ATP 3-04.6

Air Traffic Services Operations

JANUARY 2022

This publication supersedes TC 3-04.6, dated 27 December 2017.

Headquarters, Department of the Army

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Washington, D.C., 29 June 2022

Air Traffic Services Operations

1 This publication is changed to incorporate traits of the Army profession.

2 An asterisk (*) denotes changed material.

ATP 3-04.6, 12 January 2 22 is changed as follows:

Remove old pages:	Insert new pages:
pages i through iii	pages i through iii
pages 1-1 through 1-4	pages 1-1 through 1-4
pages 2-5 through 2-8	pages 2-5 through 2-8
pages 2-11 through 2-14	pages 2-11 through 2-14
pages 2-21 through 2-22	pages 2-21 through 2-22
pages 4-5 through 4-6	pages 4-5 through 4-6
pages 5-3 through 5-4	pages 5-3 through 5-4
pages Glossary-3 through Glossary-4	pages Glossary-3 through Glossary-4

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By Order of the Secretary of the Army:

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Air Traffic Services Operations

Contents

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Preface

Army Techniques Publication (ATP) 3-04.6 serves as a doctrinal guide primarily intended for the theater airfield operations group (TAOG), airfield operations battalion (AOB), and air traffic services (ATS) company commanders, subordinate leaders, and assigned personnel. This manual describes structure, mission, employment, and sustainment of ATS units supporting major combat, stability, and civil support operations. It establishes responsibilities and duties of key personnel and discusses planning considerations required for training, operations, and combat. ATP 3-04.6 is authoritative and prescriptive but is not inflexible. Situations in combat are resolved by the intelligent interpretation and application of this doctrine.

The primary audience for ATP 3-04.6 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as a joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates must ensure that their decisions and actions comply with applicable U.S., international, and in some cases host-nation laws and regulations. Commanders at all levels ensure their Soldiers operate according to the law of armed conflict and applicable rules of engagement. (See Field Manual (FM) 6-27/MTCP 11-10C.)

ATP 3-04.6 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which ATP 3-04.6 is the proponent publication (the authority) are italicized in the text and are marked with an asterisk (*) in the glossary. Terms and definitions for which ATP 3-04.6 is the proponent publication are boldfaced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

This publication applies to Active Army, Army National Guard, United States Army Reserve, and Army civilians unless otherwise stated. In addition, trainers, educators, and contractors also use this publication as a doctrinal reference. ATP 3-04.6 builds on collective knowledge and experience gained through recent operations, exercises, and the deliberate process of informed reasoning. Its principles and fundamentals address new technologies and evolving responses to diverse threats. It also assists Army branch schools in teaching ATS and airfield management operations.

The proponent of ATP 3-04.6 is the United States Army Aviation Center of Excellence (USAACE). The preparing agency is the Directorate of Training and Doctrine (DOTD), USAACE. Send comments and recommendations on Department of the Army (DA) Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Director, DOTD, ATTN: ATZQ-TD (ATP 3-04.6), 2218 6TH Avenue, Fort Rucker, AL 36362; or by e-mail to usarmy.rucker.avncoe.mbx.doctrine-branch@army.mil.

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Introduction

This publication focuses on Army Aviation ATS units' organizational structure, employment, training and readiness, and maintenance. To understand this publication, the reader must first understand the doctrinal fundamentals contained in Army Doctrine Publication (ADP) 3-0 and FM 3-04. The reader should also understand Army Regulation (AR) 95-2 and TC 3-04.15 in order to be familiar with the training and readiness section of this publication.

ATP 3-04.6 contains five chapters and four appendices:

- Chapter 1 outlines ATS organization and missions.
- Chapter 2 covers command and control as it relates to ATS.
- Chapter 3 discusses ATS employment.
- Chapter 4 provides an overview for ATS and maintenance training.
- Chapter 5 breaks down ATS maintenance operations.
- Appendix A addresses deployment and redeployment of ground vehicles and equipment.
- Appendix B provides a brief overview of tactical air traffic control systems.
- Appendix C brief introduction to risk management.
- Appendix D provides a reference to information used by aviation units during training or combat.

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Chapter 1
Organization and Missions

ATS organizations are designed to efficiently support Army Aviation during decisive action and joint operations. ATS organizations enable safe and efficient use of positive and procedural airspace control measures with a designated airfield management structure managing high-density and congested airfields. The organizational tenets for this design are doctrinally balanced, logistically supportable, modernized, multifunctional, and modular.

OPERATIONAL FRAMEWORK

1-1. Air traffic operations are conducted throughout all military operations. Air traffic organizations conduct civil support operations in response to natural or manmade disasters, accidents, and incidents within the United States and its territories.

1-2. The TAOG, AOB, and the ATS company must support—

- Strategic deployment planning and execution.
- Administrative and tactical movements.
- Intelligence preparation of the battlefield (IPB).
- Employment of communications systems.
- Force protection/sustainment.
- Integration with ground forces.

ORGANIZATION

1-3. TAOGs and AOBs are ATS forces that support theater-level requirements. The AOBs have an airfield management element as well as air traffic personnel and equipment to execute airfield and air traffic responsibilities. TAOGs and AOBs operate from a single base or conduct split-based operations in multiple locations within the theater of operations.

1-4. ATS companies assigned to a combat aviation brigade (CAB), expeditionary combat aviation brigade (ECAB), or theater aviation brigade (TAB) conduct operations as organizational elements of the general support aviation battalion (GSAB). This command relationship maximizes efficiency of operations, serving as a combat enabler for Army Aviation and divisions. The company must be able to operate and complete its mission with the CAB or TAB or as a member of an aviation task force. The company and its elements may operate within an aviation battalion task force in a direct support (DS) or general support (GS) role.

THEATER AIRFIELD OPERATIONS GROUP

1-5. The TAOG (figure 1-1, page 1-2) is a theater-level aviation support organization responsible for airfield management and air traffic organizations supporting unified management and air traffic organizations supporting joint all-domain operations. The TAOG consists of a headquarters and headquarters company (HHC) and provides command and control (C2) of three AOBs.

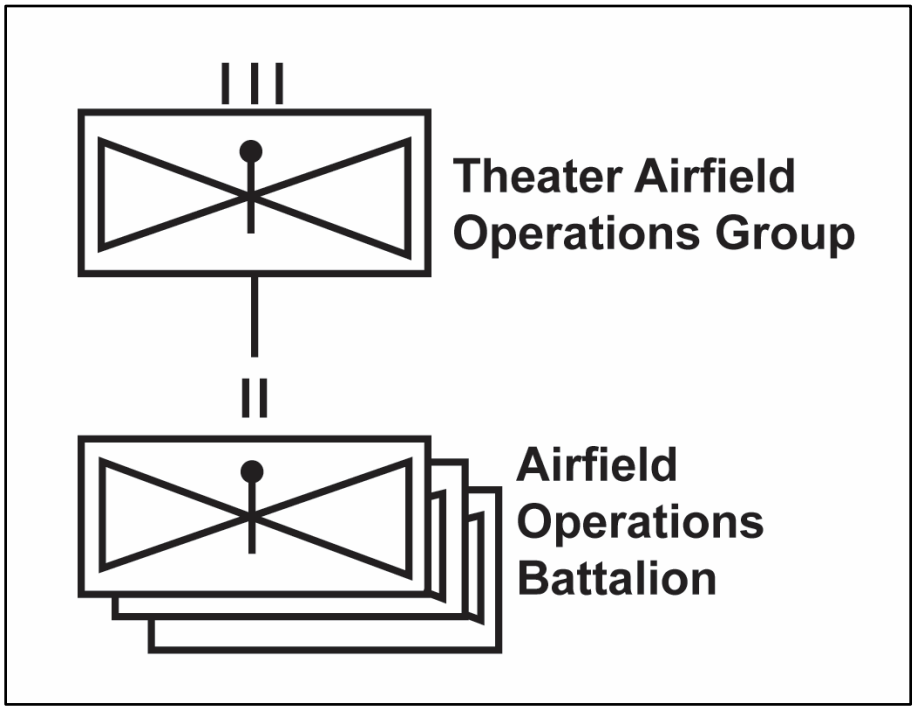

***Figure 1-1. TAOG organization**

1-6. Figure 1-2 depicts the TAOG headquarters organization.

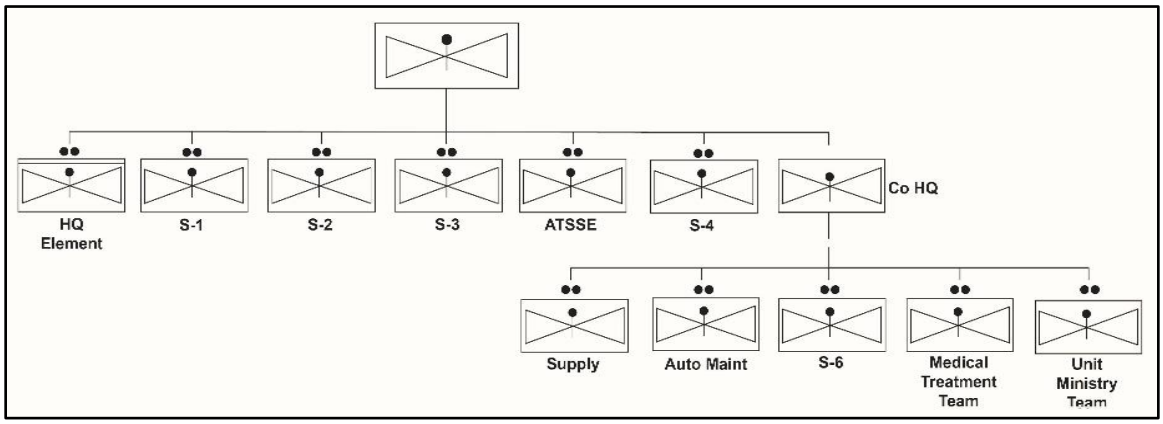

***Figure 1-2. TAOG headquarters organization**

1-7. The mission of the TAOG is to provide C2 of assigned and attached airfield management and air traffic organizations. The TAOG plans, integrates, and postures Army air traffic and airfield management forces through staff integration at the Army Service Component Command (ASCC) or corps/joint task force level. The TAOG operates as the senior airfield and ATS headquarters to execute safety and standardization and interfaces with host/allied nation, coalition, and joint forces on airfield, ATS, and airspace management matters.

1-8. The TAOG executes theater airfield operations and synchronizes air traffic in a joint environment. It establishes theater airfields in support of reception, staging, onward movement, and integrations (RSOI) requirements; seaport of debarkation (SPOD); and aerial port of debarkation (APOD) operations. The TAOG coordinates and integrates airspace use requirements with the airspace control element of the controlling Army headquarters.

1-9. The TAOG—

- Develops and validates theater ATS force requirements.
- Coordinates and schedules flight checks.
- Provides quality assurance of controller and air traffic control (ATC) maintenance training and certification programs.
- Interfaces with appropriate theater staff elements for the planning and execution of airfield and ATS mission sets.
- Reviews and processes terminal instrument procedures (TERPS) for terminal areas.
- Provides personnel for survey/reconnaissance party team, ensuring air traffic procedures, ATS equipment emplacement criteria, and TERPS are considered and addressed during site survey.
- Provides expertise to ASCC on United States Code, Title 10; host nation; and ATS issues, including contract ATC and ATS systems support contractors.
- Coordinates and synchronizes ATS field service representatives and field engineers.
- Synchronizes theater ATS maintenance efforts.
- Identifies ATS equipment staging/reset requirements.
- Executes ATS liaison responsibilities as required by ASCC with host nation airspace authority.

AIRFIELD OPERATIONS BATTALION

1-10. The AOB (figure 1-3) is composed of operational sections/platoons required for the management and execution of airfield activities at designated airfields within the theater of operations. The AOB has organic ATS forces, airfield management personnel, and a headquarters element consisting of sustainment personnel.

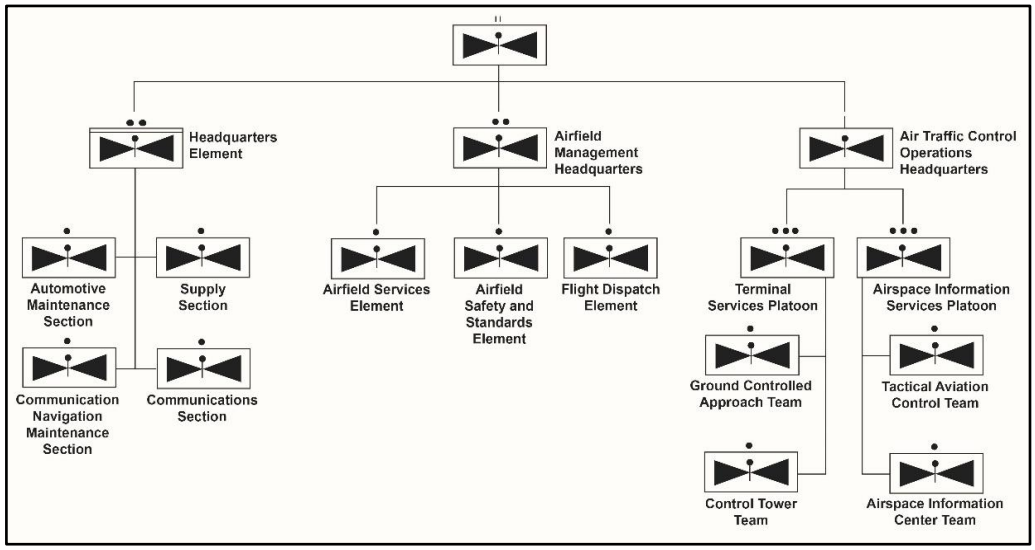

***Figure 1-3. AOB organization**

1-11. The AOB provides airfield management, base operations, and ATS services at designated airfields within the theater of operations. The battalion also provides C2 to other airfield service support assets. The AOB establishes an airspace information center for airspace management and interfaces with the theater airspace system.

1-12. The organizational design of the AOB does not include the associated equipment and personnel needed to provide a full range of airfield activities in support of aviation operations. An ATC operations HQ airfield services element, safety/standardization section, and communication/navigation (COMNAV) maintenance section are organic to the AOB. Aircraft crash rescue; hazardous material

handling; engineer support for runway surveys and runway battle damage assessment; up and down loading of cargo; weather services; petroleum, oil, and lubricants (POL) section; and the base defense operations center (BDOC) are external support elements.

1-13. An AOB—

- Conducts airfield safety inspections.
- Provides airfield management.
- Develops local flying area/rules and hazards map.
- Transmits flight movement messages.
- Develops and coordinates the airfield pre-accident plan.
- Coordinates local flying rules within theater airspace.
- Provide personnel for survey/reconnaissance party team, ensuring air traffic procedures, ATS equipment emplacement criteria, and TERPS are considered and addressed during site survey.
- Liaisons with the theater airspace authority.
- Establishes airfield crash alarm system and provides flight dispatch services.
- Disseminates air tasking order (ATO)/airspace control order (ACO) and special instructions (SPINS) information.
- Processes airspace coordinating measures (ACMs) requests for terminal areas.
- Relays airspace common operational picture.
- Establishes terminal ATS (tower and ground controlled approach [GCA]).
- Establishes Airspace Information Centers.
- Interfaces with theater or corps command, command and control system on airspace management, aviation procedures guide (APG), or heliport procedures guide.

*Air Traffic Services Company

1-14. The ATS company (figure 1-4) is organic to the GSAB for training, safety, standardization, leader development and sustainment. It is inherently dependent on the GSAB for ground maintenance, logistics, personnel actions, feeding, health care, and other sustainment support services.

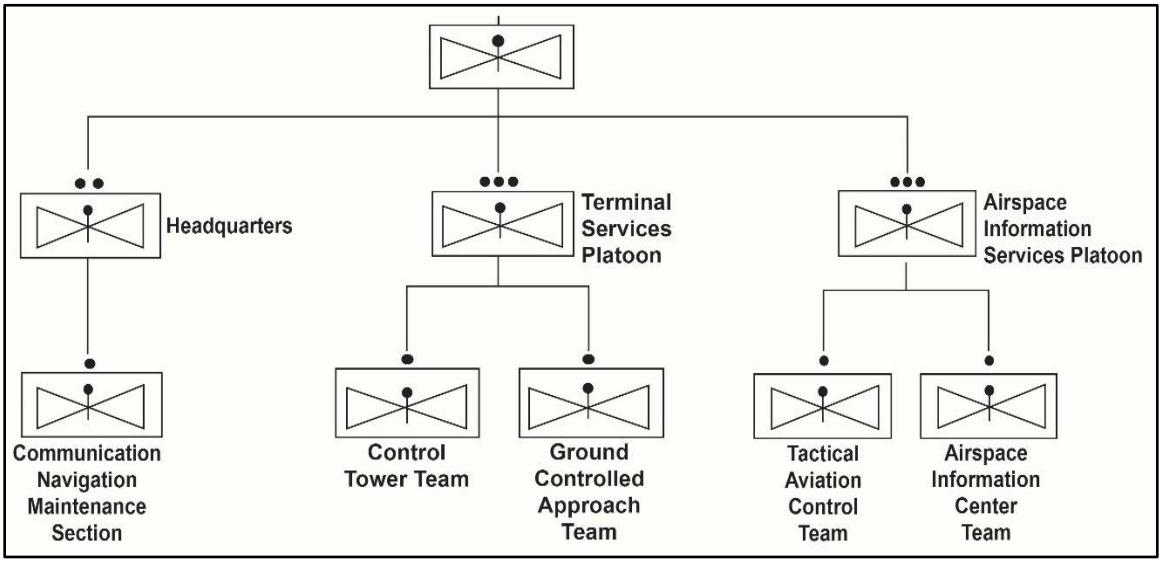

***Figure 1-4. ATS company organizational chart**

1-15. *An ATS company supports CABs, ECABs, or a TAB by providing terminal area and en route airspace information and control services. ATS companies are composed of a control tower team, GCA team, airspace information center (AIC) team, and two tactical aviation control teams (TACTs). They deploy as part of the CAB and are an integral part of the brigade's readiness.

1-16. ATS companies—

- Deploy upon notification.
- Provide self-sustaining operations for 72 hours upon arrival in an area of operations.
- Support aircraft recovery operations, personnel recovery, aeromedical evacuation, and assistance to aircraft in distress (battle damage, inclement weather, and disoriented aircraft).
- Provide airspace management operations in support of manned and unmanned air operations for its designated airspace sector by providing updates of airspace information.
- Provide navigational assistance to friendly aircraft.
- Coordinate ATC procedures with military command and control agencies and civilian agencies/organizations, including the Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO).
- Provide personnel for survey/reconnaissance party team; ensuring air traffic procedures, ATS equipment emplacement criteria, and TERPS are considered and addressed during site survey.
- Provide personnel as required for integrated aviation planning and management of air operations.
- Provide essential situational awareness (SA) information for use in activation and execution of the airfield base defense zone (BDZ).
- Provide ATS subject matter experts to assist with the CAB or TAB missions.
- Provide ATS support across all military operations to include civil support and homeland security operations facilitating restoration, revitalization, stability, and sustainment services.

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Chapter 2
Command and Control

The C2 warfighting function is the related tasks and systems that develop and integrate those activities enabling a commander to balance the art of command and the science of control in order to integrate the other warfighting functions. Commanders, assisted by their staffs, integrate numerous processes and activities within the headquarters and across the force as they exercise C2 (ADP 3-0). At every echelon of command, each commander establishes a C2 system—the arrangement of personnel, networks, information systems, processes and procedures, and facilities and equipment that enable commanders to conduct operations. Commanders organize their C2 system to support ethical and effective decision making and facilitate communication.

SECTION I – COMMAND AND STAFF RESPONSIBILITIES

2-1. Commanders influence their organizations by developing cohesive teams, mutual trust, and the shared understanding of the organization's capabilities. Commanders and their respective staffs have the responsibility of effectively using available resources to accomplish the mission.

THEATER AIRFIELD OPERATION GROUP

2-2. The TAOG staff is composed of a command section and a coordinating staff element that supports and advises the commander within their area of expertise.

COMMAND SECTION

2-3. The command section consists of the commander, executive officer, command sergeant major and the addition of a chaplain and medical treatment team/physician assistant.

Commander

2-4. The TAOG commander is responsible for the outcome of the unit's combat actions. The variety and impact of tasks confronting the TAOG commander are unique. Although the TAOG commander leads a brigade-level organization, their focus of employment is at theater level. These tasks require the cooperation of many people and integration of complex systems spanning the joint community. The TAOG commander command and controls organic, assigned, or attached forces. These forces must be task-organized to accomplish all specified and implied tasks. The TAOG commander is responsible for—

- Analyzing and defining the mission and directing its execution, as well as issuing mission-oriented orders detailing the priority of tasks.
- Advising senior commanders and providing necessary advice in developing the campaign plan by analyzing the long-term aspects of TAOG employment. The TAOG commander ensures plans and orders are in concert with senior commander intent.
- Controlling ongoing operations and providing guidance for planning future operations.
- Assessing staff capabilities and limitations, and training them to execute in their absence.
- Developing and directing a safety and standardization program for peacetime and combat.

Executive Officer

2-5. The executive officer (XO) is the principal assistant to the commander. The scope of the XO's duties is often tailored by the requirements of the commander. The XO directs, supervises, and ensures coordination of staff work and logistics, except in those specific areas reserved by the commander. The XO is responsible for—

- Disciplining the staff's work and providing quality control.
- Understanding commander's guidance and intent.
- Ensuring the staff has information, guidance from the commander, and the required facilities.
- Determining timelines for the staff, establishing back-brief times and locations, enforcing the information management plan, and providing instructions to guide the staff in the military decision making process.
- Issuing guidance and participating in formal and informal briefings.
- Supervising logistics operations and ensuring the sustainment effort.
- Staying current on the tactical situation in preparation to assume command.

2-6. As staff coordinator and supervisor, the XO—

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

Command Sergeant Major

2-7. The command sergeant major (CSM) acts in the name of the commander and is their primary advisor regarding enlisted Soldiers. The CSM focuses attention on functions critical to the success of the operation. The CSM assists the commander by—

- Monitoring noncommissioned officer (NCO) development, promotions, and assignments.
- Adhering to the Army Ethic. Enforcing the commander's efforts to uphold the Army Ethic to train, develop, and grow cohesive teams of trusted Army professionals.
- Identifying, planning, and assessing Soldier training tasks to support the performance of collective (unit) tasks on the mission essential task list (METL).
- Monitoring subordinate unit morale.
- Providing recommendations and expediting procurement and preparation of enlisted replacements for subordinate units.
- Monitoring food service and other logistics operations.
- Undertaking informal investigations.
- Assisting in controlling group movements.
- Leading the advance or quartering party during a major movement, coordinating closely with the HHC commander.
- Performing specific missions as directed by the commander.

Air Traffic and Airspace Management Technician

2-8. The Air Traffic and Airspace Management (ATASM) technician (150A W5) is the master-level technical and tactical expert on the employment of ATC systems and the airspace management process. The ATASM technician also serves as the ATC standardization officer of the TAOG and performs duties of technical leader, manager, integrator, and advisor. Responsibilities of the ATASM assigned to the TAOG command section include the following:

- Serves as the primary technical and tactical expert for the ATC standardization program for the TAOG and all subordinate organizations.
- Evaluates the efficacy of unit training and ATC qualification and rating programs.
- Maintains a high level of proficiency on the employment and operation of all deployable ATC systems and airspace operations.
- Provides expertise on unit individual, crew, and collective training to the commander
- Reviews applications for the cancellation, suspension, reissue, and withdrawal of ATC certificates and facility ratings.
- Coordinates airspace agreements for the integration of contingency ATS with host nation airspace authorities.
- Serves as the TAOG primary representative to Combatant Commands (COCOMs) for theater ATS operations and standardization programs.
- Assists the command during integration of TAOG airfield and ATS subject matter expert (SME) support to Army and joint exercises.
- Provides technical expertise and recommendations for airfield data collection packets and procedures for radar operations and navigational aids.

Aviation Safety Officer

2-9. The aviation safety officer assigned to the TAOG command section serves as the senior aviation safety expert within the organization and administers the command safety program. The TAOG aviation safety officer must obtain a high level of technical and tactical expertise not only in aviation and Army safety program aspects but must also become a senior advisor to the commander and subordinate organizations on airfield safety operations. Responsibilities of the TAOG aviation safety officer include the following:

- Administers and develops the commander's unit and airfield safety programs.
- Obtains a high level of airfield safety proficiency and technical mastery of aviation safety practices to mitigate and control aviation/airfield risk.
- Assists the command in supervising safety operations to ensure application and adherence to imposed controls and providing feedback on the effectiveness of the safety program.
- Integration and supervision of the air and ground RM process to ensure adherence to published policy.
- Assists commanders with development and implementation of ATS warfighter management programs.

Aviation Standardization Officer

2-10. The TAOG aviation standardization officer is responsible for developing a unit aviation standardization program which ensures a high degree of safety and aviation readiness to enable the employment of ATC contingency services. The aviation standardization activities of the TAOG aviation standardization officer are focused on the flight and evaluation of ATC services and ATC system performance parameters. The responsibilities of the aviation standardization officer of the TAOG include the following:

- Trains and evaluates flight crew members to conduct and evaluate ATC operations with "flyability checks" that validate the performance of ATC systems and services.

- Ensures that Army aircraft are operated according to standard procedures in the operator's manuals and are integrated into ATC collective exercises.
- Designates evaluators, instructors, examiners, and trainers in support of the ATP and flight evaluation of ATC systems and services.
- Ensures required training, tests, and flight evaluations are completed.
- Reviews, approves, and implements standardization policies and procedures of the standardization program.

CHAPLAIN

2-11. The TAOG chaplain is the personal staff officer responsible for implementing the commander's religious support program. The chaplain serves as a personal staff officer with direct access to the commander. The TAOG and AOB unit ministry team (UMT), consisting of a chaplain and a religious affairs specialist, provides religious support to all assigned or attached service members, family members, and authorized civilians. He or she provides religious, moral, and ethical advisement to the command as they impact both individuals and the organization's mission. They also coordinate with higher, subordinate, and adjacent UMTs and chaplain sections for area and denominational coverage requirements.

MEDICAL TREATMENT TEAM/PHYSICIAN ASSISTANT

2-12. The medical treatment team provides Army Health System (AHS) support for the TAOG HHC and medical oversight for subordinate units. The medical treatment team also provides emergency medical treatment, tactical combat medical care, and routine sick call services.

2-13. The TAOG physician assistant advises and assists commanders on matters concerning the medical condition of the command, including preventive, curative, and restorative care. The physician assistant conducts flight physicals for unit personnel. They determine requirements for requisition, procurement, storage, maintenance, distribution, management, and documentation of medical equipment and supplies for the HHC. The physician assistant also operates the TAOG aid station normally located in the assembly area (AA).

COORDINATING STAFF

2-14. The coordinating staff is composed of the commander's principal assistants responsible for one or a combination of broad fields of interest (personnel, intelligence, operations, logistics, planning, and communications). Coordinating staff members assist the commander in the supervision and execution of plans, operations, and activities. Collectively, through the XO, they are accountable for the commander's entire field of responsibility.

Personnel Section

2-15. The personnel staff officer (S-1) leads the personnel section by coordinating responsibility for financial management, religious activities, public affairs, and legal services support for the unit. The S-1 section is normally collocated with the logistics staff officer (S-4) in the main CP. The S-1 section is responsible for—

- Human resources matters, including personnel readiness and services.
- Personnel strength and replacement.
- Maintaining close coordination with the medical treatment team for personnel status or accountability.
- Morale support activities, financial services, and postal services.
- Managing the awards program.
- Providing casualty operations management.

Intelligence Section

2-16. The intelligence staff officer (S-2)/operations staff officer (S-3) leads the intelligence section, including the tactical CP team. The intelligence staff (in collaboration with the commander and staff) leads the staff in the IPB process, receives and validates requirements for collection, prepares the planning requirements tools, recommends information collection assets and capabilities to the operations staff, and maintains synchronization as operations progress.

2-17. The S-2 section provides intelligence to support commanders and staffs in gaining situational understanding. This section prepares information collection plans; receives and analyzes battlefield information; develops timely, accurate, relevant, and predictive intelligence products and assessments; disseminates intelligence products; and provides up-to-date intelligence information to assist in planning for and coordinating close and rear battle operations. The S-2 staff section also—

- Coordinates intelligence activities.
- Synchronizes the information collection plan to answer the commander's critical information requirements and other requirements.
- Assists development of the deployment support team.
- Frequently updates the commander and staff on the enemy situation.
- Maintains isolated personnel reports.

Operations Section

2-18. The S-2/S-3 is responsible for the organization, employment, training, and operations of the TAOG and its supporting elements. The S-3 plans, organizes, and supervises unit training and integrates supporting elements. The S-3 monitors the battle, ensures necessary maneuver support assets are provided, and anticipates developing situations.

2-19. The operations section provides planning and task organization of brigade elements for combat operations, including personnel recovery. The S-3 section maintains routine reporting, coordinates the activities of liaison personnel, and plans proactively. The S-3 section, through the signal staff officer (S-6), ensures procedures are in place to resolve complexities posed by different communications systems, Army Battle Command System, and connectivity. The S-3 section maintains close coordination with the S-4 and S-1 for TAOG logistics and personnel status.

Chemical, Biological, Radiological, and Nuclear Staff Officer and Noncommissioned Officer

2-20. The chemical, biological, radiological, and nuclear (CBRN) staff officer and NCO are the subject matter experts and advisors to the commander on all matters CBRN. The CBRN staff's primary duties include planning, training, coordinating, supervising, and conducting unit CBRN defense activities. For additional standards of proficiency and duties for CBRN staff officers and NCOs, refer to FM 3-11.

**Airspace Management Officer*

2-21. *The airspace management officer serves as air traffic and airspace (AT&A) officer of units whose mission impacts the national airspace or host nation airspace. The AT&A officer—

- Represents the airfield commander on all airspace-related matters. Examples include joint-use airspace, special-use airspace, altitude restrictions, restricted areas, range restrictions, training areas, areas of overlapping control for ATC purposes, and joint service agreements.
- Provides input to local flying rules on airspace-related matters.
- Maintains liaison with local FAA and/or host government agencies.

Air Traffic Control Officer

2-22. The ATC officer—

- Advises subordinate units on local flying rules and aircrew procedures (such as filing of flight plans, use of airfield services and facilities, joint use of airspace, night operations agreements, noise abatement, nap-of-the-earth [NOE] training area rules, and special interest areas). Input

provided by the operations officer is aligned with that provided by the AT&A officer, ATC chief, and safety officer (SO).

- Compiles airfield information from subordinate units for theater APG publication and dissemination.
- Ensures airfield facilities are adequate and kept in good repair.
- Assists subordinate units with development of unified action partners and host nation agreements.
- Ensures submission and dissemination of airfield notices to airmen (NOTAMs).
- Interfaces with division, corps, Army airspace elements and appropriate joint element when supporting another service.

Air Traffic Services Standardization Element

2-23. The air traffic services standardization element (ATSSE) is a unique organizational design of the TAOG. This element provides oversight, technical expertise and standardization for contingency airfield operations, and quality assurance for training and certification of air traffic controllers and ATS maintenance personnel. The ATSSE supports the development of special use airspace for restricted areas, transition areas, and control zones and serves as the primary staff coordinator for Army airfield operations and ATS matters within the theater. Responsibilities of the ATTSE in support of combat/contingency operations includes the following:

- Assists the COCOM during planning for contingency airfield operations.
- Provides the SAA with SME support for airfield and ATS operations.
- Coordinates, reviews, and conducts airfield assessments.
- Serves as LNO for Joint airfield and ATS operations
- Provides SME support to the COCOM during planning for integration of ATS into unified land operations.
- Assists in planning and coordination of flight inspections.
- Reviews and processes TERPS packets.
- Provides assistance and oversight during establishment of safety and separation procedures for air traffic at Army airfields and tactical LZs.
- Provides oversight of ATC training and certification programs.
- Provides control tower operator (CTO)/ATCS examiner support.
- Trains, evaluates, and certifies ATC maintenance technicians when task organized with an ATS maintenance examiner.
- Provides SME support for development of quality assurance surveillance plans (QASP) and performance work statements for airfield and ATS contracts.

Air Traffic and Airspace Management Technician

2-24. The ATASM technician (150A W3) is a military occupational specialty (MOS) warrant officer with a thorough knowledge of procedures and standards for the separation and control of aircraft, airports, and airspace. The ATASM—

- Reviews, revises, and processes TERPS packets; coordinates flight inspections; and assists in the certification process of associated navigational aids (NAVAIDs) and facilities.
- Assists in the development and revision of control zones, restricted areas, transition areas, and other special use airspace.
- Serves as the air traffic and airspace representative during the initial planning phases of missions and exercises.
- Serves as the standardization officer in the TAOG air traffic and airspace standardization office.
- Serves as the airspace subject matter expert for ATC operations/airspace during the establishment of corps, theater airfields.
- Provides guidance, advice, and counsel to commanders and staff members.

- Analyzes Army ATC/aviation accidents to assist determining causative factors.
- Performs the functions of the ATS standardization officer in the S-3 staff.
- Serves as assistant principal staff officer for all matters concerning training, operations and plans, and force development and modernization.
- Provides technical assistance on airfield and airspace matters, initiates recommendations for modifications and elaborations on policy and procedures, provides guidance, advice, and counsel to commanders and staff members.
- Provides guidance and technical input to subordinate ATC element and other staff elements and commanders at all levels.
- Provides operational guidance and technical input to joint interface control officers to ensure ATS requirements are coordinated for tactical data information links and the operational tasking data link.
- Provides technical subject matter expertise for networking and command, control, communications, computers, intelligence, surveillance, and reconnaissance connectivity, troubleshooting, and system administration in coordination with the TAOG signal support systems chief and supported unit S-6/general staff communications-electronics officer personnel.

Air Traffic Control Operations Chief

2-25. *The ATC operations chief—

- Provides oversight of all ATC activities on and around the airfield, including notifying the flight dispatch element of outages in navigational or communication systems so aircrews operating in the area can be informed.
- Provides input to local flying rules on ATC-related matters.
- Writes letters of agreement (LOAs) and letter of procedures between ATC, flight dispatch, and the Air Force weather section. These letters establish working agreements when clear delineation of authority and responsibility is required.

Logistics Section

2-26. The S-4 provides supervision and coordination of food service, supply, transportation, and maintenance support for the TAOG. S-4 section responsibilities include—

- Recommending basic loads and supply requirements.
- Recommending the ammunition required supply rate to the S-3.
- Coordinating all classes of supply (except Class VIII).
- Coordinating equipment recovery, evacuation, and repair.
- Conducting planning for operational movement control and mode and terminal operations.
- Coordinating for host nation support.
- Coordinating services including water purification, mortuary affairs, aerial resupply, laundry, and shower.
- Coordinating battlefield procurement and contracting.

Communications-Electronics Section

2-27. The S-6 OIC manages personnel and equipment assets associated with the operation and internetworking of signal communication systems, automated information systems battlefield automated systems (BASs), and integrated tactical network (ITN)/integrated enterprise network (IEN). Systems include combat net radio, tactical message service, tactical operations center local area networks, area command user system, mission command information system (MCIS), and Blue Force Tracker (BFT). The S-6—

- Integrates unit signal systems into the Department of Defense Information Network-Army.
- Develops and supervises the unit-level maintenance program for signal equipment and associated commercial off-the-shelf electronic devices.

- Manages installation and operation of radio retransmission and data distribution systems.
- Provides training and technical assistance to users of automation and communication equipment.
- Implements information systems security training plans (Levels 1 through 4).
- Conducts automated information systems security inspections.
- Prepares and evaluates the automated information systems accreditation plan and documentation.
- Supervises operation of communications security (COMSEC) inventory control facilities and manages COMSEC procurement actions.
- Supervises personnel operating COMSEC equipment.
- Implements procedures for detecting and reporting cyberspace security threats.
- Directs setup of a computer system for stand-alone operations.
- Diagnoses malfunctioning components of BAS/automated information systems and directs necessary corrective action.
- Provides oversight for a tactical intranet/web/video teleconferencing system at brigade and below.
- Performs systems administration of tactical BAS/automated information systems and network administration of tactical BAS/automated information systems at brigade and below.
- Provides technical assistance to subordinate elements.

*AIRFIELD OPERATIONS BATTALION

2-28. The AOB commander does not have an organic staff assigned to the AOB and relies on the TAOG for staff functions.

HEADQUARTERS ELEMENT

2-29. The AOB HQ element is comprised of the commander and an ATC operations NCO.

Commander

2-30. The AOB commander is a MOS 15B aviation officer responsible for the integration of airfield activities with Army Aviation or joint agencies. The AOB commander normally serves as the airfield commander with the following duties and responsibilities:

- Holds command authority of the airfield and associated personnel.
- Sets airfield policy and provides guidelines for the use of airfield property by tenant organizations (such as parking areas, hours of operation, airfield services, complaint procedures, and other operational agreements).
- Represents Army Aviation interests and coordinates Army Aviation requirements on joint-use airfields.

Air Traffic Control Operations Noncommissoned Officer

2-31. The ATC operations NCO maintains general situational understanding of airfield activities and is overall responsible for airfield operations personnel. The ATC operations NCO conducts the following activities:

- Monitors training and ensures personnel are trained on the collective tasks of the unit's METL.
- Synchronizes airfield support activities.
- Coordinates unit movement and airfield occupation/operational-use areas.
- Executes policies and standards concerning enlisted performance, training, appearance, and conduct.
- Provides counsel and guidance to NCOs and other enlisted Soldiers.

- Coordinates airfield security operations, to include individual defensive positions of the battalion.

AIRFIELD MANAGEMENT HEADQUARTERS

2-32. The airfield management section is designed for the establishment of expeditionary airfield support. The commander's operational elements will be supplemented for enduring missions.

Air Traffic Control Officer

2-33. The ATC officer is responsible for matters pertaining to operational employment, training, and mission execution of its headquarters and supporting elements. The ATC officer serves as the airfield manager and monitors daily airfield operations. Additionally, the ATC officer—

- Holds primary supervisory and management responsibility for the airfield.
- Publishes and synchronizes local flying rules with tenant aviation units.
- Attends planning meetings and provides input on issues affecting the airfield.
- Attends flight standardization committee meetings and provides input on issues affecting the airfield and local flying area.
- Establishes performance standards, procedures, and work priorities for airfield management and airfield operations personnel.
- Validates crash and rescue requirements in coordination with the aviation safety officer, medical personnel, firefighters, and other appropriate authorities.
- Maintains routine reporting and coordinates activities of liaison personnel.
- Ensures command and control, computer, and intelligence procedures are in place to resolve complexities posed by different communications systems.
- Maintains close coordination with the TAOG S-1 and S-4.
- Effects coordination with the air missile defense (AMD).
- Serves as the commander's representative on base defense operations cell counsel when required.

ATC Operations Chief

2-34. The ATC operations chief—

- Monitors training and ensures personnel are trained on the collective tasks of the unit's METL.
- Develops airfield operating standing operating procedures (SOPs) and LOAs.
- Conducts airfield inspections and checks.
- Monitors airfield emergencies and completes incident reports as required.
- Synchronizes airfield support activities.
- Coordinates airfield construction and improvement activities.
- Reviews airfield NOTAMs.
- Maintains accountability of airfield equipment.
- Performs airfield noncommissioned officer in charge duties.
- Supervises the flight dispatch section.

Airfield Safety and Standards Element

2-35. The airfield safety and standards element section develops and implements a comprehensive accident prevention program to minimize the risk of aviation operations. This element develops a pre-accident plan and works collaboratively with airfield services elements and the aviation community. Airfield safety and standardization personnel coordinate aircraft accident investigations, review operational hazard reports, and publish flight procedures in theater-specific APGs. Additional responsibilities include—

- Conducting initial and follow-up airfield safety inspections.
- Developing local airfield flight procedures and rules.
- Developing and ensuring currency of a local hazards map.
- Establishing the airfield crash alarm system.
- Coordinating and securing additional assets as needed.
- Reviewing and processing TERPS package for completeness and accuracy.
- Coordinating instrument procedure flight inspections.

2-36. The aviation SO is the commander's principal assistant during the risk management process and monitors all AOB missions to identify and address potential hazards. They recommend actions that permit mission accomplishment in the safest manner possible. The SO is responsible for the safety contents of the reading files. They are also a principal trainer and peer leader for company SOs. The airfield SO also—

- Represents the AOB commander on all safety-related matters.
- Performs duties outlined in AR 385-10, Department of the Army Pamphlet (DA PAM) 385-40, DA PAM 385-90, and TC 3-04.11.
- Investigates accidents or incidents involving aircraft or airfield personnel or equipment.
- Assists the ATC officer in writing the pre-accident plan. (Appendix C discusses emergency plans and procedures.)
- Conducts airfield and safety inspections and advises airfield personnel on safety-related matters.
- Schedules and conducts safety meetings and advises the airfield commander of potential problem areas.
- Provides input to the local flying rules on safety-related matters.

Airfield Services Element

2-37. The airfield services element is composed of the following personnel.

Aviation Operations Sergeant

2-38. The aviation operations sergeant—

- Coordinates section activities under supervision of the ATC operations sergeant/officer.
- Supervises and trains aviation operations specialists.
- Serves as assistant airfield operations sergeant.
- Provides flight-planning service to include current publications, maps and charts, NOTAM displays, and weight and balance forms on each assigned Class 2 aircraft.
- Prepares work schedules for aviation operations specialists and ensures adequate coverage during peak periods.
- Ensures section SOP provides for immediate notification of the operations officer if an impending/actual emergency or operations security (OPSEC) violation occurs.
- Processes reports of unidentified flying objects (such as kites, balloons, model airplanes, and drones).
- Develops a training program for newly assigned operations personnel.
- Ensures airfield advisory procedures are established according to Federal Aviation Administration Joint Order (FAAJO) 7110.10BB.
- Ensures ground personnel operating near or on taxiways or runways are thoroughly briefed on two-way radio communication procedures and are familiar with the ATC light signals in the Airman's Information Manual and FAAJO 7110.65Z.
- Establishes and maintains a flight information publication (FLIP) account for the airfield according to AR 95-2 (contains information on the establishment and maintenance of a Department of Defense [DOD] FLIP account.).

Aviation Operations Specialist

2-39. The aviation operations specialist—

- Posts and disseminates NOTAMs.
- Transmits and records flight data.
- Advises local control tower on proposed departures and arrivals.
- Notifies operations sergeant when an arriving flight is overdue, as required by the local SOP.
- Notifies airfield services of estimated times of arrival and departure, ensuring timely servicing of aircraft.
- Notifies operations sergeant of arriving and departing very important persons (VIPs) for proper protocol procedures.
- Disseminates all weather watches, warnings, and advisories to appropriate individuals or agencies according to the local SOP.
- Informs operations sergeant of any OPSEC violations.
- Inspects the airfield (including runways and taxiways) at least once during the shift for maintenance, police, OPSEC considerations and requirements, and foreign object damage (FOD).

Flight Dispatch Element

2-40. The flight dispatch element consists of two aviation operation sergeants. The flight dispatch element processes flight plans through the combat airspace system or host nation system. It develops and maintains local checklists, logs, and other required documentation to support functional area responsibilities. The element also provides flight planning services to include current publications, maps and charts, NOTAM displays, and weight and balance forms for Class 2 aircraft. Flight dispatch also develops local instructions for—

- Inbound and outbound aircraft.
- Distinguished visitors.
- Aircraft requiring special handling (such as air evacuation and hazardous cargo).
- Airfield restrictions (prior permission required).
- Crash alarm system.
- FLIP.
- In-flight advisories.
- FOD checks of the airfield at least once per shift.
- Providing advisory service in the event of ATC facility closure.
- A training program for newly assigned personnel.
- Ensuring airfield advisory procedures are established according to FAAJO 7110.10BB.
- Ensuring ground personnel operating near or on taxiways or runways are briefed thoroughly on two-way radio communication procedures and are familiar with the ATC light signals in the airman's information manual and FAAJO 7110.65Z.
- Establishing and maintaining a FLIP account for the airfield according to AR 95-2. (AR 95-2 contains information on the establishment and maintenance of a DOD FLIP account.)

AIR TRAFFIC CONTROL OPERATIONS HEADQUARTERS

2-41. The coordination of ATC procedures and establishment of ATS is the responsibility of the terminal and airspace information services platoons. These elements provide detailed planning for terminal and airspace information services in and out of the area of responsibility (AOR) by developing aviation flight procedures and incorporating them into the theater airspace plan. ATC elements coordinate directly with the airfield management command group, other airfield services organizations, and force protection elements. The ATC operations element—

- Assists in the development of local airfield procedures.
- Develops the air crash search and rescue map used by airfield responding agencies.

- Develops the airfield diagram, and identifies/annotates crash response points.
- Assists in development and publication of the APG.
- Develops aircraft emergency procedures for both on and off the airfield.
- Coordinates, assists, and directs emergency crash rescue services.
- Develops ATC facility training manuals and programs for the airfield assigned. This ensures a comprehensive program of instruction for assigned air traffic controllers, enabling them to become FAA certified as CTOs or ATC specialists.
- Provides the CTO and/or ATC specialist examiners for those ATC facilities.
- Initiates the TERPS process if necessary or completes any portion of it to include an emergency recovery procedure in conjunction with tenet aviation unit's standards officer.
- Secures and disseminates the ATO/ACO and associated SPINS.
- Interfaces and coordinates with local AMD.

*Air Traffic Control Operations Officer

2-42. *The ATC operations officer—

- Provides input to local flying rules on aircrew procedures (such as filing of flight plans; use of airfield services; joint use of airspace, airfield facility use, night operation agreements, noise abatement, NOE training area rules; and other special interest areas). The input provided by the operations officer is aligned with information from the AT&A officer, ATC chief, and SO.
- Ensures air traffic control facilities are adequate and are operating within established policies.
- Develops a pre-accident plan in cooperation with the ATC chief/senior sergeant, SO, airfield operations sergeant, flight dispatch sergeant, and personnel from responding agencies.
- Acts as AOB commander's representative to the BDOC.

Air Traffic Control Chief

2-43. The ATC chief—

- Supervises and manages all ATC facilities under their control at an airfield, heliport, or field site.
- Provides liaison on matters of ATC and airspace with the AT&A; DA representative; FAA; major Army commands; local post, camp, or station commander; and representatives of other units, agencies, or commands.
- Ensures ATC systems are operationally acceptable.
- Ensures facilities collect and safeguard data on aircraft mishaps, emergencies, or violations.
- Ensures assigned ATC personnel maintain currency.
- Ensures facilities conduct training and rating programs according to prescribed regulations.
- Ensures TERPS data collection and packets are complete and accurate according to Technical Manual (TM) 95-226/OPNAVINST 3722.16C/AFM 55-9/CG 318/FAA HDBK 8260.3B and FAA Order (FAAO) 8260.3E.

Note. Refer to ATS company section below for AOB communication/navigation maintenance section, and terminal and airspace information service (AIS) platoon duties and responsibilities. An AOB AIS platoon has only one TACT.

*AIR TRAFFIC SERVICES COMPANY

2-44. The ATS company staff is very limited as it relies on the battalion for most of its staff functions. The company commander has subject matter experts in ATS and ATS maintenance organically assigned to the organization.

COMPANY HEADQUARTERS

2-45. The ATS company staff is made up of the commander, first sergeant, platoon leader, platoon sergeant, and CBRN specialist.

Commander

2-46. The company commander is a MOS 15B aviation officer responsible for the command and integration of the unit with Army Aviation or joint agencies. The commander provides critical flying expertise to the ATS mission set that better enables planning and execution of ATS. Unique responsibilities of the ATS commander include—

- Providing operational understanding of aircraft performance characteristics in establishing airspace and air traffic procedures.
- Integrating aircrew and aircraft training progression into the ATS collective training scheme.
- Evaluating ATS procedures and controller proficiency through routine flight assessments.

First Sergeant

2-47. The first sergeant (1SG) is a MOS 15Z noncommissioned officer. The 1SG is the commander's primary advisor on enlisted Soldiers and individual Soldier or team training management. He or she also identifies, plans, and assesses Soldier training tasks to support the performance of collective (unit) tasks of the METL.

*Platoon Leader

2 48. *The platoon leader is an ATASM technician (150A W2). He or she supervises employment of platoon personnel and equipment. The platoon leader also—

- Manages and supervises enlisted ATC personnel.
- Is thoroughly knowledgeable of procedures and standards for separation and control of manned and unmanned systems, airports, and airspace.
- Provides standardized training and quality assurance of certification programs.
- Reviews and revises TERPS packets.
- Assists in development and revision of controlled and special use airspace.
- Provides technical expertise on installation and operation of ATC equipment.
- Applies procedures for cancellation, suspension or reissuance, and withdrawal of certificates and facility ratings.
- Provides ATS input for the development and revision of APGs.
- Monitors air traffic training development, proficiency, and facility assignments
- Provides recommendations on ATS reclassifications, medical suspensions, and flight fitness actions to the commander.
- Participates in airspace working groups to ensure integration and synchronization is accomplished.
- Ensures that the airspace control order and air tasking order is received, displayed, and understood.
- Provides recommendations in the development of the unit airspace plan (UAP) and ensures Annex C, Appendix 10 is received and included during the orders brief.
- Assists the commander with the development of DD Form 2977 (*Deliberate Risk Assessment Worksheet*).

Platoon Sergeant

2-49. The platoon sergeant is a MOS 15Q4O air traffic control operator. He or she is the primary assistant and advisor to the platoon leader concerning all aspects of operations, personnel, administration, ATS services, and equipment emplacement. The platoon sergeant also—

- May serve as an ATC specialist/CTO examiner in accordance with AR 95-2 and appropriate FAAOs.
- Assumes responsibilities of the platoon leader in their absence.
- Ensures cross-training strategy is developed and maintained.
- Provides recommendations during the development of the unit training strategy.
- Evaluates training and execution of collective and individual tasks in accordance with the combined arms training strategy.
- Reports readiness to the platoon leader and requests assistance when the training strategy cannot be met.
- Applies standards, time limitations, and policies for issuing controller qualification, certification, and facility ratings to ATC personnel.
- Participates in unit airspace working groups to ensure integration and synchronization is accomplished.
- Ensures that the airspace control order and air tasking order is received, displayed, and understood.
- Provides ATS input for the development and revision of APGs.

COMMUNICATION/NAVIGATION MAINTENANCE SECTION

2-50. The COMNAV maintenance section, organic to the ATS company, consists of an ATC systems maintenance supervisor and four equipment repairers. The ATC systems maintenance supervisor is a MOS 94D3O NCO. The maintenance chief is responsible for coordinating field maintenance of ATS equipment assigned to the company.

TERMINAL SERVICES PLATOON

2-51. The terminal services platoon consists of a control tower team and a GCA team, which is led by a platoon leader and platoon sergeant. This platoon is responsible for providing terminal control services to establish an airfield with associated precision and non-precision approaches.

Control Tower Team

2-52. The control tower team is responsible for control of participating aircraft operating within terminal airspace. This airspace is typically limited to an area visually observed and surveyed from the tower (approximately a 5-nautical mile radius from the center of the airfield with an altitude based on operational need as determined by the airspace control authority). The control tower team is also responsible for air and vehicular traffic operating on runways, taxiways, and other designated areas of the airfield.

2-53. Control tower facility chief responsibilities include—

- Coordinating the development of specific terminal airspace procedures unique to the airfield.
- Coordinating with military/civilian agencies to ensure tower ATC services are synchronized within the airspace control plan.
- Managing training of all controllers assigned to the tower.
- Understanding and implementing the aeronautical information publication and the APG.
- Resolving airspace conflicts within the terminal control area.
- Developing courses of action for the primary and alternate emplacement site for team equipment.
- Providing recommendations during the development of standard ingress/egress procedures for unmanned aircraft systems (UAS) operations.
- Ensuring appropriate air traffic measures are established in the airspace control order for tower operations.
- Ensuring the airspace control order and air tasking order is received, displayed, and understood.

- Preparing a deliberate risk assessment worksheet and providing it to the platoon sergeant.

Ground Controlled Approach Team

2-54. The GCA team provides an aircraft inadvertent instrument meteorological condition (IIMC) recovery capability to a single airfield within designated airspace using airport surveillance radar (ASR), secondary surveillance radar (SSR)/identification friend or foe (IFF), and precision approach radar (PAR). The GCA team operates in conjunction with a control tower team to form a fully instrumented Army airfield.

2-55. The GCA facility chief is responsible for—

- Conducting site surveys and collecting data used to initiate TERPS.
- Coordinating and assisting with flight inspection procedures/flyability checks.
- Coordinating development of specific GCA procedures particular to the airfield.
- Coordinating with other military/civilian agencies to ensure radar ATC services are synchronized within the airspace control plan.
- Managing training of all controllers assigned to the GCA.
- Selecting emplacement site for team equipment.
- Developing courses of action for the primary and alternate emplacement site for team equipment.
- Ensuring appropriate air traffic measures are established in the airspace control order for GCA operations.
- Ensuring the airspace control order and air tasking order is received, displayed, and understood.
- Preparing a deliberate risk assessment worksheet and provides it to the platoon sergeant.

AIRSPACE INFORMATION SERVICES PLATOON

2-56. The AIS platoon consists of a platoon leader, platoon sergeant, AIC team, and two TACTs. This platoon is responsible for providing en route flight management services to aircraft operating within assigned airspace and visual flight rule (VFR) ATC services to remote sites, landing zones (LZs), pickup zones (PZs), AAs, and forward arming and refueling points (FARPs).

Airspace Information Center

2-57. The AIC team provides en route flight management services and airspace updates to friendly aircraft operating within assigned airspace. The actual airspace assigned is dictated by the assigned mission and communications capabilities. Additionally, the AIC team displays the common tactical picture on the tactical airspace integration system (TAIS) as it is received from other BAS feeds within the Army MCIS. The AIC team monitors airspace users and ensures aircraft operate within the parameters of the ACO. The team coordinates emerging airspace requirements for current operations, broadcasts air and ground threats to participating aircraft, and maintains situational awareness of unmanned aerial systems within their area of responsibility.

2-58. The AIC facility chief is responsible for—

- Coordinating with other military/civilian agencies to ensure ATC services are synchronized within the airspace control plan.
- Managing training of all controllers assigned to the AIC.
- Coordinating requirements to ensure data and communication links are established for connectivity to other MCIS and ATC facilities.
- Ensuring appropriate air traffic measures are established in the airspace control order for AIC operations.
- Ensuring airspace coordinating measure requests are processed as required.
- Assisting the ATS company with creating and/or modifying ATC measures within the airspace control order.

- Participating in unit airspace control working groups to ensure ATC measures are understood.
- Ensuring the airspace control orders and air tasking orders are received, displayed, and understood.
- Preparing a deliberate risk assessment worksheet and providing it to the platoon sergeant.

Tactical Aviation Control Team

2-59. The TACT is trained and equipped to provide initial rapid response ATC to support Army Aviation and joint missions. TACTs support operations at LZs, PZs, AAs, and FARPs and must be Pathfinder qualified.

2-60. As a standalone ATC capability, the TACT provides ATC services for airfield seizures, noncombatant evacuation operations, domestic or foreign humanitarian assistance operations, civil disturbance operations, and short duration Army Aviation/joint operations.

2-61. The TACT rapidly establishes and controls LZs, which are temporary austere landing areas for rotary wing aircraft in remote locations. The TACT is trained and task organized to—

- Provide ATC services at designated LZs, including formulating ATC procedures, and issuing ATC clearances, instructions and advisories to effect safe, orderly, and expeditious movement of air traffic in their assigned airspace.
- Conduct air assault LZ and PZ missions.
- Provide limited weather observations and information.

2-62. Responsibilities of the tactical team leader include—

- Supervising LZ/PZ marking according to FM 3-21.38.
- Assisting in LZ/PZ/drop zone certification process.
- Participating in mission planning process with supported aviation unit.
- Coordinating with other military/civilian agencies to ensure tower ATC services are synchronized with the airspace control plan.
- Participating in unit airspace control working groups to ensure air traffic control measures are understood.
- Providing recommendations during the development of standard ingress/egress procedures for UAS operations.
- Developing courses of action for the primary and alternate emplacement site for team equipment.
- Ensuring appropriate air traffic measures are established in the airspace control order for LZ, PZ, FARP, and tactical assembly area operations.
- Ensuring the airspace control order and air tasking order is received, displayed, and understood.
- Ensuring appropriate airspace coordinating measures are established in the airspace control order for TACT operations
- Preparing deliberate risk assessment worksheet and providing it to the platoon sergeant

SECTION II – COMMUNICATIONS

2-63. To function effectively, ATS units depend on a complex communications network of equipment, personnel, and communication protocols to relay information to a wide variety of airspace users.

COMMUNICATION SYSTEMS

2-64. The primary means of communications within the ATS companies/AOBs are very high frequency (VHF)-frequency modulation (FM) and a wired connection to the command post. The companies also require high frequency (HF), satellite communication (SATCOM), integrated tactical network, and integrated enterprise network to connect with line of sight (LOS) and beyond line of sight (BLOS) for situational awareness (SA) to exchange information and to execute ATC/airspace coordination tasks.

Table 2-1 lists current ATS unit radio communication systems. See appendix B and individual TMs for tactical ATS system communication capabilities.

Table 2-1. Current radio communication systems

VHF-FM (LOS)	
SINCGARS	Used to communicate in the VHF-FM band. Can be man packed or vehicle mounted. Allows for tactical LOS communications. Capable of plain text, cipher, and frequency hopping. Includes the AN/VRC-89F(C), AN/VRC-90F(C), and the AN/VRC-92F(C). Characteristics are— - VHF-FM frequency range of 30.000 to 87.975 MHz at 25-KHz intervals. - Secure electromagnetic warfare resistant voice and data communications. - LOS communications; limited range on ground or at terrain flight altitudes. - Internal and/or external crypto for cipher text communications. - Operates in single channel mode for interoperability with older radios.
HF (NLOS)	
AN/VRC-100(V)1	Used to communicate voice and data beyond LOS. Operates in 2 to 29.9999-MHz frequency range in 100-Hz steps with embedded ALE and securable automatic position reporting. NLOS range is at least 300 km. The 30 to 100 km range is often the most challenging distance to maintain effective communications.

Legend:	LOS-line of sight
ALE-automatic link establishment	MHZ-megahertz
AM-amplitude modulation	NLOS-non line of sight
AN-Army/Navy	SINCGARS-single channel ground and airborne radio system
FM-frequency modulation	VHF-very high frequency
HF-high frequency	VRC-vehicular/radio/communications

COMMAND AND CONTROL NETS

2-65. Commanders must understand the capabilities, limitations, and vulnerabilities of their communications systems. C2 nets require uninterrupted connectivity to effectively communicate with higher and subordinate headquarters. An effective primary, alternate, contingency, emergency (PACE) is essential to uninterrupted C2.

AIR TRAFFIC SERVICES COMMAND NET ARCHITECTURE

2-66. The means to communicate is paramount to success in the operational environment. Members of the company must understand to whom they communicate, by what means, and why. Commanders must be aware of what information should be sent to and received from those individuals outside the company, allowing the company to operate and conduct the required mission load. Communication is vital to aviation planning and execution phases. Internal and external communications are reviewed after every mission to ensure proper procedures were followed and modifications emplaced as necessary. Several means of communications are standard to the company, including digital, analog, messenger, hand and arm signals, and symbols.

2-67. All levels of command establish and maintain communications with necessary headquarters and personnel. Communication methods and procedures must be established in unit SOPs and practiced during battle drills and flight operations. Regardless of cause, all units take prompt action to restore lost communications. Methods of restoring communications must be established in the unit SOP and practiced during battle drills and daily flight operations.

2-68. The company commander ensures all unit personnel are properly trained and equipment is operational before deployment. Additionally, standard set-up and proficiency in procedures must be in place rehearsed and reinforced before deployment. This ensures maximum effectiveness and efficiency of the company's communications system.

THEATER AIRFIELD OPERATIONS GROUP ARCHITECTURE

2-69. Table 2-2 depicts TAOG communications architecture and the systems it utilizes.

Table 2-2. TAOG communication architecture systems

TAOG to:	
ASCC	***TSC***
WIN-T, LOS, NLOS, ITN/IEN, COM/WIRE	WIN-T, LOS, ITN/IEN, COM/WIRE
AOB	***ADJACENT UNITS***
ITN, LOS, NLOS, COM/WIRE,	WIN-T, LOS, NLOS, COM/WIRE
ATS UNITS	***C3 AIR***
WIN-T, ITN, COM/WIRE, LOS, NLOS	WIN-T, ITN/IEN, COM/WIRE
TAC	***DIV/CORPS/ARMY***
WIN-T, LOS, NLOS, ITN/IEN, COM/WIRE	WIN-T, LOS, NLOS, ITN/IEN, COM/WIRE
Legend: AOB-airfield operations battalion ASCC-Army Service Component Command ATS-air traffic services C3-command, control, and communications COM-communication DIV-division IEN-integrated enterprise network	ITN-integrated tactical network LOS-line of sight NLOS-non line of sight TAC-Theater Aviation Command TAOG-theater airfield operation group TSC-Theater Support Command WIN-T-warfighter information network tactical

Traditional Radio Nets

2-70. The TAOG normally operates on its own and its higher headquarters command, operations and intelligence (O&I), and administrative and logistics (A&L) nets. The TAOG must often monitor lower, adjacent, and supported unit radio nets normally adhering to the communications hierarchy and restoration priorities:

- Higher to lower.
- Left to right.
- Supporting to supported.

2-71. Critical higher headquarters radio nets must be monitored at all times to include—

- Higher command net. The TAC commander, all brigade CPs, and the S-3 enter and operate.
- Higher O&I net. The S-2 and all brigade CPs enter and operate.

2-72. Other staff sections and staff officers enter other higher nets as appropriate.

Command Net

2-73. A secure command net is controlled by the S-3 and used for C2. All subordinate maneuver support and sustainment units operate in this net. As a rule, only commanders, XOs, or S-3s communicate on this net.

Operations and Intelligence Net

2-74. The O&I net is monitored and controlled by the S-2/S-3. This net is used for details and discussion leading to analysis. When completed, analysis is relayed to the appropriate commander. Monitoring O&I net allows for the anticipation of critical support requirements and problems. Routine operations and intelligence reports are sent via the O&I net. It also functions as the surveillance net when required.

Administration and Logistics Net

2-75. The A&L net is controlled by the S-1 and S-4. This net is used for details and discussion leading to the resolution of administration and logistics matters. Administrative and logistics information is relayed to the appropriate commander or discussed via the A&L net. The unit XO, operating in the tactical operations center (TOC), ensures analysis is completed and relayed in a timely manner and by the appropriate means.

AOB/Company Communications

2-76. The primary means of communication within the AOB/ATS company are radios and wire (table 2-3). The AOB and company also require SATCOM, ITN, and IEN capabilities. AOBs/companies may use these capabilities for SA and to communicate with higher and lower echelons and ATS systems.

Table 2-3. AOB/Company communications connectivity

AOB/Company to:	*TACT to:*
Company/AOB/battalion/brigade/unified action partners/TAOG: Wire, ITN/IEN, VHF-FM, HF-SSB ALE. TACT: VHF-FM, ITN/IEN, HF-SSB ALE, SATCOM, wire. GCA team: VHF-FM, ITN/IEN, wire. Outposts/company area: Wire. Terminal/AIS platoon: VHF-FM, ITN/IEN, wire. AIC/Control tower team: VHF-FM, ITN/IEN, HF-SSB ALE, wire, SATCOM. BDOC: VHF-FM, ITN, wire. Airfield operations: VHF-FM, ITN/IEN, wire.	Company/battalion/brigade/unified action partners: VHF-FM, wire, ITN/IEN, SATCOM, HF-SSB ALE. Aircraft: UHF-AM, VHF-AM, VHF-FM, HF-SSB ALE, SATCOM, RF-ITN. Weather: VHF-FM, ITN/IEN, HF-SSB ALE, SATCOM. Control tower team: VHF-FM, ITN/IEN, HF-SSB ALE, SATCOM. GCA team: VHF-FM, ITN/IEN, Wire. AIC team: VHF-FM, ITN/IEN, HF-SSB ALE, SATCOM, Wire.
Control Tower to:	***GCA to:***
Company/battalion/brigade/unified action partners: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN, wire. GCA team: VHF-FM, ITN/IEN, wire. TACT: VHF-FM, HF-SSB ALE, ITN/IEN, SATCOM. Airfield operations: VHF-AM, VHF-FM, ITN/IEN, wire. BDOC: VHF-FM, ITN/IEN, wire. AIC team: VHF-FM, HF-SSB ALE SATCOM, ITN/IEN, wire. Mission Command Information Systems server: ITN. Weather: VHF-FM, ITN/IEN, HF-SSB ALE, wire. Civil ATC: IEN, wire, commercial lines. Aircraft: UHF-AM, VHF-AM, VHF-FM, HF-SSB ALE, SATCOM, RF-ITN.	Company/battalion/brigade/unified action partners: VHF-FM, ITN/IEN, SATCOM, wire. Control tower team: VHF-FM, ITN/IEN, SATCOM, wire. TACT: VHF-FM, ITN/IEN, SATCOM, Wire. Weather: VHF-FM, ITN/IEN, SATCOM, Wire. Aircraft : UHF-AM,VHF-AM,VHF-FM, SATCOM, RF-ITN. Civil ATC: IEN, wire, commercial lines. AIC team: VHF-FM, ITN/IEN, SATCOM, wire. BDOC: VHF-FM, ITN/IEN, wire.
AIC to:	***Airfield Management to:***
Company, battalion/brigade, unified action partners: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN, wire. Aircraft: VHF-FM, UHF-AM, VHF-AM, HF-SSB ALE, SATCOM, RF-ITN. AWACS: TADIL A/J, (HF, UHF, SATCOM). Air defense system integrator: TADIL A (HF, UHF), TADIL B, (ITN, wire), TADIL J (SATCOM, ITN, UHF, wire). Civil ATC: IEN, wire, commercial lines. High to medium air defense: TADIL B (ITN, wire). Mission command information systems server: ITN.	AOB headquarters, battalion/brigade, unified action partners: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN, wire. Airfield operations/services: VHF- FM, VHF-AM, ITN/IEN, wire. Control tower team: VHF- FM, VHF-AM, ITN/IEN, wire. Mission Command Information Systems server: ITN. Weather: VHF-FM, ITN/IEN, HF-SSB ALE, SATCOM, wire. Aircraft : VHF-FM,VHF-AM, UHF-AM, HF-SSB ALE, SATCOM, RF-ITN.

Table 2-3. AOB/Company communications connectivity, cont'd

AIC to:	*Airfield Management to:*
BDOC: VHF-FM, ITN/IEN, wire. Weather: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN, wire.	Civil ATC: IEN, wire, commercial lines. BDOC: VHF-FM, ITN/IEN, wire.

GCA team: VHF-FM, ITN/IEN, SATCOM, wire. Control tower: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN, wire. TACT: VHF-FM, HF-SSB ALE, SATCOM, ITN/IEN.	
Legend: AIC-airspace information center AIS-airspace information service ALE-automatic link establishment AOB-airfield operations battalion AM- amplitude modulation ATC-air traffic control AWACS-Airborne Warning and Control System BDOC-base defense operations center FM-frequency modulation GCA-ground controlled approach	HF-high frequency IEN-integrated enterprise network ITN-integrated tactical network JNN-joint network node RF-radio frequency SATCOM-satellite communication SSB- signal side band TACT-tactical aviation control team TADIL- tactical digital information link UHF-ultra high frequency VHF-very high frequency

Digital

2-77. ATS uses modern communication capabilities and computers to enable commanders, planners, and airspace users to acquire and share information rapidly. The following is a descriptive list of some of the digital capabilities present in the TAOG, AOB, and ATS companies. The table of organization and equipment (TOE) and modified table of organization (MTOE) for ATS units are the best listing of all required and authorized digital capabilities.

Tactical Airspace Integration System Airspace Workstation

2-78. Workstation: Airspace operation, AN/FSQ-211, or the TAIS airspace workstation (AWS) is a portable computer system that hosts the TAIS mission software enabling situational awareness/situation understanding, visualization, and deconfliction of airspace and airspace users.

Joint Battle Command–Platform

2-79. Computer Sets: Digital Joint Battle Command–Platform (JBC-P), AN/UYK-128B(V)3 and AN/GYK-62G, are joint battle command information family systems that provide integrated, secure, timely, and relevant C2/SA information to tactical maneuver, maneuver support, and sustainment commanders, leaders, Soldiers, and key C2 nodes. The JBC-P is a tactical-level system that provides enhanced SA information about the joint operational environment (friendly and reported enemy, neutral, and civilian entities including reported international agencies and non-governmental organizations) to platform-level throughout the joint operations area (JOA) environment. The JBC-P contributes to the SA component of combat identification resulting in greater combat effectiveness and reduced fratricide. The JBC-P consists of computing hardware, firmware, and software. The AN/GYK-62G is employed in TOCs; it is different from the vehicle-mounted AN/UYK-128B(V)3 in that it uses a commercial off-the-shelf laptop. The JBC-P is interoperable with joint C2 systems.

Warfighter Information Network–Tactical

2-80. Warfighter Information Network-Tactical (WIN-T) is the cornerstone tactical communications and network program. The WIN-T program establishes a single integrating framework creating a network of networks for the Army, subject to commander's intent and security policy. The Army's WIN-T system is made up of two increments: Increment 1b and 2. WIN-T Increment 2 is focused on enhancing the division and brigade combat teams while WIN-T Increment 1b is focused on insuring interoperability of Increment 1b divisional support units, such as Aviation, Fires, and support brigades/battalions with Increment 2 units. Within aviation formations, the WIN-T Increment 1b architecture consist of two main components: the joint network node (JNN) at the brigade and command post node (CPN) at the battalion level. Each component (JNN and CPN) has an associated trailer-mounted satellite transportable terminal (STT) for network connectivity.

2-81. The JNN provides a high-speed and high-capacity backbone communications network focused on rapidly moving information in a manner that supports commanders, staff, functional units, and capabilities-based formations. The joint network node-network (JNN-N) enables commanders to plan,

prepare, and execute multiple missions and tasks simultaneously. The JNN-N connects to the global information grid, through the unit hub node and provides autonomous brigade networking operations by allowing brigade network access and services without requiring traditional division or higher echelon communication support. The JNN-N also provides non-classified internet protocol router network (NIPRNET) connectivity down to the battalion-level operations. JNN-N capabilities provide joint and coalition connectivity and interfaces with network communications systems through—

- Standard tactical entry point.
- BLOS.
- LOS.

2-82. The following are the major networking capabilities provided by JNN to support network enabled voice, data, and video services:

- Supports 32 secure telephone equipment subscribers (also supports two dial central office connections).
- Supports 48 two-wire phone subscribers (secure internet protocol router network [SIPRNET] and NIPRNET).
- Supports 24 internet protocol (IP) voice subscribers (SIPRNET and NIPRNET).
- Supports 46 IP data subscribers (SIPRNET and NIPRNET) (includes 24 data subscribers connected to IP phones).
- Supports one local black private branch exchange transmission Level 1 signal (1.544 Mbps or Tier 1) T1 trunk.
- Supports eight mobile subscriber equipment (MSE) black long local voice subscribers.
- Supports defense red switch network long local access to the tactical radio communication (TRC) via a Pairgain modem.
- Supports remote Battlefield Video-Teleconferencing access to the TRC via a Pairgain modem.
- Supports two MSE digital transmission group supporting voice and data.

2-83. The battalion command post node is a highly mobile transportable system with a STT. The module contains a transit cased virtual private network router and tactical encryptor security device and provides hub routers for CP and voice over internet protocol (VoIP) phones along with a file server. The battalion level CP module provides 4-Mbps wideband SIPRNET data along with VoIP phones to the aviation battalions and links to the JNN through time division multiple access satellite architecture.

2-84. For unclassified data traffic and interfaces to commercial internet, WIN-T utilizes links to the DOD's NIPRNET. NIPRNET provides for a trusted interface between the DOD intra-net to commercial internet systems and the World Wide Web through the Defense Information Systems Agency designed and maintained demilitarized zone.

2-85. WIN-T can provide a link to the DOD's SIPRNET. SIPRNET is a worldwide network which allows a secure means to transmit classified data, imagery, and video teleconferencing. SIPRNET can only be accessed by designated secure terminals.

Tactical Battle Command Client

2-86. The Tactical Battle Command (TBC) client workstation (formerly known as the command post of the future workstation) provides a flexible workspace that establishes a communication tool for users to collaborate in real time. Through a shared visual workspace, commanders and staff can analyze data, share thoughts, and plan courses of action. The workstation receives, processes, displays, produces, and transmits military command, control, communications, computers, intelligence, surveillance, and reconnaissance information for TBC. This system enables commanders to share information and data, as well as attend virtual meetings through the use of visualization tools such as multiscreen video wall, video/audio conferencing, and online collaboration tools. The TBC client workstation communicates with the TBC server suite. The client workstation uses three monitors, one 3-dimensional (3-D) and two 2-dimensional (2-D). One of the 2-D monitors may be configured as a mirror image to be projected into a large screen display for a fourth visual presentation.

Command Post Computing Environment

2-87. *The command system: Tactical, AN/TYK-26 Tactical Server Infrastructure (TSI)(V)2 Large provides virtualization and hosting of common operating picture (COP), cross cutting capabilities (CCC), C2 enterprise, collaboration, network operations (NETOPS), defensive cyberspace operations (DCOs) and other warfighting function services. A version of the command post computing environment (CPCE) software is hosted on the servers provided by the AN/TYK-26 infrastructure to reduce the physical footprint and support requirements for ASCCs, corps, division, and brigade-level command posts. It supports improvement of command post effectiveness, reduces complexity, integrates unified action partners (UAPs), converges multiple geospatial capabilities and aligns existing and emerging collaboration capabilities. In addition, the server supports an available, reliable, and resilient infrastructure which unifies data and services within the command post. The AN/TYK-26 is deployed at brigade/group size units (TAOG) and above. It is assigned to the S-6 section as the primary security enclave server.

2-88. The command system: Tactical, AN/PYC-8 TSI(V)2 Small provides virtualization and hosting of COE, CCC, C2 enterprise, collaboration, and other warfighting function services. A TSI(V)2 Small version of CPCE software is hosted on small servers provided by the TSI in order to reduce the physical footprint and support requirements for corps, division, brigade early entry and continuity during battalion CP operations. TSI(V)2 Small supports services to enable UAP interoperability and enterprise services that consist of exchange (email) services, active directory, domain name services, and web portal services, at a minimum. The TSI(V)2 Small servers are employed—

- At battalion and above CPs located in S-6 sections, to provide the converged computing and data storage hardware/software required to host the tactical computing environments (CE), their supported warfighter functional area applications, and the COE CCC.
- At corps and division brigade/group-sized units (TAOG) to support early entry operations, continuity of operations and a second smaller enclave/network.
- At battalion (AOB) to replace the current tactical command and control gateway and provide a CPCE capability.

Analog

2-89. Wire is used for communications within the CP, AA, and support area. It is the primary and most secure means of communication whenever situations permit. Initially, wire is laid on the ground; when time permits, it is buried or installed overhead. Buried wire is the preferred method to counter enemy intrusion and electromagnetic pulse. However, wire should be overhead when crossing roads (except where culverts and bridges are available). Overhead wire should be a minimum of 18 feet or 5.5 meters above ground. Wire should be tagged according to a system in the SOP, with tags at the end of each line; this facilitates reattaching wires when pulled out or cut. Overhead wire in the vicinity of helipads and airfields should be avoided; however, if used, they must be clearly marked.

2-90. Commercial lines are used when approved by higher headquarters. To deny enemy collection efforts, secure devices should be used with commercial lines. If a unit is forced to withdraw, and with the approval of higher headquarters, existing wire lines (including commercial lines) are cut and sections removed to prevent an enemy's use.

Radio

2-91. Operations often depend on radio as the primary means of communication. This is especially true during mobile combat operations. Radio communications should be kept to an absolute minimum until enemy contact is made.

2-92. VHF-FM and advanced networking waveform voice communications are the primary O&I and A&L nets and the means of communicating with ground forces. However, ATS has a broad range of other radios that facilitate joint, internal, long-range, and NOE communications. FM 3-04 discusses the following systems:

- Ultra high frequency (UHF)-amplitude modulation (AM) for internal communications and communication with military aircraft.

- VHF for tactical communications and communications with civil and military aircraft.
- HF and SATCOM for long distance and BLOS communications.

2-93. AICs, control towers, and TACTs use HF and SATCOM capabilities to provide and receive—

- Airspace SA.
- Changes to airspace requirements.
- Orders from higher headquarters to support operations in near-real time.

2-94. AICs monitor preplanned SATCOM channels so equipped aircraft can communicate position and status reporting required for en route flight management purposes. Additionally, the AIC, control tower, and TACT may use SATCOM to provide preplanned airspace information services for special operations aircraft.

2-95. Each AIC operating at theater level uses SATCOM for inter-communications of commander's critical information requirements between ATS assets.

Visual and Audio

2-96. Visual and audio signals are in the signal operator instructions (SOIs) or SOP. The SOP may establish signals not included in the SOIs. Sound and visual signals include pyrotechnics, hand-and-arm, flag, metal-on-metal, rifle shot, whistles, horns, bells, and light guns. Visual cues are especially valuable in the FARP. Control tower teams and TACTs may use FAA light gun signals for ATC in the event of radio failures or when practicing radio silence.

COMMUNICATIONS SECURITY EQUIPMENT

2-97. Air traffic services organizations must understand the functionality and operability of COMSEC equipment in order to provide a secure communications environment. Most modern and software-defined radios have embedded COMSEC. VINSON/advanced narrowband digital voice terminal crypto modernization (VACM) is an Air Force cryptographic systems program that modernizes the security devices to be compatible with modernized algorithms and required processing speeds associated with modern waveforms. These devices are identified with the letter 'M' at the end of their designation.

AN/PYQ-10

2-98. The AN/PYQ-10 Simple Key Loader (SKL) is a portable, hand-held fill device, for securely receiving, storing, and transferring data between compatible cryptographic and communications equipment. The AN/PYQ-10 provides all the functions currently resident in the CYZ-10 and incorporates Windows CE that provide streamlined management of COMSEC key, electronic protection data, and SOI. The SKL is backward-compatible with existing end cryptographic units and forward-compatible with future security equipment and systems.

ANDVT AIRTERM (KY-100M)

2-99. The KY-100M is a narrowband/wideband terminal that interoperates with KYV-5M, KY-99M and KY57/58M and the crypto-modernized waveforms of single-channel ground and airborne radio system. A self-contained terminal including COMSEC, KY-100M provides for crypto-modernized secure voice and data communications in tactical airborne/ground environments.

TYPE-1 PROGRAMMABLE ENCRYPTION DEVICE (KGV-72)

2-100. The KGV-72 features a modular architecture with the programmability and scalability to accommodate a wide range of link and internet protocol in-line network encryption applications.

TACTICAL LOCAL AREA NETWORK ENCRYPTOR-MICRO ENCRYPTOR (KG-175)

2-101. The Tactical Local Area Network Encryptor (TACLANE) devices are Type 1, key-agile, in-line network encryptors that provide network communications security on IP and asynchronous transfer mode networks for the individual user or for enclaves of users at the same security level.

Chapter 3
Employment

ATS assets promote safe, flexible, and efficient use of airspace shared with a multitude of weapon systems. ATS organizations enable Army Aviation to maximize technology by coordinating airspace and providing recovery capabilities. ATS units enhance air operations for ground force initiatives by providing airspace information, terminal, navigational, and forward-area support services. Interface occurs with theater, joint and combined, or host-nation ATS assets during all phases of operations.

SECTION I – AIR TRAFFIC SERVICES

3-1. ATS organizations enable air operations by collecting, processing, displaying, and issuing airspace user information as well as implementing procedural and positive control measures and means for airspace deconfliction. Additionally, ATS organizations support United States government agencies (interagency operations), as necessary, in the interest of national security during peacetime and contingency operations. The deployment of air traffic systems support three missions sets: airspace information services, terminal ATS, and forward area support services.

AIRSPACE INFORMATION SERVICES

3-2. AICs provide airspace information service updates to friendly aircraft and are the primary coordination link between aircraft and the CAB/division. AICs operate as a part of the associated command and control elements of the division by providing near real-time interface for airspace changes, while coordinating and deconflicting airspace requirements. The AIC ensures the flow of information required for air defense (AD) and air traffic management operations. To successfully employ an AIC in support of forcible and early entry contingency and specified Defense Support of Civil Authorities mission sets in joint all-domain operations, AICs must have an organic 100 percent mobility capability for equipment and personnel. AIC services and updates include—

- Critical in-flight advisories/updates of airspace deviations within the area of operation (AO).
- Locations of rapid refueling points, FARPs, terminal facilities, and on-call NAVAIDs.
- Terminal airfield status.
- Flight following through procedural control measures.
- Monitoring and assisting combat search and rescue operations.
- Airspace information, including planned airspace coordinating measures supporting division operations.
- Air mission planning data and airspace control information for terminal facilities.
- Current and forecast weather information.
- Electromagnetic data link to MCIS.

TERMINAL SERVICES

3-3. Terminal services assist in the movement of aircraft, including takeoff, landing, separation, and sequencing. These services include radar, tower, communications, and precision and nonprecision instrumentation on illuminated and non-illuminated airfields and airports. Terminal services can be temporary with minimal service support. Aircraft movements in, out, and through the terminal area are

closely coordinated with the tower, ground controlled approach (GCA), and AIC to ensure complete SA of the terminal AOs for deconfliction of airspace and fratricide avoidance. To successfully employ tower and GCA in support of forcible and early entry contingency and specified Defense Support of Civil Authorities mission sets in joint all-domain operations, tower and GCA teams must have an organic 100 percent mobility capability for equipment and personnel.

CONTROL TOWER TEAM

3-4. The control tower team employs at tactical landing sites or main operating bases where high density air traffic exists. Tower teams are responsible for controlling transitioning, landing, and departing aircraft. The teams must be equipped with binocular-type night vision systems for each operating position to provide three-dimensional observation and control of the airspace, surface area, and users during periods of light discipline.

GROUND CONTROLLED APPROACH TEAM

3-5. The GCA team employs with the tower team, providing a near all-weather, precision/nonprecision approach recovery capability and surveillance vectoring to arriving and departing aircraft operating in the terminal area.

FORWARD AREA SUPPORT SERVICES

3-6. TACTs coordinate aviation operations and are employed as initial entry forces at tactical remote and austere locations. The mobility of the TACT allows the commander flexibility during all phases of operations and provides aviation units with on-the-spot control and advisory capabilities in any environment. The TACT provides terminal and airspace information services where air assets require coordinated movement.

3-7. Operations such as AAs, LZ/PZ, and FARPs are best suited for the TACT. Within 15 minutes of arrival, TACTs are capable of providing ATS, secure UHF, VHF, SATCOM and high frequency (HF) radio communications, and limited meteorological information. These teams employ manpack and secure data/voice communications packages.

3-8. The TACT is trained and equipped to provide initial rapid response ATS and command, control, and communications (in support of CAB and joint missions). It can operate for 72 hours without resupply or augmentation, and its small logistic footprint is conducive to rapid site establishment and retrogrades. To successfully employ a TACT in support of forcible and early-entry contingency and specified Defense Support of Civil Authorities mission sets in joint all-domain operations, TACTs must have an organic 100 percent mobility capability for equipment and personnel. The TACTs must be equipped with binocular-type night vision systems for each operating position to provide 3-D observation and control of the airspace, surface area, and users during periods of light discipline.

EMPLOYMENT CONSIDERATIONS

3-9. Air traffic services organizations must consider the physical, human, political, cultural, and threat prior to employing ATC systems and personnel.

OPPOSED ENTRY

3-10. Opposed entry operations require full coordination of joint capabilities to place large ground forces in the theater. Synchronized with other supporting fires, air assets engage the enemy well forward to delay, disrupt, and destroy enemy forces moving toward the battle area. Air assets also assist in countering the insertion of large enemy forces to the rear of friendly combat forces. ATS units provide—

- Terminal ATC services in the theater, corps, and division AOs.
- Airspace information services throughout the AO, if required.
- TACT support throughout the battle area.
- Host nation airspace integration and airspace coordination within the AO.

UNOPPOSED ENTRY

3-11. Unopposed entry operations allow ATS organizations to deploy as a whole and begin establishment of services. By deploying as a unit, time required to initiate such items as host nation/unified action partners agreements, TERPS packages, and flight checks is reduced. Processing and publishing of airspace requirements, local flight rules, and airfield procedures can begin immediately, while other required airfield services are established with minimal delay.

OPERATIONAL CONSIDERATIONS

3-12. ATS units determine equipment requirements, back-up capabilities, and the communications connectivity used. Aviation mission support includes airspace and air traffic management, enabling maneuver commanders to orchestrate air and ground operations, lethal and nonlethal fires, and air defense in conducting decisive operations. ATS support is provided through automated airspace planning and en route, terminal, and precision recovery throughout the brigade combat team and division AOs.

3-13. Mission planning for ATS operations should incorporate close coordination with the CAB S-3, G-3 Air, host nation liaison, and joint agencies as necessary. The following planning considerations should be utilized when preparing to conduct ATS entry operations:

- Type of mission. The type of mission determines the section or sections of the ATS unit required to complete the mission.
- Support requirements. Factors such as food, water, fuel, medical support, and life support issues such as showers, laundry, and resupply of uniforms, boots, and other common table of allowance (CTA) 50-900 (TA 50) must be well planned. In addition, communication requirements at the airfield and fighter management issues such as sleep and feeding plans must be considered.
- Type of aircraft supported. This determines the types of landing areas to be used and is the primary driver in establishing ATC procedures for a location. Examples include helipads for rotary-wing aircraft, semi-improved landing strips for Shadow/Grey Eagle, LZs or short takeoff and landing strips for intra-theater resupply via C-130/C-17.
- Type of services required. This planning consideration involves instrument flight rule (IFR) recovery capability. A TERPS package must be developed and forwarded to the United States Army Aeronautical Services Agency (USAASA) for approval and certification. Emergency IFR recovery procedures are interim procedures developed for emergency use. The approval authority for this procedure is the CAB commander.
- Future mission of the base. If the base is used as a theater airfield later in the operation, ATS units—
  - Conduct site surveys and TERPS packages as required.
  - Develop terminal airspace coordination procedures.
  - Develop and publish local airfield procedures.
  - Process NAVAID frequencies requests with timelines for their use.
- Airspace requirements. The current combat airspace is assessed to determine additional airspace requirements. The requirements are submitted to be included into the ACO and disseminated to all airspace users, controllers, and aircrews during the mission brief.
- Environment. The operational environment impacts the planning process. Terrain determines equipment placement and may impact equipment capabilities based on LOS radio and NAVAID performance. The terrain can also dictate site layout for LZ or FARP operations, and the type of formation flight used during the mission. SOPs should address factors considered in the mission, enemy, terrain and weather, troops and support available, time available, and civil considerations mission planning risk assessment/management process.

ASSEMBLY AREAS/AUSTERE AIRFIELDS/LANDING SITES

3-14. An *AA* is an area in which a command is assembled to prepare for future operations (FM 3-90.1). The unit receives and issues orders; conducts services and repairs on aircraft, vehicles, and equipment,

receives and issues supplies; and prepares to execute operations. Designation and occupation of an AA may be directed by a higher headquarters or the unit commander. ATP 3-04.1 contains detailed information on AA operations.

3-15. A tactical AA is an area that is generally out of reach of enemy artillery and the location where units make final preparations (precombat checks and inspections) and rest, prior to mission execution. Selection criteria for an aviation AA are based on mission variables and military aspects of terrain. The ATS team used for a tactical AA is the TACT.

3-16. The following ATS are available at tactical AAs:

- Limited meteorological information.
- Visual surveillance of landing area.
- Positive or procedural control as required.
- Emergency marking and lighting of landing areas.

3-17. AA operations for ATS units may be limited as required by the tactical situation; however, ATS organizations may employ a variety of ATS systems simultaneously within an AA. Terminal operations in the AA are provided by the control tower and GCA teams of the terminal platoon; however TACTs may be more advantageous to terminal control for shorter duration operations. AA ATC services include—

- Providing emergency precision approach NAVAIDs.
- Providing aircraft separation and sequencing.
- Developing and coordinating required airspace, restricted operations zones, ingress and egress routes, and entry and exit points. Ingress and egress routes should be built, when possible, with 30 degrees or more of separation to facilitate the safe, orderly, and expeditious movement of air traffic.
- Providing emergency marking or lighting for the LZ.

3-18. AICs in AA operations provide—

- Dissemination of weather and critical flight information.
- Interface with air defense and airspace management (ADAM)/brigade aviation element and terminal facilities to coordinate airspace information.
- Comprehensive flight following structure supporting air traffic to and from rear area.

FORWARD ARMING AND REFUELING POINT OPERATIONS

3-19. A FARP is a sustainment capability that increases the operational reach of aviation units. A FARP's primary purpose is to provide fuel and ammunition within the area of operations as needed and is a key planning and employment consideration vital to mission accomplishment. Additionally, an aviation commander can further enhance FARP capabilities through task organization in order to provide communications, maintenance support, and security that may become critical for returning aircraft and equipment to an acceptable mission capable condition. Refer to ATP 3-04.17 for additional FARP information.

3-20. ATS units support FARP operations and can provide aviation commanders with an extra measure of safety and synchronization to facilitate efficiency. TACTs can manage aircraft flow for faster, safer, and more efficient operations. A team has four Soldiers equipped with a high mobility multipurpose wheeled vehicle (HMMWV)-mounted tactical terminal control system (TTCS) VHF, UHF, HF, and SATCOM radios, and limited weather observing capability.

LANDING ZONE/PICKUP ZONE OPERATIONS

3-21. LZ/PZ operations are ideal for the TACT. Team members are F7/Pathfinder qualified and skilled in austere operations. During planning, the TACT chief works with aviation units to select landing sites. When selecting LZs from maps, aerial or ground photographs, or aerial reconnaissance, consider the following:

- Number of helicopters. If a large number of helicopters are to be used, multiple sites or successive lifts may be required.
- Type of formation. Landing formation is determined by the area available for use.
- Surface conditions. Consider the firmness of the ground to avoid bogging down or creating excessive dust from loose dirt, sand, or snow (creates visibility problems especially at night).
- Ground slope. Landing areas should be as flat as possible. To ensure safe operations, the ground slope should be no more than seven degrees.
- Prevailing winds. Landing and takeoff are aligned with these winds if possible.
- Landing point distances (table 3-1). Helicopter landing areas measure 25 to 100 meters in diameter depending on helicopter type.
- Landing site markings. Use the inverted Y as shown in figure 3-1.

Note. Landing distances depicted in table 3-1 are minimum required distances per ATP 3-04.17. Unit SOPs should dictate standards for their unit.

Table 3-1. Landing distance sizes

Landing Point Size	*Distance (meters)*
1	25
2	35
3	50
4	80
5	100

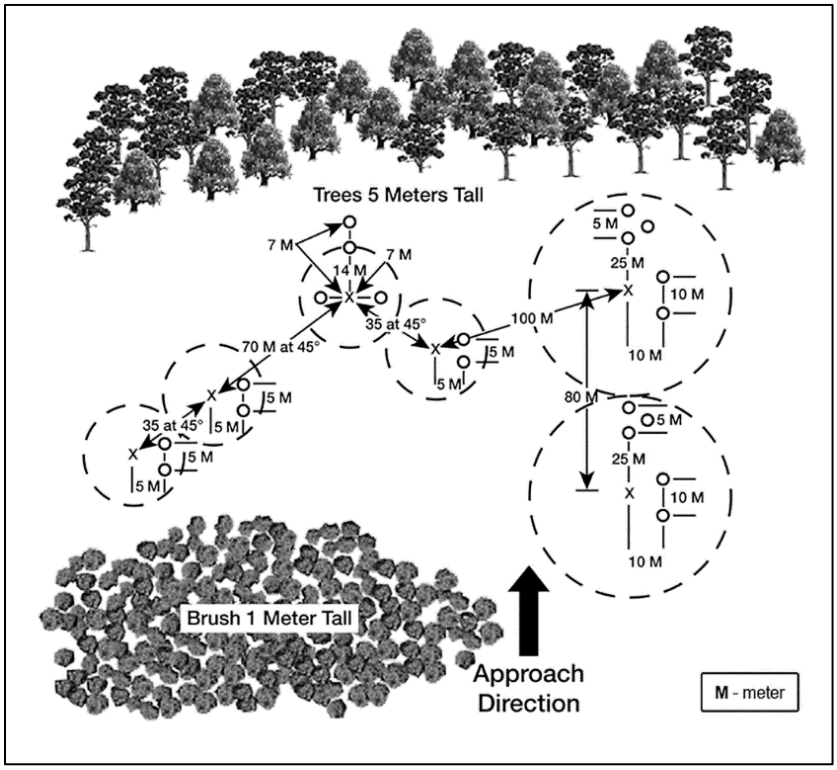

Figure 3-1. Depiction of inverted Y and additional landing sites

3-22. ATS duties include—

- Visual surveillance of landing area and visual sequencing and separation of aircraft.

- Development and coordination of required airspace for the operation. Figure 3-2 depicts LZ airspace requirements.
- Situational updates on weather, air traffic, and airspace control information.
- Lighting and marking of LZ/PZ.

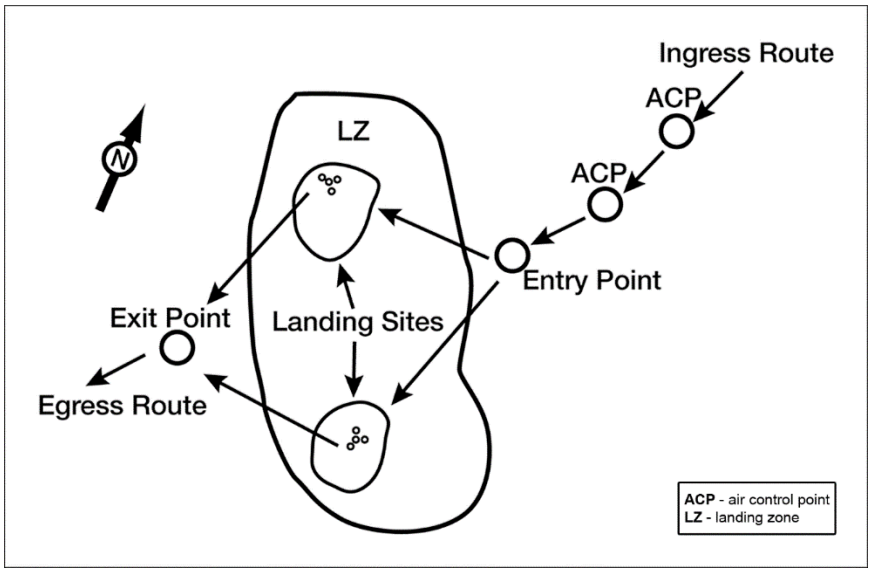

Figure 3-2. LZ airspace requirements

BASE CAMP OPERATIONS

3-23. Army deployment objectives require strategic responsiveness wherever needed. This operational concept depends on flexible combinations of Army and joint capabilities. The Army establishes airfields and heliports on base camps to increase responsiveness and reduce battlefield distances. The following factors are considered when planning airfields and heliports on base comps:

- Occupy host nation airfields if available and tactically acceptable.
- Using abandoned or captured airfields to reduce construction and support requirements.
- Use roads, highways, or parking lots if airfields are not available in sufficient quantity or unsuitably located.
- Construct an airfield or heliports on a base camp.

3-24. These planning factors broadly establish the environment for which aviation operations are expected to operate. Campaign planning at joint level establishes airfield requirements early on with consideration of service-specific objectives. Army, Air Force, Navy, and Marine engineers all have the capability to design, plan, construct, upgrade, and maintain airfields and heliports. Airfields and heliports are classified by their degree of permanence and the type of aircraft they are designed to support. Army airfields and heliports are divided into six classes (table 3-2, page 3-7).

Table 3-2. Army airfield and heliport classes

Class	*Definition (controlling aircraft weights reflect operational weight)*
I	Heliports/pads with aircraft 25,000 lb (11,340 kg) or less. Controlling aircraft (UH-60)-16,300 lb (7,395 kg).
II	Heliports/pads with aircraft over 25,000 lb (11,340 kg). Controlling aircraft (CH-47)-50,000 lb (22,680 kg).
III	Airfield with class A runways. Controlling aircraft (combination of C-23 aircraft-24,600 lb (11,200 kg) & a CH-47 aircraft at a 50,000 lb (22,680 kg). Class A runways are primarily used for small aircraft (C-12 and C-23).
IV	Airfields w/class B runways. The controlling aircraft is a C-130 aircraft at a 155,000 lb (70,310 kg) operational weight or a C-17 aircraft at a 580,000 lb (263,100 kg) operational weight. Class B runways are primarily used for high performance and large heavy aircraft (C-130, C-17,).
V	Heliports/pads supporting Army assault training missions. Controlling aircraft (CH-47)-50,000 lb (22,680 kg).
VI	Assault LZs for operations supporting Army training missions that have semi-prepared or paved landing surfaces. Controlling aircraft (C-130-155,000 lb [70,310 kg] or C-17-580,000 lb [263,100 kg]).
Legend: KG-kilogram LB-pound LZ-landing zone	

3-25. An airfield is also described on the basis of its location within the AO. Close battle area airfields are intended to provide focused logistics support or to support combat missions of short-range aircraft such as attack helicopters and UAS. These airfields are designed for initial or temporary operational standards, depending on mission requirements, and may be paved or semi-prepared. Support area airfields provide general logistics support and support of combat missions of longer-range aircraft. These airfields are designed to temporary or semi-permanent standards, depending on mission and operational requirements. Normally these airfields are paved and provide a link between close battle areas and rear area airfields. Sustainment airfields provide logistics support forward from fixed, secure bases, and support combat operations of long-range aircraft and are designed to be semi-permanent or permanent facilities.

3-26. After seizing an available airfield from which sustained main base or base camp operations can be conducted, the CAB may be able to request joint fixed-wing (FW) refuel/resupply support.

3-27. Army H-60 and CH-47 aircraft can establish refuel points from the aircraft (Fat Hawk operations for H-60s, and Fat Cow for CH-47s), while the Marine Corps CH-53s have a unique refueling capability that can support supply points, operations in deep areas, and other specialized mission applications.

3-28. The C-130 or C-17 can operate from small airfields with limited supporting infrastructure. The airfield runway must be 3,000 to 5,000 feet (914 to 1524 meters) long and 90 feet (27.4 meters) wide with graded and compacted gravel or clay. If C-130 or C-17 is used as a primary means of resupply, runway repair requirements will increase dictating engineer augmentation. CH-53 tactical bladder fuel distribution system and CH-47 Fat Cow refueling does not require a runway, but does require a large relatively flat area similar in size.

AIR TRAFFIC SERVICE SUPPORT

3-29. The ATS unit can be task organized to meet any various combat operations. ATC services required dictate the number of personnel and type of equipment necessary to support the mission. Each ATS unit is capable of providing the following services:

- Control tower.
- GCA radar.
- Airspace information to include airspace updates and flight following.
- Data collection and creation of TERPS packages.
- Support for continuous all-weather operations.
- Interface with airspace elements throughout the division AO.

3-30. In addition to the physical geography of the site, planners consider the related activities in or around the main operating base and landing areas. These functional site considerations address locations of—

- Fuel points and fuel storage areas.
- Ordnance storage areas.
- Arming/de-arming areas.
- Medical evacuation areas.
- Air Force weather support services.
- Field of view.
- Obstructions.

3-31. Additional planning considerations for ATS operations include:

- Establishing a phased plan of equipment arrival to facilitate operational capabilities and communications.
- Selecting an advanced party to conduct physical reconnaissance, locate positions for equipment, and plan equipment sites.
- Preparing diagrams that depict equipment locations and are the basis for set-up crew briefings.
- Ensuring site plans consider maximum dispersal and remoting of equipment to reduce electromagnetic and infrared signatures.
- Designating alternate site locations or remote assembly areas.

SECTION II – THEATER AIRFIELD OPERATIONS

3-32. The TAOG and its subordinate AOBs provide theater aviation support. The TAOG and AOBs are organized and equipped to facilitate early entry by establishing expeditionary airfields in support of Army operations. These organizations provide Army airfield management and command and control at theater-level airfields, and other areas designated by the joint force commander (JFC).

3-33. The AOB organization and its related ATC assets are deployed at locations requiring the operational management of airfield activities or at locations without an organic ATS element. This organization often conducts transition operations from the ATS company of the GSAB during an advancing movement or stability operations. For planning purposes, transitional ATC operations could occur for an extended period based on the intended timeframe of the operation. The synchronization of AOB resources to produce maximum operational effectiveness requires special attention to differences in the capabilities of the ATS companies and the AOB ensuring a smooth transition.

INTERMEDIATE STAGING BASE

3-34. The intermediate staging base (ISB) is a temporary location used to stage forces before insertion into the combat zone. The first deployment of a TAOG or AOB can take place here. In an ideal situation, secure bases are available in the AO for RSOI and continued support of the deploying force. The ISB is normally located within the theater of operations and outside the combat zone and AO. In cases where the joint force must secure a lodgment to project the force, an ISB may be critical to success.

3-35. If established, the TAOG along with one or more AOBs may be required to establish an airfield for staging forces. The ISB airfield may be the initial theater reception and staging facility making it the hub of Army aviation movement into the theater. Deploying forces debark from strategic lift, reassemble, and prepare for missions in the AO. Onward movement from the ISB to the combat zone may be multimodal and requires some level of reassembly in the AO. Transportation assets employed in onward movement include strategic and theater assets such as truck, rail, sea, and airlift. These movements are considered components of the deployment and are included in the time-phased force deployment document.

3-36. If tasked to operate the ISB, the Army should have a primary role in the selection process. This process involves TAOG assessment and recommendation. The ISB airfield should include sufficient Army C2, maneuver, sustainment, and joint support to enable force projection into the combat zone. The

ISB airfield should be shielded from long-range engagement systems, such as missiles, along with enemy special operations force and civil threats.

3-37. The longevity of the ISB airfield varies according to circumstances. The airfield may function as a secure facility for split-based operations during the operation or in the following capacities:

- Logistic management for rear area functions supporting the forward deployed force.
- Restricted forward deployment to only those forces necessary to execute the mission (reduces logistical footprint).
- May serve as a rest and relaxation site (in an austere unstable area).

3-38. As the lodgment expands and tactical situation permits, the JFC can establish a theater staging base within the AO, which may require the deployment of additional AOBs or redeployment of the TAOG as part of the RSOI process. Figure 3-3 depicts an ISB.

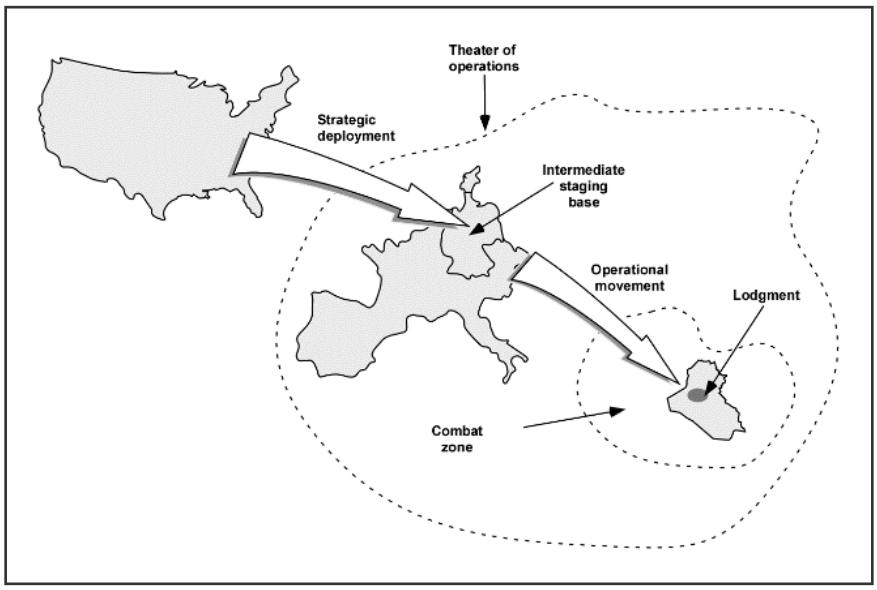

Figure 3-3. Intermediate staging base

PREDEPLOYMENT PLANNING CONSIDERATIONS

3-39. Predeployment planning considerations must be closely coordinated to ensure required assets, support elements, and resources have been coordinated and are available at the desired airfield location.

3-40. Predeployment planning considerations include—

- Host nation, unified action partners airspace and ATC agreements and directives determining regulatory guidance used by ATC with adjoining nations/ICAO. These agreements should encompass all airfields and areas approved for or restricted from use.
- Frequency requirements for radio, radar, NAVAIDs, and networks.
- Airfield lighting must be planned if night or IFR operations will be conducted. Army ATS may have a limited tactical airfield lighting capability as part of the AN/MSQ-135A Mobile Tower System (MOTS).
- National Imagery and Mapping Agency may provide geodetic control for the airfield, proving valuable for precision approaches through the global positioning system (GPS) or emergency IIMC procedures in the future. Also refer to services/coalition/Air Force commands or air staff databases for existing site surveys.
- Base operations support planning should occur before deployment. The supplier and contact lists for support items are formulated early in the planning process. These lists include areas

such as equipment support, power, base defense considerations, supply, maintenance personnel support, billeting, security, medical, and food and water, engineer support, communication needs, and signal support requirements and availability.

- Airfield services required*:
  - VFR/IFR radar, terminal.
  - Precision/nonprecision approaches.
  - Manned and unmanned systems and over flight traffic.
  - Refuel aircraft maintenance.
  - Crash rescue.
  - Air Force weather support.

Note. *These requirements affect the planning process and augmentation requirements.

- Airspace requirements may impact host nation and unified action partners agreements. Determine airspace requirements early and coordinate through the appropriate headquarters combat airspace managers. This ensures inclusion in AOC publications. Terminal airspace and airfield procedures are examples of airfield requirements.
- Engineer support for runway surveys/assessments.
- Interface between terminal and en route systems.
- Valid planning questions for terminal and en route coordination include:
  - Who can provide en route support?
  - What are the procedures (IIMC, filing IFR)?
  - Where are IFR procedures published?

EMPLOYMENT CONSIDERATIONS

3-41. The type of operation has direct bearing on its planning factors: Is it going to be used as an APOD, base camp with an airfield; are joint, interagency, and multinational forces going to use it; and is a FARP required? It also has direct bearing on equipment: Are NAVAIDs required; will a back-up capability be needed; what is the duration of the mission; and what communications and automation connectivity are required?

HOST NATION/ADJACENT NATION AIR TRAFFIC CONTROL CAPABILITIES

3-42. When planning deployment of a TAOG, it is crucial to know the condition and capabilities of airfields, NAVAIDs, airspace considerations, and other ATC resources in the AO. This information enables the planner to determine the types and mix of assets required to support initial operations until a full airfield operations sustainment package is deployed. The condition of host nation facilities may greatly simplify any agreements needed.

ENGINEER SUPPORT

3-43. The ATS elements may require engineer support for a specified mission or time period to—

- Improve terrain and structures at unit locations.
- Conduct required airfield surveys. Results can be used for TERPS data collection.
- Build, improve, or repair runways or landing pads and protect them from erosion by emplacing culverts and sandbags for drainage. Engineers can build runways to support C-130 and C-17 air traffic.
- Conduct runway assessment for aircraft classification number and pavement classification number.
- Protect semi-fixed positions from enemy observation and fires. Because airfields are usually located in large open areas to accommodate aircraft, there is a large demand for survivability

support. Berms for CP protection, digging in FARP locations to protect vital Class III/V assets, defensive fighting and survival positions, and defensive perimeter obstacles are all priorities.

- Build or improve aircraft revetments.

TERMINAL INSTRUMENT PROCEDURES

3-44. When instrument procedures are required, TERPS specialists conduct and participate in initial site surveys. If engineer support for site surveys is needed, coordination for these services is completed early in the planning process. TERPS specialists use site survey information to develop approach procedure packages. These packages are forwarded to the appropriate higher headquarters TERPS office responsible for the designated AOR. Authorization to use the procedures ultimately remains with the appropriate flying operations authority and/or the commander exercising operational control of the aircraft. During contingency operations, an in-theater TERPS liaison may be established to develop and approve instrument procedures.

3-45. Per AR 95-1, emergency recovery procedures are developed as a contingency plan for IIMCs. Recovery procedures are developed using approved DOD/FAA instrument approaches in the AO and should be a joint effort between ATC and the supported aviation unit. In locations without an approved DOD/FAA approach or commercially developed approach, an emergency recovery procedure using the GPS is developed per the aircrew training manual. If used as part of an emergency recovery procedure, non-DOD/FAA approaches are submitted for TERPS review and approval through Headquarters, USAASA or United States Army Aeronautical Services Detachment-Europe. Pending approval, these approaches are only used in visual meteorological conditions or during an actual emergency. The first colonel/O-6 in the chain of command with mission risk approval authority must approve the emergency procedure containing an unapproved instrument approach. This authority will not be further delegated. The risk associated with the recovery procedure is mitigated through the mission approval process and further defined in unit SOPs. Planned use of non-DOD/FAA instrument procedures for flight in instrument meteorological conditions (IMCs) requires approval per AR 95-1. Manual entry of waypoints is permissible when using emergency GPS procedures. Flights in IIMC that violate FAA, host nation, or ICAO regulations are considered deviations per AR 95-1 and are processed per AR 95-1.

FLIGHT INSPECTION

3-46. All electronic NAVAIDs used for IFR services must pass an FAA-authorized flight inspection prior to being placed into service per FAAO 8200.1D and TM 95-22 /OPNAVINST 3722.16C/AFM 55-9/CG 318/FAA HBK 8260.3B). FAA certified personnel perform flight inspection of NAVAIDs and instrument flight procedures. Only graduates of an approved FAA flight inspection course are authorized to perform IFR certification of NAVAIDs.

3-47. Tactical ATC facilities instrument recovery procedures are developed for aircraft in a combat theater of operations. The first colonel/0–6 in the chain of command with mission risk approval authority must approve the NAVAID procedure for use by unit assigned aircraft under their operational control until FAA developed IAPs are approved and flight inspected by FAA. This authority will not be further delegated.

3-48. A TERPS packet is completed each time a NAVAID is installed for operational use. When the radar system is deployed, the packet sent to the DAR/USAASD-E/ATSCOM includes the following documents:

- Minimum vectoring altitude charts drawn on two copies of the appropriate maps or charts.
- DA Form 7870 (*Minimum Altitude/Minimum Vectoring Altitude Obstruction Documentation*).
- DA Form 3501-1 (*Precision Approach Radar [GCA] Data*).

3-49. The documents contain all the information required by USAASA/USAASD-E to capture and record data about the radar installation for TERPS development. When ASR approaches are requested, the information contained in the PAR data sheet for the specific radar is used to develop the procedure.

3-50. All NAVAIDs must pass an internal flyability check before use. DA Form 3501-2 (*Flyability Check Evaluation)* is used to annotate results of the flyability check. Procedures contained in FAAO 8260.3E are used to construct a precision or non-precision approach that services the terminal area. This series of orders can be found the FAA website. The en route criteria is established by the airspace control authority (ACA). Critical information about tactical approach procedures at instrumented heliports and airfields must be developed by the facility responsible for the approach. This information must be disseminated to the aviation units, AIC facilities, and the appropriate airspace control elements for inclusion in the ACO, APG, SPINS, NOTAM and other related airspace information documents. The following actions are accomplished to prepare for a flyability check or flight inspection:

- Ensure all personnel are familiar with FAAO 8200.1D and FAAO 8240.41C.
- Provide accurate facility data for new or relocated facilities.
- Develop an LOA concerning the airspace used for the approach procedure.
- Assign the best-qualified controller available.
- Establish communications on a single dedicated frequency.
- Ensure all facility equipment is calibrated according to applicable manuals.
- Ensure maintenance personnel are available to make corrections and adjustments.
- Provide transportation to move flight inspection equipment and personnel if required.

AIRSPACE AND AIR DEFENSE PROCEDURES

3-51. Planners prioritize, integrate, and closely coordinate airspace control and AD requirements. The AIC and tower facility chief coordinates with the ADAM element of the supported aviation or AD unit assigned to defend the airfield. They work to establish and publish a BDZ and airspace command and control procedures that include—

- Ascertaining the size and shape of the BDZ. The dimensions of a BDZ are normally determined by the effective engagement envelope of the supporting air defense systems (such as Avenger, C-RAM, and Patriot) and anticipated air traffic patterns. Establishing entry and exit procedures, including safe lanes and identification friend or foe mode and code requirements, during BDZ construction.
- Identification of aircraft friend or foe. These procedures should not delay offensive operations and be simple enough for aircrews and ground operations personnel to execute. They include visual, electromagnetic, geographic, and maneuver procedures for differentiating friendly or hostile aircraft.
- Coordinating with local ground-based air defense unit(s) for BDZ early warning cueing, facilitating engagement of enemy aircraft.
- Planners ensure to coordinate with AD units to prevent fratricide of friendly aircraft by developing controls that mitigate hazards and reinforce engagement discipline.

3-52. AD units must be free to engage hostile targets, aircraft, and missiles within prescribed rules of engagement (ROE). ATS facilities share the responsibility of ensuring procedures are disseminated to friendly aircraft.

AIRSPACE MANAGEMENT PLANNING

3-53. Airspace management planning involves segmenting assigned airspace by volume and time for the safe and expeditious flow of air traffic. Airspace management also involves establishing various air defense measures, which are designed to protect friendly installations from enemy air attack. Planning considerations include—

- Analyzing suitable airfields to determine dimensions, and possible conflicts with civil aviation, UAS, and other users of this airspace.
- Preferred routings for friendly aircraft.
- Determining the size and shape of terminal services airspace.
- Preparing TERPS for designated airfields and submitting packages for approval, flight check, and publication.

- Coordinating with the higher headquarters airspace control element to publish ATC terminal procedures in the ACO/airspace control plan (ACP) and APG.

3-54. Normal ATC procedures, such as traffic patterns and VFR inbound and outbound routes, are developed by the tower chief in conjunction with the ATASM technician and used by supported aviation units when appropriate (threat based). Tactical Army aviation flight into and out of LZs/PZs is typically oval or race track. ATC procedures must incorporate tactical entry and exit patterns into the airfield procedures.

3-55. Terminal rotary-wing procedures in a high threat situation can enhance rotary-wing survivability. Traffic density and type are also a factor in the use of any specialized rotary-wing procedures. Numerous landing pads should be constructed on the airfield by engineers. The number is dependent on the area available for use and the proper separation between pads and runways. Special rotary-wing procedures can be established by the use of a wagon wheel overlay (figure 3-4) dividing the airspace into eight 45-degree sectors starting at 5 nautical miles and continuing each 5 nautical miles out to 15 nautical miles or whatever mileage is deemed appropriate. These sectors can be designated by an alpha numeric system and should be changed regularly and published in the current UAP/ACO or SPINS. The frequency of changes is based upon the threat activity level. The sectors are aligned with existing runways or helipads on the airfield and allow rotary wing aircraft freedom of maneuver below the established coordination level. The closer aircraft are to the airfield, the more restrictive the sectors and control becomes. The use of sectors and landing pads eliminates the need for traffic or holding patterns. Aircraft report crossing each phase line or 5-mile increment of the sector, allowing traffic calls and procedural separation by controllers, until aircraft are cleared to land direct to the helipads, which eliminates the need for runway use by rotary-wing traffic in situations where a large volume of FW traffic exists.

3-56. Terminal flight following by sector as opposed to block time flight following allows the controller the ability to make traffic calls and provide procedural separation of aircraft within the sector. One possible sector solution would be to use of the wagon wheel overlay mentioned above. The use of this system and how restrictive the system should be is based on traffic density and operations in or near the terminal area. Sector flight following and SA are critical elements of airspace management during urban operations. Sector flight following would allow terminal area controllers to pinpoint aircraft locations facilitating necessary traffic advisories and procedural separation of aircraft.

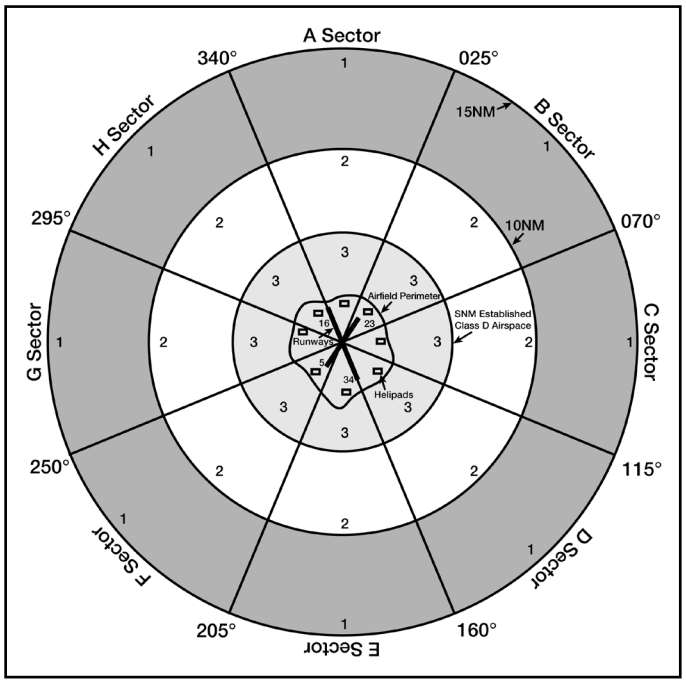

Figure 3-4. Example of wagon wheel overlay

AUSTERE TO ENDURING AIRFIELD

3-57. Enduring airfield operations can be defined as when all airfield capabilities have been established and are fully sustainable. These operations require a transition period; however major factors make it difficult to establish a hard time line. Factors such as host nation and unified action partners agreements, flight checks, or certified TERPS packages may take longer to complete then first anticipated. Every effort should be made to complete all necessary service requirements for the airfield within 45 to 120 days from establishment. The type of entry operation could delay or enhance this transition period depending on whether the entry operation was opposed or unopposed.

AIRFIELD MANAGEMENT

3-58. The management of the airfield must be established as soon as possible; it is the driving force behind the smooth transition to an enduring airfield. The airfield manager is responsible for the safe operation and accommodation of aircraft by constructing and maintaining facilities and procedures and controls.

BASE DEFENSE OPERATIONS CENTER

3-59. A successful force protection plan keys on safeguarding critical assets found at airfields within base camps. One fundamental consideration of airfield security is the resolution of command authority. A conflict often arises when command relations and responsibilities of units occupying airfields are not clear. All tenant units are responsible to the commander for base and airfield security and should have representatives on the planning board. The ATC operations officer should fill this duty requirement for the AOB. The base commander must have tactical control over these units for conducting force protection operations. The BDOC functions as a tactical command post and is responsible for the synchronization of force protection measures. This center must be integrated through communication links with the airfield management element, quick reaction force, and ATC facilities to effectively counter threats with airborne and counter-fire assets. BDOCs establish threat conditions based on the likelihood of attack. Security planning for airfields on base camps starts at the JFC level. The JFC assigns responsibilities for joint security to component commanders.

3-60. BDOC responsibilities include, but are not limited to the following:

- Planning, coordinating, and controlling security forces.
- Planning and coordinating ground fire and close air support within the AOR.
- Integrating ground base AD assets.
- Coordinating and assigning security responsibilities with tenant units.
- Coordinating and supervising activities in support of the base defense plan.
- Coordinating security measures with higher agencies.
- Monitoring unit movement and facility positions within the AOR.
- Establishing and maintaining communications with security forces and other airfield, AD, and counter-fire platoons.
- Executing fire support, a rapid and continuous integration of surface to surface indirect fires, target acquisition, armed aircraft, and other lethal and nonlethal attack/delivery systems that coverage against targets across all domains in support of the maneuver commander's concept of operations.

Reaction Forces

3-61. Reaction forces and attachments must be fully integrated into the overall plan. Each individual must have a clear and current situational understanding of friendly and enemy forces in the AO. For example, a BDOC reaction force should know if military police are conducting mounted patrols near the BDOC. The overall reaction force plan must integrate those military police units or establish boundaries between the reaction force and the military police unit.

3-62. A clear chain of command and training supported by battle drills are essential for reaction force preparedness. They must assemble and be ready to fight in 10 minutes or less. Proper preparation includes the following:

- Alarms should be a part of the airfield and BDOC SOPs.
- Reaction plans are rehearsed and executed on a routine basis. The reaction to a night attack must be second nature if the enemy force is to be repelled.

3-63. Each reaction force assembles based on an alarm or orders. Personnel move to a predetermined rally point, establish communications, and conduct operations as required to counter the threat.

Preparation for Security and Defense

3-64. Physical preparation for security and defense of the base camp and airfield includes the following—

- Ensuring each Soldier is briefed, and has a copy and understands the ROE (for complicated ROE, it is often necessary to conduct situational training exercises to ensure understanding).
- Concealment, including use of urban areas and camouflage.
- Cover for fighting positions and protective shelters.
- Vehicle revetments, transitory vehicle dismount points, and parking areas.
- Protective wire barriers.
- Prepared defensive, alternate, and supplementary positions.
- Prepared routes for supply and evacuation.
- Protective obstacle and munitions to cover avenues of approach. Obstacles must be observed and covered by fires.
- Prepared sleep areas that are dug in or revetted to protect against enemy direct or indirect fires.
- Listening posts/observation posts covering approaches. These positions must be prepared so they cannot be seen when approached from the front.
- Devices such as ground surveillance radar, personnel detection devices, and field expedients to enhance early warning of enemy approach or infiltration.
- Crew-served weapons emplaced to cover suspected avenues of approach. Cleared fields of fire.
- Wire and directional antennas to prevent detection by enemy electromagnetic warfare elements.
- Air and ground patrols to inhibit observation and attack. Returning aircraft should be given patrol areas to survey before landing. Ground patrols should conduct reconnaissance as required to detect enemy observers or civilians who may be enemy informants.
- Daily stand-to to establish and maintain a combat-ready posture for combat operations on a recurring basis. Stand-to includes all steps and measures necessary to ensure maximum effectiveness of personnel, weapons, vehicles, aircraft, communications, and CBRN equipment. Units assume a posture during stand-to enabling them to commence combat operations immediately. Although stand-to is normally associated with begin morning nautical twilight, unit operations may dictate another time.

Airfield Services

3-65. The airfield services element develops local airfield procedures; assists the SO in development of the local hazards map, pre-accident plan, crash/rescue system; and formulates needed LOAs. This element develops airfield SOPs and tactics, techniques, and procedures necessary to ensure safe and effective operations. Airfield services coordinate through the TAOG any personnel and equipment required for services not organic to the AOB (refuel services, crash rescue/firefighters, Air Force weather personnel, and, if not available, airfield lighting).

3-66. The airfield services element establishes communications, automation connectivity, and interoperability with other systems on the airfield and supported aviation units. This is accomplished

through the use of the internal communications section, to the extent possible, of the AOB. Additional communications support is coordinated through the signal support chief of the TAOG S-6 section.

3-67. Sustaining airfield operations requires trained maintenance personnel, and an ample supply of spare parts and power as well as personnel life support considerations. The airfield services element must develop contact lists for long-term airfield support requirements, which can be acquired through the corps or area support system once the TAOG establishes formal support agreements with those agencies.

Petroleum, Oil and Lubricants Services Section

3-68. The POL section refuels appropriate Army and joint aircraft. Because this section is not organic to the AOB, POL assets are coordinated through the TAOG and provided by the appropriate Theatre Support Command/ASCC.

Engineer Fire-Fighting Team

3-69. Engineer fire-fighting teams provide fire prevention/fire protection; aircraft crash rescue, natural cover, and hazardous-material incident responses within a theater of operations. The number and types of fighting teams needed to protect an AO depend on the type of facilities within that AO. Engineer fire-fighting teams are organized into headquarters and fire truck teams.

3-70. The headquarters team provides command and control and coordination for engineer fire-fighting teams. It also supervises rescue and fire-fighting operations, while fire truck teams provide fire-fighting, crash extraction, prevention programs, and first aid for logistic support areas, ISBs, base camps, and major facilities.

Weather Services

3-71. Air Force weather personnel provide support to Army component and subordinate elements to aviation battalion echelons. Through the commander's intelligence section (G-2/S-2), the Staff Weather Office (SWO) assesses and predicts atmospheric weather conditions to include surface and upper-level operational weather data and information (clouds, visibility, winds, pressure, temperature, and ground conditions). The SWO evaluates these parameters to generate operations assessments for operational impacts to inform military decision-making. When connected to the tactical Army communications network, the SWO can access additional weather products and services to support operations (satellite and weather radar imagery, space environmental forecasts, and other weather observations in the area of operations). SWOs train Army ATC personnel to take limited weather observations per inter-service publication AR 115-10/Air Force Instruction 15-157. Service requests for theater airfield weather requirements are coordinated through the theater's highest Army HQ general staff operations section (G-3), in coordination with the G-2, to the supporting Air Force component staff. Air Force weather personnel are required on site at controlled airfields during controlled airfield hours. Terminal aerodrome forecasts are produced at these locations via reachback to an operational weather squadron. Resource protection requirements tailored to local aviation operations are also coordinated through the SWO.

JOINT INTERDEPENDENCE

3-72. Joint forces provide additional capabilities in construction and engineer services, airfield management, and ATS. Airfields that support joint operations must share operational responsibilities for base support. Time-phased force and deployment data addresses requirements for support of airfields. In some cases, it is essential that other military services augment initial key areas such as fire protection, utilities, power generation, and environmental services.

3-73. During combat operations, effective and efficient use of limited airfield capacity and resources is critical to mission success. Foreign airfields hosting a variety of allied military, host nation, and commercial air activities complicate this task. To achieve unity of effort for United States forces operating on a unified action partner’s airfield, the geographic combatant commander must appoint a single on-scene commander to determine operational priorities among competing demands. United States military forces should designate a single point of contact to negotiate airfield usage issues with unified action partners airfield commanders and managers.

UNITED STATES NAVY

3-74. The naval construction force, organized primarily as Navy construction engineer units, perform both generalized and specialized construction missions in support of Navy and Marine Corps component commanders. These units provide construction support for the establishment of forward logistic support sites. In addition, naval construction battalions have extensive vertical construction capabilities. They can also be tasked to construct roads and bridges for supply routes, construct or extend airfield pavements, establish ammunition supply points, and build expeditionary airfields and advanced bases.

UNITED STATES MARINE CORPS

3-75. The Marine Corps is an expeditionary force-in-readiness. Marine Corps engineers, by nature of their organization and mission, focus on expeditionary engineering for essential aviation ground support requirements. The combat engineer battalion conducts mobility, countermobility, and survivability operations in support of Marine divisions.

3-76. The Marine Corps aviation ground support (AGS) element commands and controls expeditionary airfield support services for its aviation assets. Functions such as construction, aircraft rescue and fire-fighting, aircraft refueling, and weather services are organic to the AGS. These functions allow the Marine Corps and Navy to project their assets ashore and generate sorties at a rate beyond their sea-based platforms.

3-77. The Marine Air Traffic Control Detachment (MATCD) is the principal terminal ATC organization within the Marine Corps. Three MATCDs are structured to operate as subordinate elements of the Marine air control squadron and typically deploy as part of a Marine air ground task force. Each MATCD is organized and equipped to provide continuous all weather ATC services to an independent and geographically separated main air base or air facility, base camp airfield, or other remote air sites or points. A MATCD is composed of a command, maintenance, tower, and radar control section. Each section has personnel and equipment capable of sustaining ATC operations within an amphibious objective area.

UNITED STATES AIR FORCE

3-78. Air Mobility Command has two contingency response wings (CRWs), formerly known as the continental United States (CONUS) Air Mobility Operations Groups (AMOGs). CRWs are organized, trained, and equipped to provide three deployable contingency response groups (CRGs). The CRW as an organization does not deploy, however it provides the resources for and coordinates the deployment of subordinate units to provide deployable elements of command and control, aircraft maintenance, and aerial port personnel. Additionally, air mobility liaison officers are normally assigned to the CRWs, though they are attached and move with their associated ground units.

3-79. CRGs deploy in order to assess, open, and initially operate airfields. The groups consist of a standardized force module dedicated to the airfield opening task. This module includes a tailored section of all forces needed after seizure, or handoff from seizure forces, to assess an airfield, establish initial air mobility, command and control, and operate the flow of air mobility into and out of that airfield. CRGs may open an airfield for the Air Force, another Service, or even a coalition partner. To ensure continuity of operations, CRGs coordinate planning agreements with the theater Commander of Air Force Forces/ joint force air component commander (JFACC) staff.

3-80. Contingency response elements (CREs), formerly known as tanker/airlift control elements, are mobile organizations responsible for providing continuous onsite mobility operations management. Commanded by a commissioned officer, CREs deploy to provide air mobility mission support when command and control, mission reporting, and/or other support functions are required. CREs provide aerial port, logistics, maintenance, weather, medical, and intelligence services as necessary.

3-81. Contingency response teams (CRTs) perform a similar function as a CRE but on a smaller scale. CRTs are normally led by a noncommissioned officer and provide a level of command and control, aerial port, and maintenance services capable of supporting a limited number of aircraft.

3-82. Air Force engineer units, organized as Prime Base Engineer Emergency Force (BEEF) or Rapid Engineer Deployable Heavy Operational Squadron Engineers (RED HORSE), provide expeditionary civil-to-general engineering support across the range of military operations, including airfield engineer and construction operations.

3-83. Air Force deployable air traffic control and landing system (DATCALS) teams provide equipment and personnel to support terminal area flight operations. DATCALS are designed to ensure a safe, flexible use of terminal airspace. These teams provide continuity of control with the theater air control system and air base defense forces. General-purpose DATCALS and airfield operations personnel provide terminal area and airfield support from austere to fully supported host nation airfields with mobile tower, surveillance radar, and precision landing system, terminal NAVAIDs, and space/ground capabilities or any combination of the above.

SECTION III – STABILITY AND CIVIL SUPPORT OPERATIONS

3-84. Stability and civil support operation missions of the TAOG, AOBs, and ATS companies are similar to combat missions. Requirements are based on scale and operational environment, the supported agency or unit, and necessary interfaces. Army professionals and contractors must demonstrate to the host nation and international community their character, competence, and commitment in actions that adhere to and uphold the Army ethic. TAOG units, along with National Airspace System resources, are used frequently during civil support operations. In this role, TAOG units coordinate and integrate Army airspace user requirements into the nation's airspace system. TAOG planners and airspace users coordinate and integrate airspace requirements as necessary to permit freedom of movement to accomplish their mission. Civil support and stability operations primarily focus on—

- Disaster relief.
- Department of Homeland Security missions.
- Counter-drug operations.
- Reconstruction or restoration of essential services (air traffic) and governance.

3-85. Joint, combined, or interagency personnel may share ATS facilities. When Army Aviation performs sustained high-density operations from a joint-use airfield or landing area, the TAOG commander must consider providing airfield management, airfield operations, and ATC personnel for the purpose of joint manning. The TAOG, AOB, and ATS commanders coordinate with these joint personnel to determine employment requirements and conditions in these facilities. Joint manning LOAs must be developed among all concerned parties.

3-86. Stability operations outside of the borders of the United States that involve TAOG support in interagency airspace infrastructures require careful attention to preserve the sovereignty of the host nation. While services provided remain the same, the location of TAOG assets may differ. The focus remains on the continued security and sovereignty of the supported country during these operations. Communities on the ground and around the world expect American Soldiers to their sovereignty (FM 6-27/MCTP 11-10C). Failure to do so jeopardizes the trust and legitimacy of the operation and can undermine other objectives. TAOG activities may at some point shift to the support of aviation retrograde operations at debarkation points. TAOG units often execute these functions in host nation airspace; therefore, commanders must ensure that personnel are trained to host nation or ICAO as well as United States Army standards.

DISASTER RELIEF

3-87. TAOG and ATS units deployed for disaster relief operations in the CONUS are required to coordinate airspace in accordance with joint task force ACP In this capacity, military units are concerned with the coordination of air and ground operations to facilitate relief supplies and effects.

3-88. During disaster relief operations, outside the continental United States civilian and military agencies of the United States participate in actions taken by another government. These agencies support the host nation making it the primary agent in most actions. If the host nation requests support, United States national command authorities may direct the military to participate. In this environment, airspace

control focuses on establishing relief airfields and coordinating military airspace requirements with host-nation civil air operations. The expanded use of TAOG and ATS units during these operations can provide greater positive control of airspace.

3-89. Air traffic regulations and control of civil and military airspace users is the basis for airspace control. In host-nation disaster relief efforts, the ATC system often provides the framework for most airspace control functions. The airspace control system may require some adjustment depending on the situation. Bilateral and international agreements often establish regulatory guidance affecting the use of airspace and the conduct of air traffic activities. National sovereignty and host nation laws and procedures receive first consideration. Where these procedures do not support military operations, training must be conducted or host nation capabilities augmented with equipment, personnel, or both. Any required changes or waivers to national regulations or problems resulting from restrictions to military operations are sent to the JFC.

3-90. In disaster relief operations, TAOG and ATS units may use more positive control than procedural control, contributing directly to the identification of aircraft for the host nation airspace system. Strict host nation laws may require TAOG and ATS units maintain continuous communications during every aviation mission, making it critical that unit personnel are trained and proficient in ICAO rules and procedures.

HOMELAND SECURITY OPERATIONS

3-91. Terrorism counteraction operations prevent enemy insurgent acts by protecting personnel, units, and facilities. Airspace control and the use of airspace is dictated by the ACP, which is produced by the ACA. These operations somewhat overlap all aspects of military operations. Measures taken to counter terrorism can impact TAOG and ATS units and operations ongoing at air terminals, aerial ports, and Army airfields and heliports. Restricted use of areas around sensitive facilities is commonplace.

3-92. Drug trafficking is a true form of low intensity conflict. Likewise, counter-drug operations and low intensity conflict operations are closely associated. ATS organizations may be tasked to support the Department of Homeland Defense for support of nontraditional missions associated with radar surveillance.

RECONSTRUCTION AND RESTORATION OPERATIONS

3-93. Air traffic operations conducted under this category restore the air transportation system and usually involve civil-military actions to reestablish essential services. To establish a stable operational environment, stability operations capitalize on coordination, cooperation, integration, and synchronization of nonmilitary organizations. The United States Government often conducts stability operations through a combination of peacetime developmental cooperative activities and coercive actions in response to crisis.

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Chapter 4
Training and Readiness

Training for proficiency in our critical, collective, and mission essential tasks ensures we meet the Army's top priority of readiness, improves competence and builds confidence through trust. Competence is our demonstrated ability to successfully perform duty with discipline and to standard. Leaders earn the trust and confidence of their team when they lead by example, and demonstrate character, competence, and commitment.

SECTION I – TRAINING OVERVIEW

4-1. The intent of this chapter is to provide a linkage of the training fundamentals of ATS units to other aviation units within the aviation brigade. Much like the aircrew training program of aviators, air traffic controllers and ATS maintenance personnel complete a similar training program to reach technical and tactical qualification. Battle-focused training assist commanders with developing, managing and administering comprehensive air traffic training programs (ATTPs) and air traffic services maintenance training programs (AMTPs). ATTPs and AMTPs reflect an assembly of training requirements organized to fulfill the broad, overall training goals of aviation commanders supervising certified and noncertified air traffic and air traffic maintenance personnel.

4-2. Aviation operations require worldwide strategic and tactical mobility. As a fully integrated member of the combined arms team, aviation forces conduct a wide range of tasks across all military operations. ATS units enable aviation to operate in complex surroundings and are key to the mitigation of risk often present within hazardous operating environments. Integrating ATS teams with other aviation units within the brigade is critical in ensuring ATS assets are exercised and trained to meet wartime task proficiency.

4-3. The ATTP and AMTP are the commander's programs for training combat-ready air traffic controllers and air traffic maintenance personnel. This training covers task proficiency at the individual level, to team proficiency, and finally to unit proficiency in executing mission-essential tasks necessary to accomplish joint and combined arms operations as defined in the Army universal task list. Commanders should construct ATTPs and AMTPs to include—

- Benefits to be gained through standardization.
- Objectives to be achieved.
- Procedures or actions to be standardized, described in detail.
- Specific plans for implementation.
- Effective procedures for enforcement.
- Delineated responsibilities.

4-4. Commanders use an array of publications, such as FM 3-04, Training Circular (TC) 3-04.15, ATP 3-04.1, ADP 7-0, and combined arms training strategies (CATS) to develop the unit's ATTP. The first step in this process is an evaluation of the unit's METL to determine training requirements.

4-5. The ATTP and AMTP are the ATS commander's training program. However, warrant officers and NCO leaders and trainers are the primary unit personnel tasked with implementing the ATTP and AMTP, especially at the individual and team levels.

4-6. As the commander develops the training programs, input from the unit's implementers is vital. Warrant officer and NCO implementers advise the commander on required tasks, applicability of team

tasks to unit roles and METL-based missions, geographical factors which affect training and operational employment, training assets, and recurring training issues.

4-7. After analysis of the unit METL, implementer input, and higher commander's guidance, commanders develop a supporting individual commander's task list (CTL) for each air traffic team member. Commanders will then establish a short-range, long-range and near-term training plan to ensure ATS teams gain and maintain proficiency in unit collective tasks. Implementers must be familiar with the commander's training intent and with the training plans to implement the objectives of the ATTP and AMTP.

4-8. Units are trained to be combat ready through realistic and challenging training. At every level, commanders must train to Army standards. Battle focus enables commanders to plan and execute training that produces tactically proficient units for success on the battlefield. Using the Army training management cycle, the commander continuously plans, prepares, executes, and assesses the state of training in the unit. This cycle provides the framework for commanders to develop their unit's METL, establish training priorities, and allocate resources.

4-9. Commanders and leaders at all levels use the principles of training to develop and execute effective training. As commanders train their units on METL tasks, senior commanders reinforce training by approving and protecting training priorities and providing resources.

SECTION II – AIR TRAFFIC TRAINING PROGRAM

4-10. AR 95-2 establishes procedures, policy, responsibilities and standardization requirements for ATC training programs. The status of ATS unit training depends upon the status of individual/team/collective training. Individual, team, and collective proficiency must be balanced by ensuring training resources are used to train both at the individual and collective proficiency level. Readiness levels (RLs) correlate a Soldier's proficiency level and mission readiness.

4-11. RL training begins with development of proficiency at the individual level and progress through team to collective proficiency. This process follows the crawl-walk-run model of training. Tasks required for air traffic controllers to progress from various levels are contained within the Soldier's CTL. CTL requirements are battle-focused, tasked-based requirements derived from the unit's METL and appropriate ATTP for the air traffic system the Soldier is assigned to or training on. In some cases, air traffic controllers may have more than one RL. For example, controllers who are RL 1 in their assigned ATS system may be RL 3 or RL 2 in other ATS systems within the unit. The following guidelines should be utilized when assigning RLs to air traffic controllers and assessing ATTP progression.

READINESS LEVEL 1

4-12. A controller awarded RL 1 has been determined to possess the necessary tactical and technical skills to perform duties at the full performance level and has demonstrated task proficiency on all tasks of the CTL. Minimum RL 1 requirements are—

- Facility rated in assigned tactical facility.
- Meets proficiency standards for assigned facility according to TC 3-04.15.
- Possesses a valid and signed DD Form 2992 (*Medical Recommendation for Flying or Special Operational Duty)* indicating full flying duties (FFD).
- Licensed on all vehicles and trailers associated with assigned facility.
- Licensed on all generators and power plants associated with assigned facility.
- Has completed an Annual Skills Evaluation within one year.
- Has completed any additional RL 1 requirements specified in the associated facility's ATTP.

READINESS LEVEL 2

4-13. Air traffic controllers are awarded RL 2 when beginning position training at the team level. RL 2 is characterized by improving proficiency in collective tasks and team tasks associated with the advanced operation of ATS systems. Controllers possessing a previous ATC rating of the same type may be

awarded this level through the commander's evaluation processes. Controllers will remain at RL 2 until all RL 1 level provisions have been met. Minimum RL 2 requirements are:

- Possesses a valid and signed DD Form 2992 indicating FFD.
- Has completed all Phase 1 requirements for assigned facility.
- Has completed any additional RL 2 requirements specified in the associated facility's ATTP.

READINESS LEVEL 3

4-14. Air traffic controllers are awarded RL 3 when they have completed an MOS awarding ATC school and/or are assigned to an ATS system for which they have not previously obtained an ATC rating. A controller assigned this RL is under the direct supervision of leaders and trainers of the ATS unit. Minimum RL 3 requirements are:

- Possesses a valid and signed DD Form 2992 indicating FFD.
- Has completed a qualifying ATC school.
- Has completed any additional RL 3 requirements specified in the associated facility's ATTP.

READINESS LEVEL 4

4-15. Air traffic controllers are awarded RL 4 when ATTP progression is not required or has been temporarily suspended due to the following:

- Controller is assigned to a staff position not requiring ATTP progression and/or development.
- Controller is medically grounded/pending medical disqualification.
- Controller is pending MOS reclassification/chapter actions.
- Controller is assigned to a National Guard position without being a graduate of an approved ATC school.

COMMANDER'S EVALUATION

4-16. The commander's evaluation provides an opportunity to conduct an assessment of newly assigned air traffic controllers and allows the association of a higher RL due to previous air traffic system certifications. This evaluation consists of a records review by the commander or their designated representative within 30 days after the controller is assigned to the unit. Provided that the controller successfully completed all phases of an ATTP in the same ATS system, they may be initially designated RL 2. The following guidelines apply:

- Graduates of an ATC school who are on their first unit of assignment may not be awarded RL 2 based solely on a commander's evaluation.
- Previously certified air traffic controllers may not be awarded RL 2 if more than 12 months have passed since assignment to that air traffic system.
- Controllers may not be assigned RL 1 based upon a commander's evaluation. RL 1 is only awarded after the successful completion of CTL and training requirements contained within the unit's ATTP. RL 1 may only be awarded upon successful completion of an ATS system certification/rating or an over-the-shoulder evaluation by the ATS examiner.

ATTP FORMS AND RECORDS

4-17. The ATTP records system provides commanders with a comprehensive performance record on each air traffic controller in their unit. The following forms are used to document air traffic controller training and proficiency:

- DA Form 3479 (*Training and Proficiency Record-Air Traffic Controller*). These records provide a chronological listing of ATC certifications and ratings throughout the controller's career.
- DA Form 3479-1 (*Trainee/Controller Evaluation*). This form is used to document written evaluations of a controller's training progress and job performance.

- Commander's task list (CTL). The CTL is the base document from which the RL progression program is developed. Commanders and unit leaders develop a task list to support each individual rating. It specifies the tasks and academic subjects required for facility rating and annual training. The following are CTLs used by ATS units:
  - DA Form 3479-11 (*Commander's Task List [ATS] AN/MSQ-135 Mobile Tower System [MOTS] Operator*).
  - DA Form 3479-12 (*Commander's Task List [ATS] AN/TPN-31 Air Traffic Navigation, Integration and Coordination System [ATNAVICS] Operator*).
  - DA Form 3479-13 (*Commander's Task List [ATS] AN/TSQ-221 Tactical Airspace Integration System [TAIS] Operator*).
  - DA Form 3479-15 (*Commander's Task List [ATS] AN/TSQ-198 Tactical Terminal Control System [TTCS] Operator*).

SECTION III – ATS MAINTENANCE TRAINING PROGRAM

4-18. Much like the unique training requirements of air traffic controllers, ATS maintainers of air traffic units require special consideration to achieve task proficiency. The United States Army ATC maintenance certification program establishes uniform standards for measuring technical proficiency of ATC maintenance technicians. It also ensures technical competence of all maintenance personnel with direct responsibility for safe operation of systems/subsystems/equipment critical to air navigation and ATC. The program establishes procedures for documenting technician proficiency, granting authority, and assigning certification responsibility. This guidance applies to Army Civilians, local national civilians, and military personnel who perform maintenance on Army-owned ATC equipment. Contractor personnel are prohibited from certifying United States Army NAVAIDs. Contractor personnel may repair and verify NAVAIDs are operating properly, but NAVAID certification is an inherent governmental function.

4-19. Responsibility for the certification program is shared by examiners and various other maintenance chiefs and supervisors. Shared responsibilities include—

- Providing overall direction to and guidance on the program.
- Identifying and specifying theory and performance requirements.
- Standardizing, evaluating, and updating all phases of the program.
- Developing, validating, reviewing, and revising theory and performance examinations.
- Determining systems to be added or deleted from the program and informing appropriate individuals/elements.
- Printing and distributing examinations and certificates.
- Resolving comments, questions, and disputes regarding examinations.
- Maintaining database files containing complete verification records.
- Designating examining officials (in writing) and coordinating with the examiner regarding examination administration.
- Determining acceptability of formal schools.
- Maintaining files containing complete certification and related training records on each technician.
- Providing the technician with training materials needed to accomplish comprehensive training on the systems/subsystems/equipment.
- Requesting theory and performance examinations.
- Developing and documenting on-the-job training on site-specific systems/subsystems to support the certification program.
- Advising the commander on the status of ATS maintenance certification.
- Coordinating with the ATC facility maintenance chief for NOTAMs if training is required on any in-use operational system/subsystem/equipment.

- Conducting and recording annual reviews and proficiency assessments on DA Form 3479-9 (*ATC Maintenance Personnel Certification and Related Training Record*) and DA Form 3479-10 (*Responsibility Assignment*).

AMTP PROGRESSION

4-20. RL training begins with development of proficiency at the individual level and progress through team to collective proficiency. This process follows the crawl-walk-run model of training. Tasks required for air traffic maintenance personnel to progress from various levels are contained within the Soldier's CTL. CTL requirements are battle-focused, tasked-based requirements derived from the unit's METL. The following guidelines should be utilized when assigning RLs to air traffic maintenance personnel and assessing AMTP progression.

READINESS LEVEL 1

4-21. Air traffic maintenance personnel are awarded RL 1 upon completion of AMTP training requirements. An ATS maintainer awarded RL 1 has been determined to possess the tactical and technical skills needed to perform maintenance duties on the ATS system and subsystems. ATS maintainers should be removed from RL 1 and identified RL 2 when additional training is warranted due to a lack of proficiency.

READINESS LEVEL 2

4-22. ATS maintenance personnel are awarded RL 2 when undergoing advanced ATS system training at the team level and the required CTLs for RL 1 have not yet been met. This RL is characterized with proficiency in collective tasks and team tasks associated with the advanced maintenance of ATS systems. ATS maintenance personnel are awarded this RL when they have achieved certification on at least one ATS system of the unit. Tasks are performed in complex varying environments and require successful coordination and integration of combined arms operations. Advanced maintenance procedures during all phases of tactical operations are a critical element of this level.

READINESS LEVEL 3

4-23. ATS maintenance personnel are awarded RL 3 when they have completed an MOS awarding school and/or are on initial assignment to an ATS unit and have not achieved maintenance certification on any ATS systems of the unit. This RL is characterized with the individual task proficiency in the installation, operation, and unit level maintenance of air traffic systems. This phase reinforces basic maintenance procedures and theories. A maintainer assigned this RL is under the direct supervision of leaders and trainers of the ATS unit when performing maintenance actions.

READINESS LEVEL 4

4-24. ATS maintenance personnel are awarded RL 4 when AMTP progression is not required or has been temporarily suspended due to the following:

- Maintainer is assigned to a staff position not requiring AMTP progression and/or development.
- Maintainer is pending MOS reclassification/chapter actions.
- Maintainer is assigned to a National Guard position without being a graduate of the 94D School.

*COMMANDER'S EVALUATION

4-25. *The commander's evaluation provides an opportunity to conduct an assessment of newly assigned ATS maintenance personnel and allows the association of a higher RL due to previous air traffic system certifications. This evaluation consists of a records review by the commander or their designated representative within 30 days after the maintainer is assigned to the unit. Provided that the maintenance

personnel successfully completed all phases of an AMTP in the same ATS system, they may be initially designated RL 1 or RL 2. Commanders should utilize practical hands-on assessments to confirm proficiency levels of maintainers. The following guidelines apply:

- Graduates of MOS 94D school who are on their first unit of assignment may only be awarded RL 3 until they have successfully completed maintenance certification on at least one ATS system.
- Previously certified ATS maintenance personnel may not be awarded RL 1 if more than 12 months have passed since direct maintenance actions have been performed on all ATS systems of the present unit.
- ATS maintenance personnel are not designated RL 1 until they have achieved maintenance certification on all ATS systems of the present unit.
- While commanders may designate previously certified maintainers as RL 1, careful consideration must be given to past certifications as they relate to the current unit of assignment. Recent, task assessment/comparison, and experience level must be assessed before designating maintenance personnel RL 1.

AMTP FORMS AND RECORDS

26. The AMTP records system provides commanders with a comprehensive performance record on each ATS maintainer in their unit. The following forms are used to document ATS maintainer training and proficiency:

- DA Form 3479-9. This record provides a chronological listing of ATS system certifications throughout the maintainer's career.
- DA Form 3479-10 *Responsibility Assignment* . This form documents proficiency and maintenance responsibilities of ATS systems within the unit.
- DA Form 3479-14 (*Commander's Task List [ATS] ATS Maintainer)*. The CTL establishes tasks that cover procedures, knowledge, and skills required to perform maintenance on ATS systems and sub systems.

SECTION IV – UNIT STATUS REPORTING

4-27. The two primary Army regulations governing readiness reporting are AR 220-1 and AR 700-138. Although this section of this publication deals primarily with training, a commander must be intimately familiar with both of these regulations. The unit status report (USR) provides the commander with a snapshot of the unit's overall training and equipment status. The commander determines the unit's overall status based on an assessment of the units capability to accomplish the assigned mission. The commander's responsibilities listed in AR 220-1 include—

- Maintaining the highest unit status level possible with given resources.
- Reviewing subordinate unit reports for accuracy and compliance with applicable requirements.
- Distributing unit equipment and resources against mission essential requirements on a priority basis.
- Training to the highest level possible with available resources.
- Submitting the unit's status between regular reports, as required.
- Ensuring the unit has computer hardware/software to process and submit the USR.

4-28. A unit's C-level indicates the degree to which the unit has achieved prescribed levels of fill for personnel and equipment, the training status of those personnel, and the maintenance status of its equipment. Detailed procedures for reporting C-level are contained in AR 220-1.

4-29. The unit's standard METL is directed by the Aviation Branch proponent. When directed to train to an assigned mission, the unit commander identifies specified and implied tasks from the higher commander's collective training guidance (FM 7-0). The commander, at all levels, assesses the unit's ability to execute mission essential tasks to standard. Commanders consider the unit's ability to perform

in unique operational environments as required by the unit's METL and published collective task training and evaluation outlines. When assessing ATS unit proficiency, commanders use personal observations, published collective task training and evaluation outlines, and the standards outlined in the Leader's Guide to Objective Assessment of Training Proficiency. For additional information on unit training and training management see FM 7-0.

4-30. In addition to maintaining a minimum number of qualified air traffic controllers and ATS maintenance personnel to perform most of the critical warfighting tasks to standard, commanders must satisfactorily accomplish collective training events as defined in the appropriate CATS. Commanders perform T-level assessments per AR 220-1 to review and confirm the results of their T-level assessments in light of their unit's accomplishments during critical training events. The T-level rating provides meaningful information for the entire chain of command. The ATS unit training T-level is a major factor in determining how many days the unit needs to train to standard on METL tasks. Additionally, this T-level provides an indicator to the aviation commander and staff on aircraft support requirements to achieve training goals of the ATS company. Commanders use the number of days the unit needs to train to standard METL tasks, along with the information in AR 220-1 to determine the overall T-level. The following guidelines apply to T-level requirements for ATS units:

- T-1. At least 85 percent of air traffic controllers and ATS maintenance personnel are RL 1.
- T-2. At least 65 percent of air traffic controllers and ATS maintenance personnel are RL 1.
- T-3. At least 50 percent of air traffic controllers and ATS maintenance personnel are RL 1.
- T-4. Less than 50 percent of air traffic controllers and ATS maintenance personnel are RL 1.

4-31. The use of RLs does not supersede ATC training time limitations or rating/certification system requirements detailed in AR 95-2, FAA orders, and other appropriate maintenance and air traffic control guidelines. Commanders and examiners should develop ATTPs and AMTP's consistent with training time limitations contained within these documents.

4-32. The guidelines detailed should serve as a training indicator for controller and ATS maintenance personnel qualifications as they relate to the units overall ability to accomplish assigned mission(s). Commanders and leaders must continually assess the environment and make determinations on individual skill proficiency required to safely execute aviation operations. Commanders should always consider minimum operating requirements and maximum hours of operation (fighter management/crew rest) for the safe operation of air traffic systems.

SECTION V – TRAINING

4-33. ATS leaders must keep in mind ATC skills are a challenge to train in tactical ATS units and extremely perishable. CBRN environments create challenging conditions that must be incorporated into training. CBRN defense training should not be conducted as a separate training event, but instead a condition within ATC skill training. The crew-level training progression of the aviation brigade does not inherently support the traffic density requirements to train and sustain air traffic controllers of many ATS units. It remains critical that ATS leaders maximize opportunities to participate in the collective training events of the aviation brigade.

4-34. ATS leaders should explore other training opportunities with installation ATC facilities within their geographical area. ATS units fostering relationships and training opportunities with installation ATC facilities are uniquely better prepared to execute ATS operations in heavy air traffic environments. Likewise, ATS maintenance should not be excluded from installation training partnerships. Training on the NAVAIDs and radio systems employed by installation ATC facilities may significantly increase the skills and abilities of ATS maintainers. Courses available to ATS units include—but are not limited to—the following:

- Contingency Airfield Management (CAM).
- ADAM/Brigade Aviation Element (BAE) Tactical Air-Ground Integration Course.

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Chapter 5

Maintenance Operations

Repairing equipment far forward enhances the ability to quickly return the maximum number of systems at the earliest opportunity. The concept of replacing components and modules instead of repairing them is a key element in the logistic support and maintenance operations of all modern ATS systems. This concept leverages advanced prognostics and diagnostic tools, support equipment, and training of ATS maintainers.

SECTION I – UNIT-LEVEL MAINTENANCE

5-1. The COMNAV maintenance section of the GSAB ATS company and AOB are the maintenance enablers of the air traffic mission area. ATS maintainers only execute field-level maintenance, on tactical air traffic systems. This replace and fix forward capability ensures critical systems are available to accomplish the multitude of ATS missions assigned to air traffic organizations. Figure 5-1 illustrates the COMNAV section organized under the GSAB ATS company and AOBs.

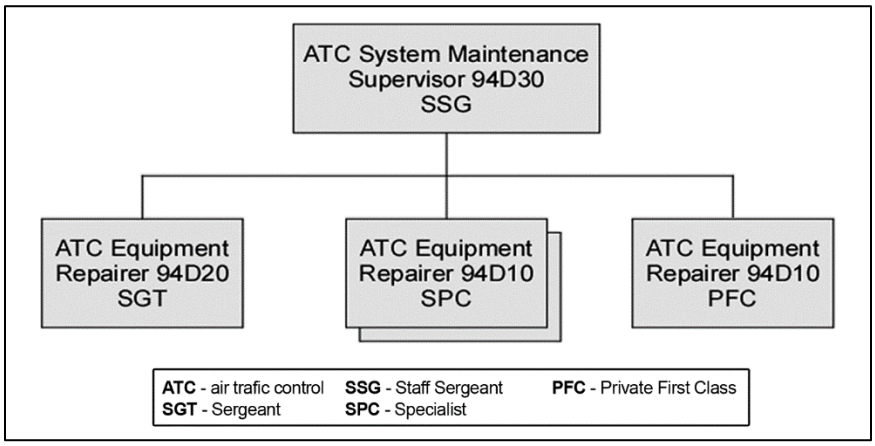

Figure 5-1. COMNAV section

TWO-LEVEL MAINTENANCE OPERATIONS

5-2. During the past decade, the United States Army has been engaged in a deliberate and seeping effort to adapt its organizations, Soldiers, equipment, and methods or operations to requirements of a rapidly changing strategic and technological landscape. The power of advanced technologies, especially information technology, enables the Army to achieve situational dominance and decision-making momentum, creating a new construct for the application of force.

5-3. The Army vision calls for transforming from a forward-deployed force to a strategically responsive force projection Army. Today's reactive maintenance system creates a large battlefield logistical footprint reliant on multiple headquarters to coordinate forward support activities and evacuation of inoperative systems. The current methodology of "fix forward" is changing to a "replace forward-repair rear" methodology. Clearly, the skills and abilities of our ATS maintainers executing this shift in doctrine will also change.

5-4. The air traffic maintenance program is aligned with the Army maintenance system detailed in AR 750-1 and ATP 4-33. Unique to the ATS maintenance strategy is the alignment of repair functions for both field and sustainment-level maintenance. Field maintenance, also known as on-system maintenance, is primarily associated with repairs that return equipment to operators. Sustainment maintenance, also known as off-system maintenance, primarily repairs and returns equipment to the supply system. Each of these functions is supported by ATS maintainers.

5-5. ATS maintainers perform the following maintenance actions under field maintenance:

- Schedule and complete PMCS for ATS systems.
- Report all ATS maintenance and logistics actions in Standard Army Management Information System, also called STAMIS, or Global Combat Support System-Army (GCSS-Army) systems.
- Manage and maintain ATS maintenance personnel training records and DA Form 3479-6 (*ATC Facility and Personnel Status Report*) in accordance with AR 95-2 and TC 3-04.15.
- Plan and schedule ATS maintenance individual and collective training in the Digital Training Management System.
- Execute the provisions on the certification program in accordance with AR 95-2.
- Manage test measurement and diagnostics equipment (TMDE).
- Manage electrical safety programs per DA PAM 385-26.
- Manage shop supply for ATS equipment.
- Inspections by sight and touch of accessible components per the technical manual and condition-based maintenance indicators or instrumentation.
- Lubricate, clean, preserve, tighten, replace, and make minor on-system adjustments.
- Limited diagnosis and fault isolation.
- Replacement of on-board spares.
- Requisition, receipt, storage, and issue of ATS specific repair parts.
- Evacuation to the appropriate maintenance support activity of unserviceable reparable components.
- Coordination and transportation of ATS systems.
- Materiel readiness reporting.
- Fabrication as identified by the appropriate TM.
- Equipment certification.

5-6. ATS maintainers perform the following maintenance actions under sustainment maintenance:

- Reports below depot ATS maintenance and logistics actions in the Standard Army Management Information System or GCSS-Army systems.
- Inspect, diagnose, isolate, and repair faults within modules and components.
- Turn-in of unserviceable end items and components through the appropriate supply activity.
- Fabrication or manufacture of repair parts, assemblies, and components.
- Equipment modifications as required by AR 750-10.
- Manufacturing of end items and parts not provided or stocked by the national supply system.
- Special inspections and modifications of equipment requiring extensive disassembly or elaborate test equipment.
- Nondestructive testing to determine the acceptability of removed parts.
- Installation of all outstanding modification work orders and minor alterations directed by the materiel proponent.
- Postproduction software support, the sustainment of the operational software embedded in weapon systems after closure of the production line.
- Custom cable repair and fabrication.

Note. Per AR 750-1, MTOE ATS maintenance personnel may perform duties at table of distribution and allowances (TDA) maintenance activities to maintain skills and update MOS training.

POSITIONING MAINTENANCE SUPPORT ASSETS

5-7. The nature of the modern battlefield demands that ATS systems be repaired quickly and as far forward as possible. This requirement implies a forward thrust of maintenance within the division AO. Maintenance assets move as far forward as the tactical situation permits, repairing unserviceable and damaged ATS systems to return them as quickly as possible.

5-8. A viable maintenance system complements the capabilities of the supply system. When equipment is in short supply or unavailable to support requirements, commanders use the maintenance system to offset the shortfall. Equipment has become complicated and technically advanced, making it easier to meet surge requirements by redirecting the maintenance effort rather than influencing the supply effort.

5-9. The job of maintenance managers is to ensure the proper mix (type and location) of maintenance that best supports the commander's tactical and operational requirements. Early movement of essential maintenance capabilities ensures that deployed ATS systems are operational upon arrival in a theater of operations.

SPLIT-BASED OPERATIONS

5-10. Split-based operations refer to performing certain logistic and maintenance functions within a given theater of operation, in more than one location. This is a principal concern of the COMNAV section due to the nature of ATS operations within the CAB and additional ATS maintenance support to the brigade aviation element and division airspace element. By all accounts, this is the most significant challenge of the ATS COMNAV section. Commanders must develop detailed plans and support agreements between supported elements/staffs of their respective commands to ensure timely repair of ATS systems emplaced throughout the battlefield.

5-11. Strategic split-based operations refer to performing certain logistic and maintenance administrative and management functions outside the JOA). These functions can be performed in a secure theater location, an ISB, or home station. Soldiers and civilians can perform personnel, materiel, and distribution management functions without deploying to the JOA if GCSS-Army is adequate. The GCSS-Army system helps minimize strategic lift requirements and reduce the sustainment footprint in theater while still meeting support requirements.

CONTRACT AND CIVILIAN MAINTENANCE SUPPORT

5-12. AR 70-1, AR 700-127, and AR 750-1 contain policy guidance on the utilization and employment of contractors, Army Civilians, and local national augmentation used for supporting Army operations. Specifically, AR 750-1 details the utilization of military and non-military personnel in maintenance operations with the following:

- Military personnel will perform maintenance in combat or hazardous duty areas as much as possible. The employment of civilians in hazardous duty areas for the performance of maintenance of field equipment that can be maintained by a Soldier is strongly discouraged.
- Civilians will not be permanently stationed in combat areas or hazardous duty areas as determined by the combatant commander (AR 715-9). Civilians may travel forward to a brigade combat team operational area on a case-by-case basis as individual equipment failures occur to provide temporary onsite maintenance and technical advice (sustainment-level maintenance assistance teams and/or modification application teams).
- Outside the brigade operational area, in addition to military personnel, civilian maintenance personnel (contract, TDA, local nationals, and so on) may be acceptable as a prudent risk on

the probability of maintenance services being continued in wartime and in support of other operations.

5-13. Certification is the quality control used by ATS maintainers to ensure ATS systems are operating within required parameters in accordance with AR 95-2. Independent discretionary judgment about the provision of services, the need to separate profit motivations from operational decisions, and the desire to minimize liability, make the regulatory function of certification and oversight inherently a governmental function. Contractors and host nation augmentation will not be used in the certification or verification of ATS systems, NAVAIDS, and ATS maintenance training programs.

SECTION II – EXTERNAL MAINTENANCE ORGANIZATIONS

5-14. Sustainment maintenance support is divided and primarily performed by three separate entities: the original equipment manufacturers (OEMs), their civilian field service representatives (CFSRs), and Army depots. These Army depots, located at fixed bases in CONUS, are the national maintenance sources of repair (SORs). Sustainment maintenance supports the supply system by economically repairing or overhauling components.

5-15. Sustainment maintenance refers to all maintenance performed on equipment above and outside of the combat aviation brigade. The OEM CFSRs may be placed within the combat aviation brigade to provide a limited forward sustainment maintenance capability. They operate out of fixed or semi-fixed facilities.

ATS MAINTENANCE DETACHMENT-FORSCOM

5-16. A deployable special repair activity with mobile maintenance contact teams is organized under the FORSCOM aligned Ordnance Branch. This company operates a supply support activity and provides Class IX materiel support for tactical ATS systems worldwide. This organization executes general support/limited depot ATS maintenance operations in CONUS and through deployed ATS maintenance teams in the theater of operation.

UNITED STATES ARMY MATERIEL COMMAND

5-17. The United States Army Materiel Command's (USAMC's) mission is complex and ranges from developing sophisticated weapon systems to maintaining and distributing spare parts. The USAMC's mission is to provide superior technology, acquisition support, and logistics. The USAMC operates the research, development and engineering centers; Army Research Laboratory; depots; arsenals; ammunition plants; and other facilities. Subordinate commands provide specific aviation support within the USAMC structure. These commands include the United States Army Aviation and Missile Command (AMCOM) and United States Army Communications-Electronics Command (CECOM).

5-18. The USAMC—

- Overhauls and upgrades Army equipment during the prepare phase of the Army sustainable readiness model.
- Produces and provides bombs and ammunition for all military services.
- Provides on-the-ground logistics assistance to every unit in the Army.
- Provides new equipment training.
- Maintains the Army's pre-positioned stocks on land and at sea.
- Researches, develops, and acquires conventional ammunition for DOD.
- Supports acquisition of end items and parts for military weapon systems.

*UNITED STATES ARMY COMMUNICATIONS-ELECTRONICS COMMAND

5-19. The CECOM mission is to develop, acquire, and sustain superior information technologies and integrated systems. CECOM controls and operates Tobyhanna Army Depot.

5-20. This particular depot is the largest, full-service electronics maintenance facility within DOD. Its mission is total sustainment, including design, manufacture, repair, and overhaul of hundreds of electronic systems. These include satellite terminals, radio and radar systems, telephones, electro-optics, night vision and anti-intrusion devices, airborne surveillance equipment, navigational instruments, electromagnetic warfare systems, guidance and control systems for tactical missiles, and BFT installation kits.

UNITED STATES ARMY AVIATION AND MISSILE COMMAND

5-21. AMCOM is a major subordinate command of the USAMC. AMCOM has direct operational control of the national maintenance SOR and two Army depots: Corpus Christi Army Depot and Letterkenny Army Depot.

NATIONAL MAINTENANCE SOURCES OF REPAIRS

5-22. The national maintenance manager is responsible for managing all sustainment-level reparables and selected field-level reparables according to AR 750-1. The national maintenance manager uses various sources of repair. The national maintenance program distributes sustainment maintenance workload across depot and non-depot activities based on national needs. The national maintenance program manager may establish the use of a theater aviation sustainment manager within a specific theater. The theater aviation sustainment manager provides a unified aviation maintenance life-cycle management command focused on the use of theater assets, providing airframe maintenance, overhaul of aviation subassemblies, and crash/battle damage repair.

5-23. Performance-based logistics (PBL) is a support strategy that places primary emphasis on optimizing system support to meet the needs of the warfighter. Its primary tenets are documentation of warfighter performance requirements as measurable metrics in performance-based agreements designation of single point accountability for performance with a product support integrator and development of support metrics and accompanying incentives to ensure that the performance objectives are met. In short, PBL is buying performance, not transactional goods and services. PBL delineates outcome performance goals of systems; ensures that responsibilities are assigned; provides incentives for attaining these goals; and facilitates the overall life-cycle management of system reliability, supportability, and total ownership costs. It is an integrated acquisition and logistics process for buying system capability.

5-24. Source-of-support decisions for PBL do not favor either organic or commercial providers. The decision is based upon a best value analysis or business case analysis of the provider's product support capability to meet set performance objectives.

5-25. Depot level maintenance includes the repair, fabrication, manufacture, rebuilding, assembly overhaul, modification, refurbishment, rebuilding, test, analysis, repair-process design, in-service engineering, upgrade, painting and disposal of parts, assemblies, subassemblies, software, components, or end items that require shop facilities, tooling, support equipment, and/or personnel of higher technical skills, or processes beyond the organizational level capability. Depot level maintenance can be independent of the location at which the maintenance or repair is performed, the source of funds, or whether the personnel are government or commercial (contractor) employees.

SECTION III – ADDITIONAL MAINTENANCE CONSIDERATIONS

5-26. The Army warranty program covers all items procured for Army use purchased with an accompanying warranty. This program includes aircraft, aircraft weapon systems, ATS systems, repair parts and components. The Army also purchases warranties for items such as trucks, tractors, engines, transmissions, and construction equipment.

Note. Refer to AR 700-139 for additional guidance on the Army's warranty program.

5-27. ATS units receiving newly fielded equipment and components should check to see what type of warranty the Army purchased for their newly fielded equipment. Tailoring the warranty concept to fit the item and its intended use in a comprehensive manner with minimal effect on standard Army logistical procedures is the single most important aspect of the warranty acquisition process. Warranty tailoring is intended to protect the Army from the costs and frequency of systemic failures and to enact responsive remedies for failures of significant operational effect on aircraft readiness.

5-28. When newly fielded equipment under warranty experiences a malfunction, aviation maintenance officers/technicians should request assistance from the logistics assistant program (LAP) office for answers to or resolution of warranty issues or questions.

5-29. Logistics assistant officers (LAOs) or logistics assistant representatives provide advice and assistance to the Army command warranty claims officer (WARCO) and aviation unit maintainers as part of their service interface as established in AR 700-4. Representatives of the LAP—

- Clarify warranty applications/exclusions and warranty claim/report procedures upon user or WARCO request.
- Provide warranty information to users/WARCOs as a secondary source of information.
- Provide specific assistance as outlined in materiel fielding plans and technical and supply bulletins/manuals and related documents for warranty management.

5-30. ATS equipment and components covered by the Army warranty program require special handling during the warranty period to keep it valid. Details concerning warranty provisions are published in supply letters. The WARCOs or LAOs have a copy of the warranty supply letter on items within their area of support. Warranties increase the time required to perform maintenance.

5-31. Once assistance and guidance is received from LAP technical representatives and warranty issues and concerns are addressed and resolved, aviation unit maintenance personnel submit a product quality deficiency report. DA PAM 738-751 provides procedural guidance and information for this report.

NEW EQUIPMENT TRAINING TEAMS

5-32. The Logistics Assistance and New Equipment Training Division is one of the subordinate divisions of the Directorate for Readiness. Its mission is staff supervision and operational control of worldwide LAPs for Army ATS systems and related support equipment. The division also provides representatives to make command visits and manage all aspects of the new equipment training and support services.

ARMY TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT

5-33. United States Army TMDE is essential to ATS maintenance due to its distinctive ability to test, adjust, synchronize, repair, and verify accuracy, safety, readiness, and information assurance of ATS systems. The capability of ATS systems, radios and communication devices to operate accurately and effectively depends on the synchronization of precise measurements against known standards.

5-34. AR 750-43 assigns management of the TMDE calibration and repair support program to Headquarters, Air Mobility Command. In turn, the TMDE activity is responsible for DA TMDE program execution and management. National Guard Bureau is assigned management, command, and control over Army National Guard maintenance companies and their assigned TMDE. It also controls calibration facilities at combined support maintenance shops. AR 750-43 prescribes policies and procedures, assigns responsibilities, and establishes goals and objectives applicable to the development, selection, acquisition, management, sustainment, and support of Army TMDE, associated test program sets, embedded diagnostics and prognostics, and interactive technical manuals.

Appendix A

Deployment-Redeployment Life-Cycle

This appendix addresses deployment of ground vehicles and equipment. The capability to quickly and safely deploy ATS assets from CONUS or forward-deployment sites to another theater of operation is critical. Units that plan, train, and validate movement strategies increase chances of success.

FUNDAMENTALS

A-1. Units may be required to move from any location to railheads, seaports of embarkation (SPOE), or aerial ports of embarkation (APOE) from which they are transported to the theater of operations. Movement to the SPOE or APOE may involve a combination of modes. Depending on distance and time available, vehicles may convoy or be shipped by rail or air.

UNIT MOVEMENT PERSONNEL

A-2. Unit movement personnel develop SOPs and load plans. They train personnel, ensure equipment is prepared for movement, and inspect equipment before and after the unit deploys. They identify, request, and coordinate additional support to move unit equipment and personnel as required.

SEA AND AIR TRANSPORT

A-3. Successful movement depends on detailed planning SOPs for deployment by various methods and the identification, training, and validation of deployment and load teams. Each team member has specific duties, from preparation at home station, to clearance of the port of debarkation (POD), to arrival at destination. The unit must continually confirm automated unit equipment lists and time phase deployment lists in preparation for future deployments

PLANNING AND PREPARATION

A-4. Upon receiving the warning order (WARNOD), and time permitting, advance parties are sent to both the port of embarkation (POE) and PODs to set the conditions for reception of unit personnel and equipment and to provide command, control, communications, and intelligence.

A-5. The following references discuss deployment actions and considerations:

- AR 525-93.
- ATP 3-35.
- Surface Deployment and Distribution Command Transportation Engineering Agency pamphlets provide specific guidance for preparation of equipment for movement. Not all contingencies for unit movement can be foreseen because of the wide range of missions and world events. Units should be aware of battle book plans and wargame probable and possible scenarios. Skeleton plans should be established to cover contingencies.

A-6. Unit movement personnel familiarize themselves with the POEs available to their organization and mission requirements. Special needs and considerations are addressed as early as possible for each POE. Unit movement personnel should—

- Establish and periodically update telephone lists, points of contact, and special requirements for likely POEs.
- Conduct periodic leader's reconnaissance of POEs. Reconnaissance includes members of unit load teams and advance party personnel.

- Identify advance party personnel and define duties.
- Identify OPSEC requirements during movement and embarkation activities.
- Plan and coordinate workspace for personnel during the embarkation phase (empty offices, borrowed tentage from nondeploying units, and rented or borrowed trailers).
- Identify and prepare requests for communications requirements (commercial lines, wire, radio, and cellular phone).
- Determine transportation requirements at POE for movement teams and key personnel (borrowed vehicles and rental cars).
- Plan messing, billeting, medical treatment facilities, refueling/defueling points, and special requirements for weapons and ammunition.

DEPLOYMENT

A-7. On order, units transport their equipment and move ground vehicles along preselected routes to the POE. Units that perform depot-level maintenance normally operate at embarkation points. As the units arrive, a dedicated sustainment movement support team assists in preparing the vehicles and equipment for deployment. Preparation includes required maintenance and installation of ferry equipment.

A-8. Air and sea deployment modes terminate at the designated APOD/SPOD. Depot or ATS maintenance facilities should be available at the port or elsewhere in the theater. Personnel at these facilities assist the unit with the removal of ferried equipment, installation of mission equipment, and perform required maintenance and inspections to prepare equipment for the mission. They also coordinate the immediate backhaul of designated support teams and transfer equipment. On receipt of the order, commanders dispatch preselected facility teams. Advance party headquarters staff members locate command facilities at each termination site to facilitate the integration of vehicles and personnel into the theater force structure.

Task Organization

A-9. Arriving elements task organize and reconfigure vehicles as appropriate for the mission. Sustainment efforts are prioritized to build combat-capable units and command, control, communications, computers, and intelligence (C4I) architecture.

Force Protection

A-10. ATS forces are vulnerable during the buildup phase when the unit is not at full strength and equipment or vehicles may not be fully assembled for combat. A security plan must be understood and executed; work prioritized immediately upon arrival at designated POD. This plan should include passive and active measures to combat air and ground threats.

Training

A-11. Many units that move from one environmental extreme to another need a period of adjustment to the new climate. The unit commander arranges training and conditioning to accelerate acclimation.

A-12. Most deployments involve operating in a joint or multinational environment. Early arriving units may be able to schedule training with other services. Liaison elements from the S-3 shop are designated to ensure smooth coordination.

Appendix B

Air Traffic Control Systems

New Army tactical ATS systems are fielded and modernized, adding flexibility, mobility, and capability to Army ATS companies and AOBs. This modernization ensures SA of airspace, and synchronization and interface with airspace users, by facilitating the movement and recovery of aircraft in a hostile environment or IMC weather conditions.

AN/MSQ-135A MOBILE TOWER SYSTEM

B-1. The AN/MSQ-135A MOTS (figure B-1) is a modular tactical ATC tower system mounted on an armored medium tactical vehicle (MTV). The MOTS Airfield Lighting System (ALS) is towed by two armored HMMWVs. The MOTS with its ALS provide the control tower team a robust ATC tower and airfield lighting capability for the terminal airspace areas of the division and theater. The MOTS is ideal for an airfield tower restoration mission or long-term airfield tower operations often necessary to support enduring airfield operations. It can provide limited control tower operations within 15 minutes of arrival at an operating location and become fully operational within 60 minutes. This system has digital air/ground communication and digital linkage to airspace control, ATS and local command nets, and is staffed with nine ATC operators. The AN/MSQ-135A is equipped with AN/ARC-220 HF-single side band automatic link establishment and AN/PRC-117 multiband (UHF-AM, VHF-AM, VHF-FM, and SATCOM) radio sets. The AN/MSQ-135A can be airlifted by C-17 and larger aircraft and the shelter by CH-47 helicopter.

Figure B-1. AN/MSQ-135A mobile tower system

AN/TSQ-198 TACTICAL TERMINAL CONTROL SYSTEM

B-2. The AN/TSQ-198B TTCS (figure B-2, page B-2) is a HMMWV-mounted ATC system for the TACT mission. The TTCS enables VFR control of air traffic at LZs, DZs, PZs, FARPs, initial airfields, and temporary helicopter operating areas. It is the system of choice for initial entry operations for localized high volume aviation operations where ATC is a risk management reducer. It can provide ATS control within 30 minutes of arrival. Four air traffic controllers are assigned to operate the AN/TSQ-

198B for a 24-hour period. Major communications components include AN/VRC-114 multiband (UHF-AM, VHF-AM, VHF-FM, and SATCOM) radios and AN/VRC-104 HF radio. The communications system can convert to a portable battery operated manpack configuration or be remoted from the vehicle up to 1 kilometer. Force XXI Battle Command Brigade and Below-BFT2 is mounted adjacent to the radio set control providing on-the-move, near-real-time horizontal and vertical information exchange using a GPS receiver. The GPS receiver receives and processes satellite-based network data to determine its own location, and is then capable of transmitting its location to other systems who receive and display situational awareness and command and control data. The AN/TSQ-198B is sling-loadable by helicopter, or can be transported by a C-130 aircraft load.

Figure B-2. AN/TSQ-198B TTCS

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

B-3. The AN/TPN-31 Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) (figure B-3, page B-3) deploys with the AN/MSQ-135A as part of initial or follow-on forces to establish an all-weather precision/non-precision landing capability at landing sites/airfields within the JOA and theater areas of responsibility. The ATNAVICS can provide GCA operations within 4 hours of arrival at an operating location. ATNAVICS directly interfaces by voice and digital data links with the tower systems and TAIS of the CAB, TAB, AOB, division and theater airspace control elements for airspace data that supports current operations. When required, the ATNAVICS will also integrate into the national/host nation airspace system and comply with FAA, ICAO, North Atlantic Treaty Organization, and the European Organization for the Safety of Air Navigation (EUROCONTROL) standards for stability and civil support operations. Although the ATNAVICS is a tactical system, the inherent flexibility of the ATNAVICS design also allows for its use in fixed-base GCA operations.

B-4. The ATNAVICS provides area surveillance and aircraft identification capability for a 25 nautical mile radius. The system consists of three integrated radars: ASR, SSR/IFF, and PAR operated by a GCA team of seven air traffic control operators. The ATNAVICS is transportable by C-17 or larger, cargo aircraft for total system deployment (prime movers, shelters, radar group and generators). The ATNAVICS shelter, sensor pallet and generators are externally air transportable by CH-47 or larger helicopters and may be segmented.

Figure B-3. AN/TPN-31 ATNAVICS

AN/TSQ-221B TACTICAL AIRSPACE INTEGRATION SYSTEM

B-5. The AN/TSQ-221B TAIS (figure B-4) is a digital and analog system for airspace control planning, operations, and ATS area support. It provides automation assistance to the full range of airspace planning, enhances airspace management operations (real-time), and ensures connectivity between all ATS assets and airspace users in theater. TAIS teams can provide AIC operations within 4 hours of arrival at an operating location.

Figure B-4. AN/TSQ-221B TAIS

B-6. TAIS is the direct link to theatre air-ground system (TAGS) through interface with the JFACC's automated airspace planning and communications system. It integrates with MCIS, with direct connectivity to battlefield automated systems. It also has enhanced operability with joint, multinational, and civil C4I systems.

B-7. TAIS is a mobile system with four workstations. Communications include VHF, UHF, HF, UHF SATCOM, enhanced position location reporting system, GPS, MSE/digital nonsecure voice telephone (FAX), improved data modem (+), and secure telephone unit III (phone). It maximizes synchronization of battlefield airspace supporting force operations and minimizing fratricide. Major capabilities include—

- Situational awareness and synchronization of all airspace operations in the tactical commander's AO.
- Maximized opportunities for continuous operations, thereby increasing the commander's flexibility and offensive capability.
- Transparent airspace management planning and operations.

- Reduction of staff workloads and planning time.

B-8. TAIS integrates airspace planning methods and procedures through interface with MCIS and TAGS agencies. Projected airspace usage plans are input digitally or manually. The system correlates all information and identifies airspace usage conflicts automatically by means of preset priorities or command decision. It displays a proposed ACO with control measure graphics (in two- or three-dimension, as selected by the operator), and in the time dimension. It provides the capability of monitoring ACO execution over time; identifies (with alarms) actual or imminent airspace user conflict in near real-time; accepts and identify conflicts with real-time airspace usage changes; distributes a revised ACO (or individually modified ACMs) to update battlefield visualization.

Appendix C

Risk Management

The tactical environment provides ever-changing demands and unpredictable problems, often under stressful conditions. Mission accomplishment requires continuous leader involvement and making right decisions and taking right actions that are ethical, effective, and efficient. Safety in the tactical environment depends on compliance with established standards. ATS units bring an added measure of safety to aviation operations. Properly used, they can mitigate or reduce many of the risks associated with these operations. Safe mission accomplishment relies heavily on the complete integration of risk management into the Army's decision making processes.

RISK MANAGEMENT

C-1. Army organizations at every level must understand and apply risk management (RM) during all activities. The five-step process—identify the hazards, assess the hazards, develop controls and make ethical risk decisions, implement controls, and supervise and evaluate—is most effective when used consistently, across all echelons. Commanders, staff officers, Army leaders, individual Soldiers, and Army Civilians each contribute to the mission. Within any organization, an individual's responsibility for RM depends on the nature of the operation or activity. Figure C-1 provides the risk matrix as shown on DD Form 2977 (*Deliberate Risk Assessment Worksheet*).

Risk Assessment Matrix		**Probability** *(expected frequency)*				
		Frequent: Continuous, regular, or inevitable occurrences	**Likely:** Several or numerous occurrences	**Occasional:** Sporadic or intermittent occurrences	**Seldom:** Infrequent occurrences	**Unlikely:** Possible occurrences but improbable
Severity *(expected consequence)*		**A**	**B**	**C**	**D**	**E**
Catastrophic: *Mission failure, unit readiness eliminated; death, unacceptable loss or damage*	I	EH	EH	H	H	M
Critical: *Significantly degraded unit readiness or mission capability; severe injury, illness, loss or damage*	II	EH	H	H	M	L
Moderate: *Somewhat degraded unit readiness or mission capability; minor injury, illness, loss, or damage*	III	H	M	M	L	L
Negligible: *Little or no impact to unit readiness or mission capability; minimal injury, loss, or damage*	IV	M	L	L	L	L
Legend: **EH** - Extremely High Risk **H** - High Risk **M** - Medium Risk **L** - Low Risk						

Figure C-1. Risk matrix

C-2. The risk management cycle for ATS units at all levels is tied directly to the training and maintenance process. Factors such as type of ratings, numbers of rated controllers, and equipment readiness and availability are assessed and corrections are made during normal garrison operations. Command emphasis at all levels of leadership on maintenance and supply operations eliminates many factors that might create an unacceptable risk during exercises or deployments. This assessment minimizes and mitigates many of the hazards faced during deployment. Leaders must complete the five steps for risk management listed in table C-1, page C-2, and refer to ATP 5-19 and DD Form 2977 for risk management definitions and terminology.

Table C-1. Steps of risk management

Step 1. Identify hazards	
	1. Make an operational analysis. This is a description of events, in time sequence, expected to occur during the operation. 2. Make a preliminary hazard analysis. List the various hazards that could occur and result in accidents. It is developed using experience, the database, and scenario thinking or similar techniques. 3. In-depth hazard analysis. Use when time permits or when certain risks require more careful consideration.
Step 2. Assess hazards	
	Assess various hazards to determine the relative probability, severity, and potential mission impact.
Step 3. develop controls and make risk decisions	
	1. Develop risk control options, starting with the most serious risks. 2. Complete a training realism assessment to ensure the suitability of risk controls. 3. Make decisions by selecting controls to reduce risk to a practical minimum constant with the mission.
Step 4. Implement controls	
	Implementation is best accomplished by integrating the procedures in unit SOPs, orders, and training.
Step 5. Supervise and evaluate	
	Maintain effectiveness by ensuring risk standards are as effective as expected and kept at high levels.
Legend: SOP-standard operating procedure	

Appendix D
Checklists

This appendix provides a reference to information used by aviation units during training or combat. It is not all inclusive, should only be used as a guide, and not supersede unit SOPs.

AVERAGE MARCH RATES FOR MIXED COLUMNS

D-1. Table D-1 provides the estimated speed march rates units can attain under certain driving and road conditions. Planners adjust these rates given individual driver training, experience, and physical conditioning.

Table D-1. Average march rates for mixed columns (in kilometers)

Condition	*March Rates*
Day, on roads	20 to 30
Night, on roads	15 to 20
Cross-country	5 to 15

AVERAGE VEHICLE SPEEDS

D-2. Table D-2 provides the planner an indication of average speeds attainable given a surface composition and degree of surface destruction.

Table D-2. Average vehicle speeds (kilometers per hour)

Road Type	*Undamaged Surface*	*10% Surface Destruction*	*<10% Surface Destruction*
Concrete, asphalt	40 to 50	20 to 35	10 to 20
Gravel and rubble	40 to 50	20 to 30	10 to 20
Dirt	15 to 25	8 to 15	5 to 10

TIME DISTANCE RATES

D-3. Table D-3 and table D-4, page D-2, reflect time distance rates in kilometers and miles, respectively.

Table D-3. Time distance rates (kilometers)

Speed	*Distance*				
	1 km	*2 km*	*3 km*	*5 km*	*10 km*
10 kph/6.2 mph	6 min	12 min	18 min	30 min	60 min
15 kph/9.4 mph	4 min	8 min	12 min	20 min	40 min
20 kph/12.5 mph	3 min	6 min	9 min	15 min	30 min
25 kph/15.6 mph	2.4 min	4.8 min	7.2 min	12 min	24 min
30 kph/18.7 mph	2 min	4 min	6 min	10 min	20 min
35 kph/22 mph	1.7 min	3.4 min	5.1 min	8.5 min	17 min
40 kph/25 mph	1.5 min	3 min	4.5 min	7.5 min	15 min
48 kph/30 mph	1.2 min	2.4 min	3.6 min	6 min	12 min
56 kph/35 mph	1 min	2 min	3 min	5 min	10 min
64 kph/40 mph	.9 min	1.8 min	3.6 min	4.5 min	9 min
72 kph/45 mph	.8 min	1.6 min	2.4 min	4 min	8 min
Legend: kph-kilometer per hour; min-minute; mph-miles per hour					

Table D-4. Time distance rates (miles)

Speed	*Distance*				
	1 mile	*2 mile*	*3 mile*	*5 mile*	*10 mile*
5 mph/8 kph	12 min	24 min	36 min	60 min	120 min
10 mph/16 kph	6 min	12 min	18 min	30 min	60 min
15 mph/24 kph	4 min	8 min	12 min	20 min	40 min
20 mph/32 kph	3 min	4 min	9 min	15 min	30 min
25 mph/40 kph	2.4 min	4.8 min	7.2 min	12 min	24 min
30 mph/48 kph	2 min	4 min	6 min	10 min	20 min
35 mph/56 kph	1.7 min	3.4 min	5.1 min	8.5 min	17 min
40 k mph/64 kph	1.5 min	3 min	4.5 min	7.5 min	15 min
45 mph/72 kph	1.3 min	2.6 min	3.9 min	6.5 min	13 min
Legend: kph-kilometer per hour; min-minute; mph-miles per hour					

Note. When converting miles to kilometers: (miles x 1.609=kilometers) or (miles/621=kilometers). Example: 12 miles x 1.609=19.3 kilometers. When converting kilometers to miles: (kilometers x 0.621=miles) or (kilometers/1.609=miles). Example: 20 kilometers x 0.621=12.4 miles.

SPOT REPORT

D-4. Spot reports are used to send timely battlefield information or status information regarding events that could have an immediate and significant effect on current and future operations (table D-5).

Table D-5. Spot report

LINE 1: DATE AND TIME (DTG) LINE 2: UNIT (unit making report) LINE 3: SIZE (size of detected element) LINE 4: ACTIVITY (detected element activity at DTG of report) LINE 5: LOCATION (UTM or grid coordinate with MGRS grid zone designator of detected element activity or event) LINE 6: UNIT (detected element unit, organization, or facility) LINE 7: TIME (DTG of observation) LINE 8: EQUIPMENT (equipment of element observed)
Legend: DTG-date time group; MGRS-military grid reference system; UTM-coordinated universal time

CLOSURE REPORT

D-5. The closure report is used to inform the commander of unit movement and its capability to conduct future operations (table D-6). This report is submitted upon movement completion or as directed by the commander.

Table D-6. Closure report

LINE 1: DATE AND TIME LINE 2: UNIT LINE 3: SP LINE 4: RELEASE POINT LINE 5: COMMAND POST LOCATION LINE 6: CLOSING DTG LINE 7: EVENTS LINE 8: ETA TO CONTINUE OPERATIONS LINE 9: SENSITIVE ITEMS STATUS LINE 10: NARRATIVE LINE 11: AUTHENTICATION
Legend: DTG-date time group; ETA-estimated time of arrival; SP- start point

MEACONING, INTRUSION, JAMMING, INTERFERENCE REPORT

D-6. The meaconing, intrusion, jamming and interference report is submitted when units experience enemy attempts to jam, interfere, or disrupt radio communications (table D-7).

Table D-7. Meaconing, intrusion, jamming and interference report

LINE 1: DATE AND TIME LINE 2: UNIT (unit making report) LINE 3: INTERFERENCE (strength and characteristics) LINE 4: LOCATION (UTM or six-digit grid coordinate with MGRS grid zone designator of incident) LINE 5: ON TIME (start DTG) LINE 6: OFF TIME (end DTG) LINE 7: EFFECTS (operations or equipment affected) LINE 8: FREQUENCY (frequency or frequency range affected) LINE 9: NARRATIVE (free text for additional information required for report clarification) LINE 10: AUTHENTICATION (report authentication)
Legend: DTG-date time group; MGRS-military grid reference system; UTM-universal transverse Mercator

MEDICAL EVACUATION REQUEST

D-7. The medical evacuation 9-line request (table D-8) is used for both air and ground intratheater medical evacuation requests.

Table D-8. Medical evacuation request

REPORT NUMBER: M030 {USMTF # D901}	
GENERAL INSTRUCTIONS: Use to request intratheater medical evacuation of sick and wounded personnel. Reference: ATP 4-02.2.	
LINE 1: LOCATION OF PICKUP SITE (UTM or six-digit grid coordinate with MGRS grid zone designator)	
LINE 2: RADIO FREQUENCY AND CALL SIGN (radio frequency of requesting unit at pickup site; call sign, and suffix)	
LINE 3: NUMBER OF PATIENTS BY PRECEDENCE (number of patients by precedence: A-urgent, B-urgent-surgical, C-priority, D-routine, or E-convenience; transmitted as precedence type + # of patients [example: “Alpha 2”; when more than one precedence insert “BREAK” between precedence])	
LINE 4: SPECIAL EQUIPMENT REQUIRED (A-none, B-hoist, C-extraction equipment, D-ventilator)	
LINE 5: NUMBER OF PATIENTS BY TYPE (total number of patients by type: L+ # of patients – litter or A+ # of patients – ambulatory [example: “Lima 3”; insert the word “BREAK” between the litter entry and ambulatory entry])	
LINE 6A (wartime): SECURITY OF PICK-UP SITE (A-no enemy troops in area, P-possibly enemy troops in area [approach with caution], E-enemy troops in area [armed escort required], or X-enemy troops in area [approach with caution])	
LINE 6B (peacetime): NO. TYPE OF WOUND, INJURY, OR ILLNESS (specific information regarding patient wounds by type [example: gunshot wound, head injury, IED blast, amputation])	
LINE 7: METHOD OF MARKING AT PZ (marking method: A-panels, B-pyrotechnic signal, C-smoke signal, D-none, E-other)	
LINE 8: PATIENT NATIONALITY AND STATUS (patient nationality: A-U.S. military, B-U.S. civilian, C-non-U.S. or multinational military, D-non-U.S. or multinational civilian, E-enemy prisoner of war)	
LINE 9A (wartime): CBRN CONTAMINATION (C-chemical, B-biological, R-radiological, N-nuclear, U-unknown, if none skip line 9)	
LINE 9B (peacetime): TERRAIN DESCRIPTION (description of terrain features at the proposed pick-up site)	
Legend: CBRN-chemical, biological, radiological, and nuclear MGRS-military grid reference system	PZ-pickup zone U.S.-United States UTM-universal transverse Mercator

EXPLOSIVE ORDINANCE DISPOSAL SUPPORT

D-8. In the event of explosive ordnance disposal support is required, requests will be in form of the explosive ordnance disposal 9 line report (table D-9).

Table D-9. Explosive ordinance disposal support

REPORT NUMBER: E040 {USMTF #D983}
GENERAL INSTRUCTIONS: Use to request EOD support, to report the results of an EOD mission, or to request EOD support to protect designated VIP. Reference: ATP 3-34.20/MCRP 3-17.2D.
LINE 1 – DATE AND TIME
LINE 2 – UNIT (unit making report)
LINE 3 – ACTIVITY (type of EOD activity the report concerns: EOD REQUEST, EOD RESPONSE, OR VIP REQUEST)
LINE 4 – REQUESTOR (identifier of unit or agency requesting EOD support)
LINE 5 – EOD UNIT (identifier of unit or agency performing the EOD mission)
** Lines 6 through 11 are applicable if the report is a request for explosive ordnance neutralization.
LINE 6 – CATEGORY (EOD incident category assigned by requestor: INDIRECT, IMMEDIATE, MINOR, or NONE)
LINE 7 – DISCOVERED (DTG when the unexploded ordnance was discovered)
LINE 8 – DESCRIPTION (if applicable, any additional descriptive information related to the threat posed to resources and facilities by unexploded ordnance)
LINE 9 – ORDNANCE (number, type, and location of unexploded ordnance to be neutralized; repeat as required)
LINE 10 – CONDITION (ARMED or UNARMED)
LINE 11 – SITUATION (either dropped in fire, underwater, accident, or a literal description of the circumstances surrounding the incident)
**Lines 12 through 15 are applicable if the report contains the results of an EOD mission.

Table D-9. Explosive ordinance disposal support, cont'd

REPORT NUMBER: E040 {USMTF #D983}	
LINE 12 – REPORTED (DTG when EOD incident was reported) LINE 13 – EOD TEAM TIME OF ARRIVAL (DTG when EOD team arrived) LINE 14 – COMPLETED (DTG when EOD action completed) LINE 15 – EOD ACTION TAKEN (disposition, condition, situation, or other information concerning EOD action taken)	
**Lines 16 through 26 are applicable if report is a VIP EOD support request.	
LINE 16 – PROTECT (first and last name of individual to be protected) LINE 17 – NO. OF PERSONNEL (number of EOD personnel required for mission) LINE 18 – DEPART (departure point name or coordinates) LINE 19 – TRANSPORTATION (transportation mode of VIP required) LINE 20 – COUNTRIES OR AREAS (countries or areas where support is required)	
**Repeat lines 17 through 20 to report multiple missions/mission data. Assign sequential lines to succeeding iterations. For example, first iteration is 17 through 20; second iteration is 17a through 20a; third iteration is 17b through 20b; and so on.	
LINE 21 – BEGIN (DTG to begin VIP support) LINE 22 – END (DTG to end VIP support)	
**Repeat lines 21 through 22 to report multiple missions/mission data. Assign sequential lines to succeeding iterations. For example, first iteration is 21 through 22; second iteration is 21a through 22a; third iteration is 21b through 22b; and so on.	
**Lines 23 through 26 are applicable if a POC has been designated by the unit requesting VIP EOD protection support.	
LINE 23 – POC (first and last name of individual designated as the requesting unit's POC for coordinating EOD VIP support) LINE 24 – TELEPHONE (telephone number of POC) LINE 25 – FREQUENCY (primary radio frequency of unit/agency requiring EOD support) LINE 26 – LOCATION (UTM or six-digit grid coordinate with MGRS grid zone designator of POC) LINE 27 – SPECIAL REQUIREMENTS (special requirements for EOD support mission) LINE 28 – NARRATIVE (free text for additional information required for report clarification) LINE 29 – AUTHENTICATION (report authentication)	
Legend: DTG-date time group EOD-explosive ordnance disposal MGRS-military grid reference system	POC-point of contact UTM-universal transverse Mercator VIP-very important person

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Glossary

SECTION I – ACRONYMS

1SG	first sergeant
2-D	2-dimensional
3-D	3-dimensional
A&L	administrative and logistics
AA	assembly area
ACA	airspace control authority
ACM	airspace coordinating measure
ACO	airspace control order
ACP	airspace control plan
AD	air defense
ADAM	air defense and airspace managment
AIC	airspace information center
AIS	airspace information service
AM	amplitude modulation
AMCOM	Aviation and Missile Command
AMD	area missile defense
AMTP	air traffic services maintenance training program
AO	area of operation
AOB	airfield operations battalion
AOR	area of responsibility
APG	aviation procedures guide
APOD	aerial port of debarkation
APOE	aerial port of embarkation
AR	Army regulation
ASCC	Army Service Component Command
ASR	airport surveillance radar
AT&A	air traffic and airspace
ATASM	air traffic and airspace management technician
ATC	air traffic control
ATNAVICS	Air Traffic Navigation, Integration, and Coordination System
ATO	air tasking order
ATS	air traffic services
ATSSE	air traffic services standardization element
ATTP	air traffic training program
BAS	battlefield automated system
BDOC	base defense operations center
BDZ	base defense zone

BFT	Blue Force Tracker
BLOS	beyond line of sight
C4I	command, control, communications, computers, and intelligence
CAB	combat aviation brigade
CATS	combined arms training strategies
CBRN	chemical, biological, radiological, and nuclear
CE	computing environment
CECOM	Communications-Electronics Command
CFSR	civilian field service representative
COMNAV	communication/navigation
COMSEC	communications security
COCOM	Combatant Command
CONUS	continental United States
CP	command post
CPCE	command post computing environment
CPN	command post node
CRE	contingency response element
CRG	contingency response group
CRT	contigency response team
CRW	contingency response wing
CSM	command sergeant major
CTL	commander’s task list
CTO	control tower operator
DA	Department of the Army
DA PAM	Department of the Army pamphlet
DATCALS	deployable air traffic control and landing system
DOD	Department of Defense
ECAB	expeditionary combat aviation brigade
FAA	Federal Aviation Administration
FAAJO	Federal Aviation Administration Joint Order
FAAO	Federal Aviation Administration Order
FARP	forward arming and refueling point
FLIP	flight information publication
FM	field manual, frequency modulation
FOD	foreign object damage
FW	fixed-wing
G-2	commander's intelligence section
GCA	ground controlled approach
GPS	global positioning system
GS	general support
GSAB	general support aviation battalion

HF	high frequency
HHC	headquarters and headquarters company
HMMWV	high mobility multi-purpose wheeled vehicle
ICAO	International Civil Aviation Organization
IFF	identification friend or foe
IFR	instrument flight rule
IIMC	inadvertent instrument meteorological condition
IMC	instrument meteorological condition
IP	internet protocol
IPB	intelligence preparation of the battlefield
ISB	intermediate staging base
JFACC	joint force air component commander
JFC	joint force commander
JNN	joint network node
JNN-N	joint network node-network
JOA	joint operations area
LAO	logistic assistant officer
LAP	logistics assistant program
LOA	letter of agreement
LOS	line of sight
LZ	landing zone
MATCD	marine air traffic control detachment
MCIS	mission command information system
METL	mission essential task list
MOS	military occupational specialty
MOTS	mobile tower system
MSE	mobile subscriber equipment
NAVAID	navigational aid
NCO	noncommissioned officer
NIPRNET	non-classified internet protocol router network
NOE	nap-of-the-earth
NOTAM	notice to airmen
O&I	operations and intelligence
OEM	original equipment manufacturer
OPSEC	operations security
PAR	precision approach radar
PBL	performance-based logistics
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oil, and lubricants
PZ	pickup zone

RL	readiness level
RM	risk management
ROE	rules of engagement
RSOI	reception, staging, onward movement, and integration
S-1	personnel staff officer
S-2	intelligence staff officer
S-3	operations staff officer
S-4	logistics staff officer
S-6	signal staff officer
SATCOM	satellite communication
SIPRNET	secure internet protocol router network
SKL	simple key loader
SME	subject matter expert
SO	safety officer
SOI	signal operating instruction
SOP	standing operating procedure
SOR	source of repair
SPINS	special instructions
SPOD	seaport of debarkation
SPOE	seaport of embarkation
SSR	secondary surveillance radar
SWO	staff weather officer
TAB	theater aviation brigade
TACT	tactical aviation control team
***TAGS**	theater air-ground system
TAIS	tactical airspace integration system
TAOG	theater airfield operations group
TBC	Tactical Battle Command
TC	training circular
TDA	table of distribution and allowances
TERPS	terminal instrument procedures
TM	technical manual
TMDE	test, measurement, and diagnostic equipment
TOC	tactical operations center
TRC	tactical radio communication
TTCS	tactical terminal control system
UAS	unmanned aircraft system
UHF	ultra high frequency
UMT	unit ministry team
USAASA	United States Army Aeronautical Services Agency
USAMC	United States Army Materiel Command

USR	unit status report
VFR	visual flight rule
VHF	very high frequency
VoIP	voice over internet protocol
WARCO	warranty claims officer
WIN-T	Warfighter Information Network-Tactical
XO	executive officer

SECTION II – TERMS

Assembly area

An area in which a command is assembled to prepare for future operations. (FM 3-90.1)

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ATP 3-04.6
12 January 2022

By Order of the Secretary of the Army:

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