CHAPTER 1
INTRODUCTION TO FIRE SUPPORT

Fire support is the collective and coordinated use of indirect fire weapons, armed aircraft, and other lethal and nonlethal means in support of a battle plan. Fire support includes mortars, field,artillery (FA), NGF, and air-delivered weapons. Nonlethal means are electronic warfare (EW) capabilities of military intelligence organizations, illumination (illum), and smoke. The combined arms commander employs these means to support his scheme of maneuver; to mass firepower; and to delay, disrupt, or destroy enemy forces in depth. Fire support destroys, neutralizes, and suppresses enemy weapons, enemy formations, and enemy indirect fire systems.

This chapter reviews weapons systems and lethal and nonlethal FS means available to the combined arms commander.

MORTARS

The fire support officer (FSO) should plan and control your mortar fires to ensure they are integrated into the overall fire plan. The maneuver S3 should reposition them on the basis of the recommendations of the FSO, the execution matrix, and the tempo of the battle. Mortars are very effective against lightly protected personnel and for obscuration, illumination, and close-in defensive fires. (For additional information on US mortar capabilities, see Appendix A.)

Mortar considerations include the following:

- They are the most responsive FS assets of the battalion. Therefore, they are ideal for responding to immediate suppression and immediate smoke missions.
- They provide highly responsive white phosphorus (WP) and illumination to the task force (TF) commander. Planning and using mortars for WP and illumination at critical times on the battlefield allow more cannon artillery to shoot killing munitions.
- They are easily detected by counterbattery radars.

- The range differences between the various munition types (high explosive [HE], WP, illumination) necessitate different positioning considerations. For example, the difference in range between HE and illumination for the 107-mm mortar is approximately 1,800 meters. This can be a significant factor, depending on the tactical situation. (For additional information on US mortar illumination and smoke capabilities, see Appendix B.)
- They can carry only limited amounts of ammunition. The FSO must consider the required supply rate (RSR) and unit basic load (UBL) for the mortars for each mission.
- Clearance of fires, to include company (co) mortars, must be addressed in the commander's guidance and maneuver rehearsal process.

FIELD ARTILLERY

The mission of the field artillery is to destroy, neutralize, or suppress the enemy by cannon, rocket, and missile fire and to assist in integrating all fire support into combined arms operations. Normally, one FA battalion is assigned a direct support (DS) mission to a committed maneuver brigade. However, additional FA units maybe assigned as reinforcing (R) or general support reinforcing (GSR) by the force FA commander. (For additional information on US artillery capabilities, see Appendix A, and for illumination and smoke capabilities, see Appendix B.)

Field artillery considerations include the following:

- It provides first round fire-for-effect (FFE) capability.
- It is an area fire weapon. However, point targets can be destroyed by using Copperhead (Cphd), a terminal guidance munition (TGM).
- It has a limited ability to survive enemy ground, air, and artillery attacks. Weapons can be detected because of their large communications and firing signature. Artillery survivability is enhanced by dispersion, hardening of positions, and various positioning and displacement techniques.
- It is best employed when massed on observed targets.
- It must be integrated with the maneuver plan and not be considered as an afterthought.
- Early in the decision-making process, the brigade staff must identify and coordinate position areas for firing units.

Tactical Missions

The artillery normally is assigned one of four tactical missions to support your operation effectively. It can instantly shift support to a different maneuver organization in a particular battle scenario by using these missions. These tactical missions are listed from the most decentralized to most centralized. They do not complicate your operation order (OPORD). They are as follows:

- **Direct support** -an FA unit provides close and continuous tire support to your units. An FA unit usually is placed in direct support of a specific maneuver brigade.
- **Reinforcing** -an FA unit augments the fires of another FA unit and yet is almost as responsive to your units as DS artillery. An FA unit can reinforce only one other FA unit.
- **General support reinforcing** -a unit furnishes fires for the entire force within its range and reinforces the fires of another FA unit as a second priority.
- **General support (GS)** -a unit provides fires in support of the entire force within its range capability.

In the offense, FS assets provide continuous fire support for all phases of the attack. Control is more decentralized to be more responsive to forward units. Therefore, in addition to your DS artillery, other artillery with R and GSR missions maybe available. Your main attack will be weighted by extra fire support, and on-order missions will be assigned to facilitate future operations. During defensive operations, it is more desirable to keep fire support centralized and under the FA commander's control because of the uncertainty of the enemy's main thrust. This centralized control results in flexibility throughout your sector. Therefore, GS and GSR missions are used most often in the defense. Do not rely extensively on GS and GSR units because they may be given missions in support of other units at any time.

REMEMBER

Once the battle begins, FA missions can change, depending on your situation. You may start with four battalions supporting an attack and then change to one or two battalions supporting an exploitation or a pursuit. Also, you may have only one or two battalions in the main battle area (MBA); but as the battle matures and the thrust of the main attack is known, you may receive two to four battalions.

Equipment: The Digital World

Initial fire support automated system (IFSAS) is the newest FS automation software. Running on a lightweight computer unit (LCU), this proven

software allows all artillery and FS cells to network with each other (brigade and battalion fire support elements [FSEs], battalion fire direction centers [FDCs], brigade and division artillery [divarty] counterfire cells, and division and corps FSEs). IFSAS permits your FSOs to actively plan, execute, and clear fires from their terminals, thus eliminating bottlenecks at the DS battalion. It also allows them to rapidly disseminate large amounts of information through message of interest (MOI) routing and artillery target intelligence (ATI) processing. IFSAS can communicate with the forward entry device (FED) and the fire support team (FIST) digital message device (DMD) at the company level, with future upgrades to allow FSOs to communicate with the mortar ballistic computer (MBC).

Lightweight tactical fire direction system (LTACFIRE) provides light forces the same capabilities that IFSAS provides mechanized forces. The brigade FSEs and battalion FDCs will continue to use briefcase terminals (BCTs), and the battalion FSEs will use LCUs with the IFSAS to complete the FS chain. LTACFIRE has the same functionality as IFSAS. Future equipment upgrades will involve replacing BCTs with LCUs.

The advanced field artillery tactical data system (AFATDS) is the automated FS system being developed as the replacement to IFSAS and LTACFIRE. AFATDS is fire support's piece of the Army tactical command and control system (ATCCS) and will fully interoperate with the maneuver control system (MCS), all source analysis system (ASAS), forward area air defense command and control ($FAADC^2$), and the combat service support control system (CSSCS). AFATDS provides joint FS capabilities to the maneuver commander through management of his allocated NGF and CAS in addition to the unit's FA and mortar assets.

All these FS systems are influenced by your guidance. You have to tell the systems **what** to attack, **who** you want to attack the target, **when** to attack the target, **where** to attack, and **why** to attack. If all this information is clearly articulated by you and correctly input into the computers, then the systems will automatically do the following:

- Analyze targets for method of attack and priority.
- Select optimal fire unit(s).
- Transmit fire orders.
- Request additional fire units (if necessary).
- Accept, store, process, and pass critical ATI information. Targeting information from artillery sources can help you gain a clearer picture of the battlefield. Therefore, a fluid exchange of information within your tactical operations center (TOC) is important. In many instances, the FSE will have a better picture of the battlefield than your operations and intelligence (O&I) section.

Artillery Target Intelligence

Artillery target intelligence can come from many sources such as the following:

- Scouts (air and ground), combat observation/lasing teams (COLTs), OH-58Ds, and company FSOs, and forward observers (FOs).
- Electronic intelligence (ELINT) sources such as low-level voice intercept (LLVI) and remotely monitored battlefield sensor system (REMBASS).
- Human intelligence (HUMINT) sources such as enemy prisoners of war (EPWs) and local nationals.
- Weapons-locating radars (AN/TPQ -36 and AN/TPQ-37).
- Unmanned aerial vehicles (UAVs).
- Division and corps FSEs.
- Higher HQ sources (joint surveillance target attack radar system [J-STARS], area security information center).

The bottom line is that you must clearly explain to your FSO your guidance for fire support. Your FSO then can advise you on the best way to effectively use the automated FS systems at your disposal.

AIR SUPPORT

Air support can be provided by the United States Air Force (USAF), Navy, Marine Corps, and allied forces. These agencies have specific command and control requirements that must be understood and rehearsed before their commitment. Requests can originate at all levels of command. A tactical air control party (TACP) is normally attached at the maneuver brigade and TF HQ. The TACP advises the Army commander, operates the Air Force air request net, keeps the air support operations center at corps HQ informed, and controls the final attack for CAS. The TACP consists of an air liaison officer (ALO) and two tactical air command and control specialists (TACCSs). The ALO helps plan the simultaneous employment of air-to-surface fires and provides direct liaison for local air defense artillery (ADA) and airspace management. Additionally, each FSO can request and control CAS. (For additional information on US CAS capabilities, see Appendix C.)

Close air support considerations include the following:

- It extends the maneuver commander's battle space.
- It delivers and helps guide smart laser munitions.

- It requires extensive coordination when employed close to friendly forces.
- It requires long lead time for missions.
- It requires suppression of enemy air defenses (SEAD) at the target area and may interrupt indirect fires because of risk to aircraft. (For additional information on USAF minimum safe distance requirements for surface target engagements, see Appendix D.)
- It requires planning for an alternate attack means for missions.

NAVAL GUNFIRE

Naval gunfire provides large volumes of immediately available, responsible fire support to land combat forces operating near coastal waters. Naval gunfire considerations include the following:

- It has a flat trajectory that makes it effective against vertical-face targets but ineffective against rear-slope targets.
- It can deliver a high volume of fire in a short period of time.
- It may provide precision guided munitions.
- It has a large range error. Always try to avoid firing over or near friendly units. Fire parallel to the forward line of own troops (FLOT).
- It is less accurrate in rough seas.
- It has limited communications between ship and shore. Ship radios are high frequency (HF) amplitude modulated (AM) and are not compatible with the standard Army frequency modulated (FM) radios.
- The only US NGF weapon system available now is the 5-inch/54 found primarily on destroyers.
- It is generally coordinated and executed through the support of liaison personnel organic to the air and naval gunfire liaison company (ANGLICO). (For additional information on the characteristics on NGF, see Appendix E.)

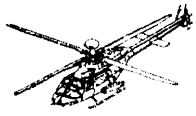
ATTACK HELICOPTERS

Attack helicopters are not FS assets. On the basis of the commander's risk-versus-payoff assessment, AH-1, AH-64, and OH-58D(I) helicopters maybe used to concentrate their organic firepower in with maneuver forces. Through operations such as joint air attack teams (JAATs), helicopters may support fires, break up enemy attacks or counterattacks, adjust indirect fires, and designate for precision guided munitions.

Attack helicopters considerations include the following:

- The brigade FSE must plan for localized SEAD.
- The brigade FSE must coordinate with the combat aviation brigade (CAB) FSO for fire support coordinating measures (FSCMs), routes into and out of your area of operations, and applicable battle positions.

AERIAL OBSERVERS AND AERIAL FIRE SUPPORT OBSERVERS



An aerial observer (AO) is an enlisted observation helicopter repairman with an additional 9 weeks of OH-58A/C tactical training at Fort Rucker, Alabama, as a left seat aircrew member. He is trained to assist aeroscout pilots to conduct reconnaissance (recon) and security missions. An aerial observer is not a fire supporter.

An aerial fire support observer (AFSO) is a senior enlisted fire supporter. He is an experienced artilleryman with 9 weeks of training at Fort Rucker in OH-58A/C operations. When the AFSO is matched with an aeroscout pilot, they become a crew called an aerial fire support team (AFST). The most common employment of AFSTs is to reinforce the aeroscouts of cavalry and attack helicopter units. The AFST is rarely employed outside of aviation brigade operations. However, all aspects of reconnaissance, security, and special operations are consistent with indirect fire target acquisition (TA), target execution, FS planning, and FS coordination.

Division artillery and FA brigade guidance to the aviation brigade staff for employment of aerial fire support teams should include the following:

- Named areas of interest (NAI) and target areas of interest (TAI) identified in the intelligence preparation of the battlefield (IPB) for inclusion in the security missions of screen, guard, covering force, and rear area security.
- Aviation brigade quick fire nets (QFNs), both digital and voice.
- Allocation of FS assets (such as priority targets) when the aviation brigade is committed.
- Instruction for all FDCs to provide time of flight (TOF) in all messages to observers. This is critical for masking and unmasking times to observe rounds.
- The OH-58D is no longer an FA aerial observation platform. It can still perform this mission, but FS personnel are no longer organic to the system.

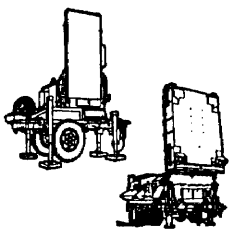
- The OH-58A/C is a capable FS platform. A cargo platform can be installed to transport a ground/vehicular laser locator designator (G/VLLD) for dismounted laser operations.
- The brigade or TF FSO is responsible for ensuring that the aviation brigade is aware of the target selection standards (TSSs), attack criteria, high-payoff targets (HPTs), and high-value targets (HVTs).

TARGET ACQUISITION

The maneuver brigade and battalion FSOs have access to several TA assets that may be available in sector or could be attached for use. The FA battalion supporting a light brigade will have an organic AN/TPQ-36 Firefinder weapons-locating radar. Heavy brigades may have an AN/TPQ-36 attached, but none are organic. Aerial fire support teams may be placed under the operational control (OPCON) of your brigade or FA battalion. A UAV may be available to the brigade for target acquisition. Additionally, the FSO will have access to information provided by the AN/TPQ-37 that is normally retained under div arty or FA brigade control to fight the counterfire battle.

The DS FA battalion S2 is the TA manager for assets attached to the battalion. He is responsible for developing and issuing the radar deployment order (RDO). When developing an RDO, the DS FA battalion S2 must coordinate with the maneuver brigade targeting officer to integrate the radar into the maneuver scheme. The radar can provide important, timely, and otherwise unavailable combat information to the S2s. Radar employment must be integrated into the intelligence collection plan developed by the S2.

AN/TPQ-36 and AN/TPQ-37 Firefinder Radars



The AN/TPQ-36 radar has a maximum detection range of 12 kilometers for artillery and mortars and 24 kilometers for rockets. It was designed primarily for the detection of mortar fire with high trajectory. The AN/TPQ -37 radar has a maximum detection range of 50 kilometers for artillery and rockets. Each radar provides first round FFE accuracy. It will be necessary to provide security since Firefinder sections have a very limited self-defense capability. Firefinder radars are normally considered HVTs by the enemy.

The term *cuing* is the process designed to prompt the radar operator to radiate. Radars can be scheduled to cue when units anticipate a vulnerability to enemy indirect fires such as a river crossing, a breaching operation, or an expected enemy preparation. This is considered situational cuing and is a product of the war-gaming process. Radars can also be cued by authorized cuing agents. Cuing agents are personnel or elements that have access to real-time information and are able to cue the radar. Some agencies that could be considered as cuing agents are the radar controlling HQ (the artillery battalion, FA brigade, or div arty), FSOs, AFSOs, COLTs, and the higher artillery HQ. Communications nets must be coordinated and rehearsed with the radar and cuing agents to be effective. Consider establishing a quick-cuing channel, similar to a quick fire channel, to facilitate timely cuing.

Firefinder zones are a method to prioritize the battlefield into areas of lesser and greater importance. They allow the radar to orient on the maneuver commander's priorities. Each Firefinder radar can have up to nine zones entered into its computer. The zones can be any combination of the four types of zones discussed below.

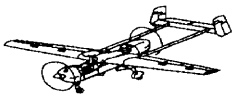
Critical friendly zone (CFZ) is an area, usually in friendly territory, which the combined arms commander deems critical to achieving his mission. When the radar predicts that a round is going to impact inside a CFZ, the location of the weapon firing into the CFZ is immediately generated as a Priority I call for fire (CFF). Some examples of when to use CFZs are around maneuver concentrations during a breaching operation, around critical maneuver units or assembly areas, and along passage points.

CM-for-fire zone (CFFZ) is an area in enemy territory that the maneuver commander wants suppressed, neutralized, or destroyed. The target will automatically generate a Priority II CFF. An example of when to use a CFFZ is around known or suspected enemy artillery, mortar, and rocket positions derived from the IPB process and updated during the battle.

Artillery target intelligence zone (ATIZ) is an area in enemy territory that the combined arms commander wishes to monitor closely. Any weapon located in this area will only generate a target report and not a CFF. These targets can be stored in a file for future fire planning. An example of when to use an ATIZ is around known or suspected enemy artillery locations beyond the range capabilities of your artillery.

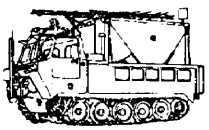
Censor zone (CZ) is an area in which the combined arms commander wants to ignore all target detections. A CZ may be placed around a friendly artillery unit that is deployed in such a position that it may fire towards the radar and hence be classified as hostile by the radar. An example of when to use a CZ is around a friendly artillery unit located close to an irregularly shaped FLOT or forward edge of the battle area (FEBA).

Unmanned Aerial Vehicles



Unmanned aerial vehicles, when available, provide a relatively survivable means of maintaining surveillance over the battlefield. The UAVs may be available from joint, combined, or coalition forces through crops or division. They have day and night capability and provide real-time surveillance. Follow-on systems may provide laser designation of targets for attack by FS means. Normally controlled by division or corps, UAVs can be allocated to subordinate units to satisfy the commander's desire to detect HPTs or priority intelligence requirements (PIR).

ELECTRONIC WARFARE



Electronic warfare is designed to exploit, disrupt, and deceive enemy command and control systems while protecting friendly use of communication and noncommunication systems. The EW assets must be closely coordinated and synchronized with your FS plan to assist in the nonlethal attack of targets. The three major components of electronic warfare are as follows:

- **Electronic warfare support measures (EWSM)** -provides the capability to intercept, search, identify, and locate enemy emitters. They represent a source of information required for jamming, deception, electronic protection (EP), targeting, and other tactical employment of combat forces.
- **Electronic attack (EA)** -includes those offensive actions or measures taken by hostile forces to prevent or reduce the effective use of electronic spectrum. EA includes electronic jamming and deception.
- **Electronic protection** -are defensive EW measures taken to retain effective friendly use of electromagnetic spectrum. It protects friendly emitters from enemy detection, location, and identification.

BATTLEFIELD OBSCURATION

Battlefield obscuration can be provided by artillery, mortars, smoke pots, rockets, hexachloroethane (HC) (smoke) grenades, and large area smoke generators. It is an aid in deceiving the enemy, concealing maneuver, and increasing your potential force ratios. Employment considerations include the following:

- Mortars are the weapons system of choice to provide smoke quickly on the battlefield. They carry limited amounts of WP, which dissipates quickly.

- The need for artillery smoke must be identified early in the planning process so that the FA battalion can make the needed adjustments if the demands for smoke munitions exceed the on-hand quantity.
- The brigade FSO must allocate smoke, which is a limited asset, on the basis of your guidance.
- Bottom line, all of the other smoke assets available must be exhausted before using your FA assets. When artillery is firing smoke, their ability to deliver killing munitions is degraded.