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Field Artillery Cannon Battalion

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Field Artillery Cannon Battalion

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Preface

Army Techniques Publication (ATP) 3-09.23 provides techniques for the field artillery (FA) cannon battalion commander and staff in support of the maneuver commander. This publication is the principle reference for the FA cannon battalion.

This publication describes the FA cannon battalion to include:

- Doctrinal guidance for commanders, staffs, and subordinate personnel that are responsible for conducting (planning, preparing, executing, and assessing) FA operations.
- Authoritative reference for personnel who develop—
  - Doctrine, techniques, and force structure.
  - Institution and unit training.
  - Standard operating procedures for brigade combat team (BCT) and field artillery brigade (FAB) operations.
- Operations for the BCT FA battalions assigned, attached, or under the operational control of the division artillery (DIVARTY) or FABs. The techniques described herein are flexible guidelines.
- Doctrine that is nested with the principles and tactics found in Army Doctrine Reference Publication (ADRP) 3-09 and field manual (FM) 3-09.
- Army operations doctrine as stated in ADRP 1, ADRP 3-0, ADRP 6-0, FM 3-90-1, and FM 3-90-2.
- Applicable North Atlantic Treaty Organization standardization agreements (see the references for a complete listing).

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

ATP 3-09.23 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which ATP 3-09.23 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 3-09.23 is the proponent publication are bold faced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

ATP 3-09.23 applies to the Active Army, Army National Guard, Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

The proponent of ATP 3-09.23 is the United States Army Training and Doctrine Command. The U.S. Army Field Artillery School is the preparing agency. Send comments and recommendations on Department of the Army Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Directorate of Training and Doctrine, 700 McNair Avenue, Suite 128, ATTN: ATSF-DD, Fort Sill, OK 73503-4436; by email to: usarmy.sill.fcoe.mbx.dotd-doctrine-inbox@mail.mil.

Introduction

The techniques herein build on the collective knowledge and experience gained through recent operations, numerous exercises, and the deliberate process of informed reasoning. These techniques are rooted in the fires principles identified in ADP 3-09, ADRP 3-09, and FM 3-09 and accommodate force design changes, new technologies and diverse threats.

ATP 3-09.23 has seven chapters and two appendices.

Chapter 1 provides the organizational framework for the FA cannon battalion found within a BCT a DIVARTY or a FAB. Section I begins with a brief description of the corps, FAB, division, DIVARTY, and the BCTs. Section II is devoted to the FA battalion mission and organization. Section III closes with a discussion of FA battalion key personnel and responsibilities.

Chapter 2 describes the FA battalion mission command. Section I begins by describing command and support relationships. Section II describes the FA battalion command post and its operation. Section III details FA battalion communications.

Chapter 3 provides an overview of the FA battalion planning process. Section I provides a brief overview of the military decisionmaking process. Section II is an overview of FA battalion intelligence preparation of the battlefield; and Section III addresses FA battalion rehearsals.

Chapter 4 describes internal and external information collection support to the detect function. Section I begins with a summary description of support from information collection assets external to the FA battalion. Section II describes support to the detect function provided by weapons locating radars organic to the FA battalion.

Chapter 5 focuses on the execution of attack with fires. Section I covers the fire mission process, including tactical and technical fire direction, massed fires, and continuity of operations. Section II discusses various types of fire missions. Section III provides information on counterfire. Section IV discusses FA battalion support for suppression of enemy air defenses (SEAD) operations. Section V provides general information on FA battalion meteorological operations and Section VI discusses FA battalion survey considerations.

Chapter 6 discusses how a FA battalion applies previously addressed techniques and principles in the context of FA operations in a variety of operational situations. Section I discusses key considerations for FA support. Section II discusses FA tasks common to operations. Sections III and IV cover FA operations in support of offensive and defensive tasks. Section V details FA support of other unique tactical operations, such as airborne operations. Section VI addresses FA support of stability tasks and defense support of civil authorities. Section VII discusses climate and terrain considerations that affect FA operations.

Chapter 7 describes the sustainment warfighting function as it relates to the FA battalion. This chapter has 13 sections:

- Section I – FA Battalion Sustainment Overview.
- Section II – Organization and Functions.
- Section III – Sustainment Planning.
- Section IV – Supply and Transportation.
- Section V – Explosive Ordnance Disposal.
- Section VI – Financial Management.
- Section VII – Human Resources Support.
- Section VIII – Religious Support.
- Section IX – Legal Support.
- Section X – Health Service Support.
- Section XI – Maintenance.
- Section XII – Support Areas.
- Section XIII – Sustainment Support Planning.

Appendix A discusses development, format, and content of a formal FA battalion operation order written in the five-paragraph field order format. Section I provides context for development of the FA battalion operation order including the operation order, concept of operations, fire support (FS) plan, and attendant FA support. Section II is an annotated outline that provides basic guidance on the content for various parts and paragraphs of the FA battalion operation order. Section III provides an example of the FA battalion operation plan, operation order and associated annexes.

Appendix B provides a discussion of techniques associated with a composite battalion of two different howitzer systems.

The glossary contains acronyms and defined terms.

Chapter 1

Field Artillery Cannon Battalion Organizational Framework

This chapter provides the organizational framework for the field artillery cannon battalion. Section I provides an overview of the force. Section II describes the field artillery battalion role and organization. Section III lists key field artillery battalion personnel and responsibilities.

SECTION I – FORCE OVERVIEW

1-1. Due to force design updates, a field artillery brigade now supports the corps. In addition, a division artillery now supports the division. The following paragraphs discuss their duties.

THE CORPS

1-2. The corps is normally the highest Army echelon deployed to a joint operations area. It commands joint, Army, and multinational land forces in campaigns and major operations. The distinguishing aspects of corps operations are their scope and scale. Normally, the corps exercises operational control over 2 or more U.S. Army divisions and a variety of supporting brigades, exercises tactical control over various multinational units and United States Marine Corps units, and is supported by various theater sustainment organizations. As a land component headquarters (HQ), the corps becomes the bridge between the operational and tactical levels.

FIELD ARTILLERY BRIGADE

1-3. Active component FABs are aligned with a corps or 8th Army Korea. However, they may be under the operational control of a task force, land component command, other service, or functional component. FABs are task organized based on their assigned tasks. The FAB gives the division, corps, joint task force, land component command, or other supported command a HQ to plan, synchronize, and execute close combat fires for engaged forces, strike, counterfire, and fires in support of decisive and shaping operations throughout the command's area of operations.

1-4. FA brigades' organic units include a HQ and HQ battery, target acquisition platoon, signal network support company, and a brigade support battalion (BSB). The FAB can be task organized with additional units based on the situation. This may be a combination of one to five Multiple Launch Rocket System, High Mobility Artillery Rocket System, and cannon battalions, as well as other enablers. National Guard field artillery brigades can support a corps but are aligned with National Guard divisions.

1-5. For more information on the FAB, see ATP 3-09.24.

THE DIVISION

1-6. The division is the Army's primary tactical warfighting headquarters. Its primary role is as a tactical headquarters commanding brigades in decisive action. The division combines offensive, defensive, and either stability or defense support of civilian authorities tasks in an area of operations assigned by its higher headquarters, normally a corps. It task-organizes its subordinate forces according to the mission variables of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) to accomplish its mission. Depending upon the variables of METT-TC, the division commands between 2 and 5 BCTs and a mix of multifunctional support brigades.

THE DIVISION ARTILLERY

1-7. The DIVARTY conducts the three tasks of the fires warfighting function for the division. These tasks are deliver fires, integrate all forms of Army, Joint, and multinational fires and conduct targeting. The DIVARTY will coordinate, integrate, synchronize and employ fires to achieve the division commander's objectives. A DIVARTY is assigned to each active component division and is ideally stationed with the division HQ. The DIVARTY commander is the fire support coordinator (FSCOORD) for the division, and is the primary advisor to the division commander for the fires warfighting function. The DIVARTY HQ focuses primarily on providing FS to the division. Specifically the DIVARTY coordinates with higher echelons for joint and multinational fires assets to enhance the capabilities of the division.

1-8. The DIVARTY is the force field artillery headquarters for the division. The division commander may direct the force field artillery headquarters to provide training certification standardization of all FA units in the division to include the BCTs organic FA battalions. The division commander must specify the degree of authority given to the DIVARTY commander. If directed the DIVARTY commander must work closely with the BCT commander to train and certify of the BCT FA battalion. Once task organized with FA battalions (rocket and cannon) or other assets the DIVARTY employs fires to create effects in order to achieve the division commander's objectives.

1-9. The DIVARTY commander must train his staff to integrate all forms of Army, joint and multinational fires. This will include the conduct of targeting, and the delivery of fires to create effects. The FSCOORD must balance his HQ efforts in executing the fires warfighting function tasks. Typically, the DIVARTY focuses on providing FS for the division rather than delivery of fires.

1-10. The DIVARTY has an HHB that includes a signal platoon and a target acquisition platoon. The DIVARTY and each of its subordinate elements can be augmented (task-organized) as required. This may include a combination of one to five Multiple Launch Rocket System, High Mobility Artillery Rocket System, and FA cannon battalions, as well as other enablers. Typically, these assets are allocated from a FAB. A DIVARTY allocated FA battalions will also require a CSSB and signal support, as the DIVARTY does not have any organic sustainment.

BRIGADE COMBAT TEAMS

1-11. The BCT consists of organic forces that are augmented and organized based on the mission variables of METT-TC. The BCT's organic units can be task organized internally or to other BCTs. The BCT is normally attached to a division, although the BCT can report directly to a corps HQ or a joint force HQ if the situation warrants. The three variants of BCTs are the armored brigade combat team (ABCT); the infantry brigade combat team (IBCT); and the Stryker brigade combat team (SBCT).

1-12. The BCTs balanced combined arms organizations have three maneuver battalions, a cavalry squadron, an FA battalion, engineer battalion, and a BSB. A forward support company from the BSB supports each FA battalion.

1-13. For more information on the BCT, see field manual (FM) 3-90.6.

SECTION II – FIELD ARTILLERY CANNON BATTALION ROLE AND ORGANIZATION

1-14. The FA battalion has a specific role in supporting the maneuver commander. The organization of each FA battalion in support of the different BCTs accomplishes this role.

ROLE

1-15. The field artillery has the role of destroying, defeating, or disrupting the enemy with integrated fires to enable maneuver commanders to dominate in unified land operations. The FA battalion also provides counterfire against enemy mortar, cannon, and rocket elements. The FA battalion has an established command relationship, but the commander may assign a command or support relationship. The FA battalion performs basic FA tasks derived from FM 7-15 to include:

- Deploy and conduct maneuver.
- Develop intelligence.
- Employ fires: close combat, shaping, and counterfire.
- Perform sustainment.
- Exercise mission command.
- Protect the force.

ORGANIZATION

1-16. The ABCT FA battalion provides responsive and accurate fires to the ABCT. The ABCT has a HQ and HQ battery to provide mission command and administrative support. A forward support company from a BSB provides logistical support. The ABCT FA battalion is organized with three batteries of six M109A6 Paladin self-propelled 155-mm howitzers. The battery consists of two platoons of three cannons in each platoon. The battalion also has one AN/TPQ-36 and one AN/TPQ-37 weapons locating radar (WLR) for target acquisition along with four AN/TPQ-50 WLRS. The ABCT is being fielded with two AN/TPQ-53 radars to replace the AN/TPQ-36 and AN/TPQ-37 radars.

1-17. The IBCT FA battalion provides responsive and accurate fires to the IBCT. The IBCT has a HQ and HQ battery to provide mission command and administrative support. A forward support company from a BSB provides logistical support. IBCT FA battalions come in a variety of configurations but most have two batteries of six M119-series towed 105-mm howitzers and one battery of six M777-series 155-mm towed howitzers. Each IBCT FA battalion has one AN/TPQ-36 WLR and four AN/TPQ-50 WLRs. The IBCT is being fielded with two AN/TPQ-53 radars to replace its AN/TPQ-36 radar.

1-18. The SBCT FA battalion provides responsive and accurate fires to the SBCT. The SBCT FA battalion has a HQ and HQ battery to provide mission command and administrative support. A forward support company from a BSB provides logistical support. The SBCT FA battalion is organized with three batteries of six M777-series towed 155-mm howitzers. The SBCT FA battalion has one AN/TPQ-36 and one AN/TPQ-37 WLRs and four ANTPQ-50 WLRs. Once fielded the SBCT will replace the AN/TPQ-36 and AN/TPQ-37 WLRs with two each AN/TPQ-53 radars.

1-19. The FA cannon battalions assigned to a FAB are currently in the National Guard and are organized with a HQ and HQ battery and three firing batteries. The HQ and headquarters battery and forward support company provide mission command, administrative, and logistical support for organic and attached elements. Each firing battery has two fire direction centers and four howitzer sections. A forward support company from the BSB supports the FA battalion.

1-20. The battalion fire direction center (FDC) provides tactical fire planning and fire control through automated systems with manual backup and communications equipment. Specific responsibilities are as follows:

- Monitor and operate in the battalion fire direction and FS coordination nets.
- Schedule fire units for planned fires in coordination with the battalion operations staff officer (S-3), brigade fire support officer (FSO) (if applicable), reinforcing or reinforced FA (as appropriate), and force field artillery HQ.
- Review the maneuver commander's attack guidance and force field artillery HQ directives and apply them to all fire mission requests.
- Ensure all battalion elements have the proper guidances and attack criteria entered into digital systems for both current and planned operations. Where applicable, this includes all fires cells and requires close coordination with the brigade fires cell.
- Execute planned fires as requested by force field artillery HQ, fires cells, observers, and reinforced units.
- Coordinate fire mission processing procedures (digital and voice) with fires cells, force field artillery HQ, reinforced or reinforcing units, targeting and intelligence assets, and air defense airspace management/brigade aviation elements (ADAM/BAEs) as appropriate. This includes digital fire mission routing and advanced field artillery tactical data system (AFATDS)

intervention rules. For airspace clearance, this includes digital or voice coordination requests and munition flight paths.

- Respond to immediate fire requests in the priority established by the supported maneuver commander's attack criteria.
- Ensure the battalion meets the five requirements for accurate fires:
  - Accurate target location and size.
  - Accurate firing unit locations.
  - Accurate weapons and munitions information.
  - Accurate meteorological information.
  - Accurate computational procedures.
- Determine registration requirements in coordination with the S-3.
- Provide technical fire direction (FD) assistance to battery and platoon FDCs as required. Coordinate for technical FD in case of catastrophic loss of the technical FD capability of battery and platoon FDCs.
- Ensure that all fire missions comply with current fire support coordination measures (FSCM) and are deconflicted with current airspace coordinating measures (ACM).
- Assist the S-3 in monitoring ammunition expenditures. In cannon units, this includes ammunition lot management. Recommend changes to attack criteria or other tactical FD guidances as necessary.
- Conduct mutual support operations as required.
- Establish and practice standard procedures for FDC operations in a degraded mode.
- Plan for and employ precision munitions.

HEADQUARTERS AND HEADQUARTERS BATTERY

1-21. The HQ and HQ battery consists of a battery HQ, battalion command section, personnel staff officer (S-1), operations and intelligence platoon, communications platoon, logistics staff officer (S-4), medical platoon, unit ministry team, and a target acquisition platoon. The battery provides communications support, and mission command for the FA battalion and subordinate, reinforcing, or attached units. The enhanced intelligence staff officer (S-2) section with target processing capability, the target acquisition platoon, and access to tactical unmanned aircraft systems (UAS) for target acquisition and battle damage assessment, constitutes a highly lethal reconnaissance-strike capability. All maintenance capability has been moved to the BSB and forward support company and is provided, as required.

1-22. The target acquisition platoon provides the FA battalion and the supported higher HQ with the capability to acquire threat mortar, artillery, and rocket systems and provide target intelligence and information. This provides the FA battalion an organic counterfire mission processing capability. The target acquisition platoons are organized with a platoon HQ, a counterfire operations section, survey section, and a mix of WLRs depending on the unit.

1-23. The FA battalion medical platoon has a platoon HQ, a medical treatment team, a combat medic section, and an evacuation section. A combat medic from the combat medic section and a ground ambulance from the evacuation section deploy with each firing battery. The medical platoon provides Army health system support through performing its health service support and force health protection missions. The medical treatment team establishes the battalion aid station, which usually operates from the combat trains. An ambulance team also operates from the battalion aid station.

1-24. Combat medics habitually work with the same battery. Combat medics will return to the medical platoon periodically as required for mentorship, medical skills enhancement, refresher training, and military occupational specialty recertification requirements. It is often necessary to augment these medics with Soldiers who have received enhanced first aid training (for example, combat lifesavers). The goal is to have one combat lifesaver trained per section throughout the battalion.

FORWARD SUPPORT COMPANY

1-25. The forward support company is organic to the BSB and augments the FA battalion. The forward support company provides field maintenance, subsistence, and supply distribution for the battalion. The forward support company consists of a company HQ, a field feeding section, a maintenance platoon, and a distribution platoon. It can operate from the FA battalion field trains, combat trains, or split and operate from both trains.

1-26. The distribution platoon provides distribution of all classes of supply except Class VIII. The FA battalion HQ and HQ battery medical platoon distributes Class VIII. The forward support company is not designed to carry an authorized stockage list, except as necessary to support issue and turn-in operations. It may carry critical line replaceable units and combat spares as authorized or directed. The maintenance platoon can function consolidated or split, based on factors of METT-TC. The maintenance platoon consists of a maintenance control section, service and recovery section, radar repair team, and a field maintenance section. In the ABCT there are also two maintenance support teams to support the firing batteries.

SECTION III – FIELD ARTILLERY BATTALION KEY PERSONNEL AND RESPONSIBILITIES

1-27. The commander controls the activities of the battalion with the assistance of the battalion staff. The battalion executive officer synchronizes the efforts of the battalion staff. The battalion staff consists of coordinating, special, and personal staff officers. The coordinating staff officers include the S-1, S-2, S-3, S-4, and the S-6. The chaplain and command sergeant major are members of the commander's personal staff.

1-28. Special staff officers include the fire direction officer (FDO), targeting officer, chemical, biological, radiological, and nuclear (CBRN) officer, and physician's assistant. The forward support company has a distribution platoon leader who has as an additional duty and responsibility to function as the FA battalion ammunition officer.

COMMAND GROUP

1-29. . ADRP 6-0 identifies the command groups organization and duties. Discussion of the command group's duties follow.

BATTALION COMMANDER

1-30. The BCT FA battalion commander is also the brigade FSCOORD. The FA battalion commander receives mission orders from the supported higher HQ and plans fires in support of operations. Aided by the battalion staff the battalion commander directs the tactical, logistical, administrative, and training activities of the FA battalion. In the role of FSCOORD, the battalion commander is responsible for advising the brigade commander and the maneuver battalion commanders on the employment and training of all fires assets, as required. FM 3-09 details the duties of the FSCOORD. The battalion commander directs employment of the FA battalion in accordance with assigned missions and guidance from the supported higher HQ. The battalion commander works closely with the commanders of supported and supporting units to ensure that the FA battalion can accomplish its mission. The battalion commander has specific responsibilities, which may include:

- Oversee the training of the battalion, with particular emphasis on those elements directly concerned with delivery of fires and FS.
- Continually assess the needs of the battalion in terms of its ability to sustain its internal operations and to support assigned missions.
- Advise the brigade commander on the effects of fires on the environment and rules of engagement (ROE).
- Establish clear and consistent standards and guidance for current and future operations.

- Establish policies to promote discipline and ensure a positive and ethical command climate within the battalion.
- Provide for the administrative and logistical support of the battalion.
- Coordinate fires digital training with the supported higher HQ fires cell and battalion or squadron fires cells, as required.
- Train the company fire support teams (FIST).
- Control the operations and fires of FA units.
- Provide guidance and ensure targeting and lethal effects are applied in an ethical manner.
- Direct preparation of the FA battalion operation order.
- Perform FSCOORD duties, as necessary:
  - Advise the supported maneuver commander on all FS matters.
  - Direct and supervise the planning and coordination of all FS assets supporting the maneuver unit, to include fires cells and FISTs.
  - Coordinate and control the operations and fires of reinforcing and general support reinforcing FA units.
  - Direct and supervise preparation of the FS plan in support of the maneuver plan.

COMMAND SERGEANT MAJOR

1-31. The battalion command sergeant major is the senior enlisted advisor to the commander. He is both a specialist and a generalist, as he must have technical competence as a field artilleryman while being broadly knowledgeable in all functional areas such as operations, administration, and sustainment. The command sergeant major best serves as an extension of the commander's eyes and as his primary troubleshooter. He works closely with each of the battalion staff sections and the firing battery leaders, frequently changing his area of focus based on the needs of the unit and the direction of the commander. The command sergeant major usually operates independently of, but complementary to the commander, frequently at a critical location where the commander needs additional supervision, oversight, or observation. Because of this, the command sergeant major requires a vehicle, radio, and driver. The command sergeant major has specific responsibilities, which may include:

- Assist the commander in maintaining effective communication with senior and subordinate leaders and staffs.
- Validate that the commander's directions and intent are being properly communicated through the leadership chain to the front line Soldiers and that their feedback and concerns are reaching the commander.
- Advise the commander and staff on matters pertaining to enlisted Soldiers.
- Assist the S-3 in planning, coordinating, and supervising collective and individual training to include certification requirements.
- Mentor unit first sergeants and noncommissioned officers.
- Direct noncommissioned officer professional development.
- Develop future leaders from within the enlisted ranks.

EXECUTIVE OFFICER

1-32. As second in command and chief of staff, the executive officer must keep abreast of current and anticipated operations. The executive officer must be prepared to assume the duties of the commander if the need arises. The executive officer must position himself forward, traveling among the battalion command post, the batteries, and the trains area(s) to perform his duties. The executive officer has specific responsibilities, which may include:

- Direct staff actions and operations, to include the battalion's military decisonmaking process, especially production of the FA battalion operation order and battalion staff involvement in the brigade FS plan.
- Supervise administrative and logistic operations within the battalion, to include development of the battalion's combat and field train's concept and sustainment plan.

- Collaborate and communicate with his counterparts on the BCT, FAB, and maneuver battalion staffs, as required.
- Direct development of continuity of operation plans for the command post, the various operations centers, and each staff section.
- Direct development of mutual support unit operations, as necessary or as directed, with another FA unit.
- Enforce the commander's standards throughout the unit, in the battalion commander's absence.

1-33. The battalion commander decides which function the executive officer will give his primary focus at any given time. The commander bases this decision on the immediate requirements of the battalion and the overall tactical situation. Changing situations will require periodic changes in the executive officer's focus. The executive officer must recognize his primary function is to understand the battalion commander's intent and that he is normally the senior officer at the battalion responsible for executing that intent. When the executive officer is functioning primarily as second in command, one or more of the primary staff officers (often the S-4) assumes a major portion of the functions of senior sustainment coordinator. When the executive officer concerns himself primarily with the sustainment of the battalion, the S-3 assumes a greater portion of the commander's duties in the battalion area.

S-1

1-34. The S-1 is the coordinating staff officer for all matters concerning human resources support (military and civilian). The S-1 provides technical direction to FA battalion units in the areas of: Man the Force (personnel readiness management, personnel accounting, strength reporting; personal information management, and casualty operations); Provide Human Resources Services (postal operations and essential personnel services); Human Resources Planning and Operations; and Coordinate Personnel Support (morale, welfare, and recreation operations, command interest programs, and retention). For more information on the duties and responsibilities of the S-1, see FM 1-0.

S-2

1-35. The S-2 performs a wide variety of tasks concerning intelligence, targeting, and protection. In addition, he assists the S-3 in the supervision of the command post. The S-2 has specific responsibilities, which may include:

- Supervise the intelligence section.
- Develop artillery focused intelligence preparation of the battlefield in conjunction with other staff elements, the brigade S-2, and the S-2 for any supporting FA units.
- Develop enemy artillery order of battle and monitor tactics and techniques of enemy artillery, mortars, and target acquisition assets.
- Predict artillery target locations and pass predicted locations to the appropriate fires cell, fires element, FDC, or targeting cell.
- Provide survivability and mobility information to the battalion S-3.
- Assess the enemy's capability to interfere with signal communications and supervise the counterintelligence aspects of signal operations within the battalion, in conjunction with the S-6.
- Recommend commander's critical intelligence requirements, especially priority intelligence requirements, related to the primary mission, tasks, and role of the battalion.
- Prepare intelligence estimates, the enemy situation portion of the FA battalion operation plan or operation order, and assists the targeting officer and the target acquisition platoon leader with the target acquisition tab of the FA battalion operation order, including the radar deployment order, as required.
- Organize an aggressive collection effort designed to answer priority intelligence requirements, in coordination with other S-2s.
- Advise the S-3 in positioning, tasking, and supervising organic and attached target acquisition assets and coordinating survey for target acquisition assets.

- Assist in developing and collecting the intelligence and target acquisition data necessary to support counterfire operations.
- Assist the counterfire operations section of the FA battalion or the target processing section of the DIVARTY or FAB in radar employment and positioning, decision points for cueing and moving radars, cueing schedules, and radar zones.
- Template potential enemy locations; determine enemy-to-friendly FA force ratios; evaluate enemy FA target acquisition capabilities and tactics; and advise the FA battalion and maneuver commanders on the enemy indirect fire and counterfire threats.
- Verify intelligence preparation of the battlefield analysis includes evaluation of the role and capabilities of ground, air, and naval forces, and possibly satellite and space-based assets in the enemy's counterfire program.
- Verify subordinate and supporting units are kept informed of the enemy situation.
- Provide analysis of the air and ground threat to assist the S-3 in coordinating the battalion ground and air defense plans.
- Advise the commander and staff on control of classified materials.
- Identify the role of intelligence in the development of FS tasks.

S-3

1-36. The S-3 is responsible for training, planning, and execution of battalion operations. The S-3 has specific responsibilities, which may include:

- Advise the battalion commander in specific areas including:
  - FA organization for combat and attack guidance.
  - Identification of FS tasks.
  - Positioning of firing and target acquisition assets; command posts; forward support company operations, and battalion trains command post, as required.
  - The FA battalion estimate, military decisonmaking process, and operation plan or operation order.
  - Employment of organic, attached, and reinforcing firing units.
  - Employment of organic or attached radars and other target acquisition assets to include UAS, as required.
  - Employment of organic and attached survey assets.
  - Logistic priorities in coordination with the executive officer, S-4, and S-1.
- Supervise rehearsals.
- Direct the operations and positioning of the command post.
- Direct tactical movement, to include selection of positions, preparation of the tactical movement plan, and terrain management, for elements under the battalion's control or direction.
- Direct preparation and dissemination of the operation plan, or operation order and directives.
- Direct battalion survey operations.
- Coordinate plans with higher, subordinate, and adjacent FA units.
- Verify databases and commander's guidance in automated equipment are correct and properly coordinated within the battalion.
- Plan and manage ammunition consumption, distribution, and resupply, to include calculating ammunition requirements, basic loads, required supply rate, and controlled supply rate, in coordination with the S-4 and forward support company commander.
- Integrate operations security into the overall operations of the unit.
- Establish communications priorities.
- Direct the planning and execution of the battalion's participation in the counterfire fight.
- Verify counterfire plans meet the intent and guidance of the supported maneuver commander, the FA battalion and FAB commanders, as appropriate.

- Verify the command post and firing battery leaders understand the priorities, mission routing, clearance of fires, and attack guidance for counterfire within the battalion's zone of fire.
- Maintain close coordination with the supported higher HQ fires cell and other artillery HQ to ensure the battalion's counterfire responsibilities are coordinated and synchronized, and higher and supported unit requirements do not conflict with the FA battalion.
- Supervise radar management and incorporation to confirm radar zone management, sector assignments, cueing, and positioning into the decision support template, synchronization matrix, and the target acquisition tab of the FA battalion operation order.
- Identify detailed counterfire responsibilities, to include specified and implied counterfire tasks, and counterfire responsibilities during the planning process.
- Verify counterfire ammunition requirements in overall ammunition requirements.
- Evaluate assigned controlled supply rates to determine the impact on counterfire responsibilities.
- Evaluate protection issues inherent in counterfire tasks and tactics, in conjunction with the S-2, counterfire operations section or target processing section, and FDO.

S-4

1-37. The S-4 coordinates and manages logistical support for the battalion. The S-4 and forward support company commander conduct joint planning to ensure continuity and integration of logistics throughout operations. The forward support company commander and S-4 host periodic logistics synchronization meetings with commanders, executive officers, and first sergeants to adjust the concept of support and to update logistics requirements, as required. The S-4 has specific responsibilities, which may include:

- Advise the commander and staff on sustainment, to include logistics operations, battalion trains concept and positioning.
- Monitor ammunition estimates, distribution, and resupply operations.
- Monitor transportation requirements and main supply route selection and operation.
- Plan non-tactical unit movements.
- Prepare logistic estimates and plans using logistic preparation of the battlefield methodology.
- Prepare paragraph 4 of the battalion operation order and the logistics support plan or tab, in conjunction with the S-1.
- Direct battalion supply and sustainment operations, to include ammunition and refueling.
- Monitor distribution operations for classes of supply, except Class VIII within the battalion.
- Recommend logistics priorities and employment of S-4 assets that support the commander's intent and mission accomplishment.
- Direct the administrative and logistics operations and battalion support operations, in conjunction with the S-1.
- Verify the S-4 section and the BSB support operations officer establish and maintain situational understanding.
- Direct administrative movements.
- Request maps (digital or paper) for distribution.
- Review the battalion's FS tasks for critical logistic requirements (for example, expeditionary support packages of ammunition or vehicle refuel).

S-6

1-38. The S-6 is responsible for communications and automation operations, management, and security. The S-6 is a coordinating staff officer and is directly accountable to the executive officer. The S-6 has specific responsibilities, which may include:

- Selection of unit position areas from a communications standpoint.
- Communications and automation planning, operations, priorities, security, training, and rehearsals.

- Communications and automation requirements associated with FS tasks (for example, unique communications and automation equipment, networks, database exchange, procedures for data links, or other critical communications).
- Direct communications operations to include establishment of communications systems and installation and maintenance of equipment.
- Coordinate integration of battalion communication systems into those of the supported higher HQ, maneuver units, subordinate and supporting FA units.
- Coordinate with signal units for communications support.
- Supervise operator maintenance of communication equipment.
- Manage frequency allocations and assignments.
- Direct communications security.
- Supervise the communications security custodian who issues and accounts for communications security equipment, key lists, codes, ciphers, signal operating instructions, and authentication systems.
- Direct automation systems administration, maintenance, and security.
- Establish automation systems administrative and security procedures for automation hardware and software.
- Direct battalion local area networks configuration and usage of network capabilities.
- Update global positioning system satellite constellation (ephemeris) data for precision munitions capable units.
- Prepare communications estimates and the signal paragraph of the FA battalion operation order.
- Perform communications reconnaissance and survey to assist the S-3 in positioning key elements (for example, retransmission stations) of the battalion.
- Plan for retransmission sites, as necessary.

BATTALION CHAPLAIN

1-39. The chaplain serves the commander as the personal staff officer to plan, synchronize, coordinate, and provide personally delivered religious support. He advises the commander on moral and ethical issues. He develops a religious support plan, conducts field services, and manages Soldier welfare ministries. He provides counseling to Soldiers and helps maintain the morale and spiritual well-being of personnel, as required. A chaplain's assistant supports the chaplain by performing religious support duties and coordinating religious programs, worship, and crisis intervention.

FORWARD SUPPORT COMPANY COMMANDER

1-40. The forward support company commander should be involved in the planning process to assist the S-4 in determining logistics requirements and integrating the concept of sustainment into the tactical plan. The forward support company commander knows best how to employ the forward support company in support of the tactical plan.

BATTALION S-3 SECTION

1-41. The battalion S-3 section consists of an assistant S-3, operations sergeant, battalion master gunner, CBRN officer and noncommissioned officer, and a battalion ammunition officer. The section performs their duties as directed by the S-3.

ASSISTANT S-3

1-42. The assistant S-3 supervises the activities of the operations section and manages command post operations in the absence of the S-3. During operations, the assistant S-3 is usually on shift as a command post battle captain. The assistant S-3 constructs the FA support matrix and positioning overlay for the FA battalion operation order. During execution, the assistant S-3 ensures that all digital displays and manual status boards are updated as necessary; verifies targets, and advises the S-3 of targets that violate fire

support coordination measures or maneuver control measures, or conflict with airspace coordinating measures. His focus is on positioning and ranging targets established in the FS plan, maintaining howitzer strength, and coordinating ammunition resupply. With advice from the S-2 and targeting officer, the assistant S-3 positions and moves organic and attached radars.

OPERATIONS SERGEANT

1-43. The operations sergeant supervises the activities of enlisted Soldiers in the command post and assists the assistant S-3 with operations functions. He trains all personnel on command post digital functions. He supervises network control duties for the battalion command network. He maintains the staff journal and message log, and verifies all situation maps and graphics or charts (digital and paper) are current at all times. The operations sergeant prepares the briefing site for the battalion's military decisionmaking process (MDMP). The operations sergeant verifies the command post supplies, maintenance, and security.

BATTALION MASTER GUNNER

1-44. The battalion master gunner is the weapon system expert in the battalion. He is the battalion's most knowledgeable Soldier on the unit's primary weapon system(s). In a composite battalion, there may be a need for 2 master gunners. The master gunner knows all aspects of the weapon (for example, operation, maintenance, training, and record keeping) and supporting ammunition vehicle. He also serves as a command post assistant operations sergeant. The battalion master gunner has specific responsibilities, which may include:

- Assist the S-3 and command sergeant major in managing the battalion's individual and crew-served weapons training and certification program, to include training and certification of officers and senior noncommissioned officers with emphasis on the training and evaluation of howitzer section chiefs.
- Direct battalion certification events.
- Assist the S-3 in the management of the artillery safety program. Note: coordinate these efforts with the battalion safety officer and noncommissioned officer as part of the battalion's overall safety program.
- Assist the S-3 and executive officer in maintaining primary weapon system readiness and operational status, which includes howitzer, ammunition, and the vehicle and crew maintenance training.
- Assist the batteries in the management of their primary military occupational specialty training and battery safety programs.
- Provide technical expertise to the firing battery gunnery sergeants when troubleshooting the weapon system and ammunition vehicles.
- Acquire and review information on weapon systems and ammunition vehicles, to include field manuals, technical manuals, bulletins, training circulars, training support packages, and other relevant information for updates.

Note. The master gunner must frequently check official internet sites, professional publications, and other sources of information for current and emerging tactics, techniques, procedures, and safety information.

- Maintain a dialogue with master gunners in other battalions and United States Army Fires Center of Excellence to ensure rapid identification of new issues noted by other units.
- Assist the S-3 to disseminate critical information concerning the battalion's primary weapon system.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR OFFICER AND CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR NONCOMMISSIONED OFFICER

1-45. The CBRN officer's primary roles and responsibilities include the following:

- Advises the commander on all CBRN threats and hazards, ranging from weapons of mass destruction to toxic industrial material
- Implements CBRN protective measures
- Provides CBRN warning and reporting
- Prepares CBRN plans and orders
- Plans operational level decontamination missions.
- When not executing inherent duties, the CBRN officer serves as a battle captain.

1-46. The CBRN noncommissioned officer's roles and responsibilities include the following:

- Advises the commander on the conduct of unified land operations in CBRN environments.
- Advises the commander on CBRN readiness for the unit and associated assessments.
- Advises the commander on the integration of CBRN threats and hazards into unit level training and associated assessments.
- Maintains the unit CBRN room.
- Maintains appropriate and current publications associated with CBRN operations.
- Performs organizational level maintenance and supervise operator level maintenance for CBRN defense equipment.
- Coordinates unit supply activities associated with CBRN defense equipment.
- Maintains the unit level optical inserts program.
- Develops, in conjunction with the unit leadership, the unit level administrative, deployment, and tactical SOPs as appropriate.
- Manages unit reports related to CBRN operations.
- Writes the CBRN portion of the FA battalion operation order.
- Advises the commander on equipment maintenance, CBRN reconnaissance and surveillance, and supports contingency requirements.

BATTALION AMMUNITION OFFICER

1-47. The distribution platoon leader in the forward support company manages re-supply of ammunition in the FA battalion and performs an additional duty as the battalion ammunition officer. As such, the battalion ammunition officer may collocate with the operations section or in the combat trains command post if one is established in the brigade support area. The ammunition officer has specific responsibilities, which may include:

- Manage the use of the battalion's ammunition carrying assets.
- Manage ammunition movement from the forward support company holding area to the combat trains area and then forward to the batteries.
- Maintain accountability of ammunition.
- Verify ammunition loads delivered to the batteries contain the proper mix and quantities of ammunition.
- Perform mission analysis to verify ammunition-handling capabilities can support current operations and report shortcomings to the S-3.
- Coordinate with the S-4 on ammunition resupply actions.
- Manage turn-in of residue and unexpended ammunition.
- Assist the S-4 with the development and processing of requests for ammunition.

BATTALION S-2 SECTION

1-48. The battalion S-2 section provides tactical focus and targeting capability for the FA battalion.

TARGETING OFFICER

1-49. The targeting officer and the S-2 section intelligence analyst operate as part of the FA battalion counterfire operations section within the battalion command post. The targeting officer also serves as the battalion counterfire officer and functions as an assistant S-2. He focuses on target information received from target acquisition sources and uses the AFATDS, distributed common ground/surface system-Army, and the effects management tool to collect, analyze and process this information into required target guidance and instructions. The targeting officer has specific responsibilities, which may include:

- Assist the S-2 and S-3 in target production, processing, administration, and assist with external targeting coordination.
- Assist the S-2 with enemy FA order of battle development and intelligence preparation of the battlefield.
- Assist the S-2 with the intelligence, target acquisition, and surveillance portions of the operation plan or operation order, to include the radar deployment order, as required.
- Direct attached, organic, and operational control target acquisition assets.
- Assist the battalion S-2 and S-3 with development and execution of the target acquisition and counterfire plans.
- Assist the S-2 in identifying commander's critical information requirements.
- Supervise the intelligence section in the absence of the S-2.
- Perform officer in charge shift duties for the S-2 section.
- Update target acquisition coverage of FA target acquisition assets, and position areas for FA target acquisition assets.
- Orient FA target acquisition assets to ensure required coverage.
- Track the status of FA target acquisition assets.
- Maintain situational understanding of targeting operations.
- Recommend target selection standards.
- Use target selection standards to develop enemy artillery targets and suspect targets.
- Provide target location error information on available target acquisition assets to the S-2, S-3, and brigade FSO as a basis for target selection standards recommendations to the targeting team.
- Advise the FA battalion commander and the supported higher HQ FSO on counterfire operations.
- Support targeting meetings, as required.
- Conduct predictive battle damage assessment and request battle damage assessment from external sources and supported higher HQ.

INTELLIGENCE SERGEANT

1-50. The intelligence sergeant (master sergeant) assists the S-2 in the planning, supervision, and execution of intelligence and targeting operations. The intelligence sergeant may be a shift leader for the section, especially in the absence of the S-2. In the FA battalion, the intelligence sergeant may perform many of the section's targeting functions.

TARGET ACQUISITION PLATOON

1-51. The target acquisition platoon has two key leaders the platoon leader and the target acquisition platoon sergeant. A description of their duties follows.

TARGET ACQUISITION PLATOON LEADER

1-52. The platoon leader is the officer in charge of the target acquisition platoon and the assistant counterfire officer. The platoon leader is a key participant in the battalion's planning and operations. He supervises the activities of the platoon to include training, maintenance, security, and employment. The target acquisition platoon leader has specific responsibilities, which may include:

- Perform tactical coordination for FA weapons locating radars in support of the supported higher HQ, to include communications, security, protection, logistics, and administration.
- Inspect maintenance of platoon vehicles and equipment.
- Monitor the mission support requirements of weapon locating radars.
- Inform the FA battalion commander, S-3, and S-2 on the status of FA weapon locating radars.
- Recommend to commander and S-3 external mobility and survivability assets, as required.
- Advise the battalion commander and his staff on radar operations.
- Examine, write, and interpret standard operating procedures, orders, directives, and technical publications for data pertinent to employment of radars and data collection assets.
- Commands and directs the target acquisition platoon's operations and associated equipment.
- Inspects maintenance of platoon vehicles and equipment.

1-53. When positioned with the BCT fires cell:

- Serves as the conduit that links the BCT counterfire effort with trend and pattern analysis conducted with the S-2.
- Serves as the BCT assistant counterfire officer within the BCT fires cell and is linked digitally to the counterfire cell at division level and the FA battalion counterfire operations section.
- Develops and maintains the counterfire and indirect fire database within the BCT fires cell.
- Assists the BCT intelligence analyst and S-2 in developing indirect fire products for use during the targeting working group and targeting meeting.

TARGET ACQUISITION PLATOON SERGEANT

1-54. The target acquisition platoon sergeant is the senior enlisted Soldier in the platoon. He assists the platoon leader in the performance of his duties. The target acquisition platoon sergeant has specific responsibilities, which may include:

- Train radar section chiefs.
- Coordinate survey support for radars, as required.
- Supervise maintenance and training of radar sections.
- Provide input to the targeting officer to construct and maintain the target acquisition capabilities chart, as required.
- Provide input to the radar deployment order, as required.
- Monitor the deployment of the radar sections and recommend general position areas, search areas, and cueing agents to the targeting officer.
- Coordinate the distribution of replacement personnel and administrative actions.
- Facilitate supply distribution to the radar sections.

BATTALION FIRE DIRECTION CENTER

1-55. The fire direction center has two key leaders the fire direction officer and the chief fire control sergeant. A description of their duties follows.

FIRE DIRECTION OFFICER

1-56. The FDO supervises tactical and technical fire direction within the battalion. Based on guidance from the battalion commander, S-3, S-2, and targeting officer, the FDO decides where and how the battalion and any reinforcing units will fire. The FDO has specific responsibilities, which may include:

- Supervise the FDC.
- Assist the FA battalion commander in developing tactical and technical fire direction guidance.
- Develop and supervise input of appropriate parameters into the AFATDS, coordination of these parameters with maneuver battalion fires cells and the BCT fires cell, reinforcing, reinforced FA units, and FAB HQ, as necessary.

- Coordinate digital communications and database elements with users of non-FA digital mission command systems, as required.
- Analyze requested targets for attack by FA. Consider ROE, desired effects, method of fire, and types of ammunition needed.
- Verify dissemination of fire orders, schedules of fire, and schedules of targets to subordinate and supporting unit FDCs, fires cells, and the supported higher HQ fires cell, as required.
- Maintain the current target display or overlay.
- Keep FA elements informed of targets.
- Establish procedures and train personnel to accomplish tactical and technical fire direction in a degraded (manual and voice) mode.
- Establish procedures for interface between AFATDS and any other digital system with which the FDC may be required to interface.
- Establish and maintain the tactical air integration system link in particular to receive the airspace control overlay, and facilitate coordination and clearance of airspace for mission execution.

CHIEF FIRE CONTROL SERGEANT

1-57. He is the automated technical and tactical fire control expert in the battalion FDC. The chief fire control sergeant has specific responsibilities that may include:

- Establish the tactical database in the battalion automated fire control system.
- Monitor the technical input and executions of fire plans and missions.
- Advise the FDO on changes or updates to battlefield geometry and firing unit status.
- Crosscheck status boards with system data.
- Assist the FDO in the execution of his duties.

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Chapter 2

Field Artillery Battalion Mission Command

Section I describes command and support relationships. Section II describes the FA battalion command post and its operation. Section III discusses FA battalion communications.

SECTION I – COMMAND AND SUPPORT RELATIONSHIPS

2-1. An FA battalion has a command or support relationship. FM 3-09 and ADRP 5-0 have detailed information on command and support relationships.

RELATIONSHIPS

2-2. The FA battalion is organic to the BCT or task-organized to a DIVARTY or FAB. The FA performs these functions as required:

- Deliver fires for close combat, shaping operations, and counterfire.
- Assume a different command or support relationship as directed by higher HQ. The FA battalion personnel must know the inherent responsibilities of Army command and support relationships.
- Establish communications within the supported higher HQ fires cell communications network.
- Establish internal communications as the network control station for subordinate units of the battalion.

2-3. Augmentation with additional FA depends upon the mission variables of METT-TC, which may include:

- A FA battalion with a support relationship. For example, the division or corps commander may place an augmenting FAB or BCT FA battalion in a reinforcing or general support-reinforcing relationship to a BCT's organic FA battalion.
- A FA battalion given a different command relationship. For example, an augmenting FA battalion attached to a BCT. The brigade commander has the authority to:
  - Give the FA battalion a reinforcing support relationship to his organic FA battalion.
  - Attach the FA unit to his organic FA battalion.
- United States Marine Corps or Multinational artillery units may support a BCT. Command, support and liaison requirements must be coordinated. United States Marine Corps artillery units and North Atlantic Treaty Organization (NATO) artillery units are prepared to accomplish the tactical tasks and responsibilities found in FM 3-09.

2-4. If the FA battalion is operating as part of a joint (multi-service) or multinational operation, several other command relationship terms may be encountered (combatant command, operational command) during support. Detailed information on these command relationship terms are in FM 3-09 and ADRP 5-0.

2-5. The FA battalion commander and staff also need to understand that some of the command relationship terms used have slightly different definitions within multinational forces than within Department of Defense. For example, in NATO, operational control does not include authority to assign separate employment of components of the units concerned. (The NATO definition of operational control more closely represents the Department of Defense definition of tactical control.) During joint and multinational operations, FA battalion commanders should seek clarification from their higher commander, or verify the definitions of operational terms through review of orders or from the agreements that established the force. Commanders use agreed-upon multinational command and support relationships when controlling multinational forces.

NONSTANDARD FIELD ARTILLERY SUPPORT RELATIONSHIPS

2-6. If an unusual tactical situation exists, or none of the standard command and support relationship inherent responsibilities (or NATO tactical tasks and responsibilities) accurately convey the maneuver commander's guidance for fires, he assigns a nonstandard FA support relationship to the FA unit. A nonstandard FA relationship may amplify, limit, or change one or more of the support inherent responsibilities, or it may spell out contingencies not covered by those responsibilities. See FM 3-09 for additional information.

ON-ORDER COMMAND OR SUPPORT RELATIONSHIPS

2-7. During the course of an operation, a FA battalion may change command or support relationships. The assignment of an on-order FA relationship gives the battalion advance notice. This facilitates planning for and transition to the follow-on command or support relationship. Positioning, ammunition requirements, and timing of the change are several of the key considerations for battalions that have an on-order relationship. An on-order relationship is in the maneuver operation order, FS plan, and the FA battalion operation plan or operation order. See FM 3-09.

SECTION II – MISSION COMMAND

OVERVIEW

2-8. The FA battalion commander exercises mission command through the establishment of a battalion command post. The command post, which is typically comprised of the S-3, S-2, S-6, FDC, and the counterfire operations section, is habitually located with the command group. The combat trains command post if established is located in the combat trains battalion support area and is manned by the S-4, S-1 noncommissioned officer, battalion aid station, and elements of the forward support company. The combat trains command post is the operations center for the combat trains. See Chapter 7.

2-9. The primary command facility is the battalion command post. The commander usually positions his command group with the command post. It is normally located where the commander can best command assets and influence FA and other fires systems in support of operations.

2-10. The battalion will also designate an alternate command post, which will assume control of battalion operations in the event the main command post becomes inoperable or loses communications. The alternate command post may be another FA battalion, a firing battery, the supported higher HQ fires cell, or the combat train's command post. The battalion may also form a tactical command post forward during high intensity, fast moving operations. The tactical command post concentrates on the current battle, performing critical operations, fire direction, and intelligence tasks, while the main command post performs planning and coordination functions.

2-11. In offensive tasks, the main command post may be required to move forward to shorten communications distances and maintain control of the firing batteries and platoons. Under these conditions, the FA battalion may use a tactical command post technique, moving some elements of the main command post forward while the rear element of the main command post maintains control. Once established forward the tactical command post takes control and the rear element breaks down and moves forward to reform a main command post. See command post positioning and movement for a discussion of employment of the tactical command post.

COMMAND POST ORGANIZATION AND OPERATION

2-12. The makeup of the FA battalion command post will vary with the situation and the commander's concept of operations. Most of the elements that comprise the command post are in the HQ and HQ battery, which may include:

- Command group.
- Main command post.

- Communications support.
- Survey elements.

COMMAND GROUP

2-13. The command group consists of the battalion commander, assisted by the command sergeant major, the executive officer, and their drivers. They frequently operate out of the command post, where they can best monitor and control the battalion's operations.

2-14. The FA battalion commander positions himself where he can best fulfill his command responsibilities. This may be in the FA battalion command post, a trains location, a firing battery, or a key traffic or observation point. The FA battalion commander may at times be in the brigade HQ, a maneuver battalion fires cell, or with the brigade commander at a critical location on the battlefield. The FA battalion commander will have digital equipment and radios in his vehicle that allow him to monitor digital traffic and aid in command of the battalion while he operates away from the command post.

2-15. The members of the command group are often away from the command post observing, directing, or otherwise influencing the action at critical places on the battlefield. The battalion executive officer, command sergeant major, and S-3 provide critical support, which allows the FA battalion commander the flexibility to position himself wherever the situation dictates.

2-16. The battalion executive officer may operate out of the battalion trains command post instead of the main command post, especially when focusing his efforts on the battalion's sustainment operations. During periods of major planning actions, or when the commander and S-3 may be out of the main command post for extended periods, the executive officer will probably be in the main command post.

MAIN COMMAND POST

2-17. The main command post serves as the FA battalion's primary operations center, assisting the battalion commander in synchronizing fires in support of brigade operations. It is the location in the battalion where the majority of planning, staff coordination, plan execution, receiving and disseminating information, and monitoring of key events occur. In order for the FA battalion to accomplish its assigned mission, the command post personnel should be able to perform critical functions, to include:

- Advise the battalion commander, and as appropriate, key FS personnel, on the organization for combat, positioning, allocation of ammunition and attack guidance.
- Perform tactical fire direction, to include selection of units and ammunition to support fire mission requests in response to the supported commander's attack guidance and to achieve the desired effects.
- Plan operations, to include generating a FA battalion, operation plan or operation order that outlines the concept of operations and responsibilities for the battalion and describes the FA battalion commander's plan for accomplishing assigned missions and responsibilities. Note: In the FA battalion, the operation plan or operation order must address the scheme of fires, and is prepared in coordination with the supported higher HQ fires cell as part of the maneuver operation order. The operations section, in coordination with the maneuver fires cells, ensure that the FA plan is synchronized with the maneuver force plan. The command post automation systems provide a collaborative planning capability to assist in these planning functions.
- Direct current operations, to include controlling fires and target acquisition assets that are organic, attached, or reinforcing the battalion; move and position firing elements; orchestrate the delivery of effective fires in support of close combat.
- Monitor technical fire direction, to include providing technical assistance to battery and platoon FDCs.
- Maintain situational understanding of the overall supported higher HQ operation to ensure the battalion provides timely, responsive support and rapidly adjusts to the changes encountered.
- Conduct information management operations, receiving, processing, and disseminating critical battlefield information in all formats.
- Direct counterfire operations.

- Conduct essential intelligence operations and tasks.
- Perform targeting.
- Direct and coordinate tactical UAS employment.
- Advise the S-4 of Class V requirements.
- Direct survey operations to support the battalion's operations.
- Direct communications operations, to include radio, wire, automation management, local area networks, and signal security.
- Direct CBRN defensive operations within the battalion.
- Provide general direction of administrative and logistic operations in coordination with the battalion trains command post, forward support company, and the firing batteries.
- Perform mutual support unit operations.

Headquarters and Headquarters Battery Commander and First Sergeant

2-18. The HQ and HQ battery commander and first sergeant are responsible for the security and logistical support for the command post. Dispersed elements of HQ and HQ battery at the battalion main command post, or at the battalion trains command post, must work closely with staff officers and section leaders to ensure adequate support for all elements.

2-19. With the HQ and HQ battery commander and first sergeant usually directing the security, support, and movement of the battalion main command post, the forward support company commander and first sergeant assume responsibility for the FA battalion support area. Due to dispersion of personnel, both leadership teams must coordinate their efforts between the command post and the FA battalion support area. The FA battalion commander designates command and security responsibilities for the battalion trains command post. While positioning and movement of the main command post are primarily an S-3 responsibility, the HQ and HQ battery commander and first sergeant provide assistance in reconnaissance, movement, and occupation.

Communications Support

2-20. The S-6, S-3, and the HQ and HQ battery commander work together to ensure the command post has adequate communications support. This primarily includes assistance in the setup and maintenance of radio, digital communications and automation equipment, and retransmission capability. The S-6 supports the battalions other operations centers and the firing batteries. The communications element in the command post may consist of a contact team that travels with and gives priority to command post support.

Survey Elements

2-21. The battalion survey sections may base their operations out of the command post in order to allow better control by the S-3.

COMMAND POST ORGANIZATION

2-22. The operations and intelligence element and the battalion FDC are the two major functional elements of the FA battalion command post. The operations and intelligence element manages both current and future operations and coordinates aspects of FA support. It also performs the planning and operational functions, to include developing fire plans, orders, conducting artillery focused intelligence preparation of the battlefield, developing artillery targets, planning, and executing supported higher HQ counterfire operations, tracking the status of subordinate units, and controlling unit movements.

2-23. The FDC performs tactical fire direction by processing calls for fire, determining the type and amount of ammunition required to achieve the desired effects and transmitting fire orders to the platoon FDCs or platoon operations centers.

S-3 SECTION

2-24. The operations section responsibilities may include:

- Plan and coordinate the positioning of key mission command logistic elements and firing batteries and platoons supporting current and future operations.
- Plan and coordinate battalion movements and assist the battery commanders with coordination of movements. This includes assignment of routes, position areas, and their clearance through the area of operations.
- Maintain current operational status of organic, attached, and reinforcing and reinforced units.
- Prepare and disseminate operational reports.
- Maintain friendly situational understanding and common operational picture.
- Disseminate the battalion common operational picture.
- Coordinate survey requirements for the supported higher HQ to include radars or units from the FAB.
- Advise the FDC, fires cells, reinforcing and reinforced units on scheduling of planned fires, as required.
- Prepare and disseminate the FA battalion operation plan or operation order, while assisting fires cells with development of the supported higher HQ FS plan.
- Monitor ammunition consumption and resupply for the battalion.
- Inform other staff sections (such as, S-1, S-4, forward support company commander, and combat trains) of the current status of the supported forces and any changes to sustainment requirements.
- Supervise CBRN defensive operations.
- Direct operations security within the battalion along with the S-2 and S-6.
- Assume control of reinforcing and reinforced artillery battalions during mutual support unit operations, as required.
- Coordinate communications requirements with the S-6 for the battalion.

S-2 SECTION

2-25. The S-2 section is an integral part of the operations and intelligence section. The intelligence section provides the commander and S-3 with intelligence information essential to the operation and survival of the battalion. The intelligence section responsibilities may include:

- Prepare artillery focused intelligence preparation of the battlefield products of the supported higher HQ area of operations in coordination with the brigade S-2. The FA battalion intelligence preparation of the battlefield is an extension of the BCT intelligence preparation of the battlefield and higher HQ intelligence preparation of the battlefield, focused on specific artillery-related intelligence requirements. The intelligence preparation of the battlefield process is a continuous process.
- Assist the S-3 in battery and platoon position area selection to ensure that positions are in consonance with intelligence preparation of the battlefield insights and survivability requirements.
- Assist the counterfire operations section in the development of the target acquisition Annex or Tab to the FA battalion operation plan or operations order and the radar deployment order for organic and attached radars. Ensures the radar deployment order designates positions and establishes cueing procedures. Coordinate the use of target acquisition radars, organic or attached, with the battalion S-3.
- Develop targeting data based on the brigade commander's high-payoff target list and attack guidance matrix. Provide recommendations and input to the targeting team that develop the high-payoff target list and attack guidance matrix for the brigade commander.
- Monitor enemy artillery tactics and techniques within the supported higher HQ area of operation.
- Exchange combat information and intelligence with the supported higher HQ, subordinate units, reinforcing, reinforced units, and adjacent units, as required.
- Coordinate with battery first sergeants to develop a ground and air defense plan for the battalion.
- Assist the S-3 with planning, coordination, and conduct of operations security.

- Coordinate external battalion security requirements.
- Support the development of commander's critical information requirements, specifically priority intelligence requirements.

COUNTERFIRE OPERATIONS SECTION

2-26. The counterfire operations section and the FA battalion S-2 make up the target processing team. This is a working group that recommends and updates target acquisition coverage, control of FA target acquisition assets and position areas for FA target acquisition assets. The counterfire operations section duties include:

- Conduct counterfire operations.
- Produce the radar deployment order for the supported higher HQ.
- Orient FA target acquisition assets to ensure required coverage of the supported higher HQ area of operations.
- Track FA target acquisition assets and reports status to the S-2 and S-3.
- Assist the battalion S-2 and S-3 with development and execution of the FA target acquisition and counterfire plan.
- Maintain situational understanding of targeting operations.
- Recommend target selection standards.
- Use target selection standards to develop enemy artillery targets and suspect targets.
- Provide target location error information on available target acquisition assets to the S-2, S-3, and brigade FSO as a basis for target selection standards recommendation to the targeting working group.
- Advise the FA battalion commander on counterfire operations.
- Support targeting meetings, as required.
- Assist the battalion S-2 in writing the target acquisition and surveillance portions of the FA battalion operation plan or operation order.
- Direct attached, organic, and operational control target acquisition assets.
- Assist the S-2 in identifying commander's critical information requirements.
- Conduct predictive battle damage assessment and request battle damage assessment from external sources and supported higher HQ.
- Assist in the planning of tactical UAS missions and operations.

COMMAND POST ACTIVITIES

2-27. The S-3 supervises the command post's activities. The S-3 usually does not have a specific shift of duty because he directs operations during critical times.

2-28. The S-3 positions himself in the command post where he can see and hear critical information that will allow him to make sound tactical decisions based on the commander's guidance. In the event the S-3 is not in the command post, the assistant S-3 or shift officer assumes the S-3's responsibility of managing command post operations. The S-3 and executive officer should develop shifts to cover 24-hour operations. This should be covered and published in the tactical standard operating procedures.

2-29. Each section should maintain a shift log, documenting the major events, actions, and message traffic applicable to the section, as well as accomplishment of major shift responsibilities. The log serves as a record of the major events and as a tool to prepare for shift briefings.

2-30. Shifts should overlap by about an hour to allow proper handover of the battle. In addition, shift changeover for each section may be staggered to improve continuity. Update approximately an hour before shift change, maps, status boards, shift logs, and other tools with current information; filing and document destruction is accomplished; and general command post housekeeping completed. The oncoming shift should be given time to review maps, status boards, shift logs, and other applicable tools. The outgoing shift should provide a shift briefing that addresses, as a minimum, current operational status, command post status, and battalion command post and section tasks.

2-31. The S-3 or section leaders may establish a tactical standard operating procedure format for the shift change briefing.

MANAGEMENT OF TACTICAL INFORMATION

2-32. The battalion S-3 and the rest of the command post staff control the day-to-day operations of the FA battalion. They receive and track battlefield information into tactical movement, delivery of fires, and sustainment operations. For the battalion staff to effectively track the tactical situation and satisfy the maneuver commander's concept of fires, situational understanding and battle tracking must be as accurate as possible. Using digital systems the staff provides situational understanding, battle tracking capabilities, collaborative planning, and rapid dissemination of information.

2-33. AFATDS provides automated planning, preparation, execution, and assessment of close combat, counterfire, interdiction, shaping operations, and SEAD. AFATDS interfaces with other automation systems. It can also provide numerous separate overlays to allow specific information when needed such as enemy overlay, target overlay, friendly artillery locations overlay, and operational graphics.

2-34. Display the commander's tactical display on the command post of the future at the FA battalion. Display the supported higher HQ staffs map, overlays, and other control measures. AFATDS publishes unit information, targets, and certain geometries that other automated systems in the command post can access.

2-35. Automated systems, such as force XXI Battle Command and below (FBCB2), display the current situation on a map with boundaries and other control measures. It is important to remember that the current situation provided by a satellite-based system has a time delay and is near-real time, not real time.

2-36. Where the various systems are located throughout the command post will depend on the command post design as determined by the commander, executive officer, and S-3. It is imperative that each staff member fully understand the capabilities of each system and use each system to facilitate command post information management. The physical layout of the command post should support the flow of information and allow the S-3 to direct the efforts of the staff in an efficient manner.

2-37. The S-3 should position himself in the command post where he can effectively manage his personnel. He should be at a vantage point where he has access to radios, telephones, and digital display devices. He must also monitor and manage the back-up systems, such as the operations and intelligence maps and other manual status charts.

2-38. The primary information sources in the command post are its internal and external digital and voice networks. Normally, in a FA battalion, the networks that give the S-3 the clearest picture of current events on the battlefield are the supported higher HQ FS coordination network and the command networks (voice). It is important to understand that the FA battalion staff monitors these networks and does not normally transmit on them. To reduce confusion in the command post, it is recommended these networks be the only ones audible on remote devices in the operations (extension) area. Use headsets when monitoring the other voice networks or monitor from within the appropriate staff vehicles. The S-3 is kept informed of the majority of the traffic on the other networks (data and voice) by status charts updates, reviewing message forms, and computer displays. Bring anything of significance that requires the S-3's attention to the S-3 immediately.

2-39. The S-3's principal networks for fire planning and execution are the battalion fire direction, operations, fires, and supported higher HQ FS networks. These networks allow the command post to review fire missions and perform a secondary independent check of FS coordination measures. The S-3 is able to observe targets in relation to the tactical situation.

2-40. The operations and intelligence section must closely monitor the information received from all tactical information sources to verify critical data, identify potentially inaccurate information, and to resolve discrepancies between conflicting reports or data.

2-41. By monitoring the supported command network plus the situational understanding provided by automation systems, the S-3 determines the tempo of the operation, anticipates where fires will be directed by the battalion commander or brigade FSO, and maintains situational awareness. This allows the S-3 to be proactive in positioning units and managing ammunition for effective tactical control of fires.

2-42. The command post passes tactical orders and information to the batteries and any supporting units over the battalion command network. Send tactical orders and information to the firing platoons over AFATDS. Remote the voice command network radio to the operations sergeant's post and monitored with a headset. The S-3 receives the information passed on this network by monitoring the computer screens and by reviewing messages and reports used to update the situation. Avoid sending situation reports and updates of information with battalion combat and field trains on this network. Send routine administrative and logistical traffic on the battalion administrative and logistics network.

2-43. The S-2 section monitors the supported higher HQ operations and intelligence network. The focus of the traffic on operations and intelligence network is maneuver specific, but the S-2 can gather information relevant to FA support requirements and operational security considerations. The S-2 section should monitor this with either a remote (headset) or from inside the S-2 vehicle. Pass routine traffic to the S-3 in message form. The S-3 monitors critical traffic requiring his attention from his battle station, on the S-2's remote. The S-2 shares target information generated by the target acquisition platoon with the supported higher HQ analyst.

2-44. When the BCT is subordinate to a division or corps and not operating independently or directly for a Joint Task Force, the FA battalion monitors and operates in several DIVARTY or FAB networks.

DISPLAY OF INFORMATION

2-45. Automation systems provide the FA battalion command post with tools for the management of information. The digital systems are very dependent on generator power and except for FBCB2 and AFTADS will not be available on the move. It is recommended that the command post also maintain alternate information management tools to augment and back-up the digital systems, which may include:

- Map boards that facilitate exchange of overlays with minimum loss of accuracy.
- Overlays with tactical information to assist command post personnel in planning and executing operations (for example, maneuver graphics, position area, target, and sustainment).
- Status boards along functional lines to track the current status of elements and other combat information.

COMMAND POST POSITIONING AND MOVEMENT

2-46. The S-3 control the movement and positioning of the FA battalion command post based on the guidance and direction of the commander. The S-2 provides mobility information concerning terrain, trafficability of roads, obstacles, minefields, contaminated areas, and survivability information regarding ground, air, and CBRN threat from enemy forces, and information about the civilian populace in the area. The S-6 provides guidance on communications factors. The other members of the command post may also assist with reconnaissance, security, and advance party operations. The fires cell assists with clearance for the positions and movement routes that must be coordinated with the supported higher HQ staff and subordinate maneuver battalions.

COMMAND POST POSITIONING CONSIDERATIONS

2-47. The S-3 uses the intelligence preparation of the battlefield products in determining positions. The S-3 usually plans primary, alternate, and possibly supplementary command post positions. The primary consideration for positioning the command post is the ability to accomplish its mission. The S-3 must also consider if the command post will be collocated with other elements, such as the battalion trains or a supported maneuver unit.

Other Factors That Influence Positioning Of The Command Post

2-48. Position the command post based on general movement of the forward line of own troops, which may be forward, rearward, static, or erratic.

- In a sustained, rapidly advancing offensive operation, position the command post as far forward as feasible.
- During a retrograde, place the command post farther to the rear than normal. On a non-linear battlefield, increased security considerations may be less predictable than on a linear battlefield.

2-49. If in a high enemy counterfire threat, position the command post outside the range of mortars and as many of the enemy's artillery systems as feasible,. Defilade or reverse slope positioning may provide increased protection, however, retransmission of communications may be necessary.

2-50. In response to high enemy air threat, position the command post in heavily wooded or urban terrain that allows better camouflage. Place the command post close to an air and missile defense unit that can provide coverage. The use of wooded or urban terrain, coupled with camouflage and light discipline, are also critical to reducing vulnerability to air and satellite imagery.

2-51. Position the command post with or near other friendly elements when there is a high risk from enemy penetrating forces or small force operations. When there is a threat of rapid penetration from an enemy attack or counterattack, position the command post off the expected axis of advance, especially any high-speed avenues of approach. For increased security, position infantry, military police, or logistic elements with the command post.

2-52. If there is a significant electronic warfare threat, position the command post away from the maneuver command posts and the battalion trains to reduce the threat to them and to reduce the electronic signature. To reduce electronic locating vulnerability, position the command post in defilade or masked locations and use retransmission.

2-53. Position the command post close to the maneuver command post when extensive coordination with the BCT HQ is critical.

2-54. Consider communications factors such as digital and radio communication ranges and retransmission capability. Communication considerations are the distances between units, the capabilities of the equipment, atmospheric conditions, and terrain.

2-55. Consider grounding of equipment, tie-downs for extensions and shelters, and preparation of defensive positions for terrain that is extremely wet, rocky, or steep, and urban terrain that may interfere with weapon platforms.

2-56. Consider hilly or mountainous terrain that provides survivability advantages, but may also interfere with communications for the command post.

TACTICAL COMMAND POST CONSIDERATIONS

2-57. To facilitate the continuity of operations during movement of the command post to a new location, the battalion may use a tactical command post. This is a variation of movement by echelon. A small portion of the main command post, and minimal security and support elements, will move to the new location in advance of the remainder of the command post. Designate a FDC to assume control of fire mission processing and act as the battalion until the main command post can re-assume control and continue to process fire missions. Maintain tactical fire control at the main command post (-) during the tactical command post movement. Once the tactical command post is in place it conducts a continuity of operations exchange with the main command post (-) and establishes communications with subordinate, higher, and supported units before it assumes control of the battalion. The remainder of the command post then moves to the new location and normal operations can resume.

2-58. Composition of the tactical command post is limited to key equipment and personnel. As an example, a tactical command post may include:

- A high-mobility multipurpose-wheeled vehicle; operations vehicle with extension.
- An FBCB2, AFATDS, status boards and situation maps.
- S-2 or S-3; assistant S-3; command post noncommissioned officer; FDO and FDC noncommissioned officer; S-2 noncommissioned officer; selected operations and intelligence and FDC personnel; and other HQ and HQ battery elements to provide support and security.

2-59. The size and composition of the tactical command post will depend on the tactical situation and the S-3's major concerns. A smaller tactical command post may be preferred during periods of rapid advancement and frequent moves, while utilizing a larger tactical command post if security is a major issue, and speed of movement is not critical. During a rapidly advancing offensive operation, the tactical command post may be moving again shortly after the rest of the command post has closed and assumed control of the battalion.

2-60. The unit can use a version of the tactical command post technique in a reversed sequence, during defensive operations when the battalion must move to the rear or laterally away from a penetration. The bulk of the command post would move first, while the tactical command post remains in place controlling the battalion until a new command post is established. This allows quick displacement of the tactical command post and the ability to remain close to the fight.

2-61. The battalion can also form a tactical command post to place the battalion commander or S-3 closer to the action, near the maneuver commander, his command post, or the supported higher HQ fires cell. Use the tactical command post during operations requiring frequent, fast moves where the main command post would have trouble-keeping pace with the supported maneuver unit. The tactical command post would be the focal point for battalion control of the current fight, emphasizing operations, fire direction, and limited target acquisition and intelligence functions. The main command post would follow as soon as possible and monitor the situation, prepared to assume control, as required. The main command post continues to conduct planning and other command post functions in order to allow the tactical command post to concentrate on the current fight during a critical stage in the battle. The tactical command post will consist of only one or two vehicles that have the speed and maneuverability to keep up with the maneuver forces. The tactical command post should have a robust communications capability as it may operate separate from the main command post for a longer period and must be fully capable of controlling the battalion's fires and directing subordinate elements. The tactical command post technique is also useful when the commander wants to send a command post element forward with an artillery raid.

ADDITIONAL COMMAND POST MOVEMENT TECHNIQUES

2-62. Security, organization for combat, personnel strength, equipment status, availability of mutually supporting battalions, and the tactical situation influences movement of the command post. The command post may move as a single unit, or in several small elements. A major consideration in determining the command post movement technique is the availability of an element to assume the command post functions for continuity of operations. For example, an AFATDS at the FA battalion could conduct continuity of operations with the brigade fires cell AFATDS, or a firing platoon FDC AFATDS. Rehearsal and clear tactical standard operating procedures prevent confusion.

LIAISON OPERATIONS

2-63. One of the inherent responsibilities of a FA battalion assigned a reinforcing or a general support-reinforcing support relationship is to provide liaison to the reinforced unit. The battalion commander may direct liaison be established with another FA unit, a maneuver unit, or any other element. Liaison may be necessary with nonmilitary elements. FA battalions organic to BCTs do not have organic liaison sections. If liaison is required, establish a team from existing resources.

2-64. Liaison is the contact or intercommunication maintained between elements to ensure mutual understanding and unity of purpose and action. Liaison activities augment the commander's ability to synchronize and focus combat power. Liaison includes establishing and maintaining physical contact and communications. Establish liaison activities to ensure cooperation and understanding between commanders and staffs; coordination on tactical matters to achieve mutual purpose, support, and action; exact and precise understanding of implied or inferred coordination measures to achieve synchronized results.

2-65. Overall, liaison becomes another tool to help commanders gain assurance that supporting and supported commanders understand implicit coordination, and achieve synchronized results. Effective liaison enhances the commander's confidence in planning and in mission execution.

2-66. If the reinforced and reinforcing units have compatible communications and automation equipment, and both units maintain communications and situational understanding, the actual physical presence of a

liaison team at the reinforced unit may not be required. If the units choose to collocate command posts or FDCs, no additional liaison is required.

2-67. When assigned a support relationship of general support, position a DIVARTY, FAB, or FA battalion in a BCTs area of operation. The general support FA battalion commander may consider sending one of his liaison teams to the BCT fires cell. This team can help the battalion commander track the maneuver situation and keep the brigade commander informed of the location and status of the FA battalion that is in his area but not under his control.

SECTION III – FIELD ARTILLERY BATTALION COMMUNICATIONS

2-68. The commander must develop techniques that promote an expeditious flow of information throughout the unit. List the techniques in the unit's standard operating procedures.

2-69. Units base decisions on the information derived from the mission command processes and activities, to include:

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

2-70. The mission command system includes the facilities, personnel, networks, information systems, processes and procedures essential to a commander to enable mission command. The mission command system of the FA battalion is the command post, the personnel that operate the command post, a mixture of automation systems and the communications systems with which they operate.

AUTOMATED SYSTEMS

2-71. Automated systems provide the electronic architecture in which situational understanding is accomplished. The BCT, DIVARTY, and FAB are equipped with automated systems, providing them significant advantages in collecting technical information, and distributing information and intelligence rapidly. The automated systems enable commanders to rapidly gain reliable information and, therefore, achieve information dominance in their operational environment. The automated systems satisfy two critical requirements; interoperability, and situational understanding. The automated systems employ networks that are interoperable with theater, joint, and multinational command and control systems. These systems pass critical information at decisive times, which leverage and exploit tactical success and facilitate future operations.

2-72. The automated systems include:

- Global Command and Control System – Army.
- Command Post of the Future.
- Advanced Field Artillery Tactical Data System.
- Air and Missile Defense Workstation.
- Distributed Common Ground/Surface System-Army.
- Battle Command Sustainment Support System.
- Force XXI Battle Command-Brigade and Below.
- Integrated Meteorological System.
- Digital Topographic Support System.
- Tactical Airspace Integration System.

2-73. The FA battalion gains access to these network automated systems through a wideband capability provided by the FA battalion small command post node. The small command post node provides secret data and voice over the internet protocol phone service. This architecture allows the battalion data network to access the Global Command and Control System-Army through either a unit hub node or a joint network node.

2-74. At the FA battalion, assigned operators are in charge of setting up the communications package to support data and voice over internet protocol services to the HQ. Setup for the network is a standard procedure that consists of powering the system, pointing to the satellite, and connecting the data equipment for needed dial tone or e-mail and organizational traffic.

2-75. Vertically and horizontally integrate automated systems at the tactical and operational levels. The digital message capabilities of the automated systems provide the FA battalion commander a variety of tools to assist him in command of the battalion. It is imperative that commanders and staffs fully understand what the systems can and cannot do for them. Commanders should never forget that face-to-face communication is always the most effective.

THE COMMUNICATIONS NETWORK

2-76. The BCT, DIVARTY and FAB rely on a federation of communications networks that collectively enable mission command. Not all components of the network are under the BCT, DIVARTY or FAB control. The network is a critical tool in BCT, DIVARTY and FAB operations and must be redundant, flexible, and adaptive to the commander. It is important that all BCT, DIVARTY and FAB brigade leadership be familiar with the capabilities and limitations of the components of the communications network. Various networks may be encountered at the BCT, DIVARTY and FAB, which may include:

- Combat Net Radio.
- Blue force tracking.
- Enhanced Position Locating Reporting System.
- Warfighter Information Network – Tactical
- TROJAN data network.
- Satellite communications.
- Global Broadcast Service.
- Movement Tracking System (forward support company)
- V-Sat (forward support company)

2-77. For more information on these systems, see FM 3-90.6.

FIELD ARTILLERY BATTALION RADIO COMMUNICATION OPERATIONS

2-78. Radio communications are critical to the operation of the FA battalion. The different responsibilities and areas that are essential to radio communications success are as follows.

RADIO COMMUNICATIONS RESPONSIBILITIES

2-79. Radio communication is a command responsibility and essential to efficient command of the FA battalion and enhances its ability to provide effective fires. The commander's radio communications plan should address elements of his command to include supported, reinforced, and adjacent units. To establish a responsive and dependable communications system, the FA battalion must consider and work within the following parameters, to include:

- Rely heavily on frequency modulation radio communications.
- Monitor multiple radio networks while maintaining continuity of operations during displacement.
- Communicate over long distances to many diverse elements, such as FIST, fires cells, reinforcing units, FAB, and the supported maneuver force.
- Rely increasingly on digital data communications, which have shorter-range capabilities than voice communications.

2-80. The FA battalion commander is responsible for adequacy and proper use of radio communications within his command and for their efficient operation in the system of the next higher command. The

commander can delegate the authority to establish, maintain, control, and coordinate the battalion's various radio networks to a subordinate.

2-81. The FA battalion S-6 has overall authority and direction of the communications assets and operations within the FA battalion. The battalion S-6 must work closely with the brigade S-6 to ensure efficient radio communications for FS throughout the supported higher HQ area of operations. The S-6 maintains the communications and automation systems, in addition operates retransmission stations for the FA battalion. The S-6 section has a section HQ, an automation management section, and a retransmission section.

2-82. Elements of the battalion send communications equipment for repair through the S-6 section. The communications maintenance section performs maintenance on battalion HQ communications equipment within their capability. Repair personnel in the forward support company provide on-site field maintenance and assistance for the subordinate units of the battalion.

2-83. The automation management section provides assistance with the establishment, operation, and maintenance of the battalion's automation systems. This includes hardware, software, networks, and automation security. The section's networking functions include management and maintenance internal to the FA battalion local area network.

2-84. The retransmission section establishes and maintains the retransmission station, as required. Dual retransmission capability is essential to maintaining digital and voice communications over extended distances or due to areas of rough and complex terrain.

ECHELONS OF COMMAND

2-85. The senior unit is responsible for establishing communications links with its subordinate units. This responsibility is primarily one of planning and directing the establishment of the communications links since assets belonging to either the senior HQ or the subordinate unit may be used. The supported higher HQ has the responsibility to establish communications with the FA battalion and the FA battalion HQ has responsibility to establish communications with its organic elements.

2-86. The battalion's responsibilities for establishing communications include:

- **Senior to Subordinate**. A senior unit is responsible for establishing communications with a subordinate unit. An attached unit of any size is subordinate to the attached command.
- **Supporting to Supported**. A supporting unit is responsible for establishing communications with the supported unit.
- **Reinforcing to Reinforced**. A reinforcing unit is responsible for establishing communications with the reinforced unit.
- **Passing to Stationary**. In a forward passage of lines, the passing unit is responsible for establishing communications with the stationary unit.
- **Stationary to Passing**. In a rearward passage of lines, the stationary unit is responsible for establishing communications with the passing unit.
- **Lateral Communications**. The next higher commander or SOP directs responsibility for establishing communications between adjacent units. If responsibility is not directed by orders, the commander of the unit on the left is responsible for establishing communications with the unit on the right. The commander of a unit positioned behind another unit establishes communications with the forward unit.
- **Restoration**. Regardless of the responsibility, all units take prompt action to restore lost communications.

AREA OF OPERATIONS

2-87. Adjacent commands must maintain communications with each other to ensure coordination of the combat effort. When facing the forward line of own troops (left-to-right relationship), the command on the left establishes communications with the command on its right. In a noncontiguous area of operations, units will establish and maintain communications with adjacent units that can mutually support or influence their operations.

RESTORING AND REESTABLISHING COMMUNICATIONS

2-88. Regardless of which unit is responsible for establishing communications, all units served by the system must help restore any communications system outage. This means that units will work from higher to lower and lower to higher to reestablish communications when interrupted and not wait for the network control station to solve the problem.

PLANNING CONSIDERATION

2-89. The communications plan supports the command requirements of a tactical mission. To meet specific requirements commanders may modify their systems based on METT-TC. The S-6 assists the S-3 in developing the communications plan during the MDMP. There are factors to be considered during the planning phase, to include:

- **Digital and Voice Networks**. FA battalions use a mix of digital and voice radio networks as determined by the operational status of assigned equipment and mission variables. If digital capability is lost by the battalion or by one or more of the batteries, the voice networks can quickly become overburdened. The FA battalion communications plan must include plans for converting some digital networks to voice while continuing to support the remaining digital data networks. The communication plan should include a plan for reconverting to digital networks. It is extremely important to keep voice traffic off digital networks and vice versa. Develop and rehearse frequently a voice backup plan for each operation. Many of the details can be included in the unit tactical standard operating procedure.
- **Planning Ranges**. Range capabilities vary with the method of communications, the type and model of equipment used, terrain, weather, and atmospheric conditions. Jamming also degrades communications range. Since rehearsal on the actual terrain and under the exact conditions is often impossible, experience, digital terrain tools, and thorough map reconnaissance are essential to proper estimation of communications ranges.
- **System Mixes**. The factors of METT-TC have different effects on the communications means. The preferred communications setup is any system or mixture of systems that will communicate the information with the least exposure to enemy electronic warfare and not place total reliance on radio. A good communications plan maximizes the use of all available systems and backup plans to prevent over reliance on any one system. Address much of a FA battalion's basic communications planning in the unit's tactical standard operating procedure.

COMMUNICATIONS SECURITY CONSIDERATIONS

2-90. Communications security should be part of each FA battalion tactical standard operating procedure. Effective communications security techniques include:

- Require authentication on non-secure networks if operating in the single channel mode of operation. Note: proper authentication procedures can eliminate intrusion and imitative deception.
- Never mix plain and encrypted traffic on the same network. Doing so compromises the nature of the network, which makes interception and analysis easier for the enemy.
- Use secure equipment whenever possible. If the battalion is supporting a unit without secure capability, specify networks that will be unsecured and enforce secure discipline on all remaining networks.
- Limit transmissions to five seconds or less, if operating in the single channel mode of operation. This makes interception and direction finding more difficult.

- Work through jamming if possible. Report suspected jamming on a different network to supported higher HQ or the network control station immediately. Do not stop using the suspected network as this may tip the enemy that their jamming attempts were successful and friendly forces will not be able to pinpoint the jamming location if they stop and start jamming a new channel or frequency. Jumping networks should be a last resort. Remember that if jamming is bad enough to keep a unit from operating on a network, it may also keep many of the stations from receiving the signal to change frequencies. Disseminate anti-jam frequencies well in advance, so that subscriber stations can move to the alternate frequencies in sequence. Reduce susceptibility to jamming by using frequency-hopping radios.
- Schedule and use only authorized call signs from the automated network control device or signal operating instructions.

INTERNAL AND EXTERNAL COMMUNICATIONS NETWORKS

2-91. The FA battalion communicates through internal and external communication networks. The details on both internal and external networks follows.

INTERNAL NETWORKS

2-92. The FA battalion will require 6 to 10 internal networks for normal operations, to include as required:

- Use battalion command (voice) network for command, collection, and dissemination of tactical information and intelligence. The battalion operations section is the network control station.
- Use battalion fire direction (digital) networks for tactical and technical fire direction from the forward observer through the FA battalion FDC to the controlling platoon FDC. Assign the fire direction networks according to the mission and the battalion's communications status, not necessarily one per platoon. However, a technique frequently used under ideal communications, is to assign a network per firing platoon, with the forward observers, FIST, maneuver battalion fires cell, and battalion FDC spread evenly across the networks. In some operational situations, when platoons are firing units, it will be required to allocate a fire direction network per firing platoon. The network control station for all fire direction networks is the battalion FDC. Establish one or more of the networks as a voice network.
- Use battalion command (digital) networks for FS planning and coordination between FA elements, for mutual support unit operations, and for tactical and technical fire direction to reinforcing artillery units. The network control station is the battalion FDC. Establish the network as a voice network during degraded operations.
- Battalion operations and intelligence (digital) network is used for exchanging targeting, counterfire section, survey, meteorological data, and intelligence information within the battalion. These elements can include radars, target processing section, and survey teams. The network control station is the battalion S-3 section.
- Battalion administration and logistics (voice) network is used for coordinating battalion administrative and logistical matters. The battalion trains command post is the network control station. The FA battalion S-4, S-1, the forward support company commander, and his subordinate platoon leaders will operate in this network on a full time basis. The firing battery commanders, first sergeants, or executive officer will operate in this network, as required.

EXTERNAL NETWORKS

2-93. The FA battalion may operate on several external networks. The actual number will depend on availability of communications assets, supported higher HQ task organization, and the division or corps organization with supporting brigades. The FA battalion may operate numerous external networks, to include as required:

- BCT (voice).
- BCT operations and intelligence (voice).
- BCT administrative and support (voice).
- FAB network (digital) as assigned.

- FAB operations and intelligence (digital), as assigned.
- DIVARTY network (digital) as assigned.
- DIVARTY operations and intelligence (digital), as assigned.
- BCT FS network (voice).
- Maneuver battalion FS network (voice).
- BCT fires cell and battalion or squadron fires cells may also operate on a naval gunfire (voice) network.

COMMUNICATIONS TECHNIQUES

2-94. Communications operations must take advantage of all techniques to facilitate mission accomplishment. Communication operational techniques should be considered and employed to enhance the FA battalion command capability, which may include:

- **Remote Transmitters**. Using remote transmitters separates the radio frequency emitter from the command post or from other critical facilities. In addition, remote radios allow transmitters to be sited for optimum communications while allowing the user to position in locations better suited to survivability. Remote transmitters also minimize on-site or mutual interference while dissipating and reducing electronic signature.
- **Retransmission**. The FA battalion should use retransmission operations to extend the area of coverage of a specific radio network or to reduce the electronic signature of a position. Reduce radio frequency power output by the use of a retransmission site at the command post or other location. Double overall, network ranges by the effective use of retransmission. Terrain and obstacles restrict the transmitting distances of frequency modulation and very high frequency transmissions. The positioning of radio equipment is often critical. Techniques for using frequency modulation retransmission include:
  - Conduct a map reconnaissance of the area of operations. The S-6, S-2, and S-3 should discuss retransmission operations during the planning phase.
  - Analyze the terrain for optimum communications; use the digital terrain tools to assist in this analysis.
  - Select primary and alternate locations for retransmission. Consider accessibility, security, and logistical support.
  - Arrange the timetable for site occupation and network operation.
  - Train operators on retransmission procedures.
  - Ensure users are aware of the tactical situation and how retransmission works.
  - Program additional key and delay time to allow radios to key up before transmitting.
  - Plan to use a nearby firing platoon, battery, FIST, or supported higher HQ fires cell to relay messages. This capability is useful when direct communication with an element is not possible. Relay addressing should be established per tactical standard operating procedure or as identified in the signal operating instructions.
- **Antenna Multiplexers**. Using antenna multiplexers reduces the number of ground plane antennas required to operate multiple radios. The time required to align and tune these devices is considerably less than the time required to install multiple antennas. However, multiplexers also have several disadvantages, to include reduced communications range and significantly increased bit error rate for digital traffic. Note: the rate will vary for different frequencies.
- **Directional Antennas**. Directional antennas reduce electronic signature in two directions while extending the range of the radio along the long axis of the antenna. Use directional antennas in single-channel mode, not frequency-hopping mode.

2-95. A robust digital and voice communications network that can transmit over an extended range is essential for successful operations. Interrupted communications include, obstructions to line of sight, other systems operating in the same electromagnetic spectrum, atmospheric conditions, and enemy electronic attack. Planning communications is increasingly complex and requires participation by every staff member, not just the S-6. Planning should include at a minimum:

- Include a detailed communications line of sight analysis (digital terrain tools or a communications modified combined obstacle overlay).
- Provide for alternate means of communications.
- Ensure subordinates understand the commander's intent so that they know what to do if communications are lost.
- Plan communications architectures in detail, including the use of retransmission, digital network linkages, and command post placement.
- Develop and distribute an overlay that depicts retransmission, digital network links, and command nodes in the brigade's area of operations. This communication overlay enables communications node and terrain management deconfliction, prevents fratricide, and provides for an increase in communication efficiency by reducing communications signature, profile, and request for information.
- Define the initial task organization and expected changes to establish and maintain the tactical internet.
- Follow proper signal and communications security procedures.
- Keep digital orders, overlays, and messages concise to avoid overloading the tactical internet and digital systems.
- Establish standard operating procedures, for when and what communications will be transmitted digitally and which will be transmitted by voice.
- Establish alternate communications procedures.

Commercial Lines and Cell Phones

2-96. Use commercial lines when approved by supported higher HQ. Consider securing commercial lines using devices like the secure telephone unit and limiting classified material sent over non-secure lines and on cell phones. Threat forces may rely heavily on local communications networks.

Sound and Visual

2-97. Sound and visual signals include pyrotechnics, hand-and-arm, flags, metal-on-metal, and sirens. The instructions for the use of signals are in the signal operating instructions or the unit standard operating procedures. Establish signals not included in the signal operating instructions by the use of standard operating procedures or in the operation order. The battlefield will have many sound and visual cues that become increasingly important in complex and urban terrain. Commanders and staff planners must carefully determine how sound and visual signals will be used and authenticated.

Messengers and Liaison Officers

2-98. Use messengers between the command posts, BSB, and higher and lower HQ in the event of communications failures or enemy jamming. Send liaisons to supported higher HQ to speed the passage of information between command posts. The use of liaison officers becomes increasingly important as digitally equipped units operate with non-digitally equipped units. The liaison officers provide access to the digital common operational picture.

Frequency Modulation (voice) Communications

2-99. The FA battalion should not rely on digital communications alone. Digitization does not eliminate the requirement for maps and voice communications. Digitized systems facilitate collaborative planning and rapid dissemination of plans and orders. The FA battalion commander and staff must learn to use the automation systems extensively during the planning and preparation phase of any operation.

2-100. Whether to use voice or digital means for communication is a function of the situation and standard operating procedures. Even though both systems are critical for effective command at all levels, voice may be the primary method for control.

2-101. Voice radio remains the primary means of communications after crossing the line of departure because it is more responsive, multiple stations can monitor the network, and parties convey emotion during the transmission, which is a critical tool in assessing and understanding the battlefield situation.

2-102. Voice is the primary method of communications when maneuver elements are in contact and time is a critical factor. The FA battalion commander and staff must remain sensitive to the difficulty and danger of using digital systems when units are moving or in contact and not expect digital reports under those conditions. The FA battalion commander and staff must continue to update digital databases and common operational picture. Use digital systems for reporting combat information when not in direct fire contact. Company and troop command posts serve as the critical link in turning the voice reports received by units in contact into the digital reports that generate the common operational picture on the FBCB2 system. Other general guidelines may include:

- Report initial contact at any echelon within the brigade on voice, as this alerts the network that a digital threat spot report will follow as soon as possible.
- Use voice for elements on the move (not in command posts), unless they can stop and generate a digital message or report.
- Initiate emergency logistical requests, especially casualty evacuation requests, on voice with a follow-up digital report if possible.
- Transmit threat spot reports for reconnaissance elements moving or in contact on voice; their supported higher HQ should convert voice reports into digital spot reports to generate situational understanding.
- Submit calls for fire on targets of opportunity digitally or by voice.
- Submit digital planned calls for fire from FIST in the initial part of an engagement.
- Submit digital routine logistics reports and requests.
- Submit digital routine reports prior to and following combat.
- Submit digital orders, plans, and graphics, accompanied by a voice call to alert recipients that they have critical information. Additionally, the transmitting element should request a verbal acknowledgement of both receipt and understanding of the transmitted information by an appropriate Soldier.
- Submit voice obstacle and CBRN reports followed by digital reports to generate a geo-referenced situational understanding message portraying the obstacle or contaminated area across the network.

Chapter 3

Field Artillery Battalion Planning

Planning helps commanders create and communicate a common vision among commanders, their staffs, subordinate commanders, and unified action partners. Planning results in a plan and orders that synchronize the action of forces in time, space, and purpose to achieve objectives and accomplish missions. The primary planning methodology used by FA battalions is the MDMP. This chapter has three sections. Section I provides an overview of the MDMP and provides considerations for the FA BN. Section II discusses intelligence preparation of the battlefield and as it applies to the FA battalion. Section III addresses FA battalion rehearsals.

SECTION I – THE MILITARY DECISIONMAKING PROCESS

3-1. The FA battalion commander and staff use the MDMP to guide their planning. They must tailor the MDMP to fit the tactical situation and the battalion's mission. The FA battalion integrates the battalion's planning process with the brigade's planning process. This includes development of the brigade operation plan or operation order, unit airspace plan, FS plan, and supporting FA battalion operation order.

3-2. For more information on the MDMP, see ADRP 5-0 and FM 6-0.

3-3. Table 3-1 provides an overview of how the FA battalion uses the MDMP for planning.

Table 3-1. Field artillery battalion planning process (example)

Chapter 4STEP	*Chapter 5INPUTS*	*Chapter 6ACTIONS*	*Chapter 7OUTPUTS*
Receipt of Mission	•Higher HQ warning order or operation order, FS plan, and unit airspace plan (if prepared) • FA Battalion Operation Order or FA support plan (if prepared). •Available or updated internal and external data.	•Evaluate higher HQ information – mission and task guidance focus. •Initiate running estimates, FS, FA operations, intelligence and target acquisition, mission command, sustainment, and data collection. •Identify draft commander's critical information requirements. •Conduct time analysis.	•Initial FA task list. •Initial running estimates & briefs to FA battalion commander. •Draft commander's critical information requirements and requests for information. •Initial timeline for MDMP and rehearsals. •Initial commander's guidance •Warning order.

Table 3-1. Field artillery battalion planning process (example) continued

Mission Analysis	•Higher HQ (BCT, DIVARTY, FAB) operation order, FS plan, FA support plan, and unit airspace plan (if prepared). •Facts and assumptions from higher, lower, supported, supporting, and adjacent elements, to include fires cells. •Intelligence preparation of the battlefield products (such as, modified combined obstacle overlay, situation templates). •Commander's critical information requirements. •Enemy course of action from S-2. •High-value targets by phase or critical event. •Outputs from previous step. •Internal and external replies to commander's critical information requirements and request for information.	•Understand 2 higher HQ maneuver orders, FS plans and FA support plans. •Identify specified and implied tasks. •Identify commander's critical information requirements. •Organize and analyze facts. •Translate facts and status of FS, FA, and target acquisition assets into capabilities, limitations, and constraints. •Analyze effects of intelligence preparation of the battlefield on - FA and target acquisition. •Develop draft FA support tasks. •Refine running estimates, FA, operations, intelligence, target acquisition, mission command, and sustainment. •Initiate target value analysis. •Identify potential wargaming and rehearsal aids (for example, models, tables, maps, sketches, and audio visual equipment). •Identify non-combatants to be protected and critical or cultural infrastructure to be preserved. •Refine rehearsal plan (such as, timelines, communications, control, and database requirements). •Develop mission analysis brief.	•Updated running estimates. -Facts and assumptions. -Constraints and restrictions. -Critical shortage lists. -Artillery-focused intelligence preparation of the battlefield products (for example, modified combined obstacle overlay, situation templates, and enemy courses of action). -Commander's critical information requirements, request for information •Restated mission. •Specified and implied tasks. •Approved FA tasks. •Commander's guidance and intent. •Mission analysis brief. •Initial movement; mission command; sustainment; fires (fire control and schedules); and intelligence, surveillance, and reconnaissance plans and concepts. •Updated timelines. •Warning order.

Table 3-1. Field artillery battalion planning process (example) continued

Course of Action Development Course of Action Analysis Wargaming	•See outputs from previous step. •Higher HQ updates (BCT, DIVARTY, FAB). •Internal and external replies to commander's critical information requirements and requests for information.	•Develop FA battalion courses of action in synchronization with BCT, DIVARTY, FAB courses of action. •Identify FS and FA decision points and firing unit and fires cell options. •Determine where to find and attack enemy formations associated with FA tasks. •Identify high-payoff targets in those formations. •Quantify desired effects for FS tasks. •Plan decide, detect, deliver, and assess methods for FA tasks to include triggers. •Integrate triggers with BCT, DIVARTY, FAB course of action. •Allocate assets to acquire and attack. •Develop draft targeting and fire plans products. •Identify FA and target acquisition position areas, routes, movements, and timing options. •Identify FA trains and sustainment options (such as, ammo distribution and resupply options). •Use battle calculus to test feasibility. •Refine intelligence, surveillance, and reconnaissance plan. • Define airspace requirements, and any desired FSCMs and ACMs. Develop control measures to safeguard non-combatants and critical or cultural infrastructure.	•For each course of action developed: -Course of action statement and sketch. -Concept of fires. -Draft FS execution matrix or FA support matrix. -Draft target lists and overlay. -Draft or modified target synchronization matrix. -Changes and differences in FS or FA guidance, target selection standards, integrated processes, and fire order standards. -Basic schedule of fires requirements. -Information collection plan differences. •Refined modified combined obstacle overlay & situation template. •Wargaming aids (for example, charts, sketches, overlays, handouts, models, and audiovisual requirements). • FSCMs for fires planning files, and ACMs for UAPs supporting each COA.

Table 3-1. Field artillery battalion planning process (example) continued

Course of Action Analysis and Comparison	•See outputs from previous step.	•Targeting decisions: finalize high-payoff target list and target synchronization matrix. •Wargame the FA battalion course of action and operation plan or operation order versus enemy courses of action. •Supported BCT course of action and integrated FS plan(s) versus enemy courses of action. •Modify or refine inputs, as required. •Test and refine BCT FS plan or FA battalion operation plan or order. •Finalize running estimates, FS, FA operations, mission command, intelligence, target acquisition, and sustainment. •Finalize and coordinate draft target lists, schedules of fires, and schedules of targets. •Refine and finalize commander's critical information requirements. •Prepare or modify draft FA support plan or FS plan. • Finalize airspace requirements and associated ACMs for each COA.	•Course of action decision matrix. •Refined modified combined obstacle overlay and situation template. •Detailed task organization. •Refined running estimates. •Refined risk estimate. •Refined commander's critical information requirements and request for information. **Final Drafts:** •Fires paragraph BCT operation plan and FS plan. •FS plan and annex: -FS execution matrix. -Target list and overlay. -Target synchronization matrix or modified target synchronization matrix. -High-payoff target list, attack guidance matrix, and target selection standards. •BCT FA support plan or FA battalion operation plan or order: -FA support matrix -Fires schedules -Radar deployment order and information collection plan • Finalize FSCMs for fires planning files, and ACMs for Unified Action Partners supporting each COA.

Table 3-1. Field artillery battalion planning process (example) continued

Course of Action Approval	•See outputs from previous step.	•Conduct BCT, DIVARTY, FAB, or FA battalion approval briefing. •FSCOORD presents analysis to brigade commander as part of staff. •FA battalion executive officer or operations officer presents analysis to FA battalion commander. •BCT FS plan or FA battalion operation plan or order briefed as part of each course of action. •Brigade, DIVARTY, FAB, or FA battalion commanders direct changes and approve courses of action as required.	•Approved or modified FA battalion courses of action. •Commander or executive officer issues FA battalion operation plan or order in conjunction with BCT operation plan or operation order and FS plan. •FA battalion guidance (for example, format, coordination, addressees, and timelines). •FA battalion staff and FS back briefs. Issue final rehearsal guidance and information. •Issue warning order, as required.
Orders Production Dissemination and Transition	•See outputs from previous step.	•Finalize staff and other inputs and products. •Gather inputs, prepare and quality check final FA and FS products. •Verify receipt and understanding. •Gather and evaluate lower and higher feedback and rehearsal results. •Recommend post-production changes and updates, as necessary based on rehearsal results, feedback, and changes to the commander for decisions. •Prepare modified products, warning orders, and fragmentary orders to reflect changes and commander decisions.	•Issue FA battalion operation plan or operation order in conjunction with BCT operation order and FS plan. •Disseminate post-production changes and updates via warning orders and fragmentary orders.
ACM – airspace coordinating measure, BCT- brigade combat team, COA - course of action, DIVARTY – division artillery, FA - field artillery, FAB – field artillery brigade, FS – fire support, FSCOORD - fire support coordinator, HQ – headquarters, MDMP – military decisionmaking process			

SECTION II – INTELLIGENCE PREPARATION OF THE BATTLEFIELD CONDUCTED BY A FIELD ARTILLERY BATTALION

3-4. The FA battalion S-2 must expand the supported higher HQ intelligence preparation of the battlefield products, particularly the threat data, to focus on survivability and mobility issues for the FA battalion. The S-2 must answer, "How can the threat and terrain affect my unit?"

STEPS IN THE INTELLIGENCE PREPARATION OF THE BATTLEFIELD PROCESS

3-5. The FA battalion must focus on the following steps when conducting intelligence preparation of the battlefield. For more information on intelligence preparation of the battlefield, see ATP 2-01.3.

DEFINE THE OPERATIONAL ENVIRONMENT

3-6. The FA battalion S-2, together with the commander and S-3, review the identified area of operations and area of interest to determine any recommended changes are necessary based on the battalion's mission. The area of operations and area of interest focus the S-2's efforts, information collection, and the development of the radar deployment order.

DESCRIBE THE ENVIRONMENTAL EFFECTS

3-7. This step includes weather analysis; modified combined obstacle overlay; observation, cover, concealment; avenues of approach, obstacles, key terrain; and FA specific considerations. The supported higher HQ normally provides the products that describe the battlefield effects. Refined products by the S-2 accurately reflect the battalion's area of operations and area of interest. The defining product in this step is the modified combined obstacle overlay. It is a graphic depiction of an in-depth study of the battlefield area incorporating terrain and weather. Refinement of the modified combined obstacle overlay must include analyzing terrain from a FA perspective, determining inter-visibility lines, identifying avenues of approach and potential position areas, and identifying key and decisive terrain.

EVALUATE THE THREAT

3-8. The FA battalion S-2 analyzes threat templates that accurately portray how enemy forces execute their operations and how they react to current conditions. The FA battalion S-2 determines which enemy capabilities may significantly affect friendly FA operations. Use common source data or other governmental agencies to develop a template if a doctrinal template is not available. The use of doctrinal templates that show how enemy doctrine dictates their tactical approach without terrain and weather constraints assist in providing answers to important FA questions, for example:

- What are the high-value targets for the enemy forces?
- What means of FS will the enemy use based on friendly maneuver force actions?
- Can the enemy FA and mortars range friendly forces with conventional and rocket-assisted projectiles?
- Where will enemy FA, mortar units, electronic intelligence, and counterfire acquisition assets position and reposition?
- At what point will the enemy firing units need to resupply, and how are they being resupplied?
- What is the enemy threat in friendly brigade support areas?
- Doctrinally, where will the enemy emplace persistent and non-persistent CBRN obstacles and mine fields?

DETERMINE THREAT COURSES OF ACTION

3-9. Concurrent with the development of friendly courses of action by the FA battalion staff, the S-2 analyzes the situational template and event template. The S-2 will usually receive the supported higher HQ situation templates. Normally, the situation templates do not address the concerns of the FA battalion. The

S-2 should refine them to focus on specific FA issues, including enemy indirect fire systems and units down to the battery level. At a minimum, the S-2 should refine two situation templates. The first is the most probable threat course of action, and the second is the most dangerous threat course of action.

3-10. The process does not end when the FA battalion S-2 has produced the intelligence preparation of the battlefield products. The S-2 uses their knowledge of the area of operations and area of interest in conjunction with intelligence feeds from sources to update the intelligence preparation of the battlefield products and advise the commander and S-3 on changes to the threat course of action and impacts for the battalion.

SECTION III – FIELD ARTILLERY BATTALION REHEARSALS

3-11. Rehearsals are an integral part of the planning process. An effective rehearsal both practices and tests the plan. The FA battalion staff translates modifications identified during rehearsals into verbal and written changes to previously published plans, orders, and even standard operating procedures. Time availability is the critical element in conducting rehearsals.

FIELD ARTILLERY BATTALION REHEARSALS

3-12. The following information provides broad guidance and possible techniques. Timeframes mentioned are rough estimates based on lessons learned, feedback from units, publications, and other published documents. Actual rehearsal techniques, schedules, and times will vary depending on the situation and unit standard operating procedure.

CONFIRMATION BRIEFS AND BACK-BRIEFS

3-13. FA battalion commanders, staff, and leaders give and receive confirmation briefs and back briefs. Commanders and staffs prepare in advance since confirmation briefs often occur immediately after the briefing or issuing of the operation order. If time is limited, the FA battalion commander may have the executive officer and S-3 take some of the briefings from subordinate leaders. A supported higher HQ may also use this disseminated briefing technique, however the FA battalion commander should try to give his briefing to the supported maneuver commander whenever possible.

COMBINED ARMS REHEARSALS

3-14. The supported higher HQ commander, the type of rehearsal, and the technique used will determine the extent of the FA battalion's involvement in a combined arms rehearsal. At a minimum, selected personnel from the battalion command post will participate in the combined arms rehearsal. When time is limited, the FA battalion may integrate some of its support rehearsals into the combined arms rehearsal. However, this should not interfere with the rehearsal. The battalion should rehearse critical tasks prior to the combined arms rehearsals.

FIRE SUPPORT REHEARSALS

3-15. Fire support rehearsals verify synchronization of the FS plan with the scheme of maneuver. They focus on the execution of FS tasks and the FS execution matrix, the effectiveness of FS coordination and airspace coordinating measures, and the timing and synchronization of FS efforts. FS rehearsals rehearse FS tasks (including FA tasks) or when time is limited, the ones limited as designated by the maneuver commander. Use this rehearsal prior to the combined arms rehearsal, as a preparation tool, or after the combined arms rehearsal, to reinforce previous rehearsals, or to address weaknesses and changes identified during the rehearsal. This small-scale rehearsal focuses on the functioning of the FS chain. Preparing for other rehearsals, when time is limited, or to reinforce training units use these rehearsals.

FIELD ARTILLERY TACTICAL REHEARSALS

3-16. Tactical rehearsals ensure the FA battalion operation plan or operation order properly plan and synchronize FA tactical fire control, movement, and key sustainment operations. FA tactical rehearsals focus on areas, to include:

- Tactical execution of FA fire support tasks, the FA support matrix, schedules of fires, and schedules of targets – primary and backup methods.
- Tactical fire control and mission routing procedures.
- Clearance of fires requirements and procedures.
- Commander's attack criteria and priority of fires considerations.
- Effectiveness of FA movement and positioning plans, primary and alternate, for firing, control, and sustainment elements.
- Targeting, counterfire, and SEAD operations.
- Mutual support and continuity operations.
- Communications requirements – use and positioning of retransmission equipment, use of voice versus digital.
- Survey requirements.
- Timing and synchronization of FA efforts with maneuver and airspace operations.
- Enemy prisoner of war procedures.
- Meteorological requirements.
- Resupply triggers, especially for low-density munitions.

FIELD ARTILLERY TECHNICAL REHEARSALS

3-17. FA technical rehearsals ensure that the supported higher HQ FS plan and FA battalion operation plan or operation order properly addresses FA technical fire direction and to exercise the technical fire direction process. FA technical rehearsals focus on areas, to include:

- Technical execution of FA tasks and the FA support matrix – digital links and primary and backup methods (for example, FDC). Rehearsal of backups includes evaluation of reactions to catastrophic loss of a FDC (battalion or battery) and loss of digital or voice capability.
- Integration of tactical and technical fire control processes and computation of firing solutions, to include the communication and interaction among the fires cells, fire direction, and firing elements.
- Identification of technical fire direction issues – high-angle fire, minimum safe distance, target, ammunition, range, FSCM and ACM conflicts.
- Digital database verification – setup, communications, positions, FSCMs, ACMs, target and attack guidance, mission routing and intervention points, target list, and scheduling data.
- Digital continuity of operations – actions for minor and catastrophic failure.
- Digital interface requirements –fire direction system, AFATDS version differences, and any other digital systems to include the tactical air integration system.
- Integration of voice and digital operations, to include backup plans.

FIELD ARTILLERY SUSTAINMENT REHEARSALS

3-18. Sustainment rehearsals verify and reinforce FA sustainment planning and synchronization, and ensure that the FA battalion operation plan or operation order and FA support matrix, address sustainment tasks. FA sustainment rehearsals focus on areas, to include:

- Sustainment required for execution of FA tasks and the FA support matrix.
- Positioning and movement of the battalion trains.
- Ammunition distribution, positioning, expenditure, and resupply.
- Maintenance and recovery operations.
- Refueling and resupply requirements.

- Medical treatment and evacuation procedures.
- Contaminated routes, and decontamination sites.
- Water requirements.

INTEGRATED REHEARSALS

3-19. Units may integrate fires and FA tactical, technical, and sustainment rehearsals to maximize use of limited time. The commander will determine the amount of focus placed on each major area of the integrated rehearsal, to include at a minimum:

- FS task planning.
  - High-payoff target (for example, number, location, purpose, and priority).
  - Primary and alternate triggers, observers, and sensors.
  - Unit that will deliver fires.
  - Attack guidance (for example, shell-fuze combination, number of volleys, and units to fire).
  - Method of engagement (for example, time on target, at my command, or when ready).
  - Time-space relationship between unit response time, duration of fires, and scheme of maneuver.
- Mission thread from the observer or sensor to the firing unit for each task.
  - Primary and backup digital communication links (for example, supported unit, observers [ground and air], fires cells, FDCs, howitzers, radars, and intelligence assets).
  - Correct solution.
  - Attack methods (for example, shell, fuze, and unit).
  - Intervention points in automated FS systems.
  - Correct function of mission routing information.
  - Coordination and deconfliction of targets, as required.
- Key actions that support each phase.
  - Movement requirements, especially the trigger events that initiate moves and their relationship with FS tasks (for example, survivability move criteria).
  - Time-space relationships between FS tasks and movements to ensure units are in position to mass during critical periods and verify the terrain management plan.
  - Logistic requirements, especially critical sustainment tasks.
- FSCMs, ACMs, and coordination requirements for critical targets.
- Priority of fires during each phase.
- Digital database.

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Chapter 4

Detect and Locate Surface Targets

The detect function of the decide, detect, deliver, and assess targeting D3A methodology translates target priorities developed during the MDMP into information collection and target acquisition tasking contained in the operation plan or operation order and its annexes. The S-2 is the primary staff section directing the effort to locate and identify high-payoff targets. The S-2 overseas this effort and directs the tasking of acquisition assets against appropriate targets. Artillery and mortar weapons locating radars are organic to the FA battalion. Information collection and target acquisition assets internal or external to the FA battalion may acquire targets engaged by the FA battalion. Section I begins with a summary description of support from information collection and target acquisition assets external to the FA battalion. Section II describes support to the detect function provided by weapons locating radars organic to the FA battalion.

SECTION I – INFORMATION COLLECTION AND TARGET ACQUISITION

4-1. Information collection and target acquisition are critical aspects of detecting and locating surface targets. Details of information collection and external target acquisition assets follow.

INFORMATION COLLECTION

4-2. Artillery target intelligence can come from many sources, which may include:

- Direct observation by special operations forces, scouts, and forward observers.
- Electronic intelligence sources such as radio frequency intercept systems.
- Human intelligence sources.
- Weapons locating radars.
- Unmanned aircraft systems.
- Higher HQ and joint sources.
- Maneuver formations down through the squad level.

4-3. The S-2 is the staff representative responsible for directing the collection management effort to detect high-payoff targets accurately enough to engage them, as identified in the decide function. The detect function primarily entails execution of the supported higher HQ information collection plan. The brigade has an S-2 element at the brigade and at each subordinate battalion HQ including the FA battalion

4-4. FA battalion FS coordination and observation entities located with the supported unit play a significant role in the detect function, to include:

- BCT fires Cell. The fires cell is the BCT command post functional cell responsible for the collective and coordinated use of army indirect fires and joint fires (including electronic attack). fires cell capabilities include:
  - Planning, integrating, and synchronizing lethal FS into the BCT operations.
  - Integration of available nonlethal capabilities into targeting.
  - Managing counterfire operations.
- Battalion or Squadron Fires Cell. Fires cells provide a FS coordination capability for the maneuver battalion, cavalry squadron, and brigade engineer battalion. The brigade engineer battalion once fielded will replace the brigade special troops battalion. The fires cell assists the

battalion or squadron in executing its portion of the BCT's scheme of fires. Through its AFATDS, the fires cell provides the company FIST digital linkage to the battalion or squadron mortars as well as the FA battalion and FS assets available at higher levels.

- Company and troop Fire Support Teams. FIST provide the maneuver companies or troops with FS coordination, targeting, terminal control, and combat and effects assessments capabilities. Each battalion fires cell has subordinate FIST that support each maneuver company and cavalry troop. The FIST typically operates from a FS vehicle possessing a target acquisition and communications suite with the capability to designate for laser-guided munitions. The battalion commander can direct that FIST be task organized within the battalion or squadron based on mission variables of METT-TC and employed according to an observation plan where they can best acquire targets in support of the operation.
- Joint Fires Observer. A joint fires observer is a trained service member who can request, adjust, and control surface-to-surface fires, provide targeting information in support of type 2 and 3 close air support terminal attack controls, and perform autonomous terminal guidance operations. The capability to have terminal attack control down to maneuver company level is an Army requirement. The Army joint fires observer requirement is 1 joint fires observer per maneuver platoon. Personnel trained as a joint fires observer may be assigned or selected for duty, to include:
  - Company FSO.
  - Company FS noncommissioned officer.
  - Platoon forward observer.
  - Member of a scout or reconnaissance organization.

4-5. Platoon forward observers. Forward observers are assigned to the FIST supporting each infantry company. Equipped with target acquisition devices to accurately locate targets and communications necessary to forward targets to AFATDS, the forward observers are the primary observers in the companies. They are normally collocated with the platoon leaders. They provide target refinement, execute planned fires, and request fires for their supported platoons. The forward observer may direct close air support in emergencies where joint terminal attack controller personnel are not available.

EXTERNAL TARGET ACQUISITION CAPABILITIES

4-6. The military intelligence company consists of a HQ element, an analysis and integration platoon, a multisensor ground platoon, and a tactical UAS platoon. The company provides analysis and integration support to the BCT S-2 section and has the additional capability to coordinate and execute tactical human intelligence operations. The military intelligence company usually has an attached United States Air Force weather section. In all actions, the brigade commander's critical information requirements drive the information collection effort.

4-7. The BCT cavalry squadron has a HQ troop and three cavalry troops. The troop organization allows for scout teaming; has small UAS in each troop; and a fires cell in the HQ and HQ company, which includes a joint tactical air control party.

4-8. Selected other information collection capabilities include:

- A CBRN reconnaissance platoon in the brigade engineer battalion.
- A military police platoon, which consists of a HQ section and three military police squads in the brigade engineer battalion.
- A civil affairs company, which consists of a civil military operations center, a civil liaison team, and 4 to 6 civil affairs teams, uses a number of methods to assess the civil component of the supported commander's AO. The civil affairs core task of civil information management is a process whereby civil information is collected, collated, processed, analyzed, produced and disseminated. It is integrated with the common operational picture and briefed at updates.
- Infrastructure reconnaissance is a multidiscipline variant of reconnaissance to collect technical information on various categories of the public systems, services, and facilities of a country or region. This task may take the form of either an assessment or a survey and develops the

situational understanding of the local capability to support the infrastructure requirements of the local populace and military operations within a specific area (see FM 3-34.170).

- Each maneuver battalion has a scout platoon consisting of three scout sections. The BCT may recommend tasking a specific requirement to a subordinate units scout platoon, but normally tasks the subordinate battalion for the requirements and lets the maneuver battalion commander allocate resources internal to his organization.
- The long-range advanced scout surveillance system found in the cavalry squadron and battalion scout platoons enables scouts to operate well outside the range of currently fielded threat direct fire and sensor systems. The system's line-of-sight, multi-sensor suite provides real time target detection, recognition and identification capability with 24-hour and adverse weather operation. The system also determines and can export far-target location coordinates. It can be mounted or dismounted. The system consists of a second-generation forward-looking infrared with long-range optics, an eye safe laser rangefinder, a day video camera, and global positioning system with attitude determination.
- BCT UAS are capable of locating and recognizing major enemy forces, moving vehicles, weapons systems, and other targets that contrast with their surroundings. In addition, UAS are capable of locating and confirming the position of friendly forces, or the presence of noncombatants. UAS perform reconnaissance, security, target acquisition, or battle damage assessment. UAS sections are organic throughout the BCT. These UASs provide real time imagery to the command post for analysis and retransmission over digital systems. The Raven is organic to the specific company or troops of the battalions and the Shadow is organic to the military intelligence company. One use of the Raven is for advanced party operations when conducting reconnaissance selection and occupation of the position.

4-9. The RQ-11 Raven (figure 4-1) is typical of an unmanned aircraft system at echelons of brigade and below and is characterized by close range (8-12 kilometers [km]), short duration missions (60-90 minutes) operating below the coordinating altitude and thoroughly integrating with the ground forces normally in a direct support role.

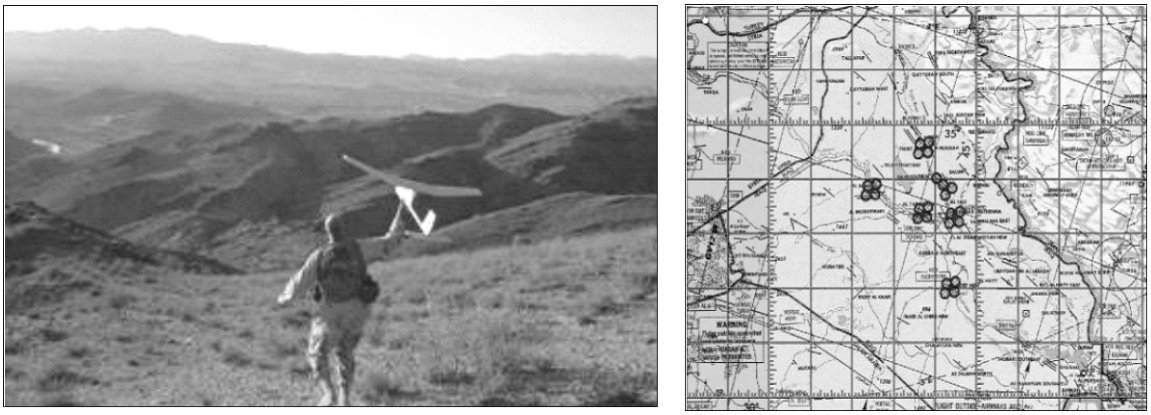

Figure 4-1. RQ-11 Raven aircraft and coverage (example)

4-10. For more information on UAS characteristics and employment, see FM 3-04.155.

4-11. Employ Air Force joint terminal attack controllers forward with each maneuver company and task organize and position where they can best support the operation.

4-12. The cavalry squadron employs three cavalry troops and additional assets provided by the corps, division, or the BCT. The BCT fires cell works closely with the cavalry squadron fires cell to integrate FA support into the operation.

4-13. Each cavalry troop and maneuver company is typically provided a FIST with the capability to laser designate targets for precision-guided artillery and joint munitions. The FIST performs FS tasks in support of troop operations, aiding in the employment of supporting mortars and close air support. Specify supporting FA fires allocated to cavalry squadron operations in FS tasks that were identified in top-down

fire planning. Integrate this support into cavalry squadron operations as part of the scheme of fires for BCT operations with specific synchronization instructions reflected in the appropriate attack guidance matrix.

4-14. Initiate the employment of the BCT fires during cavalry squadron operations through a variety of sensor cues resulting from deliberate and incidental contacts. The cavalry squadron has numerous sensors available for executing its information collection mission. Tactical UAS, ground sensors, and counterintelligence personnel available to the commander to augment his internal assets. The squadron commander can also request external assets available to him from Army forces, joint, and national levels as well.

4-15. Every system or combination of systems employed by the cavalry squadron is capable of reporting the presence of the enemy and therefore is a source for the initiation of FS. In many cases, the accuracy in target location of an initial contact may not be sufficient to generate an immediate fire mission or other tactical response. The BCT fires cell must be aware of this and ensure its targeting elements work closely with the cavalry squadron fires cell to see that minimum target selection standards are met or cross-cue other sensors to gain an accurate target location.

4-16. During the counterfire fight, counter-reconnaissance fight, or the close fight the FA battalion should be the primary recipient of direct sensor inputs. This allows the FA battalion to fully exploit the AFATDS digital architecture to provide timely and responsive FS. The BCT fires cell must constantly monitor execution of current operations and consider the full range of both lethal and nonlethal attack options to meet the commander's guidance in achieving desired effects on enemy formations or capabilities.

SECTION II – FIELD ARTILLERY BATTALION TARGET ACQUISITION

4-17. This section on field artillery battalion target acquisition consists of an overview, radar employment, which includes radar zone management, radar cueing, radar movement, and radar tasking. Details on this information follows.

OVERVIEW

4-18. Sound tactical planning effectively covers the supported higher HQ area of operations with target acquisition assets. Conduct target acquisition planning at tactical levels of the supported higher HQ as an integral part of the MDMP. This fully integrates target acquisition assets into combined arms operations. The FA battalion HQ is responsible for employing its organic target acquisition assets in accordance with the supported higher HQ operational plan.

4-19. The goal of the target acquisition effort is to provide timely and accurate information to enable the attack of specified targets. Target acquisition systems and equipment perform the key tasks of target detection, location, tracking, identification, and classification.

4-20. The FA battalion S-2, with the counterfire operations section, assesses weapons locating radar acquisitions and information collection reports to support targeting. The FA battalion uses this focused intelligence in the development and execution of counterfire.

4-21. UAS support to the FA battalion enhances the battalion's capability to conduct close support fires, counterfire, and SEAD operations. The brigade commander may direct attachment of a UAS mission planning and control section to the target acquisition platoon of the FA battalion. The mission planning and control section consists of a ground control station and associated personnel and supporting equipment. The mission planning and control section receives the mission, plans and controls the aircraft, and reports information. The FA battalion S-3, S-2, and targeting officer will provide the mission planning and control section with the information required to plan and execute the UAS mission. UAS supporting the FA battalion contribute to the overall information collection and target acquisition picture. Primarily task the UAS for FA battalion target acquisition and battle damage assessment. The FA battalion supported by a UAS has enhanced ability to:

- Acquire and locate enemy strike assets to facilitate counterfire.
- Acquire and transmit target data to support the attack of high-payoff targets and targets of opportunity.

- Provide target designation.
- Provide surveillance.
- Provide battle damage assessment.

4-22. Access to a UAS by the FA battalion allows the supported higher HQ reconnaissance elements to concentrate on collecting combat information while FS personnel directing the UAS provide support with target acquisition, fires, and battle damage assessment.

4-23. The target acquisition platoon organic to the FA battalion provides acquisition of threat mortar, artillery, and rocket systems to enable counterfire operations, and generate artillery target intelligence. The platoon consists of a counterfire operations section, a survey section, and a mix of AN/TPQ-36, AN/TPQ-37, and AN/TPQ-50 weapons locating radars depending upon the type of BCT. Once fielding is complete, all target acquisition platoons will consist of two AN/TPQ-53 radars and four ANTPQ-50 weapons locating radars. The platoon deploys in whole or part within tailored force packages. Once in theater, the FA battalion controls the employment of the platoon and any additional weapons locating radars attached or augmenting the supported higher HQ. Weapons locating radars require external assets for security. The survey section provides common survey for FA firing units and mortars when assets are available.

4-24. The counterfire operations section is responsible for providing responsive and accurate counterfire. Counterfire operations are both proactive and reactive countermeasures. Both countermeasures serve as a support multiplier. The counterfire operations section consists of the following personnel—a targeting officer, the senior FA targeting noncommissioned officer, two targeting noncommissioned officers and two target-processing specialists. These individuals work together with the battalion intelligence officer and staff.

4-25. The survey team provides a common grid that will permit the massing of fires, establishes survey control point as directed, and near stake and far stake data for the WLR for transmission of target data from one element to another. The survey capabilities consist of an improved position and azimuth determining system global positioning system team.

4-26. The primary mission of the WLR radars is to detect and locate enemy mortars, artillery, and rockets quickly and accurately enough to permit immediate engagement. The AN/TPQ-36 locates shorter-ranged, high-angle, lower velocity weapons such as mortars and shorter-range artillery. The AN/TPQ-37 locates longer-range, low-angle, higher velocity weapons such as long-range artillery and rockets. The AN/TPQ-53 provides for extended range or the flexibility to do 6400 mil (360 degree) operations. The four organic AN/TPQ-50 radars can detect mortars over a 6400 mil (360 degree) search sector.

4-27. For additional information on FA WLRs, see ATP 3-09.12.

RADAR EMPLOYMENT

4-28. The FA battalion S-3, S-2, and the target acquisition platoon leader, in coordination with supported higher HQ and fires cells of supported units, must work closely to ensure effective management of organic, assigned, or attached radars. Considerations for radar positioning are mission, survivability and security, survey requirements, communications, movement, orientation, and cueing of radars.

4-29. Mission accomplishment is the primary consideration in selecting a radar position. The secondary consideration is survivability and security. Radar position selection starts with the FA battalion S-2 and targeting officer's terrain analysis. They use the modified combined obstacle overlay, terrabase, radar positioning analysis system, and the situational template developed and refined by the intelligence section. They conduct map reconnaissance and select several potential positions. After detailed analysis of these, they recommend primary, alternate, and supplemental positions to the FA battalion S-3, who accepts, rejects, or modifies the positions. Key considerations when positioning radars include:

- Does the position support the commander's intent?
- Where are the enemy's indirect fire systems, or where will, they most likely be located?
- Where will the enemy focus his indirect fires?
- Can the radar acquire targets throughout the supported force area of operations?
- What are the electronic warfare, ground, and air threats to the radar?

- Does the position effectively maximize the radar's range capabilities while simultaneously minimizing the risk of enemy target acquisition?
- Does the position offer a screening crest?
- What is the track volume and aspect angle?
- Do radar positions complement each other?
- Does the position offer good communications with the FA battalion?
- Does the position consider future operations and movement?
- Where are the radar alternate positions and supplemental positions?
- Where are the positions of other friendly units?
- Is the radar on a high-speed avenue of approach that could potentially make it vulnerable to rapid advancement by the enemy?
- Avoid possible area for enemy chemical strikes or air assaults?
- Is the route clear of enemy, chemicals, and mines?
- What is the friendly scheme of maneuver?
- What are the emplacement and displacement times for the various radars?
- What are the movement times between the positions?

4-30. When possible, the target acquisition platoon leader or platoon sergeant should reconnoiter the sites and provide input to the FA battalion S-3. The FA battalion S-3 coordinates the radar's position(s) with the supported higher HQ or other supported fires cells and S-3.

RADAR ZONE MANAGEMENT

4-31. Radar zone management involves the use of both sectors of search and various types of zones. The FA battalion S-3, S-2, targeting officer, target acquisition platoon leader, and the supported higher HQ fires cells work together to ensure that sectors and zones adequately support the overall force counterfire plan.

Radar Zone Management Planning Sequence

4-32. The FA battalion S-3, S-2, targeting officer, target acquisition platoon leader determine considerations for successful zone planning to include:

- Prioritize operational sector and scheme of maneuver events for zone planning based on the commander's intent and guidance.
- Develop zones during the course of action development and the wargaming process.
- Approve and allocate zones to battalion or squadron fires cells that support the scheme of maneuver, meet the commander's priorities for protection, and facilitate the engagement of high payoff targets.
- Develop and assign decision points as triggers for the execution of planned zones.
- Incorporate decision points (triggers) for planned zones and radar movement into the appropriate decision support template, synchronization and execution matrices, and information collection plan.
- Ensure nominated zones facilitate the scheme of maneuver.
- Rehearse planned zones (for example, radar movement, zone activation, and counterfire battle drill) during combined arms, FA technical, and FS rehearsals.
- Refine zones during execution as the intelligence preparation of the battlefield improves or the supported higher HQ scheme of maneuver changes.
- Develop positioning guidance for the radar that optimizes the probability of acquisition and supports the coverage of planned zones.

Radar Zone Management Responsibilities

4-33. The FA battalion responsibilities for radar employment and zone management must be established to focus the planning process and execution. The FA battalion commander is ultimately responsible for

counterfire and zone management. He relies on the S-3, S-2, and targeting officer for counterfire and zone management responsibilities. For more information on zone management, see ATP 3-09.12.

RADAR CUEING

4-34. The FA battalion S-2 and the targeting officer will establish cueing guidance to include authorized agents, communications links, and conditions under which the radar may be cued. Publish the information in the target acquisition tab in the FA appendix to the supported higher HQ FS plan or FA battalion operation order. Cueing instructions are listed in the radar deployment order. For additional information on cueing, see ATP 3-09.12.

RADAR MOVEMENT

4-35. During the wargaming process, the FA battalion S-2 and S-3 decide when they want to try to force enemy indirect fire weapons to move and when accumulated cueing time can cause radar detection. They include these events as decision points on the decision support template. The S-2 or targeting officer moves the radar based on factors of METT-TC and the radar's accumulated cueing times. Moving the radar at a critical time in the battle may cause the supported unit to take heavy losses. When a radar moves, coverage must be coordinated with other organic, attached, assigned, or reinforcing radars, if available. For more information, see ATP 3-09.12.

RADAR TASKING

4-36. There are several methods for specifying coverage for radar sections. Specify radar coverage by using the radar deployment order, the radar execution matrix, and the AFATDS radar deployment order format. All three methods provide the required information for conducting radar operations. For more on information on the radar deployment order, see ATP 3-09.12.

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Chapter 5

Deliver Fires

This chapter focuses on the delivery of fires. The chapter has five sections. Section I covers the fire mission process, including tactical and technical fire direction, massed fires, and continuity of operations. Section II discusses various types of special fire missions. Section III provides information on strike and counterfire. Section IV discusses FA battalion support for SEAD operations. Section V discusses FA battalion survey considerations.

SECTION I – FIELD ARTILLERY BATTALION FIRE MISSION PROCESSING

5-1. FA battalion functions directly associated with surface-to-surface attack encompass the fire mission process. Fire missions can be initiated by any sensor (for example forward observers, air observers, weapons locating radars) or fires cell. FA battalions normally do not perform airspace deconfliction; instead, the brigade fires cell handles the process through connectivity with the brigade air defense and airspace management and brigade aviation element (ADAMBAE). Unmanned aircraft systems may send their calls for fire directly to the brigade fires cell when acting under BCT control. Radars and the counterfire operations section can also work at the brigade level. The FA battalion indirect fire attacks depends on:

- Accurately locating an appropriate target (target acquisition process).
- Initiating a call for fire into the FS system (the fire request).
- Analyzing the fire mission to determine the proper method of attack (tactical fire direction) in FA battalion and, sometimes, platoon FDCs.
- Transmitting the call for fire to the selected firing platoon FDC(s) that –
  - Transmit the call for fire data to the howitzer capable of technical computations of firing data or
  - Convert the call for fire into fire orders for the howitzers (technical fire direction).
- Delivering the required ordnance on the target (deliver fires).
- Determining and reporting battle damage assessment.

5-2. Whether this process is done manually or through an automated system, the process is the same. Automating fire control does not change what we do, but how we do it.

5-3. To expedite fires, the unit can coordinate the use of various quickfire linkages, designed to facilitate rapid-fire mission execution, while achieving desired control. For example, a quickfire channel could be established from a FIST, through the battalion or squadron fires cell, and then directly to the FA battalion FDC. For even faster response and more decentralized control, the FIST may send the mission directly to the FDC that will execute the mission. This is often used for priority targets and final protective fires. Quickfire channels can be used for any observer or sensor. Any brigade, battalion, squadron fires cell or FA command post that is normally in the fire mission flow, but is bypassed during quickfire operations, should receive a notification of each fire mission through message of interest processing.

FIRE MISSION REQUESTS

5-4. The FA battalion digitally plans and executes fires as much as possible. However, the battalion may receive an immediate fire mission from a wide variety of sources, in both voice and digital formats. Higher or lower fires cells generate calls for fire. Fires cells and other requestors send fire missions directly from the requestor to the battalion or the platoon FDC or through several elements in the system.

DIGITAL

5-5. FA and non-FA units send digital fire missions. Procedures and capabilities may vary depending on which digital systems are interfacing with one another. FA battalion commanders must ensure their units:

- Maintain technical expertise in a rapidly changing hardware and software environment.
- Find digital training opportunities involving digital equipment that the unit does not possess.
- Train to troubleshoot digital communications.

5-6. Aggressively seek out training opportunities. Digital FA technical support rehearsals should thoroughly address digital interface issues and possibilities. Rehearse digital fire missions along the entire data link, under the same digital conditions anticipated for the actual operation (for example, extended communications distances, surge digital traffic capacity, degraded operations, and alternate routes). For FA battalions this involves significant coordination responsibilities for both FS and FA digital operations.

VOICE

5-7. Use of voice may be necessary for immediate fire requests or during adverse communications conditions. FDCs must anticipate the circumstances and the types of voice missions they may encounter. The tactical solution and effects on the target should be essentially the same regardless of whether the mission is processed voice or digital. Missions from non-FA personnel may require innovative solutions to coordination, communication, and clearance of fires.

UNTRAINED OBSERVERS

5-8. Occasionally the FA battalion may need to process fire missions from untrained observers. Often these are critical requests where the requestor is under fire. Practice and rehearse the battle drill for untrained observers. Identify specific members of the FA battalion and firing battery FDCs as the primary handlers of untrained observer missions. These personnel should possess good communications skills, patience combined with a sense of urgency, and the ability to remain calm in stressful situations. Practice untrained observer missions during major training exercises.

5-9. For more information on untrained observer procedures, see ATP 3-09.30 and FM 6-40.

TACTICAL FIRE DIRECTION

5-10. The FDC primarily performs tactical fire direction. Tactical fire direction is the process that results in a fire order. A fire order is a FDO decision, made under supervision of the S-3, on whether and how to attack a target. The FDO considerations include:

- Location of the target –
  - Is it cleared to fire?
  - Is it within range?
  - Can the target be attacked?
- Nature of the target –
  - How large is it?
  - What is its degree of protection?
- Ammunition available –
  - Types of ammunition?
  - Quantity of ammunition?
- Are firing units available in range and ready to fire.
- Maneuver commander's guidance and tactical standard operating procedure.
- Request for fire –
  - What did the observer ask for?
  - Can the FA battalion provide it?
  - Should the FA battalion provide it?

- Munitions effects –
  - Proper ammunition?
  - Nature of the target and commander's guidance?
  - How should the target be attacked?
- Tactical situation –
  - When should the battalion fire?
  - Are special instructions required?
- ROE.
- FSCMs and ACMs.
- Collateral damage estimates.

5-11. The objectives of tactical fire direction include:

- Provide continuous, accurate, and responsive fires in all conditions.
- Maintain the ability to engage various targets types over wide frontages.
- Mass the fires of available units.
- Engage a number and variety of targets simultaneously.

5-12. Tactical fire direction is either centralized or decentralized. The AFATDS enables each FDC to perform tactical fire direction, the FA battalion commander and S-3 must determine the mix of control to best meet the tactical situation, anticipate changes in control, and train FDCs to quickly adjust control when warranted.

CENTRALIZED CONTROL

5-13. Consider use of centralized tactical fire control when there are few firing units, when ammunition is low, during critical operations where the commander needs to exercise control, or when restrictive ROE are in place. The FA battalion will normally use platoon-based operations, but under maximum centralized control, the FA battalion may use battery-based operations (for example, each battery designates one FDC as the battery operations center). Also under maximum centralized control, fires requests will go through the supported higher HQ fires cells and FA battalion FDCs. AFATDS intervention point rules and guidance settings are restrictive. Each operations facility halts and reviews most fire missions with only pre-designated critical missions flowing automatically through the fire control system. The airspace environment is also likely to be non-permissive, and fires may require clearance for each individual mission, depending on commander’s guidance, ROE, collateral damage restrictions, execution of close combat attack or close air support, and other airspace operations.

DECENTRALIZED CONTROL

5-14. Decentralized tactical fire control is used when maximum responsiveness and speed of execution is necessary. Under decentralized control, the FA battalion will usually use platoon-based operations. Some degree of decentralized control may be used even when resources are scarce if the brigade commander, with input from his FSO determines the risks inherent in reduced control are warranted.

5-15. Decentralized control involves the use of data linkages and quickfire channels that may bypass some or all of the normal intervening operations facilities. Another method is to modify the AFATDS intervention rules and commander’s guidance so that most missions flow through intervening operations facilities without stopping. Airspace is likely to have been pre-cleared, or procedural controls established to provide priority airspace to fires assets, with the commander desiring a more permissive environment and accepting a somewhat higher risk to airspace conflicts.

5-16. With decentralized control, FA battalion commanders, S-3s, and FDOs must closely monitor ammunition expenditures and the number of rounds fired from current positions. The potential for ammunition shortages and forced survivability moves may increase under decentralized control.

QUICKFIRE CHANNELS

5-17. When significantly responsive fires are necessary, a quickfire channel may be established. This may be a voice or digital link. The quickfire channel establishes a direct link between the sensor and the shooter, or it may have one or more intervening control elements that evaluate and relay traffic. Quickfire channels can be established using existing networks, with the only changes being in the actual routing or reporting of information. Establishment of quickfire channels may also involve the use of alternate networks or communications methods.

5-18. Quickfire channels uses include:

- Counterfire to link weapons locating radar and a firing unit.
- SEAD to link aircraft, electronic warfare, or information collection assets to a firing unit.
- Immediate suppression to link a FIST or other observer with a designated firing unit.
- Operations to link UAS with firing units.

5-19. Quickfire channel situations may involve supplementing the FA battalion with special communications equipment or coordinating nonstandard digital communications protocols. The FA battalion S-6 plays a critical role in identifying and evaluating quickfire channels in support of FA battalion FS tasks. Wargaming and rehearsals require detailed analysis, as testing of the communications links may not be possible until during or immediately prior to the event. Requesting lessons learned information from other units that performed similar operations proves extremely beneficial in identifying potential problems that are not identified during planning and rehearsal.

AUTOMATED TACTICAL FIRE CONTROL

5-20. AFATDS digitally links the FA battalion internally and externally with supported higher HQ, subordinate agencies, and adjacent units. The system automates tactical fire direction and planning functions. AFATDS can process and disseminate information, to include:

- Fire plans.
- Target information.
- Fire missions generated from incoming target intelligence (for example, tactical fire direction).
- FSCMs and other forms of battlefield geometry.
- Ammunition and firing unit data.
- Messages of interest to other operations facilities, to include fire mission airspace coordination and munition flight path message to the higher HQs tactical air integration system and BAE.
- Meteorological and survey data.
- Operation plans, operation orders, fragmentary orders, running estimates, wargaming, graphics, and matrices.
- Movement control and logistics management.

5-21. The AFATDS tactical fire control program analyzes nominated targets, selects the method of attack, reviews available firing units, and selects the optimal firing unit(s) and munitions to engage the target. After analysis is completed and approved by the FDO through either intervention or pre-established standards; The tactical fire control program directs the delivery unit to attack the target.

5-22. The first step in providing for tactical fire direction involves establishing setup parameters in the computer. These parameters, entered prior to operations, consist of the tactical database and commander's guidance. Enter much of the general planning data at BCT and FA battalion level or higher. Disseminate this information downward with some modification at each level. Support Unit locations, ammunition counts, and other data is input at lower levels and forwarded to supported higher HQ.

5-23. The tactical database consists of geometry, firing units, ammunition, and meteorological information. The tactical database includes information from unit plans and orders such as the supported maneuver unit's area of operations (AFATDS zone of responsibility), FSCMs, ACMs, ammunition status, available firing units, firing unit locations, and atmospheric conditions. The single, most critical function of the FDC

is tactical database management, enabling any FDC to temporarily take tactical control of the FA battalion and restore critical information to other FDCs.

5-24. The commander's guidance is simply the translation of the supported higher HQ or other supported maneuver commander's concept of the operation and scheme of fires into system language. The guidance includes information such as attack methods, priority zones, target types, shells, priority of selecting firing units, and exclusion of any firing units or shells and fuzes. Keep the commander's guidance current and accurate because the computer uses it to produce a fire order.

5-25. AFATDS contains information from the joint weapons effectiveness systems concerning the amount and type of ammunition and the optimum number of units to fire for a particular target. This information enables the computer to select the best ammunition for a particular target. Commander's guidance reserves certain ammunition for future use. It can be used to vary the joint weapons effectiveness systems' data in the computer. Once established, the computer implements the criteria without a delay in mission processing. In urgent situations, the commander's guidance may be manually overridden.

5-26. Based on the brigade commander's guidance for the different phases of the operation, the FDO, working with the FA battalion commander and S-3, and the brigade FSO, continually assess and adjust the AFATDS guidance settings. Changes in the tactical situation may make previously valid assumptions and guidance inadequate or even dangerously wrong. If anticipated ammunition fails to arrive, firing units are not available, or if the threat changes, the AFATDS parameters must be adjusted. In a manual environment, this process is no less important.

5-27. In the automated tactical fire direction process, AFATDS automatically prepares a request for additional fires whenever the FA battalion and any reinforcing unit cannot provide the volume of fire specified by the guidance settings. AFATDS automatically forwards requests for additional fires to the supported higher HQ fires cell and when applicable, to the division or corps fires cell.

TECHNICAL FIRE DIRECTION

5-28. Technical fire direction converts weapon and ammunition characteristics (for example, muzzle velocities, propellant temperature, and projectile weight), weapon and target locations, and meteorological information into firing data. Howitzer sections use the results of this process for firing.

5-29. Paladin, M777A2, and M119A3 battalions perform technical fire direction on the howitzer and the FDC assumes a back-up technical fire direction role. During degraded mode, the FDC will exercise direct technical control of howitzers.

5-30. In FA battalions with M119A2 howitzers, the howitzers do not possess the capability to compute a technical solution. Therefore, the FDC exercises direct control and transmits firing solutions to each howitzer.

5-31. FDCs determine technical fire direction for special missions such as registrations and special munitions (for example, Excalibur). FDCs maintain a capability to compute technical data manually for trouble shooting data and in case of loss of automation capability.

MASSED FIRES

5-32. Massing available fires enables the FA battalion to inflict maximum damage on the enemy with a minimum expenditure of ammunition. Massed fires reduce the vulnerability of the firing unit to the enemy's target acquisition capabilities. Failure to mass fires may also give the enemy time to react and seek protection. A clear understanding of the supported higher HQ or other supported maneuver commander's guidance for fires and accurate AFATDS guidance settings are key to determining how much fires are enough. Evaluate every mission received and employ sufficient massed fires to achieve the effects required.

5-33. The FA battalion should maintain the maximum feasible degree of centralized control over the firing systems. Commander's criteria are critical in managing the fires of the battalion. If clear AFATDS guidance is developed and accurately entered into the automated systems, the computer can assume much of the burden of sorting the missions as they are received and assign them the appropriate priority.

5-34. Techniques available to the FDO for massing fires is the use of "time-on-target" or, for mobile targets, use of "at my command" in the fire order. With these techniques, the element of surprise is not lost since the delivery of fires is controlled. Survivability of firing units is enhanced, because mass fire techniques require fewer rounds to achieve the desired effects and because massed fires temporarily saturate enemy target acquisition devices. These two techniques for massing fires, when properly applied against appropriate targets, can maximize effects.

5-35. A technique to mass fires effectively when more than one battery or platoon is to be fired for effect is the efficient use of voice communications to execute digital fire orders. By using voice to execute an order, the battalion FDO can ensure that target(s) are engaged with the required number of firing units in a synchronized manner. Unit tactical standard operating procedures should address the procedures for both digital and voice fire orders.

CONTINUITY OF OPERATIONS

5-36. Continuity of operations functions are built into the AFATDS software at the supported higher HQ fires cell, FA battalion FDC, platoon FDC, and battalion or squadron fires cells for rapid reaction to the loss of an operational element. This redundancy significantly reduces the need for complex and carefully orchestrated mutual support unit operations. Once the systems are initialized and the data-sharing paths established according to the operation, the computers will automatically, without human intervention, update other systems with which a particular station is sharing information. A loss of any single computer or group of computers in AFATDS may not have a devastating impact. The AFATDS at each node has the capability to serve as a backup system for any other node's AFATDS.

5-37. In addition to continuity of operations, manual means will remain an effective backup. The FA battalion command post should thoroughly plan and rehearse transfer to manual backup operations.

SECTION II – FIRE MISSIONS REQUIRING SPECIAL CONSIDERATION

5-38. This section provides general information and guidance concerning fire missions that may require special consideration by a FA battalion. For more information on these missions, from the perspective of the observer, FDC, or fires cell, see ATP 3-09.30.

IMPROVED CONVENTIONAL MUNITIONS

5-39. The 105-mm and 155-mm howitzers can deliver improved conventional munitions. The types of improved conventional munitions include antipersonnel and dual-purpose improved conventional munitions. Anytime improved conventional munitions are fired, a percentage may fail to detonate depending on the meteorology, environmental, and terrain conditions. Dud rates may increase in adverse weather and terrain conditions (for example, forests, mountainous areas, rocky or uneven terrain, snow, surface water, soft sand, marshy terrain, and high winds). Collateral damage and ROE may limit improved conventional munitions employment.

ILLUMINATION

5-40. The amount of illumination ammunition required for a particular mission depends on the observer-target distance, the visibility, and the size, width, and depth of the area to be illuminated. The FDC and the observer must coordinate selection of the proper illumination pattern and controlled rate of fire to maximize illumination effectiveness with minimal ammunition expenditure. Illumination missions may be lengthy missions, increasing the firing unit's vulnerability to enemy acquisition and attack. The FA battalion S-3 should consider directing platoons to fire illumination missions from supplementary positions as much as possible. During the planning process, the FA battalion S-3 should evaluate fire support tasks requiring coordinated illumination missions to determine their potential impact on the overall fire plan and on the priority of fires. Illumination may expose friendly forces to enemy observation. Consider the use of infrared illumination. Infrared illumination allows illumination of target areas covertly without the glare of a conventional white-light flare. The empty canister may pose a down-range safety hazard to friendly forces and noncombatants.

SMOKE WHITE PHOSPHOROUS

5-41. The types of smoke projectiles used for FA delivered smoke include hexachloroethane and white phosphorus (WP). Each has different characteristics and capabilities that must be considered in their employment. Atmospheric stability, wind direction, and wind speed are the major factors influencing the effectiveness of smoke. Significant changes in weather conditions require the FA battalion S-3 and FDO to determine potential impact on FS tasks involving FA battalion delivered smoke (for example, wind, temperature, humidity and precipitation, terrain, and darkness).

WARNING

Hexachloroethane and WP produce toxic fumes, may start fires, and the empty canisters may pose a down-range danger to friendly forces and noncombatants.

SCATTERABLE MINES

5-42. FA scatterable mines, which are currently limited to 155-mm howitzers, give the supported higher HQ or other supported maneuver commander an all-weather capability to quickly emplace minefields, which makes them best suited as situational obstacles. There are currently two types of FA delivered scatterable mines: an area denial artillery munition antipersonnel mine and the remote antiarmor munition system for use against lightly armored vehicles. Minefield angle, range, and target size all affect the fire order requirements for effective scatterable mines delivery. Because scatterable mines missions can be lengthy missions to fire (10-30 minutes), the FA battalion S-3 should consider the time the unit would not be available to fire other missions and the increased vulnerability of the unit to enemy acquisition and counterfire. The S-3 should consider protection measures, such as using additional howitzers to decrease the time, firing the mission from an alternate (possibly hardened) position, or directing a survivability move after mission completion. The S-3 should consider a safety zone for each minefield.

Note. S-3 should consider ROE when planning a minefield.

EXCALIBUR

5-43. The M982-series Excalibur is a 155-mm extended range, all weather, precision guided projectile designed for use with 155-mm digitized howitzers. The employment of Excalibur helps reduce collateral damage. Engaging enemy elements inside urban structures and near non-combatants denies sanctuary to enemy forces. Unitary precision and steep terminal trajectory offset enemy advantages gained by occupying compartmentalized complex terrain. As a high explosive projectile (equivalent to the M107), the unitary maintains lethality sufficient to engage targets common to open terrain. Due to its extremely high altitude flight path, Excalibur requires significant pre-coordination. Without this coordination, these fires will require coordination by the Division's supporting Air Support Operations Center, or joint airspace command and control nodes, such as the Air Operations Center. For more information on the employment considerations, capabilities, and options for Excalibur, see TM 9-1320-202-13.

PRECISION GUIDANCE KIT

5-44. The M1156 Precision Guidance Kit (PGK) is an all-weather, near precision, global positioning system guided fuze for digitized platforms. The PGK is intended for engagement of area targets and other targets normally engaged with high explosive munitions to correct for inherent ballistic errors. The near precision capability ($\leq$ 50-meter circular error probable) of the PGK increases the efficiency of the rounds fired at targets at mid through maximum ranges by reducing the number of rounds required to achieve the desired effects. The PGK makes small corrections of the ballistic flight path of the projectile to guide it to

the intended target grid. The user initializes the PGK for guided flight via an electronic portable inductive artillery fuze setter. The PGK has two fuze modes – point detonating and proximity.

M1130 105MM PREFORMED FRAGMENT

5-45. The M1130 105mm pre-formed fragment munition is a 105mm high explosive projectile for use against personnel and light armored targets. The round is filled with 9,300 3mm tungsten spheres that provide enhanced lethality. The pre-formed fragmented cartridge replaces the M760 and M927 cartridges.

DANGER CLOSE

5-46. The term "danger close" is used when friendly troops are within a prescribed distance of the intended impact of munitions, specifically 600 meters for cannon and mortars and 750 meters for 5" naval gunfire. In danger close missions the situation, type of ammunition being fired, the number of rounds, method of fire, Angle T, weather, and terrain conditions must be considered to ensure safe firing. Weather and terrain can affect certain munitions such as improved conventional munitions, smoke, illumination, and variable time fuzes. Dry, grassy terrain, spilled fuel, damaged vehicles loaded with ammunition, and wooden structures all present potential hazards. Mountains, trees, and urban terrain complicate danger close missions as steep slopes make observer adjustment more difficult to estimate, and crests or buildings can interfere with firing, stopping rounds or causing variable time fuzes to function early. High-angle fire can alleviate problems with crests or buildings, but may have greater dispersion (for example, probable error). Rocky terrain and hard surfaces present increased risk of ricochets, especially with flat trajectories. Whenever possible, the most accurate weapon system and shell, fuze, and charge combination should be used for danger close situations. Ground burst smoke or illumination can be used as marker to verify expected impact, observer, and target locations.

SECTION III – COUNTERFIRE

5-47. Counterfire is not a separate battle, but one aspect of the overall combined arms fight. Integrate and synchronize the counterfire fight with elements of the maneuver commander's plan.

5-48. Effective counterfire includes the destruction or neutralization of enemy weapons, to include electronic warfare weapons such as jammers, target acquisition systems (for example, radars, electronic warfare systems, and UAS), supporting command and control, communications, transportation, and sustainment sites. However, the critical aspect in counterfire operations is information management, which involves two key areas: intelligence or target acquisition, and information processing. Friendly and enemy intelligence and target acquisition assets compete to find the various parts of each other's indirect fire system, analyze the information, decide the most effective method to attack, and disseminate orders to howitzers, jammers and other attack assets. Accuracy of information and fires, speed, and effectiveness combine to determine the outcome of the counterfire battle.

RESPONSIBILITIES

5-49. The supported maneuver commander has overall responsibility for the planning and conduct of counterfire operations as part of his operation. The brigade FSO advises the brigade commander on the integration of counterfire into operations, the priority of counterfire within the overall operation, and basic counterfire priorities.

5-50. The FA battalion commander has overall responsibility for the FA battalion's execution of counterfire. In the FA battalion, the key counterfire personnel are the FA battalion commander, S-3, FDO, S-2, targeting officer, target acquisition platoon leader, and liaison officer (from a reinforcing FA battalion, if available). The brigade commander receives input and recommendations from his organic FA battalion commander, FSO, S-3, S-2, and other staff officers involved in counterfire operations. The brigade commander issues decisions and guidance as necessary to direct counterfire efforts, to ensure effective coordination occurs. Supporting reinforcing, general support, and general support-reinforcing FA units frequently receive this counterfire guidance through the supported higher HQ or other supported maneuver HQ.

5-51. A FA battalion's counterfire responsibilities will vary dependent on the echelon, tactical mission, and guidance from the brigade commander. The FA battalion fires acquired counterfire targets or forwards through fires channels for attack by other FA or non-FA assets. The S-3 and S-2 attempt to locate and destroy enemy mortars and artillery that pose the greatest threat. Execute counterfire to counter enemy artillery and mortar systems before they can inflict significant damage.

FIELD ARTILLERY ROLE IN COUNTERFIRE

5-52. The FA battalion usually plans counterfire within the supported higher HQ area of operations. If circumstances dictate give, most of the counterfire fight to a reinforcing unit. The supported higher HQ has specific counterfire responsibilities, to include as required:

- Supporting the commander's protection priorities. State these priorities in terms of what assets, functions, and positions are critical to the supported higher HQ mission.
- Development, dissemination, and management of intelligence and order of battle information on the enemy's indirect fire system, including systems in the maneuver unit's area of operations, as well as any within its area of interest that can impact the maneuver unit's mission to include:
  - Indirect fire weapon systems (for example, mortars, cannons, rocket, and missile launchers).
  - Target acquisition assets (for example, observers, radars, sound and flash systems, and electronic intelligence).
  - Control elements relevant to counterfire operations.
  - Enemy indirect fire tactics.
  - Enemy counterfire tactics (for example, use of lethal and nonlethal assets against friendly FA).
- Advising the brigade commander in establishment of attack guidance for counterfire targets.
- Coordination of counterfire operations with higher echelon counterfire operations.
- Integration of counterfire into the operation plan in a complementary manner that helps enable maneuver operations.
- Achieving indirect fire superiority within the area of operations.

DIVISION OR CORPS COUNTERFIRE

5-53. Division or corps may task the BCT to cover target areas of interest with its organic radars and target acquisition or information collection assets. The FA battalion commander must understand his unit's responsibilities in the larger counterfire fight, and ensure efficient execution of assigned counterfire tasks. The BCT's FA battalion will not normally execute the division or corps counterfire fight because that would reduce immediate available fires for the BCT.

COUNTERFIRE PLANNING

5-54. The FA battalion S-2 and targeting officer plan, coordinate, and synchronize the counterfire fight during the wargaming process. They recommend call for fire zones, decision points, triggers for cueing and moving radars and changing zones. They coordinate with the supported higher HQ fires cell for supported force critical friendly zones (CFZ). Counterfire planning considerations include:

- What unit will conduct counterfire (for example, unit designated by the FA battalion S-3 on the FDO's recommendation, considering range, ammunition, and position)?
- What will happen if multiple acquisitions occur simultaneously?
- What is the standard fire order (for example, the FDO recommends a standard fire order for the S-3's approval, ensuring it meets the commander's guidance)?
- What are the decision points for moving the radar (for example, based on the phases of fire or accumulated cue time)?
- What are the decision points to change the radar zones (for example, based on the phases of the operation)?
- What are the decision points on when to start cueing?

- Plan radar zones for all phases of the operation, and what are the decision points for turning them on and off?
- When does the S-3 want to force the enemy's artillery to move?
- Does the plan account for branches and sequels (for example, degrees of success or failure)?
- Does the plan call for when and when not to engage with counterfire?
- What is the criteria to meet the commander's intent (for example, how many enemy firing or launch platforms must be destroyed)?
- Can the call for fire zones be pre-cleared within maneuver and airspace planning? For example, consider use of FSCMs such as a coordinated fire line, free-fire areas, and ACMs.
- What are the decision points for massing the battalion's fires on the enemy's artillery?
- What is the cueing schedule and who cues the radar during the different phases of the operation?

5-55. There are several critical decision points in the wargaming process. One of the most important involves forcing the enemy's indirect fire weapons to move, which allows the radar and the counterfire unit to move without jeopardizing protection. Use suppressive, neutralization or destruction fires to force the enemy to move. Another critical decision arises when target acquisitions occur simultaneously, the counterfire unit can become overwhelmed. Table 5-1 lists the options available when the radar receives multiple acquisitions.

Table 5-1. Multiple target acquisitions

Type Targets	FA Battalion With a Reinforcing Battalion	FA Battalion Without a Reinforcing Battalion
Multiple Targets in Range	Reinforcing battalion engages target(s) and passes other target(s) to the FA battalion. Reinforcing battalion engages targets simultaneously. Reinforcing battalion engages targets sequentially.	FA battalion engages targets simultaneously. FA battalion engages the targets sequentially. FA battalion engages target(s) and passes the other target(s) to a FAB, DIVARTY, or a higher HQ fires cell for attack with other assets.
Multiple Targets in Range, but the FA Battalion is Involved in Missions with a Higher Priority	Reinforcing battalion engages target(s) and passes the other target(s) to a FAB, DIVARTY or a higher HQ fires cell for attack with other assets.	FA battalion passes the targets to a FAB, DIVARTY, or a higher HQ fires cell for attack with other assets.
Multiple Targets - Some Out of Range	Reinforcing and supported FA battalion engage the target(s) within range and pass the other target(s) to a FAB, DIVARTY or a higher HQ fires cell for attack with other assets.	FA battalion engages the target(s) within range and passes the other target(s) to a FAB, DIVARTY or a higher HQ fires cell for attack with other assets.
DIVARTY – division artillery, FA – field artillery, FAB – field artillery brigade, FS – fire support, HQ – headquarters		

REHEARSING COUNTERFIRE

5-56. Counterfire rehearsal synchronizes the counterfire fight with the supported higher HQ schemes of maneuver, fires, and communications. The FA battalion S-2 and targeting officer should rehearse the counterfire plan with the radar and intelligence sections. The S-2 and counterfire operations section should rehearse management of radar zones during different phases, using radio networks (digital and voice with cueing agents); decision points for movements and prepare-to-march-order; times to be ready to radiate (cueing schedules); and reporting accumulated radar radiation time.

COUNTERFIRE DRILL

5-57. The following scenario describes possible FA battalion command post counterfire techniques. They focus on the interactions of the staff, which are most important in synchronizing the counterfire fight, to include:

- **Plan**. During the MDMP and wargaming processes, the BCT fires cell and FA battalion staffs identify counterfire, targeting, and target acquisition data requirements and responsibilities. The BCT operation order, fires annex, FA appendix, and target acquisition tab to include the radar deployment order provides the necessary information. In the scenario, FA assets are in place and ready to support the mission. The BCT organic FA battalion has an attached radar from a FAB.
- **Acquire**. As the battle begins, the radar acquires enemy artillery firing from a call for fire zone. The radar section assigns a target number from its allocated block of numbers and immediately transmits the counterfire information grids (for example, impact and origin).
- **Decide**. The FA battalion operations and intelligence section receives the radar fire mission digitally or by voice. The AFATDS operator or radio operator sounds off with "fire mission, radar" or a similar standard operating procedure phrase to alert the FDC. Then he announces target number, origin and impact grids, and time acquired to the FA battalion S-2 and assistant S-3. The FDO immediately sends a fire mission to the platoon(s) with a fire order of "do not load." The assistant S-3 and S-2 plot the grids. The assistant S-3 makes a quick map spot, determines if units are in range of the target, and informs the S-3. The S-2 begins to verify his template and identify the type of unit(s). The S-3 requests clearance of fires through the BCT fires cell, as required. The BCT fires cell clears the fires through maneuver channels, and the fire battalion FDO cancels "do not load."
- **Deliver**. The FA battalion FDO fires the mission and requests additional fires from the DIVARTY or FAB, as required. If attack criteria are achieved, the FA battalion S-3 directs end-of-mission on that target. Alternative actions the S-3 may direct include:
  - **Handoff**. The FA battalion may be forced to handoff the mission to DIVARTY or a FAB or BCT fires cell if it cannot service the mission.
  - **End of Mission**. The FA battalion S-3 or FDO may have to direct end-of-mission before the mission is fired because FSCMs or boundaries are violated, clearance cannot be granted in a timely manner, clearance of fires is denied, or there is a duplication of missions.
- **Assess**. The FA battalion operations and intelligence section uses supporting organic UAS or coordinates with the BCT fires cell and DIVARTY or FAB to receive battle damage assessment. The S-2 updates logs and revises enemy artillery positions based on origin grids and revises enemy most likely course of action based on impact grids. The FA battalion S-2 and targeting officer evaluates revised enemy artillery positions and refines the radar zones in coordination with BCT fires cell targeting officers and those of DIVARTY or FAB supporting HQ. The FA battalion S-2 may also need to update the radar deployment order, make cueing schedule changes, move the radar, and coordinate coverage during movement. The S-3 may also need to relocate firing elements.

SECTION IV – SUPPRESSION OF ENEMY AIR DEFENSES

5-58. This section provides a summary description of suppression of enemy air defenses (SEAD) and FA battalion involvement in support of BCT or higher echelon operations. To assist in this task the use of a joint air attack team may be employed. The joint air attack team normally operates as a coordinated effort supported by FS, air defense artillery, naval surface FS, information collection assets, electronic warfare systems, and ground maneuver forces against enemy forces. Joint terminal attack controllers may perform duties as directed by the air mission commander in support of the ground commander's scheme of maneuver.

5-59. SEAD involves activities to neutralize, destroy, or temporarily degrade surface-based enemy air defenses by lethal and nonlethal means. Effective SEAD increases friendly aircraft survivability, enhances air operations, and facilitates rapid air superiority. This in turn supports the supported higher HQ' ground

maneuver and counterfire battles. Army SEAD operations are primarily designed to protect air assets near the forward line of own troops or during cross-forward line of own troops operations.

5-60. Fires cells conduct SEAD planning, targeting, and coordination. Both ground force fires cells and aviation unit fires cells may be working together in planning and coordinating SEAD.

FIELD ARTILLERY BATTALION IN SUPPRESSION OF ENEMY AIR DEFENSES OPERATIONS

5-61. The FA battalion may be involved in overall SEAD planning and coordination. This may include planning and execution of both BCT and FA battalion FS tasks. There may also be instances where supporting FA battalions with a support relationship of reinforcing, general support-reinforcing, or general support plays a major role in the overall SEAD for an operation. In this situation, the FA battalion commander or the S-3 may go to the planning HQ or fires cell and actively participate in the detailed SEAD planning. Supporting FA battalions may establish temporary liaison with the supported maneuver or aviation fires cell during the planning and execution of critical SEAD missions.

5-62. FA battalion involvement in SEAD may include:

- Planning, conducting, or participating in SEAD programs designed to degrade and suppress enemy air defense assets throughout the supported higher HQ area of operations or to destroy, degrade, and suppress enemy air defense within a specific area or corridor.
- Planning, executing, or participating in SEAD fire plans designed to support specific air operations.
- Providing immediate fires to rotary or fixed-wing aviation assets in support of an ongoing air operation.

5-63. A SEAD plan or program may involve several FA battalions, with cannon, rocket, or missile units providing fires along ingress and egress routes. Early identification of air routes and attack by fire positions is crucial in focusing target acquisition assets and intelligence templating in developing attack plans, and in coordinating air corridors and airspace coordination areas with FA positioning requirements.

5-64. One technique for localized SEAD is to prepare the attack by fire positions with FA indirect fires before occupation by the attack aircraft. Time separation is critical to prevent fratricide and to allow the aircraft to occupy the attack by fire positions unopposed. The unit should fire the attack by fire preparation based on an H-hour with the last rounds scheduled to impact from one to ten minutes before the aircraft arrive in their attack by fire positions.

5-65. When using indirect fires, to orient the attack aircraft to the engagement area, they begin firing as the aircraft arrive in their attack by fire positions. The engagement area preparation serves two purposes. First, it suppresses the enemy maneuver elements and therefore any enemy air defenses that are accompanying them. Second, the flashes and smoke from the munitions provide the aircrews with a visual reference of the location of the targets.

5-66. SEAD targets should be fired during egress in the same fashion as the ingress targets. Any targets discovered during ingress should be included in the egress program. The egress SEAD should be fired on-call if the attack aircraft can communicate with the FSO. If all communications with the aircraft is lost during the attack, then the egress SEAD should be fired on a planned time schedule. This allows the aircraft to know when it is safe to proceed down their egress route without being hit by SEAD fires.

PLANNING FOR AND CONDUCTING SUPPRESSION OF ENEMY AIR DEFENSES OPERATIONS

5-67. The FA battalion S-3 and FDO work closely with the appropriate fires cell and maneuver S-3 to maintain current mission data. They review tasks involving SEAD for both the supported higher HQ and FA battalion to ensure firing units will be in position, on time, with the necessary ammunition to fire the missions. They review the relative priorities, potential mission conflicts, and enemy threats to better anticipate how alternative or backup plans must be executed. The FA battalion S-3 verifies triggering

responsibility, authority to change mission factors, and who the firing unit must contact if problems develop. The S-3 briefs the FA battalion FDO and firing units (primary and alternate) in all aspects of the SEAD mission.

5-68. The FA battalion S-3 should consider established air corridors and airspace coordination areas when selecting firing positions. FA battalion S-3s should query fires cells early to identify air corridors and airspace coordination areas.

5-69. Evaluate the SEAD primary and backup triggers during rehearsals. Timing is important in SEAD fires to prevent fratricide of friendly air and obscuration of the main target. Aircraft may arrive early or late, targeting information may not develop, or the FA firing unit may be unavailable, delayed, or involved in another mission. The FA battalion S-3 must decide whether to fire or abort the mission. Since aborting a SEAD mission can have serious impact on the air mission, wargaming analysis and prior coordination are critical to understanding the commander's guidance and priorities that should guide the FA battalion S-3's decision. The FA battalion commander may retain abort decisionmaking authority on SEAD FS tasks.

5-70. Review air observer immediate fires request procedures. Individual requests by flight leaders (pilots) for SEAD support are treated as targets of opportunity. Add targets of opportunity to the current SEAD plan and fire during egress or during a re-attack of the target. The FA battalion S-3 and FDO must anticipate these missions and consider time, ammunition, firing units, and potential target types, and develop tentative fire orders for the more likely scenarios.

5-71. The FA battalion S-3 or FDO may have to recommend or make rapid adjustment to the SEAD fire plan to adjust for changing circumstances. The S-3 and FDO must carefully review the potential impact on other fires. Successful execution of adjustments depends on a complete understanding of the commander's intent, priorities, and the concept of operations. Thorough review of branches and sequels and accurate situational awareness (operational and sustainment) during planning will facilitate these adjustments during execution,

5-72. Use smoke to obscure enemy air defenses and smoke or illumination to signal the lifting or shifting of fires to allow aircraft to attack. The FA battalion S-3 should ensure the use of these fires is well coordinated.

5-73. The FA battalion S-2 works closely with targeting officers in the fires cells and with S-2s in higher and subordinate echelons to ensure the battalion has the most current targeting information. If the battalion performs SEAD targeting, the S-2 must submit requests for SEAD related intelligence and targeting information as early as possible. Direct coordination with aviation, Air Force, and military intelligence elements may be necessary to get accurate information in a timely manner. The S-2 and targeting officer in the FA battalion may briefly move to the fires cell responsible for planning SEAD.

5-74. SEAD targets include command and control, air defense artillery weapons, and radars. Because of the ranges involved in supporting operations, target locations must be as accurate as possible. During coordination of SEAD targeting, FA battalion S-2s and S-3s should discuss target location accuracy with fires cells when they identify potential problems.

5-75. The sources for development of SEAD targets are primarily visual observation by ground and air observers, electronic and imagery assets, or templating techniques. Suppression of deeper enemy air defenses targets supporting air operations are provided primarily by Air Force tactical air reconnaissance flight reports, other aircraft reports, or satellite imagery available through division, corps and above intelligence coordinators, all of which may require more coordination and special communications or automation arrangements.

5-76. The FA battalion S-6, working with the S-3, reviews tasks involving SEAD for unique communications and automation requirements. Due to the varied command and support arrangements, participants, and distances involved, unusual communications arrangements may be necessary. Retransmission or voice and digital relay may be necessary. Additional communications equipment may be warranted. Quickfire channels may be used. The FA battalion S-6 may need to work directly with a ground or aviation force fires cell to ensure communications arrangements are adequate. Alternate (backup) communications plans should be developed.

SECTION V – METEOROLOGY

5-77. Apply current meteorological data for accurate artillery fires, battlefield forecasts, radiological fallout predictions, and target acquisition. This information is in the form of meteorology messages provided by the FA battalion headquarters.

5-78. Computer Meteorological Data-Profiler (AN/GMK-2) is an evolutionary block of the Profiler system and reduces the logistical footprint to a laptop configuration located in the main command post.

5-79. The AFATDS operator operates the Computer Meteorological Data-Profiler interfaces with the AFATDS via local area network connection.

SECTION VI – SURVEY

5-80. This section summarizes key survey consideration for the FA battalion. Survey is used to establish and transfer accurate locations and directional control for weapons and target acquisition assets. Survey establishes a common grid that permits the massing of fires, the delivery of surprise observed fires, the delivery of effective unobserved fires, and the transfer of target data from one unit to another. With the increased availability of global positioning system devices in vehicles and weapon systems, requirements for survey support are decreasing. However, understanding of standard survey principles is critical for successful operations during degraded operations.

5-81. Survey control is a command responsibility. The FA battalion is responsible for establishing a common grid throughout its area of operations. During MDMP development, the brigade commander, S-3, and FSO identify key survey issues. In advising the brigade commander, the FSO analyzes the commander's guidance, the scheme of maneuver, rate of movement, effects desired on high-payoff targets, and accuracy requirements for weapons and target acquisition sensors. The FSO ensures that the supported higher HQ FS plan and its FA appendix (FA battalion operation plan or operation order) provide the necessary survey guidance and tasks. Details for survey support to mortars and non-FA target acquisition assets are addressed in both the supported higher HQ FS plan and its appendix, as the non-FA units may not receive the FA battalion operation plan or operation order.

5-82. The FA battalion may receive survey instructions and guidance directly from the brigade FSO or fires cell during direct involvement in the supported higher HQ MDMP. The FA battalion commander, S-3, and survey section chief are the key individuals involved in reviewing the instructions and guidance, identifying the battalion’s total survey requirements, and developing battalion survey plans.

5-83. The FA battalion commander’s guidance must provide information, which may include:

- Priorities for survey to include survey methods.
- Accuracies required if other than tactical standard operating procedure. Modified survey techniques may be needed as the result of mission variables of METT-TC.
- Times that critical tasks in the survey plan must be completed.
- Location accuracy and number of survey control points.
- Position requirements (for example, primary, alternate and supplementary).
- Future plans.
- Digitized platform (for example, automated fire control system or Paladin digital fire control system, digital fire control system, mobile counterfire system) initialization information and confidence checks.

5-84. The FA battalion S-3 must coordinate continuously with higher-echelon staff and commanders and advise the FA battalion commander on any deviation from previous guidance. If the tactical situation or the absence of accessible survey control points require use of hasty survey or field-expedient methods of establishing survey control points, the BCT, DIVARTY, or FAB commander must be informed.

5-85. The FA battalion S-3, advised by the survey section chief, develops the survey plan using available assets and techniques to best meet the guidance given by the commander. The S-3s of both reinforced and reinforcing battalions must coordinate their efforts and plans. Survey assets may have to be pooled on occasion without regard to unit identity to accomplish the mission. General support and general support-

reinforcing units will closely coordinate their survey requirements with the FA battalion's area of operations, especially during offensive operations. During defensive operations involving rearward movement, reinforcing units may rely heavily on supporting FAB or DIVARTY general support and general support-reinforcing unit survey information to facilitate survey operations. The FA battalion survey plan must be coordinated to ensure use of consolidated survey control point data and to eliminate duplication of effort.

SURVEY PLANNING FACTORS

5-86. The FA battalion commander and S-3 must be aware of the basic capabilities and limitations of survey before they can issue effective guidance and orders to the survey section, to include as required:

- Available survey assets, equipment, and personnel.
- Total survey requirements.
- Weapon locations and types.
- Target acquisition locations (for example, radars, observers, and military intelligence equipment).
- Survey control points.
- FAB and DIVARTY requirements.
- Target area survey.
- Time and distance factors.
- Operational status of other positioning systems (for example, those in weapon or target acquisition systems and other vehicular and handheld systems).
- Weather and terrain.
- Availability and accuracy of existing survey control points.
- In addition to acquisition assets designed specifically to locate enemy units, the brigade commander has laser rangefinders, artillery survey, and laser-equipped observers to determine accurate planned target locations in engagement areas and on obstacles. These tools and the use of satellite oriented locating systems such as the global positioning system greatly enhance the accuracy of FS.

5-87. Datum defines for the user a cohesive set of survey control. All surveyed positions in one datum are reduced to a common grid reference with certain prescribed accuracies. It is therefore essential for users, when working in an area where more than one datum exists, to define the datum of their grid coordinates. FS agencies and personnel must be aware of datum concerns.

SURVEY PLANNING TIMES

5-88. The factors used in planning survey include:

- Cross-country - 10 kilometers per hour.
- Unimproved road - 25 kilometers per hour.
- Improved road - 50 kilometers per hour.
- Maximum mission time is unlimited.
- Maximum mission radial distance - 75 kilometers from last update point.
- Initialization times are—
  - 10 minutes.
  - 15 minutes below -20 Celsius.
  - 20 minutes in latitudes greater than 65N or S and temperature above -20 Celsius.
  - 25 minutes in latitudes greater than 65N or S and temperature below -20 Celsius.
  - 5 minutes using hot start.

PLANNING GUIDE

5-89. The FA battalion commander and S-3 can use guidelines to ensure that most of the issues relating to survey planning are covered. It is not exhaustive and may have to be modified to meet a particular situation, to include:

- Select primary, alternate, and supplementary position areas for assets requiring survey.
- Set time requirements associated with providing survey (for example, planning, reconnaissance, fieldwork, and completion).

5-90. Reduce standard requirements only if time is a critical factor. An example might be providing only direction to FA units and requiring other units to establish their own locations by use of hasty techniques. Determine accuracy requirements for weapons and target acquisition systems (for example, third, fourth, or fifth order survey), to include as required:

- Set a survey priority for each asset requiring survey. This may mean that survey will be controlled at the highest feasible level and not be done independently by individual battalions and units.
- Determine the availability of starting survey control points, improved position azimuth determining system update points, closing points, and the accuracy of each point. If they are not readily available, include the requirement to emplace them in survey priorities.
- Consider performing survey updates at survey control points during rearm, refuel, and resupply operations or in conjunction with planned moves.
- Coordinate at all levels. The requirements from higher HQ must be determined so that they can be included in the planning process.

DEGRADED SURVEY OPERATIONS

5-91. Degraded conditions for survey operations may occur due to unavailability of satellite systems or inoperable automated position or direction systems. During these times, the FA battalion will rely more heavily on the use of the most current and available improved position azimuth determining system and hasty survey techniques. During offensive operations, all FA battalions may require survey assistance from supported higher HQ survey assets. During defensive operations, supported higher HQ survey teams can readily assist FA battalion and reinforcing units as they move rearward; however, this requires early identification and coordination of requirements. Use hasty survey techniques during degraded operations or when adequate survey control is not available.

Chapter 6

Field Artillery Battalion Operations

This chapter discusses how a FA battalion in a variety of operations. Section I discusses key considerations for FA support. Section II discusses FA tasks common to operations. Sections III and IV cover FA operations in support of offensive and defensive tasks, respectively. Section V details FA support of other unique tactical operations, such as airborne operations. Section VI addresses FA support of stability operations and defense support of civil authorities operations, and Section VII discusses operational considerations that affect FA operations.

SECTION I – KEY CONSIDERATIONS FOR FIELD ARTILLERY BATTALION SUPPORT TO OPERATIONS

6-1. This section covers the key considerations for FA battalion support to operations, close combat supporting fires, fighting in depth, and security and protection. The details of these considerations follow.

CLOSE COMBAT SUPPORTING FIRES

6-2. Close combat FS demands rapid response, precision, and, at times, sustained fires for suppression. Suppressive fires cause the enemy to remain sheltered until friendly forces gain their objectives. Suppression requires control at the lowest possible level to support maneuver and to respond quickly to enemy movements. Smoke to facilitate maneuver is necessary in the close combat attack as well.

6-3. Close combat engagements fought by companies and platoons rely on highly responsive fires, frequently using precision-guided munitions delivered simultaneously by any available means.

6-4. Because high-payoff targets appear fleetingly, they must be engaged quickly and accurately. FA systems fire lethal area and precision munitions to engage high-payoff targets.

6-5. Companies and platoons will continue to need high volumes of smoke and suppressive fires in close combat engagements. As opposed to the precision fires needed to kill identified targets, suppressive fires must affect a larger area to cause the enemy to seek shelter. Since it is not always possible to predict exactly where the enemy will be it is important for such systems to be extremely responsive.

6-6. Attacking forces require precise, immediately responsive fires employed close to friendly elements. Further, these fires must be able to shift rapidly to engage or suppress new targets, isolate portions of the battlefield, or degrade the enemy's ability to maneuver. Therefore, organic means provide the optimal close combat firepower requirements for attacking tactical ground forces because of the precise timing and positive control ground commanders require.

FIGHTING IN DEPTH

6-7. FA battalions shape engagements for maneuver forces by providing long-range fires. Use indirect fires to attack surveillance capabilities, artillery and air defense assets, and enemy command and control nodes. BCT shaping of the situation in depth with both lethal and nonlethal means will be important in assuring freedom of action for their battalions and for sustaining the BCT's offensive actions to greater depth.

6-8. The counterfire challenges for the attacking force have always been greater because weapons locating radars and the units and sensors in their network must continually displace forward while

maintaining counterfire coverage. The defender can put his artillery units in hidden and protected positions, use them with great discretion, and refrain from using them in mass until he can achieve maximum effect.

6-9. Higher levels of command will remain responsible for acquiring and attacking enemy long-range artillery systems that will target maneuver brigades. Maneuver forces must assume responsibility for counterfire operations against the enemy's short-range cannon and mortar systems in their proximity.

SECURITY AND PROTECTION

6-10. Maneuver forces need to secure and protect their command posts and sustainment units without overly degrading their maneuver company strength. Determine elements vulnerable to enemy attack, which may include:

- The HQ and its command posts and command groups.
- UAS launchers and sensors operating behind the cavalry troops and maneuver battalions.
- The artillery platoons, batteries, command posts, radars, and targeting elements of the FS system.
- The various sustainment elements supporting the BCT.
- The retransmission sites.
- The military intelligence collection assets.
- The mortars, command posts, and combat trains of the maneuver battalions.

6-11. Maintaining security will be especially difficult during high-tempo offensive operations. Local security and mutual support within a formation, to include rapid-response forces, and follow-and-support forces will need to adapt to this condition wherever they fight.

6-12. The brigade engineer battalion provides an additional commander and staff to plan, coordinate, and execute security for both Level I and Level II threats. For additional information on response force operations see ADRP 3-37 and FM 3-39.

SECTION II – COMMON FIELD ARTILLERY TASKS

6-13. Common FA tasks include:

- Deploy and conduct movement.
- Develop intelligence.
- Employ fires.
- Exercise control.
- Perform sustainment.

DEPLOY AND CONDUCT MOVEMENT

6-14. During wargaming and during the battle, anticipate when tactical movement of the battalion or batteries may be necessary. When speed is necessary, consider moving the battalion on multiple routes if possible. Thoroughly identify terrain management issues during planning, wargaming, and rehearsals. Conduct movement and positioning coordination early to reduce conflicts. Consider using the hours of darkness for movement and resupply.

DEVELOP INTELLIGENCE

6-15. Develop information on both military and civilian threats. Identify and template enemy FA assets that can affect both combined arms operations and the FA battalion's operations. Develop and submit prioritized FA related intelligence and target acquisition requirements as early as possible. Request and collect intelligence information from maneuver units, military police, nearby units, and host nation civil and military elements to protect FA battalion assets from attack, as required.

EMPLOY FIRES

6-16. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

DETECT AND LOCATE TARGETS

6-17. Identify specified and implied targeting responsibilities. Develop targets and targeting information to support counterfire and SEAD operations. Identify which observers (primary and alternate) will trigger FA events (for example, fire missions and cueing). Coordinate the support of external FA and non-FA intelligence and target acquisition assets to acquire targeting information and battle damage assessment, as required. Plan and direct counterfire radar operations in coordination with supported higher HQ radar operations.

DELIVER FIRES

6-18. The FA battalion delivers fires to:

- Provide close combat and fires in depth to support maneuver operations and to destroy and disrupt enemy command and control.
- Mass fires to gain maximum efficiency and effectiveness.
- Destroy, neutralize, and suppress enemy indirect fire systems with counterfire.
- Provide FA illumination to assist friendly force night operations, to mark locations or targets, to provide friendly direction orientation, or to degrade night vision equipment of the enemy.
- Interdict and disrupt enemy sustainment efforts and troop movements.

6-19. The FA battalion S-3 must maintain close coordination with the brigade FSO and fires cell to continuously monitor changes, review, and adjust primary and alternate task and trigger responsibilities. When responsibilities change, the S-3 must ensure the responsible unit receives frequencies, lasing codes, or quickfire and data linkage information. He will also coordinate for meteorology and survey data, and integrate weapons locating radar placement and acquisition data into fire planning.

6-20. The battalion ammunition officer and forward support company commander may need to deliver or redistribute ammunition, to include emergency expeditionary support packages tailored to provide fires in support of aviation operations, scatterable mines, and smoke to support maneuver operations.

EXERCISE CONTROL

6-21. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

COMMUNICATE

6-22. Closely monitor distances during planning and execution to determine when digital and voice radio range limitations and terrain may become excessive. Employ alternate digital routing and voice capability to back up critical digital communications. Carefully position and move retransmission teams to maintain communications in offensive and defensive tasks. Use decentralized techniques, such as direct routing and quickfire channels to provide immediate responsive data linkages for critical fires.

COORDINATE FIRE SUPPORT

6-23. Make maximum use of available fires cells to gather friendly and enemy information and coordinate movement and positioning. Use liaison as much as possible to ensure effective coordination with other FA units and military and civilian elements, as required. During fast moving operations, and whenever danger close fires are planned or anticipated increase frequency of information and database updates

PERFORM SUSTAINMENT

6-24. Stockpile ammunition to support major firing events (for example, preparations or counter preparations). Time key ammunition deliveries of low-density ammunition (for example, illumination) and stockpiled ammunition to arrive just before it is required. When supply lines become extended use helicopter resupply for critical items.

PROTECT THE FORCE

6-25. Coordinate support from maneuver units, military police, nearby units, and host nation civil and military elements to assist in defending FA battalion assets from attack and in repelling attacks. Consider using supplementary positions for lengthy, planned missions, especially when the counterfire threat is high. Make maximum use of terrain masking to shield fires and communication from enemy acquisition.

SECTION III – FIELD ARTILLERY BATTALION SUPPORT OF OFFENSIVE TASKS

6-26. This section describes FA battalion techniques and considerations for FA battalion support of offensive tasks. It highlights those principles that are generally common to all offensive operations, and discusses FA battalion considerations unique to specific types of offensive actions.

FORMS OF MANEUVER AND TYPES OF OFFENSIVE TASKS

6-27. Maneuver units use six forms of maneuver in the offense these include envelopment, turning movement, frontal attack, penetration, infiltration, and flank attack. There are four types of offensive tasks, movement to contact, attack, exploitation, and pursuit. The FA battalion commander and staff must understand the differences in the types of offensive tasks, forms of maneuver, and the implications for the FA battalions. For more information on offensive tasks, see FM 3-90-1.

FIELD ARTILLERY BATTALION TASKS IN THE OFFENSE

6-28. The FA battalion and supporting artillery prepare the way for the maneuver force by suppressing, neutralizing, or destroying the enemy as well as obscuring his vision of friendly movement, and creating misdirection. Plan fires to soften enemy defenses before the attack. Use short, violent preparations against front-line defenses, observation posts, command and control, indirect fire weapons, and reserves.

DEPLOY AND CONDUCT MOVEMENT

6-29. Offensive tasks frequently involve forward, rearward, and lateral movement. During periods of rapid advance, open terrain may be available, and position areas may be relatively easier to find. When advances stall, or attacking forces are counterattacked, terrain may condense. Movement may become a series of shorter tactical maneuvers, occasionally involving increased lateral or even rearward movement. FA considerations in support of maneuver includes:

- Plan to use hasty occupations to support rapid movement.
- Plan for the use of digital terrain tools and map reconnaissance, since time is short and the enemy holds the terrain.
- Request photographic reconnaissance or copies of the products from other reconnaissance efforts.
- Consider air reconnaissance, if available.
- Consider using locations that the enemy used for his FA units. It may be an indicator that the terrain is suitable. However, these positions are known to the enemy, may contain hazards from destroyed enemy equipment as well as provide a visible signature (for example, burning vehicles) and unexploded ordnance hazards.
- FA battalions may have difficulty maintaining radar coverage during a fast moving attack. Division and corps, DIVARTY and FAB assistance may be required.

- FA battalions may rely heavily on fast movement techniques such as movement in column or move units in several smaller march elements.
- Position firing units well forward to range beyond maneuver objectives. Identify requirements for extended range munitions.
- Plan alternate routes to bypass enemy obstacles, and request engineer mobility support, as required.
- Consider repositioning light units by air.
- Coordinate early and frequently for external weapons locating radar support.
- Position pre-designated combat configured loads at transition points.

DEVELOP INTELLIGENCE

6-30. Identify and prioritize locating enemy indirect fire assets that can potentially affect friendly offensive tasks. Develop and identify counterfire targets for preparations, counterpreparations, and other fires. Use canalizing terrain or road networks near enemy FA to create target areas of interest and engagement areas. Coordinate intelligence collection and target acquisition coverage of the area. Consider attacking entrapped enemy FA by air or ground forces as an alternative to attack by the FA battalion and supporting artillery.

EMPLOY FIRES

6-31. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-32. Plan for frequent repositioning of target acquisition assets based on forward line of own troops movement. Use call for fire zones to provide target acquisition coverage on suspected enemy firing positions. Ensure radars are in position in time to support the assault on the objective and consolidation. Consider the use of CFZs at congested areas such as breaching sites and gap crossings.

Deliver Fires

6-33. Provide fires at the time and place required by the maneuver commander, to include suppressive fires on the objective. Isolate the objective with fires beyond and to the flanks. Provide fires to support breaching tasks. Use improved conventional munitions, high explosive, and smoke to suppress enemy forces overwatching obstacles. Use smoke to screen the breaching operation, and aggressive counterfire and CFZs to reduce the enemy indirect fire threat against the breaching force. Plan for increased use of hasty survey. Survey availability decreases in relation to the speed of the advance. Prepare to receive and execute hasty fire plans to support changes in objectives, repelling enemy counterattacks, or developing penetrations and exploitations. Put survey with lead FA units. Forward updated survey data to supported higher HQ to facilitate emplacement of following FA assets. When the FA battalion supports lead elements, especially during penetrations and exploitations, it must increase coordination with its higher FA HQ. Consider using Excalibur and precision guidance kit against forces in strong points. Anticipate hasty planning. Coordinate with higher HQ to identify targets at depth. Offensive tasks may require increased high explosive munitions, less improved conventional munitions, and scatterable mines. Anticipate changing ammunition requirements as the battle progress and for future tasks.

EXERCISE CONTROL

6-34. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-35. Plan retransmission capability to cover extended lines of communication.

Coordinate Fire Support

6-36. Plan fires to prevent enemy reinforcement, disengagement, and resupply of the objective. Plan fires to protect friendly units as they reorganize on the objective.

PERFORM SUSTAINMENT

6-37. Coordinate stockpiling of ammunition for preparations. Plan for increasingly extended lines of resupply. Plan for frequent moves of the combat trains. Synchronize resupply of ammunition, petroleum, oil, and lubricants. Quickly link and push well-designed expeditionary support packages far enough forward to firing units. Consider air resupply using Army air, container delivery system, or mass supply (light forces).

PROTECT THE FORCE

6-38. Plan for unit defense in a 6,400-mil environment, since encountering bypassed enemy elements becomes more probable. Ensure ammunition plans address security, movement, and recovery of not needed ammunition. Within the framework of the maneuver deception plan, consider deception techniques to confuse the enemy's intelligence assets. Consider using weapons locating radar CFZs to enable effective counterfire. Prepare to provide continuous FS in a CBRN environment. The threat of an enemy CBRN attack may increase as his defeat becomes imminent.

SECTION IV – FIELD ARTILLERY BATTALION SUPPORT OF DEFENSIVE TASKS

6-39. This section describes FA battalion techniques and considerations for FA battalion support of defensive tasks. It highlights those principles that are generally common to all defensive tasks, and discusses FA battalion considerations unique to specific types of defensive actions.

TYPES OF DEFENSIVE ASKS

6-40. The types of defensive tasks are area defense, mobile defense, and retrograde. The FA battalion commander and staff must understand the differences in these and the implications for the FA battalions.

6-41. For more information on defensive tasks, see FM 3-90-1.

FIELD ARTILLERY BATTALION TASKS IN THE DEFENSE

6-42. Several tactical techniques are common to FA battalion support of the defense. Planning considerations for the basic FA tasks in support of defensive operations follow.

DEPLOY AND CONDUCT MOVEMENT

6-43. Movement during early stages of the defense may often be reactive. The FA battalion may experience increased lateral and rearward movement until the friendly maneuver force can regain the initiative, slow the advance or better anticipate enemy actions. All personnel involved in movement planning must understand the impacts of battle tempo on movement, which may include:

- Integrate FA battalion, DIVARTY, and FAB movement so that the FA units are in their firing positions in time to support the attack.
- Identify and avoid potential rearward and lateral chokepoints if possible by sequenced movement.
- The FA battalion should consider the possibility that civilian exodus and evacuation during the defense may interfere with movement. Request military police support as required.
- Coordinate movement plans with the maneuver HQ. Consider the obstacle plan in planning movements.

- If the defense is forced into unexpected lateral or rearward moves, conduct aggressive ground reconnaissance, selection, and occupation of position. Other units may be slow to react, which can cause congested terrain. The FA battalion may use alternate locations more frequently in the defense.
- Use lateral maneuver to move the FA battalion and supporting FA units away from enemy penetrations. This facilitates dispersal of FA battalion and supporting FA units while allowing both continued support to forward defenses and massing of fires onto penetrating forces. However, logistic support may be complicated if the penetration becomes large enough that batteries are widely separated, especially if FA battalion trains are forced to move rearward.
- Controlled sequencing of FA battalion and supporting FA movement can facilitate positioning of FA battalion and supporting FA for follow-on missions (for example, support of counterattack).
- Request advance engineer preparation of FA position areas.

DEVELOP INTELLIGENCE

6-44. Monitor threats posed by enemy reconnaissance and special purpose troops infiltrating into friendly territory in advance of main force. Determine potential enemy offensive use of CBRN capabilities. Identify indicators of enemy massing of FA.

EMPLOY FIRES

6-45. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-46. Reliance on external target acquisition assets to identify targets in depth may increase. Anticipate movement of call for fire zones based on S-2s situation template and expected rate of enemy advance. Higher FA HQ and target acquisition units can assist front line target acquisition assets in identifying and reconnoitering target acquisition positions toward the rear.

Deliver Fires

6-47. The FA battalion may participate in targeting and scheduling for larger counterpreparation fires. The S-3 must anticipate how these fires could affect other battalion missions. Provide target area survey to ensure accurate placement of final protective fires, smoke screens, scatterable mines minefields, and fires supporting obstacles. Identify survey requirements early and request supported higher HQ assistance with survey points to the rear. Make maximum use of digital equipment to obtain and disseminate known survey points. Deliver massed fires to support planned engagement areas, blunting enemy penetrations, and counterfire or counterpreparation programs. Ensure sustainment areas have indirect FS. Consider propellant types and positioning in order to avoid high-angle fires to limit enemy counterfire acquisition. Plan alternate firing positions in support of brigade area.

PERFORM SUSTAINMENT

6-48. In the defense, supply lines are frequently shorter. During rearward movement, the battalion has the advantage of falling back into friendly territory. This allows advance preparation of position areas and the battalion can fall back onto personnel, supplies, and equipment. However, civilian evacuations and enemy fires can interfere with lines of communication. In this case, determine sustainment actions, which may include:

- Preposition ammunition for immediate consumption.
- Plan for surge use of sustainment to maximize benefits of shortened supply lines.
- If the firing platoons of a the FA battalion become widely dispersed around the flanks of a penetration, the FA battalion may need to run a modified echeloned trains operation or coordinate support through other FA and maneuver units until normal resupply lines are restored.

- Coordinate for forward triage of wounded personnel and forward repair of damaged equipment to return to combat effectiveness rapidly.
- Consider means for controlling movement of detainees and dislocated civilians to the brigade support area.

EXERCISE CONTROL

6-49. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-50. Use digital communications whenever possible. Plan redundant communications means.

Coordinate Fire Support

6-51. Coordinate additional FA fires when survival or unplanned tactical moves temporarily hinder battalion or battery mission support. Identify FS requirements for stay-behind forces. Ensure commander's guidance addresses control of scatterable mines and dud and crater producing munitions, especially when friendly counterattacks are expected.

PROTECT THE FORCE

6-52. Coordinate for engineer support and Class IV materials to harden positions and reduce the effectiveness of enemy weapons systems. Plan for use of direct fire in support of battery and platoon defenses. Use CFZs to increase protection of key friendly units. Pay increased attention to operations security considerations concerning trash and abandoned equipment. Review emergency destruction procedures. Anticipate the need for survivability moves after the battalion has provided extended or intense massed fires. In a CBRN environment, identify and plan for movement avoiding contaminated routes.

SECTION V – FIELD ARTILLERY BATTALION SUPPORT OF OTHER TACTICAL OPERATIONS

6-53. The section describes techniques and considerations for FA battalion support of other tactical operations. These techniques are common to both the offense and the defense.

AIR ASSAULT OPERATIONS

6-54. Tailor the air assault task force for a specific mission. As an example, the task force may consist of an infantry battalion, an aviation company, and a FA battery. Overall command goes to the air assault task force commander. Air assaults seize objectives in depth and conduct penetration, covering force, or surveillance tasks. Air assaults may occur in urban areas, jungles, and mountains to reinforce threatened sectors.

6-55. FA battalion participation in an air assault is characterized by maximum decentralization of mission command. Firing units move to quickly provide FA fires to engage targets in depth, to bypass enemy concentrations or untrafficable terrain, and to facilitate future operations. FA battalion and supporting FA units can expect to conduct SEAD, landing zone preparations, and artillery raids. Artillery raids involve the rapid movement of artillery assets by air into position to attack a high-payoff target. A FA raid normally requires operations across the forward line of own troops, is short in duration, and does not involve sustained operations. Detailed planning, surprise, and speed of execution are key factors for success.

6-56. For more information on air assault operations, see FM 3-99.

6-57. Planning considerations for the basic FA tasks in support of air assault are discussed in the following paragraphs.

DEPLOY AND CONDUCT MOVEMENT

6-58. Coordinate load plans to ensure critical elements are cross-loaded to prevent catastrophic loss in the event of downed aircraft. Initially conduct reconnaissance by map and air. Plan for air or ground displacement.

DEVELOP INTELLIGENCE

6-59. Imagery can aid in identifying potential firing points, the general topography of the land, and major routes in the area. The supported maneuver unit S-2 and supported higher HQ S-2 can assist in templating FA and non-FA enemy forces in the air assault area and in identifying primary threats.

EMPLOY FIRES

6-60. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-61. Request forward observers to accompany leading elements of the assault force to observe and adjust SEAD fires and execute the FA tasks in support of the air assault. Coordinate with air reconnaissance and air scouts for target identification and attack.

Deliver Fires

6-62. Execute fires to support the air movement plan. Fires initiated and terminated according to a strict time schedule. Other fires rely on phase lines, air control points and other control measures to initiate, shift, and terminate fires. Coordinate for meteorological data in the new position area. Give priority to intelligence collection to ensure accurate location of enemy air defense. Ensure command posts and platoon FDCs understand priorities for SEAD. Plan fires for false insertions in support of the deception plan.

EXERCISE CONTROL

6-63. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-64. Use aircraft and coordinate retransmission during the movement to ensure continuous communication between the fires cell controlling fires and the assets providing those fires. Plan and coordinate visual signals (for example, flares and colored smoke). Coordinate signal between air assault forces and supporting forces.

Coordinate Fire Support

6-65. Coordinate short and intense SEAD fires along the flight route(s) to aid aircraft flying past areas of known or suspected enemy antiaircraft positions. Consider the use of all SEAD assets: electronic warfare, FA, close air support, and attack helicopters. Plan to lift and shift fires, airspace coordination areas (formal and informal), and other FSCMs as needed to coincide with arrival times of aircraft formations. Ensure use of FA or mortar smoke on or near landing zones meets commander's guidance and does not interfere with air or ground operations.

PERFORM SUSTAINMENT

6-66. Ensure adequate ammunition is available for the artillery supporting the assault force. Plan, prioritize, and synchronize resupply of sustainment materiel, primarily Class V.

PROTECT THE FORCE

6-67. Consider enemy air, ground, and artillery threats when planning moves because units are most vulnerable in pickup and landing zones. Consider the effects of munitions in the landing zone or pickup zone (for example, improved conventional munitions duds and high explosive and point detonating cratering) that may make the area unusable. Be prepared to provide 6,400-mil observation and firing capability, as required. Consider positioning units for mutual defense by taking maximum advantage of available intelligence and air photographs.

AIRBORNE OPERATIONS

6-68. Airborne operations are joint operations conducted between the Army and Air Force. The Air Force provides airlift, close air support, and air resupply for ground forces. FA battalion and supporting FA units are normally attached to maneuver units for airborne operations (for example, FA battery or platoon attached to a maneuver battalion). The higher HQ of the FA units assumes control of subordinate units upon arrival in the airhead and resumes its command relationship. During BCT airborne operations, the FA battalion provides an assault command post to control FA assets.

6-69. For more information on airborne operations, see FM 3-99.

6-70. Planning considerations for the basic FA tasks in support of airborne operations are discussed in the following paragraphs.

DEPLOY AND CONDUCT MOVEMENT

6-71. Conduct initial reconnaissance by map or air. Plan displacement using air assets. Consider decentralized control for unit movement.

DEVELOP INTELLIGENCE

6-72. Air photography can be extremely helpful in identifying potential firing points, better understanding the general topography of the land, and major routes in the area from friendly and enemy perspectives. The supported maneuver unit S-2 and supported higher HQ S-2 may be able to assist in templating any enemy forces that can affect or are located in the drop zone.

EMPLOY FIRES

6-73. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-74. Use air observers to include UAS, and national level assets. Deploy weapons locating radars as soon as practical after the initial assault.

Deliver Fires

6-75. Execute fires to support the air movement plan. Plan non-cratering munitions on airfields. Mass available indirect fire systems, to include mortars. Ensure units have a 6,400-mil capability. Prepare to use hasty survey techniques in the drop zone. Establish a common grid for FA and mortars as soon as possible. Coordinate meteorological data for the area of operations.

EXERCISE CONTROL

6-76. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-77. Initially use primarily frequency modulation communications. Communicate by tactical satellite means when available. Establish amplitude modulation radio communications for use over long distances. Use visual signals and messengers for short-distance communications.

Coordinate Fire Support

6-78. Rely on digital imagery and air photography when maps are not available. Ensure positive clearance of fires, which is essential during initial stages of the operation. Because drop zones are frequently out of range of supporting cannon FA, more reliance on joint FS assets (for example, Air Force manned or unmanned observation and attack aircraft and naval FS) may be necessary.

PERFORM SUSTAINMENT

6-79. Resupply requires careful planning and coordination, especially Class V, as airborne units have limited sustainment capability. Supplies are usually airdropped or air-landed (for example, containerized delivery or mass supply). Inspect weapons and equipment for damage after an airdrop. Conduct medical evacuation by air.

PROTECT THE FORCE

6-80. Position units based on enemy ground, air, and artillery threats, as well as, the amount of space provided by the expanding airhead. Be prepared to provide 6,400-mil observation and firing capability, as required. Position units for mutual defense. Prepare unit defense taking maximum advantage of available intelligence and air photographs.

URBAN OPERATIONS

6-81. Urban operations are characterized by extreme limitations on freedom to maneuver. Both attacking and defending forces must use available cover and concealment offered by urban areas, but both are equally hampered by reduced visibility. While the defender normally has the advantage, operations are slow and deliberate and small-unit operations predominate. The defender enjoys superior protection as well as concealment and covered routes of movement. The attacker can isolate and bypass certain areas; but is forced to fight into other, well-defended areas.

6-82. FA battalion units can use positions in villages and small towns to great advantage. Barns and other large buildings offer complete concealment of weapons, HQ elements, supplies, and equipment. Normally, decentralization is required. Detailed orders and tactical standard operating procedures are necessary due to decreased communication ranges and extended frontages for firing units. FA techniques of assault fire and direct fire may be required more often in urban terrain than elsewhere.

6-83. For more information on urban operations, see FM 3-06.

6-84. Planning considerations for the basic FA tasks in support of urban operations are discussed in the following paragraphs.

DEPLOY AND CONDUCT MOVEMENT

6-85. Ensure position areas will support emplacement since there is a predominance of concrete surfaces in urban areas. Anticipate the possibility that street rubble may hamper movement. Anticipate increased movements to overcome obstruction and dead space. Ensure howitzer positions allow for high-angle firing. Position FA on the edge of the urban area, if possible. Provide multiple routes of escape from the position. Select howitzer positions that allow direct fire capability. Consider the need for multiple survey control points. Anticipate difficulties due to obstructions and electro-magnetic interference (for example, structural metal, power lines, and transformers).

DEVELOP INTELLIGENCE

6-86. Closely coordinate targeting efforts to ensure protected areas and FSCMs are identified and posted to automated and manual systems. Determine the status and disposition (for example, friendly, enemy, and neutral) of the civilian population. Is the enemy using the civilian population for cover?

EMPLOY FIRES

6-87. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-88. Identify size and location of dead space where indirect area fires cannot reach. Dead space is generally five times the height of buildings for low-angle fire and one-half the height of buildings for high-angle fire for area munitions. Plan precision munitions to cover dead space. Plan radar coverage to take advantage of the increase in enemy high-angle fires. Radars lose effectiveness if positioned too close behind buildings.

Deliver Fires

6-89. Use variable time fuzes carefully to avoid premature detonation. Use caution in the adjustment of fires. Observers may lose sight of rounds detonating behind building or other structures. The FA battalion may support numerous small-scale close engagements. This involves frequent shifting of fires from one mission to the next. The FA battalion may need to shift ongoing missions between firing units if battle movements or adjustments move the fires into the dead space of the initial firing unit. More frequently, FDCs must account for bursting radius, delivery errors, and standard deviations. Reference cards, tactical standard operating procedures, and rehearsals are critical in ensuring timely clearance of fires.

6-90. Commanders may require close control of white phosphorous projectiles, since they may create unwanted fires and smoke. Use a delay or concrete-piercing fuze to penetrate fortifications and buildings. Plan for increased use of high-angle fires. Use precision-guided munitions to engage targets in area munitions dead space or to minimize collateral damage. Consider an increase in ammunition expenditure, especially if other fires assets are not available. To provide maximum flexibility in urban operations, consider the use of a FA composite battalion. Consider use of infrared illumination if friendly forces are properly equipped.

6-91. Determine the limitations of laser designators in urban terrain, which may include:

- The difficulty in maintaining a continuous laser track on moving targets because of structure interference.
- The presence of highly reflective surfaces, such as windows that may refract laser energy or pose a hazard to friendly troops.
- Presence of highly absorptive surfaces such as open windows or tunnels, which may degrade designator effectiveness.
- It may be hard to position designators to ensure Angle T does not exceed 800 mils.
- Determining accurate locations by map spot can be difficult.
- Smoke and dust dispersing the laser.

EXERCISE CONTROL

6-92. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-93. Anticipate reduction of radio ranges due to line of sight problems. Increase use of wire, messenger, and visual signals. Route wire through sewers and buildings for protection. Plan to remote antennas to upper floors to increase their range. Do not position antennas on rooftops since they will be vulnerable to fires and possibly give away unit locations. Locate generators near existing walls outside occupied buildings. Use existing civilian telephone systems for unsecured communications, when possible.

Coordinate Fire Support

6-94. To the maximum extent possible, avoid collateral damage to civilian populations. Well-defined priorities of fire are extremely important in urban operations. Consider use of air observers. Consider use of observers on overlooking terrain outside the city and using external routes for observer movement. Review the ROE carefully. The supported higher HQ and battalion or squadron FSO will encounter more detailed ROE and lists of protected or restricted sites and areas during urban operations. FSCMs usage may increase. Identify potentially hazardous industrial, cultural, and other protected sites that may require restrictive FSCMs. Consider underground danger areas, such as gas, water, and power lines. A natural gas explosion or electrical fire near a protected structure, civilians, or friendly troops can become a ROE violation. Coordinate FA fires carefully due to the close proximity of friendly and enemy units (for example, use of a numbering system for each building may aid in coordinating fires within close proximity of friendly troops).

PERFORM SUSTAINMENT

6-95. Anticipate an increased use of certain munitions (for example, delay and concrete piercing fuzes, high explosive, smoke, Excalibur, or precision guidance kit). Use several smaller resupply convoys if movement is restricted. Anticipate difficulty moving large sustainment vehicles inside firing positions. Use locally available power sources and supplies, when available. Plan for increased time for resupply actions. Consider use of prestocked supplies.

PROTECT THE FORCE

6-96. Use existing structures as hardened positions. Ensure stability of building structure prior to occupation. Shock waves may cause weak walls and ceilings to collapse. Plan to increase observation posts and listening posts, as terrain allows threat forces to infiltrate and get closer to artillery positions. Plan foot traffic routes to minimize exposure from observation and sniper fires from tall buildings. Consider using supplemental positions for battery or platoon defense. Avoid obvious positions if possible (for example, parks and schoolyards). Establish guidance and drills for key situations (for example, snipers and minefields), to include consideration for unseen dangers (for example, underground gas, water, electrical lines, or improvised explosive devices).

ENCIRCLED FORCES

6-97. The FA battalion may support the breakout of encircled forces as part of the encircled force, or from outside the encirclement. Determine considerations as part of the encircled force, which may include:

- Identify FA, FS, and target acquisition assets within the encirclement and direct or participate in the reorganization. Ensure centralized control where possible and recommend the establishment of a force field artillery HQ, as required.
- Complete 6,400-mil coverage.
- Retain the capability to mass fires, as required.
- Plan for air resupply of ammunition and critical items.
- Plan to reallocate ammunition to support the fire unit(s) supporting the breakout.
- Identify FA outside the encirclement that can range the FA battalion’s zone of fire and coordinate support if possible.
- Reorganize FS communications to minimize overloading of these networks.
- Stress survival techniques.

- Identify appropriate FSCMs, such as a restrictive fire area or a restrictive fire line.
- Review existing or necessary airspace coordinating measures.
- Consider the use of censor zones by the weapons locating radars over friendly FA units in both the encircled force and the main force areas to prevent fratricide.
- Plan for restrictions on firing and reallocation of ammunition caused by shortages of munitions.
- Plan to mass fires to support the main breakout effort, but ensure as much 6,400-mil coverage as possible.

6-98. The FA battalion should be neither the first nor the last unit out of the perimeter during a breakout of an encirclement. If more than one firing element is within the perimeter, phase the withdrawal to maximize the time FA fires are available. Consider external FA support if available. Maintain unit integrity at platoon or battery level. The FA battalion commander must keep in contact with both the lead element commander and the forces remaining in the perimeter. Moving units must anticipate emergency occupations. During linkup, the FA battalion commander determines considerations, which may include:

- Integrate fires with the breakout plan and establish FSCMs.
- Position weapons to support the relieving force.
- Plan for subsequent actions to include follow-on missions for the FA.
- Establish and exchange weapons locating radar zone information.

PASSAGE OF LINES

6-99. Coordination and synchronization during passage of lines is critical. The details on an FA battalion conducting forward and rearward passage of lines follows.

FORWARD PASSAGE

6-100. During an offensive passage of lines, responsibility for FA fires passes from the stationary force to the passing force at the same time control passes to the maneuver units. The stationary FA force may be attached to the passing FA force or it may be ordered to reinforce the passing FA force from its present positions, until the passing force has moved out of range. Considerations, for forward passage of lines include:

- Establish liaison and communications with the stationary FA HQ.
- Obtain and review the passage plans of the supported force.
- Determine security requirements.
- Obtain available target lists and fire plans from the stationary force.
- Plan and review position areas and routes.
- Review possible enemy observation capabilities in the area.
- Review existing, in effect, and needed FSCMs, ACMs, and airspace plans.
- Consider resupply operations for the future.
- Coordinate elements that are needed forward.
- Exchange survey data with the stationary FA HQ.
- Exchange radar zone data.
- Plan for follow-on mission(s).

REARWARD PASSAGE

6-101. Withdrawal actions in the defense often involve a rearward passage of lines. This often occurs when a covering force withdraws behind the forward edge of the battle area. FA units with each force exchange liaison and critical information as early as possible. They coordinate fire plans to synchronize and maximize their combined firepower. This includes the transfer of FA support responsibilities within the maneuver unit's sector. This transfer usually coincides with the passing of maneuver control. Considerations for rearward passage of lines include:

- Exchange FA fire plans.

- Establish communications requirements.
- Coordinate clearance of position areas and routes, as required.
- Coordinate resupply, if appropriate.
- Exchange survey data in the area with the passing brigade FSO and survey planning and coordination officer (additional duty).
- Establish and exchange recognition signals with the stationary force.

RELIEF IN PLACE

6-102. Normally, the FA units will not be relieved at the same time as the maneuver forces. The change of FA responsibilities is as agreed upon by the two FA commanders unless otherwise directed.

6-103. During a relief in place, the outgoing force passes fire plans to the incoming force so those plans can be continued. Both FA commanders determine considerations, which may include:

- Establish liaison and communications between FA units.
- Exchange signal information.
- The incoming FA unit reviews and, if necessary, adjusts fire plans to support the incoming force.
- Establish procedures for the relief.
- Establish the tasks of the outgoing FA.
- Disseminate specific tactical standard operating procedure items of the incoming force.
- Disseminate the current target list to the incoming force.
- Plan fires to support or emplace a barrier or obstacle, as required.
- Plan smoke to screen friendly movements.
- Support the deception plan.
- Displacement of relieved artillery units, movement, and emplacement of relieving artillery units to avoid reduction of support or alerting the enemy.

GAP CROSSING OPERATIONS

6-104. Determine considerations during an offensive gap crossing (deliberate, hasty, or covert), which may include:

- Air observers and UAS can provide surveillance beyond the gap depending on availability and visibility. Smoke may limit ground observation.
- Consider using CFZs, with well defined cueing techniques, on the gap-crossing site, associated assembly areas, and air defense positions.
- Fire series and groups to neutralize the bridgehead area and then to isolate it. Use in depth fires to prevent or delay enemy reinforcements.
- Position firing units to facilitate rapid crossing of the maneuver force.
- Ammunition expenditures of smoke and, possibly, illuminating projectiles may be high during a deliberate crossing. Consider air resupply initially to the far bank to offset congested crossing sites, or stockpiling it in logistics sites along firing platoons' routes of march to the crossing site.
- Maintaining communications is critical when units are split on the two banks of the gap crossing.
- FA battalion units should displace to far bank positions as soon as maneuver units seize first-phase objectives on the far bank and secure FA positions are available. FA units must cross the gap before their supported maneuver units move out of range. FA crossings require well-planned integration into the overall combined arms movement plan.
- Survey assets should cross as soon as possible. When a survey team equipped with survey crosses a wet gap by barge or boat, ensure plans allocate time for it to do a ten minute zero-velocity update just before crossing.

6-105. Considerations during a retrograde gap crossing (deliberate, hasty, or covert) include:

- Anticipate fires to the flanks on enemy crossing sites and infiltrating forces involved in enemy flanking efforts.
- Consider using CFZs, with well defined cueing techniques, on the gap-crossing site, associated assembly areas, and air defense positions.
- Use call for fire zones and templating to locate enemy FA that attempts to interdict friendly routes of withdrawal, reinforcement, and resupply.
- Plan for increased close combat fires (for example, final protective fires, smoke, and scatterable mines) and massed fire missions to assist disengagement and withdrawal of the last maneuver elements across the gap.
- Move FA across the gap as soon as possible, while maintaining mission capability, to avoid entrapment or congestion.
- If the maneuver force plans to establish defensive positions across the gap, and stabilize the forward line of own troops, consider engineer support to harden FA and forward observer and FIST positions across the gap.
- FA battalion units may be able to move into hardened positions vacated by supporting FA units. However, consider the risks that the previous firing may have compromised the positions.

BREACHING OPERATIONS

6-106. Breaching is a synchronized combined-arms operation under the control of a maneuver commander. Breaching operations begin when friendly forces detect an obstacle and begin to apply the breaching fundamentals, and they end when battle handover has occurred between follow-on forces and a unit conducting the breaching operation. Considerations for breaching operations include:

- Provide suppressive indirect fires. Anticipate the need for high volumes of suppressive and obscuration ammunition. Develop expeditionary support packages to support breaching related FS tasks and schedule delivery to maximize ammunition resupply operations.
- Provide fires during phases of the breaching (for example, suppress, obscure, secure, reduce, and assault). For more information, see FM 3-09.
- Alternate plans are especially critical to maintaining suppressive and obscuration fires while the breaching team is exposed.
- Unplanned breaching operations may require that the FA battalion S-3 quickly review ammunition status for impact on other tasks.
- Position a forward observer or FIST member forward to coordinate fires for the breaching team. Plan for observers in depth, including air observers and UAS.
- All FA firing units must understand the primary and alternate triggering plans to shift fires to the assault force.
- Anticipate SEAD fires if air assets participate in the operation.
- Consider using scatterable mines to prevent reinforcement or counterattack. Ensure it does not interfere with the breaching or the follow-on assault.
- Coordinate weapons locating radar coverage and zones in support of the breaching operation.
- Plan for extensive use of smoke and possibly illumination.
- Consider use of infrared illumination during night breaches.
- Avoid use of dual-purpose improved conventional munitions on or near the breaching site and avenues of advance due to the possibility of hazardous duds.
- Position artillery forward, but clear of avenues of approach.
- Be prepared to quickly move firing units through the breach.

6-107. For more information on breaching operations, see ATTP 3-90.4.

SECURITY OPERATIONS

6-108. Units conduct security operations tasks to provide early warning of enemy operations, to provide the force being protected with time and space within which to react, and to develop the situation for the

protected force. The five types of security operations tasks are screen, guard, cover, area, and local, which respectively contain increasing levels of combat power and security. Local security operations tasks are not discussed. The FA battalion commander and staff must understand the differences in these tasks and the implications for the FA battalions.

6-109. For more information on security operations, see FM 3-90-2.

COVERING FORCE OPERATIONS

6-110. The covering force is a tactically self-contained security force operating a considerable distance to the front or rear of a moving or stationary force. Offensive covering force operations emphasize reconnaissance along the main body's axis of advance and attempt to destroy the enemy's reconnaissance and security forces, determine enemy force dispositions, identify gaps or weaknesses that the main body can exploit, and to defeat and destroy forces, as directed. Defensive covering operations focus on counter reconnaissance. They attempt to prevent the main body from being surprised, to defeat the enemy's reconnaissance and advance elements, determine the size and direction of the enemy's main attack, and delay and disorganize enemy forces in order to allow the main body additional time to prepare its defense. Covering force operations are frequently fast-paced operations involving extended forces operating over long distances.

6-111. A FA battalion may be part of a larger covering force operation where a FAB functions as the force field artillery HQ. The FA battalion will provide organic FS to its BCT, but may also have a support relationship of reinforcing, general support-reinforcing or general support. If directed by the maneuver commander, the FA battalion may serve as the covering force FA HQ. In either case, the FA battalion may have one or more attached or reinforcing howitzer batteries from a FAB. Considerations for FA battalion and supporting FA units involved in covering force operations include:

- Locate the enemy and provide responsive fires to leading elements and elements in contact.
- Use priority of fires and quickfire channels.
- Attack targets in depth with massed fires to prevent enemy reinforcements.
- Plan for hasty attack contingencies.
- Anticipate frequent moves and emergency fire missions.
- Keep ammunition uploaded.
- Plan for employment of hasty smoke, illumination, and increased suppressive fires.
- Plan to use scatterable mines to delay enemy formations and employ Excalibur and precision guidance kit for selected high-payoff targets.
- Prepare for the use of permissive, on order FSCMs and rapidly moving forward line of own troops requiring frequent position updates.
- Plan for a passage of lines, by reviewing passage of lines procedures.
- Position supporting FA forward. Consider future missions in selecting FA positions when the covering force operation nears completion.

SCREEN

6-112. Screen describes a force whose primary task is to observe, identify, and report information. A screen force fights only in self-protection. The screening force maintains surveillance, provides early warning to the main body, destroys enemy reconnaissance elements within its capability, and impedes and harasses the enemy. Indirect fires are a significant means of impeding and harassing the enemy. FA planning and execution in support of a screen mission is similar to that for a defense in sector mission.

GUARD

6-113. Guard describes a force whose primary task is to protect the main force by fighting to gain time, while also observing and reporting information, and to prevent enemy ground observation or direct fire against the main body by reconnoitering, attacking, defending, and delaying. A guard force normally operates within the range of the main body's indirect fire weapons. The FA battalion supporting this operation, plans, prepares, and executes this mission as it would for any other security operations task.

AREA SECURITY

6-114. Units conduct area security operations to protect friendly forces, installations, and actions in a specific area. Area security preserves the force commander's freedom to move his reserves, position FS assets, conduct operations, and provide for sustainment operations. Area security actions, which may be offensive or defensive in nature, could include area reconnaissance; sustainment operations; and security of designated personnel, equipment, facilities, and critical points. Applications of area security missions are convoy and route security. FA battalion considerations, for area security, are similar to those identified to support the brigade support area.

BASE AND BRIGADE SUPPORT AREA SECURITY

6-115. The objective of base security is to maintain a secure position, defending in all directions. The commander can employ base security when conducting either offensive or defensive operations. The supported higher HQ establishes base security when the supported unit must hold critical terrain in areas where the defense is not tied in with adjacent units. The supported higher HQ can also form a perimeter and conduct base security when it has been bypassed and isolated by the enemy, and must defend in place.

6-116. Security operations must synchronize the sustainment operations functions of terrain management, security, sustainment, and movement in consonance with the supported higher HQ commander's concept and intent.

6-117. A FA battalion must employ fires throughout the supported higher HQ area of operations, to include FS for base and brigade support area operations. The supported higher HQ fires cell plans fires and coordinates the clearance of airspace for the base and brigade support area operations. The FA battalion S-3 should consider position area selection, nonstandard mission assignment, on order mission of reinforcing FA when developing plans to execute FA fires in support of base and brigade support area operations.

6-118. While the division and corps fires cells are the primary planners and coordinators of division and sustainment area fires, FAB battalions may participate in the reinforcing, general support-reinforcing and general support fires process. They may assist in coordinating fire plans with nearby sustainment units or host nation military, paramilitary, or civil authorities. They may also provide call for fire training to key personnel, especially those responsible for base cluster defenses.

6-119. Three levels of response to threats serve as guides for planning brigade support area operations. These levels focus on the nature of the friendly actions needed to defeat the threat, which may include:

- **Level I**. Smaller threats that the base or base cluster self-defense measures can defeat.
- **Level II**. Threats beyond the capability of the base or base cluster self-defenses, but relatively small response forces (for example, military police) can defeat.
- **Level III**. Threats that require commitment of a combined arms tactical combat force to defeat.

6-120. These threats can result from enemy forces infiltrating the base and brigade support area. A successful defense against a Level III threat requires planning and preparation for the tactical combat force's employment. The S-3 should consider the use of fires in support of tactical combat force security operations.

6-121. Commanders will generally provide FA fires for Level III threats or in support of a military police force engaging a Level II threat in an area where the possibility of collateral damage is reduced. These threats can result from enemy forces infiltrating the base and brigade support area. A successful defense against a Level III threat requires planning and preparation for the tactical combat force's employment. The S-3 should consider the use of fires in support of tactical combat force security operations.

6-122. Planning considerations for the basic FA tasks in support of base and brigade support area security are:

- Deploy and conduct movement.
- Develop intelligence.
- Employ fires.
- Exercise control.

- FS coordination.
- Protect the force.

DEPLOY AND CONDUCT MOVEMENT

6-123. Brigade support area FSOs can assist FA battalions and supporting FA with terrain management issues. Level III threats may cause significant traffic as sustainment units and civilians move away from the threat. The FA battalion may need to request priority for movement and military police assistance if available. Consider positioning of firing elements to provide supporting fires.

DEVELOP INTELLIGENCE

6-124. The S-2 should closely monitor developing situations in the brigade support area to better anticipate potential battalion involvement and determine the nature and extent of enemy brigade support area threats.

EMPLOY FIRES

6-125. FA units must quickly review assigned FS tasks and other tasks to determine the impact of brigade support area missions. If the FS plans are not adequate, the unit should notify the supported higher HQ fires cell and the force field artillery HQ (if established) so the FS tasks can be reassigned or terminated. Ammunition restrictions on scatterable mines and dud producing munitions may limit FA to high explosive rounds, except in major penetrations. Illumination may require high-angle fire to allow safe firing. Consider fire hazards.

EXERCISE CONTROL

6-126. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communications

6-127. Communication with the higher HQ fires cell may be difficult due to distances. A FA battalion may need to relay fire planning and FS coordination information through another FA battalion or even a battalion or squadron fires cell. Nonstandard communications arrangements may be necessary. Sustainment units may not have digital equipment that interface with FA systems. Host nation civil or paramilitary forces may not have compatible radios.

Fire Support Coordination

6-128. Commander's guidance, FSCMs, and ROE for FA fires in brigade support areas are generally restrictive in nature (for example, restrictive fire areas and no-fire areas). The supported commander may task the FA battalion in support of a brigade support area to provide forward observers or FSOs to assist with support area operations. Fire mission requests in brigade support areas may frequently involve untrained observers. A FA battalion may participate in development of a hasty fire plan with the FSO of a responding tactical combat force, military police, and other response forces. Consider using restrictive fire lines to control fires between converging friendly forces.

PROTECT THE FORCE

6-129. The FA battalion and other FA units may request other joint fires assets when available.

STATIC POSITIONS

6-130. Static positions create a 6,400-mil defense for basing units. These static positions are a secure area and most would have guard towers, indirect fire protection, and an infrastructure to support the unit. Many times the support elements of the supported higher HQ are in the same static positions as the combat unit.

6-131. Planning considerations for the basic FA tasks in support of static positions include deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force.

DEPLOY AND CONDUCT MOVEMENT

6-132. Prepare to conduct battery and platoon operations. Understand the theater specific ROE and collateral damage estimation procedures. Employment of a firing element may require coordination with adjacent units in order to properly manage terrain.

DEVELOP INTELLIGENCE

6-133. Air photography can be extremely helpful in identifying potential firing points, better understanding the general topography of the land, and major routes in the area from friendly and enemy perspectives. The supported maneuver unit S-2 may be able to assist in templating FA and non-FA enemy forces in the forward operating base or fire base area. Incorporate intelligence gathering and source development into patrol plans and other contacts with the local population.

EMPLOY FIRES

6-134. Determine the impacts of the terrain on the specific type of howitzer being employed. Consider immediate and intervening crests. Consider ability to access survey data and aiming points dependent on weapon system and its ability to conduct degraded operations. Consider potential requirements to displace in support of the maneuver force. Select alternate and supplementary positions. Position firing elements for mutual support.

EXERCISE CONTROL

6-135. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-136. Determine the primary and alternate means of communication and provide redundancy. Consider the use of line of sight and non-line of sight communications.

Coordinate Fire Support

6-137. One FDC may provide control and technical and tactical fire direction for one to six howitzers at one static location. Consider redundant means of communication and fire direction.

PERFORM SUSTAINMENT

6-138. Determine location of maintenance support team. Support assets should be readily available. Use mutual support for common chassis vehicles, if available. Determine primary and alternate means of support for classes of supplies. Determine required supply rate and controlled supply rate. Determine assets available to deliver ammunition. Use mutually supporting transportation assets, if available. Consider emplacement of ammunition resupply vehicles and required material handling equipment. Consider hazardous material restrictions in theater.

PROTECT THE FORCE

6-139. Position units based on enemy ground, air, and artillery threats, as well as, the amount of space provided by the supported higher HQ. Be prepared to provide 6,400-mil firing and weapons locating radar capability. Always position units to provide for mutual defense of the area. Prepare unit defense taking maximum advantage of available intelligence and air photographs. Update intelligence and security by contacts developing sources among any local population.

LINKUP OPERATIONS

6-140. Linkup operations join two friendly forces. Both forces may be moving toward one another or one may be stationary. Often, a linkup operation requires a passage of lines. When the linkup is made, the linkup force may join the stationary force or it may pass through or around and continue the attack. The controlling HQ of both forces establishes the command relationship between the two forces and the responsibilities for each. It also establishes the control measures. Considerations for linkup operations include:

- As the linkup nears completion, consider future operations in positioning of FA battalion elements.
- Plan for the increased use of on-order restrictive fire lines and coordinated fire lines.
- Place increased emphasis on maintaining updated position locations FSCMs and ACMs in both automated and manual systems.
- Anticipate blocking fires to prevent trapped enemy forces from escaping the linking forces.
- Ensure clearance of fires procedures address contingencies and FA forces. General support or general support-reinforcing FAB units may need to clear fires with both linking forces.
- Exchange targeting and communications information, triggers, quickfire channels, laser designation codes, and other essential items.
- Exchange recognition signals and disseminate to personnel.
- FA battalions supporting linking forces should consider exchanging liaison. If the linkup involves a stationary and moving force, the moving FA HQ should provide liaison to the stationary FA HQ.

ARTILLERY RAID OPERATIONS

6-141. An artillery raid is a type of spoiling attack that uses FA as its primary attack mechanism. Raid missions support the supported higher HQ objectives by sending firing elements forward to engage enemy targets that are currently beyond the maximum range of available FA weapons. Raids may occur in conjunction with a large ground attack that seizes the terrain needed for the firing unit, with a small force that creates a relatively small moving pocket, or even without a significant ground force (if the threat is low). Towed FA units may conduct airmobile FA raids. An artillery raid is frequently a platoon or battery-sized operation, but can involve an entire battalion.

ARTILLERY RAID TECHNIQUES

6-142. The artillery raid consists of the unit selection, raid briefing, execution of the raid, and checklists. Details of the artillery raid techniques follow.

Unit Selection

6-143. If supported higher HQ does not specify the firing element, the battalion S-3 determines which unit and firing element will conduct the raid based on factors, to include:

- Number and characteristics (for example range, rate of fire) of available howitzers.
- Ammunition availability (for example, number and type of rounds).
- Location of firing element (for example, proximity to firing points).
- Tactical situation.
- Personnel (for example, amount, training, and experience).

Raid Briefing

6-144. For cross forward line of own troops operations, the battalion HQ will conduct a raid briefing with the commander of the selected battery and platoon. If available, the commander of the maneuver security force should be present during the briefing in order to enable coordination. Due to time constraints or travel distance involved, a face-to-face meeting with the maneuver commander may not be feasible. For raids to be conducted behind the forward line of own troops with minimal external assistance, raid missions may be

passed via radio (voice or digital). The battalion commander or S-3 conducts the raid briefing, which may include:

- **SITUATION**. Friendly, enemy, attachments, and detachments.
- **MISSION**. Who, what, when, where, and why (for example, the size of the element to conduct raid, method of control, and target and firing point grids).
- **EXECUTION**
  - Route.
  - Start point, check point, and release point locations.
  - FA position areas.
  - Rally point after mission.
  - Target grids.
  - Firing window or time on target.
  - Number and type rounds per target.
  - Number of howitzers required.
  - Call signs and frequencies.
  - FSCMs and ACMs.
  - Abort authority and abort code word.
  - Emergency destruction criteria.
  - FS assets available.
  - Link up-point with maneuver element guides.
  - Protection (for example, air defense artillery, electronic warfare, FS assets, and escort).
  - Passage lane and passage point.
  - Procedures and signals for passage of lines.
  - Maneuver call signs and frequencies.
  - Maneuver commander name and rank.
  - Medical and casualty evacuation.
- **SUSTAINMENT**
  - Maintenance support and contact team requirements.
  - Survey support available.
  - Reload requirements.
  - Amount of ammunition to be brought forward.
  - Rearming and refueling support.
- **COMMAND AND SIGNAL**
  - Retransmission location and frequency.
  - Command nodes (for example, FDC vehicle and antennae).

Execution of the Raid

6-145. Identify responsibilities and outline steps for the actual execution of the raid, which may include:

- Firing units will carry forward only the number of vehicles necessary to accomplish the mission as designated by battalion. Depending on the importance of the target, one additional howitzer will be brought forward and laid on the target in case of technical or mechanical difficulties. Weapons platforms with automated fire control systems will move forward with the mission in their system and a hardcopy of the mission in case manual fire mission processing is required.
- The officer in charge or noncommissioned officer in charge of the raid party will brief the maneuver unit commander or representative at link up point or via communications as directed.
- Once the brief is conducted, the leader of the raid unit or a maneuver escort will bring the firing elements to the link-up points.
- Security force will move forward and clear the route to the firing point.

- If possible, report link-up, movement and checkpoints, and in position to battery or platoon FDC. If necessary, a vehicle will be brought forward with the raid element to act as a relay between the raid element and the controlling raid HQ if constant communications is required. If not, the communication will be maintained between the supported unit HQ, the battalion command post, and the raid officer in charge. The raid officer in charge must be prepared to accept target updates prior to the designated time.
- Once the maneuver security force has cleared the route, the firing element will be called forward to the firing points.
- The mission(s) is (are) fired. Units will report shot on each target and rounds complete to the controlling HQ.
- Firing elements will then withdraw to a pre-designated rally point.
- If the firing unit was briefed that it was to perform a follow-on mission, the unit would proceed to the next location and fire the mission. Upon rounds complete, the firing element will withdraw to the rally point.
- Battalion will provide abort criteria.

Checklists

6-146. The use of checklists can assist raid planners. Develop checklists as part of the unit tactical standard operating procedure or battle books. Provided is an example of a battalion level checklist for an artillery raid operation in table 6-1 on page 6-24.

Table 6-1. Artillery raid planning checklist (example)

ARTILLERY RAID PLANNING CHECKLIST (BATTALION)	
ITEM	***ACTIVITY***
1	Verify raid order contains all pertinent data.
2	If not specified, what size FA unit is necessary for a successful mission?
3	Who is the raid force commander (for example, maneuver or FA)?
4	What protection assets will support the raid force?
	Maneuver Force?
	Fire Support Plan?
	Air Defense?
	Reconnaissance and Security?
	Radar?
	Observers?
5	What are the ABORT criteria?
6	What frequencies will be used to command the raid?
7	Any updates on enemy and friendly situation that impact on raid?
8	What is the route (does it require clearance by a maneuver commander)?
9	Passage of Lines.
	Linkup Routes,Grid and Time?
	Maneuver Graphics?
	Engineer Plan (mobility and countermobility)?
	Air Defense Plan and Coverage to include the Airspace control overlay?
	Fire Support and Observation Plan?
	Control (Raid Battle Handover Line)?
	Medical Evacuation Support?
	Maintenance Support?
10	What survey support is optimal and adequate for raid force?
11	Is meteorological data available and valid?
12	Will ammunition need to be brought forward? How much?
13	What is the reload plan (approved location for reload operations)? Need to conduct reload to complete the mission?
14	Will the firing point require clearance by a maneuver force? Will this be in addition to the security force?
15	What is the link-up grid for coordinating with the raid force commander? When will link-up take place?
16	What are the name, frequency, and call sign of the raid force commander and security force?
17	Notify the raid commander of the raid mission and time and place of briefing.
18	Plot firing positions, passage lanes, points, and routes.
19	Determine and verify firing elements, number of howitzers, and command structure.
20	Develop timetable (start point, time on target).
21	Brief the commander of the raid element battery or platoon.
22	Track planning and rehearsal schedule coordinated by battery and platoon.
23	Monitor and track progress of raid.

SECTION VI – FIELD ARTILLERY BATTALION SUPPORT OF STABILITY OPERATIONS AND DEFENSE SUPPORT OF CIVIL AUTHORITIES

6-147. The FA battalion provides support for stability operations. Stability operations are joint force operations and involve significant political considerations. The FA battalion leadership should understand the nature of the joint, multinational, civil, and military relationships, and the cultures of our allies and the host nation. The FA battalion's success relies in large part on the legitimacy provided by international agreements, the battalion's ability to abide by established agreements, and the ROE while executing assigned tasks.

6-148. Defense support of civil authorities are conducted within the United States. The FA battalion's communications infrastructure, coordination skills, and inherent mobility can enhance and assist a command's overall coordination and liaison effort. Potential responsibilities include enhancing effective command, convoy operations, local security operations, and liaison.

STABILITY OPERATIONS

6-149. Stability operations encompass activities where the FA battalion is employed in areas outside the United States. The battalion may conduct offensive and defensive tasks but may also support operations in nontraditional, noncombat roles. Disaster relief and humanitarian assistance and security are examples.

6-150. Stability operations encompass various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services, emergency infrastructure reconstruction, and humanitarian relief. Stability tasks emphasize constructive effects and focus toward achieving the desired end state. Stability tasks a FA battalion may perform include:

- Establish civil security.
- Establish civil control.
- Restore essential services.
- Support to governance.
- Support to economic and infrastructure development.

6-151. For more information on stability operations, see ADRP 3-07.

DEFENSE SUPPORT OF CIVIL AUTHORITIES

6-152. The Defense support of civil authorities is conducted in the United States. FA units contribute in nontraditional ways during defense support of civil authorities. See ADRP 3-28 for additional information on defense support of civil authorities.

SECTION VII – OPERATIONAL CONSIDERATIONS

6-153. Both climate and terrain can vary widely between different operational areas. FA battalions frequently adjust their tactics, techniques, and procedures to account for these differences. This section describes FA battalion techniques and considerations for climate and terrain.

NIGHT OPERATIONS

6-154. The basic ingredient of successful night operations is the confidence of the individual Soldier in his ability and equipment. This confidence stems from detailed planning and effective training. The adverse effects of darkness require a change in techniques.

6-155. Objectives of night operations include:

- Exploit our technological advantage at night over a less sophisticated enemy.
- Achieve surprise and avoid losses that might be incurred in daylight over the same terrain.
- Compensate for advantages held by a numerically superior enemy who has air superiority.

- Retain the initiative by defeating enemy night operations.

6-156. Planning considerations for the basic FA tasks in support of night operations are deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force.

DEPLOY AND CONDUCT MOVEMENT

6-157. Plan and rehearse reconnaissance, selection, and occupation of a position area for night occupation. Plan for increased movement times at night. Plan for the increased use of traffic control points during movement. Guide every vehicle into position according to the track plan. Erect tentage before darkness and check for light leaks. Install generators and light sets before darkness.

DEVELOP INTELLIGENCE

6-158. Scout high traffic routes during daytime to identify potential ambush sites, intersections, or turns where vehicles and convoys may become misdirected or where large vehicles may have difficulty traversing. Identify locations of military police, maneuver, and other friendly force checkpoints and patrols. Also, identify host nation checkpoints. Verify clearance procedures are in place to ensure there are no misunderstandings in the dark.

EMPLOY FIRES

6-159. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-160. Limited sound flash observations by forward observers may be possible to supplement radar. Provide observation posts with night vision devices.

Deliver Fires

6-161. Adjust final protective fires and danger close targets during daylight, if possible. Establish procedures for marking the end of the orienting line and the orienting station. During periods of relatively low activity and stable fronts, consider firing from supplementary positions at night to reduce night survivability moves of the platoons. Review commander's guidance on use of illumination and smoke. Anticipate requests for illumination in the brigade support areas when enemy infiltration risk is moderate to high. Coordinate FSCMs and clearance of fire procedures. Obtain current friendly force locations. Plan for the increased time to perform tasks, particularly ones as complex as hasty survey. Illumination canister may pose a down-range hazard.

EXERCISE CONTROL

6-162. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-163. Install and check communications equipment and operation of local area network systems..

Coordinate Fire Support

6-164. Determine the specific area in which the commander desires to use smoke to degrade enemy night vision capabilities. Ensure smoke does not degrade friendly night vision capabilities. Coordinate distribution of ammunition as early as possible during daylight hours. Determine where infrared illumination can and cannot be used in place of white light illumination.

PERFORM SUSTAINMENT

6-165. Plan resupply operations at night to decrease vulnerability. Ensure adequate amounts of illuminating and smoke projectiles are on hand and in the proper locations. Perform noisy operations while the unit is firing. Firing will mask the noise of heavy vehicular traffic and material handling equipment.

PROTECT THE FORCE

6-166. Plan and adjust on-call final protective fires around unit positions prior to darkness. Establish direct fire sectors prior to darkness. Stress light and noise discipline. Include self-illumination in the unit defense plan. In urban operations, consider employing and emplacing weapon locating radars at night in order to reduce exposure to harassing and sniper fires.

COLD WEATHER OPERATIONS

6-167. Cold weather operations involve long nights, snow, and extreme cold. Weather phenomena such as whiteouts and grey outs cause loss of depth perception, which increases the hazards of driving. Ice fogs often form over troop concentrations and disclose their location. In extreme cold, metal becomes brittle, hydraulic oil thickens, and parts breakage rates increase. Rates of fire for indirect fire weapons decrease as a result of heavily clothed howitzer crews, cold weapons, and fogged lenses on fire control devices.

6-168. Winterization of equipment is critical for sustaining combat effectiveness. Indoctrination, training, and acclimatization of individual Soldiers in cold weather environments are essential first steps to overcoming these adversities. Thorough planning and preparation will help a FA unit fulfill its mission while facing the extremes of this environment. Since daylight hours are shorter, maximize light availability for preparations, reconnaissance, rehearsals, and other key activities.

6-169. For more information on cold weather operations, see ATTP 3-97.11.

6-170. Planning considerations for the basic FA tasks in support of cold weather operations include deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force.

DEPLOY AND CONDUCT MOVEMENT

6-171. Consider route reconnaissance by both ground and air. Determine ice thickness and load bearing before crossing frozen lakes and rivers. Determine position areas prior to movement since frozen, snow-covered terrain may limit the number of available positions. Anticipate icy road conditions and blocked routes in mountain passes during cold weather. Hot springs exist in some cold weather locations. They may freeze during extreme cold but will weaken and thaw before other areas. Plan for increased movement times due to local conditions. Use air assets, if available, to position artillery weapons. Train Soldiers to operate equipment on ice and snow. Enforce track plans in the position area.

DEVELOP INTELLIGENCE

6-172. Increase air reconnaissance, especially when there are adverse road conditions. Photographic reconnaissance may provide valuable information on possible enemy FA locations, especially after fresh snow.

EMPLOY FIRES

6-173. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-174. Anticipate degradation of weapons locating radar operations due to extreme cold weather. Update meteorology data when abrupt temperature changes occur.

Deliver Fires

6-175. Plan for increased use of airburst munitions. Improved conventional munitions and scatterable mines effectiveness is decreased in snow and frozen ground. Use WP as marking rounds; however, phosphorus may burn undetected in the snow for extended periods and create a hazard to friendly troops. White smoke may not be observable against snow and clouds. Consider the use of colored smoke when available for marking. Plan to use variable time fuzes for cold weather operations; however, snow and ice may cause premature detonation. Use the M732 series proximity fuze for cold weather operations. Plan for decreased rates of fire as a result of heavily clothed howitzer crews, cold weapons, and fogged lenses on fire control devices. Place additional emphasis on monitoring propellant temperatures. If registration is required, plan for the use of high-burst or radar registrations and meteorological data plus velocity error.

EXERCISE CONTROL

6-176. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-177. Plan for decreased communications effectiveness. Replace batteries more frequently since they become less effective with the decrease in temperature. Cover the mouthpieces of microphones to prevent frost from forming. Plan for difficulty in establishing a good electrical ground in permafrost and snow. Keep antennas free of snow and ice. Check technical manuals for radios and power sources regarding special precautions during operation in extremely cold climates. Ensure retransmission teams are well supplied to endure longer periods without resupply during inclement weather. Monitor storms that could cause them to become snowed in at high altitude or in mountainous cold weather regions.

Coordinate Fire Support

6-178. Plan for limited ground mobility of artillery weapons and ammunition supply vehicles and increased time preparing for operation. Frequently relieve personnel in exposed, extremely cold static listening post and observation post positions. Establish a marking system for friendly locations.

PERFORM SUSTAINMENT

6-179. Plan for decreased logistical resupply due to reduced mobility and difficulty in determining grid locations. Ensure supply convoys travel in close columns during whiteout conditions and prolonged darkness. Plan for an increase in parts breakage as metal becomes brittle in extremely cold temperatures. Plan maximum use of air resupply. Order larger quantities of petroleum, oil, and lubricants due to an increased use of personnel heaters and vehicle warm-up operations. Check vehicle winterization often to ensure continued protection. Exercise weapon recoil systems often between fire missions. Adhere to preventive maintenance checks and services as prescribed for cold weather operations. Implement a maintenance plan for extreme cold weather and exercising equipment (for example, periodic starting of engines and alternative lubricants, as required).

PROTECT THE FORCE

6-180. Provide firing areas with firing platform stability. Avoid emplacement in avalanche-prone areas, as the shock wave produced by firing can cause an avalanche. Maintain seasonal camouflage for use by units. Train Soldiers on the prevention of cold weather injuries. Provide warming areas for Soldier use.

DESERT OPERATIONS

6-181. Military operations in desert regions are characterized by rapid, highly mobile warfare conducted over great distances. These fast-moving battles, with long-range visibility, are more suited to mechanized rather than light forces. Deserts offer little life support.

6-182. Active deception techniques play key roles in the concentration and dispersal of units and security takes on added importance. Long-range engagements are common due to terrain, weather, and fields of fire. However, heat waves, mirages, dust, and sandstorms can hamper ground observation. Air observation is highly effective in this environment; however, the absence of prominent landmarks in some areas degrades this capability. In addition, the lack of trees and hills makes aircraft more vulnerable to enemy air defenses.

6-183. For more information on desert operations, see FM 90-3.

6-184. Planning considerations for the basic FA tasks in support of desert operations include deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force.

DEPLOY AND CONDUCT MOVEMENT

6-185. Position radars to provide the maximum screening crest. Consider the effect of sand and dust on visibility and convoy speeds. Position howitzers in defilade. Avoid predictable FA positions.

DEVELOP INTELLIGENCE

6-186. Friendly ground observation is enhanced but additional early warning is required due to rapid movement rates. Quickly disseminate notifications of enemy penetrations or infiltrations to affected FA units.

EMPLOY FIRES

6-187. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-188. Anticipate terrain association and navigation errors that increase target location errors. Use laser designators to perform target area survey. Emplace and camouflage radars and equipment at night, if possible. Exploit situational cueing. Anticipate increased survivability moves. Use survey to establish observation post locations and directional reference.

Deliver Fires

6-189. Stress uniform storage and frequent measuring of propellant temperature due to high surface temperature effect on propellants. Request meteorological data for transitional periods because of abrupt weather changes (especially temperature) in the morning and evening. Plan to provide survey control over extended distances.

6-190. Determine considerations for increase in hasty survey, which may include:

- Graphic resection if maps are available and accurate.
- Simultaneous observation.
- Use of survey to determine direction and global positioning system for location in establishing survey control points.
- Consider the location of survey control points and their effect on providing control.

EXERCISE CONTROL

6-191. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-192. Consider increased ranges for radio communications. Plan for early emplacement of retransmission assets. Protect radio equipment. Failure rates increase due to blowing sand and large temperature variances.

Coordinate Fire Support

6-193. Anticipate rapid enemy movement. Provide SEAD fires in support of close air support and attack helicopters. Prepare to support forces dispersed over wide expanses of terrain, but retain the ability to mass fires as much as possible.

PERFORM SUSTAINMENT

6-194. Plan for extended supply lines. Plan for increased water consumption. Plan for increased vehicle overheating, electrical component breakdown, and faster tire wear. Stockpile filters, coolants, lubricants, cleaning materials, and tires. Train Soldiers in the prevention of heat and cold weather injuries. Plan for night and air resupply. However, dust clouds from helicopters and convoys must not give away position areas. Check vehicles batteries often and maintain adequate supplies of distilled water. Electrolyte in wet-cell batteries evaporates quickly. Perform frequent maintenance on vehicles, equipment, and weapons. Apply surface lubrication sparingly.

PROTECT THE FORCE

6-195. Anticipate more heat and burn cases, snake, and insect bite victims. Use the terrain to provide depth and dispersion. Use wadis for concealment. Use desert camouflage nets. Request attachment of anti-tank teams if contact with enemy armor or mechanized forces is anticipated. Employ crew-served weapons to maximize effective ranges.

JUNGLE OPERATIONS

6-196. Jungle operations involve a greater, but not exclusive, reliance on air assets for mobility, observation, and resupply of engaged forces. Surface mobility (wheeled and tracked) is limited. Light forces are best suited for jungle operations. Insert and extract light personnel and equipment by helicopter. High temperatures and humidity take their toll on equipment and Soldiers. Frequent jungle operations include ambushes, raids, and small unit patrols.

6-197. Close in fighting is common in jungle terrain. Fires may be limited to high-angle indirect fires and close air support. If the friendly force has a substantial advantage in FS, the enemy will most likely try to establish and maintain extremely close contact. This limits the effectiveness of fires because of the fratricide danger. Massing fires may be difficult because firing units may be dispersed over large areas in order to support small-unit operations.

6-198. Planning considerations for the basic FA tasks in support of jungle operations include deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force. For more information on jungle operations, see FM 90-5.

DEPLOY AND CONDUCT MOVEMENT

6-199. Select positions accessible by roads, when available. Plan to reposition towed artillery with air assets. Anticipate difficulty in mobility for wheeled and tracked vehicles. Anticipate weather conditions and its effect on mobility. Plan equipment loads to maximize available air assets.

DEVELOP INTELLIGENCE

6-200. Consider increased ground reconnaissance in and around position areas and routes, as well as security assistance from military police and maneuver units. The S-2 should look for signs that the enemy is using cleared locations as firing areas while using nearby cover for hide areas.

EMPLOY FIRES

6-201. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-202. Stress safety considerations since map reading (self-location, target location, and friendly unit location) is difficult. Plan for increased use of weapons locating radars for counterfire missions. Use ground surveillance radars and remote sensors, if available. Plan for the use of UAS.

Deliver Fires

6-203. Ammunition considerations include:

- High explosive-delay fuzes penetrates the treetops and splinters the trees, creating additional fragmentation.
- Smoke has limited effectiveness in dense vegetation.
- WP is effective as a marking round. Consider using an airburst WP round as the initial round in adjustment.
- Plan for a reduction in illumination effects because of vegetation.
- Anticipate increased hasty survey techniques as survey control points may be scarce and difficult to establish.
- Use creeping fires in heavy vegetation.
- Anticipate increased maintenance problems due to moisture and rust.
- Expect ammunition expenditure to be high and plan accordingly.
- Use air as the primary means of resupply, when possible.

EXERCISE CONTROL

6-204. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-205. Communication personnel plan for communication degradation in a triple-canopy jungle. Ensure antenna cables, connectors, power, and telephone cables are off the ground. Having the cables off the ground minimizes the effects of moisture, fungus, and insects. Elevate antennas above the jungle canopy, when possible. Coordinate for air observers or airborne command platforms to act as relay stations, when possible. Use directional antennas to increase the range of communications. Plan the use of retransmission assets. Coordinate fires. Plan to fire high-angle missions and for an increase in the requests for SEAD.

PROTECT THE FORCE

6-206. Position units for mutual defense, especially when thick vegetation increases vulnerability to ground attack. Plan and adjust for mutual support. Prepare to use anti-personnel mines (Claymores) and direct fire cannon munitions (flechette rounds or high-explosive rounds with fuzes set on the minimum time – killer junior rounds) for immediate use while in position. Establish local security. Select alternate and supplemental positions. Plan for increased health hazards, disease, and snake and insect bites. Coordinate engineer support for firing positions, as required.

MOUNTAIN OPERATIONS

6-207. Mountain operations include many of the same problems found in cold weather regions. Mountainous areas typically have rugged, compartmented terrain with steep slopes, treacherous mobility, and poor road networks. Weather may span the entire spectrum from extreme cold with ice and snow in winter to extreme heat during the summer. In mountain operations, the advantages favor the defender, and the focal point is the battle to control the high ground. Infantry units are the most suitable force for this type of combat, particularly when properly supported. In addition, the terrain promotes isolated battles that make command difficult. Small-unit commanders often operate semi-independently.

6-208. Planning considerations for the basic FA tasks in support of mountain operations include deploy and conduct movement, develop intelligence, employ fires, exercise control, perform sustainment, and protect the force. For more information on mountain operations, see FM 3-97.6.

DEPLOY AND CONDUCT MOVEMENT

6-209. Position FA in defilade to increase their survivability, but beware of snow, rockslides, and possible enfilading fire from enemy rocket propelled grenades and mortars in these positions. Give self-propelled units priority in position area selection due to terrain limitations. Maximize helicopter airlift for movement, especially for elements such as retransmission sites and survey. The staff should plan for air reconnaissance of routes and positions, when possible. On narrow mountain roads, identify ambush and choke points. Turnaround point locations for large vehicles and those pulling trailers may be scarce. Locate potential turnaround points during route reconnaissance. Personnel plan for increased hasty survey. Place special emphasis on accurate altitude.

DEVELOP INTELLIGENCE

6-210. Increase use of air reconnaissance, intelligence platforms, and internal and external intelligence reports to compensate for reduced visibility. Conduct active patrolling and reconnaissance. Place increased emphasis on terrain considerations in templating enemy FA. Do not underestimate the enemy's ability to position mortars in difficult terrain. Range capabilities are useful in templating enemy indirect fire locations.

EMPLOY FIRES

6-211. The ability to employ fires requires the capability to detect and locate targets and to deliver fires. Information on detect and locate targets and deliver fires follows.

Detect and Locate Targets

6-212. Request forward observers on high ground to maximize visibility; however, they may need to be staggered at different levels if low-level clouds are possible. Anticipate poor visibility due to clouds, fog, or snow blindness. Employ weapons locating radars to detect high-angle fires. Position radars to maximize terrain masking. Target acquisition personnel plan for ground surveillance radars and remote sensors, if available.

Deliver Fires

6-213. Choose shell and fuze combinations based on terrain, High explosive-point detonating, high explosive-delay, and improved conventional munitions have reduced effectiveness in snow; but are highly effective in rocky terrain. The adverse effect of the slope of the terrain impact on both scatterable mines and improved conventional munitions effectiveness includes:

- Scatterable mines must stabilize within 30 seconds of impact for the submunitions to arm.
- Uneven terrain (for example, plowed ground and jumbled rocks) may keep mine trip wires from deploying properly.
- Dual-purpose improved conventional munitions do not function if the angle of impact is greater than 60°. Anticipate difficulty in adjusting fires due to the mountainous terrain. Anticipate increased high-angle fires and registration.
- Plan high-angle fires with airburst munitions on reverse slopes of hills and mountains.
- Use scatterable mines to restrict routes, especially at chokepoints.
- Anticipate difficulty in transfer of firing data due to the wide variance in altitude of firing units.
- Plan frequent meteorological data updates due to rapidly changing weather conditions

EXERCISE CONTROL

6-214. To exercise control the FA battalion must be able to communicate and coordinate fire support. Information on how to communicate and coordinate fire support follows.

Communicate

6-215. Consider the masking effects of mountains or hills on communications. Use directional antennas to increase range. Maximize line-of-sight radio communications. Plan retransmission capabilities, to include helicopter radio relay. Airlift retransmission units onto hilltops, when possible.

PERFORM SUSTAINMENT

6-216. Use helicopter and airdrop resupply when appropriate. Plan for increased maintenance on vehicles and equipment due to the increased strain caused by terrain and weather. Plan for additional cold weather contingency items required for sustained unit operations in mountainous terrain.

PROTECT THE FORCE

6-217. Coordinate attack helicopter or air support for the FA battalion as the mountains may reduce the use of mutually supporting fires. Request military police ground reconnaissance of routes, especially at chokepoints. Consider the danger of flash flooding in dry riverbeds or flood plains. Consider using open column convoy techniques through mountain passes and other restrictive terrain. Maximize use of terrain for cover and concealment to compensate for limited hardening potential. Position units in defilade. Position observation posts, listening posts, and crew-served weapons to enhance survivability by providing early warning and defensive fires. Plan for defensive cannon direct fire missions.

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Chapter 7
Field Artillery Battalion Sustainment

The FA battalion must provide responsive, effective, and sustainable fires in a variety of environments across the range of military operations. Joint operations will be the norm. The sustainment warfighting function is the related tasks and systems that provide support and services to ensure freedom of action, extend operational reach, and prolong endurance (ADRP 3-0). Sustainment is the warfighting function that deals with arming, fueling, supplying, providing medical care and maintenance for the FA battalion, enabling it to fulfill its mission. The BSB is the core of sustainment to the FAB and BCT. The BSB is organic to the brigades and consists of functional and multifunctional companies assigned to provide support. Because FA battalion sustainment operations are conducted in conjunction with maneuver sustainment operations, FA battalion commanders and staffs must completely understand FAB, DIVARTY and BCT sustainment. For more information on sustainment, see ADRP 4-0.

SECTION I – FIELD ARTILLERY BATTALION SUSTAINMENT OVERVIEW

7-1. Sustainment operations are simultaneous operations distributed across the area of operations in accordance with the maneuver commander's intent and operations plan. In the most decentralized operations, Paladin howitzer platoons in the ABCT and towed howitzer platoons in the IBCT and SBCT, will routinely maneuver within 2-4 kilometers (km) of maneuver elements enabling mutual support from dispersed locations. This proximity to maneuver elements provides protection and security to individual systems (both FA battalion assets and maneuver). Sustainment of the FA battalion is normally conducted in conjunction with sustainment of the supported higher HQ. It will probably not be a separate event unless ammunition expenditure rates of the FA battalion drive separate resupply.

FIELD ARTILLERY BATTALION SUSTAINMENT OVERVIEW

7-2. The forward support company is the cornerstone of the distribution system at the FA battalion level. The forward support company contains logistic elements plus direct support maintenance. The FA battalion staff provides human resources, financial management, religious, legal, and command information support.

Note. Although this chapter's discussion addresses sustainment within the BCT FA battalion, those FA battalions task organized to a FAB are supported in a similar manner. For more information on sustainment in the BCT or FAB, see FM 3-90.6.

7-3. The BCT's FA battalions are sustained from their augmenting forward support companies, the BSB, and at times directly from the division, corps, and theater sustainment base. The FA battalion executive officer is responsible to the FA battalion commander for monitoring sustainment operations and inserting himself where appropriate to ensure sustainment of the battalion. Under the supervision of the battalion executive officer, the battalion staff identifies sustainment requirements for the FA battalion concept of operations and provides the requirements to the forward support company or brigade commander. The forward support company provides supply, maintenance, and transportation to the FA battalion and is the key sustainment operator at the FA battalion level. The battalion staff plans sustainment operations. The S-4 will request any additional logistics support from the BSB.

7-4. The battery commander concentrates on fighting his unit to accomplish the tactical mission. Sustainment responsibilities at battery level are primarily to report status, supervise operator level maintenance, request support, and execute internal sustainment operations.

7-5. Regardless of the brigade sustainment structure, the FA battalion commander ensures that support is provided not only for his organic and attached elements but for any supporting units as well. The battalion staff (primarily S-1 and S-4) coordinates support for the attachments and verifies who is to provide the support and how to request the support. When a large unit attachment joins the FA battalion, the attachment should bring an appropriate slice of sustainment assets from its parent unit. The forward support company commander usually controls these sustainment assets (less medical, human relations, legal, and religious). The attached unit leader must coordinate with the FA battalion S-1 and furnish him a copy of his unit battle roster as well as provide the FA battalion S-4 the status of major pieces of equipment. Thereafter, the attached unit submits reports and requests for resupply according to the FA battalion standard operating procedure.

7-6. In the FA battalions, sustainment assets are assigned to the forward support company, except for the medical platoon, which is assigned to the FA battalion HQ and HQ battery. The focal point for sustainment support is at the battalion combat trains command post. The combat trains command post, under the supervision of the battalion S-4, anticipates, requests, coordinates, and supervises execution of sustainment by either HQ and HQ battery or forward support company assets.

SECTION II – ORGANIZATION AND FUNCTIONS

7-7. The FA battalion commander can task organize the sustainment assets for centralized or decentralized control. Centralized control leaves the forward support company intact and controlled by the forward support company commander. Decentralized control places elements of the forward support company and medical platoon (-) under a command relationship of a firing battery. Centralized support lightens the support burden on the firing batteries and can increase mobility. Decentralized logistic support gives the firing batteries more control over their sustainment operations, facilitates attachment of a battery to another FA unit or to a maneuver unit, and allows independent operations. Considerations may include:

- Mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC).
- Personnel status (for example, strength and experience) of these sections.
- Availability of equipment.
- Availability of external support.
- Capability of the battalion staff to supervise additional sections.

FORWARD SUPPORT COMPANY

7-8. The BSBs forward support companies can be given a command or support relationship to supported maneuver or FA battalions of the brigade. The forward support company provides field maintenance and supply distribution for the FA battalion. The company commander is responsible for executing the sustainment plan in accordance with the FA battalion commander's guidance. The company has a distribution platoon and a maintenance platoon that support Class I, Class III, Class V, Class IX, maintenance, and recovery. The forward support company can operate from either unit trains in one location or echeloned trains organized into battery trains, battalion combat trains, unit maintenance collection point(s), battalion aid station, or battalion trains.

7-9. The field maintenance platoon can function consolidated or echeloned, depending on METT-TC. It consists of a platoon HQ, maintenance control section, service and recovery section, maintenance section, and two field maintenance teams designed to provide support to the firing batteries.

7-10. The distribution platoon has a Class III, V and a general supply section. The distribution platoon provides distribution of all classes of supply (minus Class VIII). The forward support company has no authorized stockage list, except as necessary to support issue and turn-in operations. It may carry critical line replaceable units and combat spares as authorized or directed. Combat spares are a combination of shop stock, bench stock, and prescribed load list.

7-11. The company is organized with a food service section that is designed to provide the FA battalion with Class I and field feeding. It can operate one main kitchen serving Unitized Group Rations – A options, up to three mobile kitchens serving Unitized Group Rations heat and serve, or distribute Meals Ready to Eat or Unitized Group Rations – E option in accordance with the brigade field feeding plan. When field feeding teams are operating with a firing battery separate from the forward support company, they will fall under the command of that battery.

7-12. The platoon HQ section manages the distribution of supplies in support of the FA battalion, which may include:

- Maintain a current listing for on-hand commodities.
- Establish facilities for limited storage, receipt, and issue of supported commodities.
- Perform limited storage, receipt, and issue of supported commodities.
- Deliver issued assets (for example, logistics packages) and picks up retrogrades (for example, turn-ins to maintenance or for disposal).

7-13. The distribution section is responsible for supporting retail fuel operations in the FA battalion.

7-14. The distribution section is responsible for supporting Class V operations in the FA battalion. Small-arms ammunition constitutes an insignificant portion of the FA battalion daily tonnage requirements and is handled routinely with normal ammunition resupply. The FA battalion S-4 plans for and supervises Class V operations, and the distribution platoon leader supervises resupply operations. The S-3, S-4, coordinates with the forward support commander and the distribution platoon leader exchanging information concerning ammunition. Each must know the required supply rate submitted to the supported higher HQ, the controlled supply rate established by the supported higher HQ, and the authorized basic load. Provide this information to the battalion and battery commanders so they can plan resupply operations and set priorities.

SECTION III – SUSTAINMENT PLANNING

7-15. The lead sustainment planner in the FA battalion is usually the S-4, assisted by the S-1, the battalion surgeon, and forward support company commander. Representatives from these and other sections form a sustainment planning cell at the FA battalion main command post to ensure sustainment plans are fully integrated into operations planning. The standard operating procedure should be the basis for sustainment operations with planning conducted to determine specific requirements and to prepare for contingencies. Battalion and battery orders should address only specific support matters for the operation and any deviations from standard operating procedure.

7-16. Although the sustainment planners at the battalion main command post control and coordinate sustainment and other support for specific FA battalion operations, routine operations are usually planned in the field trains. The battalion S-1 may have representatives at or near the brigade S-1 to handle various human resources functions (for example, replacement or monitor casualty operations). The battalion S-4 may choose to locate with the BSB sustainment officer.

7-17. To provide effective support, sustainment planners and operators must understand the mission statement, intent, and concept of the operation. The S-4 is responsible for producing the sustainment paragraph and annexes of the FA operation order, operation plan or support plan, which should include:

- Commander's priorities.
- Class III and Class V resupply during the mission, as required.
- Movement criteria.
- Type and quantities of support required.
- Priority of support, by type and unit.
- Sustainment overlay.
- Supply routes.
- Logistic release points.
- Casualty evacuation points.
- Maintenance collection points.

REPORTS

7-18. The accurate reporting of sustainment status is essential to keeping units combat ready. Standard operating procedures should establish report formats, reporting times, and voice brevity codes to keep sustainment networks manageable. The FBCB2 helps commanders automate the sustainment data-gathering process through sustainment situation reports, personnel situation reports, logistical calls for support, sustainment task order messaging, situational awareness, and task management capabilities.

7-19. At the BSB and BCT level, the Battle Command Sustainment Support System (BCS3) collects sustainment data from various sustainment-related information systems throughout the BCT to provide actionable sustainment information to support sustainment-related decisions. To assist planners, BCS3 has a simulation tool that enables the user to project supply consumption for a given course of action by event or across time. To assist in execution, BCS3 gives the commander the latest available status of critical weapons systems, fuel, ammunition, and personnel. BSC3 also provides a map-centric view of inbound vehicles and cargo that are equipped with movement tracking devices.

7-20. Although sustainment planners may have data available from BCS3 and FBCB2 sustainment and personnel status messages, it may need to use nonstandard text messages to identify equipment and personnel issues. The battalion staff must be proactive in identifying and solving sustainment issues, to include:

- Use FBCB2, BCS3, and other systems to maintain sustainment situational awareness.
- Work closely with higher HQ' staff to resolve sustainment problems.
- Establish sustainment priorities that conform to mission requirements.
- Recommend sustainment related commander's critical information requirements.
- Inform the commander of critical sustainment issues.

7-21. The S-6 and forward support company commander must work together to ensure that FBCB2, BCS3, and sustainment information systems have interconnectivity. The S-4, S-1, and forward support company commander must monitor the status of this system and implement alternate means of reporting, as required.

MEDICAL REPORTING

7-22. The medical communications for combat casualty care and Defense Health Information Management System is an automated system, which links health care providers and medical support providers, at all roles of care, with integrated medical information. The medical communications for combat casualty care and Defense Health Information Management System receives, stores, processes, transmits, and reports, medical surveillance, casualty movement and tracking, medical treatment, medical situational awareness, and medical data across all roles of care.

7-23. The brigade surgeon's section uses BCS3, FBCB2, and medical communications for combat casualty care and Defense Health Information Management System to support mission planning, coordination of orders and subordinate tasks, and to monitor and ensure execution throughout the mission.

SUSTAINMENT SUPPORT FOR ATTACHMENTS

7-24. Generally, attachments to the FA battalion should arrive with their appropriate sustainment augmentation. When a platoon, section, or detachment is attached to the FA battalion, the battalion S-4 integrates their sustainment augmentation pieces into the battalion support system. The battalion S-4 must clearly state who will provide medical, maintenance and recovery, and supply support for Class III, V, and IX. When receiving attachments, sustainment planners require some basic information from the sending unit's S-4 to anticipate how to develop a synchronized concept of support, to include as required:

- Number and type of vehicles, personnel by specialty, and weapons systems.
- Current status and strength.
- When attachment is effective and for how long.
- What support assets are coming with the attached unit.
- When and where linkup will occur, and who is responsible for linkup.

SECTION IV – SUPPLY AND TRANSPORTATION

7-25. Supply and transportation are elements of sustainment. The classes of supply and a reference to transportation related to supply make up this section.

SUPPLY

7-26. Supplies are grouped into ten classes for supply management and planning (table 7-1). Resupply operations are based on these classes.

Table 7-1. Classes of supply

SUPPLY CLASS	*DEFINITION*
I 	Subsistence, water, and gratuitous health and comfort items
II 	Clothing, individual equipment, tentage, organizational tool sets and kits, hand tools, unclassified maps, administrative and housekeeping supplies and equipment
III 	Petroleum, oil, and lubricants
IV 	Construction and barrier materiel
V 	Ammunition
VI 	Personal demand items normally sold through exchanges
VII 	Major end items
VIII 	Medical materiel to include repair parts peculiar to medical equipment
IX 	Repair parts and components
X 	Materiel to support nonmilitary programs

EXPEDITIONARY SUPPORT PACKAGING

7-27. To facilitate the ordering and distribution of supplies, the Army uses expeditionary support packages to package commonly requested supplies. The Army uses expeditionary support packages for training exercises; deployments; war reserves, pre-positioned stocks; and predictable demands to meet the unit commanders' requirements.

7-28. Expeditionary support packages allow for a minimum of handling from the storage point through the transportation system and into the supported units. These loads are equipped with radio frequency tags or other automated methods. The radio frequency tags and automation enable logisticians to track supplies and redirect the expeditionary support packages to accommodate changes in missions and priorities.

7-29. Expeditionary support packages are appropriate for all classes of supply except some Class VII major end items.

7-30. The BCT will use standard expeditionary support packages in conjunction with a "pure palleting" methodology to provide responsive support for meeting actual requirements during the sustainment phase of operations. This allows commanders the ability to order only what is necessary and minimize retrograde of unnecessary material.

PURE PALLETING

7-31. Pure palleting is a process that collects supply requisitions for a given unit using their Department of Defense activity address code, configures standard expeditionary support packages and other supply items into loads, then throughputs them to their destination. Time limit for the collection process is usually three days. Packages not filling a whole pallet are then combined with other packages to produce consolidated

loads, destined for multiple Department of Defense activity address codes in a BCT will be shipped to the BCT's supply and distribution company.

7-32. Develop pure palleting for supplies, which may include:

- Class II (for example, chemical, biological, radiological, nuclear; clothing; and religious supplies).
- Class III (for example, packaged petroleum, oil, and lubricants).
- Class IV (for example, construction and barrier materials).
- Class VIII (for example, medical).
- Class IX (for example, batteries and repair parts).

RATIONS

7-33. The FA battalion deploys with three days of operational rations as its unit basic load. The BSB draws its operational supplies once it is in the joint operations area, based upon unit strength reports. Currently, the office of the surgeon general limits the continuous use of meals ready to eat to 21 days. Theater food service officers provide guidance on when to introduce unitized group rations and other ration supplements. Fresh food (A-rations) after deployment may be available through regional commercial contractors. This must be approved by the commander's guidance and either Army veterinary services or through the civilian augmentation program.

WATER

7-34. Water is provided to Soldiers in two forms: bulk, and bottled (or packaged). Water support will be provided through an organic water purification and distribution capability when feasible. Bulk potable water is used as needed for individual Soldiers. Bottled water may be provided on a limited basis, usually during the deployment phase of operations.

7-35. Bottled water and rations are broken down into daily lots at the BSB distribution point, and picked up by the forward support company supply section. Each battery has water trailers and five-gallon containers for distribution of potable water. Battery supply sergeants maintain water trailers in their battery area, and refill from the brigade support area. Refilling of five-gallon containers occurs during logistics package operations. Usually, a one-for-one exchange is conducted with the containers (one empty for one full); the supply section refills the containers.

CLASS I & II (PACKAGED)

7-36. Usually, the BCTs deploy with 30 days of common consumable supplies. Battery supply sergeants maintain the appropriate level of CBRN protective equipment. These supplies are provided by the BSB and are maintained as part of the unit's authorized stockage list. Vehicles also carry a small amount of commonly used packaged petroleum products for immediate use. These loads are established in the unit standard operating procedures.

7-37. Replenishment and other necessary supplies are ordered by company supply sergeants from the BSB. Supplies are provided at the BCT distribution point, usually within the brigade support area to the forward support company supply for the appropriate battery. They are carried forward with the next logistics package, or immediately, if needed.

Religious Supplies

7-38. The unit ministry team of the FA battalion orders consumable chaplain supplies through the BCT unit ministry team, as required. These supplies are considered Class II.

Maps

7-39. Maps are considered a Class II supply. Usually, paper map sheets are delivered with appropriate supplies to the requester. Unit standard operating procedure should detail the specific procedures for digital maps.

CLASS III (BULK)

7-40. The FA battalion usually deploys with half-full vehicle fuel tanks, purged fuelers, and empty fuel cans. Fuel is issued upon arrival in the operational area. Fuel for UAS will be issued by a dedicated fuel asset within the BCT.

7-41. The battalion S-4 forecasts the battalion's requirements based upon the current or upcoming mission. The forecast is standard operating procedure dependent, but usually is for the 72-hour period beyond the next day, or out to 96 hours. The forward support company conducts forward distribution to the platoons, batteries, command posts, and attachments.

CLASS IV

7-42. FA battalion units deploy with a limited amount of Class IV barrier materiel, primarily for protection of unit perimeters and key positions (for example, command posts). This material is part of the unit's basic load, and usually is carried on tactical vehicles.

7-43. Battery supply sergeants order replenishment from the BSB. The forward support company carries the supplies forward with the next logistics package, or immediately, if needed. Barrier materiel may also be requested as expeditionary support packages.

CLASS V

7-44. A combat load is the unit commander's designated quantity of munitions and items authorized to be carried by unit personnel and combat vehicles (for example, turret-load). Troop-carried munitions to accompany troops are those issued before departure from the air port of embarkation. Turret-load and combat load munitions are those authorized for transportation in thick-skinned vehicles for deployment purposes. Generally, BCTs have the capability to haul one combat load of critical munitions.

7-45. Most units do not deploy with their ammunition combat load of Class V ammunition. Instead, they are issued their combat load upon arrival in the joint operations area. When the urgency of the deployment and the requirement for decisive action dictate the necessity to initiate combat operations immediately upon arrival in the operational area, selected units deploy with a full combat load of ammunition.

7-46. The BSB does not deploy with sustainment stocks. Initially, munitions are delivered to the brigade support area as expeditionary support packages from pre-positioned stocks (in-theater or afloat) or from the continental United States.

7-47. The battalion S-4 determines the battalion's ammunition resupply requirements based on information provided in the batteries' situation reports, and guidance received from the battalion commander and S-3. The S-4 submits the forecast to the BCT or FAB S-4.

7-48. To sustain tactical operations, operational planners determine their munitions requirements, and develop a required supply rate. Required supply rates are computed by S-3s as rounds per weapon per day. Sustainment planners at the expeditionary sustainment command and theater support command consider the required supply rate, available stocks, and due in stocks, and develop a controlled supply rate. The controlled supply rate limits the issue of munitions that are in short supply. If the required supply rate exceeds the controlled supply rate, the commander determines who receives the ammunition. Controlled supply rates may be published in the operation order or as a fragmentary order. They may be included in the FS plan, FA operation order or FA support plan.

Ammunition Terms

7-49. Utilize common ammunition terms, to include as required:

- Army Regulation 5-13 discusses Combat Load as the standard quantity and type of munitions an individual weapon, crew-served weapon or a weapons platform and its modified table of organization and equipment designated munitions carriers are designed to hold. Combat loads for bulk munitions (grenades, signals, and so forth) are not associated with a weapon or weapons platform. Bulk munition combat loads are assigned by standard resource code and reflect the quantity of munitions required to give units capability and flexibility. Combat loads support the

initiation of combat operations and are the basic building blocks of Army war reserve requirements.

- **The *required supply rate* is the amount of ammunition expressed in terms of rounds per weapon per day for ammunition items fired by weapons, in terms of other units of measure per day for bulk allotment, and other items estimated to be required to sustain operations of any designated force without restriction for a specified period**. Tactical commanders use this rate to state their requirements for ammunition to support planned tactical operations at specified intervals. The required supply rate is submitted through command channels. It is consolidated at each echelon and is considered by each commander in subsequently determining the controlled supply rate within the command.
- **The *controlled supply rate* is the rate of ammunition consumption that can be supported, considering availability, facilities, and transportation. It is expressed in rounds per unit, individual, or vehicle per day.** The Army service component commander announces the controlled supply rate for each item of ammunition, and, in turn, each tactical commander announces a controlled supply rate to the next subordinate tactical commander. A unit may not draw ammunition in excess of its controlled supply rate without authority from its next higher HQ. The controlled supply rates may be published in the operation order or as a fragmentary order. They may be included in the FS plan or the FA support plan.
- Ammunition for immediate consumption is ammunition drawn for a specific purpose, such as a preparation. This ammunition is drawn in addition to the controlled supply rate. It is drawn to be expended within the next 24 hours and is considered expended when issued. If circumstances preclude expenditure as planned, the battalion must report this ammunition as excess daily until it is expended or reallocated.
- An *ammunition transfer holding point* is a designated site operated by a BSB distribution company where ammunition is received and transferred to supported units within a BCT. May also temporarily hold or store ammunition as required (ATP 4-90).
- An expeditionary support package is a single or multi-type load of ammunition built to the anticipated or actual needs of a firing unit, thereby facilitating throughput to the lowest echelon. Expeditionary support packages are often designed to fit standard transportation assets and for transportation as a single unit. FA munitions are packaged and delivered in completed rounds (for example, fuzes, primers, propellants, and projectiles). See table 7-2 (on page 7-9) for FA examples of expeditionary support packages.
- Descriptions of other ammunition loads may be found in Army Regulation 5-13.

Table 7-2. Field artillery expeditionary support packages (example)

EXAMPLE PACKAGE G				
#	DODIC	NOMENCLATURE	QUANTITY	PERCENT
1.	D529	M795 HE	4 Pallets (32 projectiles)	18
2.	D563	M483A1 DPICM	18 Pallets (144 projectiles)	82
3.	DA12/DA13	M231, M232, MACS	2 Pallets (168 prop chgs)	74
4.	N340	M739, Fuze, PD	1 Box (16 fuzes)	9
5.	NA09	M782, Fuze, MOFA	1 Box (16 fuzes)	9
6.	NA17	M762A1, Fuze, ET	9 Boxes (144 fuzes)	82
7.	N523	M82, Primer	1 Box (500 primers)	100+
TOTAL WEIGHT: 13 Short Tons				
EXAMPLE PACKAGE J, SMOKE				
#	DODIC	NOMENCLATURE	QUANTITY	PERCENT
1.	D528	M825 Smoke	20 Pallets (160 projectiles)	100
2.	DA12/DA13	M231, M232, MACS	1 Pallet (84 prop chgs)	53
3.	NA17	M762A1, Fuze, ET	10 Boxes (160 fuzes)	100
4.	N523	M82, Primer	1 Box (500 primers)	100+
TOTAL WEIGHT: ≈12 Short Tons				

DODIC – Department of Defense identification code
DPICM—dual purpose improved conventional munitions
HE—high explosive
PD—point detonating
VT—variable time
MACS—modular artillery charge system
MOFA—multi-option artillery fuze
ET—electronic time
prop chgs—propellant charges

Required Supply Rate Calculation

7-50. The required supply rate is the FA battalion's estimate of the amount of ammunition it will require for an operation. Determining the required supply rate is the responsibility of the battalion S-3 and can be accomplished in a number of ways. These include personal experience, historical data from similar battles and use of automated planning factors on the operations logistics planner's software. Required supply rate reporting requirements may verify with tactical standard operating procedure and the situation. Generally, the required supply rate is submitted through the supported maneuver force or senior FA HQ, with information copies to appropriate HQ. Required supply rates are consolidated and reviewed at higher HQ, and used in determining the controlled supply rate for each unit. The FA battalion will generally receive its controlled supply rate through the same channels that it reports its required supply rate.

7-51. The manual method discussed here provides a method in computing a required supply rate for artillery ammunition. Determine the required supply rate steps, which may include:

- Step 1—Determine the level of the operation using table 7-3 on page 7-10.

Table 7-3. Levels of operation

LEVELS OF OPERATION			
Level of Operation	***Percent of Commitment***		***Commitment of Higher Headquarters Reserves***
	Maneuver	***Fire Support***	
Heavy	60+	100	Probable
Moderate	30+	50+	Not Anticipated
Light	30-	50-	No

- Step 2—From Table 7-4 (on page 7-11), select the type of weapon system for which the required supply rate is being calculated. Rounds are expressed in number of rounds per tube per day.
- Step 3—Select the type of operation and level of operation in Table 7-4. If the type of operation is not listed, use the conversion table listed in Table 7-5 (on page 7-11).
- Step 4—Compute ammunition requirements for the operation by using Table 7-4:
  - Day 1—Number of rounds required for the first day extracted from the first day column in the table.
  - Day 2-4—Number of rounds from the succeeding day's column multiplied by the number of days to be computed (see Note (1), Table 7-4).
  - Day 5—Average the number of rounds from the succeeding and protracted days for the weapon system (see Note (1), Table 7-4).
  - Day 6-15—Number of rounds from the protracted day's column multiplied by the number of days (see Note (1), Table 7-4).

Table 7-4. Daily ammunition requirements—rounds per weapon and short ton (example)

Type of Operation	Level of Operation	First Day		Succeeding Days [1]		Protracted Period [2]	
105-mm Howitzer		Rounds	STON[3]	Rounds	STON	Rounds	STON
Covering Force	1-Heavy	491	16.8	511	17.5	198	6.8
	2-Moderate	319	10.9	332	11.4	129	4.4
	3-Light	172	5.9	179	6.1	69	2.4
Defense of Position	1-Heavy	423	14.5	467	16.0	222	7.6
	2-Moderate	275	9.4	304	10.4	144	4.9
	3-Light	148	5.1	163	5.6	78	2.7
Attack of Position	1-Heavy	376	12.9	381	13.0	210	7.2
	2-Moderate	244	8.4	248	8.5	137	4.7
	3-Light	132	4.5	133	4.6	74	2.5
155-mm Howitzer							
Covering Force	1-Heavy	254	17.2	274	18.6	174	11.8
	2-Moderate	165	11.2	178	12.1	113	7.7
	3-Light	89	6.0	96	6.5	61	4.1
Defense of Position	1-Heavy	203	13.8	207	14.0	183	12.4
	2-Moderate	132	9.0	135	9.2	119	8.1
	3-Light	71	4.8	72	4.9	64	4.3
Attack of Position	1-Heavy	146	9.9	153	10.4	140	9.5
	2-Moderate	95	6.4	99	6.7	91	6.2
	3-Light	51	3.5	54	3.7	49	3.3

Notes:
(1) Succeeding days are the second, third and fourth days of the battle. For the fifth day ammunition requirements, take the average of the succeeding days rate and the protracted rate.
(2) Protracted period refers to days 6 through 15. For estimating ammunition requirements for periods greater than 15 days, use rates provided in Safety Bulletin 38-26, (C) Nonnuclear Ammunition Supply Rates (U).
(3) STONS—Short tons are computed based on total weight per complete round: 105-mm - 68.5 lbs/rd , 155-mm - 135.7 lb/rd
lbs – pounds rd – round mm – millimeter

Table 7-5. Conversion factors table

TYPE OF OPERATION	CONVERSION FACTOR
Attack of position	100% of attack of position (deliberately organized)
Covering Force	100% of defense of position
Inactive Situation	80% of protracted period
Meeting Engagement	200% of protracted period
Pursuit	40% of protracted period
Retrograde Operation	59% of defense of position (succeeding days)
Assault of Hostile Shore	100% of defense of position (succeeding days)

- Step 5—Beyond day 15, use safety bulletin 38-26.
- Step 6—Divide the total rounds by the number of days in the operation. This will give the number of rounds per tube per day.

7-52. Ammunition supplies are provided from the supported higher HQ ammunition transfer holding point (normally within the brigade support area) to the forward support company. They are carried forward with the next logistics package, or immediately, as required. Ammunition and explosives are accounted for and provided proper physical security at all times.

CLASS VI

7-53. Soldiers usually carry 30 days of personal comfort items with them when deploying. They replenish their own supplies through the Army and Air Force Exchange System or local purchase.

7-54. Health and comfort packs provide forward area troops everyday necessities required when the exchange system is not available. Delivery of health and comfort packs is based on headcounts provided for field feeding

CLASS VII

7-55. Units normally deploy with their modification table of organization and equipment required equipment. There may be additional equipment issued in the joint operations area. Battery commanders must ensure their supply sergeants establish accountability on new equipment by creating hand receipts from packing lists or inventory. Report new equipment through the battalion S-4 and brigade S-4 to the appropriate property book officer. Property book officers account for and order Class VII and other non-expendable items in the supported higher HQ.

7-56. Class VII replacement is based on losses reported through command channels to the brigade S-3 and S-4 per unit standard operating procedure. This permits the commander to remain apprised of the operational status of subordinate commands, and to direct the distribution of items to those units having the most critical need. Replacement Class VII equipment is delivered to the supported higher HQ in the brigade support area. The brigade S-4 and BSB sustainment officer should confirm if replacement weapons systems (for example, howitzers) will be delivered with basic issue items, additional authorized list, munitions, and crew. This allows the battalion S-3 and S-4 to better apportion replacements.

7-57. Low density, specialized equipment in the battalion may require additional evaluation by Department of the Army civilians or contractors before classifying it as a loss.

CLASS VIII

7-58. Usually Role 1 medical treatment facilities deploy with a three-day supply of consumable medical supplies, and batteries deploy with complete combat lifesaver bags. Individual Soldiers should deploy with a 180-day supply of their prescribed medications. As they deploy, Soldiers must advise their supporting medical unit of their specific needs so the medical sustainment system can sustain these prescriptions.

CLASS IX

7-59. Each battery stocks and deploys with combat spares for repair parts (for example, weapons and radio maintenance). Battery spares are a combination of prescribed load list, shop stock, and bench stock. The forward support company also has combat spares or shop stock to support maintenance of vehicles, generators, and other equipment.

7-60. The battery supply sergeant and maintenance personnel replenish their combat spares and order other parts as needed through the forward support company to the BSB. Class IX repair part requisitions are prioritized based on the commander's priority of maintenance and need.

CLASS X

7-61. If the FA battalion conducts civil-military operations, the battalion S-4 must seek guidance on ordering supplies and materiel for non-military use through the chain of command. Materiel for civil-military operations usually is provided by the Department of State, host nation, or non-governmental organizations (for example, Red Cross).

7-62. For more information on processing of unit strength reports and the flow of all classes of supplies to the FA battalion, see FM 3-90.6.

TRANSPORTATION

7-63. The FA battalion is 100% mobile with organic vehicles and trailers. The BSB, including the forward support company is mobile for organic equipment, and has been designed to be mobile with three combat loads for BCT units. The BSB commander, in coordination with the brigade commander, may choose to sacrifice mobility for extra supply stocks. If the BSB's limited assets are committed, and extra transportation is required, the brigade S-4 requests transportation assets from higher HQ.

7-64. For information on supply operations involving air delivery, deployment, and the retrograde of flat racks, see FM 3-90.6.

SECTION V – EXPLOSIVE ORDNANCE DISPOSAL

7-65. Explosive ordnance disposal capabilities are not organic to the BCT, FAB, or DIVARTY. Request explosive ordnance disposal augmentation from higher HQ to support operations. Requests for explosive ordnance disposal support are processed through the BSB sustainment officer, who then forwards the request to the supporting explosive ordnance disposal HQ. Once unexploded ordnance is located, the locating unit will send an explosive ordnance disposal 9 Line Report through their chain of command requesting explosive ordnance disposal support. If there is a constant presence of hazards, such as improvised explosive devices, explosive ordnance disposal teams may be in Direct or General Support of the BCT, FAB, or DIVARTY.

SECTION VI – FINANCIAL MANAGEMENT

7-66. The battalion has no organic financial management support assets. Financial management detachments are deployed to provide area financial support to a brigade or equivalent size unit, or as directed by the financial management company commander. Financial management support includes banking and currency support, disbursing support, tracking cost and accounting, host nation support, and limited pay support. Typical finance requirements of the FA battalion include temporary duty requests, purchase requests and commitments, and multinational support.

SECTION VII – HUMAN RESOURCES SUPPORT

7-67. Human resources support operations are embedded within the battalion S-1 section. The S-1 plans, provides, and coordinates the delivery of human resources support, services, or information to all assigned or attached personnel. Human resources support beyond the capability of the S-1 is coordinated with the BSB S-1. The S-1 is the coordinating office for religious, medical, financial management, and the Red Cross. For more information, see FM 1-0.

SECTION VIII – RELIGIOUS SUPPORT

7-68. Each battalion has a unit ministry team, consisting of a chaplain and chaplain assistant, to provide religious support to their Soldiers. The chaplain serves the commander as a personal staff officer. The chaplain plans, synchronizes, and coordinates religious support, within the battalion area of operations. The brigade unit ministry team is responsible for the technical oversight of the unit ministry teams in subordinate units.

SECTION IX – LEGAL SUPPORT

7-69. The BCT has an organic legal team identified as the brigade legal section. The brigade legal section provides legal support to the command, brigade staff, and subordinate battalions across the Judge Advocate General's Corp's legal disciplines: military justice, international and operational law, administrative and civil law, contract and fiscal law, claims, and legal assistance. The Brigade Judge Advocate usually locates the legal section in the brigade's main command post to provide immediate support to the brigade commander and the fires cell. Each battalion typically has a paralegal noncommissioned officer assigned to the S-1 section to provide immediate legal support to battalion commanders and staff, although they remain

under the supervisory control of the brigade judge advocate. See FM 1-04, Legal Support to the Operational Army, for additional information about brigade legal section support.

SECTION X – ARMY HEALTH SYSTEM

ROLE 1 MEDICAL SUPPORT

COMBAT LIFESAVERS

7-70. The combat lifesaver is a nonmedical Soldier selected by the unit commander for additional training beyond basic first aid procedures. A minimum of one individual per squad, crew, team, or equivalent-size unit should be trained. The primary duty of this individual does not change. The additional duty of the combat lifesaver is to provide enhanced first aid for injuries before the combat medic arrives. The combat lifesaver is usually the first person on the scene to begin the process of providing enhanced first aid to wounded and injured personnel. The combat lifesaver is not intended to take the place of medical personnel, but to stabilize a wounded or injured Soldier's condition until medical personnel arrive.

BATTALION MEDICAL PLATOON

7-71. The battalion medical platoon is the focal point of Army health system support for the battalion. The platoon receives, treats, and evacuate patients and coordinates further medical evacuation, as required. It establishes and operates the battalion aid station, which is the primary role 1 medical treatment facility for the battalion.

7-72. For more information on medical platoon operations, see ATP 4-02.3.

SECTION XI – MAINTENANCE

7-73. The Army has two levels of maintenance, field and sustainment. Field maintenance consists primarily of replacing parts on the user's system. It is generally a merging of organizational and direct support levels of maintenance. Field-level maintainers are concentrated in the BSB, either in the supported higher HQ BSB's forward support company or the field maintenance company. Sustainment maintenance consists of repairing of components removed from the user's system. Sustainment maintenance is generally a merging of the former general support and depot levels of maintenance. Generally, sustainment-level maintainers are located in the sustainment brigade, usually in a component repair company.

FIELD MAINTENANCE

7-74. Field maintenance is on-system maintenance and is mainly preventive maintenance and replacement of defective parts. Field maintenance returns repaired equipment to the Soldier. It covers tasks previously assigned to operator or crew, organization or unit, and direct support maintenance levels. It includes some off-system maintenance critical to mission readiness.

7-75. Battery commanders ensure that vehicle crews and equipment operators perform preventative maintenance checks and services. To provide quick turnaround of maintenance problems, each battery has a field maintenance team from their supporting forward support company dedicated to support them. These field maintenance teams have contact maintenance trucks and mechanics trained in the company's equipment.

7-76. The forward support company performs field maintenance. The forward support company has a maintenance platoon that repairs automotive, armament, ground support, electronic, and missile equipment. The forward support company focuses on line replaceable unit replacement, using combat repair team and field maintenance team stocks, on board spares and shop stock. It has a service and recovery section and also performs battle damage assessment and repair. The forward support company's maintenance control section orders and manages repair parts. The forward support company commander establishes unit maintenance collection points in coordination with the FA battalion S-4.

7-77. The maintenance platoon leader task-organizes the maintenance platoon according to directives he receives from the forward support company commander. The battalion executive officer, S-3, S-4, and forward support company commander analyze the current and anticipated support requirements and recommend to the FA battalion commander the maintenance concept to be used. They will recommend to the commander the appropriate support at battery, maintenance collection point, command post, and trains locations.

7-78. In most tactical situations, the forward support company will provide each firing battery a maintenance support team. In some instances, the forward support company's recovery vehicles may also be positioned forward with each firing battery but remain under battalion control. This provides a quick-fix capability for those items that can be repaired quickly without hindering tactical operations and a recovery capability for those items requiring repairs that are more extensive.

7-79. The rest of the maintenance platoon is in the combat trains under the control of the maintenance platoon sergeant. The platoon maintenance section performs maintenance on forward support company and HQ and HQ battery equipment and assists the field maintenance teams, as required.

7-80. Maintenance of low density, specialized equipment usually requires maintenance by Department of the Army civilians or contractors. The battalion S-4 must coordinate through the forward support company for specific management procedures for this maintenance.

SUSTAINMENT MAINTENANCE

7-81. Sustainment maintenance actions typically involve repair of repairable Class IX components, off-system, for return to the supply system. Examples of sustainment maintenance include inside-the-box repair of line replaceable units, and rebuild of engines and transmissions.

7-82. A repairable is an item that can be cost-effectively repaired. When a repairable such as a diesel engine or turbine fuel control malfunctions, it can be replaced by a repaired or rebuilt component; it usually does not need to be replaced by a new item. Although the mechanics in the supported higher HQ cannot repair unserviceable repairables, the component repair companies in the sustainment brigade need those unserviceables to create serviceable repair parts.

SECTION XII – SUPPORT AREAS

7-83. A support area is a designated area in which sustainment elements, some staff elements, and other elements locate to support a unit. Types of support areas include the brigade support area, battalion trains, and battery trains.

7-84. The brigade support area is the logistical, personnel, and administrative hub of the supported higher HQ. It consists of the BSB, but could also include a supported higher HQ alternate command post, battalion field trains, brigade engineer battalion units, air and missile defense assets, signal assets, and other sustainment units from higher HQ. The brigade support area is located to maintain support to the supported higher HQ, but not to interfere with the tactical movement of supported higher HQ units, or with units that must pass through the supported higher HQ area. Usually the brigade support area is on a main supply route and ideally is out of the range of the enemy's medium artillery. The brigade support area should be positioned away from the enemy's likely avenues of approach into the brigade support area.

TRAINS

7-85. Trains are a unit grouping of personnel, vehicles, and equipment to provide sustainment. It is the basic sustainment tactical organization. Battalions use trains to array their subordinate sustainment elements, including their forward support company. Battalion trains usually are under the control of the battalion S-4, and assisted by the battalion S-1. The composition and location of battalion trains varies depending on the number of units attached to, or augmenting, the battalion. The battalion trains can be employed in two basic configurations, as unit trains or as echeloned trains. See FM 3-90.6 for additional information on sustainment trains.

UNIT TRAINS

7-86. When logistical support resources are centralized in one location, they are called unit trains. There are benefits to utilizing this option, which may include:

- Coordinated control and a single base for logistical personnel and equipment.
- Enhanced security and capability for ground defense.

7-87. Unit trains may be appropriate in slow-moving or static situations, when the tactical situation forces the trains to be a self-contained operation, during reconstitution, when the battalion is in an assembly area, or during an extended tactical march. Unit trains normally consist of the forward support company sustainment assets, except for field maintenance teams positioned with the firing batteries and possibly a maintenance collection point. The maintenance collection point may be positioned closer to the firing batteries or near the FA battalion command post to facilitate rapid repair and evacuation of equipment. The forward support company commander is responsible for and commands unit trains.

7-88. Towed FA battalions normally lack sufficient resources to effectively use the echeloned trains concept and typically operate under a unit trains organization. The unit trains are normally in or near the brigade support area. An example of field and combat trains is located in table 7-6 (on page 7-17).

ECHELONED TRAINS

7-89. The battalion trains may consist of three types (for example, battery trains, combat trains and field trains). The preferred method of supporting the self-propelled FA battalion is through echeloned trains. There are also benefits to utilizing this option, which may include:

- Immediate responsive forward support tailored to the tactical situation.
- Flexible resource usage.
- Increased resource survivability and enhanced responsiveness when the tactical situation is fluid or when the battalion is operating over extended distances.

Table 7-6. Field trains and combat trains (example)

Field Trains	*Combat Trains*
Forward Support Company (-)	Forward Support Company (-) FWD
Forward Support Company Commander And First Sergeant	Field Maintenance Teams
Maintenance Platoon Headquarters (-)	Headquarters and Headquarters Battery Commander (If collocated with battalion command post)
Food Service Section	Maintenance Collection Point
Maintenance Section	Maintenance Control Section
Distribution Platoon Headquarters (-)	Battalion Aid Station
General Supply Section	Class III Section (-)
Class III Section (-)	Class V Section (-)
Class V Section (-)	Field Artillery Battalion S-1 And S-4 (-)
Field Artillery Battalion S-1 And S-4 (-)	
Note: This is one example of how the field and combat trains could be configured based on mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC). The commander will configure the field artillery battalion trains to meet operational requirements. FWD – forward, S-1– manpower and personnel staff officer, S-4 – logistics staff officer	

BATTERY TRAINS

7-90. Battery trains may be formed to provide sustainment for a battery during combat operations. The battery organizes its organic and attached sustainment assets into its battery trains, which usually include the first sergeant and medical aid and evacuation teams. The supply sergeant and armorer are generally located in the battalion field trains. Generally, the battery trains include a maintenance support team from the forward support company, with capabilities for maintenance, recovery, and limited combat spares.

COMBAT TRAINS

7-91. The battalion combat trains usually consist of the forward support company and the battalion medical unit and are organized to provide immediate critical sustainment support to the firing batteries. The combat trains are the hub of sustainment operations for the battalion. When the combat trains are collocated with the battalion command post, the HQ and HQ battery commander may be designated as the commander of the combat trains. When the combat trains are located away from the HQ and HQ battery command post area, the FA battalion commander designates who commands the combat trains. The battalion trains command post is located in the combat trains, and the S-4 may be responsible along with the forward support company commander for supervising and managing this command post.

7-92. The S-4 section along with forward support company personnel may form the basis of a combat trains command post, which may be established to plan and coordinate sustainment for tactical operations. Although the combat trains command post may serve as an alternate main command post in maneuver battalions, the combat trains command post typically does not have the communications and tactical fire control capabilities to do so for a FA battalion. If the combat trains command post is required to take command of the battalion, the AFATDS capability for tactical fire direction is provided from the battalion command post. When established, the combat trains command post usually consists of the elements of the forward support company, battalion S-1, and battalion S-4. Most of the time, the S-4 is the officer in charge of the combat trains command post. There are situations that may dictate the need for a combat trains command post, which may include:

- Fast-moving, fluid operations
- BSB forward element operations.
- Reception, staging, onward movement, and integration operations.

7-93. Determine the optimum balance of combat trains elements, to include as required:

- The S-1 and S-4 (minus) combat trains command post.
- Maintenance control section.
- Petroleum, oil, and lubricant (for example, emergency resupply to the batteries and platoons).
- Ammunition (for example, emergency distribution to the firing platoons).
- Battalion aid station.
- Decontamination assets.
- Elements of the communications platoon.
- Maintenance collection point.
- Maintenance support teams with recovery, if not forward with batteries.

7-94. The combat trains are located close enough to be responsive to the forward batteries and platoons but, if possible, they should not be within range of enemy indirect fire. They generally occupy an area between the brigade support area or the field trains (if deployed separately) and about one to four kms behind the forward battery or platoon position areas**.** Combat trains may move often to stay in supporting distance of the firing units.

7-95. The combat trains command post is the focal point of battalion sustainment operations. The command post concentrates on ammunition and petroleum, oil, and lubricants resupply, priority equipment repair and salvage, and emergency medical care. The combat trains post must stay abreast of the tactical situation to include monitoring the battalion command network, identifying logistic support requirements, and receiving requests, reports, and requirements from subordinate elements.

7-96. The combat trains command post uses FBCB2 to maintain tactical situational awareness. The S-4 also operates the BCS3. This system provides the capability to monitor and track requests for and the status of repair parts and supplies for the FA battalion. This system provides the FA battalion the capability to develop sustainment estimates for future operations as well as to provide the commander with the status of sustainment operations supporting current operations.

7-97. Logistic personnel analyze, consolidate, and forward battalion requirements to the battalion sustainment center (field trains). The battalion sustainment center coordinates with and directs elements of the forward support company in the FA battalion support area to take actions to meet the requirements of the forward units.

MAINTENANCE COLLECTION POINT

7-98. The FA battalion often establishes a maintenance collection point to provide forward maintenance support to the battalion. The forward support company commander may designate either the maintenance platoon leader or platoon sergeant as the commander of the maintenance collection point. Under the echeloned trains concept, the maintenance collection point may locate in the combat trains, especially when increased security is required. However, the unit may also establish the maintenance collection point outside of, but near the combat trains to facilitate mission accomplishment, as required.

FIELD TRAINS

7-99. Field trains include those assets not located with the combat trains. The field trains can provide direct coordination between the battalion and the BSB. The field trains personnel assist the coordination and movement of support from the BSB to the battalion by ensuring that logistics packages are organized and configured per the unit's requests and that the logistics packages make it forward to the release points and back to the brigade support area.

7-100. The field trains may collocate with the brigade support area, operate independently between the brigade support area and combat trains, or collocate with trains of another FA or maneuver battalion. The threat and the distances between the forward elements of the battalion and the brigade support area affect the field trains' location.

7-101. If the battalion is operating within the support distance of the brigade support area, the battalion field trains may collocate with the BSB in the brigade support area. This facilitates support by the BSB,

eases communications requirements, simplifies security requirements, and reduces the need for additional coordination with the supported higher HQ for terrain. When collocating with the BSB, the field trains fall under the operational control of the BSB commander for movement, security, terrain management, and synchronization of sustainment activities. The positioning needs of the battalion must be coordinated with the BSB. If possible, the battalion field trains should be positioned near the exit points of the brigade support area in order to move forward to better support the battalion. If the battalion is operating at extended ranges from the brigade support area, the field trains may be positioned between the BSB and the battalion to better facilitate support.

7-102. The battalion field trains command post may act as the primary direct coordination element between the FA battalion and the brigade support area. When established, the field trains command post usually consists of the elements of the forward support company, FA battalion S-1 and S-4, and selected HQ and HQ battery personnel (for example, HQ and HQ battery commander or executive officer, first sergeant, chemical noncommissioned officer, and supply sergeant). The FA battalion commander may determine the officer or noncommissioned officer in charge of the field trains command post. Situations that may dictate the need for a field trains command post include periods of supply or resupply of major end items or periods when sustainment elements of the squadron are no longer 100% mobile. The field trains command post tracks the current battle; plans for sustainment of future operations; provides sustainment representation to the main command post for planning and integration; forecasts and coordinates future requirements; and coordinates the return to duty of Soldiers and repaired equipment.

7-103. The designated trains commander is responsible for trains security. In trains areas, a perimeter defense is planned. Elements in the trains are assigned a specific sector to defend. Mutually supporting positions that dominate likely avenues of approach are selected for vehicles armed with crew-served weapons. Reaction forces and observation posts are established in accordance with the tactical standard operating procedure. To enhance security, an alarm or warning system (such as rocket, artillery, missile warning) is arranged. Sector sketches, fire plans, and obstacle plans should be prepared. The designated trains commander directs rehearsals to ensure that personnel know the parts they play in the defensive scheme.

SECURITY OF SUPPORT AREAS

7-104. Sustainment elements must organize and prepare to defend themselves against ground or air attacks. The number of support areas established depends upon METT-TC. Obviously the more areas that are established, the more difficult they become to defend as personnel and defensive means are spread over multiple locations. The security of the trains at each echelon is the responsibility of the individual in charge of the trains. The best defense is to avoid detection. Determine considerations that enable trains security, which may include:

- Select trains sites that use available cover, concealment, and camouflage.
- Use movement and positioning discipline, as well as noise and light discipline to prevent detection.
- Establish a perimeter defense.
- Establish observation posts and patrols.
- Position weapons for self-defense.
- Plan mutually supporting positions.
- Prepare a fire plan and make sector sketches.
- Identify sectors of fires.
- Emplace or select target reference points to control fires, and for use of indirect fires.
- Integrate available combat vehicles within the trains (for example, vehicles awaiting maintenance or personnel) into the plan, and adjust the plan when vehicles depart.
- Conduct rehearsals.
- Establish rest plans.
- Identify an alarm or warning system that would enable rapid execution of the defense plan without further guidance; the alarm, warning system, and defense plan are usually included in the standard operating procedure.

- Designate a reaction force. Ensure the force is equipped to perform its mission. The ready reaction force must be well rehearsed or briefed on ROE.
- Unit assembly.
- Friendly and threat force recognition.
- Actions on contact.

SUPPLY ROUTES

7-105. The FA battalion S-4, in coordination with the forward support company commander and battalion S-3, select supply routes between support areas. Main supply routes are routes designated within the supported higher HQ area of operations upon which the bulk of sustainment traffic flows in support of operations. Select a main supply route based on the terrain, friendly disposition, enemy situation, and scheme of maneuver. Plan alternate supply routes in the event that a main supply route is interdicted by the enemy, or becomes too congested. In the event of contamination, either the primary or alternate main supply route may be designated as the "dirty main supply route" to handle contaminated traffic. Alternate supply routes should meet the same criteria as the main supply route. Military police and engineer units if available may assist with regulating traffic, and maintain routes. Security of supply routes may require the commander to commit non-sustainment resources.

7-106. Determining route considerations, include:

- Location and planned scheme of maneuver for subordinate units.
- Location and planned movements of other units moving through the battalion's area of operations.
- Route characteristics such as route classification, width, obstructions, steep slopes, sharp curves, and type roadway surface.
- Two-way, all-weather trafficability.
- Classification of bridges and culverts.
- Requirements for traffic control such as at choke points, congested areas, confusing intersections, or along built-up areas.
- Number and locations of crossover routes from the main supply route to alternate supply routes.
- Requirements for repair, upgrade, or maintenance of the route, fording sites, and bridges.
- Route vulnerabilities that must be protected. This may include bridges, fords, built-up areas, and choke points.
- Enemy threats such as air attack, conventional and unconventional tactics, mines, ambushes, and chemical strikes.
- Known or likely locations of enemy penetrations, attacks, chemical strikes, or obstacles.
- Known or potential civilian and dislocated civilian movements that must be controlled or monitored.

SECTION XIII – SUSTAINMENT SUPPORT PLANNING

7-107. Sustainment planning must focus on tasks and systems that provide support and services to the battalion's Soldiers and weapon systems. Sustainment planning must address sustainment support during phases of an operation. The battalion staff develops the sustainment support plan concurrently with the tactical plan. Supporting sustainment plans must be as detailed as the tactical plan and fully synchronized and integrated. Use of tactical standard operating procedure and contingency plans greatly help the support staff officers in the planning effort. The FA battalion operation order or the FA support plan addresses the key what, where, when, why, and how of logistic support issues as well as deviations from the tactical standard operating procedure.

7-108. To develop and execute sound plans, logistic support personnel must achieve and maintain a high degree of situational awareness and initiate actions well before the start of operations they are to support. Careful management of the information flow demands that information requirements be clearly identified early in the process, and shared with all involved.

7-109. FA logistics preparation is a conscious effort to identify and assess factors that facilitate, inhibit, or deny support to the FA battalion. Logistic preparation involves a review of known FS tasks involving sustainment support and the use of S-2 intelligence preparation of the battlefield products as an aid in analyzing the operating, arming, fueling, fixing, moving, and sustaining factors. The goal is to determine the FA battalion logistic support requirements that will allow the development of a sustainment estimate and a feasible concept of support.

7-110. The logistic preparation process requires that the FA battalion commander, executive officer, and S-3 understand data needed by sustainment support staff to plan and provide timely, effective support. It requires that the S-1, S-4, and the forward support company commander understand the mission, the scheme of maneuver, fires, and battlefield time and space implications for support. Logistics preparation is a coordinated effort, which may include:

- Determine data requirements to support required actions.
- Identify sources for pertinent data and collect raw or processed data.
- Analyze collected data and develop it into decision information by assessing the impact on the mission and competing courses of action.
- Integrate decision information into the MDMP by incorporating it into logistical estimates, fires plans, and actions.

7-111. Determine sources that provide relevant logistical data, which may include:

- Supported higher HQ briefings, plans, and orders.
- FA battalion commander's planning guidance and intent.
- Operations and intelligence briefings and overlays.
- Wargaming and rehearsals.
- Organizational equipment, subordinate unit status reports, and route reconnaissance overlays.
- Traffic circulation and highway regulation plans.

7-112. A sustainment running estimate, which includes logistics preparation, is a continuous analysis of sustainment factors affecting mission accomplishment. Emphasis is on how the status of logistic support will affect proposed courses of action. Sustainment planners use this estimate to recommend the best course of action that can be supported and to develop plans to support the operation.

7-113. The sustainment running estimate at the FA battalion level is usually informal. At a minimum it is formulated in a briefing format that should address facts, assumptions, and conclusions, to include as required:

- Human resources (for example, personnel strength data, gains and losses, status of key personnel, and casualty estimates).
- Ordnance (for example, Class V status; restrictions, distribution system, required supply rate, controlled supply rate, expeditionary support package, maintenance, Class IX status, repair times, and evacuation policy).
- Supply (for example, Class III [bulk] status, distribution system, and restrictions).
- Transportation (for example, status of transportation assets, critical lines of communication, and main supply route status).
- Sustainment of Soldiers and their systems (for example, Classes I, II, III, IV, VI, VII, IX, water, and field services status).
- Courses of action that can be supported.

7-114. Based on mission analysis, compare resources with requirements, evaluate shortfalls in close coordination with operations planners to determine their effect on selected courses of action.

7-115. The sustainment staff must provide the sustainment running estimate in time for commanders to confirm the feasibility of the plan, modify plans and priorities as necessary, and calculate risks. Timely completion also facilitates the generation and coordination of supply and support requests.

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Appendix A

Field Artillery Battalion Operation Order

This appendix discusses development, format, and content of a formal FA battalion operation order written in the five-paragraph field order format. Section I provides context for development of the FA battalion operation order including the operations order, concept of operations, FS plan, and attendant FA support. Section II is an annotated outline, which provides basic guidance on the content for various parts and paragraphs of the FA battalion operation order. Section III provides an example of the FA battalion operation plan and operation order and associated annexes.

SECTION I – THE OPERATION ORDER, CONCEPT OF OPERATIONS, FIRES ANNEX, FIELD ARTILLERY SUPPORT APPENDIX, AND FIELD ARTILLERY BATTALION OPERATION ORDER

A-1. There is necessary input required to develop a FA battalion operations order. Section I provides an overview of the operation order, concept of operations, fires annex, field artillery support appendix, in the development of the FA battalion operations order.

OPERATION ORDER

A-2. The brigade FSO and the fires cell planners participate in the supported higher HQ operation order process, which includes development and dissemination of the supported higher HQ FS plan. The brigade commander's selected course of action, his concept of the operation, his intent, and guidance given during the planning process form the basis for the development of the supported higher HQ operation order. The supported higher HQ operation order merges maneuver and fires. Paragraph three of the supported higher HQ operation order outlines how the brigade commander wants to use his FS and maneuver assets. The FS plan, prepared by the brigade FSO and fires cell planners provides the detailed FS information that supports the supported higher HQ operation plan or operation order. Those portions of the supported higher HQ FS plan that detail FA battalion involvement are prepared in conjunction with the FA battalion command post.

CONCEPT OF OPERATIONS

A-3. Concept of operations is a statement of the brigade commander's intent that expands why the supported higher HQ has been tasked to do the mission. It also states the results expected, how these results facilitate future operations, and how, in broad terms, the brigade commander visualizes achieving those results. The brigade commander states the concept in enough detail to ensure appropriate action by subordinates in the absence of additional communications or further instructions. The “who” (for example, subordinate units) that will accomplish the concept of operation is detailed in subparagraphs. If an operations overlay is used, it is referenced here; however, the concept statement must be present on the overlay.

FIRE SUPPORT PLAN

A-4. The brigade FSO and fires cell planners are responsible for preparation of the fires portion of the concept of operation. The brigade S-3, FSO, and fires cell planners must carefully weigh the need for a fires annex, and the level of detail required, based on the complexity of the operation, deviations from standard operating procedures, maneuver commander guidance, and time available to develop, publish, and disseminate the operation order. If the fires information in the basic fires subparagraph is enough to constitute an adequate FS plan for the operation, a fires annex is not published. If the fires subparagraph

needs more amplification, the brigade FSO and fires cell planners are responsible for preparation of a fires annex to the supported higher HQ operation order, which constitutes the supported higher HQ FS plan. The supported higher HQ FS plan includes a subparagraph for each FS agency (for example, close air support, FA support, and naval FS) involved in the operation. The appropriate FS representatives within the supported higher HQ fires cell prepare input for these subparagraphs. Those portions of the supported higher HQ FS plan that detail FA battalion involvement are prepared in conjunction with the FA battalion command post.

FIELD ARTILLERY SUPPORT

A-5. For very simple operations, the FA subparagraph of the fires subparagraph of the supported higher HQ operation order may be all that is needed to describe FA support for the impending operation. For more complex operations that require more detail, the needed information is contained in the FA subparagraph of the FS annex to the supported higher HQ operation order. The FA battalion operation order normally serves as the FA appendix, although a separate FA appendix may be prepared by the FA battalion if still more detail is needed.

SECTION II – FIELD ARTILLERY BATTALION OPERATION ORDER

A-6. The purpose of the written FA battalion operation plan (OPLAN) or operation order (OPORD) is to inform FA battalion subordinate and supporting units of tasks and requirements that are peculiar to a specific operation and to synchronize their involvement. The FA battalion operation plan or operation order is the FA battalion commander's tactical plan for employing the fires of FA assets under his span of responsibility. The FA battalion operation plan or operation order is an integral supporting document to the supported higher HQ operation plan or operation order, FS annex, and if present supporting FA appendix. FA battalions with a support relationship of reinforcing, general support-reinforcing and general support battalions usually prepare a stand-alone operation plan or order.

A-7. The FA battalion operation plan or operation order explains the FA battalion missions and tasks and provides the FA battalion commander's guidance, intent, and concept of operations. It assigns responsibilities to subordinate and supporting elements, focusing on FA battalion actions necessary to execute FA tasks. The FA battalion operation plan or operation order must address the FA battalion commander's guidance, changes to fire order standards involving how and when to attack targets, and assignment of unit responsibilities for specific high-payoff targets and other key targets or missions. The operation plan or operation order also addresses movement and positioning plans, mission command arrangements (for example, data links), target acquisition tasks, sustainment information, and protection measures.

A-8. The FA battalion's operation plan or operation order generally does not duplicate information from the supported higher HQ operation order, FS plan or from the battalion's tactical standard operating procedures. However, it may be necessary to repeat critical information in the battalion's operation plan or operation order if the higher-level FS plan, FA support plan, or the battalion's tactical standard operating procedures are not disseminated to all of the battalion's subordinate or supporting elements.

A-9. Appropriate annexes and appendices should be prepared for portions of the operation order that are better explained in a different format (for example, overlay or matrix), that are too extensive to be in the operation order, that are expected to change or lengthen, or that are submitted too late to be included in the operation order. Determine commonly included annexes and appendices, which may include:

- FS overlay.
- FS execution matrix.
- Targeting.
- Target lists.
- FA support.
- Air support.
- Naval FS.
- Cyber electromagnetic activities.

- Fire plan (schedules).
- Survey annex.
- Target acquisition annex.
- Digital annex AFATDS fire direction system links, and subscriber tables.
- FA positioning and movement overlay.

A-10. The FA execution matrix is a concise planning and execution tool that graphically depicts the FA battalion's FA tasks. It identifies key tasks for each element and ties accomplishment of those tasks to the requirements of Annex D (Fires) of the maneuver operation order. See figure A-1 page A-21 for an example of a FA execution matrix.

A-11. Another annex or appendix for consideration is risk management. Risk management provides a standard by which to define and communicate the potential impact of hazards (risks) in terms of potential loss compared to potential gain. The risk management process is aligned with each step of the MDMP.

A-12. For more information on risk management, see ATP 5-19.

FIELD ARTILLERY BATTALION OPERATION ORDER ANNOTATED FORMAT

A-13. The format for the FA battalion operation order is illustrated in the following annotated example. Explanations are given for the various paragraphs and subparagraphs in the relevant portions of the order.

Note. See FM 6-0 for a full operation order format. For purposes of brevity, only the portions applicable to FA are included.

[CLASSIFICATION]

Place the classification at the top and bottom of every page of the operation plan (OPLAN) or operation order (OPORD). Place the classification marking (TS), (S), (C), or (U) at the front of each paragraph and subparagraph in parentheses. Refer to AR 380-5 for classification and release marking instructions.

Copy___of___copies
Issuing headquarters
Place of issue
DTG of signature
Message reference number

The first line of the heading is the copy number assigned by the issuing headquarters. Maintain a log of specific copies issued to addressees. The second line is the official designation of the issuing headquarters (for example, 1st Infantry Division). The third line is the place of issue. It may be a code name, postal designation, or geographic location. The fourth line is the 24 September 2015 or 24 September 2015-time group that the plan or order was signed or issued and becomes effective unless specified otherwise in the coordinating instructions. The fifth line is a headquarters internal control number assigned to all plans and orders in accordance with unit standard operating procedures (SOPs).

OPERATION PLAN Or ORDER [number] [(code name)] [classification of title)]
Example: OPORD 5913 (Operation Bold Buzzard) (Unclassified)

Number plans and orders consecutively by calendar year. Include code name, if any.

(U) References: *List documents essential to understanding the OPLAN or OPORD. List references concerning a specific function in the appropriate attachments.*

[page number]
[CLASSIFICATION]

[CLASSIFICATION]

(a) *List maps and charts first. Map entries include series number, country, sheet names, or numbers, edition, and scale.*

(b) *List other references in subparagraphs.*

(U) Time Zone Used throughout the OPLAN or OPORD: *State the time zone used in the area of operations during execution. When the OPLAN or OPORD applies to units in different time zones, use Greenwich Mean (ZULU) Time.*

(U) Task Organization: *Describe the organization of forces available to the issuing headquarters and their command and support relationships. Refer to Annex A (Task Organization) if long or complicated. This subparagraph gives a clear statement of the organization including command or support relationship. For United States Marine Corps or NATO unit if assigned, FA tactical missions of the subordinate units in the FA battalion (see FM 3-09). Task organization will normally be done by various phases corresponding to the operation. Anticipated on-order changes to organization or tactical missions are included in this subparagraph. List those FA battalion subordinate units that will provide support to BCT battalions or squadrons (for example, dedicated elements) and supporting FAB, DIVARTY or other FA units with a command or support relationship.*

1. (U) Situation. *The situation paragraph describes the conditions of the operational environment that impact operations in the following subparagraphs:*

a. (U) Area of Interest. *Describe the area of interest. Refer to Annex B (Intelligence) as required.*

b. (U) Area of Operations. *Describe the area of operations. Refer to the appropriate map by its subaparagraph under references, for example, "Map, reference (b)." See Appendix 2 (Operation Overlay) to Annex C (Operations) as required.*

(1) (U) Terrain. *Describe the aspects of terrain that impact operations. Refer to Annex B (Intelligence) as required.*

(2) (U) Weather. *Describe the aspects of weather that impact operations. Refer to Annex B (Intelligence) as required.*

c. (U) Enemy Forces. *Identify enemy forces and appraise their general capabilities. Describe the enemy's disposition, location, strength, and probable courses of action. Identify adversaries and known or potential terrorist threats within the area of operations. Refer to Annex B (Intelligence) as required. Specific information on the threat to the FA battalion should include:*

- *Indirect fire threat.*
- *Ground threat.*
- *Air threat.*

d. (U) Friendly Forces. *Briefly identify the missions of friendly forces and the objectives, goals, and missions of civilian organizations that impact the issuing headquarters in following subparagraphs:*

(1) (U) Higher Headquarters Mission and Intent. *Identify and state the mission and commander's intent for headquarters two levels up and one level up from the issuing headquarters.*

(a) (U) Higher Headquarters Two Levels Up. *Identify the higher headquarters two echelons above (for example, Joint Task Force-18).*

1. (U) Mission.

2. (U) Commander's Intent.

(b) (U) Higher Headquarters. *Identify the higher headquarters one echelon above (for example, 1st [U.S.] Armored Division).*

1. (U) Mission.

2. (U) Commander's Intent.

(2) (U) Missions of Adjacent Units. *Identify and state the missions of adjacent units and other units whose actions have a significant impact on the issuing headquarters.*

e. (U) Interagency, Intergovernmental, and Nongovernmental Organizations. *Identify and state the objective or goals and primary tasks of those non-Department of Defense organizations that have a significant role within the area of operations. Refer to Annex V (Interagency Coordination) as required.*

f. (U) Civil Considerations. *Describe the critical aspects of the civil situation that impact operations. Refer to appendix 1 (Intelligence Estimate) to Annex B (Intelligence) as requried.*

g. (U) Attachments and Detachments. *List units attached to or detached from the issuing headquarters. State when each attachment or detachment is effective (for example, on order, on commitment of the reserve) if different from the effective time of the OPLAN or OPORD. Do not repeat information already already listed in Annex A (Task Organization). This includes attached target acquisition assets and sensor system downlinks, as well as detached batteries and platoons.*

h. (U)Assumptions. *List assumptions used in the development of the OPLAN or OPORD. If the FA battalion operation plan supports another operation plan, assumptions may be required. If the FA battalion operation order is part of an operation order, assumptions are not included.*

2. (U) MISSION. *State the unit's mission—a short description of the who, what (task), when, where, and why (purpose) that clearly indicates the action to be taken and the reason for doing so.*

3. (U) EXECUTION. *Describe how the commander intends to accomplish the mission in terms of the commander's intent, an overarching concept of operations, schemes of employment for each warfighting function, assessment, specified tasks to subordinate units, and key coordinating instructions in the subparagraphs below.*

a. (U) Commander's Intent. *Commanders develop their intent statement personally. The commander's intent is a clear, concise statement of what the force must do and conditions the force must establish with respect to the enemy, terrain, and civil considerations that represent the desired end state. It succinctly describes what constitutes the success of an operation and provides the purpose and conditions that define that desired end state. The commander's intent must be easy to remember and clearly understood two echelons down. The commander's intent includes:*

- ***Purpose—****an expanded description of the operation's purpose beyond the "why" of the mission statement.*
- ***Key tasks—****those significant activities the force as a whole must perform to achieve the desired end state.*
- ***End state****—a description of the desired future conditions that represent success.*

b. (U) Concept of Operations. *The concept of operations is a statement that directs the manner in which subordinate units cooperate to accomplish the mission and establishes the sequence of actions the force will use to achieve the end state. It is normally expressed in terms of the commander's desired operational framework as discussed in ADRP 3-0. It states the principal tasks required, the responsible subordinate units, and how the principal tasks complement one another. Normally, the concept of operations projects the status of the force at the end of the operation. If the mission dictates a significant change in tasks during the operation, the commander may phase the operation. The concept of operations may be a single paragraph, divided into two or more subparagraphs, or if unusually lengthy, summarize here with details located in Annex C (Operations). If the concept of operations is phased, describe each phase in a subparagraph. Label these subparagraphs as "Phase" followed by the appropriate Roman numeral, for example, "Phase I." If the operation is phased, all paragraphs and subparagraphs of the base order and all annexes must mirror the phasing established in the concept of operations. The operation overlay and graphic depictions of lines of effort help portray the concept of operations and are located in Annex C (Operations). The concept of operations is a detailed statement of the FA battalion commander's visualization of the conduct of FA battalion support for the BCT operation by phase to the desired end state. The concept clarifies the purpose of the BCT operation (by phase), then how the FA battalion will support it. It is a detailed explanation of the commander's intent. It is stated in enough detail to ensure appropriate action by subordinate units in the absence of more specific instructions. This paragraph may include a summary of the BCT operation plan or operation order concept of operations by phase for units that do not receive the BCT operation order.*

c. (U) Scheme of Movement and Maneuver. *Describe the employment, of maneuver units in accordance with the concept of operations. Provide the primary tasks of maneuver units conducting the decisive operation and the purpose of each. Next, state the primary tasks of maneuver units conducting shaping operations, including security operations, and the purpose of each. For offensive tasks, identify the form of maneuver. For defensive tasks, identify the type of defense. For stability tasks, describe the role of maneuver units by primary stability tasks. If the operation is phased, identify the main effort by phase. Identify and include priorities for the reserve. Refer to Annex C (Operations) as required.*

(1) (U) Scheme of Mobility and Countermobility. *State the scheme of mobility and countermobility including priorities by unit or area. Refer to Annex G (Engineer) as required.*

(2) (U) Scheme of Battlefield Obscuration. *State the scheme of battlefield obscuration, including priorities by unit or area. Refer to Appenix 9 (Battlefield Obscuration) to Annex C (Operations) asrequired.*

(3) (U) Scheme of Information Collection. *Describe how the commander intends to use reconnaissance missions and surveillance tasks to support the concept of operations. Include the primary reconnaissance objectives. Refer to Annex L (Information Collection) as required.*

*(**Note:** Army forces do not conduct reconnaissance missions and surveillance within the United States and its territories. For domestic operations, this paragraph is titled "Information Awareness and Assessment" and the contents of this paragraph comply with Executive Order 12333.)*

d. (U) Scheme of Intelligence. *Describe how the commander envisions intelligence supporting the concept of operations. Include the priority of effort to situation development, targeting, and assessment. State the priority of intelligence support to units and areas. Refer to Annex B (Intelligence) as required.*

e. (U) Scheme of Fires. *Describe how the commander intends to use fires to support the concept of operations with emphasis on the scheme of maneuver. State the FS tasks and the purpose of each task. State the priorities for, allocation of, and restrictions on fires, as it applies to the BCT operation. Refer to Annex D (Fires) as required.*

f. (U) Scheme of Protection. *Describe how the commander envisions protection supporting the concept of operations. Include the priorities of protection by unit and area. Include survivability. Address the scheme of operational area security, including security for routes, bases, and critical infrastructure. Identify tactical operating forces and other reaction forces. Use subparagraphs for protection categories (for example, air and missile defense and explosive ordnance disposal) based on the situation. Refer to Annex E (Protection) as required.*

g. (U) Cyber Electromagnetic Activities. *Describe how cyber electromagnetic activities (including cyberspace operations, electronic warfare and spectrum management operations), supports the concept of opeations. Refer to Appendix 12 (Cyber Electromagnetic Activities) to Annex C (Operations) as required. Refer to Annex H (Signal) for defensive cyberspace operations, network operations and spectrum management operations as required.*

h. (U) Stability Tasks. *Describe how stability tasks support the concept of operations. Describe how the commander envisions the conduct of stability operations in coordination with other organizations. (See FM 3-07.) If other organizations or the host nation are unable to provide for civil security, restoration of essential services, and civil control, then commanders with an assigned area of operations must do so with available resources, request additional resources, or request relief for these requirements from higher headquarters.Commanders assign specific responsibilities for stability tasks to subordinate units in paragraph 3j (Tasks to Subordinate Units) and paragraph 3k (Coordinataing Instructions). Refer to Annex C (Operations) and Annex K (Civil Affairs Operations) as required.*

i. (U) Assessment. *Describe the priorities for assessment and identify the measures of effectiveness used to assess end state conditions and objectives. Refer to Annex M (Assessment) as required.*

j. (U) Tasks to Subordinate Units. *State the task assigned to each unit that reports directly to the headquarters issuing the order. Each task must include who (the subordinate unit assigned the task), what (the task itself), when, where, and why (purpose). Use a separate subparagraph for each unit. List units in task organization sequence. Place tasks that affect two or more units in paragraph 3k. (Coordinating Instructions).This portion is used to issue instructions unique to subordinate units and to amplify instructions found in the matrices. For example, "See FA battalion support matrix and overlay for movement, position areas, azimuths of fire, and location of sustainment units and functions."*

k. (U) Coordinating Instructions. *List only instructions and tasks applicable to two or more units not covered in unit SOPs. Include instructions and details of coordination applicable to two or more sub elements of the FA battalion. Instructions included in this subparagraph may also be addressed in annexes to the FA battalion operation plan or operation order. If a separate annex is developed, include in the coordinating instructions subparagraph only items of general interest. Place details of interest only to a particular element in the annex. If an annex is prepared, reference it (for example, "see Annex___") in the body of the FA battalion operation plan or operation order. This paragraph should detail instructions, which may include:*

- *Time or condition when the OPORD becomes effective.*
- *Target acquisition including a counterfire reference grid and instructions to or about specific target acquisition sources.*
- *Survey including priorities for survey, accuracy required, sources authorized, timing, position requirements, and future plans spheroid, datum, ellipsoid, codes for survey and computations.*
- *Automated and manual fire control and fire direction instructions, especially coordination requirements with units of similar, but not identical, automated systems. Mutual support unit taskings and changes from continuity of operations standard operating procedures are identified here.*
- *High-payoff target list taken directly from BCT operation order or operation plan.*
- *Attack guidance matrix, that may appear as a matrix in the annex, or taken directly from the BCT operation order or operation plan.*
- *Targeting synchronization matrix from brigade combat team operation order or operation plan and fires cell.*
- *Chemical, biological, radiological, and nuclear defense.*
- *Meteorology including source, type, and times of meteorological data messages.*
- *Liaison requirements.*
- *Fire plan(s) including target list, schedules of fires, schedules of targets, and FSCMs.*
- *Commander's critical information requirements, priority intelligence requirements, essential elements of friendly information, friendly forces information requirements, and other intelligence datum and information, as required.*

- *Intelligence acquisition tasks, as required.*
- *Ammunition restrictions (for example, expenditure restrictions, approval requirements, and risk limitations for dual-purpose improved conventional munitions based on expected dud rates).*
- *Fratricide prevention measures (for example, special vehicle markings) that are not found in the tactical standard operating procedure.*
- *Rehearsals.*
- *Time or condition when the OPORD becomes effective.*
- *Commander's Critical Information Requirements. List commander's critical Information requirements (CCIRs).*
- *Essential Elements of Friendly Information. List essential elements of friendly Information (EEFIs).*
- *FSCMs. List critical FS coordination or control measures.*
- *Airspace Coordinating Measures. List critical airspace coordinating or control measures.*
- *Rules of Engagement. List rules of engagement. Refer to Appendix 11 (Rules of Engagement) to Annex C (Operations) as required.*
- *Risk Reduction Control Measures. State measures specific to this operation not included in unit SOPs. They may include mission-oriented protective posture, operational exposure guidance, troop-safety criteria, and fratricide avoidance measures. Refer to Annex E (Protection) as required.*
- *Personnel Recovery Coordination Measures. Refer to Appendix 2 (Personnel Recovery) to Annex E (Protection) as required.*
- *Environmental Considerations. Refer to Appendix 5 (Environmental Considerations) to Annex G (Engineer) as required.*
- *Themes and Messages. List information themes and messages.*
- *Other Coordinating Instructions. List in subparagraphs any additional coordinating instructions and tasks that apply to two or more units, such as the operational timeline and any other critical timing or events.*

4. (U) SUSTAINMENT. *Describe the concept of sustainment, including priorities of sustainment by unit or area. Include instructions for administrative movements, deployments, and transportation—or references to applicable appendixes—if appropriate. As a minimum, the controlled supply rate and the sustainment locations (for example, combat trains, field trains, and casualty collection points) should be given. Address only those sustainment aspects that apply to the operation. Address the pertinent aspects of the sustainment functions of manning, operating, arming, fueling, fixing, moving, and sustaining Soldiers and their systems. Use the following subparagraphs to provide the broad concept of support for logistics, personnel, and health system support. Provide detailed instructions for each sustainment subfunction in the appendixes to Annex F (Sustainment).*

a. (U) Logistics. *Refer to Annex F (Sustainment) as required.*

b. (U) Presonnel. *Refer to Annex F (Sustainment) as required.*

c. (U) Health Service Support. *Refer to Annex F (Sustainment) as required.*

5. COMMAND AND SIGNAL. *The command and signal paragraph should list the locations of the FA battalion command post and the locations of higher, supporting, and supported unit command posts. The FA battalion commander's planned location during the operation, and alternate command post can be in this paragraph. Plans should also address any alternate battalion fire direction center arrangements not covered in, or that are changed from, unit standingstandard operating procedure. Other automated mission command systems used or interface requirements, and any particular aspects for their use also are included here. Address succession of command if other than tactical standingstandard operating procedure. This information should be entered into the following paragraphs:*

a. (U) Command.

(1) (U) Location of Commander Key Leaders. *State where the commander and key leaders intend to be during the operaion, by phase if the operation is phased.*

(2) (U) Succession of Command. *State the succession of command if not covered in the unit's SOPs.*

(3) (U) Liaison Requirements. *State liaison requirements not covered in the unit's SOPs.*

b. (U) Control. *The second subparagraph contains the index of the effective signal operating instructions to include edition in effect and courier schedule. Special instructions on the use of radios, wire, multiple subscriber equipment, retransmission elements, and signals not covered in tactical standard operating procedures are included here. Additionally, include radio frequency hop instructions, specific data communications requirements, and multiple subscriber instructions peculiar to the operation. Also, list any special signals not covered by standard operating procedure here (for example, vehicle recognition markings).*

(1) (U) Command Posts. *Describe the employment of command posts, including the location of each command post and its time of opening and closing, as appropriate. State the primary controlling command post for specific tasks or phases of the operation (for example, "The division tactical command post will control the air assault").*

(2) (U) Reports. *List reports not covered in SOPs. Refer to Annex R (Reports) as required.*

c. (U) Signal. *Describe the concept of signal support, including location and movement of key signal nodes and critical electromagnetic spectrum considerations throughout the operation. Refer to Annex H (Signal) as required.*

ACKNOWLEDGE: *Provide instructions for how the addressees acknowledge receipt of the OPLAN or OPORD. The word "acknowledge" may suffice. Refer to the message reference number if necessary. Acknowledgement of an OPLAN or OPORD means that it has been received and understood.*

[Commander's last name]
[Commander's rank]

The commander or authorized representative signs the original copy. If the representative signs the original, add the phrase "For the Commander." The signed copy is the historical copy and remains in the headquarters' files.

OFFICIAL:

[Authenticator's Name]
[Authenticator's Position]

Use only if the commander does not sign the original order. If the commander signs the original, no further authentication is required. If the commander does not sign, the signature of the preparing staff officer requires authentication and only the last name and rank of the commander appear in the signature block.

ANNEXES:

Note. Annexes should be prepared for portions of the FA battalion operation order that are explained better in a different format (for example, overlay or matrix), that are too extensive for the BCT operation plan or operation order, that are expected to change or lengthen, or that are submitted too late to be included. Often subordinate units will not receive the basic BCT operation order or operation plan or FS annex. Therefore, reprints of portions of these documents may be required and included as annexes.

Order Annexes as they are referenced in the basic FA battalion operation plan or operation order. The tactical standard operating procedure may specify that some annexes will always be produced. Determine the need for common annexes used at FA battalion level, which may include:

- *FA execution matrix - FA battalion command post.*
- *FA battalion positioning and movement overlay - FA battalion command post.*
- *Fire plan (note: S-3 may refer to plan names and subordinate elements, can print out target list, schedules of fires and schedules of targets and FSCMs instead of developing a separate annex) - BCT fires cell.*
- *Survey - FA battalion.*
- *Target acquisition - FA battalion command post.*
- *AFATDS and other fire direction systems - FA battalion command post.*

Other annexes used if time permits–

- *Intelligence (for example, overlay, annex, priority intelligence requirements, and information requirements lists) - BCT or FA brigade command post.*
- *Sustainment overlay - FA battalion combat trains command post.*
- *BCT overlays – BCT, FAB, and DIVARTY command post.*
- *Meteorological data- FA battalion, FAB, and DIVARTY command post.*
- *Task organization (may be attached from operation order).*
- *Obstacle overlay - BCT or FAB command post.*
- *Rules of engagement- BCT, FAB, or DIVARTY command post.*
- *Air defense artillery, engineer, and other supporting element plans, as required.*
- *Special distribution items (for example, fratricide prevention information).*
- *Composite risk management (for example, potential impact of hazards (risks) in terms of potential loss compared to potential gain).*

SECTION III – EXAMPLE FIELD ARTILLERY BATTALION OPERATION ORDER AND ANNEXES

A-14. An example of a FA battalion operation order is shown below. At the top and bottom of each page insert the classification of the operation order, and at the bottom of each page of the operation order put a page number.

FIELD ARTILLERY BATTALION OPERATION ORDER (OPORD) BODY (EXAMPLE)

(Classification)

Copy___of___copies
HQs, 1-37 FA, 3-3 ABCT (+) 52 ID
Barstow, CA
271800APR15
MJ9861

OPORD 5913 (Operation Bold Buzzard) (Unclassified)

(U) References:

- Maps: Series V795, California; Sheets; 2453 I, 2454 I, 2454 II, 2553 I, 2553 IV, 2554 I, 2554 II, 2554 III, 2554 IV, 2653 IV, 2654 III, 2654 IV, scale 1:50,000.
- OPORD 0702-04, 3-3 ABCT (+), 52 ID.

(U) Time Zone Used throughout the OPLAN or OPORD:

Time Zone Used Throughout Order: LOCAL

(U) Task Organization:

- 1-37 FA, 3-3 ABCT (+) (155, self-propelled) (M109A6).
- 3-163 FA, 52d FAB (155, self-propelled) (M109A6) (R).
- See Annex A (Task Organization) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

1. (U) SITUATION.

Following a breakdown in negotiations over a disputed border province, Eastland walked out of peace talks with Westland and initiated international propaganda claiming historical rights to several religious sites in Westland. Although the disputed border province is ethnically mixed, the majority of its population supports the Westland government. There are, however, Eastland sympathizers in the border region, especially among its nomadic population. In response to several Eastland-sponsored terrorist attacks against Westland civilians in Irwin City and an announcement by Eastland that they would conduct military exercises along the international border, X (United States) Corps was ordered to conduct a joint exercise with the Westland Home Guard (WHG). During the early evening hours of 20APR15, elements of the Eastland Operational Strategic Command West (OSC-W) conducted a cross-border attack to seize key terrain prior to the mobilization of WHG forces and the closure of X United States Corps. WHG border forces engaged these units and forced the attack to stall generally along phase line (PL) PRUNE. elements of OSC-W are currently holding key terrain vicinity PL RAISIN at approximately 75% combat power, while the remainder of OSC-W completes preparations to resume offensive operations on or about 01MAY15. The goals of expected future Eastland attacks are destruction of United States forces to cause their withdrawal, pre-emption of a counterattack to restore the international border, and defeat of Westland forces.

a. (U) Area of Interest.

See Annex B (Intelligence) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

b. (U) Area of Operations.

See map, reference (1) Appendix 2 (Operation Overlay) to Annex C (Operations) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

(1) (U) Terrain.

See Appendix 3 (Terrain) to Annex F (Engineer) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

(2) (U) Weather.

See Appendix 4 (Weather) to Annex B (Intelligence) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

c. (U) Enemy Forces.

23DTG conducts a decentralized area defense to retain control of the key terrain captured during the previous offensive action in order to facilitate future OSC-W offensive operations in 72-96 hours. The 23DTG disruption zone extends to PL PINE and the 231BTG disruption zone extends from PL PRUNE to PL RAISIN. 23DTG reconnaissance forces occupy observation posts between PL PINE and PL PRUNE, while 231BTG and battalion reconnaissance forces occupy observation posts between PL PRUNE and PL RAISIN. Their task is to observe likely BLUFOR decision points and predicted enemy locations to identify high-value targets for indirect fire attack and to identify the BLUFOR main effort. The 231BTG disruption force consists of a BMP company (+) from the 231BTG reserve reinforced with one tank platoon (T72), one antitank platoon (9P148), two air defense platoons (ZSU-23-4, SA18), and a roving battery of 2S1s. Its task is to conduct a maneuver defense to attrite the lead BLUEFOR combined arms battalion to allow the battle zone forces to defeat the BCT forward of PL RAISIN. The battle zone consists of a BMP BN (+) comprised of three BMP-2 companies, each with a tank platoon, deployed in company complex battle positions vicinity Hill 876, Hill 781 and Hill 985, and an economy of force complex battle position consisting of a truck mobile infantry company and a BMP-2 platoon in Granite Pass to control the north-south lines of communication into Irwin City. The battalion will defend from these positions to inflict maximum casualties on friendly forces and force our attack to culminate prior to securing the key terrain. Unoccupied defensive positions have been detected west of Medina Ma'akl (NV 4714) which could potentially be occupied either by the BMP company currently located vic Hill 985 or the 231BTG reserve. The enemy may use forces in the disruption zone to create windows of opportunity for possible spoiling attacks by the 231BTG reserve. The 231BTG indirect fire assets, consisting of two 2S1 batteries and a battery of BM-21s, will initially focus on supporting the disruption zone to destroy friendly reconnaissance forces and attrite the lead task force. Once friendly forces reach PL RAISIN, enemy priority of fires will shift to massing fire in planned kill zones within the 231BTG battle zone. Special purpose forces teams and direct action cell terrorists west of PL PRUNE will conduct reconnaissance operations, ambushes, and attack high payoff targets to disrupt the 52 ID attack.

The 231BTG indirect fire assets that are expected to support forces opposing 3-3 ABCT (+) - two 2S3 batteries (152-mm self-propelled) and a battery of BM-21s (122-mm) in the support zone and a roving battery of 2S3s (152-mmself-propelled) in the disruption zone—will initially focus on supporting the disruption zone to destroy friendly reconnaissance forces and attack the lead BLUEFOR combined arms battalion. Once 3-3 ABCT (+) reaches PL RAISIN, priority of fires will shift to massing fire in planned kill zones within the 231BTG battle zone. Special purpose forces teams and Direct Action cells west of PL PINE will conduct reconnaissance operations, ambushes, and attack high payoff targets to disrupt 3-3 ABCT (+) attack. special purpose forces teams and Direct Action cells pose a threat to weapons locating radar sections and FA batteries and as well as advance parties and survey.

For additional information see Annex B (Intelligence) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

d. (U) Friendly Forces.

At 301830APR15 52 ID conducts a coordinated frontal attack with 85 SBCT (+) and 3-3 ABCT (+) abreast, the main effort in the south. The decisive operation is the defeat of the OSC-W forces vicinity Objective HOOK while minimizing collateral damage in Irwin City. 85 SBCT (+), the division main effort, attacks to defeat enemy forces vicinity Objective HOOK. On order attacks to the limit of advance and secures key mountain passes vicinity Objective PUNCH. 3-3 ABCT (+) in the north conducts a shaping operation to protect the flank of the main effort. 2-52 ABCT (+) attacks to defeat OSC-W forces vicinity Objective ROUNDHOUSE. On order screens the division's northern flank from PL PINE to PL SPRUCE. 3BCT, division reserve, occupies assembly area HOUSTON in the southwest with a planning priority to assume the main effort. 3BCT reconnaissance squadron (2-20 CAV) initially screens the division front between PL PINE and PL OAK. On order moves to assembly area HOUSTON to link-up with parent unit and prepare for future operations. The purpose of fires during the attack is to destroy (reduce by 30%) the artillery supporting the 231BTG. 52 FAB SEAD supports multinational air force attacks on the enemy

Integrated Fires Command in the northeast and combat aviation brigade attacks on the elements in the southeast.

A division preparation triggered by the 85 SBCT (+) will disrupt (reduce by 10%) maneuver forces in defensive positions vicinity Objectives HOOK and JAB. During the attack, priority of effort is SEAD for cross-forward line of own troops operations, then counterfire, then support of the close battle. Priority of electronic attack is against indirect fire systems, mission command nodes, and air defense. 52 FAB is the counterfire headquarters and will provide target acquisition and counterfire. Division counterfire priorities are rocket and missile launchers, cannon systems, and then artillery command and control systems. Close air support weight of effort (two missions) is to the division main effort.

(1) (U) 52 ID.

(a). (U) Mission. At 301830APR15, 52 ID attacks to the limit of advance, PL SPRUCE, to defeat OSC-W forces and secure key terrain vicinity Objective KAYAK in order to protect the north flank of the corps main effort and restore the territorial integrity of Westland.

(b). (U) Commander's Intent.

Purpose is to restore the territorial integrity of Westland. We will do this by decisively defeating OSC-W forces in our area of operations and defeat any subsequent cross-border attacks while protecting the flank of the corps main effort.

Key tasks:

- The rapid defeat of enemy forces in the disruption zone forces.
- A coordinated attack by the lead BCTs to defeat enemy forces vicinity Objectives HOOK and JAB.
- A rapid build-up of combat power along the international border (vicinity Objectives UPPERCUT and PUNCH) in order to control key passes into Westland.

End state. OSC-W forces in the area of operations are defeated and unable to influence the 23 AD, the division in control of key terrain along the international border, and our forces in a hasty defense prepared for future operations.

(2) (U) 3-3 ABCT (+).

This operation begins with shaping operation #1, the reconnaissance of Objectives KINGS, BLAZERS, SONICS, and JAZZ. Team reconnaissance (dismounted reconnaissance elements from each of the BCT's combined arms battalions) is inserted via air on or about line of departure-24 hours to confirm or deny enemy dispositions and observe enemy attempts to reposition against 85 SBCT (+). Team reconnaissance operates under BCT control, and executes BCT reconnaissance objectives. Shaping operation #2 also begins on a line of departure -24 hours as 3-1 CAV begins its zone reconnaissance of the disruption zone. Shaping operation #2 continues when 3-1 CAV conducts a forward passage of lines with reconnaissance squadron of 3BCT and attacks to PL PORTLAND to defeat the enemy and its disruption zone forces to ensure freedom of maneuver for follow-on friendly forces. As 3-1 CAV crosses PL PRUNE, 1-15 IN attacks along AXIS DUKE, through attack position LION, and prepares to accept battle handover at PL PORTLAND. At the same time, 2-69 AR attacks along AXIS Count. On order, the BCT begins its decisive operation (the destruction of enemy forces vicinity Objective KINGS) and defeat of enemy forces vicinity Objective SONICS). 1-15 IN conducts shaping operation #3 by attacking to defeat the enemy forces vicinity Objective BLAZERS to protect the flank of the BCT main effort. Once this shaping operation has started 2-69 AR attacks to destroy the enemy vicinity Objective KINGS and defeat of enemy forces vicinity Objective SONICS to protect the flank of the 52 ID main effort. As 2-69 AR begins its attack, 1-15 IN crosses PL PORTLAND and initiates shaping operation #4 to fix enemy elements on Objective JAZZ in order to protect the flank of 2-69 AR. On order 3-1 CAV attacks to defeat the enemy vicinity Objective JAZZ as 1-15 IN and 2-69 AR attack to the limit of advance to defeat any remaining Westland forces in sector and secure key terrain vicinity Objective SPURS and Objective SIXERS (52 ID Objective UPPERCUT) in order to set the conditions for the defense. The brigade accepts risk by having no tactical combat force.

(a). (U) Mission: At 301830APR15, 3-3 ABCT (+) attacks to the limit of advance to defeat OSC-W forces vicinity Objective JAB in order to protect the northern flank of 85 SBCT (+), the division main effort. On order secures key terrain vicinity Objective UPPERCUT, transitions to a hasty defense, and prepares for future operations.

(b). (U) Commander's Intent.

Purpose: Defeat enemy forces in area of operations so they cannot reposition against the 85 SBCT (+).

Key Tasks:

- Emplace reconnaissance elements early so we are aware of, and have the flexibility to respond to any enemy attempts to reposition forces.
- Defeat the disruption zone combat platoons and air defense artillery ambush elements to allow for the unimpeded movement of the brigade main body.
- Isolate and decisively defeat the enemy forces in each company complex battle position.
- Quickly build-up combat power and control key terrain along the international border.

End State: OSC-W forces in the 3-3 ABCT (+) area of operations are defeated. The BCT is at no less than 75% combat power. 1-15 IN and 2-69 AR are in hasty defenses controlling key terrain along PL SPRUCE. 3-1 CAV has established a hasty defense in depth.

(2) (U) Missions of Adjacent Units. Not Applicable

e. (U) Interagency, Intergovernmental, and Nongovernmental Organizations. See Annex V (Interagency Coordination) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

f. (U) Civil Considerations. See Appendix 1 (Intelligence Estimate) to Annex B (Intelligence) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

g. (U) Attachments and Detachments. See Annex A (Task Organization) OPORD 0702-04, 3-3 ABCT (+), 52 ID**.**

h. (U) Assumptions.

- We will retain control of the key terrain.
- We will have air superiority.
- The threat will conduct an area defense.

2. (U) MISSION.

Not later than (NLT) 301830APR15 1-37 FA and 3-163 FA, 52 FAB (R) supports 3-3 ABCT (+) attack to the limit of advance (PL SPRUCE) to defeat enemy forces vicinity Objective KINGS and Objective BLAZERS and secure key terrain vicinity Objective SPURS and Objective SIXERS in order to protect the northern flank of the 52 ID main effort.

3. (U) EXECUTION.

a. (U) Commander's Intent.

NLT 301830APR07 1-37 FA will support with fires the 3-3 ABCT (+) attack to defeat the threat forces vicinity Objective KINGS and Objective BLAZERS.

Purpose: See concept of operations below.

Key tasks: See the six FS tasks below.

End state: See assessment and effect for each FS task below.

b. Concept of Operations.

(1) Fire Support Task #1
Who: 3-163 FA (R).
When: See trigger**.**
Where: See key BCT targets below.
What (Task): Destroy (reduce by 30%) enemy Disruption Zone forces in area of operations.
Why (Purpose): To allow 3-1 CAV to defeat the disruption zone force.
How:
Priority: FA priority of fires: 3-1 CAV.
Allocation: 1-15 IN, one active critical friendly zone (CFZ); 2-69 AR, one active CFZ.
Key BCT Targets: 3-1 CAV AB0001 (named area of interest B14), AB0005, AB0010 (3 X BN3).
Target Allocations: 3-1 CAV can plan two additional targets.
Trigger: 3-1 CAV, as acquired with eyes on NET 3-1 CAV line of departure.
Restrictions: Division coordinated fire line: PL RAISIN; 3-3 ABCT (+) coordinated fire line PL PORTLAND. No destructive fires prior to 301830APR06. Suppressive fires for disengagement of 3-1 CAV early reconnaissance are acceptable.
Assessment (Effect): End state—Three BMPs (Enemy Armored Personnel Carrier), one T72, and two 9P148s (AT-5) destroyed.

(2) Fire Support Task #2
Who: 3-163 FA (R).
When: See triggers for each key target below.
Where: See key targets below**.**
What (Task): Destroy (reduce by 60%) one platoon at the point of penetration vicinity Objectives KINGS, BLAZERS, and SONICS in the battle zone.
Why (Purpose): Provide favorable force ratios at the point of penetration of each company battle position.
How:
Priority: FA priority of fires: 2-69 AR.
Allocation: 2-69 AR one active CFZ; 1-15 IN, one active CFZ.
Key BCT Targets-

- AB0015 (NV374083)-BMP platoon, Fired as Series HARRY (3 X BN 6); Observer: 2-69 AR 4; Trigger: 2-69 AR support force ready to occupy support by fire position.
- AB0020 (NV378088)-BMP platoon, Fired as Series HARRY (3 X BN 6); Observer: 2-69 AR 4; Trigger: 2-69 AR, support force ready to occupy support by fire position.
- AB0025 (NV395129)-BMP platoon, Fired as Series DICK (3 X BN 6); Observer: 1-15 IN 5; Trigger: 1-15 IN, support force ready to occupy support by fire position.
- AB0030 (NV395124)-BMP platoon, Fired as Series DICK (3 X BN 6); Observer: 1-15 IN 5; Trigger: 1-15 IN support force ready to occupy support by fire position.

Target Allocations: 1-15 IN may plan four (4) additional targets in support of attack vicinity Objective KINGS and SONICS, 2-69 AR may plan two (2) additional targets in support of attack vicinity Objective BLAZERS.
Restrictions: Division coordinated fire line: PL ELM; Brigade coordinated fire line PL EUGENE; 2-69 AR, one active CFZ; 1-15 IN; one active CFZ; 3-1 CAV, 1-15 IN and 2-69 AR will plan no-fire area (NFA) around scout and FIST locations forward of their respective forward line of own troops.
Assessment (Effect): End state—Two BMPs and one T72 vicinity Objective KINGS and SONICS destroyed; two BMPs and one T72 vicinity Objective BLAZERS destroyed.

(3) Fire Support Task #3
Who: 1-37 FA.
When: See triggers for each key target below.
Where: See key targets below**.**
What (Task): Disrupt the ability of two platoons at the point of penetration vicinity Objectives KINGS and BLAZERS from placing effective direct fires on breaching forces.
Why (Purpose): To allow the successful establishment of breach lanes vicinity Objectives KINGS and BLAZERS.
How:
Priority: FA priority of fires: 1-15 IN.
Allocation: One active CFZ; 1-15 IN, one active CFZ.
Key BCT Targets-

- AB0035 (NV390125)-Smoke vicinity Objective BLAZERS; Observer: 1-15 IN; Trigger: Trail Company, -1-15 IN crosses PL PORTLAND.
- AB0025 (NV395129)-BMP platoon, Suppression (3 X BN3); Observer: 1-15 IN; Trigger: Support force in support by fire position.
- AB0030 (NV395124)-BMP platoon, Suppression (3 X BN3); Observer: 1-15 IN; Trigger: Support force in support by fire position.
- AB0015 (NV374083)-BMP platoon, Suppression (3 X BN3); Observer: 2-69 AR; Trigger: Support force in support by fire position.
- AB0020 (NV378088)-BMP platoon, Suppression (3 X BN3); Observer: 2-69 AR; Trigger: Support force in support by fire position.
- AB0040 (NV365078)-Smoke vicinity Objective BLAZERS; Observer: 2-69 AR; Trigger: Trail Company, 2-69 AR crosses PL PORTLAND.

Target Allocations: 2-69 AR may plan one (1) additional target in support of attack vicinity Objective KING.
Smoke: 2-69 AR allocated 30 minutes FA smoke (Length: Cross-1400m, Quartering-1000m, Head and Tail-300m); 1-15 IN allocated 30 minutes FA smoke (Length: Cross-1400m, Quartering-1000m, Head and Tail-300m).
Restrictions: Restrictions: Division coordinated fire line – PL ELM. 3-1 CAV, 1-15 IN and 2-69 AR will plan NFA around scout and FIST locations forward of their respective forward line of own troops. 2-69 AR one active CFZ; 1-15 IN; one active CFZ.
Assessment (Effect): End state**—**Direct fire weapon systems suppressed; 3-1 CAV, 1-15 IN and 2-69 AR breaches complete without effective enemy direct fires.

(4) Fire support Task #4
Who: 1-37 FA.
When: On order.
Where:
What (Task): Limit the effective massed artillery fires against 3-1 CAV, 1-15 IN and 2-69 AR.
Why (Purpose): To protect critical friendly forces during the BCTs attack.
How:
Priority: FA priority of fires: 3-1 CAV, On order 1-15 IN.
Allocation: CFZ Allocations: 1-15 IN – five (5) planned, two (2) active; 2-69 AR – five (5) planned, three (3) active, 3-1 CAV five (5) planned, two (2) active (15 X BN2).
Restrictions: Division coordinated fire line – PL ELM. 3-1 CAV, 1-15 IN and 2-22 CAV will plan NFA around scout and FIST locations forward of their respective forward line of own troops.
Assessment (Effect): End state**—**All CFZ violations suppressed, (1) enemy system destroyed.

(5) Fire Support Task #5
Who: 3-163 FA (R).
When: See trigger below.
Where: See key targets below**.**
What (Task): Disrupt the enemy's ability to reposition against 1-15 IN.
Why (Purpose): To protect the flank of 1-15 IN**.**
How:
Priority: FA priority of fires: 3-1 CAV.
Allocation:
Key BCT Targets:

- AB0045 Family of scatterable mines.
- AB0050 repositioning route (templated) CAS1 (4 X BN6).

Target Allocations: Team RECON may plan two additional targets.
Trigger: Identification of forces repositioning vicinity named area of interest B4.
Restrictions: Team RECON, 3-1 CAV, 1-15 IN and 2-69 AR will plan NFA around scout and FIST locations forward of their respective forward line of own troops.
Assessment: End state—Four T72s, close air support; four BMP-2s, FA destroyed.

(6) Fire Support Task #6
Who: 1-37 FA
When: See trigger below.
Where: See key targets below**.**
What (Task): Disrupt the enemy's repositioning forces against 3-3 ABCT (+).
Why (Purpose): To protect 3-3 ABCT (+) attacking maneuver elements**.**
How:
Priority: FA priority of fires: Team RECON, 2-69 AR, and 1-15 IN.
*Allocation**:***
Key BCT Targets: AB0055 repositioning route (templated) CAS1 (4 X BN6).
Target Allocations: Team RECON may select two additional targets.
Trigger: Identification of forces repositioning vicinity named area of interest B5.
Restrictions: Team RECON, 3-1 CAV, 1-15 IN and 2-69 AR will plan NFA around scout and FIST locations forward of their respective forward line of own troops.
Assessment (Effect): End state**—**Three T72s, close air support; one T72, FA destroyed.

c. (U) Scheme of Movement and Maneuver.

3-3 ABCT (+) is opposed by elements of the 231BTG of the 23DTG. Assessed forces are currently at approximately 75% combat power. Directly opposing 3-3 ABCT (+) in a disruption zone, the enemy has deployed a disruption force – approximately a company of mechanized infantry with tanks – supported by artillery, anti-tank systems, and a reconnaissance screen. Expect forces to conduct a maneuver defense generally between PL PINE and PL RAISIN. Opposing the 3-3 ABCT (+) is a reinforced mechanized infantry battalion (BMP-2) defending in complex terrain to retain control of key ground lines of communication that lead into the enemy main effort's area of operations via Irwin City. A truck mobile infantry company and at least one tank company augment this battalion. In the support zone, a combined arms force of mechanized infantry (one company) and a platoon of tanks form the 231BTG reserve. Also, expect at least 2 x 2S1 batteries and one battery of BM-21s to be in direct support of the forces opposing 3-3 ABCT (+). Finally, there are elements of a company of Eastland special purpose forces and two or three cells of Eastland-aligned direct action cell terrorists operating in the BCT area of operations. The special purpose forces will

conduct reconnaissance, surveillance, and sabotage operations to disrupt the deployment of X United States Corps units, while the terrorist cells may work in concert with the special purpose forces or take independent action against political and military targets. 1-37 FA will move with 2-69 AR and 3-163 FA (R) will move with 1-15 IN.

(1) (U) Scheme of Mobility and Countermobility. See Annex G (Engineer) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

(2) (U) Scheme of Battlefield Obscuration. See Appendix 9 (Battlefield Obscuration) to Annex C (Operations) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

(3) (U) Scheme of Intelligence Collection. See Annex L (Intelligence Collection) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

d. (U) Scheme of Intelligence. See Annex B (Intelligence) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

e. (U) Scheme of Fire.

Team reconnaissance has priority of fires from their insertion until the BCT LDs. On order [upon battle hand-from the reconnaissance squadron of 3BCT (2-20 CAV)]. 3-1 CAV receives priority of fires and is allocated one priority target for the disruption zone fight. During the attack to the limit of advance, priority of fires shifts to 2-69 AR followed by 1-15 IN and 3-1 CAV.

Fire Support Tasks #4, #5, & #6 all remain in effect. 3-1 CAV, 1-15 IN and 2-69 AR will refine their targets and submit updates to the target list NLT 2 hours before line of departure.

f. (U) Scheme of Protection. See Annex E (Protection) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

g. (U) Stability Tasks. See Annex C (Operations) and Annex K (Civil Affairs Operations) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

h. (U) Assessment. See Annex M (Assessment) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

i. (U) Tasks to Subordinate Units.

- A Battery 1-37 FA: Fire Support Task 3; On order Fire Support Task 4.
- B Battery 1-37 FA: Fire Support Task 6; On order Fire Support Task 4.
- 3-163 FA (R): Fire Support Tasks 1, 2 and 5, On order Fire Support Task 4.

j. (U) Coordinating Instructions.

- PL SPRUCE is limit of advance for the 3-3 ABCT (+) attack.
- FSCMs.
  - Fire support coordination line is PL ELM, On order PL SPRUCE.
  - 52 ID coordinated fire line - PL RAISIN, On order ELM, On order PL SPRUCE.
  - 3-3 ABCT (+) coordinated fire line – PL PORTLAND, On order PL RAISIN On order PL ELM.
  - 3-1 CAV, 1-15 IN and 2-69 AR will plan NFA (radius 500 meters) around scout and FIST forward of the task force forward line of own troops.
  - No destructive fires within the enemy battle zone prior to line of departure 301830APR15.
  - Disengagement fires to support team reconnaissance and 3-1 CAV early reconnaissance are authorized. .
  - On order airspace coordination area BLACK (no fires above 4000m above ground level) during close air support missions.
- Common Sensor Boundary is PL ELM.
- FS rehearsal 290100APR15.
- Target refinement due to 3-3 ABCT (+) FSO NLT 292130APR15.

- Observer Codes per standard operating procedure.
  - FIST 241-246.
  - 2-69 AR 255-258.
  - 3-1 CAV 259-262.
  - 1-15 IN 263-266.
- Target Numbers per standard operating procedure.
  - 3-3 ABCT (+) AB0001-1999.
  - 3-1 CAV AB2000-2999.
  - 2-69 AR AB3000-3999.
  - 1-15 IN AB4000-4999.
  - 1-37 FA AB6000-6999 .
  - 3-163 FA (R) AB7000-7999.
  - Counterfire AB8000-8999.
- CFZ Numbers.
  - BCT CFZ 1-20.
  - 3-1 CAV CFZ 41-60.
  - 2-69 AR CFZ 61-80.
  - 1-15 IN CFZ 81-100.
  - 1-37 FA CFZ 101-120.
  - 3-163 FA (R) CFZ 121-140.
- Position areas (PA) for FA (2000m x 2000m).
  - PA 1 - NV132235.
  - PA 2 - NV105217.
  - PA 3 - NV095175.
  - PA 4 - NV220200.
  - PA 5 - NV205185.
  - PA 6 - NV205215.
  - PA 7 - NV265105.
  - PA 8 NV255075.
  - PA 9 - NV285155.
  - PA 10 - NV346205.
  - PA 11 - NV355190.
  - PA 12 - NV330214.
  - PA 13 - NV460178.
  - PA 14 - NV448160.
  - PA 15 - NV431124.

4. (U) SUSTAINMENT.

See Annex F (Sustainment) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

a. (U) Logistics.

(U) Class V Allocation

- 16 battalion 3 round packages high explosive available.
- 24 battalion 3 round packages dual-purpose improved conventional munitions available.
- 60 min of FA smoke available (Length: Cross-1400m, Quartering-1000m, Head, and Tail-300m).
- 2 Medium Density area denial artillery munitions and remote antiarmor mine system (400m x 400m).

b. (U) During.

(U) Controlled Supply Rate

Weapon and Ammunition	Round,Weapon,Day
155 Dual-purpose improved conventional munition	60
155 High explosive	45
155 Dual-purpose improved conventional munition (base bleed)	9
155 Rocket assisted projectile	8
155 Hexachloroethane smoke	6
155 White phosphorus	6
155 Area denial artillery munitions	3
155 Remote antiarmor mine system	7
155 Illumination	4

c. (U) After. See Annex F (Sustainment) OPORD 0702-04, 3-3 ABCT (+), 52 ID.

5. COMMAND AND SIGNAL

a. (U) Command.

(1) (U) Location of Commander. 1-37 FA battalion command post located grid to be published.

(2) (U) Succession of Command. Succession of command: Battalion executive officer, S-3, A battery commander, B battery commander..

(3) (U) Liaison Requirements. In accordance with unit's SOPs.

b. (U) Control.

(1) (U) Command Posts.

- 1-37 FA battalion command post located grid to be published.
- 3-163 FA (R) battalion command post located grid to be published.
- Combat trains command post (combat trains) located grid to be published.
- Battalion sustainment center (field trains) co-located with the brigade support area.

(2) (U) Reports. In accordance with unit's SOPs.

c. (U) Signal. Signal operating instructions AKAV 0306 in effect.

ACKNOWLEDGE:

Commander's last name
Commander's rank

OFFICIAL:
/Signed/
Redleg
S-3

Annexes

A. FIELD ARTILLERY EXECUTION MATRIX (See figure A-1).

B. TARGET LIST WORK SHEET (See figure A-2).

C. NFA

D. FIELD ARTILLERY SUPPORT OVERLAY TO OPERATION ORDER (See figure A-3).

ANNEX A (FIELD ARTILLERY EXECUTION MATRIX) TO 1-37 FA OPORD APPENDIX TO ANNEX D (FIRE SUPPORT) TO OPORD 0702-04, 3-3 ABCT (+), 52 ID (EFFECTIVE 280630 APR 15)

REFERENCE

Maps: Series V795, California; Sheets; 2453 I, 2454 I, 2454 II, 2553 I, 2553 IV, 2554 I, 2554 II, 2554 III, 2554 IV, 2653 IV, 2654 III, 2654 IV, scale 1:50,000. Time Zone Used Throughout Order: LOCAL.

PHASE/EVENT / UNIT	ISR FLIGHT INITIAL SET	DISTRIBUTION ZONE PL PINE to PORTLAND	BATTLE ZONE PL PORTLAND to EUGENE	SUPPORT ZONE PL EUGENE to SPRUCE
3-3 ABCT (+)	FA POF Task 4 & 5 → Task 6 →	Task 1	Task 2 & 3 →	Task 4 & 5
3-1 CAV		AB0001 AB0005 FA POF AB0010	O/O FA POF	
1-15 INF			OBJ BLAZERS SERIES DICK AB0025, AB0030, AB0040 SMK	
2-69 AR			FA POF OBJ KINGS SERIES HARRY AB0015, AB0020, AB0040 SMK	FA POF
CAS (SEE FSP)			AB0045 (TAI B4) AB0055 (TAI B5) →	
3-37 FA	PA1 NV132235 PA2 NV105217 PA3 NV095175		PA7 NV265105 PA8 NV255075 PA9 NV285155	PA13 NV460178 PA14 NV448160 PA15 NV341124
3-163 FA (R)	AA TEMPLE	PA4 NV220200 PA5 NV205185 PA6 NV205215		PA10 NV346205 PA11 NV355190 PA12 NV330214
1 TM RECON	NAI B4 & B5		AB0045/50/55&CAS	
2 TM RECON	NAI B2			
3 TM RECON	NAI B3			
4 2-69 AR	→	→	→	→
5 1-15 INF 3-1 CAV	→ →	→ →	→ →	→ →
3-3 ABCT (+) 3-37 FA WLR Q-53	Q-53 2 Zones	CSB PL ELM →	→	→
FSCM BCT CFL	PL PORTLAND CFL PL ELM FSCL	PL PORTLAND CFL PL ELM FSCL	PL EUGENE CFL PL ELM FSCL	PL SPRUCE CFL PL HEMLOCK FSCL

AA – assembly area, ABCT – armored brigade combat team, AR – armor, BCT – brigade combat team, CAS – close air support, CSB – common sensor boundary, CFL – coordinated fire line, FA – field artillery, FSCL – fire support coordination line, FSP – fire support plan, ISR – intelligence surveillance reconnaissance, OBJ – objective, O/O – on order, PA – position area, PL –phase line, POF – priority of fires, SMK – smoke, TAI – target area of interest

Figure A-1. Annex A (Field Artillery Execution Matrix) to 1-37 FA OPORD (example)

ANNEX B (TARGET LIST WORK SHEET) TO 1-37 FA OPORD APPENDIX TO ANNEX D (FIRE SUPPORT) TO OPORD 0702-04, 3-3 ABCT (+), 52 ID (EFFECTIVE 280630 APR 15)

REFERENCE

Maps: Series V795, California; Sheets; 2453 I, 2454 I, 2454 II, 2553 I, 2553 IV, 2554 I, 2554 II, 2554 III, 2554 IV, 2653 IV, 2654 III, 2654 IV, scale 1:50,000.
Time Zone Used Throughout Order: LOCAL.

TARGET LIST WORKSHEET

( )

For use of this form see ATP 3-09.30, the proponent agency is TRADOC SHEET 1 OF 1

LINE NO	TARGET NO	DESCRIPTION	LOCATION	ALTITUDE	ATTITUDE	SIZE L	SIZE W	SOURCE / ACCURACY	REMARKS
	a	b	c	d	e	f	g	h	i
1	AA3411	82-mm Mortar Position (4 Tubes)	923435						
2	AA3412	Mech INF in trench line	918560		1600	400	50		
3	AA3413	Aircraft Landing Strip	920450		4800	1200	200		
4	AA3414	Suspected Regt CP	947343		(Radius 800m)				
5	AA3415	Final Protective Fire	875689	340	1650	200			Adjust With/+2 Delay
6	AA3416	Road Junction	885670						Target Reference Point A3
7									
8									
9									

SAMPLE

DA FORM 4655-R, AUG 2013 REPLACES DA FORM 4655-R WHICH MAY BE USED UNTIL SUPPLIES ARE EXHAUSTED.

cp – command post, L – length, Mech – mechanized, m – meter, mm – millimeter, NO – number, Regt – regiment, W - width

Figure A-2. Annex B (Target List Worksheet) to 1-37 FA OPORD (example)

ANNEX C (NO-FIRE AREA) TO 1-37 FA OPORD APPENDIX TO ANNEX D (FIRE SUPPORT) TO OPORD 0702-04 3-3 ABCT (+), 52 ID (EFFECTIVE 280630 APR 15)

REFERENCE

Maps: Series V795, California; Sheets; 2453 I, 2454 I, 2454 II, 2553 I, 2553 IV, 2554 I, 2554 II, 2554 III, 2554 IV, 2653 IV, 2654 III, 2654 IV, scale 1:50,000.
Time Zone Used Throughout Order: LOCAL.

NFA for 3-3 ABCT (+) located east of line of departure are listed below. Firing with NFA safety radius of grid locations requires approval from the responsible task force commander. Task forces and team reconnaissance are responsible for providing updates on actual observation post and landing zone location within 15 minutes of unit occupation or vacating any position.

Location	Description	No Fire Area Safety Radius
NV436194	OBSERVATION POST	500 meters
NV455092	OBSERVATION POST	500 meters
NV388082	OBSERVATION POST	500 meters
NV419097	OBSERVATION POST	500 meters
NV471088	LANDING ZONE GREEN	1000 meters
NV434204	LANDING ZONE YELLOW	1000 meters
NV445175	LANDING ZONE RED	1000 meters
NV2802	MEDINA IRWIN	2000 meters
NV2222	QUUAM SAHKRAT	1000 meters
NV3509	MEDINA WASL	1000 meters
NV4714	MEDINA MA'AKL	1000 meters

ANNEX D (FIELD ARTILLERY SUPPORT OVERLAY) TO 1-37FA OPORD APPENDIX TO ANNEX D (FIRE SUPPORT) TO OPORD 0702-04, 3-3 ABCT (+), 52 ID (EFFECTIVE 280630 APR 15)

REFERENCE

Maps: Series V795, California; Sheets; 2453 I, 2454 I, 2454 II, 2553 I, 2553 IV, 2554 I, 2554 II, 2554 III, 2554 IV, 2653 IV, 2654 III, 2654 IV, scale 1:50,000.
Time Zone Used Throughout Order: LOCAL.

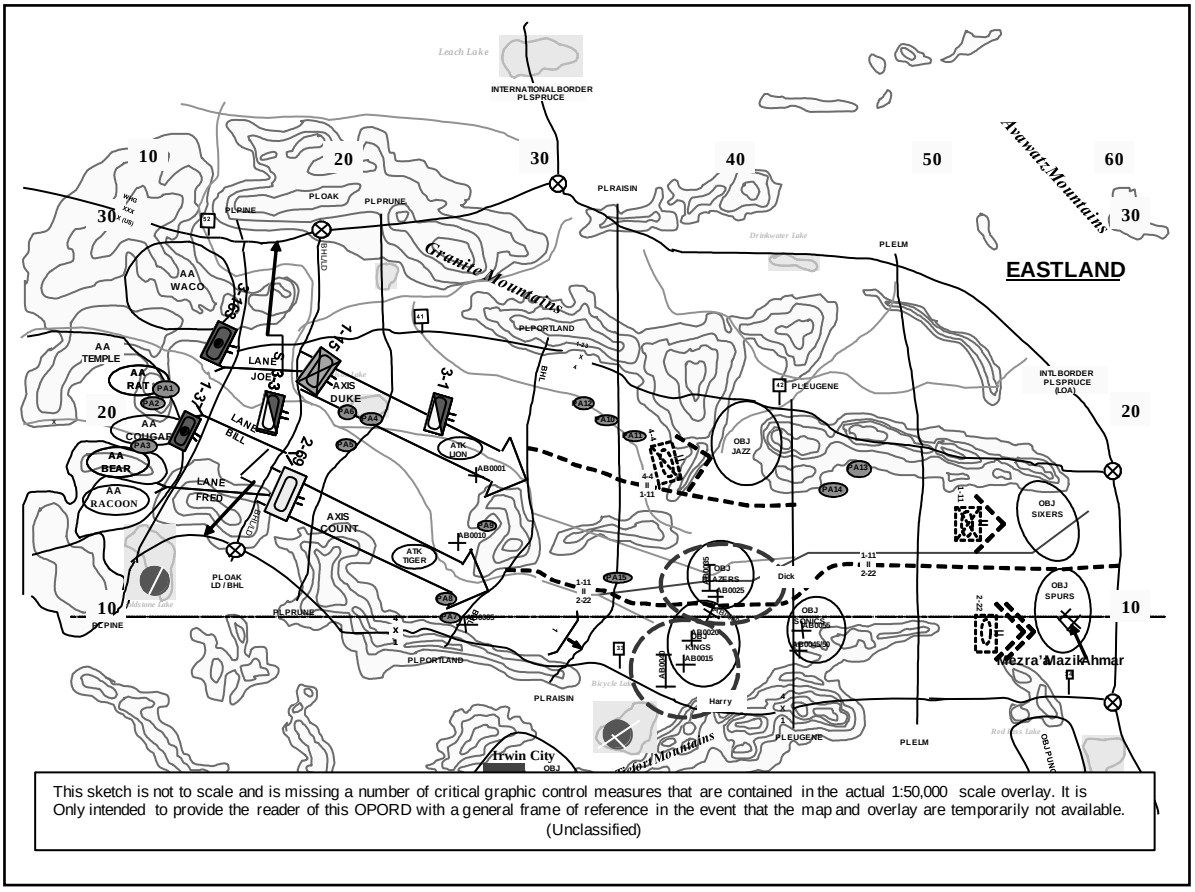

Figure A-3. Annex D (Field Artillery Support Overlay) to 1-37 FA OPORD (example)

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Appendix B

Composite Battalion

Composite FA battalions are made up of cannon batteries consisting of differ caliber weapons. This chapter provides a brief overview and discussion of techniques and associated considerations unique to a FA battalion operating as a composite organization.

OVERVIEW

B-1. Cannon units operating with weapons of different calibers (105-mm, 155-mm) and sometimes types (towed, self-propelled) characterize composite units. The composite cannon structure consists of any combination of cannon systems, with associated prime movers and ammunition resupply vehicles, which include:

- Howitzer, Medium, Towed, 155-mm, M777-series.
- Howitzer, Light, Towed, 105-mm, M119-series.

B-2. Composite units may be organized under tables of organization and equipment or through force tailoring. Although a battalion may be organized with individual firing batteries equipped with only a given type of weapon, a mission's task organization may require that different weapon systems co-exist within the same battery. Under this circumstance, the battery's cannon crews should train on and, be certified to operate both systems for maximum tactical flexibility.

B-3. Combat operations have dictated that units encounter composite unit situations (see the following example) where they might have any combination of howitzer configurations across the battalion or battery. These situations affect personnel, equipment, manning, training, and sustainment among others. Identify considerations associated with composite units as early as possible in the MDMP.

Example

A composite cannon battery organization, where the battery is organized as a dual unit. In this example, each howitzer section is assigned a M119A2, 105-mm, towed howitzer and a M777A2, 155-mm, towed howitzer system per section. This configuration is common in static positions.

B-4. Composite cannon battalion units present unique challenges and tactical considerations for the cannon battalion commander and key leaders. Considerations for composite battalion units include:

- Unit composition (howitzer mix).
- Manning levels for howitzer sections, FDCs, and battery and platoon leadership.
- Technical firing solution computation capabilities.

UNIT COMPOSITION (LIGHT AND MEDIUM HOWITZER MIX)

B-5. The makeup of a composite cannon battalion will vary. Unit tables of organization and equipment, task-organization, commander's preference, personnel strength, level of training, individual capabilities, and other factors may require the commander to modify unit composition. The commander bases this decision on mission variables and unit tactical standard operating procedures. The commander issues planning guidance on unit composition to key leaders.

Note. The type of howitzer, associated prime mover (if equipped), and ammunition resupply vehicle vary among the systems. See the applicable technical manual for general information and equipment description.

B-6. Planning considerations for unit composition include equipment type, quantity, supply, and maintenance associated with different types of equipment. Considerations vary according to the type of howitzer(s), quantity of vehicles, and associated equipment in the cannon battery, which include:

- Position area requirements that decrease with the use of towed howitzers and other wheeled vehicles.
- Climate and terrain that hampers or restricts movement of vehicles (mountains, jungle, desert, cold regions, and urban population areas).
- Methods of employment (platoon, paired and grouped, or single howitzer) that differ between terrain and distance.
- Method of control (centralized or decentralized) based on method of employment.
- Movement by alternate means (airborne or air assault), as required.

Note. For more information on airborne or air assault missions, see FM 3-99.

- Sustainment requirements that increase with the amount of vehicles task-organized to the unit.
- Supply accountability of equipment with hand receipts, shortage annexes, and additional authorization listings.
- Operator level maintenance and records management of howitzers, vehicles, and associated equipment new (not organic) to the unit.
- Maintenance support from forward support company and BSB.

Note. A maintenance section is not currently authorized at battalion or battery level.

- Operator licensing requirements for organic and task-organized equipment.
- Ammunition management (105-mm, 155-mm).

B-7. For more information on howitzer systems, see TM 9-1015-252-10 (M119A2), TM 9-1015-260-10 (M119A3) and TM 9-1025-215-10 (M777 Series).

AMMUNITION

B-8. The considerations for ammunition management will vary based on ammunition totals and forecasted requirements. Unit tables of organization and equipment, task-organization, commander's preference, personnel strength, level of training, individual capabilities, and other factors may require the commander to modify procedures for ammunition management. The commander bases this decision on mission variables and unit tactical standard operating procedures. The commander issues planning guidance for ammunition management.

B-9. Ammunition lot management is a critical consideration for FDC personnel. Commanders must ensure these personnel are trained and competent.

B-10. Ammunition management involves the resupply, management, handling, segregation, and preparation of semi-fixed and separate loading howitzer ammunition, to include forecasting requirements based on mission variables. Difficulties arise from the improper handling, storage, segregation, and accountability of howitzer ammunition by type, lot, and weight. These types of actions can lead to a decrease in mission effectiveness and possible damage of equipment and injury to personnel.

B-11. The type of howitzer, associated prime mover (if equipped), and ammunition resupply vehicle vary among the systems. Each ammunition section has personnel and equipment to provide limited ammunition support. Some units may consolidate ammunition sections at battalion level.

B-12. Planning considerations for ammunition management include:

- Time available.
- Personnel available.
- Equipment available.
- Ammunition accountability.
- Ammunition supply point.
  - Personnel experience and training.
  - Hand receipt procedures.
  - Ammunition handling procedures.

Note. Ammunition handlers should pay close attention to warning and safety statements for howitzer ammunition contained in howitzer technical manuals.

Note. For more information on ammunition handling, storage, and safety, see TB 43-0250.

- Transportation by battery elements.
- Hand receipt procedures.
- Training.
- Safety.
  - Continuous operation.
  - Sleep deprivation.

B-13. Other ammunition management considerations:

- Inventory ammunition by type, lot, and weight, and segregate by the same, if possible.
- Provide a 13B noncommissioned officer to support ammunition operations at the ammunition supply point.
- Attach and assign knowledgeable personnel to serve as ammunition specialists at the ammunition transfer holding point, if possible.
- Ensure that basic FA tasks for lot management, transportation and storage of ammunition are trained within the brigade and battalion.
- Issue ammunition to firing elements as soon as possible.
- Distribute communications security Black Key early, if required.
- Standardize the rearm, refuel, resupply, and survey point.
- Provide additional ammunition, as required, to support the maneuver force in mountainous terrain due to reduced munitions effectiveness.
- Limit or preclude registrations because they may not be possible or practical due to security and ammunition requirements.

POSITIONING

B-14. If a FA battalion is given its own area of operations, consider that batteries are not manned or equipped with a command post like the infantry companies. The personnel to staff these positions are going to have to be designated by the battalion and battery. Bottom line, if given a maneuver mission, the FA platoons may have to operate with only a single gun in a firing platoon. The crew from the other guns may be required to supplement battery or battalion command posts.

B-15. When considering unit positions the following questions must be addressed by the commander and staff:

- What are the slope, soil conditions, and trafficability of the position area?
- Where can observation and listening posts best be positioned?
- Are there site to crest or intervening crest problems?
- What are the percent illumination, moonrise, moonset, and night vision device window?
- What are the precipitation, wind, and temperature?
- Where are the positions to fire from and are they clear?

- Do the positions facilitate fires throughout the maximum area of the supported maneuver force?
- Do the positions enable communications with higher headquarters?
- Do the positions use existing terrain features to prevent threat forces from targeting the unit.
- Do the positions avoid high-speed avenues of approach and have more than one entrance and exit?
- Does the terrain facilitate movement within the position?
- Do the positions include the primary position, alternate position, and supplementary position?

MANNING

B-16. Manning is the first hurdle that has to be overcome. Units may receive additional howitzers and equipment but not additional personnel to man and maintain the materiel. Units may have to operate with reduced crews.

B-17. Certain military occupational specialties must be managed down to the individual soldier. Specifically howitzer section chiefs and all fire direction personnel. The FDC chiefs you send down range must be able to operate with little to no supervision.

B-18. The unit manning levels will vary based on unit composition. Unit tables of organization and equipment, task-organization, commander's preference, personnel strength, level of training, individual capabilities, and other factors may require the battery commander to modify requirements for unit manning levels. The battery commander bases this decision on mission variables and unit tactical standard operating procedures. The battery commander issues planning guidance on the minimum safe manning levels for howitzer sections and FDC personnel during firing.

B-19. If the battalion creates additional platoons, consider assigning a gunnery sergeant per platoon. This will facilitate 24-hour operations, and better handling of ammunition, platoon leaders may have to double as platoon leader and FDO. If so, the chief of firing battery and gunnery sergeant can supervise the gun line while the platoon leader is in the FDC.

B-20. It is normal to expect howitzer sections and FDCs to reduce to numbers less than prescribed by tables of organization and equipment strength due to illness, casualties, battery tasking, and the need to rest personnel. Combine the duties of section personnel to meet mission requirements and still maintain continuous operation, as required.

B-21. Planning considerations for manning levels include unit composition and minimum safe manning requirements. Considerations vary according to the assigned equipment, which include:

- Experience level of howitzer section personnel.
- Experience level of FDC personnel.
- Knowledgeable and competent personnel assignments from section level to platoon leadership.

B-22. Determine minimum safe manning requirements and levels as early as possible in the MDMP. Include these numbers in the unit tactical standard operating procedures, as applicable.

B-23. HQ and HQ battery composition is critical and must have some handpicked leadership at various levels to be successful.

HOWITZER SECTION

B-24. Train and certify howitzer sections on both type cannon systems. Cross train and certify howitzer sections and crews to provide the maneuver commander with more options for FS.

B-25. Closely manage leave for gunner and above, section chief, gunnery sergeant, chief of firing battery, and platoon leader. This can cause problems for the entire battalion if not managed properly.

B-26. Considerations for howitzer sections include:

- Tactical situation.
- Crew drill on each weapon system (dual assigned).
- Cross training among howitzer platforms to increase proficiency.

- Minimum safe manning requirements for firing.
- Training and certification programs for howitzer crews on each assigned weapon system.

B-27. Cross training of section personnel takes on an added importance with the introduction of dual howitzers at the section level. The howitzer section must be ready and capable of executing dual fire missions on both systems near simultaneously. In addition to indirect fires, the need may arise to include direct fires, as well (see example below).

Example

Firing sections conducted a dual fire combat mission, switching between indirect and direct artillery fire modes on M777A2 and M119A2 or M119A3 weapon systems against several threat positions. These Soldiers fired nearly simultaneously in support of nearby troops in contact, while also engaging the forces firing at the combat outpost, switching between systems and modes within mere minutes.

B-28. Combine howitzer sections to maintain established minimum safe manning requirements. Battery leadership may perform duties as cannoneers with a howitzer section, if required.

Note. Problems during firing arise due to a lack of training and sacrificing established procedure for speed. Bypassing established procedures can lead to inaccuracies in fires, wasted rounds, and a decrease in the effectiveness of FS. Careless or improper procedures at the howitzer contribute to these inaccuracies. Proper training is the key to minimizing human error and careless gunnery procedures.

FIRE DIRECTION CENTER

B-29. AFATDS can only do technical computations for one system at a time. The FDC must have a primary and backup check. Something to consider is using AFATDS and Centaur as primary with Centaur and manual charts backup.

B-30. Due to the requirement for 24-hour operations and leaves, you will not have enough lieutenants to have one at every static position FDC. Lieutenants will have to divide their time between the FDC and the gun line particularly to help manage the ammunition with the gunnery sergeant. If the lieutenant is not FA branched qualified then the FDC chief is the senior gunnery expert on the combat outpost.

B-31. All FDC personnel must:

- Manage muzzle velocity variations and meteorology requirements to ensure accurate fires.
- Understand airspace control and airspace clearance procedures.

B-32. Considerations for FDC personnel include:

- Military occupational specialty critical shortages.
- Requests for additional military occupational specialty authorizations above tables of organization and equipment.
- Fire request processing.
- Ammunition management.

B-33. The FDC is the primary fire control facility for the cannon battery. Positive and effective fire control depends on well-trained and properly staffed personnel to process responsive and accurate firing data to support the mission. The FDC is organized and equipped to maintain continuous operation. Personnel and equipment shortages will result in a decrease in mission effectiveness. The commander may develop an operational needs statement based on mission variables. Identify considerations for critical shortages of military occupational specialties and requests for additional authorizations as early as possible in the MDMP.

B-34. For more information on duties and responsibilities of FDC personnel, see FM 6-40.

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

ABCT	armored brigade combat team
ACM	airspace coordinating measure
ADRP	Army doctrine reference publication
AFATDS	Advanced Field Artillery Tactical Data System
ATP	Army techniques publication
BCS3	Battle Command Sustainment Support System
BCT	brigade combat team
BMP	enemy armored personnel carrier
BSB	brigade support battalion
CBRN	chemical, biological, radiological, and nuclear
CFZ	critical friendly zone
DIVARTY	division artillery
FA	field artillery
FAB	field artillery brigade
FBCB2	Force XXI Battle Command, brigade and below
FDC	fire direction center
FDO	fire direction officer
FIST	fire support team
FM	field manual
FS	fire support
FSCM	fire support coordiantion measure
FSCOORD	fire support coordinator
FSO	fire support officer
HQ	headquarters
IBCT	infantry brigade combat team
km	kilometer
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civil considerations
MDMP	military decisionmaking process
NATO	North Atlantic Treaty Organization
NFA	no-fire area
NLT	not later than
OPLAN	operation plan
OPORD	operation order
PA	position area
PGK	precision guidance kit
PL	phase line
ROE	rules of engagement
S-1	battalion or brigade personnel staff officer
S-2	battalion or brigade intelligence staff officer

S-3	battalion or brigade operations staff officer
S-4	battalion or brigade logistics staff officer
S-6	battalion or brigade signal staff officer
SBCT	Stryker brigade combat team
UAS	unmanned aircraft system
WLR	weapons locating radar
WP	white phosphorous

SECTION II – TERMS AND DEFINITIONS

***controlled supply rate**

The rate of ammunition consumption that can be supported, considering availability, facilities, and transportation. It is expressed in rounds per unit, individual, or vehicle per day.

*** required supply rate**

The amount of ammunition expressed in terms of rounds per weapon per day for ammunition items fired by weapons, in terms of other units of measure per day for bulk allotment, and other items estimated to be required to sustain operations of any designated force without restriction for a specified period.

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ATP 3-09.23 (FM 3-09.21)

24 September 2015

By Order of the Secretary of the Army

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