H-62. Formations and spacing intervals should be selected that provide all aircraft maneuver space to evade hostile fire. Standardized terminology such as “chalk two breaking right missile” or “chalk three tracers three o’clock breaking left” should be used to alert the flight to your actions. Briefings should include evasive formation break up procedures and how to reform the formation after breaking the engagement. It is important to communicate your ASE indications to other aircraft in the formation since you may be the only aircraft receiving it due to terrain, narrow radar beam, altitude, or maintenance problems.

CONCLUSION

H-63. Survivability for Army aviation on the modern battlefield and in stability operations and support operations requires extensive coordination with other staffs. Since Army aviation can cover broad spaces at high speeds, coordination for airspace and fire control measures is paramount. The tactical operations officer and ASE and/or EWO are trained to incorporate ASE and/or EW considerations into the mission planning and execution. ASE is only effective if configured properly and used with tactics to counter the threat's capabilities. Army aviation must plan to make maximum use of the electromagnetic spectrum and fully exploit the weaknesses of the threat's EW capabilities.

Appendix I

Fratricide Prevention

GENERAL

I-1. Fratricide is the employment of friendly weapons and munitions with the intent to kill the enemy or destroy his equipment or facilities, which results in unforeseen and unintentional death or injury to friendly personnel. Fratricide is a grim fact in combat operations. Such incidents cover a wide spectrum of conditions, but historically, they are most likely to occur in the early stages of combat, during reduced visibility or along shared unit boundaries. In previous 20th century conflicts, supporting fires (air and artillery) accounted for almost 75 percent of fratricide incidents and an even greater proportion of friendly fire casualties. However, this proportion may be changing for modernized armored forces in high intensity scenarios due to advances in direct fire technology and tactics.

CAUSES AND EFFECTS

I-2. Every incident of fratricide is a function of many contributing factors or preconditions. Ultimately, the combination of these factors leads to an individual or unit error that produces friendly casualties. As an example, incomplete planning or poor maneuver control can cause forces to converge or intermingle on the battlefield. The resulting local increase in weapons density greatly increases the likelihood of a friend-on-friend engagement. This appendix will help leaders better anticipate and minimize the most important conditions that lead to fratricide such as weapons density.

PRIMARY CAUSES OF FRATRICIDE

SITUATIONAL AWARENESS

Inadequate Fire and Maneuver Control

I-3. Units may fail to disseminate (via troop-leading procedures and rehearsals) the minimum necessary maneuver and fire control measures to coordinate activities on the ground. Improper use or inconsistent understanding can likewise make control measures ineffective. Situational awareness decreases as density of forces increases when units operate without proper dispersion and spatial separation. This is compounded by plans that allow forces to converge or intermingle without adequate controls. As the battle develops, the plan cannot address obvious enemy moves as they occur and synchronization fails.

Direct Fire Control Failures

I-4. Defensive and particularly offensive fire control plans may not be developed or may fail in execution. Some units do not designate target reference points, EAs, and priorities. Some may designate but fail to adhere to them. Units fail to tie control measures to recognizable terrain features. Weapons positioning can be poor, and fire discipline can break down upon contact.

Land Navigation Failures

I-5. Navigation is often complicated by difficult terrain or weather and visibility. Navigation problems can cause units to stray out of sector, report wrong locations, become disoriented, or employ FS weapons from wrong locations. As a result, friendly units may collide unexpectedly or be erroneously engaged.

Reporting, Crosstalk, and Battle Tracking Failures

I-6. Commanders, leaders and their CPs at all levels often do not generate timely, accurate, and complete reports or track subordinates as locations and the tactical situation change. Commanders are unable to maintain situational awareness. This distorts the picture at each level and permits the erroneous clearance of fires (both direct and indirect) and violations of danger close.

Known Battlefield Hazards

I-7. Unexploded ordnance, unmarked and unrecorded minefields, FASCAM, flying debris from discarding SABOTs and illumination rounds, and booby traps litter the battlefield. Failure to make, record, remove, or otherwise anticipate these threats leads to casualties.

POSITIVE IDENTIFICATION

I-8. Vehicle commanders, gunners, and helicopter pilots cannot distinguish friendly and enemy thermal and optical signatures at the ranges that they can be acquired. Our weapons can kill beyond the ranges where we have clear ID. Our tactics and doctrine lead us to exploit our range advantage over the enemy. During limited visibility or in restricted terrain, units in proximity can mistake each other for the enemy due to short engagement windows and decision time. We do not have a means to determine friend or foe, other than visual recognition of our forces and the enemy's. When the enemy and our allies are equipped similarly, and when the enemy uses U.S. and allied equipment, the problem is compounded. Simple, effective fire and maneuver control measures and plans, good situational awareness, and disciplined engagements are absolutely necessary.

OTHER

I-9. Another cause is weapons errors. Lapses in unit and individual discipline or violations of the ROE allow errors that are not merely accidents. Examples are out-of-sector engagements, unauthorized discharges, mistakes with explosives and hand grenades, charge errors, incorrect gun data, and similar incidents.

PRIMARY CONTRIBUTING FACTORS

MISSION

- High vehicle or weapons density.
- Commander's intent is unclear or complex.
- Poor coordination.
- Crosstalk lacking.
- No habitual relationships.
- Incomplete graphic control measures.

ENEMY

- Weak intelligence or reconnaissance.
- Intermingled with friendly.

TERRAIN

- Obscuration or poor visibility.
- Extreme engagement ranges.
- Navigation difficulty.
- Absence of recognizable features.

TROOPS AND EQUIPMENT

- High weapons lethality.
- Unseasoned leaders or troops.
- Poor fire control SOPs.
- Incomplete ROE.
- Anxiety or confusion.
- Failure to adhere to SOPs.
- Unreliable navigation systems.

TIME

- Soldier and leader fatigue.
- Inadequate rehearsals.
- Short planning time.

ROLE OF CONTRIBUTING FACTORS

I-10. Contributing factors (such as anxiety, confusion, bad weather, and inadequate preparation) may greatly increase the chances of a navigation error that causes fratricide. Short planning time, failure to rehearse, and leader fatigue are other preconditions that may result in a fatally flawed plan or lack of appropriate control measures. Every mission will involve a unique mix of these factors and their relative importance will vary. In some cases, favorable conditions may compensate for a fratricide contributing factor (for example, a bright moonlight reduces navigation and control challenges), or two otherwise minor conditions may combine to greatly increase risk (inexperienced flank platoon leader develops communication problems). These contributing factors are a critical dimension of realistic training to reduce fratricide.

EFFECTS OF FRATRICIDE

I-11. The effects of fratricide can be devastating and spread rapidly throughout a unit. Fratricide increases the risk of unacceptable losses and the risk of mission failure. Fratricide seriously affects the unit's ability to survive and function. Observations of units experiencing fratricide include—

- Hesitation to conduct limited visibility operations.
- Loss of confidence in the unit's leadership.
- Increase of leader self-doubt.
- Hesitation to use supporting combat systems.
- Oversupervision of units.
- Loss of initiative.
- Loss of aggressiveness during fire and maneuver.
- Disrupted operations.
- Needless loss of combat power.
- General degradation of cohesion and morale.

FRATRICIDE RISK ASSESSMENT IN PERSPECTIVE

I-12. The tactically competent and savvy leader must consider the risk of fratricide, take appropriate commonsense measures to reduce the risk and integrate those measures into his mission planning and execution. Combat is inherently risky, but the prudent leader takes reasonable measures to reduce the risk. Good commanders are careful not to place undue emphasis on risk avoidance and thus increase timidity and hesitance during battle. We fight and win by focusing overwhelming combat power on the enemy from three or four different systems, thus, giving him several different ways to die all at once. Sensitivity to fratricide risk reduction should not deter this focus on decisive, integrated combined arms engagements. Fratricide prevention must be part of operational planning.

TECHNIQUES OF RISK REDUCTION

I-13. We have discussed the primary causes of fratricide and the consequences of adverse preconditions and contributing factors. Now we will discuss a technique that allows troop leaders to anticipate these circumstances, assess the relative impact of each contributing factor, and employ risk-reducing measures. The leader's primary focus is on reducing the likelihood of fratricide. Fratricide should be addressed early-on in the planning process. As part of accomplishing your mission while preserving combat power, you should identify and incorporate necessary fratricide prevention measures. Be sure to update your assessment "in-stride" as the situation develops. The fratricide risk assessment matrix will allow you to address fratricide using the following steps:

- Identify the fratricide risks using the matrix during your analysis of METT-T factors.
- Use each submatrix to assess possible fratricide loss and probability.
- Make decisions and develop ways and means to reduce risks.
- Implement measures by integrating them into plans, orders, SOPS, training performance standards, and rehearsals.
- Supervise and enforce safety measures and standards.

FRATRICIDE RISK ASSESSMENT MATRIX

I-14. Leaders at squad, section, and platoon levels must consciously identify specific fratricide risk for any mission. Using this structured approach, troop commanders and platoon leaders can predict the most likely causes of fratricide and take action to protect their soldiers. Whether used for an actual combat operation or a training event, this thought process complements the troop leading procedures and analysis of METT-T factors in planning. The fratricide risk assessment matrix shows an approach to assess the relative risk of fratricide for combat maneuver platoons and companies. To assign a risk value to each direct cause of fratricide from the previous section, we pair the most critical METT-T contributing factors associated with each cause. For each primary cause, favorable conditions lead to the lower left corner of the matrix and lesser risk values. As either contributing factor becomes unfavorable, risk increases, with the worst precondition for each kind of fratricide represented by the upper right had corner of the matrix. Figure I-1 is an example of a fratricide risk assessment matrix that should be used in assessing every mission.

FRATRICIDE RISK REDUCTION MEASURES

I-15. The key to solving fratricide problems is detailed planning and rehearsals to minimize predictable risks. Units must tailor and practice combat skills constantly during collective training opportunities. Ultimately, the only effective techniques will be those soldiers who understand, innovate and refine themselves, practice frequently, and integrate into unit SOPs. Figure I-2 is a chart that can be used in determining the risk reduction measures that can be applied to reduce the possibility of fratricide. Using the METT-T acronym, the following is a list of recommended reduction measures.

SITUATION AWARENESS

FIRE & MANEUVER CONTROL				RATING
DENSITY OF FORCES	CLARITY OF THE SITUATION			
	Maintain Force Seperation	Forces Converge	Forces Intermingle	
Heavy	5	7	9	
Normal	3	5	7	
Sparse	1	3	5	

FIRE DISTRIBUTION PLAN				RATING
PREP TIME REHEARSALS DISSEMINATION	COLLECTIVE PROFICIENCY			
	Strong SOPs Hab Attchmnts	Mod Trained or Fam Tsk Org	Unseasoned & Unfam Tsk Org	
Brief back Rehearsals	3	4	5	
Reduced Force Rehearsals	2	3	4	
Full Force Rehearsals	1	2	3	

LAND NAVIGATION				RATING
EXTENT OF RECON & IPB	VISIBILITY & NAVIGATION DIFFICULTY			
	Ample Controls High Confidence	Confidence with Much Effort	Very Difficult Low Confidence	
Minimal	3	4	5	
Limited	2	3	4	
Extensive	1	2	3	

FIRE CONTROL & BATTLE TRACKING				RATING
CLEARANCE OF FIRES	COMMO & CROSSTALK			
	Reliable Redundant	Adequate Means	Unreliable No Backups	
Passive Only	21	23	25	
Positive	1	3	5	

BATTLEFIELD HAZARDS				RATING
USE OF ADD'L DUD-PRODUCING MUNITIONS	KNOWLEDGE OF EXISTING HAZARDS			
	Extensive	Partial	Extremely Limited	
Unknown	3	4	5	
Major	2	3	4	
Minor	1	2	3	

POSITIVE IDENTIFICATION

COMBAT IDENTIFICATION				RATING
ENGAGEMENT RANGES & FIELDS OF FIRE	VISIBILITY & NAVIGATION DIFFICULTY			
	Practiced Very Effective	Expedient Some-what Effective	Marginally Effective	
ID Unlikely	3	6	7	
Marginal ID	2	4	5	
Optimal ID	1	2	3	

DISCIPLINE

FIRE CONTROL DISCIPLINE				RATING
COMMAND & CONTROL OR SUPERVISION	VISIBILITY & NAVIGATION DIFFICULTY			
	Complete & Effective	Complete Some-what Effective	Expedient Untested	
Ad Hoc-Improvised	4	6	7	
Attached	2	4	5	
Organic	1	2	3	

TROOPS

SOLDIER & LEADER PREPAREDNESS				RATING
MISSION-RELATED EXPERIENCE & COMPETENCE	SOLDIER & LEADER FATIGUE			
	Rested Low Exertion	Mod Rest & Exertion	Limited Rest High Exertion	
Unseasoned	5	7	9	
Moderate Experience	3	5	7	
Highly Experienced	1	3	5	

LOW RISK	CAUTION	HIGH RISK	TOTAL
8 to 20	21 to 30	>30	

Figure I-1. Sample Format for a Fratricide Risk Assessment Matrix

FRATRICIDE Risk Reduction Measures	**Rountine Measures Low Risk**	**Caution**	**Extraordinary Measures High Risk**
● FIRE AND MANEUVER CONTROL	Brief Backs Supervision PMCS & Pre Combat Checks	Lim Vis Rehearsal Reinforce CleAr Intent Cross-Level/ Consolidate Equip	Converging/ Adj Forces Rehearsals Task Force Rehearsal
● FIRE DISTRIBUTION PLAN	Extensive Rehearsals SOPs Synchronization matrix	Modify Task Organization Some Direct Fire Units-Wpns Hold or Tight Limited Visibility Plan	Multiple Synchronization Rehearsals Modify Plan Limited ObjectIves
● LAND NAVIGATION	Detailed Navigation Plan Reconnaissancce Confirms Impact of Terrain-Weather-Enemy	Ground Guides/Night Vision Aids Redundant Navigation Aids Marking Enemy Positions	Multi-Echelon Navigation Extensive Recon/Centralization Reduce Equipment Dependence
● FIRE CONTROL AND BATTLE TRACKING	Positive Clearance of Fires Commo Checks Fire Support Rehearsal	Positive Clearance of Fires Restrictive Control Measures SOP Guides/Beacons/Vectoring	POSITIVE Clearance of FIres More Leaders Forward Redundant Commo Provide Backups
● BATTLEFIELD HAZARDS	Safety Discipline Disseminate Known Hazards	Vehicle Hazards Considered Rehearse React to Hazard Review Equip Limitations	Add Intermediate Objectives Special Log/Maint Actions Detailed Deception
● COMBAT IDENTIFICA-TION	Sustain CVI Skills Boresight Cbt Vehicle Recognition Sys	CBT ID Enhancements IFF Expedients for Exposed Elements	Clear IR Friendly Marking Multiple Recognition Signals
● FIRE CONTROL DISCIPLINE	Review ROE Challenge/Password Discipline Inspections Buddy System	Lighten Load/Review Equip List Simplified Plan Simplicity/Repetition Modify ROE	Interim Halts/Assessments Challenge/Password Enhance-ments Rotate High Stress Positions
● SOLDIER AND LEADER PREPARED-NESS	Address Seasonal Hazards Sustainment Training Sustain Morale Full Troop Leading Process Sleep Plan	Max Use of Transport Abbreviated Troop Leading Process Refresh Mission Specific Skills Controlled Pace In Execution	Priority of Tasks Priority of Rehearsals FRAGO only for Efficiency Request Additional Combat Power Don't Exceed Tng Proficiency

Figure I-2. Risk Reduction Measures

MISSION

- Tactically sound and simple scheme of maneuver.
- Complete and concise orders.
- Doctrinally and tactically correct clearance of fires.
- CPs and TOCs accurately track the battle; render timely reports.
- Maintain graphics two levels down.
- Use large-scale battalion and brigade sector sketches for detail.
- Coordinate with adjacent units; track adjacent battle.
- Subcompartment sectors and assign responsibility during stability operations and support operations.
- Coordinate and communicate aviation and maneuver elements.
- Get air tasking order a day prior, to see what aviation assets will be operating in your units AO.
- Clear fires around BSA—FA Bn HHB Cdr is FSO for the FSB.
- Only allow the QRF in the BSA perimeter.
- Special operations C^2 element. SOCCE is the key to coordination of SOF and conventional unit maneuver.
- Anticipate or assess fratricide risk during planning.
- Send key leader on objective reconnaissance (such as the squad leader from the lead platoon).
- Detailed EA development and direct fire planning.

ENEMY

- Know enemy characteristics and equipment.
- Know hostile criteria and enemy aircraft flight profiles.
- Additional recognition signals or markers.

TERRAIN

- Navigate accurately—know your location.
- Fire control measures on identifiable terrain.
- Unit boundaries on identifiable terrain.
- OCOKA analysis to identify fratricide risk.
- Redundant NAVAIDS or checks.
- Control the MSR—know what should be on it and what should not.
- Thorough map reconnaissance.
- Detailed map preparation.

TROOPS AND EQUIPMENT

- Always rehearse—do not accept excuses.
- Consider limited visibility rehearsal.
- Situational awareness—units, enemy, hazards.

- Know your weapon and vehicle orientation.
- Anticipate where weapon system density will be highest.
- Recognize battlefield stress.
- Use validated SOPs to simplify operations.
- Know ROE.
- Accurate and timely spot reports.
- Positive target identification—do not shoot first and ask questions later.
- Sustain good aircraft identification training program.
- Train BSA troops in threat ID and survivability skills.
- Know friendly weapons effects.
- Accurately program onboard navigation systems. Do not input friendly unit locations into target navigation index.

TIME

- Maximize planning time.
- Prioritize tasks, rehearsals, or reconnaissance.
- Multiple WARNORDs and FRAGOs to save time.
- Adjust pace and tempo.

Appendix J

Environmental Concerns and Compliance

ENVIRONMENTAL AWARENESS AND COMPLIANCE

J-1. Unit preparation to conduct aviation operations, in any environment, can incorporate the necessary environmental awareness with minimal additional planning. Many aspects of environmental protection discussed below will appear to be common sense and will most likely be a part of the unit's operational activity. This appendix will be a guide by which to attain a balance between mission accomplishment and protecting environmentally sensitive areas.

TRAINING PREPARATION

J-2. Advanced preparation is key to successful completion of training and the same holds true for environmental awareness and protection. The commander should be aware of the publications governing environmental protection. All unit staffs (troop and above) should designate an environmental compliance officer and/or NCO to serve as unit POC. This person will be responsible for environmental education, SOP updates, preperation of environmental risk assessments, and incident reporting. ARs 200-1 and 200-2 explain the Army's environmental programs. Appendix A, in both regulations, references the additional documents that should be reviewed. TC 5-400 provides a comprehensive listing of all items of interest in the preparation for operating near and avoiding environmentally sensitive areas.

J-3. Figure J-1 is a general POC matrix to assist in the planning for environmental factors that will affect unit training:

J-4. Most topics can be reviewed by contacting the ED, NRB, and range control. In most cases, ED and NRB are located under the DPW. In cases where training is conducted overseas, you will refer to the host nation equivalent of the above listed points of contact. If there is no host nation equivalent, all training will be conducted under US policies and requirements. Units should coordinate with these organizations to provide a briefing prior to the start of mission training.

ARMY ENVIRONMENTAL COMPLIANCE ASSESSMENT SYSTEM

J-5. Units that handle HW and HM must designate, in writing, a HW coordinator. The unit must comply with ECAP protocol and will be periodically inspected. ECAP protocols should be attained from the ED and/or DPW or, if unable, then call the Army environmental hotline at 1-800-USA-3845 or DSN 584-1699.

TOPIC	POC
Air pollution	ED
Archeological and historic sites	ED and Natural Resources Branch
Clean and safe water	ED
HMs and waste	Directorate of Logistics, Defense Reutilization and Marketing Office, ED, and the fire department.
Noise pollution	ED, Range Control (DPTM)
Range clearances and restrictions	Range Control (DPTM)
Standing operating procedures	ED
Spill reporting	ED
Threatened/endangered species	NRB
Water pollution	ED
Wetland protection	NRB, Range Control
Wildlife management	NRB, Range Control

Figure J-1. Point of Contact Matrix

UNIT LEVEL ENVIRONMENTAL PROGRAMS (REFER TO TC 5-400)

- Step 1. Ensure all unit personnel have had or are scheduled to receive environmental awareness training.
- Step 2. Designate, in writing, an environmental compliance officer and/or HW coordinator and ensure they are properly trained and qualified.
- Step 3. Unit environmental compliance officer will interface with appropriate environmental personnel and ensure that unit complies with environmental laws and regulations.
- Step 4. Meet with battalion S3, S4, and installation personnel who deal with environmental issues.
- Step 5. Identify requirements concerning ECAP inspections; that may effect unit and identify problem areas and how to avoid and/or protect them.
- Step 6. Ensure SOP addresses environmental issues and/or procedures that apply to the unit and coordinate environmental

requirements with appropriate installation and/or chain of command personnel.

NOTE: Personnel to contact to support unit is the chain of command, DPW, staff judge advocate, and range control.

TYPES OF UNIT PROGRAMS (REFER TO TC 5-400).

- HM Programs.
- HW Programs.
- HAZCOM Programs.
- Pollution prevention and HAZMIN recycling programs.
- Spill prevention and response plan programs.

NOTE: TC 5-400 gives specific guidance on environmental protection matters and should be complied with. This appendix is intended to supplement, not replace, TC 5-400.

MISSION EXECUTION

J-6. Environmental concerns pertaining to a mission could be incorporated into the mission briefing using the acronym METT-T. Some of the factors affecting the briefing should be unit mission, geographical location, and time of the year.

MISSION

- Identify and assess known environmental risks during planning.
- Determine environmental impact on mission execution.
- Specify those areas to avoid and minimize the effect on units scheme to maneuver.
- Select alternate training methods or goals.
- Provide maps and/or sketches with detailed areas of environmental concern.
- Emphasize the importance that every soldier play an active role in the identification and timely reporting of new environmental risk elements.
- Rapidly and effectively respond to all POL and/or HW accidents.
- Select routes that allow for quick access in case the aircraft transporting HM and/or HW should have to land unexpectedly.

ENEMY

- Identify areas of probable environmental contamination that could effect friendly force movement.
- Evaluate intelligence reports of enemy equipment and/or capability and how it would be employed against the environment.
- Develop enemy target options to minimize environmental effects.

- Maneuver enemy action away from environmentally sensitive areas, when feasible.

TERRAIN AND WEATHER

- Provide recommended paths of movement to avoid environmentally sensitive areas.
- Emphasize navigation accuracy and identify well defined terrain features to assist.
- Obtain and analyze predominant and developing weather patterns to diminish possible environmental risks.

TROOPS AND EQUIPMENT

- Develop a briefing for all soldiers that highlights and defines the environmental concerns and/or points of interest.
- Provide a detailed and accurate SOP that identifies guidelines to avoid risk areas and not inhibit mission accomplishment.
- Anticipate areas of probable risk and brief troops on how to prevent damage.
- Employ practice scenarios that tests soldier response and promotes the decision making process to changing environmental risks.
- Require accurate and timely reports that pertain to any environmentally concerned issues, friendly or enemy.

TIME

- Maximize planning time and minimize complexity of mission brief.
- Practice and develop various mission profiles that emphasize adjusting for changing environmental factors, while maintaining the desired momentum.

RISK ASSESSMENT

J-7. The environmental risk assessment considerations contained in this appendix address the potential impact of unit activities on the environment. Units add other considerations to address local conditions or different unit activities. Using a scale of “0” (no probability of environmental damage) to “5” (extremely high probability of environmental damage), unit leaders rate the specific activities the unit will perform during an operation. Unit leaders perform this evaluation for each of seven environmental areas. Using sound judgment, unit leaders consider the conditions under which the unit operates. Unit leaders then apply this value to the risk assessment matrix (Figure J-2). The value is not an absolute. Different leaders will assign different ratings for the same activity. It is simply a judgment call based on the leader’s assessment. This appendix is formatted to allow photocopying or other reproduction, as required.

Environmental Area:						Rating
Unit Activity	**Risk Impact** (Circle one number in each row.)					
Movement of heavy vehicles and systems	5	4	3	2	1	0
Movement of personnel and light vehicles/systems	5	4	3	2	1	0
Activities of assembly-area	5	4	3	2	1	0
Field maintenance of equipment	5	4	3	2	1	0
Garrison maintenance of equipment	5	4	3	2	1	0

Figure J-2. Risk Assessment Matrix

ENVIRONMENTAL FACTORS

J-8. Knowledge of environmental factors is key to planning and decision making. With this knowledge, leaders quantify risks, detect problem areas, reduce risk of injury or death, reduce property damage, and ensure compliance with environmental regulations. Unit leaders should complete environmental risk assessments before conducting any training, operations, or logistics activities. The environmental risk assessment matrix (Figure J-3) provides a deliberate approach to assessing the risk of unit activities on specific environmental areas. The matrix has four components—environmental area, unit activities, risk impact, risk rating.

Environmental Area: Air Pollution						Rating 15
Unit Activity	**Risk Impact** (Circle one number in each row.)					
Movement of heavy vehicles and systems	5	4	3	2	1	0
Movement of personnel and light vehicles/systems	5	4	3	2	1	0
Activities of assembly-area	5	4	3	2	1	0
Field maintenance of equipment	5	4	3	2	1	0
Garrison maintenance of equipment	5	4	3	2	1	0

Figure J-3. Completed Risk Assessment Matrix

ENVIRONMENTAL AREAS

J-9. The risk assessment matrix assesses risk in seven environmental areas. Unit leaders and staffs should develop one matrix for each. These areas are air pollution, archeological, cultural and historical resources, HMs and HW, noise pollution, threatened and endangered species, water pollution, and soil, vegetation, and wetland protection.

UNIT ACTIVITIES

J-10. The risk assessment matrix used in this manual considers five unit activities. These activities are generic, and units may modify them to meet their mission requirements and local conditions. These unit missions are movement of heavy vehicles and systems, movement of personnel and light vehicles and systems, activities of the AA, field maintenance of equipment, and garrison maintenance of equipment.

NOTE: Examples of other activities that units might add are direct and indirect weapons firing, unexploded ordnance operations, aviation support and operations, medical support and operations, mines and demolition, smoke operations, waterborne or amphibious operations, night operations, and NBC operations.

RISK IMPACT VALUE

J-11. The risk impact value estimates the probability the unit operation will have a negative impact on a particular environmental area. It is a judgment for which the numeric value, 0-5, most closely reflects the conditions under which the unit is operating. The value is not an absolute, different unit leaders might assign different values for the same mission. The risk impact value is simply a judgment call based on the unit leader's assessment of the potential for environmental damage. The criteria shown in figures J-4 through J-10 of this appendix help unit leaders evaluate the probability of occurrence. In filling out the matrix, the unit leader or staff officer circles the value selected for each unit operation (Figure J-3).

AIR POLLUTION—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Current or forecasted weather conditions will contribute to brush fires (dry and windy). Operating and/or work area is susceptible to brush fires. Operating and/or work area lacks vegetation and/or pavement and is susceptible to dust formulation. Vehicles and equipment are not reliable or well maintained. Soldiers are not proficient and/or experienced in the unit activity being conducted. Command and control and/or supervision is marginal. Sustained high-tempo operations and/or activities (36 hours plus) are planned. Extensive use of external combustion equipment (for example, paving or roofing equipment) or explosives, incendiary devices, flares or simulators is planned.
4	Current or forecasted weather conditions could contribute to brush fires. Operating and/or work area is susceptible to brush fires. Operating and/or work area is susceptible to moderate dust formulation. Soldiers lack environmental awareness. Some high-tempo operations and/or activities are planned. Some use of external combustion equipment (for example, paving or roofing equipment), explosives, incendiary devices, flares, or simulators is planned.
3	Weather is favorable to training; winds are within safe operating limits. Operating and/or work area is safe from brush fires. Soldiers are briefed on hazards of brush fires and fire restrictions. Command and control and/or supervision are adequate.
2	Operating and/or work area is safe from brush fires. Operating and/or work area is not susceptible to dust formulation. Standby fire-fighting equipment is available. Soldiers are briefed on hazards of brush fires and fire restrictions. Soldiers are environmentally conscientious. Command and control and/or supervision are good.
1	Operating and/or work areas are not susceptible to brush fires.

	Fires are limited, controlled, and allowed only in authorized areas. CS (riot-control chemical agent) and smoke are strictly controlled. Vehicles and equipment are well maintained and in good operating order. Soldiers are environmentally conscientious. Soldiers are thoroughly familiar with range fire restrictions. Command and control and/or supervision is excellent.
0	No risk and/or not applicable.

Figure J-4. Air Pollution Risk Impact Value

ARCHEOLOGICAL, CULTURAL, AND HISTORIC RESOURCES—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Low-visibility, night, or sustained high-tempo operations and/or activities (36 hours plus) are planned. Operational and/or work area has many archeological, cultural, or historic resources. Archeological, Cultural and Historic resources are neither identified nor marked off limits. Command and control and/or supervision is marginal. Soldiers are not familiar with the operational and/or work area.
4	Operational and/or work area has some archeological, cultural, and historic resources. Archeological, cultural, and historic sites are marked off limits. Low-visibility or night operations and/or activities are planned. Command and control and/or supervision is adequate. Soldiers are not familiar with the operational and/or work area.
3	Archeological, cultural, and historic sites are identified and marked off limits. Soldiers have been briefed on off-limit sites in operational and/or work area. No low-visibility or night operations and/or activities are planned. C^2 and supervision are adequate.
2	Archeological, cultural, and historic sites are identified and marked off limits. No low-visibility or night operations and/or activities are planned. Command and control and/or supervision is good. Soldiers are familiar with the operational and/or work area.
1	Archeological, cultural, and historic sites are identified and marked off limits. Soldiers avoid sites during training, operations and/or activities, and logistical activities. Soldiers are proactive in recognizing, safeguarding, and reporting signs or evidence of possible archeological artifacts or sites. Command and control and/or supervision is effective. Soldiers are thoroughly familiar with the operational and/or work area.

	Current or forecasted weather conditions are not an adverse factor.
0	No risk and/or not applicable.

Figure J-5. Archeological, Cultural, and Historic Resources Risk Impact Value

HM AND HW—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Low-visibility, night, or sustained high-tempo operations and/or activities (36 hours plus) are planned. Operations and/or activities are planned close to surface water sources. Current or forecasted weather conditions are harsh. Soldiers' experience with responding to HM or HW spills is limited or untested. Command and control and/or supervision is marginal. Soldiers lack environmental awareness.
4	Some high-tempo operations and/or activities are planned. Operations and/or activities close to water sources are planned. Current or forecasted weather conditions are marginal. Some individuals are HM and/or HW qualified.
3	Soldiers are environmentally conscientious but not trained. Key HM and/or HW personnel are available during operations and maintenance activities. Adequate spill cleanup materials are available. Command and control and/or supervision is adequate. Current or forecasted weather conditions are not a factor.
2	Routine operations and/or activities are planned (Soldiers have adequate rest). Key HM and/or HW individuals will oversee high-risk HM and/or HW operations and maintenance activities. Soldiers are environmentally sensitive and HM and/or HW trained. Current or forecasted weather conditions are not a factor. Command and control and/or supervision is excellent.
1	Soldiers dealing with HM and/or HW are well trained and experienced. Spill response team is well trained and has successfully conducted a HW and/or HM spill drill within preceding six months. Unit HM and/or HW SOP is current (includes accurate HM and/or HW inventory and location) and fire department is provided with this inventory and location of HM and/or HW. Command and control and/or supervision is excellent. HM and/or HW is transported according to local and/or installation procedures. Tempo of operations and/or activities, training, and maintenance is routine. Soldiers support the recycling program. Work areas are well maintained and unit maintains good housekeeping practices.
0	No risk and/or not applicable.

Figure J-6. Hazardous Material and Hazardous Waste Risk Impact Value

NOISE POLLUTION—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Sustained high-tempo operations and/or activities (36 hours plus) are planned, with much noise-generating equipment and activities (artillery, tracked vehicles, weapons firing, construction equipment, aircraft, power generation equipment). Activities are located close to civilian populace. Command and control and/or supervision is marginal. Soldiers' proficiency in the activities being conducted is marginal. Soldiers lack environmental awareness. Extensive night maneuvers are planned.
4	High-tempo operations and/or activities are planned with some noise-generating activities (artillery, tracked vehicles, weapons firing, construction equipment, aircraft, power generation equipment). A large number of engine starts and runups are required. Command and control and/or supervision is adequate. Activities are located near civilian populace. Soldiers lack environmental awareness. Limited night maneuvers are planned.
3	Level of noise-generating equipment is routine (wheeled vehicles, small generators, lawnmowers, cadences and/or jodies). Civilian populace will be nominally affected. Command and control and/or supervision is adequate. Night maneuvers may be conducted.
2	Level of noise generated is nominal. Command and control and/or supervision is good. Soldiers are environmentally conscientious. Night maneuvers are not likely.
1	Soldiers are aware of and comply with noise-restriction hours. Minimum operations and/or activities, training, or maintenance activities are planned. Command and control and/or supervision is highly effective. Activities are located away from civilian populace. No night maneuvers are planned.
0	No risk and/or not applicable.

Figure J-7. Noise Pollution Risk Impact Value

THREATENED AND ENDANGERED SPECIES—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Threatened and endangered species' habitats are not identified. Threatened and endangered species' habitats are not marked off as a restricted area. Command and control and/or supervision is marginal. Sustained low-visibility or night operations and/or activities are planned. Sustained high-tempo operations and/or activities (36 hours plus) are planned. Soldiers are not familiar with the operational and/or work area.
4	Threatened and endangered species' habitats are marked off.
	Low-visibility or night operations and/or activities are planned, and the troops are inexperienced. Command and control and/or supervision is adequate. Soldiers are not familiar with the operational and/or work area.
3	Threatened and endangered species' habitats are marked off. Soldiers are briefed on threatened and endangered species. Low-visibility or night operations and/or activities are planned, but troops are experienced. Command and control and/or supervision is adequate.
2	Threatened and endangered species' habitats are identified. Threatened and endangered species' habitats are marked off. Low-visibility or night operations and/or activities are not planned. Command and control and/or supervision is good. Soldiers are familiar with the operational and/or work area.
1	Threatened and endangered species' habitats are identified. Soldiers know and recognize threatened and endangered species. Threatened and endangered species' habitats are marked off as restricted and/or off-limits areas. Soldiers avoid threatened and endangered species' habitats during training, operations and/or activities, and logistical activities. Command and control and/or supervision is effective. Soldiers are thoroughly familiar with the operational and/or work area.
0	No risk and/or not applicable.

Figure J-8. Threatened and Endangered Species Risk Impact Value

WATER POLLUTION—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Maneuver will cause much operational and/or work area damage. Potential spills most likely will affect surface waters (wetlands, groundwater, streams, ditches, sewers, or drains). Night or low-visibility operations and/or activities are planned. Soldiers' environmental proficiency is low. Command and control and/or supervision is marginal. Sustained high-tempo operations and/or activities (36 hours plus) are planned. Spill response is marginal or untested. Spill response material is not available.
4	Maneuver will cause some terrain damage. Potential spill is 25 gallons; will not affect surface waters, wetlands, groundwater, streams, ditches, sewers, or drains. High-tempo operations and/or activities (up to 36 hours) are planned. Soldiers' environmental proficiency is somewhat low. Command and control and/or supervision is marginal.
3	Potential spill is 25 gallons, with no potential contamination of any water source. Routine operations and/or activities (12-16 hours a day) are planned. Soldiers are environmentally sensitive. Command and control and/or supervision is adequate. Weather will not adversely affect operations and/or activities.
2	Potential spill is 1 gallon; with no potential contamination of any water source. Routine operations and/or activities (12-16 hours a day) are planned. Soldiers are environmentally sensitive. Command and control and/or supervision is good. Soldiers are trained in spill-response duties. Spill control material is readily available.
1	No potential for spill. Soldiers are very environmentally aware. Command and control and/or supervision is high-tested. Soldiers maintain good housekeeping practices. Equipment is well maintained. Collection of maintenance wastes is managed properly.
0	No risk and/or not applicable.

Figure J-9. Water Pollution Risk Impact Value

WETLAND PROTECTION—PROBABILITY OF NEGATIVE IMPACT

Value	Contributing Factors
5	Sustained high-tempo operations and/or activities (36 hours plus) are planned. Command and control and/or supervision is marginal. Current or forecasted weather conditions will cause operations and/or activities to adversely affect wetlands. Soldiers lack environmental awareness. Soldiers' proficiency in the activities being conducted is marginal. Field service and/or maintenance may have to be done near wetlands. Spill response is marginal or untested. Spill response materials are not available.
4	Low-visibility or night operations and/or activities are planned. Command and control and/or supervision is adequate. Soldiers are not familiar with the operational and/or work area. Soldiers lack environmental awareness. Field service and/or maintenance may have to be done near wetlands.
3	Soldiers have been briefed on susceptibility of wetlands to damage. No low-visibility or night operations and/or activities are planned. Command and control and/or supervision is adequate.
2	Soldiers are environmentally conscientious. No low-visibility or night operations and/or activities are planned. Command and control and/or supervision is good. Soldiers are familiar with the operational and/or work area.
1	Maintenance is conducted only in approved areas. Wetland areas and boundaries are identified. No refueling will be conducted in wetland areas. Streams and/or ditches will be crossed at designated vehicle crossings. Command and control and/or supervision is excellent. Soldiers are environmentally conscientious. Soldiers are familiar with operational and/or work area. Activity in the area is specifically permitted by the installation SOP or other documents. Collection of maintenance wastes is managed properly.
0	No risk and/or not applicable.

Figure J-10. Wetland Protection Risk Impact Value

RISK RATING

J-12. Unit leaders rate the risk for each environmental area (each matrix) by adding the circled risk impact values (Figure J-11). Unit leaders develop a risk assessment of the entire activity or operation adding the risk ratings for the individual matrixes on one form. The overall environmental risk falls into one of four categories—low, medium, high, or extremely high (Figure J-12). Activities with an extremely high probability of environmental damage require MACOM approval. These activities may also require NEPA analysis.

	Movement of heavy vehicles/ systems	Movement of personnel and light vehicles/ systems	Assembly area activities	Field maintenance of equipment	Garrison maintenance of equipment	Risk rating
Air pollution	3	1	5	4	2	15
Archeological and historical sites	3	3	0	1	0	7
Hazardous materials and hazardous waste	2	1	1	2	0	6
Noise pollution	1	0	1	0	0	2
Threatened and endangered species	1	1	0	0	0	2
Water pollution	5	2	3	2	0	12
Wetland protection	5	2	1	2	0	10
Overall rating	20	10	11	11	2	54

Figure J-11. Overall Risk Assessment Matrix

Category	Range	Environmental Damage	Decision Maker
Low	0 - 58	Little or none	Unit Commander
Medium	59 - 117	Minor	Next higher command
High	118 - 149	Significant	Installation and/or division
Extremely High	150-175	Severe	MACOM

Figure J-12. Overall Environmental Risk

RISK REDUCTION

J-13. The unit leader addresses each environmental area to reduce risks associated with unit activities. While he considers all risk values above "0," obviously he spends more time on risk values of "5" rather than "0." If the overall risk is low or medium, unit leaders still review any areas rated high or extremely high. The unit leader should use his judgment in altering the operation to reduce the risk in this specific area. Many environmental risk reduction measures are simply extensions of good management and leadership practices. Unit leaders can effectively manage environmental risks using the following six steps:

- Step 1. Identify hazards to the environment during mission analysis. Consider all activities that may pollute air, soil, and water. Also consider activities that may degrade natural or cultural resources.
- Step 2. Assess the probability of environmental damage or violations with environmental risk assessment matrixes.
- Step 3. Make decisions and develop measures to reduce high risks. Risk reduction measures can include rehearsals, changing locations or times of operations, and increasing supervision.
- Step 4. Brief chain of command, unit staff, and appropriate decision makers on proposed plans and residual risk.
- Step 5. Integrate environmental measures into plans, orders, SOPs, and rehearsals. Inform subordinates, down to individual soldier- and Marine-level, of risk reduction measures.
- Step 6. Supervise and enforce environmental standards. Hold those in charge accountable for environmental risk reduction.

RESIDUAL RISK

J-14. Once all practicable risk reduction measures are in place, some risk will remain. This residual risk requires leaders' attention. Unit leaders inform the chain of command and appropriate decision makers of residual risk and its implications for the operation. Unit leaders also inform their subordinates and focus C^2 efforts onto those portions of the operation.

SUMMARY

J-15. Unit leaders use environmental risk assessment to estimate the potential impact of unit activities on the environment. This process applies to routine activities, training, mobilization, or deployment. The environmental risk assessment will allow leaders and their staffs to identify potential environmental problems before they occur. The process also allows unit leaders to identify and manage residual risk.

Appendix K

Air-Ground Integration

GENERAL

K-1. Effective integration of air and ground assets is required to successfully conduct cavalry operations. Each element (air and ground) brings unique capabilities and limitations to the cavalry commander. Integration starts at home station with the implementation of effective SOPs, habitual relationships, and AGT training and continues through planning, preparation, and execution of the operation.

FUNDAMENTALS

K-2. To ensure effective integration, commanders and staffs must consider some basic fundamentals for air-ground integration. These fundamentals provide the framework for enhancing the effectiveness of both air and ground maneuver assets. In all cases, the cavalry commander must employ air cavalry assets as a maneuver force. This basic premise, when coupled with the fundamentals of air-ground integration, will ensure air cavalry is synchronized in the squadron operation. The fundamentals are—

- Understanding capabilities and limitations.
- Use of SOPs.
- C^2.
- Maximizing available assets.
- Employment methods.
- Synchronization.

CAPABILITIES AND LIMITATIONS

K-3. To successfully integrate air and ground elements, the SCO, staff, and subordinate commanders must understand the capabilities and limitations of each element. Table F-1 outlines the capabilities and limitations for the employment of air cavalry assets. Table F-2 outlines the capabilities and limitations for the employment of ground cavalry assets.

Table K-1. Capabilities and Limitations for the Employment of Air Cavalry Assets

AIR CAPABILITIES	AIR LIMITATIONS
Terrain independent maneuver	Degraded limited visibility operations
Adds speed to operations	Lack of detailed reconnaissance
Adds agility to operations	Limited station times
Adds depth to operations	Crew endurance
Increases tempo of operations	Aircraft maintenance requirements
Digital connectivity	Cannot hold terrain
Enhanced optics	Increased Class III and/or Class V requirements
Elevated observation platform	FARP survivability
Video reconnaissance	Weather limitations
Long range direct fire capability	AA survivability
Precision munition guidance	Reaction time from decreased REDCON
Enhanced FS capabilities	Survivability in close operations
Enhanced night survivability and/or capability	

Table K-2. Capabilities and Limitations for the Employment of Ground Cavalry Assets

GROUND CAPABILITIES	GROUND LIMITATIONS
Hold terrain	Terrain restrictions
Detailed reconnaissance	Movement (visibility and/or obstacles)
Continuous operations	Responsiveness over distances
Self-supporting	Limited breach capabilities
C^2 organization	Limited long range acquisition
Firepower and protection	
Organic FS (mortars)	

STANDING OPERATING PROCEDURES

K-4. To ensure standardization throughout the squadron, SOPs must be established to provide a common basis for the integration of air-ground operations. The SOP may include, but is not limited to—

- Common terminology.
- Conditions for AGT employment.
- Specialized task organizations.
- Roles and responsibilities for planning and preparation.
- Air-ground coordination checklists.
- Battle handover checklists.
- Air passage of lines procedures.
- Recognition signals.
- Antifratricide markings and procedures.
- Clearance of fires procedures.
- Liaison requirements.
- Reporting.
- Communications architecture.
- Movement techniques

- Actions on contact drills (indirect fires, observation, direct fires from inferior force, direct fires from superior force, fixed wing, rotary wing, civilians and noncombatants).
- Battle drills (breach operations, close reconnaissance, counter-reconnaissance, fix and bypass, zone reconnaissance, area reconnaissance, route reconnaissance, screen operations, hasty attack).

COMMAND AND CONTROL

K-5. The commander must define the control of the air and ground operation. Two methods of control are used. Under both methods, control normally rests with the commander who owns the terrain the operation is covering.

SQUADRON CONTROL

K-6. The normal method of C^2 for air cavalry assets is to retain them under squadron control. The ACT commanders operate on the squadron command network and may coordinate detailed actions with the GCTs on the air or ground troop command network. The SCO ensures the focus of the ACTs remains synchronized, clarifies coordination, and issues orders to each troop as necessary. However, this method should not preclude cross talk and coordination between ground and ACTs. The level of cross talk and coordination for each type operation may be outlined in the squadron SOP or OPORD. Advantages and disadvantages are METT-T dependent.

Advantages

K-7. Advantages may include the following:

- Enhanced situational awareness at the squadron level.
- Allows the SCO to focus combat power as the situation develops (flexibility).
- Enhanced visibility on the logistics status of the ACT at the squadron level.
- Reduces the C^2 requirements on the ground troop commander.
- Streamlines reporting and FS requests.
- Reduces planning, liaison, and rehearsal requirements at the troop level.
- Increases the tempo of squadron level operations.
- Easier to establish and execute squadron level A^2C^2 plan.

Disadvantages

K-8. Disadvantages may include the following:

- Less situational awareness below the troop level.
- Air and ground synchronization is more difficult at the troop level.
- Higher potential for fratricide.
- Clearance of direct and mortar fires are more difficult.

- Air passage of lines are more difficult.
- Close reconnaissance and target handovers are more difficult.
- Increased traffic on the squadron command network.

AIR-GROUND TEAMS

K-9. The second method of C^2 is the formation of air- ground teams. This is normally a temporary relationship to deal with a specific situation. OPCON is the command relationship used. AGT formation is best used when decentralized troop operations are required. Route reconnaissance, area reconnaissance, reconnaissance in force, movement to contact as an advanced guard, feints, raids, screens, and area security are operations that may be enhanced by the formation of AGTs. Based on METT-T, control may be with either the ground or air cavalry commander. Control by the ACT is appropriate when—

- Limited ground cavalry assets in the area—air cavalry owns the battlespace.
- Ground troop commander or CP not in position to control.
- ACT commander has better situational awareness.
- Operation is of limited duration.

Control by the GCT is appropriate when—

- Limited air cavalry assets in the area—ground cavalry owns the battlespace.
- Ground troop commander or CP in position to control.
- GCT commander has better situational awareness.
- Operation is of longer duration.

The advantages and disadvantages of forming AGTs are METT-T dependent.

Advantages

K-10. Advantages may include the following:

- Enhanced situational awareness below the troop level.
- Allows the SCO to weight the ME.
- Enhanced close reconnaissance and security operations.
- Facilitates decentralized operations.
- Streamlines clearance of direct and mortar fires in the close fight.
- Increases GCT ability to observe mortar fires.
- Reduces traffic on the squadron command network.
- Air cavalry enhances GCT C^2 over extended distances.
- Enhanced response for downed aircraft in the close fight.
- Provides for greater security for the ACTs during day close reconnaissance and security missions.

Disadvantages

K-11. Disadvantages may include the following:

- Reduced situational awareness at the squadron level on ACT assets.
- Reduces SCO's ability to reorient air cavalry assets.
- Increases time required to clear indirect artillery fires.
- Less visibility on logistics status of the ACTs—FARP requirements.
- Squadron level A^2C^2 more difficult.
- Increased C^2 and liaison requirements at troop level.
- Does not maximize ACTs ability to add depth and tempo to squadron operation.

MAXIMIZING AVAILABLE ASSETS

K-12. ACTs are not sufficiently manned and equipped to effectively conduct independent, sustained 24-hour operations. Intelligence must drive maneuver—the commander's intent and the IPB process focuses the employment of the ACTs. ACTs should be employed at the platoon or troop level to ensure they have sufficient combat power and C^2 to achieve the SCO's intent. Attempting to maintain a 24-hour presence with air cavalry assets may negate many of the ACTs capabilities and result in the ACTs being piecemealed into the fight.

EMPLOYMENT METHODS

K-13. Cavalry squadrons have two options for the employment of the ACTs. The first option is to employ troops simultaneously, with separate areas of operation. The second option is to employ the ACTs sequentially, with the same or different areas of operation. In either option, the ACTs may be retained under squadron control or task organized with ground cavalry assets as AGTs.

SIMULTANEOUS OPERATIONS

K-14. The cavalry SCO employs simultaneous operations when—

- Covering extended distances or a larger AO.
- Squadron must orient in multiple directions.
- Operation is of limited duration.
- IPB allows commander to focus ACTs at decisive point and time.
- Maximum reconnaissance forward is required.
- Maximum security is required to provide early warning and reaction time for the squadron.
- Threat requires the ACTs to operate primarily at night for survivability.

SEQUENTIAL OPERATIONS

K-15. The cavalry SCO employs sequential operations when—

- AO is smaller.
- Squadron is oriented in a single direction.
- Operation requires extended coverage in time.

- IPB does not allow the commander to focus ACTs at decisive point or time.
- Maximum reconnaissance or security forward not required.
- ACT held as a squadron reserve or required for follow-on operations.

SYNCHRONIZATION

K-16. The integration of air cavalry into the decision making process is an important and unique aspect of staff planning in any cavalry organization. The employment of air cavalry may be the significant difference between COAs presented to the commander. When developing COAs, air-ground synchronization should be planned along the following guidelines:

INTELLIGENCE

K-17. As stated above, intelligence must drive the maneuver plan. Effective intelligence preparation of the battlefield will often make it obvious how and when to employ air cavalry assets. To provide the commander with a clear picture of when and where to employ air cavalry, the IPB process should answer the following fundamental questions:

- Where is the enemy currently located?
- Where is the enemy going and/or what is his repositioning criteria and routes?
- Where can we best acquire or engage the enemy?
- When will he be there?
- What weapons system does the enemy have that can effect air cavalry assets?

Answering these questions will allow the commander and staff to—

- Designate reconnaissance objectives and focus.
- Determine priority intelligence requirements to facilitate employment of the air cavalry.
- Develop a R&S plan with depth and redundancy.
- Determine required combat multipliers (lethal and nonlethal SEAD), AGT task organization, and ACT weapons configurations.
- Determine bypass and engagement criteria.
- Determine REDCON levels and employment timelines or triggers.
- Determine holding area locations, FAA locations, and FARP locations.
- Focus on developing a plan that pits the ACTs capabilities against enemy weaknesses.

MANEUVER

K-18. ACTs should be employed with many of the same considerations for ground cavalry assets. ACTs fight as maneuver forces in platoon or troop strength. This allows sufficient combat power for maintaining enemy contact, actions on contact, FARP rotations, developing the situation, and ensures continuous and seamless C^2. Standard maneuver graphics, movement techniques, and reporting requirements enhances air-ground integration and eases the planning requirements at the squadron level. As with ground cavalry assets, air cavalry requires varying guidance and planning considerations based on the mission, commander's intent, and other METT-T requirements. Maneuver planning considerations for the employment of air cavalry are as follows:

Reconnaissance Operations

K-19. Reconnaissance is an inherent task to all missions conducted by ACTs. Early development and integration of the ACTs in the squadron R&S plan allows parallel planning and ensures assets are available to meet the commander's intent. A clear and realistic task and purpose, as well as engagement criteria, are essential to ensure the ACTs remain focused on the reconnaissance objective. Normally, air cavalry is primarily force oriented and employed ahead of ground forces. This will facilitate rapid movement of GCTs and exploit the capability of air cavalry to increase the tempo of squadron operations. However, this does not imply that ACTs are not deliberate in executing movement techniques and maximizing stand off acquisition capabilities. When task organizing AGTs, the commander delineates employment constraints or restrictions to ensure the ACTs are employed within his intent. These constraints and restrictions may be outlined in the unit's SOP, OPORD, or verbal guidance from the SCO. Figures K-1 through K-6 show TTPs for integrated reconnaissance operations.

Security Operations

K-20. During security operations, the ACT's main role is still reconnaissance. The ACT's reconnaissance effort is focused on providing the squadron early warning, reaction time, and maneuver space. ACTs should be employed with sufficient distance forward or to the flank of ground forces to provide the maximum reaction time, normally within the range of supporting indirect fires. In unique situations, the ACTs may be employed in the attack role to conduct hasty or deliberate attacks to destroy enemy reconnaissance and security forces. However, the loss of the ACTs in the reconnaissance role often outweighs the advantages of employing them in the attack helicopter role. In the reconnaissance role, ACTs should maximize the use of indirect (mortars, artillery and CAS), as well as target handovers to attack helicopters or GCTs to meet the commander's intent for enemy destruction. This reduces the risk of the ACT becoming decisively engaged and losing mission focus.

**AIR-GROUND INTEGRATION
ROUTE RECONNAISSANCE**

- As an AGT, a GCT, and an ACT conduct coordinated route reconnaissance operations

- The ACT establishes a platoon boundary to separate the zone.

- The ACT operates with two ACTM conducting bounding overwatch with the commander's team back.

- Checkpoints, NAIs, and PLs are used to identify critical reconnaissance objectives and to control maneuver.

- ACTMs reconnaissance adjacent terrain/ routes, BUAs, ford sites, provide security, and assist the maneuver of the ground scout platoons. The ACTMs are operating on the ground platoon internal networks.

- The ACT commander cross talks with the GCT commander on the GCT command network to coordinate the reconnaissance effort. The ACT commander conducts face-to-face cross talk (as required) and assists the GCT commander with C^2.

- The ACT is primarily force oriented, focused on security and hasty route reconnaissance, while the GCT conducts a deliberate route reconnaissance.

- The ACT provides far side security, locates bypasses, and provides early warning to the GCT at chokepoints and obstacles.

- During actions on contact the ACT conducts target handover to the GCT and develops the situation to the flanks and forward of the GCT.

- To maintain tempo and maximum reconnaissance forward, the ACT commander's team temporarily relieves forward ACTM's for FARP rotation. As the commander's team rotates to the FARP, the senior platoon leader takes over C^2 for the ACT.

- GCT mortar section positions in the center of the zone to provide suppressive fires for the forward ACTMs.

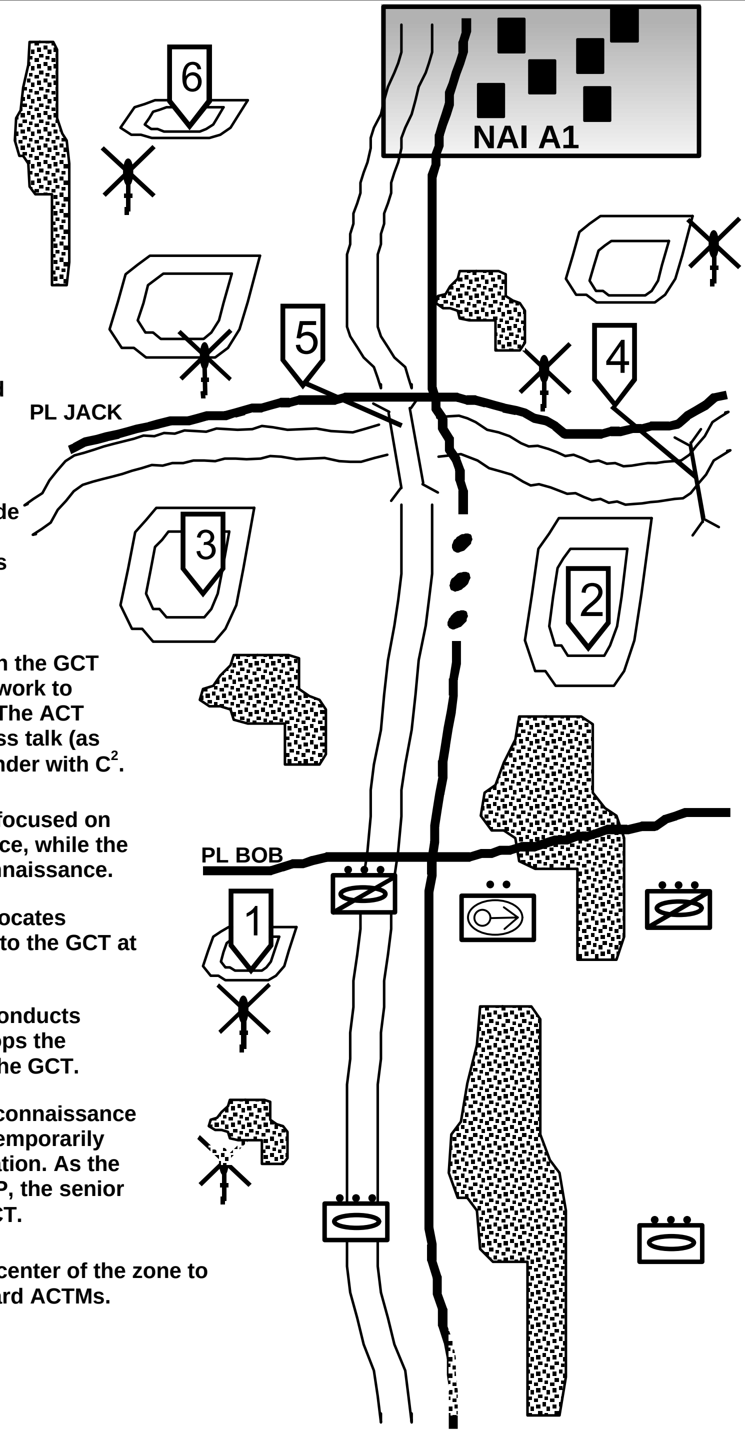


Figure K-1. Air-Ground Integration—Route Reconnaissance

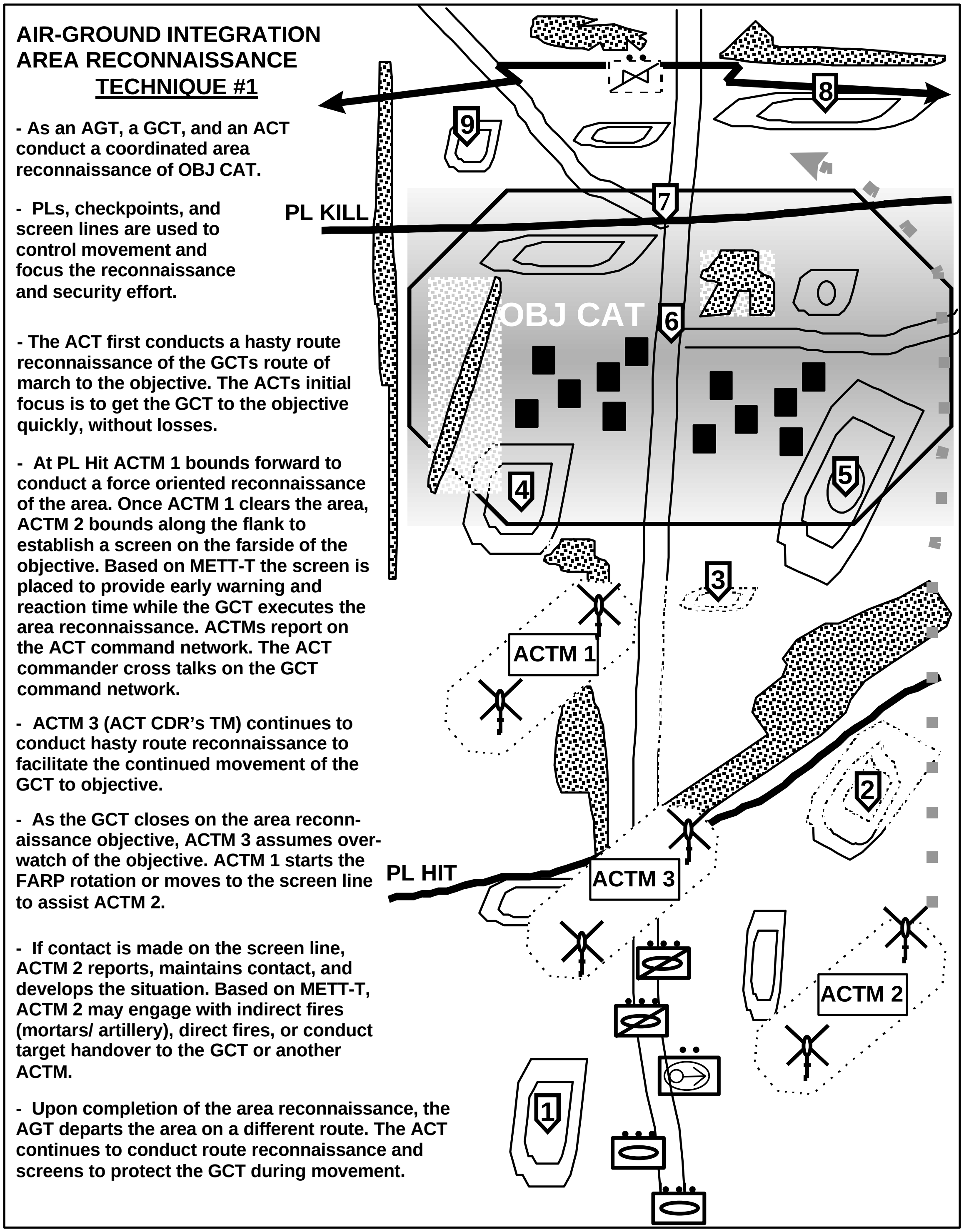


Figure K-2. Air-Ground Integration—Area Reconnaissance (Technique 1)

AIR-GROUND INTEGRATION
AREA RECONNAISSANCE
TECHNIQUE #2

- As an AGT, a GCT, and an and ACT conduct a coordinated area reconnaissance of OBJ CAT.

- PLs, checkpoints, and screen lines are used to control movement and focus the reconnaissance and security effort.

- The ACT first conducts a hasty route reconnaissance of the GCTs route of march to the objective. The ACT uses a "V" formation, 2 ACTMs up, 1 ACTM back. The ACTs initial focus is to get the GCT to the objective quickly, without losses.

- At PL Hit, ACTM 1 and 2 bound forward to conduct a force oriented reconnaissance of the area. After the area is cleared, ACTM 1 bounds along the left flank and ACTM 2 bounds along the right flank to establish a screen on the farside of the objective. Based on METT-T the screen is placed to provide early warning and reaction time while the GCT executes the area reconnaissance. ACTMs report on the ACT command network. The ACT commander cross talks on the GCT command network.

- ACTM 3 (ACT CDR's TM) continues to conduct hasty route reconnaissance to facilitate the continued movement of the GCT to objective.

- As the GCT closes on the area reconnaissance objective, ACTM 3 assumes overwatch of the objective. ACTMs 1 and 2 conduct team FARP rotations. ACTM 3 conducts team internal FARP rotation.

- If contact is made on the screen line ACTM 1 or ACTM 2 reports, maintains contact, and develops the situation. Based on METT-T, ACTM 1 or ACTM 2 may engage with indirect fires (mortars/ artillery), direct fires, or conduct target handover to the GCT or another ACTM. The out of contact ACTM on the screen displaces to maintain contact in-depth.

- Upon completion of the area reconnaissance the AGT departs the area on a different route. The ACT continues to conduct route reconnaissance and screens to protect the GCT during movement.

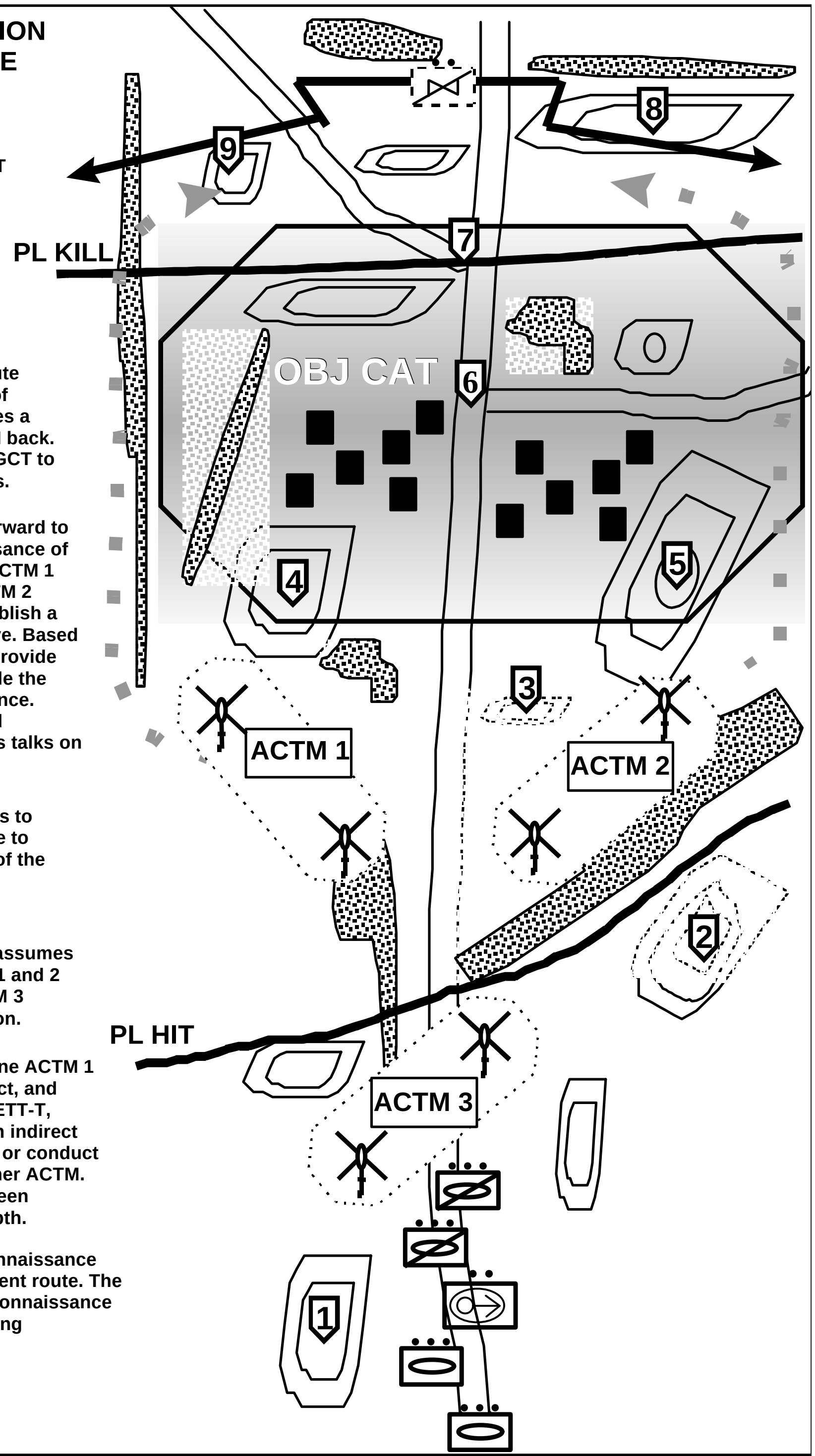


Figure K-3. Air-Ground Integration—Area Reconnaissance (Technique 2)

AIR-GROUND INTEGRATION AREA RECONNAISSANCE

TECHNIQUE #2

- As an AGT, a GCT, and an ACT conduct a coordinated zone reconnaissance.

- The ACT establishes a platoon boundary, with troop, platoon, and team graphics to facilitate C^2.

- PLs, OPs, checkpoints, NAIs, and TIRS are used to control movement and focus the reconnaissance effort.

- The ACT operates with three ACTM, two in zone conducting bounding overwatch, with the third as a ROS team.

- FARP rotations are conducted by team. If METT-T forces the teams to conduct internal FARP rotations, the zone reconnaissance effort stops, and the ACTM establishes a screen.

- The troop commander operates independent of the the ACTMs to better facilitate C^2.

- When working as part of a AGT the reconnaissance effort for the ACT is usually force oriented versus terrain oriented.

- The ACTMs move forward of the GCT focusing on key terrain, routes in zone, bypass of obstacles, and maintaining contact with large enemy formations.

- Bypass criteria must be clearly defined. The ACT must not become decisively engaged by ancillary enemy forces and distracted from their primary reconnaissance focus.

- During actions on contact the ACT develops the situation, conducts a target hand-off with the GCT, and continues the reconnaissance effort.

- The ACT commander passes spot reports to the GCT commander on the GCT command network.

- Once the ACT reaches the LOA they establish and maintain a screen until relieved by the squadron or the GCT. An ALOA forward of the LOA may be used to provide additional early warning.

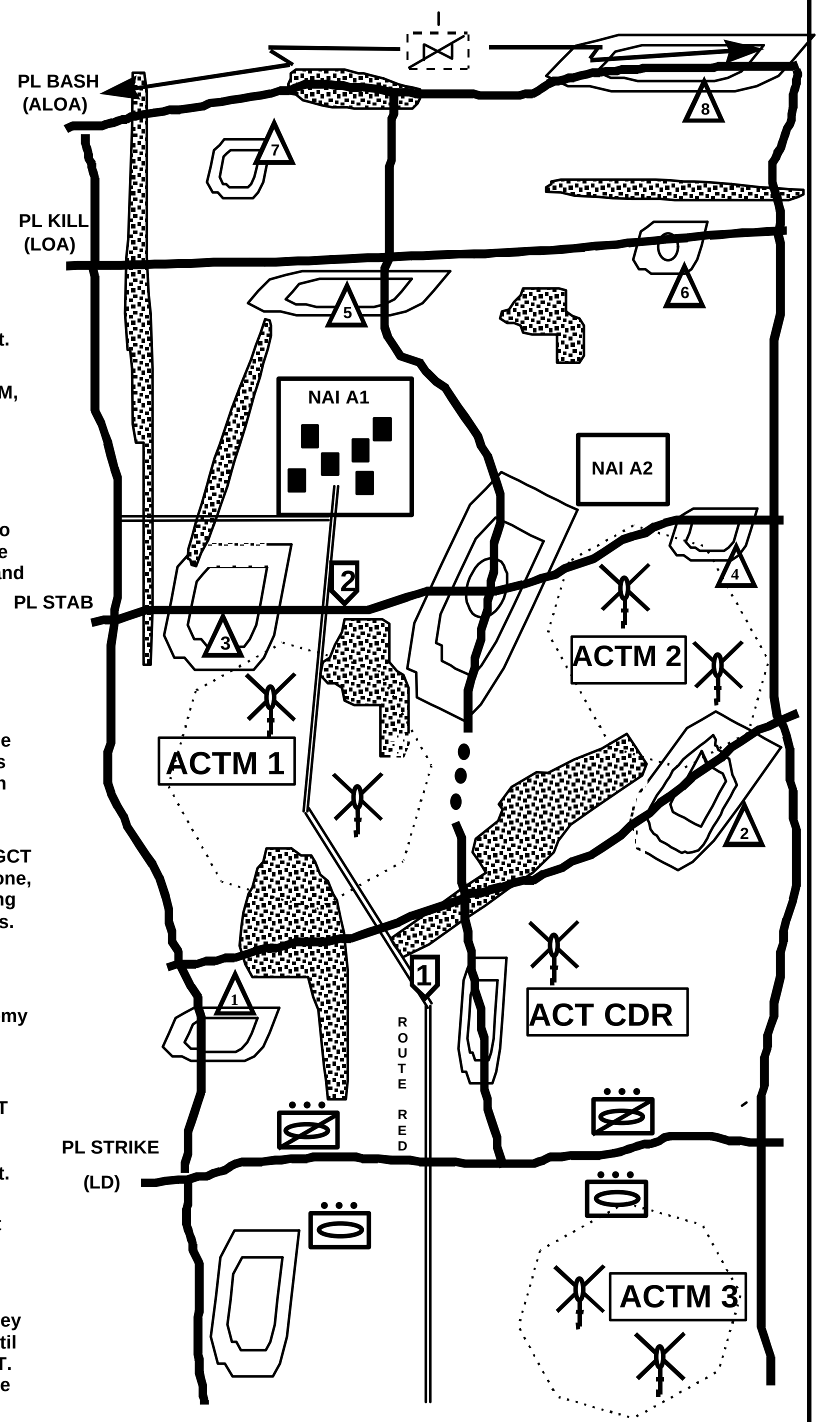


Figure K-4. Air-Ground Integration – Zone Reconnaissance (Technique 1)

AIR-GROUND INTEGRATION
ZONE RECONNAISSANCE
TECHNIQUE #2

- **As an AGT, a GCT, and an ACT conduct a coordinated zone reconnaissance.**

- **PLs, OPs, checkpoints, NAIs, and TIRS are used to control movement and focus the reconnaissance effort.**

- **The ACT operates with three SWT. The platoon on the left is designated the ME and is task organized with three aircraft. The platoon on the right is the supporting effort and is task organized with two aircraft forward with one aircraft providing security for the ACT commander.**

- **FARP rotation for the ME platoon is team internal. The commander's security aircraft assists with ROS in the SE platoon. The ME platoon leader C^{2}s the ACT when the ACT commander conducts FARP rotation.**

- **The ACT commander's team centrally locates to facilitate C^2.**

- **The ME platoon conducts force oriented zone reconnaissance with two aircraft forward. The third aircraft focuses on the route of march for the GCT.**

- **The SE platoon conducts force oriented zone reconnaissance and may screen battalion avenues of approach (in conjunction with a ground scout platoon) to provide security as the GCT main body moves along the route.**

- **Bypass criteria must be clearly defined. The ACT must not become decisively engaged by ancillary enemy forces and distracted from their primary reconnaissance focus.**

- **During actions on contact the ACT develops the situation, conducts a target hand-off with the GCT, and continues the reconnaissance effort.**

- **The ACT commander passes reconnaissance information to the GCT commander on the GCT command network.**

- **Once the ACT reaches the LOA they screen until relieved by the squadron or the GCT. An ALOA forward of the LOA may be used to provide additional early warning.**

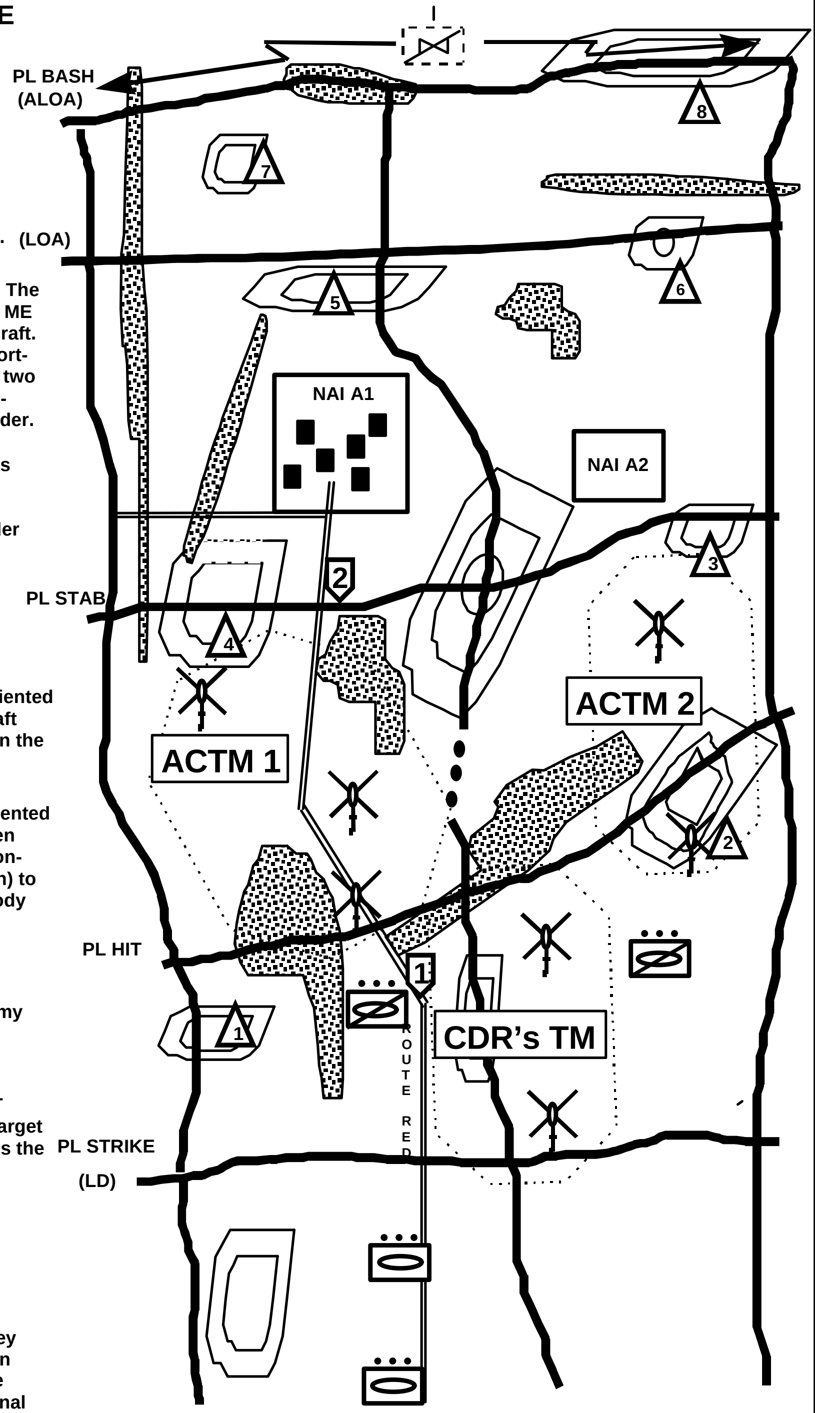


Figure K-5. Air-Ground Integration—Zone Reconnaissance (Technique 2)

AIR-GROUND INTEGRATION

- **An ACT and GCT conduct a coordinated stationary screen of the right flank of the main body.**

- **The ACT establishes OPs, team boundaries, and other control measures to facilitate C^2 and depth to the screen line.**

- **The ACT operates with 3 ACTMs set in OPs to maintain maximum eyes forward and provide security within the team. OPs are not placed linearly along the screen, but placed in-depth to allow contact to be maintained with enemy force and to cover multiple avenues of approach. ACTM integrity is maintained to facilitate security and reconnaissance through the depth of the sector.**

- **The ACT commander operates independent of the ACTMs, when possible, positioning himself where he can best C^2 the troop, coordinate with the GCT, and pass intelligence to squadron.**

- **The rear boundary of the ACT is established as a battle handover line to facilitate rapid target handovers to the GCT without losing enemy contact.**

- **ACTMs conduct internal relief on station to maximize reconnaissance forward. FARPs should be positioned as close to the screen as METT-T allows to minimize FARP turn around times.**

- **The GCT positions scout sections in-depth to provide redundant coverage in-depth and to facilitate battle handover to the two tank platoons, which are defending BPs.**

- **The two tank platoons defend BPs to destroy enemy reconnaissance forces that penetrate the ACT and ground scout platoon screens.**

- **Based on the SCO's engagement and bypass criteria, the ACT should maintain contact with enemy forces and conduct target handovers for destruction by the GCT. This allows the ACT to maintain the screen without being decisively engaged.**

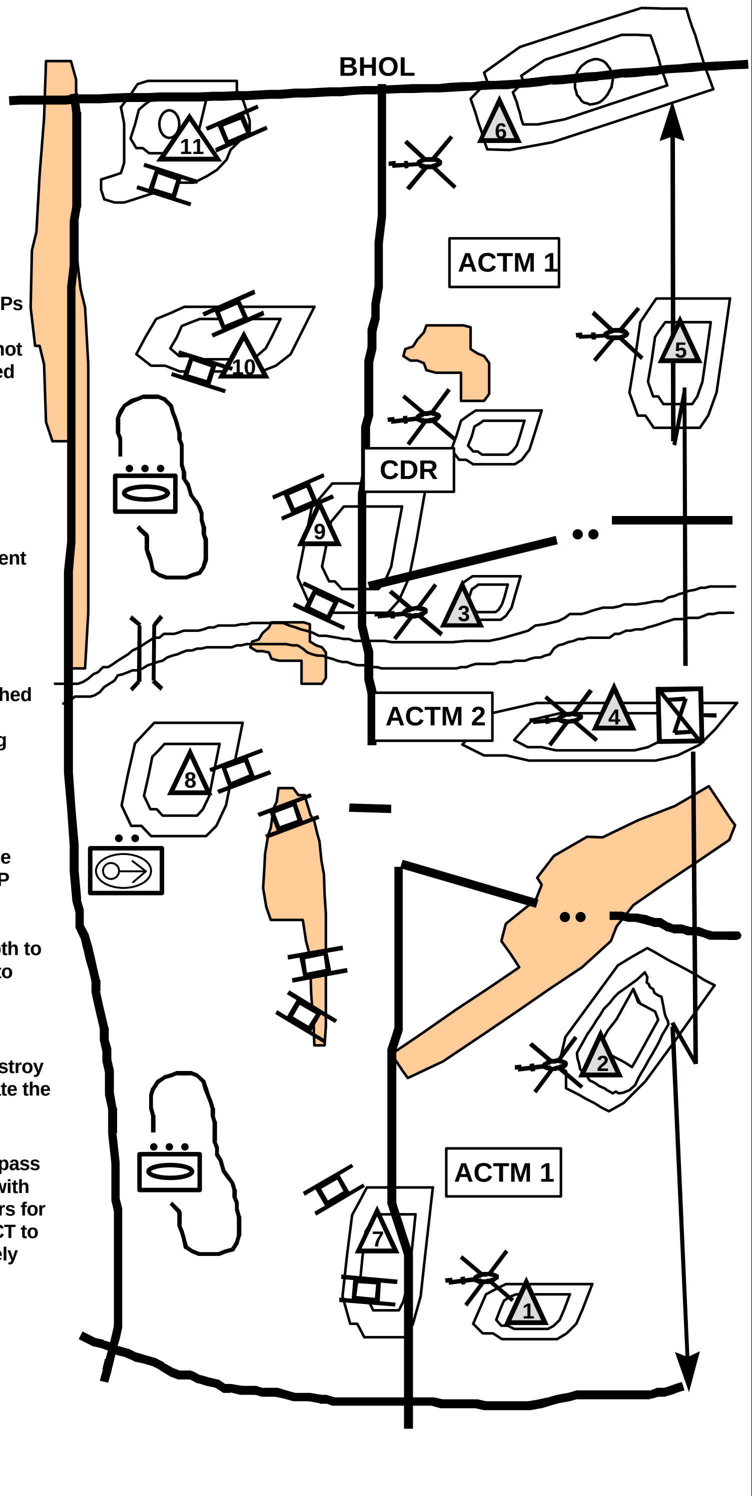


Figure K-6. Air-Ground Integration—Stationary Flank Screen

Fire Support

K-21. FS coordination is critical to ensure the commander's essential FS tasks are accomplished, as well as expediting clearance of fires. The squadron FSO must ensure ACTs are integrated into the FS observer plan. ACTs can facilitate long range, accurate, and timely indirect fires through the use of the MMS and onboard digital capabilities. When task organized in AGTs, the ACTs should be integrated into the GCT FS plan for observing troop mortar and artillery fires. To facilitate clearance of fires, the AGT commander and FIST must maintain situational awareness on the location of all air and ground assets. Standard maneuver and FS coordination measures, as well as accurate SITREPs will speed this process. During AGT operations, the squadron FSO may have less situational awareness on the location of all ACT assets operating on the battlefield. This may require clearing each of the grids fired, within the AGT sector or zone, to reduce the chance of fratricide. ACTs normally process all of their fires directly through the squadron FSO when engaging targets beyond the CFL. If targets are being engaged short of CFL, the ACT should process the call for fire through the GCT FIST. To enhance survivability for the employment of ACTs the FSO should consider planning and executing lethal and nonlethal SEAD. Based on METT-T, SEAD may be used to suppress, destroy, or deceive enemy AD systems to facilitate the ACTs maneuver plan. Localized and/or complimentary SEAD may be an EFST for cavalry SCO. Localized SEAD must be event driven and should be war-gamed to ensure the desired effect can be achieved based on target location, volume of fire, and timing. Complimentary SEAD is a continual process of engaging AD systems throughout the AO as they are identified.

Mobility and Survivability

K-22. ACTs can be used to assist with identification of obstacles and setting the conditions for breaching SOSR. Based on sensor conditions, the OH-58D MMS and VIXL capability can be used to identify obstacle makeup, complexity, and potential bypasses. If a bypass is not available, the ACT may be used to help set the condition for a breach. Although ACTs have limited firepower they may be used to provide suppression during the first phase of SOSR. During the obscuration phase, the ACT can assist the GCT FIST with adjusting artillery and mortar delivered smoke. During the secure and reduction phases, the ACT can provide a screen or overwatch position on the far side of the obstacle to identify and/or destroy repositioning enemy forces.

Logistics

K-23. To maintain maximum reconnaissance forward ACTs require frequent rotations to the FARP. During reconnaissance operations ACTs will consume greater amounts of Class III. During security operations ACTs will consume high levels of both Class III and Class V. Positioning of FARPs should be as far forward as METT-T allows to reduce FARP turnaround times. Security and enemy FA ranges are the primary considerations for forward employment of the FARP. To provide rapid maintenance recovery and the capability to repair minor aircraft faults, the squadron maintenance troop should locate a maintenance contact team in each FARP.

Battle Command

K-24. The SCO must determine the command relationship for the employment of the ACTs. When task organizing AGTs the SCO and staff should consider the impact of placing additional C^2, combined planning, combined rehearsal, and liaison requirements on the ground and air troop. If limited time is available for troop leading procedures, the AGT will not have sufficient time to develop, brief, and rehearse a synchronized plan. When time is available, the most effective means of conducting integrated planning is the use of the LNO. The troop (air or ground) being placed OPCON should provide a full time LNO to the AGT commander to facilitate coordination during planning, preparation, and if possible, during execution. The final step during the preparation phase is to conduct the confirmation brief. The SCO must ensure that the AGT commander understands his intent, restrictions, and constraints for the employment of the air cavalry assets. Additionally, the SCO may include the conditions for bringing the air cavalry assets back under squadron control.

Glossary

1SG	first sergeant
A&L	administrative and logistics
A/DACG	arriving/departing aircraft control group
A^2C^2	Army airspace command and control
A^2C^2S	Army airborne command and control system
AA	assembly area
AAR	after action review
AATF	air assault task force
ABCS	Army battle command system
ABF	attack by fire
ACA	airspace coordination area
ACFL	agreed cease fire line
ACL	allowable combat load
ACO	air coordination order
ACP	armament control panel
ACR	armored cavalry regiment
ACR/L	armored cavalry regiment/light
ACS	air cavalry squadron
ACT	air cavalry troop
ACTM	air cavalry team
ACU	area common user
AD	air defense
ADA	air defense artillery
ADO	air defense officer
ADRG	arc digitized raster graphic
ADSS	ANVIS display symbology system
AFAPD	Air Force applications program development
AGES	air ground engagement system
AGMB	advance guard main body
AGT	air-ground team

AH	attack helicopter
AHO	above highest obstacle
AHRS	attitude heading reference system
AHT	assault helicopter troop
ALFGL	automatic low frequency gain limiting
ALO	air liaison officer
ALOA	air limit of advance
ALOC	administrative/logistics operations center
ALSE	Army life support equipment
AM	amplitude modulation
AMC	Army Materiel Command
AMO	air movement officer
AMPS	aviation mission planning system
ANCD	automated net control devices
ANGLICO	air and naval gunfire liaison company
AO	area of operation
AOC	air operations center
AOT	areas of transfer
APFSDS	armor-piercing, fin-stabilized, discarding sabot (ammunition)
ARAT	Army Reprogramming Analysis Team
ARFOR	Army Force
arty	artillery
ASAS-RWS	all-source analysis system—remote work station
ASB	aviation support battalion
ASE	aircraft survivability equipment
ASI	additional skill identifier
ASL	authorized stockage list
ASOC	air support operations center
ASP	ammunition supply point
ATA	air-to-air
ATAS	air-to-air stinger
ATC	air traffic control
ATCCS	Army tactical command and control system

atchs	attaches
ATF	aviation task force
ATHS	airborne target handover system
ATKHB	attack helicopter battalion
ATKHT	attack helicopter troop
ATM	aircrew training manual, air targeting mode
ATO	air tasking order
ATP	ammunition transfer point
ATS	air traffic services
AVIM	aviation intermediate maintenance
avn	aviation
AVTOC	aviation tactical operations center
AVTR	airborne video tape recorder
AVUM	aviation unit maintenance
AWACS	airborne warning and control system
BCBL	battle command battle lab
BDA	battle damage assessment
BDAR	battle damage assessment and repair
BDE	brigade
BHL	battle handover line
BHO	battle handover
BMNT	beginning morning nautical twilight
BMO	battalion maintenance officer
BMP	Boyevaya Mashina Pekhoty (literal Russian: combat vehicle, infantry)
Bn	battalion
BP	battle position
BSA	brigade support area
C-E	communication-electronic
C^2	command and control
C^2V	command and control vehicle
C^3I	command, control, communication, and intelligence

CAM	chemical agent monitor
CAS	close air support
CASEVAC	casualty evacuation
CATF	commander amphibious task force
CCIR	commander's critical information requirements
Cdr	commander
CD-ROM	compact disk-read only memory
CEOI	communication electronic operating instructions
CEWI	combat electronic warfare and intelligence
CF	correlation factor
CFL	coordinated fire line
CFT	captive flight trainer
CG	center of gravity
cGyph	centigray per hour
CH	cargo helicopter
CLF	commander landing force
CMS	countermeasure set
Cmd	command
C-NITE	Cobra night
CNR	combat net radio
COA	course of action
COLT	combat observation lasing team
comm	communication
COMMZ	communication zone
COMSEC	communications security
CONUS	continental United States
COP	combat observation post
COSCOM	corps support command
CP	command post
CPG	copilot-gunner
CPO	copilot-observer
CRP	combat reconnaissance patrol
CS	combat support
CSAR	combat search and rescue

CSM	command sergeant major
CSOP	combat security observation post
CSS	combat service support
CTCP	combat trains command post
CTT	commanders tactical terminal
CW	continuous wave
CW2	Chief Warrant Officer, W-2
CW3	Chief Warrant Officer, W-3
CW4	Chief Warrant Officer, W-4
CW5	Chief Warrant Officer. W-5

DA	Department of the Army
DAO	division ammunition officer
DAART	downed aircraft/aircrew recovery team
DART	downed aircraft recovery team
DASB	division aviation support battalion
DCS	division cavalry squadron
DEL	deployment equipment list
DEW	directed energy weapons
DF	direction finding
dig	digital
DIG	date-time group
DISCOM	division support command
Div	division
DMMC	division material management center
DMSO	division medical supply office
DP	decision point
DPW	Department of Public Works
DRA	data rate adapter
DS	direct support
DSA	division support area
DST	decision support template
DTC	data transfer cartridge
DTED	digital terrain elevation data

DTM	data transfer module
DTR	defense transportation regulation
DTS	data transfer system
DVO	direct view optics
DZ	drop zone
EA	engagement area
ECAS	environmental compliance assessment system
ECCM	electronic counter-countermeasures
ECM	electronic countermeasures
ED	environmental division
EEFI	essential elements of friendly information
EEI	essential elements of information
EENT	end evening nautical twilight
EFST	essential fire support task
EGI	embedded GPS/INS
EID	emitter identification database
EMCOM	emissions control
EO	electro-optical
EP	electronic protection
EPW	enemy prisoner of war
ERFS	extended range fuel system
ES	electronic support
ESM	electronic support measures
ETAC	enlisted terminal attack controller
EU	electronic unit
EW	electronic warfare
EWO	electronic warfare officer
EWS	electronic warfare support
EXTAL	extra time allowance
FA	field artillery
FAA	forward assembly area
FAC	forward air controller

FARE	forward area refueling equipment
FARP	forward area arming and refueling point
FASCAM	family of scatterable mines
FCC	flight coordination center
FCR	fire control radar
FEBA	forward edge of the battle area
FFA	free-fire area
FFAR	folding fin aerial rockets
FFIR	friendly force information requirements
FIST	fire support team
FH	frequency hopping
FLE	forward logistics element
FLIR	forward looking infrared
FLOT	forward line of own troops
FM	field manual, frequency modulation
FOC	flight operations center
FORSCOM	United States Army Forces Command
FOV	field of view
FP	forward patrol
FPF	final protective fires
FRAGO	fragmentary order
FSB	forward support battalion
FSCL	fire support coordination line
FSCM	fire support coordinating measures
FSCOORD	fire support coordinator
FSE	forward support element, forward security element
FSO	fire support officer
FSSE	forward service support elements
FWF	former warring factions
G3	Assistant Chief of Staff (Operations and Plans)
GAS	ground aided seeker
GB	gigabyte
GCA	ground controlled approach

GCT	ground cavalry troop
GFAP	general framework agreement for peace
GLO	ground liaison officer
GMRR	guards motorized rifle regiment
gnd	ground
grp	group
GPS	global positioning system
GRREG	graves registration
GS	general support
GSAB	general support aviation battalion
GSR	ground surveillance radar
GT	gun target
GTM	ground targeting mode
GUI	graphical user interface
HA	holding area
HAZCOM	hazardous communications
HAZMIN	hazardous waste minimization
HE	high explosive
HERO	hazards of electromagnetic radiation to ordnance
HESC	heavy equipment supply company
HF	high frequency
HHB	headquarters and headquarters battalion
HHC	headquarters and headquarters company
HHQ	higher headquarters
HHT	headquarters and headquarters troop
HIMAD	high-to-medium altitude air defense
HIRSS	hover infrared suppression system
HM	hazardous material
HMMWV	high mobility multipurpose wheel vehicle
hr	hour
HSC	headquarters and supply company
HSD	horizontal situational display
HUMINT	human intelligence

HW	hazardous waste
HVT	high valve target
ID	identification
IDM	improved data modem
IEBL	inter-entity boundary line
IEW	intelligence and electronic warfare
IFF	identification, friend or foe
IFOR	implementation force
IMC	instrument meteorological conditions
IMCPU	improved master controller processor unit
IMSP	improved mast mounted sight system processor
INS	inertial navigation system
INTSUM	intelligence summary
IO	information operations
IP	instructor pilot
IPB	intelligence preparation of the battlefield
IR	infrared
ITO	installation transportation officer
IW	information warfare
J-SEAD	joint-suppression of enemy air defense
JAAT	joint air attack team
JCO	joint commission observer
JMC	joint military commission
JPN	jam program number
JSTARS	joint surveillance target attack radar system
JTF	joint task force
KIA	killed in action
km	kilometer
KMIH	kilometer traveled in an hour
KMPH	kilometers per hour
KW	Kiowa Warrior

LAN	local area network
LANTIRN	low altitude navigation target infrared night
LBA	Longbow Apache
LCE	load carrying equipment
LCU	lightweight computer unit
LD	line of departure
LNO	liaison officer
LOA	limit of advance
LOAL	lock on after launch
LOAL-DIR	lock on after launch-direct
LOAL-HI	lock on after launch-high
LOAL-LO	lock on after launch-low
LOBL	lock on before launch
LOC	line of contact
LOGPAC	logistics package
LOS	line of sight
LP	listening post
LRF/D	laser range finder/designator
LRSD	long range surveillance detachment
LST	laser spot tracker
LZ	landing zone
MAC	Military Airlift Command
MACOM	major command
maint	maintenance
MBA	main battle area
MCOO	modified combined obstacle overlay
MCS	maneuver control system
MCS/P	maneuver control system/phoenix
MDMP	military decision making process
ME	main effort
MEDEVAC	medical evacuation
METL	mission essential task list

METT-T	mission, enemy, terrain, troops, and time available
MFD	multifunction display
MFO	multifunction display
MI	military intelligence
MIA	missing in action
MICLIC	mine-clearing line charge
MIH	miles traveled in an hour
MILES	multiple integrated laser engagement system
MILSTAMP	military standard transportation and movement procedure
min	minute
MMC	materiel management center
MMS	mast-mounted sight
MOPP	mission oriented protective posture
MOUT	military operation in urban terrain
MPH	miles per hour
MPSM	multipurpose submunition
MRB	motorized rifle battalion
MRC	motorized rifle company
MRE	meal, ready to eat
MRP	motorized rifle platoon
MRR	motorized rifle regiment
MRT	minimum resolvable temperature
MS	mission support, movement station
MSB	main support battalion
MSCA	military support to civilian authorities
MSE	mobile subscriber equipment
MSEC-BBS	multiservice electronic combat—bulletin board system
MSR	main supply route
MTI	moving target indicator
MTO	message to observer
NAI	named areas of interest
NAVAIDS	navigational aids
NBC	nuclear, biological, and chemical

NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NCS	net control station
NCTR	noncooperative target recognition
NEO	noncombatant evacuation operations
NEPA	National Environmental Protection Agency
NET	new equipment training
NFA	no-fire area
NFL	no-fire line
NGFS	naval gun fire support
NIGA	neutron induced gamma activity
NIMA	National Imagery and Mapping Agency
NOE	nap-of-the-earth
NRB	natural resources branch
NSFS	naval surface fire support
NVD	night vision device
NVG	night vision goggle

O/O	on order
O&I	operations and intelligence
OCOKA	obstacles, cover and concealment, observation and fields of fire, key terrain, and avenues of approach
OCONUS	outside continental United States
OD	outside dose
ODA	optical display assembly
OH	observation helicopter
OIC	officer in charge
OP	observation post
OPCON	operational control
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
OPTEMPO	operation tempo
ORF	operational readiness float

OT	observer target
PA	pressure altitude
PAC	pitch attitude cue
PAF	preassault fires
PC	pilot in command
PCC	precombat checks
PCI	precombat inspection
PCOA	probable courses of action
PDU	pilot display unit
photo	photograph
PIR	priority intelligence requirements
PL	phase line
PLL	prescribed load list
PLS	palletized load system
plts	platoons
PMCS	preventive maintenance checks and services
POC	point of contact
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oils, and lubrication
POR	preparation of replacement for overseas movement
PPAR	purpose of fires, priority of fires, assets available/allocations and restrictions
PPC	performance planning card
PPM	progressive phase maintenance
PRC	populace and resources control
PST	past time
PW	pulsed wave
PZ	pickup zone
QRF	quick reaction force
R&S	reconnaissance and surveillance
RADAR	radio detection and ranging

RAS	regimental aviation squadron
RATT	radio teletypewriter
RBECS	remote battlefield electronic CEOI system
REDCON	readiness condition
RF	radio frequency
RFA	restrictive fire area
RFI	radar frequency interferometer
RFL	restrictive fire line
RIF	reconnaissance in force
RMMC	regimental materiel management center
RMP	reprogrammable microprocessor
ROE	rules of engagement
ROS	relief on station
RP	release point
RSA	regimental support area
RSDS	radar signal detecting set
RSS	regimental support squadron
RTO	radiotelephone operator
RWS	remote work station
S&S	supply and service
S&T	supply and transport
S1	adjutant
S2	intelligence officer
S3	operations and training officer
S4	supply officer
S5	civil affairs officer
SAD	safe/arm device
SAL HF	semiactive laser designated hellfire
SALT	size, activity, location, and time
SALUTE	size, activity, location, unit, time, and equipment
SAM	surface-to-air missile
SARH	semi-active radar homing
SATCOM	satellite communication

SA-6	(Gainful, Soviet SAM)
SA-8	(Gecko, Soviet SAM)
SA-11	Gadfy, Soviet Low-to-Medium Altitude SAM)
SBF	support by fire
SCO	squadron commander
SE	supporting effort
SEAD	suppression of enemy air defenses
SEMA	special electronic mission aircraft
SHORAD	short range air defense
SICP-RWS	standard integrated command post rigid wall shelter
SIDPERS	standard installation/division personnel system
SIGINT	signal intelligence
SINCGARS	single channel ground and airborne radio system
SIP	system improvement program
SIT/STAT	situation/status
SITREP	situation report
SITTEMP	situation and event template
SJA	staff judge advocate
SME	subject matter expert
SMO	squadron maintenance officer
SOCCE	special operations command and control element
SOF	special operations force
SOI	signal operation instructions
SOP	standing operating procedures
SOSR	suppress, obscure, secure, and reduce
SP	start point
SPIN	special instructions
SPOTREP	spot report
sqdn	squadron
SQI	skill qualification identifier
SRA	specialized repair authorization
SSA	squadron support area
STACOM	satellite communications
STU-III	secure telephone unit-III

STX	situational training exercises
TAA	tactical assembly area
TAC	tactical air coordinator
TAC CP	tactical command post
TAC(A)	tactical air coordinator (airborne)
TACAIR	tactical air
TACAN	tactical air navigation
TACFIRE	tactical fire
TACP	tactical air control party
TADS	target acquisition and designation system
TAI	target areas of interest
TC ACCIS	Transportation Corps automated command and control information system
TCC	transportation component command
TCIM	tactical communication interface module
TCU	transportable computer unit
TDIS	time-distance
TDMP	tactical decision making process
TF	task force
TFE	task force eagle
TI	technical inspector
TIRS	terrain reference index system
TIS	thermal imaging sensor
TIS INTG	thermal imaging sensor integrator
TOA	transfer of authority
TOC	tactical operations center
TOE/TO&E	table of organization and equipment
TOF	time of flight
TOO	tactical operations officer
TOT	time-on-target
TOW	tube launched, optical tracked, wire guided (missile)
TPM	terrain profile mode
TPME	task, purpose, method, and end state
TRP	target reference point

TSU	telescopic sight unit
TTP	tactics, techniques, and procedures
TVM	track-via-missile
TVS	television sensor
UAV	unmanned aerial vehicle
UH	utility helicopter
UHF	ultra high frequency
UMCP	unit maintenance collection point
UMO	unit movement officer
UMT	unit ministry team
UNIX	multiuser, multitasking operating system
UNPROFOR	United Nations Protection Force
US	United States
USA	United States Army
USAAVNC	United States Army Aviation Center
USAF	United States Air Force
USMC	United States Marine Corps
USN	United States Navy
USTRANSCOM	United States Army Transportation Command
UTM	universal transverse mercator
UWP	universal weapon pylon
UXO	unexploded ordnance
VHF	very high frequency
VIXL	video image crosslink
VMF	variable message format
VPK	vehicles per kilometer
VPM	vehicles per mile
VSD	vertical situation display
VTR	video tape recorder
WARNORD	warning order
WH	white hot

WOD	word of day
WO1	Warrant Officer One
WSPS	wire strike protection system
XO	executive officer
ZOS	zone of separation

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Index

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