

Tactics, Techniques, and Procedures for

# **OBSERVED FIRE**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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TACTICS, TECHNIQUES, AND PROCEDURES FOR  
**OBSERVED FIRE****Table of Contents**

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## PREFACE

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The purpose of this publication is to explain observed fire procedures used by units in combat and to explain how observed fire training is conducted in peacetime to meet combat requirements. The material presented herein applies to both nuclear and nonnuclear warfare.

This publication discusses observed fire procedures, with the firing unit using both manual and automated fire direction techniques. The observed fire procedures are usually the same; only those instances in which differences occur are indicated. Digital and automated observed fire procedures are discussed in the appendixes. This publication covers only technical observed fire procedures. The operational and organizational aspects of employing observers are discussed in other publications, particularly in the FM 6-20 series manuals.

The target audience for this publication is the field artillery fire support team (FIST) personnel and other fire support observers, to include aerial fire support observers (AFSOs), combat observation/lasing teams (COLTs), infantry scouts, and personnel who may become involved in rear area combat operations.

This publication is fully compatible with the Army's AirLand Battle doctrine and is consistent with current joint and combined doctrine.

This publication implements the following international agreements (standardization agreements [STANAGs] and quadripartite standardization agreements [QSTAGs]):

- QSTAG 224, Edition 2, *Manual Fire Direction Equipment Target Classification, and Methods of Engagement*,
- QSTAG 225, Edition 3, *Call for Fire Procedures*.
- QSTAG 246, Edition 3, *Radio Telephone Procedures for the Conduct of Artillery Fire*.
- QSTAG 503, Edition 1, *Bombing, Shelling, Mortaring, and Location Reports*.
- QSTAG 505, Edition 2, *Adjustment of Artillery Fire*.
- STANAG 1034, Edition 8, *Allied Spotting Procedures for Naval Gunfire Support*.
- STANAG 2088, Edition 6 and QSTAG 182, Edition 2, *Battlefield Illumination*.
- STANAG 2934, Edition 1, *Artillery Procedures*.
- STANAG 3736 Edition 7, *Offensive Air Support Operations*.

The proponent of this publication is HQ, TRADOC. Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:

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Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men,
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## CHAPTER 1

# FIELD ARTILLERY EFFECTIVENESS

### 1-1. FIELD ARTILLERY TEAM

The fire support gunnery problem is solved through the coordinated efforts of the field artillery team (Figure 1-1). This team consists of the observer, the fire direction center (FDC), and the firing unit—all linked by an adequate communications system. Doctrine requires team members to operate with a sense of urgency and to continually strive to reduce the time required to execute an effective fire mission.

**a. Observer.** The observer serves as the “eyes” of all indirect fire systems. He detects and locates suitable indirect fire targets within his zone of observation. To attack a target, the observer transmits a request for indirect fires and adjusts the fires onto the target when necessary. An observer provides surveillance data pertaining to his fires. See Chapter 2 for a discussion of the fire support team and the observer.

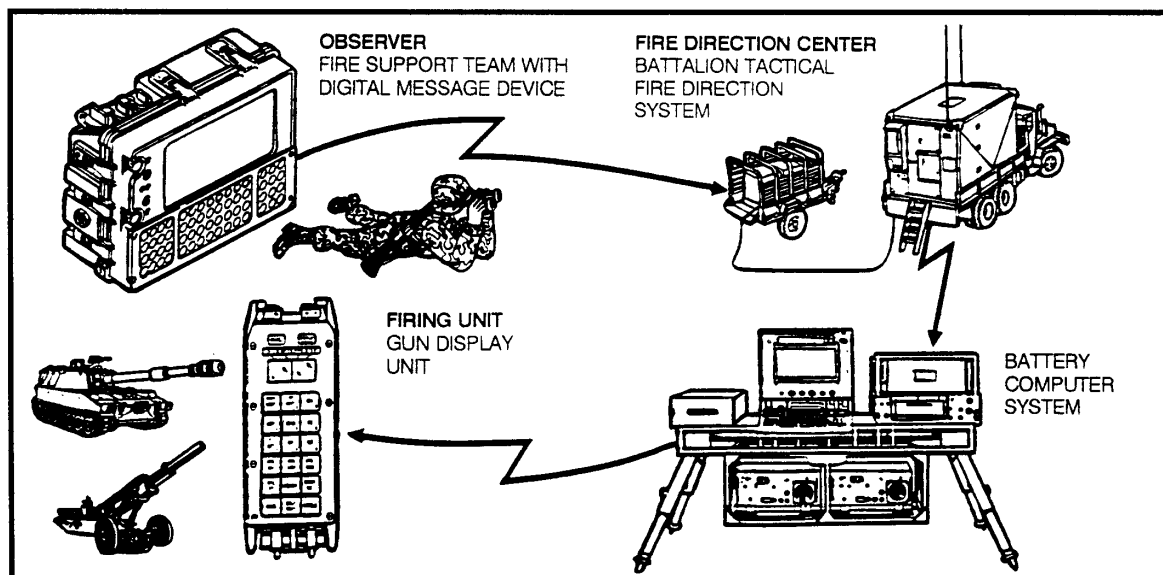
**b. Fire Direction Center.** The FDC serves as the “brain” of the system. It receives the call for fire from the observer, determines firing data, and converts them to fire commands (technical fire direction). The FDC transmits

the fire commands to the sections designated to fire the mission. Because of the great distance between artillery units on the battlefield and requirements for improved responsiveness, technical fire direction normally is conducted by the battery FDC. The battalion FDC does the following:

- Provides tactical fire direction (how to attack a target).
- Monitors all fire nets.
- Provides technical fire direction assistance to battery FDCs; for example, fire plan firing data and fire direction backup.

**c. Firing Unit.** The firing unit serves as the “brawn” of the system. It consists of the firing unit headquarters and the firing sections. The normal function of the firing section is to deliver fires as directed by the FDC. See the FM 6-20 series for a discussion of the fire support system, TC 6-40 and TC 6-40A for a discussion of field artillery (FA) fire direction, and FM 6-50 for a detailed discussion of the cannon battery.

Figure 1-1 THE FIELD ARTILLERY TEAM



## 1-2. FIRE SUPPORT EFFECTIVENESS

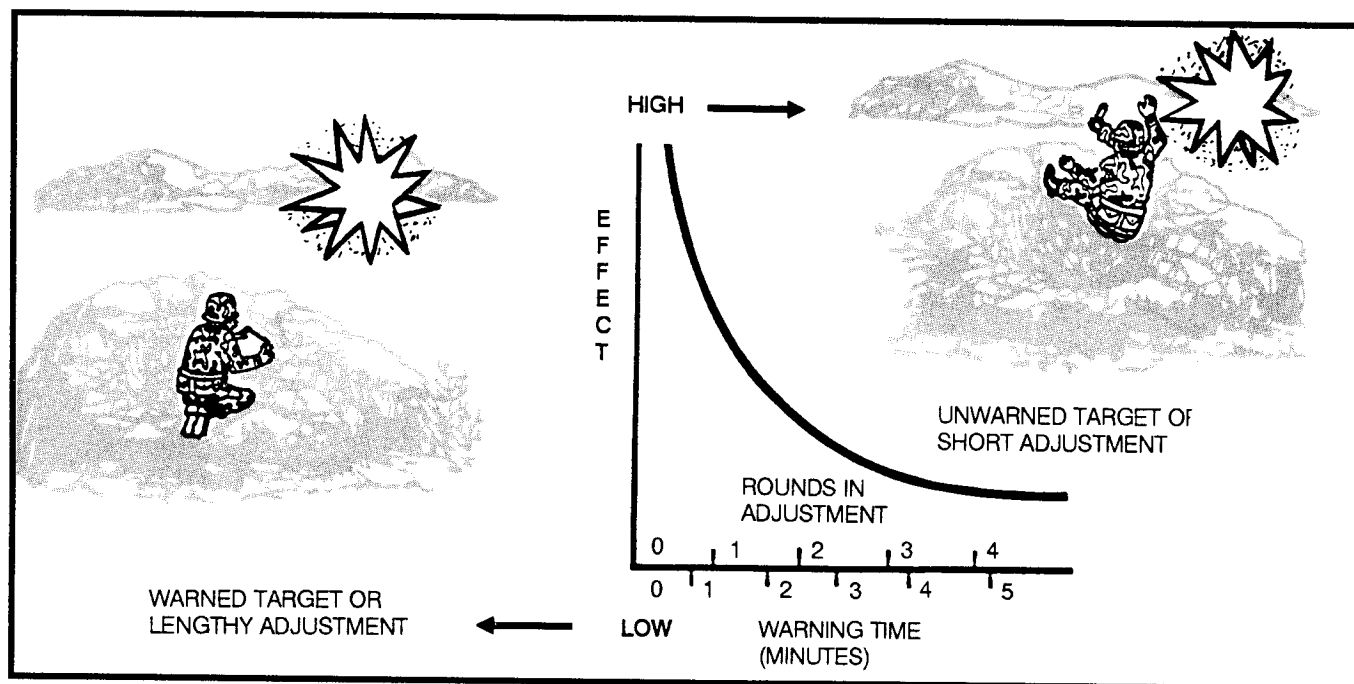
**a. System Responsiveness.** In addition to gunnery, the fire support system consists of target acquisition, weapons and munitions, and command and control. To be an effective force in battle, fire support must be responsive to the needs of our maneuver forces. Procedures must be streamlined to minimize the time lag between target acquisition and effects on the target. Unnecessary delay can result in a failure to have adequate effects on the target. Responsiveness can be achieved if we do the following:

- Plan fire support requirements in advance.
- Streamline the call for fire.
- Limit radio transmissions on fire nets to time-sensitive, mission-essential traffic only.

**b. Effect on Target.** The ability of the fire support system to place effective fires on a target will depend, in part, on the method of fire and type of ammunition selected to attack the target. Maximum effect can be achieved through accurate initial fires and massed fires.

(1) **Accurate Initial Fires.** Accurate initial fires (surprise fires) inflict the greatest number of casualties. The observer must strive for first-round fire for effect (FFE) or make a one-round adjustment if adjustment is necessary. Figure 1-2 compares effect achieved to length of adjustment.

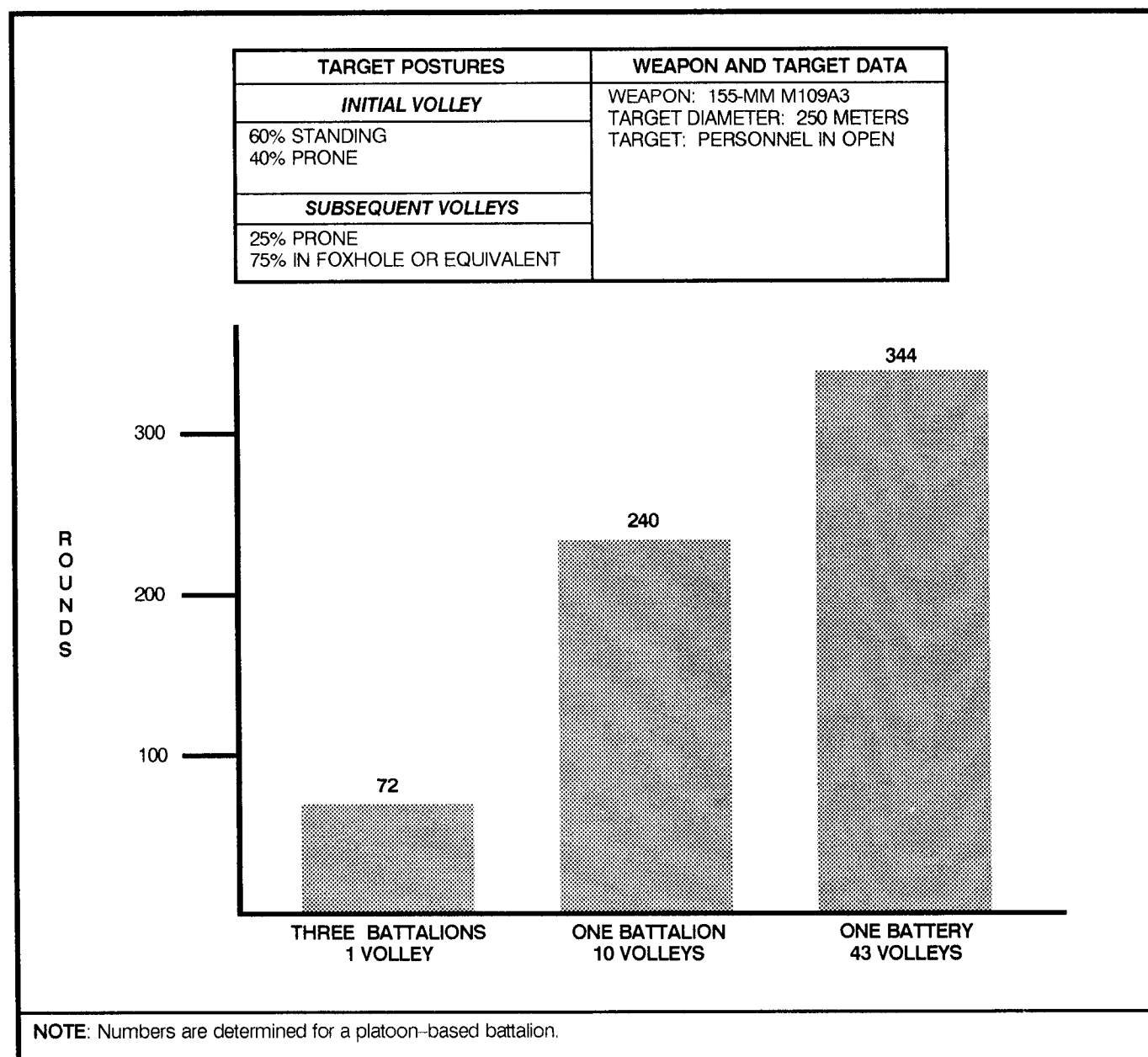
Figure 1-2. EFFECTIVENESS COMPARED TO LENGTH OF ADJUSTMENT



(2) Massed Fires. Massing all available fires normally enables us to inflict maximum effect on a target with a minimum expenditure of ammunition. It also reduces our vulnerability to enemy target acquisition (TA) devices. Failure to mass fires gives the enemy time to react and seek protection. Figure 1-3 compares massed fire and successive volley ammunition expenditures to get equivalent effect. Massed fires of three battalions firing one round are more effective against soft targets than one

battalion firing the same total number of rounds in successive volleys. This is because of the minimum time lag between volley impacts. Massed fires ensure maximum effect in attacking targets that can easily change their posture category for example, a soft target (personnel in the open) can easily become a hard target (personnel with overhead cover). Massed fires do not necessarily provide increased effectiveness against hard targets, because volume of fire is more critical than round impact timing.

Figure 1-3. NUMBER OF ROUNDS REQUIRED FOR EQUIVALENT EFFECT



(3) Proper Munitions. In attacking a target, the shell-fuze combination selected must be capable of producing desired results against the most vulnerable part of the target; for example, the gun crew versus the gun. Failure to select proper shell-fuze combinations will result in an excessive expenditure of ammunition and a reduction in effects on target. Figure 1-4 compares ammunition expenditures and relative effects.

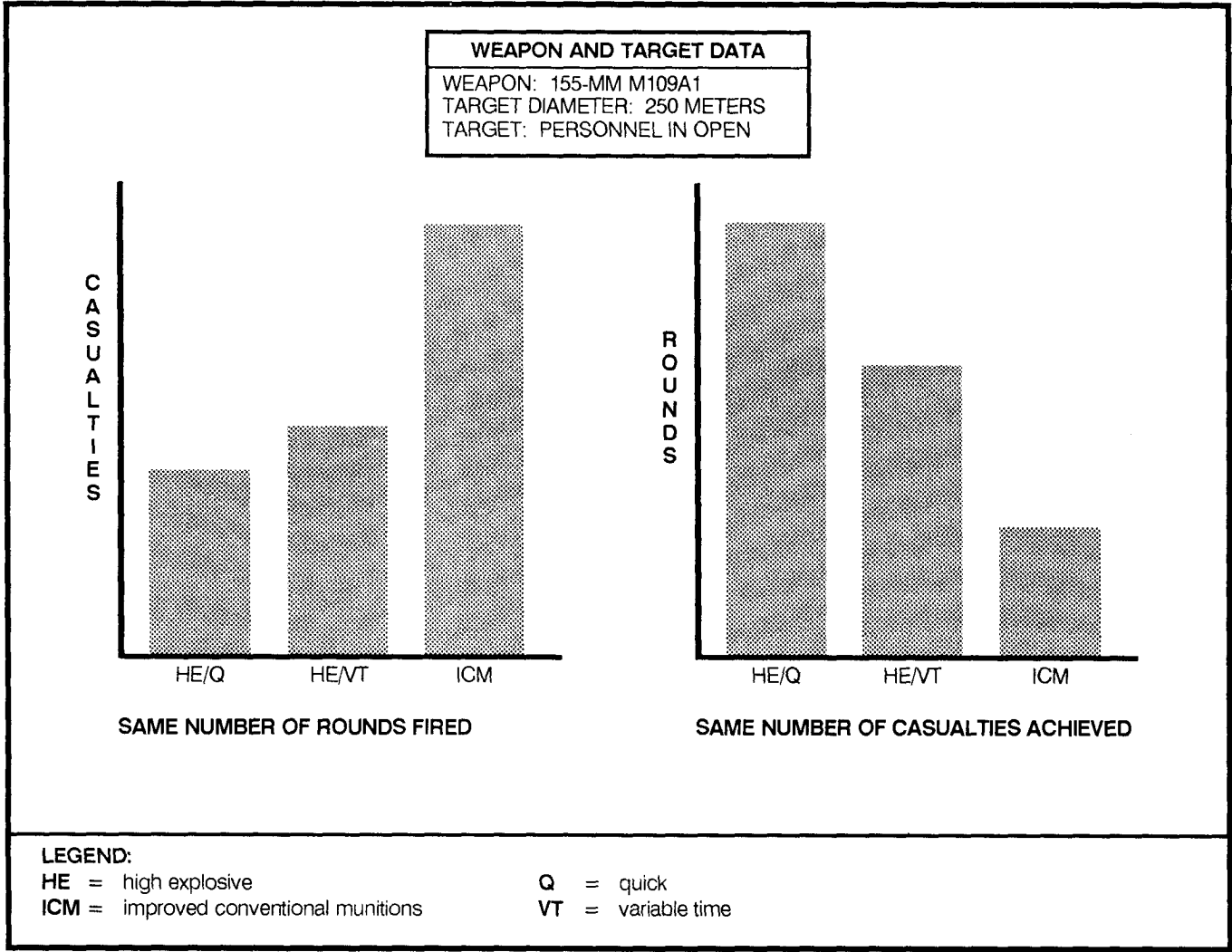
(4) Law of War Considerations. In addition to the above tactical considerations, the selection of targets, munitions, and techniques of fire must comply with the Geneva and Hague Conventions regarding prohibited targets and tactics. The FIST personnel must ensure that the target they select is a legal target and that they use lawful tactics. An example is a battalion of 155-mm

howitzers firing improved conventional munitions (ICM) to neutralize a sniper or an armored personnel carrier (APC) in a heavily populated town. This not only is a waste of firepower but also may violate the rule of proportionality and the prohibition of unnecessary suffering in the law of war.

1-3. CAPABILITIES AND LIMITATIONS

- a. The accuracy of calls for fire depends on the actions and capabilities of forward observers (FOs) and company fire support officers (FSOs) and the accuracy of fire support plans.
- b. Error-free self-location and precise target location are ideals for which the forward observer must strive.

Figure 1-4. AMMUNITION EXPENDITURES AND RELATIVE EFFECTS



First-round FFE on a target of opportunity and immediate and effective suppression of enemy direct fire systems are musts if the supported maneuver unit is to accomplish its mission. Moreover, accurate location of planned targets is imperative to effective execution of a fire support plan. Accurate location of planned targets is possible only if the enemy is under actual observation by a forward observer or other targeting asset. Fire support may be indirect fire-but it must be directed!

**c. Achievement of these goals is primarily situation-dependent.** Accuracy of FA fires also depends to a great extent on the skill and experience of the observer who calls for fire and the equipment he uses for self-location and target location.

**d.** The traditional forward observer, equipped with a map, compass, and binoculars, can expect a mean target location error of about 500 meters. This is not enough for reliable first-round FFE or target suppression; it is no better than it was in World War II. Lengthy adjustments of fire are required to move the rounds onto the target. This wastes time and ammunition and gives the enemy a chance to take cover or leave the area.

**e.** Attainable accuracy for modern observer teams (FISTs, COLTs, and AFSOs), equipped with electronic and optical devices such as laser range finders and position-locating systems, is considerably improved. When properly used by trained and qualified observers, these devices enable the observer to attain first-round accuracy never before possible; but they have inherent hazardous characteristics. Lasers are not eye-safe and can inflict severe eye injuries. Thus, their use in training environments is severely restricted. Even in an actual conflict, care must be taken to prevent injuring unprotected friendly troops. Eye-safe laser range finders for use in training areas are currently under development and will be fielded when available. Appendix A provides additional information on laser-equipped systems.

#### WARNING

Lasers have inherently hazardous characteristics. Current lasers are not eye-safe and can inflict severe eye injury.

**f.** Forward observer teams, especially the force fire support coordinator (FSCOORD) (company or task force FSO), must ensure the maneuver commander recognizes

limitations on attainable accuracy of indirect fire systems and considers these capabilities and limitations when developing his scheme of maneuver.

### 1-4. MANEUVER COMMANDER

**a.** The maneuver commander has the responsibility to ensure that fire support is thoroughly integrated into his scheme of maneuver. When he develops his plan of attack or defensive framework, the FSO, as fire support coordinator, must be at his side. Likewise, when the platoon leader makes his reconnaissance, the platoon FO is with him every step of the way. Before the battle starts, the maneuver leader must assign actions to the company FSO and the FO to ensure they are carried out during the battle. For example, he must **clearly** assign individual responsibility for firing planned targets.

**b.** The maneuver commander and his FSCOORD should remember that if a task is not specifically assigned to an individual, everyone will tend to believe it is someone else's responsibility and the task will never be carried out. For example, simply assigning responsibility for firing on a planned target is not enough. The criteria for shooting must be made clear, and provisions must be made to ensure the responsible FO or FSO will indeed be able to carry out the task. As a minimum, in a defensive situation, specific guidance is needed to answer these questions regarding planned targets:

- Should the observer call for fire when only one enemy vehicle is near the target, or should he shoot only at platoon-sized enemy formations?
- Is the platoon FO to stay close to the platoon leader even in conditions of obscurity, or should he go elsewhere to be in a better position to observe the target?
- If the observer is authorized or required to be elsewhere, how and when is he to get there?
- Who will cover the assigned sector and targets if the assigned FO team does not make it to the assigned position?
- Does the observer have adequate communications, and how will they be tested?

These example considerations are by no means exhaustive. The maneuver commander should remember that the FIST members are assigned down to the platoon level. He must use them before and during the battle.

## CHAPTER 2

# DUTIES OF THE FIRE SUPPORT TEAM AND THE OBSERVER

### 2-1. FIRE SUPPORT TEAM

**a. Personnel and Equipment.** Indirect fire support is critical to the success of all maneuver operations. To ensure the accuracy of indirect fires, qualified observers are needed to locate targets and fires. Forward air controllers (FACs) and firepower control teams (FCTs) provide the expertise for close air support (CAS) and naval gunfire (NGF) respectively. For artillery and mortar support, FIST personnel act as the observers, or eyes, for the maneuver company. The FISTs are attached to maneuver elements at company level during deployment for training or hostilities. They are

normally assigned to the artillery units providing direct support to maneuver. Although the personnel and equipment in each FIST vary depending on the type of force supported, each FIST has (at least) a four-man headquarters. The headquarters personnel include the company FSO (an FA lieutenant), a fire support sergeant (an SSG), a fire support specialist (an SPC), and a radiotelephone operator (RATELO) and driver (a PFC). In addition to the FIST headquarters, a two-man FO party is authorized for each infantry platoon. Table 2-1 shows personnel and major equipment authorizations for each FIST. Transportation for platoon FO parties is provided by the supported force.

Table 2-1. FIST PERSONNEL AND EQUIPMENT

PERSONNEL AND EQUIPMENT	TYPE UNIT					
	MECHANIZED INFANTRY	ARMOR/ CAVALARY	INFANTRY	LIGHT DIVISION	AIRBORNE	AIR ASSAULT
Company FSO (LT)	1	1	1	1	1	1
Fire support sergeant (SSG)	1	1	1	1	1	1
Forward observer (SGT)	3	0	3	3	3	3
Fire support specialist (SPC)	1	1	1	1	1	1
RATELO and driver (PFC)	4	1	4	4	4	4
HMMWV	0	0	1	0	1	1
AN/VRC-88	5	2	1	0	1	1
AN/VRC-91	1	1	1	0	1	1
AN/PRC-119	0	0	4	5	4	4
DMD	4	1	4	4	4	4
FIST DMD	1	1	1	1	1	1
FISTV or APC	1	1	0	0	0	0
G/VLLD	1	1	1	0	0	1
<b>LEGEND:</b> <div style="display: flex; justify-content: space-between;"> <div> <b>DMD</b> = digital message device (Appendix B gives detailed information on the DMD.)  <b>FISTV</b> = fire support team vehicle  <b>G/VLLD</b> = ground/vehicular laser locator designator  <b>HMMWV</b> = high-mobility multipurpose wheeled vehicle </div> <div> <b>LT</b> = lieutenant  <b>PFC</b> = private first class  <b>SGT</b> = sergeant  <b>SPC</b> = specialist  <b>SSG</b> = staff sergeant </div> </div>						



**b. Responsibilities.** The mission of the FIST is to provide fire support for the maneuver company. To accomplish this mission, the FIST is responsible for the five tasks discussed below.

(1) **Fire Support Planning.** Fire support planning includes developing fire plans (target lists and overlays) and determining FO control options to ensure fire support is integrated into the company commander's scheme of maneuver and can be executed in a timely manner.

(2) **Fire Support Coordination.** The FIST must stay abreast of the maneuver situation at all times and monitor requests for fire support within the company to prevent fratricide as the result of friendly fire support. The FIST must advise the maneuver commander on fire support coordinating measures in effect.

(3) **Target Location and Calls for Indirect Fire.** With an accurate target location and a proper match of fire support asset to a target, the FIST can increase the effectiveness of indirect fire support.

(4) **Battlefield Information Reporting.** The observers are the eyes of the field artillery and a major source of information for the fire support community. Information may be sent in the form of artillery target intelligence (ATI) reports or spot reports. Information is also gathered from the target description and the surveillance received in each call for fire.

(5) **Emergency Control of Close Air Support and Naval Gunfire.** Forward air controllers and naval gunfire spotter teams (NGSTs) may not always be available. Therefore, the FIST must be proficient in controlling CAS and NGF.

## 2-2. DUTIES OF FIRE SUPPORT TEAM PERSONNEL

**a. Company Fire Support Officer.** The primary duty of the company FSO is being the FSCoord at company level. He is a full-time fire support advisor to the maneuver company commander, planner, and coordinator. The company FSO advises the commander on the capabilities, limitations, and employment of all fire support assets available to support his operation. These assets may include the M981 FISTV, the laser target designators, and the fire support weapon systems. The company FSO bases his actions on the needs of the supported force as directed by the maneuver commander's guidance. Additional responsibilities of the company FSO include the following:

- Employ all means of fire support.
- Integrate fire support assets into the maneuver commander's battle plan.

- Control the actions of the platoon FOs.
- Employ the M981 FISTV and/or laser equipment to maximize their capabilities.

**b. Fire Support Sergeant.** The fire support sergeant is the company FSOs assistant. Therefore, he must be able to perform all of the duties of the FSO and act in his absence. The duties of the fire support sergeant include the following:

- Employ all means of fire support.
- Act as the senior enlisted supervisor for the FIST.
- Supervise the maintenance of team equipment.
- Conduct and evaluate FIST training.

**NOTE:** Several training devices exist that the fire support sergeant can use to train the FIST. Appendix C provides information on these training devices.

- Supervise the establishment of FIST communications.
- Designate targets for "smart" munitions.

**c. Fire Support Specialist.** The duty of the fire support specialist is to help the fire support sergeant in the performance of his duties. His duties include the following:

- Employ all means of indirect fire support.
- Perform all duties of a platoon FO.
- Assist in the setup, operation, and maintenance of all equipment assigned to the FIST headquarters.

**d. Forward Observer.** At platoon level, except in tank companies and armored cavalry troops, the FO acts as the eyes of the field artillery and mortars. As the maneuver platoon's fire support representative, the primary duty of the FO is to locate targets and call for and adjust indirect fire support. Also, the FO must be able to do the following:

- Submit key targets for inclusion in the company fire plan (limited fire planning).
- Prepare, maintain, and use situation maps.
- Advise the platoon leader as to the capabilities and limitations of available indirect fire support.
- Report battlefield intelligence.
- Designate targets for smart munitions.

**e. Radiotelephone Operator.** The RATELO must be able to set up, operate, and maintain the equipment of the FIST headquarters or the platoon FO party. As a member

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