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FIRE COORDINATION EXERCISE

TABLE OF CONTENTS

	Page
Preface	ii
Chapter 1. Introduction.....	1-1
Chapter 2. Simulation Training.....	2-1
Chapter 3. Live Training.....	3-1
Chapter 4. Tactical Scenarios.....	4-1
Appendix Training Resources Requirements.....	A-1
Glossary.....	Glossary-1
References.....	References-1
Index.....	Index-1

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PREFACE

The purpose of this training circular (TC) is to provide commanders and their staffs with a framework for planning and executing fire coordination exercises (FCX) in a modern training environment. The FCX focuses on the execution of maneuver unit tasks critical to the successful synchronization of direct and indirect fires with maneuver at the basic level. All the other critical battlefield operating systems (BOS) are not addressed in the FCX, which is limited to the basic coordination of indirect fires with maneuver forces. The whole purpose of the FCX is to train maneuver commanders in the art of synchronization, at its very basic level. Once this level is mastered, maneuver training involves all of the combat multipliers in a more advanced training environment, the situational training exercise (STX).

Chapter 1 provides an overview and concept for TC 71-5. It also includes a brief description of the various training aids, devices, simulators, and simulations (TADSS) currently fielded or under development. It also includes a recommended training frequency chart and a chart showing which TADSS support the training of specific BOS functions according to the unit's echelon. This chart is designed to assist commanders in selecting the appropriate training exercise to meet their identified training requirements.

Chapter 2 provides a framework for developing and executing coordination exercises using simulation based training aids. The chapter covers constructive and virtual simulation training aids. Each section includes a detailed description of the simulation based training aid as well as describing the advantages and limitations of each simulation based training aid.

Chapter 3 provides a framework for developing and executing coordination exercises using various training techniques. These techniques include multiple integrated laser engagement system (MILES) for force-on-force training and tank weapons gunnery simulation system (TWGSS), precision gunnery system (PGS), and the various subcaliber training devices for precision gunnery training exercises. One section covers the various training devices available including a more detailed description of the training device as well as describing the advantages and limitations of each training device. A second section covers scaled ranges and a third section covers full-scale coordination exercises.

Chapter 4 provides sample scenarios for the execution of FCXs and tasks to be trained based on movement to contact, defense in sector, and hasty attack missions at company through brigade level. Also included is an appendix detailing the resources required to physically prepare the FCX training site.

TC 71-5 is designed to be used by armored and mechanized companies, battalions, and brigades or similar type organizations whose missions include engaging enemy forces by direct and indirect fires. The primary examples throughout this publication are focused on heavy forces, due to the high costs of full-scale exercises for those type units. It is applicable for both the active and reserve components of the total Army.

This publication is consistent with the current series of training manuals FM 25-100, FM 25-101, FM 71-1, FM 71-2, and FM 71-3.

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 Commander, United States Army Armor Center, ATTN: ATZK-TDD-B, Fort Knox, Kentucky 40121-5000.

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

Chapter 1

INTRODUCTION

This TC provides commanders and their staffs with a framework for planning and executing FCX in a modern training environment.

The FCX focuses on the execution of tasks critical to the successful synchronization of direct and indirect fires with maneuver at the basic level. This TC is also designed to incorporate the training philosophy of FC 71-5, Fire Coordination Exercises, and supports the precepts of FM 25-100 and FM 25-101.

The FCX is a prescriptive training event that allows the commander to ensure that his subordinate leaders and their staffs are proficient in the execution of these tasks prior to conducting training that integrates other BOS at higher skill levels.

CONTENTS	
	Page
Section I. Training Methodology	1-1
Section II. Training Aids, Devices, Simulators, and Simulations.	1-6

Section I. Training Methodology

Training exercises provide an excellent environment for the simultaneous performance of multiechelon training activities to evaluate and sustain the skills of soldiers, leaders, teams, staffs, and units. Exercises simulate battle conditions to train leaders under mission-unique conditions and standards for training, evaluating, and applying the best tactics, techniques, and procedures (TTP) to the mission being trained. Some exercises use minimal troop support and can be executed at homestation to provide commanders and staffs realistic practice in executing wartime missions. Goals associated with training exercises are—

- Sustain soldier, leader, and collective skills
- Develop and sustain command and control (C2) skills of commanders and their staffs.
- Provide an opportunity to train progressively using increasingly more realistic (difficult) conditions.

This TC provides commanders and their staffs with a prescriptive training guide useful in training the execution of the essential BOS of maneuver, fire support (FS), and C2. It also assists commanders in selecting the specific TADSS best suited for conducting the FCX based on what is available.

This concept is tied directly to the battle focused training philosophy of FM 25-101. Through the mission essential task list (METL) assessment process a unit commander identifies an METL task requiring additional training. He then selects the training event and the TADSS that provides the best opportunity for him to meet his desired training objective. The commander also has the option to use a combination of TADSS and training events to meet his training objectives.

Figure 1-1 depicts our current training methodology and links it to the process described in this TC. After conducting his training or METL assessment, the commander establishes his training objectives. He then establishes his training strategy and can use TC 71-5 to select the appropriate training event or combination of training events that meet his training objective. At the completion of the training event, the commander conducts an after-action review (AAR) that begins the training assessment step again.

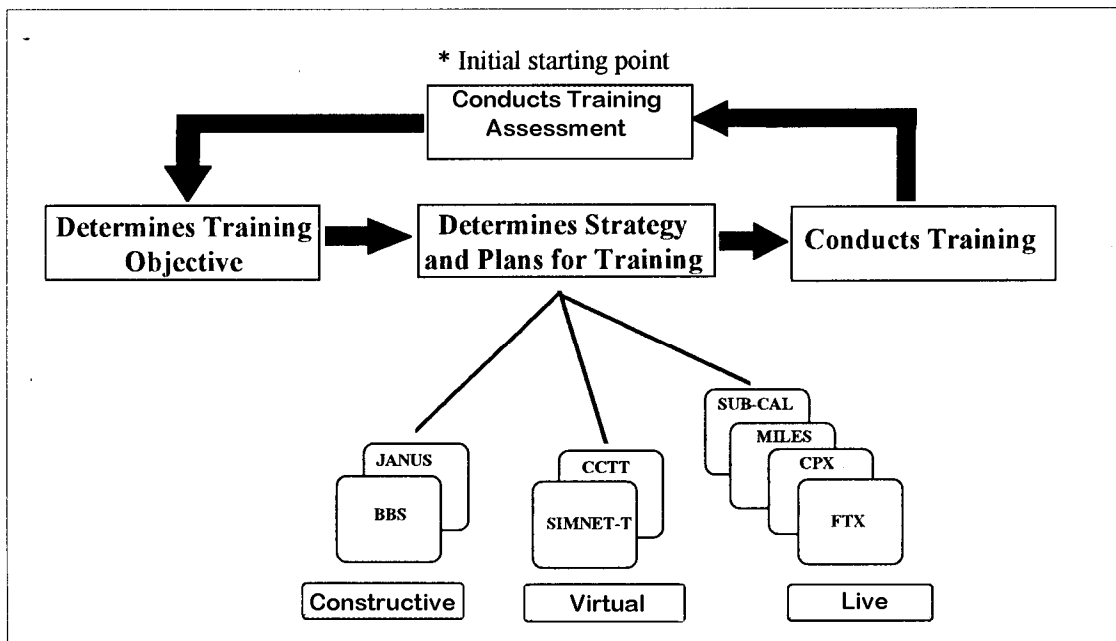


Figure 1-1. Training concept.

The purpose of FCX preparation and execution checks is to ensure that this training event is planned and synchronized. These checks cover the preparation of the leaders to be trained, the observer/controllers (OC) who will execute and evaluate the training, and the training resources required. Unit leaders are trained on prerequisite tasks prior to training. The OCs are coached on how to train, given time to prepare, and rehearsed so that training will be challenging and doctrinally correct. Commanders must ensure that the OCs and leaders being trained are not only tactically and technically competent on their training tasks, but also understand how the training

relates to wartime missions. The OCs must be especially competent in their abilities to provide meaningful AARs. The preparation and execution checks for an FCX are—

- Plan the training.
- Resource the training.
- Train and rehearse the OCs.
- Train unit leaders on related TTP.
- Rehearse the training unit's leaders.
- Execute the FCX.
- Prepare and conduct the AAR.
- Conduct corrective training, as necessary.

Plan the Training. Planning begins with identifying who will be trained in the FCX. Next, the commander conducts a training assessment to determine which tasks and subtasks need additional training. By referencing the appropriate mission training plan (MTP), each task's conditions and standards can be identified and incorporated into the commander's training plan. Then the commander establishes his training objectives.

Using the generic tactical scenarios in this TC, unit commanders conduct a staff exercise to develop an operations order (OPORD). The OPORD is then used to develop an event list and timeline that is tied to the specific direct and indirect fire and C2 tasks selected for training. This process allows commanders to focus their training resources on the tasks selected for training during the training assessment process.

Resource the Training. The commander must next decide whether he will conduct unit training in a live or simulated training environment. Using the appendix in this TC, the commander can identify the training resources required to support his plan. Lastly, the training event is scheduled, and all resources are allocated as needed.

Train and Rehearse the OCs. The training and certification of the OCs is a critical step in this process. The OCs must be tactically and technically proficient in the task(s) they are to evaluate. The OCs must be capable of conducting an AAR that facilitates self-discovery of key issues for the unit, establishes cause and effect, solves or leads to solving the problems identified, and fosters an environment for continuous improvement. Additionally, the OCs should reference and visualize applicable doctrine and TTPs during the conduct of the AAR in order to facilitate understanding. They must be completely familiar with the conditions and standards of the task(s) that will be trained, and must know the evaluated units' tactical standing operating procedures (TSOP) and field standing operating procedures (SOP).

Train Unit Leaders on Related TTP. Training unit leaders on the related TTP is a key to the successful execution of the FCX. Unit commanders ensure their subordinate leaders are trained on the tasks, conditions, and standards of the FCX. This should include a review of the appropriate MTP and related TTP for the mission and tasks. A series of officer professional development (OPD) sessions or other informal training seminars is one method for training subordinate leaders.

Rehearse the Training Unit's Leaders. Rehearsals enhance battlefield success. Participating in a rehearsal allows for a better understanding of the distances, timings, and critical events of the planned training. Rehearsals can be conducted using the various levels described in FM 71-123 and utilizing numerous techniques from one of the three types of rehearsals. An example is to use sandtables or terrain models to reinforce everyone's understanding of the FCX. The Center for Army Lessons Learned (CALL) Newsletter Rehearsals, 91-1, dtd April 91, provides more detail on planning and conducting tactical rehearsals.

Execute the FCX. The proper execution of the FCX to standard is a difficult but rewarding process. The end result is a unit trained to standard on the synchronization of direct and indirect fires with the C2 process. A unit executes the FCX the same way it plans to execute a combat mission.

Prepare and Conduct the AAR. The evaluation process is continuous. Therefore, evaluations must be planned for the FCX. These evaluations are focused on the tasks, conditions, and standards selected for training. Training evaluation is integral to training management and is conducted by leaders at every level. Appendix G, FM 25-101 provides a detailed description of the AAR process.

Conduct Corrective Training, as Necessary. Additional training allows participants to translate observations and evaluation into corrective action. Additional training allows the participants to apply the lessons learned during the execution and AAR. Leaders understand that all tasks will not be performed to standard. Therefore, during the short-range and near-term planning process, they provide flexibility in training events and schedules that allow for additional training immediately following the AAR.

The FCX focuses on the very basic level of training—the coordination of direct and indirect fires with maneuver and C2. Once a unit has met these training standards, it is, ready to move on to more difficult training events. These are STXs that integrate fires, maneuver, and C2 with the remaining BOS elements, and free-play opposing forces (OPFOR) situations (see Figure 1-2).

As with any exercise that integrates fire with maneuver, commanders must calculate the minimum safe distances required for the systems he is using. Once the minimum safe distances are calculated, commanders can then plan their maneuver to exploit the benefits of these weapons.

OPFOR		Combat Systems			Conditions	
		CO/TM/TRP	BN/TF/SQDN	BDE/REGT		
F C X	Stationary Targets (No Return Fire)	Direct Fire/Stationary	Direct Fire/Stationary	Direct Fire/Stationary	Day/Clear	
		Direct & Indirect Fires	Direct & Indirect Fires	Direct & Indirect Fires		
	Stationary Targets (Fires Back)	Direct & Indirect Fires/Maneuver	Direct & Indirect Fires/Maneuver	Direct & Indirect Fires/Maneuver		
			Air Defense Artillery	Air Defense Artillery	Obscuration	
	Programmed Moving Targets		Close Air Support	Army Aviation		
	Moving OPFOR with Artillery			Close Air Support		
	NBC			JAAT	Night	
S T X	Live Thinking OPFOR	Remaining BOS Elements Integrated			Reduced Timeline	

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Figure 1-2. Progression of training difficulty.

RECOMMENDED TRAINING FREQUENCY

Units should execute an FCX every quarter or after a change in the unit's key leaders. Table 1-1 shows the recommended frequency and the associated triggering event that would cause an FCX to be conducted.

Table 1-1. Recommended training frequency.

ACTIVE COMPONENT						
CO/TM/TRP	Quarterly	New Co Cdr	New Co FIST	New Plt Ldr		
BN/TF/SQDN	Quarterly	New Bn Cdr	New Bn FSO	New Co Cdr	New S3	New XO
BDE/REGT	Quarterly	New Bde Cdr	New Bde S3	New Bde FSCOORD	New Bde XO	New Bde FSO

RESERVE COMPONENT						
CO/TM/TRP	Semi-annual	New Co Cdr	New Co FIST	New Plt Ldr		
BN/TF/SQDN	Semi-annual	New Bn Cdr	New Bn FSO	New Co Cdr	New S3	New XO
BDE/REGT	Semi-annual	New Bde Cdr	New Bde S3	New Bde FSCOORD	New Bde XO	New Bde FSO

Section II. Training Aids, Devices, Simulators, and Simulations

OVERVIEW

This section provides a brief description of the various TADSS currently available. Table 1-2 shows which TADSS system supports units training in their BOS functions according to the unit's echelon. More detailed information on each TADSS can be found in Chapters 2 and 3.

Table 1-2. Training aids, devices, simulators, and simulations supporting fire coordination exercises.

BOS	CO/TM/TRP	BN/TF/SQDN	BDE/REGT
Maneuver	SIMNET-T Target Lifting Device CCTT MILES JANUS Laser Target Interface Telfare PGS TWGSS TPGID	SIMNET-T CCTT JANUS BBS MILES TWGSS TPGID	SIMNET-T JANUS BBS MILES
Fire Support	SIMNET-T JANUS CCTT MILES Trainer, Mortar Pneumatic	SIMNET-T JANUS BBS CCTT MILES Trainer, Mortar Pneumatic	SIMNET-T JANUS BBS MILES
Command and Control	SIMNET-T JANUS CCTT MILES	SIMNET-T JANUS CCTT MILES BBS	SIMNET-T JANUS BBS MILES

TELFARE

Telfare is a training device that permits the substitution of the M2 HB .50 caliber machine gun for the tank main gun for use on full-scale ranges. By using Telfare, a commander can incorporate tank main gun firing into an FCX. This system has a major advantage in that it is very cost efficient. Telfare has two notable limitations. The training area required often exceeds the size of many local training areas. Also, the system is not very accurate over extended ranges.

TANK PRECISION GUNNERY INBORE DEVICE (TPGID)

The TPGID is a 35-mm subcaliber training device that fits into a tank's main gun tube. Available only in United States Army, Europe (USAREUR), this device allows for full crew integration in live-fire exercises (LFX) on full scale tank gunnery ranges, with full- or half-scale size targets. The system can be used to conduct tank tables VI and XI and combined arms live-fire exercises. However, the system's effective range is 2,000 meters, requiring reduced targetry ranges to execute any gunnery tables. Currently, the system is only available at Grafenwoehr Training Area in Germany.

MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES)

MILES is a family of training systems (MILES, MILES II/simulated area weapons effects [SAWE], and MILES/air ground engagement system [AGES] II) that simulates the effects of direct-fire weapons. MILES provides the capability for force-on-force and target engagement in a real time environment. By using MILES, a commander incorporates various direct-fire weapons in an FCX without actually firing live ammunition. MILES gunnery saves a great deal of training cost by saving on training ammunition and wear and tear on the tank's gun tube. However, obscurants can affect the system's performance.

The MILES/AGES II version is a MILES training device for rotary-wing aircraft in offensive and defensive combat roles during force-on-force training. This system allows for the aircraft to engage targets and be engaged by ground forces and other aircraft involved in the force-on-force training.

TANK WEAPONS GUNNERY SIMULATION SYSTEM (TWGSS)

TWGSS is a training device that simulates main gun and coaxial machine gun functions in both the precision and degraded modes. TWGSS can be used on both full- and half-scale ranges. This simulation includes visual effects in the commander's and gunner's sights that simulate ballistic tracers, burst on impact, and target obscuration along with aural effects. By using TWGSS, a commander can incorporate tanks in direct fire and call-for-fire modes. TWGSS' major advantages are that it is cost effective since it saves a great deal of tank main gun ammunition and it effectively simulates the effect of firing the weapon. Its main disadvantages are the requirements for specialized targetry support and the limitations in engaging obscured targets.

PRECISION GUNNERY SYSTEM (PGS)

PGS is a training device that simulates main gun, coaxial gun, and tube-launched, optically tracked, wire-guided (TOW) missile functions in both precision and degraded modes in full and 1/10th scale for the Bradley Fighting Vehicle (BFV). The simulation includes visual effects in the commander's and gunner's sights that simulate ballistic tracers, burst on impact and obscuration along with aural effects. By using PGS, a commander can incorporate BFVs in an FCX in direct fire and call-for-fire modes. Since actual ammunition is not used, a range facility is not required. PGS advantages and disadvantages are the same as TWGSS.

LASER TARGET INTERFACE DEVICE (LTID)

The LTID system consists of a MILES laser sensor and control box that attaches to a target lifting device. The sensor, and in some cases a reflector, is attached to the face of the target. When the MILES laser beam strikes the sensor, a signal is sent to the control box. This signal is evaluated by the control box causing the target to fall when the appropriate kill code is received. This system can be used with the TWGSS, PGS, or any training device that incorporates an MILES laser. Its chief disadvantage is that it can only be used with the systems named above.

TRAINER, MORTAR, PNEUMATIC

The trainer, mortar, pneumatic device uses compressed air to fire a 25-mm sub projectile to train 4.2", 60-mm and 81-mm mortar crews. The device is used on 500, 1,000, and 2,000 inch ranges and trains individuals and crews in calling for and adjusting indirect FS. This system does provide excellent training for mortar crews and their fire direction centers (FDC); however, its limited range capability reduces its usefulness when training with maneuver forces.

JANUS

JANUS is an interactive, event-driven wargaming simulation used to train platoon and company level commanders on the application of tactical doctrine and combat techniques. At the battalion and brigade level, JANUS serves as an excellent training simulation requiring the deliberate and combat decision making using the entire battle staff. Commanders must apply sound warfighting principles and achieve full synchronization of the BOS to fight a successful JANUS battle. JANUS' main advantage is that it requires full and detailed commander and staff interaction to develop and execute their mission.

BRIGADE/BATTALION BATTLE SIMULATION (BBS)

BBS is an interactive, event-driven wargaming simulation. It provides maneuver commanders and their staffs with the opportunity to practice deliberate and combat decision making in a realistic, multithreat, time stressed simulated combat environment. BBS supports training of combat maneuver commanders and their staffs at brigade and battalion level. The advantage that BBS offers is that it trains unit key leaders in executing their mission with a fully integrated team of combat, combat support (CS), and combat service support (CSS) units. Company commanders, CS, and CSS units also receive training as part of all BBS exercises, BBS' disadvantage is that it does not train platoon size and smaller units.

SIMULATION NETWORKING-TRAINER (SIMNET-T)

SIMNET-T is a large scale, fully interactive simulation network that enables commanders at all levels to conduct force-on-force combined arms training. SIMNET-T training is primarily focused on the tasks of C2, tactical movement, and the synchronization of direct and indirect fires. SIMNET-T's chief advantage is that it allows commanders to conduct a low-cost mounted combined arms mission training his entire force. However, the system is only available at fixed site training locations and is not easily accessible to the entire force.

CLOSE COMBAT TACTICAL-TRAINER (CCTT)

The CCTT is an interactive network of manned simulators operating on a computer-generated data base in a manner that provides training in combat operations for tactical units. The CCTT concept is to incorporate combat, CS, CSS, and OPFOR into a large scale simulation. Numerous Army Training and Evaluation Program (ARTEP) and mission essential tasks can be performed. The CCTT will be available in fixed and mobile versions.

Chapter 2

SIMULATION TRAINING

Simulations used in training attempt to accurately portray reality. Some of the benefits of simulation training include cost efficient training, training units in tasks that are too hazardous to the environment, and training units in complex tasks in a repetitive fashion. Also, training within simulations enables the senior trainer to control all of the environmental variables and give enhanced observation feedback to the training unit. The training outcomes and behaviors are similar outcomes that would have resulted from a full-up exercise. There are several ways in which training simulations can replicate war. The Army has the capability to replicate tactical engagements through constructive and live simulations. Before employing the proper simulation, the commander and his staff must ask the following questions:

- What tasks are being trained?
- What are the training objectives?
- Who is being trained?
- What level of training are the trainees currently at?
- What TADSS are available?
- What scenario/event will commander use to drive the training?

These questions begin to identify the simulations available and point the trainer toward the proper simulation. Several simulation methods can be employed to meet overall training objectives. Each simulation performs specific tasks for the trainer. Selection of the proper simulation or simulations ensures that tasks are trained and training outcomes are met. A brief description of each method should help the trainer select the appropriate method of simulation to meet the training objectives in question.

The descriptions that follow describe the simulations' full scale capabilities. Leaders must remember the greatest advantage of the FCX is that it enables them to train basic leader skills and collective tasks with a minimum expenditure of resources, and the focus of FCXs is the synchronization of maneuver and fires. When designing FCXs using simulations, commanders must tailor the simulation system to maintain focus on the synchronization of maneuver with indirect and direct fires while minimizing the interaction of other CS and CSS tasks.

CONTENTS	
	Page
Section I. Constructive Simulations	2-2
Section II. Virtual Simulations	2-6

Section I. Constructive Simulations

Constructive simulations are widely used within the Army and have proliferated greatly within the last 10 years. They are complex, computer-driven models most often associated with exercises training battalions, brigades, divisions, and corps.

The primary training audience of constructive simulations is the commanders and their battle staffs. In the majority of cases, these simulations are “exercise drivers” for command post (CP) type training exercises where the commander and staff are in field CPs. The adjacent, higher, and lower units are “played” in computer workstations transparent to the primary training audience. Communication between the commander and workstation units is with organic communication equipment.

Outcomes from constructive simulations are based on models of attrition and algorithms within the simulation. Most constructive simulations require interactive free-play from the workstation role-players from both friendly and OPFOR. Regardless of which specific constructive simulation, all are efficient in training leaders and staffs from company through brigade.

BATTALION/BRIGADE BATTLE SIMULATIONS (BBS)

An example of a constructive simulation where the training audience does not personally or physically interact with the simulation is the BBS. The BBS is a low-cost training simulation. It provides maneuver brigade and battalion commanders and their battle staffs with the opportunity to practice decision-making skills. BBS focuses on the execution of Army doctrine in a realistic, multithreat, time stressed combat environment. The commanders with their battle staffs must develop, correlate, and assess large quantities of tactical and logistical data. They must formulate situational estimates and make immediate decisions in the C2 and synchronization of combat, CS, CSS, and aviation assets. BBS supports training of combat maneuver and other commanders and the staffs at brigade and battalion and other comparable unit levels. Company commanders, CS, and CSS units also receive valuable secondary training as part of any BBS driven command post exercise (CPX). A significant disadvantage associated with using BBS is that the normal training time for workstation interactors and warfighters is 6 to 8 hours. The advantages of using BBS are—

- Trains leaders in decision-making skills.
- Processes volumes of tactical and logistical data.
- Trains commanders and staffs at brigade and battalion levels.

- Allows senior commanders to modify OPFOR capabilities and course of action (COA).
- Standard unit size is platoon for ground forces.
- Allows modeling of many non-US weapon systems for both OPFOR and BLUEFOR.

Working with the BBS OPFOR controllers, senior commanders can increase or decrease the training difficulty level by changing the OPFOR capabilities and basic COA. Tailoring the OPFOR COA will ensure that his training objectives are met.

BBS is capable of modeling from individual soldier and individual weapon through brigade-size units with all accompanying weapons systems (such as from pistols through tanks as well as other equipment and supplies). The standard unit size is platoon level for ground maneuver elements and individual systems for aviation and CSS specialty missions. The equipment data base also allows the modeling of many non-US weapon systems and platforms for both OPFOR and BLUEFOR. Table 2-1 shows the major functionalities. Table 2-3, on page 2-5, shows the BBS training locations.

Table 2-1. Battalion/brigade battle simulations functionalities.

Direct Fire	Movement
Indirect Fire	Operations
Intelligence	Ground Surveillance Sensors
Firefinder Radars	Air Defense
Artillery Fires Including Target Acquisition	Mobility, Countermobility, Survivability
Close Air Support	FASCAM
Airborne and Airmobile	Army Aviation
Smoke	Chemical/Nuclear
Weather	Casualty Evacuation
Personnel and Logistics	

JANUS

Although primary training audiences do not come in direct physical contact with most constructive simulations; however, some of these simulations do require direct interaction with the training audience. This is the case with the JANUS simulation. JANUS is a system used primarily as an individual leader training simulation. A major disadvantage of using JANUS is that the training time required

for workstation interactors and warfighters is 8 to 12 hours. The advantages of using JANUS include—

- Used to train platoon through brigade levels.
- Focused on execution of tactical doctrine and combat techniques.
- Accurately models both friendly and enemy weapon systems.
- Weapons systems affected by terrain and weather.
- Ability to conduct military operations in urban terrain (MOUT) and dismounted infantry operations.
- Utilizes digitized high resolution terrain, with up to a 100 km by 100 km box of maneuver terrain.
- Senior commanders can modify the training difficulty level by—
 - Modifying the OPFOR basic capabilities and COA.
 - Incorporating as many of the OPFOR BOS as he determines appropriate.

JANUS is an interactive, event-driven wargaming simulation used to train platoon through brigade level commanders. Training specifically focuses on the application of tactical doctrine and combat techniques. Players must consider all aspects of employing their forces just as they would in combat. JANUS accurately models both friendly and enemy weapons systems with resolution down to the individual platform (such as T-80, M2, or individual soldier weapons). These systems have distinctive properties such as dimension, weight, carrying capacity, weapons, and weapons capabilities; all of which can be affected by terrain and weather. Recent enhancements include the ability to conduct MOUT and improved dismounted infantry functionality.

At the battalion and brigade level, JANUS serves as an excellent training simulation requiring detailed commander-battle staff interaction as they develop and execute the ground tactical plan. Commanders must apply sound warfighting principles and achieve full integration and synchronization of the BOS elements to fight a successful JANUS battle. Normal training time for workstation interactors and warfighters is 8 to 12 hours.

JANUS uses digitized high resolution terrain, displaying it in a format similar to standard military map representation, such as contour lines, roads, rivers, vegetation, and urban areas. System capabilities allow up to a 100 km x 100 km maneuver box during game play.

Working with the JANUS controllers, commanders can increase or decrease the training's difficulty level in three basic ways. First, the capabilities of the OPFOR combat units can be increased or decreased. The OPFOR basic capabilities in terms of weapons system lethality, capability to detect and to be detected can all be increased

or decreased. This allows the training unit to fight against an OPFOR with variable capabilities.

Second, the OPFOR COA can be tailored to meet the units' training objectives. The OPFOR can follow a prescribed COA or the OPFOR can be free-play. A prescribed OPFOR COA permits the training unit to execute an easier scenario and ensures that enemy contact will be made; while a free-play OPFOR presents an exponentially more difficult scenario for the training unit.

Third, as many or as few of the OPFOR BOS can be incorporated into the scenario as needed. Since the OPFOR can use all of their BOS during a scenario, the training unit can incorporate specific OPFOR BOS as needed to meet their training objectives. For example, during a JANUS scenario the OPFOR chemical warfare capability can be negated by the JANUS controller. Table 2-2 shows the major functionalities of JANUS. Table 2-3 shows the JANUS training locations.

Table 2-2. JANUS functionalities.

Obstacle Employment	"See All" Workstation
AVLB Play	MOUT
Hel Pop-up Positions	Artillery Impact Recording
Engineer Play	LOS Display
Suppression	Direct Fire
Mounted and Dismounted	Ops Unit and TF Options
Status Reports	Kill Reports
Artillery Missions/PGMs	Dual Graph Tablets
Zoom Capability	Replay Function
Class III and V Consume/Resupply	Minefield Breaching
Symbology	Terrain Effects
Friend-See-Friend (LOS)	Direct Fire Fratricide
Smoke and Weather Effects	ADA Operations
Airmobile Operations	CAS
Firefinder Radars	

Table 2-3. Brigade/battalion battle simulation/JANUS training locations.

Birmingham, AL	Camp Bullis, TX
Camp Casey, ROK	Camp Parks, CA
Ft. Benning, GA	Ft. Bliss, TX
Ft. Bragg, NC	Ft. Campbell, KY
Ft. Carson, CO	Ft. Dix, NJ
Ft. Drum, NY	Ft. Jackson, SC
Ft. Knox, KY	Ft. Leavenworth, KS
Ft. Leonardwood, MO	Ft. McClellan, AL
Ft. Polk, LA	Ft. Richardson, AK
Ft. Riley, KS	Ft. Rucker, AL
Ft. Sheridan, IL	Ft. Sill, OK
Ft. Stewart, GA	Grafenwoehr, GER
Hohenfels, GER	Houston, TX
Schoefield Barracks, HI	Vicenza, ITL

Section II. Virtual Simulations

Virtual simulations are referred to as simulators because they are either a single part or complete replicas of individual or crew-served weapon systems and/or vehicles and crafts. Examples of virtual simulations are found in flight simulators at Fort Rucker, tank simulators at Fort Knox, infantry fighting vehicle (IFV) simulators at Fort Benning, and engineer vehicle simulators at Fort Leonardwood. Virtual simulations provide primary training to individuals and crews in collective training experiences.

Virtual simulations train collective training tasks. These simulations contain simulators that closely replicate all or parts of tanks, armored personnel carriers (APC), and other equipment. Simulations normally require the trainee(s) to immerse into the simulated battlefield. The trainee then inputs the applicable information into the controls of the simulator. Visual, sound, and motion playback cause the trainee to continue interacting with the simulator through a prescribed number of tasks.

SIMULATION NETWORKING-TRAINER (SIMNET-T)

SIMNET-T exploits the ability of computer technology to transfer data streams across networks containing large numbers of simulators with real time update of simulators in the network. The advantages of using SIMNET-T include—

- Emulates artillery, engineer, dismounted infantry, air defense, and CSS.
- Senior commanders can modify training difficulty by establishing the combat capabilities as parameters for both OPFOR and BLUEFOR.
- OPFOR COA can be altered as the combat situation develops.

The disadvantages involved in using SIMNET-T include—

- Does not simulate battlefield environmental conditions.
- Does not fully simulate all of the BOS-
 - Only surfaced laid minefields used for countermobility operations.
 - Defending units can not occupy prepared BPs.

SIMNET-T trains combat units at the crew through battalion echelons. Existing simulators are in the form of M1 tanks and M2/M3 BFVs. Emulations of artillery, engineer, dismounted infantry, air defense, and CSS also exist. Working with the SIMNET-T controllers, commanders can increase or decrease the training's difficulty level by increasing or decreasing basic combat capabilities for both the

BLUEFOR and OPFOR. Specifically, SIMNET-T allows commanders to set the direct fire parameters of gunnery proficiency and target detection.

Additionally, the OPFOR COA can be tailored to meet the unit's training objectives. The OPFOR can follow a prescribed COA or the OPFOR can be free-play. A prescribed OPFOR COA permits the training unit to execute an easier scenario and ensures that enemy contact will be made. While a free-play OPFOR presents an exponentially more difficult scenario for the training unit.

While the SIMNET-T is an excellent training simulator, it does contain several weaknesses. It does not simulate battlefield environmental conditions nor does it fully simulate all of the BOS. Additionally, it does not permit defending units to occupy dug-in defensive positions and it only permits the use of surface laid minefields for countermobility operations. Table 2-4 shows the major functionalities. Table 2-5 shows the Army's SIMNET-T training locations.

Table 2-4. Simulation networking-trainer functionalities.

Direct Fire (Main Tank Gun, TOW) C2	Indirect Fire (Arty, Mortar) Helicopters/CAS (MG, TOW, Bombs)
Mounted Maneuver Air Defense	Dismounted maneuver (TBD)

Table 2-5. Simulation networking-trainer locations.

FIXED SITES	MOBILE SETS
Camp McCain, MS Ft. Benning, GA Ft. Hood, TX Ft. Knox, KY Ft. Rucker, AL Ft. Stewart, GA Grafenwoehr, GER	<u>Homestation</u> Boise, ID Macon, GA

The SIMNET-T is not a substitute for field training, but an additional tool to maximize training opportunities. Training at the SIMNET-T prepares a unit to get the maximum benefits from scheduled field training exercises (FTX) by providing a flexible training system to the unit before deployment, and as a sustainment training tool.

CLOSE COMBAT TACTICAL TRAINER (CCTT)

The planned follow-on system for SIMNET-T is the CCTT. The CCTT is currently scheduled for fielding during FY 96 through FY 99. The first CCTT is scheduled to be fielded to 1st Cavalry Division in 3d quarter FY 96. The CCTT is an interactive network of manned simulators operating on a computer-generated data base that provides training in combat operations for maneuver battalions and companies, while their brigade headquarters exercises simultaneously in BBS. Numerous ARTEP and mission essential tasks can be performed using CCTT. Currently, the combat vehicles manned in CCTT are the M1 series tanks, M2/M3 BFVs, and the M981 fire support team vehicles (FISTV). A dismounted infantry simulator module is also available. Other vehicle types will become available as manned simulators as this system matures and is enhanced.

The advantages in using the CCTT system include—

- Replicates full spectrum of battlefield environmental conditions.
- Commanders can incorporate as many or as few of the BOS as needed.

The CCTT will be produced in fixed and mobile versions. The fixed sites will primarily support active component units, while the mobile versions will support reserve component units. Table 2-6 lists proposed CCTT locations.

Table 2-6. Close combat tactical trainer locations.

FIXED SITES	MOBILE SETS		
	<u>Homestation</u>	<u>M1</u>	<u>M2</u>
Ft. Stewart, GA	Ft. Bragg, NC		1
Ft. Benning, GA	Ft. McClellan, AL	1	1
Ft. Knox, KY	Ft. Polk, LA	1	1
Ft. Hood, TX (2)	Camp Bowie, TX	1	1
Ft. Riley, KS	Camp Dodge, IA	1	
Ft. Carson, CO	Camp Shelby, MS	1	1
Ft. Lewis, WA	Camp Roberts, CA	1	1
USAREUR (2)	Camp Perry, OH	1	
EUSA	Yakima, WA		1
	Catoosa, GA	1	
	Leesburg, SC	1	1
	Indiantown Gap, PA	1	1
	Ft. Dix, NJ		1
	Gowen Field, ID	1	

Chapter 3

LIVE TRAINING

Live exercises are conducted in conjunction with, prior to, or after simulation training. An important consideration in choosing to use live training or simulations is what resources are available. Most units have the ability to use organic equipment and locally maintained training devices to train at homestation. The scope of the training can be adjusted to suit the mission needs and the resources available.

Live exercises may be conducted at several levels varying from MILES or TWGSS live-fire simulators to full-scale main gun range exercises using reduced numbers of personnel and equipment. Any combination of weapons simulators, subcaliber devices, and organic weapons may be used to create the desired training effect. The advantages of using live training versus simulators are–

- Unpredictable environmental conditions.
- Increased familiarity with organic weapons systems.
- Full effect of the terrain is incorporated into training event.
- Full replication of all direct fire weapons effects (some limited in most simulators).

The disadvantages of live training are–

- High costs.
- Limited range resources.
- Limited Class V availability.
- Range scheduling constraints.
- Increased OC requirements (limited playback capability when compared with virtual and constructive simulation).
- Environmental restrictions.
- Increased wear and tear on unit equipment.

CONTENTS

	Page
Section I. Weapons Simulator Exercises.	3-2
Section II. Subcaliber Live-Fire Exercises.	3-4
Section III. Full-Scale Live-Fire Exercises.	3-6

The effectiveness of live training can be limited by a unit's ability to match its training objectives to the resources available. Live training can be tailored to address many different training needs from company maneuver to brigade staff operations.

This may be done separately or in a multiecheloned training event in accordance with the unit's METL assessment and training objectives.

Section I. Weapons Simulator Exercises

Weapons simulator exercises employ training devices that do not require live-fire range facilities. The most frequently used training devices use eye-safe lasers integrated into weapons systems fire control such as MILES or TWGSS/PGS. These training devices provide a relatively high degree of realism in training while allowing units a high degree of maneuver freedom not available in LFXs. Weapons simulator exercises allow training across the full combat spectrum of offensive and defensive missions.

MILES and TWGSS/PGS simulate tank and BFV and other main gun or small arms firing effects through a coded laser signal that transmits the type of weapon firing to the target. They may be used against personnel or vehicles, but can also be used with range targetry equipped with LTIDs. MILES is a force-on-force training tool that is readily available at most training areas and most garrisons where combat vehicles are stationed. It is somewhat limited in its ability to replicate gunnery effects back to the firing crew and inhibits the full use of the vehicle due to cable routing and placement of electronic devices that control the MILES transmitters and receivers. TWGSS and PGS are precision gunnery training tools that offer several significant improvements over MILES. TWGSS and PGS simulate the full effects of firing and requires crews to use the same gunnery techniques used during live fire.

MILES and TWGSS/PGS allow the unit freedom in developing the OPFOR scenario and target types. LTIDs can be applied in any scenario and with any target types. This allows the unit to tailor its training to meet its specific mission needs. This may be especially useful during mobilization training when a unit does not have time or resources to conduct live-fire training or travel to a major training area. LTID targetry can be used anywhere that target lifters can be placed. It is important to note that LTIDs must use special reflectors when used with TWGSS/PGS in order to generate a target effect to the gunner. This method provides the flexibility to conduct an FCX on any training land that has enough room for vehicles and targets without the necessity of an impact area.

Full-scale ranges can also be used to support weapons simulator exercises. This would normally be used in circumstances where live ammunition is limited and reduced training costs are desired. Ranges may vary from single purpose specialized ranges to multipurpose range complexes (MPRC). Maneuver unit participation in the FCX may be limited to key leaders based on the intent of the exercise, physical lane size limitations or other such limiting factors. In many situations such exercises can easily facilitate training at all levels; in particular events using MILES can easily be designed to train crew skills as well as collective tasks simultaneously.

The absence of live munitions in these simulator exercises enables units to overcome safety requirements associated with live-fire range operations, which do not exist in a real battlefield. This is regardless of whether the training is conducted on maneuver land or on a traditional live-fire range. There is no requirement for a live OPFOR. This reduces the training overhead in terms of personnel and equipment availability, but it is very dependent upon the availability of LTIDs and weapons simulators. Live simulations offer more maneuver free play, but are more complicated to control and observe. Live weapons simulator exercises are more focused toward the synchronization of fires, maneuver, and C2 in a controlled environment,

A limitation in comparison to other simulations and LFXs is the inability to determine precisely the impact of target effects. Virtual and constructive simulations have the capability to provide detailed feedback to exercise evaluators that show specific information regarding which vehicle killed another and the exact effects of artillery and close air support (CAS). LFXs are harder to monitor specific target effects, but crews can see the immediate effects of their weapons systems as the action occurs. Weapons simulators give a firing signature from the firing vehicle, but there is no way to determine specific target effects. Total target hits or kills are observed with no ability to identify who hit the target.

Weapons simulator exercises at the company level are primarily oriented towards direct fire coordination with limited BOS integration. This is a function of the absence of many BOS elements within the company/team. The use of mortar fires may be simulated using subcaliber devices to train small unit leaders direct and indirect fire coordination. An alternative method may be to conduct a dry fire exercise using weapons simulators in conjunction with a live-fire mortar or artillery range. An example of a multiechelon approach to training might be to incorporate a company level direct fire simulation with a live-fire artillery exercise and a Bn/TF staff coordination exercise.

Weapons simulator exercises at the battalion and brigade level are primarily oriented towards commander and staff synchronization of direct and indirect fires with maneuver and C2. Participation by subordinate maneuver unit key leaders is limited to platoon leaders and company commanders. These subordinate level leaders represent their entire unit and generate information requirements and reports to exercise the staff. The staff and commanders use this information to drive the exercise scenario and develop staff coordination. The overall exercise objective is to coordinate direct and indirect fires, maneuver, and C2 to maximize the effect of fires at the decisive point and time.

The weapons simulator exercises allow the commander to train his unit from company to brigade level in a realistic environment that replicates battlefield conditions for weather, time, and distance. It is cost effective in comparison with LFXs and realistic in comparison with most simulations. Weapons simulator exercises allow the commander to tailor the training by echelon and incorporate multiechelon exercises based on that unit's specific training needs and conduct many iterations without additional cost. The weapons simulator exercises FCX is a flexible, cost effective, and realistic alternative to simulations and live-fire training.

Weapons simulator exercises can be integrated into unit training in several different ways. At the company level, an FCX can be conducted with the direct fire weapon systems using MILES, TWGSS/PGS, and LTIDs. Indirect fire can be integrated using subcaliber mortar devices and/or pyrotechnics. Participation may be limited to the platoon leaders, FIST, and the company commander. Bn/TF and brigade units can conduct their own FCXs on the same terrain/range that the company-level FCX was executed on; however, participation by maneuver units must be limited to key leaders' vehicles in order to have enough training space to support the entire unit.

Section II. Subcaliber Live-Fire Exercises

Subcaliber LFXs are conducted on live-fire ranges using small caliber munitions to replicate tank main gun and BFV 25-mm fires. Subcaliber devices normally associated with the FCX include the 5.56-mm Brewster device (subcaliber training device M180) and the .50 subcaliber Telfare device. The TPGID may also be available in limited numbers in Europe. Subcaliber devices increase the realism for combat vehicle crews, but limit the freedom of maneuver based on range restrictions and safety considerations in a live-fire environment.

Subcaliber LFXs can be conducted on ranges varying in size from mini or scaled ranges to full-scale computerized MPRC facilities. The use of subcaliber training may be due to lack of main gun ammunition or the need to reduce training costs. The primary limitation of subcaliber device training is usually the availability of the subcaliber devices. Availability of training devices may vary significantly from training area to training area and from the active component to the reserve component training facilities.

Scaled ranges usually use the 5.56-mm Brewster device or similar caliber device to replicate main gun fires. This training is conducted on a 1/10th scale range with scaled targets and terrain. A major consideration on this type of range is the use of moving targets. In order to fit the 1/10th scale terrain model, the movement of targets must be slowed as well. The 1/10th scale makes it easy to convert target speed based on models found in FM 17-12-1. Speed conversion is simple based on a factor of 10 so that a target moving at 20 to 30 mph now moves at 2 to 3 mph. One of the main limitations of the scaled subcaliber range is the need to define firing lanes due to safety considerations. Range restrictions may inhibit fire patterns and tactical actions that a unit would normally use. Additionally, this exercise is the most maneuver restrictive of the FCX.

Full-scale ranges can also be used with subcaliber devices to replicate main gun firing. The use of a full-scale range facilitates more realistic conditions for vehicle crews and may provide enough room to incorporate complete units at a reduced cost of

training. Telfare is the most commonly available system to conduct subcaliber training on full-scale ranges. The use of the M2HB .50 caliber machine gun as a tank main gun simulator requires the use of reduced ranges and can be used with full size or scale targets. Target range must be designed around the effective range of the .50 caliber round. The reduced scale targetry size used is normally half of full scale. Additionally, target speed must be reduced by half to accurately replicate the full-scale target.

Subcaliber LFXs at the company level are primarily oriented towards direct fire coordination with limited BOS integration. Just as in the simulation exercises, this is a function of the absence of many BOS elements within the company/team. The use of mortar fires may be simulated using subcaliber devices to train small unit leaders direct and indirect fire coordination. Because subcaliber LFXs are conducted on a live-fire range it should be relatively easy to coordinate subcaliber or full up mortar and artillery live fire as part of the coordination exercise. As in other FCX training events, a multiechelon approach allows the unit to train any element from maneuver companies to battalion and brigade staffs around one exercise.

Subcaliber LFXs at the battalion and brigade level are primarily oriented towards commander and staff synchronization of direct and indirect fires with selective BOS elements. The use of subcaliber devices may allow the unit to conduct a full-scale exercise to train small units in conjunction with these BOS elements. The exercise may also be scaled down to a key leader exercise depending on the training objectives and METL assessments. Although the FCXs focus is fire coordination, leaders can also gain greater proficiency in other collective tasks related to the mission being trained. As leaders coordinate fires with movement, they gain greater proficiency in C2 tasks. Planning for coordination of fires exercises troop-leading and staff planning procedures. Reporting of enemy size, activity, type, and locations prior to initiation of fires exercises the ability to perform tactical intelligence functions and to develop the situation tactically. Once these fundamental tasks have been mastered, a unit can obtain higher levels of performance during STXs and FTX as well as combined arms live-fire exercises. The overall FCX objective is to coordinate direct and indirect fires, maneuver, and C2 to maximize the effect of fires at the decisive point and time.

The subcaliber LFX offers the unit several unique advantages over simulations and full-scale LFXs. Training on a full-scale range offers a high level of realism related to terrain and environment. This exercise also offers more realistic target effects than constructive simulations as well as parts of virtual simulations. SIMNET-T does not have the ability to fire machine guns, small arms, or replicate dismounted infantry maneuver. The subcaliber LFX is designed to incorporate all of these elements. The primary limitation is the limited ability to maneuver due to range restrictions and safety considerations. The subcaliber live-fire method of training provides the commander with a realistic training environment for company to brigade level elements with a reduction in costs compared to full-scale live-fire training.

Section III. Full-Scale Live-Fire Exercises

Full-scale LFXs are conducted using organic weapons systems and selective BOS elements on full-scale range facility of MPRC facility if available. It is normally too expensive to conduct a full brigade or Bn/TF FCX during homestation training events. The range requirements usually restrict all other training conducted in the vicinity of a live-fire FCX. However, the live-fire FCX provides the commander with the most realistic training environment for synchronization of fires, maneuver, and C2 that can be trained without deploying to a major training area.

Full-scale LFXs may be designed with a great deal of flexibility. This training can be conducted from company to brigade. Cost savings are realized by reducing the scope of the exercise to key leaders. The full-scale LFX may incorporate key leaders to platoon leaders or to company commanders depending on the higher commander's training objective. This provides a realistic environment for the commanders and staff while training leader vehicle crews on BOS integration and C2 tasks.

The key leader full-scale LFX emphasizes the effects of actual combat weapons systems while synchronizing BOS elements to maximize the effect. The effects of terrain and weather are integral to the training. This may include engagement area (EA) preparation that includes digging and weapons system sighting. Many weather conditions such as night, fog, and rain cannot be replicated in simulations making the LFX more realistic. This exercise also emphasizes leader training and knowledge of their organic weapons systems in real terms and under actual environmental conditions.

The primary limitations of a full-scale LFX are the amount of range resources required and the limited ability to conduct maneuver in conjunction with the live-fire training. Most full-scale LFXs require enough area to support at least one company. Bn/TF and brigade key leader LFXs require even more range space to replicate the unit. Safety issues and restrictions dictate how much free play may be used to train maneuver.

Company-level LFXs are primarily oriented towards direct fire coordination and may readily incorporate indirect fires. The company/team has limited BOS element integration so the synchronization of fires takes precedence over BOS coordination. Mortar and artillery fire may be fired directly in support of the company exercise if the range layout will allow it. Even with just one company training in the LFX it is possible and desirable to incorporate multiechelon training for the staffs and BOS elements. As in other FCX training events, a multiechelon approach allows the unit to train any element from company maneuver to Bn/TF and brigade staffs around one exercise.

FCXs at the Bn/TF and brigade level are primarily oriented towards commander and staff synchronization of direct and indirect fires with maneuver and C2. The use of organic weapons systems may allow the unit to conduct an exercise to train small unit leaders in conjunction with participating BOS elements, depending on the commander's training objectives and METL assessments.

The full-scale LFX is the most realistic type of FCX. It offers many advantages over simulations and subcaliber exercises in terms of the realism and exposure to terrain and weather, but it is by far the most cost and resource intensive version of the FCX. Simulations and subcaliber training may be used prior to conducting a full-scale LFX to complement the training and to raise the training level sufficiently that time, ammunition, and money is not wasted learning lessons that could be learned in other training environments.

Live fire and weapons simulator exercises offer a wide and varied approach to training commander and staff coordination and synchronization. The effectiveness of this training is only limited by the availability of training devices and ranges and the imagination of the units in developing a training plan to meet their specific needs. Simulators, subcaliber devices, and live ranges may be used separately or together. The key is understanding the training objective and the training need and having the flexibility to incorporate these training methods to meet those needs.

Chapter 4

TACTICAL SCENARIOS

Commanders have a great variety of sources to develop their FCX scenarios. They can use orders from previous exercises, specifically design scenarios kept "on the shelf" to conduct FCXs with, or any other solution that the commander wishes to use. This chapter is designed to provide that spark to the commander's imagination when he is developing the scenarios for his subordinate units to execute.

The chapter is organized into three sections, covering brigade/regiment-, battalion/task force/squadron-, and company/team/troop-level FCXs. For each echelon addressed, a sample scenario is given for movement to contact, hasty attack, and defense in sector, with all three scenarios linked together-similar to the multiple phases of a tactical operation. The actual scenario executed during the FCX is determined by the unit commander's METL assessment.

In the scenario figures two different range dimensions are depicted. The solid line depicts a full scale exercise conducted in constructive, virtual, or live simulation if the training resources are available. The dashed lines depict the range dimensions necessary to conduct a subcaliber FCX using 1:10 scale targets. The OPFOR controller is responsible for replicating target destruction, whenever the training unit responds correctly to the OPFOR's activities. Since the key leader vehicles involved in the FCX cannot possibly engage every target in an array, the OPFOR controller will monitor the unit and destroy an appropriate number of OPFOR vehicles based on the commander's fire commands, calls for fire/CAS, orders to subordinates, and reports to higher headquarters, in addition to the direct fire engagements of his own vehicle.

Following this chapter, an appendix will outline all of the resources required to setup and support these FCX scenarios. The appendix covers FCXs in constructive, virtual, and live simulations.

CONTENTS		Page
Section I.	Brigade-Level Fire Coordination Exercises	4-2
Section II.	Battalion/Task Force-Level Fire Coordination Exercises	4-10
Section III.	Company-Level Fire Coordination Exercises	4-21
Section IV.	Summary	4-30

Section I. Brigade-Level Fire Coordination Exercises

Brigades conduct operations as combined arms teams. Brigades have a variety of tasks they must execute during any tactical operation, offense or defense. Figure 4-1 and Table 4-1 outlines the tasks that brigade must execute during an FCX. The details of these tasks and their conditions and standards for heavy brigades are in ARTEP 71-3-MTP.

In these scenarios 2d Bde, 25th AD is a brigade organized with one infantry battalion and three armor battalions assigned; with an artillery battalion, an engineer battalion, and a forward support battalion (FSB) in direct support, along with the brigades normal attachments of smaller size support units from the 25th AD. Also, the 8th Attack Helicopter battalion is operational control (OPCON) to the brigade.

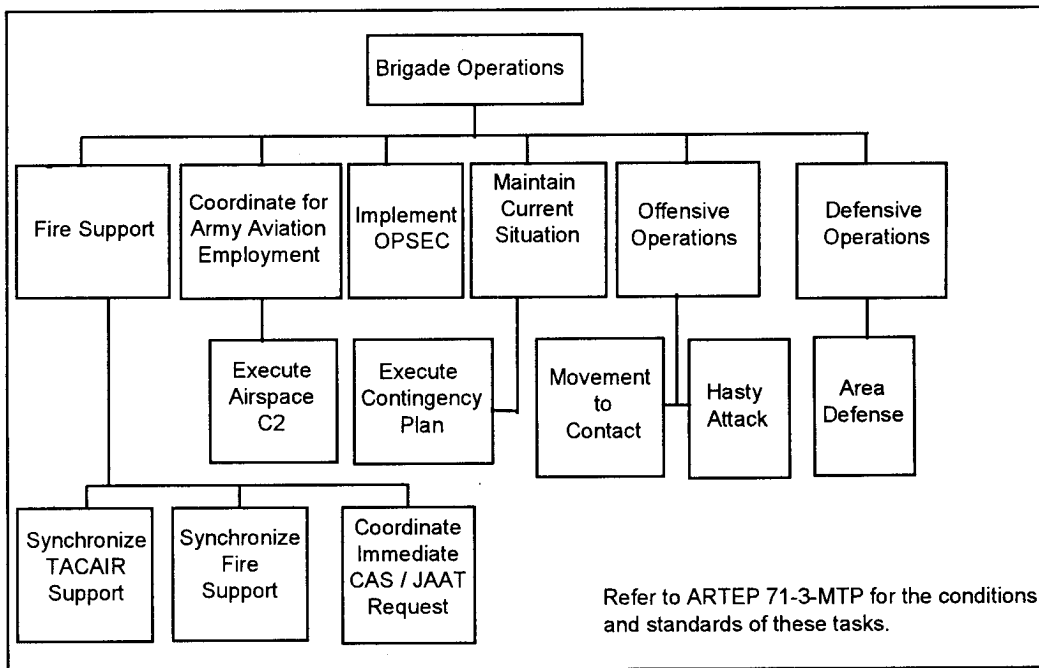


Figure 4-1. Brigade fire coordination exercise tasks to train.

MOVEMENT TO CONTACT

The 2d Bde, 25th AD is conducting a movement to contact to destroy the 142d motorized rifle regiment (MRR), facilitating the 25th AD's main attack to restore the international border. The division G2 has confirmed that the enemy is moving towards the brigade's zone and is using advance guard formations. The brigade's lead TF is assigned to destroy the lead motorized rifle battalion (MRB) of the MRR, the advance guard main body (AGMB). The brigade commander then intends to bypass the AGMB with his remaining three TFs, using Axis Lance in a brigade wedge formation, locate the regimental main body, and attack to destroy the MRR.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Lead TF Makes Contact with FSE	<ul style="list-style-type: none"> - Contact with FSE - Receive Indirect Fire - Encountered Obstacle
Lead TF Makes Contact with AGMB	<ul style="list-style-type: none"> - Lead TF Fixes & Defeats AGMB - Receive Direct and Indirect Fire
Bde (-) Maneuvers to Defeat the MRR Main Body	<ul style="list-style-type: none"> - Bde (-) Bypasses AGMB - Bde Reconnoiters to Find MRR (-) - Bde Makes Contact with MRR (-) - Bde Attacks to Destroy MRR (-)
Bde Consolidate on Objective	<ul style="list-style-type: none"> - Conduct Hasty Defense - Consolidate - Reorganize - Prepare for Follow-on Mission(s)
<p>Supporting Tasks (ARTEP 71-3 MTP)</p> <ul style="list-style-type: none"> - 3-9a. Offensive Operations - 3-9b. (1) Movement to Contact - 3-9b. (3) Deliberate Attack - 3-10a. Defensive Operations - 3-10b. (2) Area Defense - 71-3-3003 Maintain Current Situation - 71-3-3004 Synchronize TACAIR Support - 71-3-3005 Synchronize Fire Support Operations - 71-3-3009 Coordinate Immediate CAS/JAAT - 71-3-3011 Coordinate Army Aviation Employment - 71-3-3012 Execute Airspace Command & Control - 71-3-3014 Implementation of OPSEC - 71-3-3016 Execute Contingency Plans 	

Table 4-1. Brigade movement to contact.

After the MRR is destroyed, the commander intends to consolidate his gains by conducting a hasty defense. The attack helicopter battalion has been assigned to locate and fix the MRR's main body. When the MRR is fixed, the battalion will begin attriting the MRR with direct and indirect fires as the brigade's TFs close on the MRR along Axis Lance. See Table 4-1 for an outline of the scenario's key events and supporting tasks.

In a live simulation FCX on a range complex or in a training area, the MRR is replicated using vehicle target panels, with lifters, and sets of dismounted infantry silhouette targets. The targetry should be arrayed in great depth. Lifting targets beyond direct fire range will simulate the MRR entering the brigade's zone and allow commanders to develop the situation with indirect fires, prior to beginning direct fire engagements. As the MRR moves into zone, the initial target array is dropped and a new/closer array appears to continue to drive the scenario. This technique of using targetry to simulate the MRR's movement should be continued until the MRR is defeated or the brigade withdraws. A senior leader well-versed in current OPFOR doctrine should control the OPFOR targetry (such as the S2 of an adjacent brigade or an assistant G2). This level of experience is necessary to avoid letting the scenario get out of control and wasting training resources.

There are two major direct fire issues to address when conducting a brigade FCX like this. First, under normal range conditions, the target would be at ranges no greater than 2,500 meters; however, you must scale down the range distances when using subcaliber devices. Consult with the technical manual for your training device and then set up the exercise range with target ranges no further away than the maximum effective range of the device. Second, due to the terrain limitations in most homestation training areas, the brigade will have to scale back elements participating in the FCX to key leader vehicles and selective BOS representatives. Maneuver elements participating should be limited to company/team, TF commanders', and brigade commander's vehicles. If there is not enough training area to support all these commanders' vehicles, scale back participation even further-with only Bn/TF commanders representing their units. The BOS representatives involved should include the brigade tactical operations center (TOC)/tactical command post (TAC CP), TF TOC, the fire support officers' (FSO)/air liaison officers' (ALO) vehicles, and the air defense officers. Figure 4-2 illustrates the brigade movement to contact scenario.

When executing an FCX in simulators (such as SIMNET-T, CCTT, JANUS, or BBS), the MRR is replicated in one of two ways. In constructive simulations, it is portrayed by electronic icons representing the enemy echelons desired. In virtual simulations, the enemy is shown in virtually simulated threat vehicles, grouped into the size/type of enemy force desired. The electronic terrain used in the scenario would be the normal/doctrinal size zone that a brigade would be assigned during a movement to contact.

In FCXs in constructive or virtual simulators, the MRR's movement is replicated by programming the MRR's plan of attack (from its line of departure [LD] to its objectives) into the computer system, allowing it to control the MRR until contact is made. This will allow the brigade to operate in a realistic combat

environment. This enables the brigade's Bn/TFs to locate the enemy beyond direct fire range as the MRR enters the brigade's zone and allow commanders to develop the situation prior to beginning direct fire engagements. As the MRR moves into zone and contact is made, the OPFOR controller can then override the computer control, if necessary, and direct the OPFOR formations to react as they doctrinally would. This technique of moving the MRR's icons/formations should be continued until the MRR is defeated or the brigade withdraws. Again, it is absolutely essential to have a senior leader well versed in current OPFOR doctrine to control the OPFOR's movement, to avoid letting the scenario get out of control and wasting training resources.

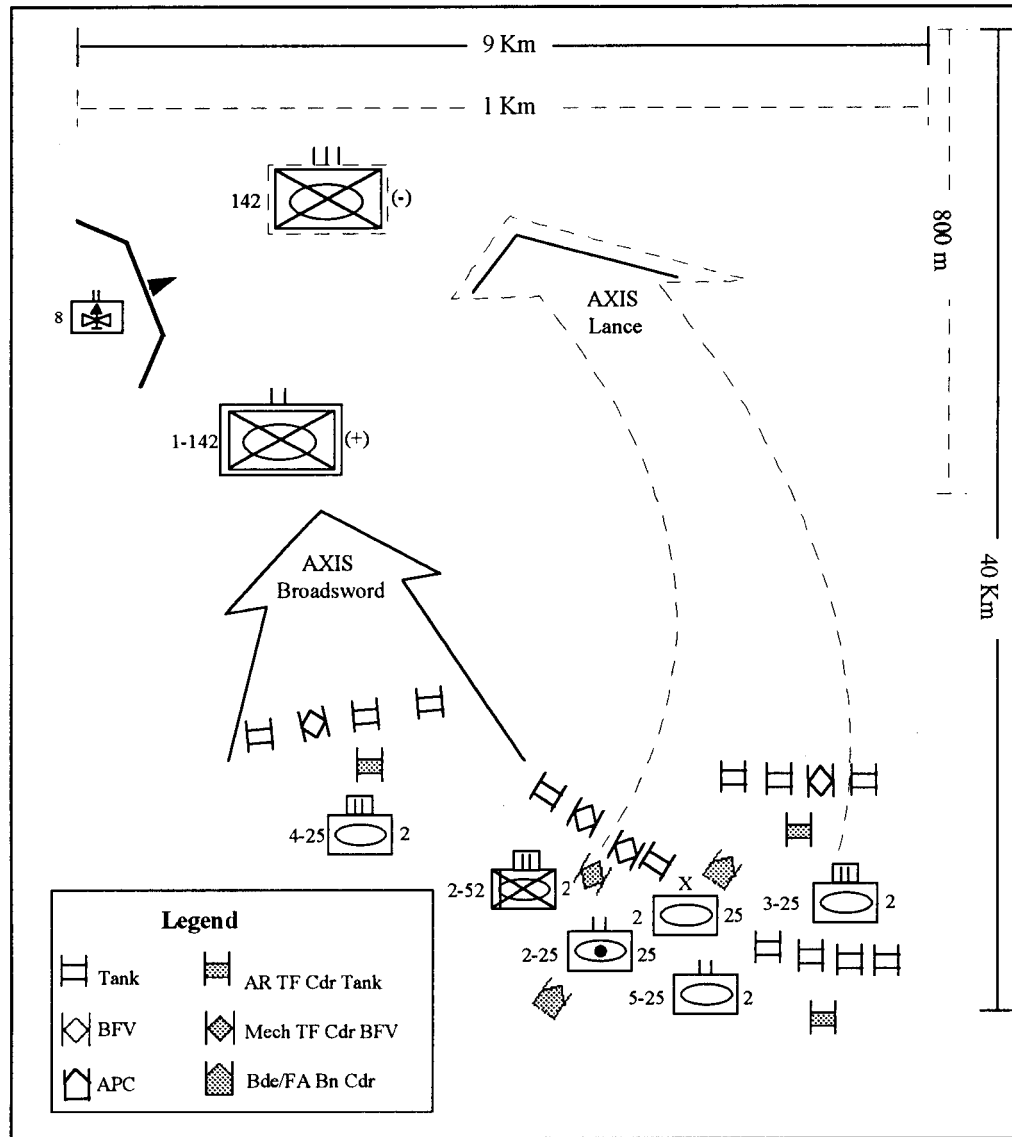


Figure 4-2. Brigade movement to contact scenario.

HASTY ATTACK

The 2d Bde's leading TF, on Axis Lance, has gained contact with the 142d MRR main body. He reports that the 142d MRR main body consist of two MRBs (BMP II) reinforced with tanks (T-SO) are located at center mass NS 7346 and are moving southwest into zone towards their templated initial objective. The brigade commander decides to switch to the hasty attack phase of his operation. He orders the attack helicopter battalion to continue to fix and attrit the MRR as TF 3-25th AR joins it to help provide the support by fire needed for the brigade's main attack. Simultaneously, the commander orders his direct support artillery battalion to establish firing positions to support the impending attack. Once the artillery is ready, he orders neutralization fires on the 3d Bn of the MRR to isolate the MRR 2d Bn from outside support. Next, the brigade's lead TF and the attack helicopter battalion continue to fix the MRR movement from support-by-fire positions, as the two remaining Bn/TF attack to destroy the MRR through fire and maneuver. Figure 4-3 illustrates the brigade hasty attack scenario. Table 4-2 outlines the scenario's major events and supporting tasks.

Use the same target arrays as the movement to contact target array. However, raise the targets/position the icons or virtual formations in groups to represent the MRR two stationary MRBs in roughly doctrinal formations.

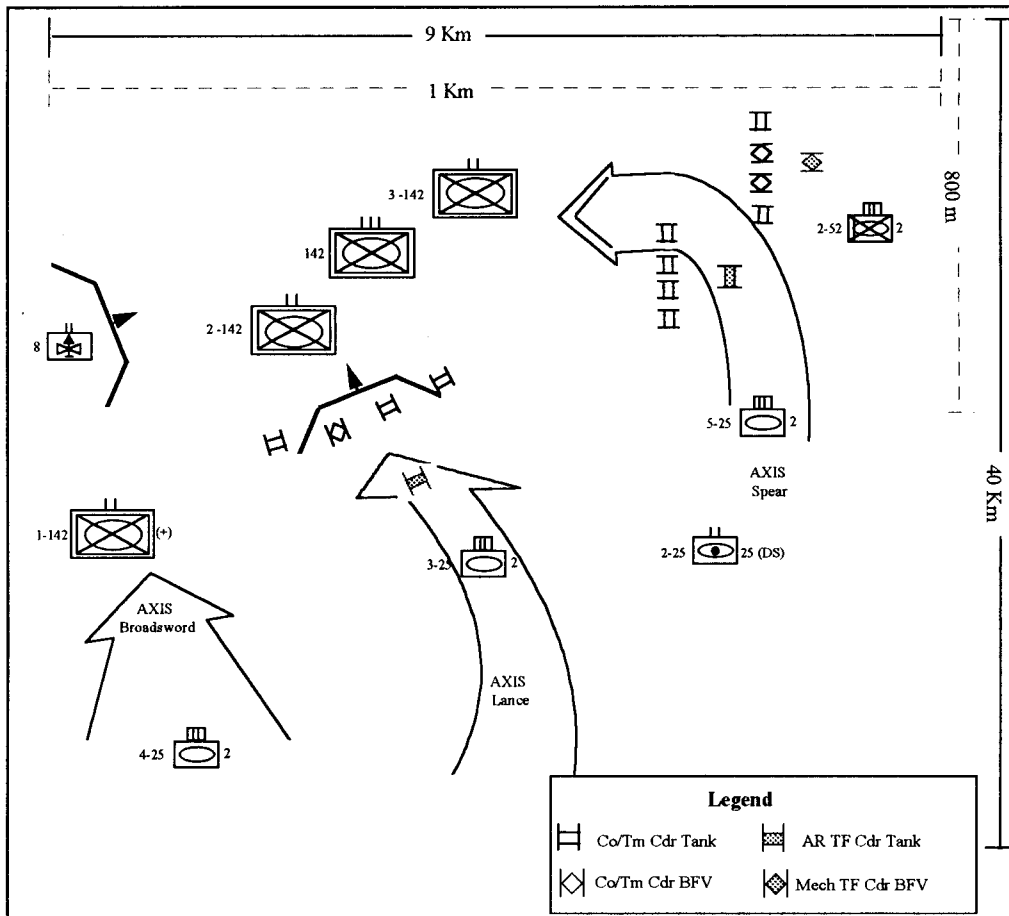


Figure 4-3. Brigade hasty attack scenario.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Bde Makes Contact with the MRB	<ul style="list-style-type: none"> - Fix the MRB - Receive Direct & Indirect Fire
Bde Maneuvers to Attack MRB	<ul style="list-style-type: none"> - Bde Maneuvers to MRB's Flank - Breaches Obstacle - Receive Direct and Indirect Fire - Bde Attacks to Destroy MRR
Bde Seizes the Objective	<ul style="list-style-type: none"> - Bde Clears the Objective - Consolidate - Conduct Hasty Defense - Reorganize - Prepare for Follow-on Mission(s)
<p>Supporting Tasks (ARTEP 71-3 MTP)</p> <ul style="list-style-type: none"> - 3-9a. Offensive Operations - 3-9b. (3) Deliberate Attack - 3-10a. Defensive Operations - 3-10b. (2) Area Defense - 71-3-3003 Maintain Current Situation - 71-3-3004 Synchronize TACAIR Support - 71-3-3009 Coordinate Immediate CAS/JAAT - 71-3-3011 Coordinate Army Aviation Employment - 71-3-3012 Execute Airspace Command & Control - 71-3-3014 Implementation of OPSEC - 71-3-3016 Execute Contingency Plans 	

Table 4-2. Brigade hasty attack.

DEFENSE IN SECTOR

The brigade's attack was a success and the MRR was destroyed, along with its motorized rifle division (MRD) in a division-size meeting engagement. The 25th AD 1st Bde and 3d Bde suffered heavy casualties during the engagement, causing the 25th AD commander to order a defense in sector. The 2d Bde, with the highest level of available strength, has been assigned the sector astride the avenue of approach of the 2d echelon MRD. The brigade commander has organized his sector into three TF sectors within its main battle area (MBA). Also, its mechanized TF is conducting a counterreconnaissance guard mission within its sector along the forward edge of battle area (FEBA). The attack helicopter battalion is assigned a forward assembly area (FAA) in the brigade's rear area. From this FAA, it will attack the 2d echelon MRR in depth as it enters the brigade's sector. The TFs will destroy the 1st echelon MRRs with direct and indirect fires. Division G2 confirms that the 2d echelon MRD's leading MRRs are using the advance guard formation in their attack (see Figure 4-4). Table 4-3 outlines the scenario's key events and supporting tasks.

The OPFOR controller simulates moving the enemy force into the sector the same way that the target arrays/icons/virtual formations were controlled in the movement to contact scenario. However, the OPFOR controller should ensure that the formation widths allow for contact with more than one TF at a time in order to train the entire brigade and the commander's C2 functions.

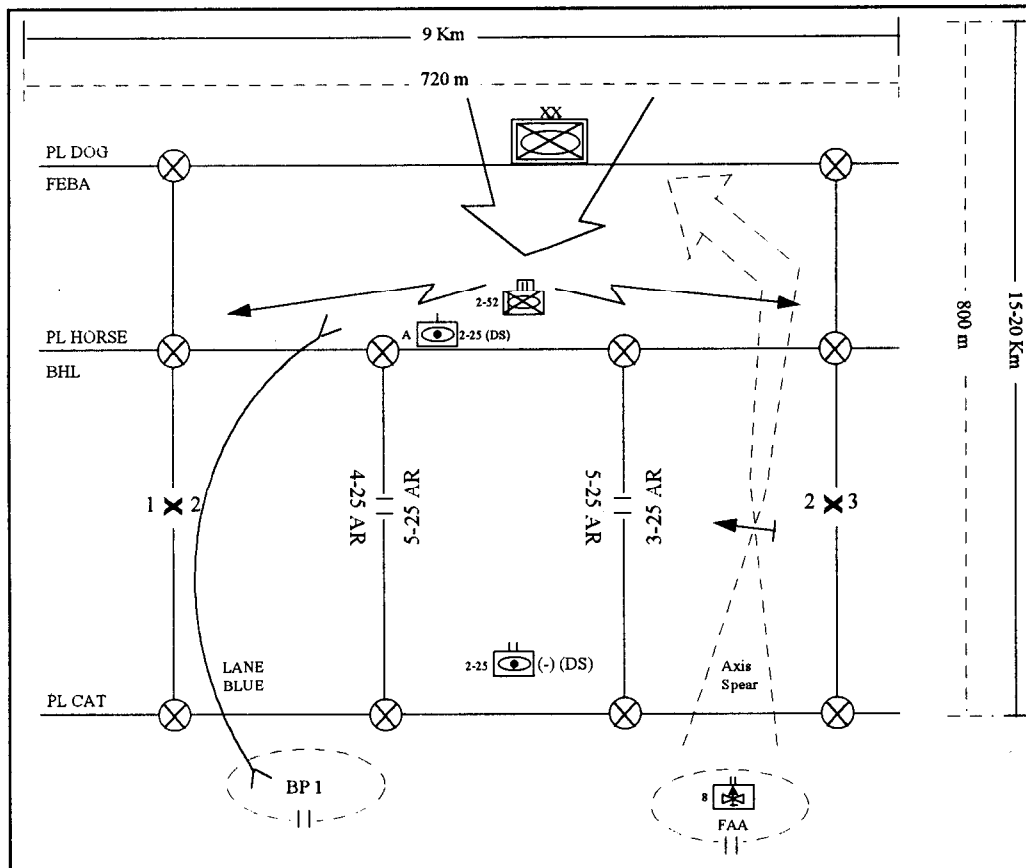


Figure 4-4. Brigade defense in sector scenario.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Bde Fights Counterreconnaissance	<ul style="list-style-type: none"> - Deny Enemy Reconnaissance of the Bde's MBA - Identify Enemy's Main Effort - Force Enemy to Deploy Early - Withdraw the Guard Force
MRD Assaults into Bde's Sector	<ul style="list-style-type: none"> - Destroy Enemy in Bde Sector - Orient Indirect Fires & TACAIR Against Enemy's Main Effort - Overwatch/Re-seed Obstacles
Bde Counterattacks	<ul style="list-style-type: none"> - Identify when MRD Assault Stalls - Counterattack Trail MRR by Bde Reserve TF - Focus Indirect Fire & TACAIR to Support the Counterattack Force - Bde Pursuit of Withdrawing MRD
Bde Consolidates and Reorganization	<ul style="list-style-type: none"> - Reestablish Original Defensive Positions - Consolidate - Reorganize - Clear Enemy Forces from Sector - Prepare for Follow-on Mission(s)
<p>Supporting Tasks (ARTEP 71-3 MTP)</p> <ul style="list-style-type: none"> - 3-9a. Offensive Operations - 3-9b. (3) Deliberate Attack - 3-10a. Defensive Operations - 3-10b. (2) Area Defense - 71-3-3003 Maintain Current Situation - 71-3-3004 Synchronize TACAIR Support - 71-3-3005 Synchronize Fire Support Operations - 71-3-3009 Coordinate Immediate CAS/JAAT - 71-3-3011 Coordinate Army Aviation Employment - 71-3-3012 Execute Airspace Command & Control - 71-3-3014 Implementation of OPSEC - 71-3-3016 Execute Contingency Plans 	

Table 4-3. Brigade defense in sector.

Section II. Battalion/Task Force-Level Fire Coordination Exercises

The Bn/TF scenarios are direct extensions of the brigade movement to contact, hasty attack, and defense in sector scenarios. Both battalions and TFs are addressed, in this section, in the role they would execute in a brigade operation.

Included in this section are task outlines containing the tasks that a Bn/TF must execute for the specific mission they are assigned. Not all of the MTP tasks are listed. Remember, the focus of the FCX is still on synchronizing direct and indirect fires with maneuver and C2. The task outlines reflect this focus.

MOVEMENT TO CONTACT

The following is a sample of a Bn/TF level movement to contact FCX scenario.

TF 4-25th AR is conducting a movement to contact along Axis Sword to destroy the AGMB battalion of the 142d MRR, in order to fix the 142d MRR and facilitate the 2d Bde's attack. The TF's zone is 10 km long and up to 3 km wide. TF scouts have suppressed a combat reconnaissance patrol (CRP) with indirect fires and Team A has fixed the forward security element (FSE), both in zone. The TF commander elects to bypass the fixed FSE, leaving the Team A commander to destroy the FSE on his own, and move with his remaining three company/teams to engage the AGMB on favorable terrain of his choosing. Upon contact with the AGMB, the commander elects to fix the enemy with a tank team and indirect fire, while enveloping the enemy formation to destroy it with a tank company and a mechanized team. Upon destruction of the FSE, Team A quickly consolidates and then rejoins the TF, as the reserve.

In a live simulation, the AGMB is replicated on the range complex using vehicle target panels, with lifters, and dismounted infantry silhouette targets. The OPFOR targetry should be under the brigade S2's control. Controlling the target array, similar to the array in the brigade movement to contact scenario, the controller must ensure that just enough targets are presented to portray the AGMB moving into the TF zone. There are two major direct fire issues to address when conducting a Bn/TF FCX like this. First, there is the target range distance issue that is addressed in the brigade-level FCX scenario discussion. Second, due to the terrain limitations in most homestation training areas, the TF will have to scale back elements participating in the FCX to key leader vehicles and selective BOS representatives. Maneuver elements participating should be limited to platoon leaders' and company/team and TF commanders' vehicles—eliminating the platoon leaders' participation if the training area is too limited. The BOS representatives involved should include the TF TOC, the FSO/ALO vehicle, and the air defense platoon leader.

In FCXs using constructive or virtual simulators, the AGMB movement is replicated by programming the AGMB plan of attack (from its LD to its objectives) into the computer system, allowing it to control the OPFOR until contact is made. This will allow the Bn/TF to operate in a realistic combat environment. This enables the Bn/TF company/teams to locate the enemy beyond direct fire range as the AGMB enters the Bn/TF zone and allow commanders to develop the situation prior to beginning direct fire engagements. As the enemy moves into zone and contact is made, the OPFOR controller can then override the computer control, if necessary, and direct the OPFOR formations to react as they doctrinally would. This technique of moving the enemy icons/formations should be continued until the AGMB is either defeated or the Bn/TF withdraws. Due to the limited number of simulators available, the Bn/TF will have to scale back elements participating in the FCX to key leader vehicles and selective BOS representatives. Maneuver elements participating should be limited to platoon leaders and company/team and TF commanders-eliminating the platoon leaders' participation if the number of simulators available is too limited. The BOS representatives involved should include the TF TOC, the FSO/ALO vehicle, and the air defense platoon leader.

Figure 4-5 illustrates the Bn/TF movement to contact scenario. Figure 4-6 outlines the tasks that the Bn/TF movement to contact should train, at a minimum. Table 4-4 on page 4-13 contains the scenario's major events and supporting tasks.

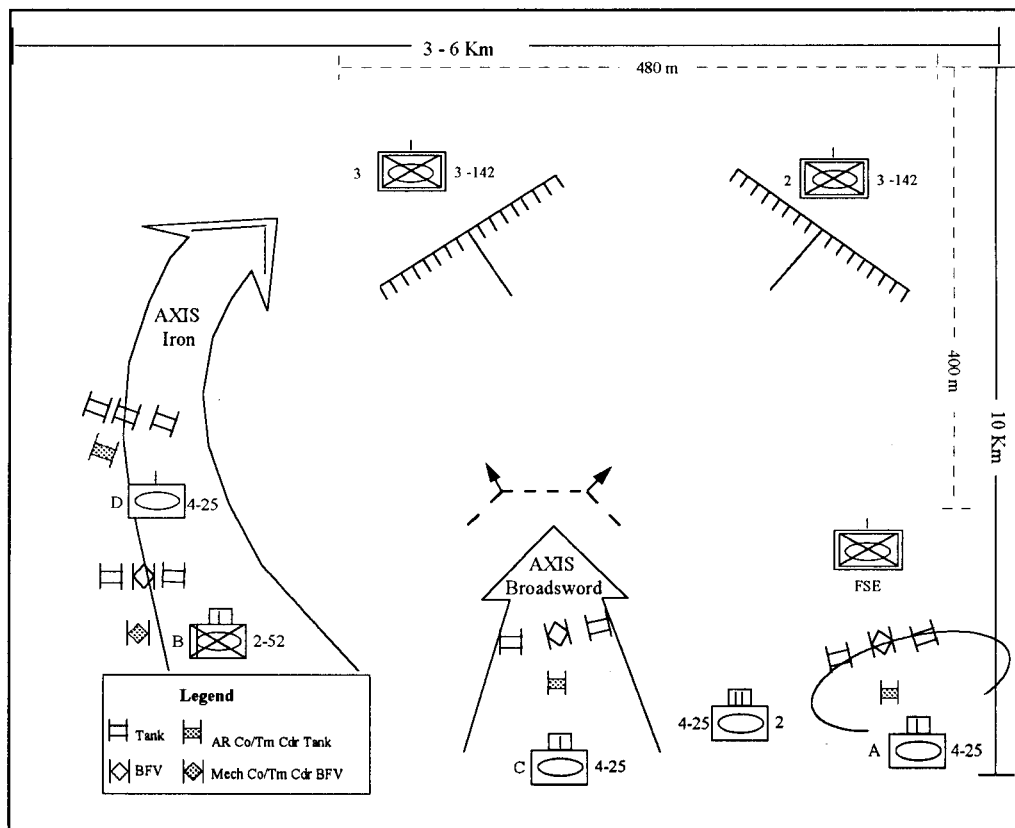


Figure 4-5. Battalion/task force movement to contact scenario.

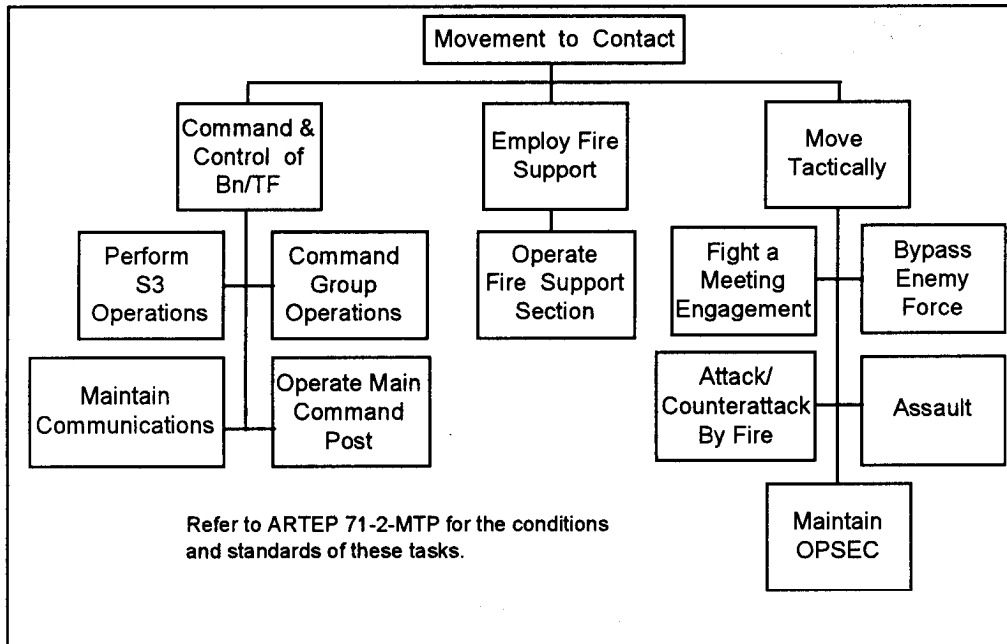


Figure 4-6. Battalion/task force movement to contact tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Scout Section Makes Contact with CRP	<ul style="list-style-type: none"> - Scouts Conduct Action on Contact to Defeat CRP - React to Indirect Fire - TF Bypasses the CRP
Scout Section Identifies FSE	<ul style="list-style-type: none"> - Scout Guides TF Advance Guard Co/Tm - Scouts Continue Reconnaissance to Locate AGMB - Adv Guard Maneuvers to Fix FSE
TF Adv Guard Defeats FSE	<ul style="list-style-type: none"> - Adv Guard Fixes & Defeats FSE - React to Direct & Indirect Fires - TF Bypasses FSE
TF makes Contact with AGMB	<ul style="list-style-type: none"> - AGMB Fixed by Co/Tm in SBF - TF Envelops AGMB with 2 Co/Tm Attacking thru Assailable Flank - TF Defeats AGMB with Direct & Indirect Fires - Adv Guard Co/Tm becomes TF Reserve
TF Consolidates/Reorganizes	<ul style="list-style-type: none"> - TF Conducts Hasty Defense - Consolidate - Reorganizes - TF Prepares for Next Mission
<p>Supporting Tasks (ARTEP 71-3 MTP)</p> <ul style="list-style-type: none"> - 71-1-3006 Fight a Meeting Engagement - 71-1-3007 Assault - 71-1-3008 Attack/Counterattack by Fire - 71-1-3009 Defend - 71-1-3021 Bypass Enemy Force - 71-1-3022 Reorganize - 71-1-3023 Consolidate - 71-1-3028 Maintain OPSEC - 71-1-3401 Maintain Communications - 71-1-3901 Command & Control BN/TF - 71-1-3902 Perform S3 Operations - 71-1-3903 Command Group Operations - 71-1-3904 Operate Main Command Post - 71-1-3907 Employ Fire Support - 71-1-3908 Operate Fire Support Section 	

Table 4-4. Battalion/task force movement to contact.

HASTY ATTACK

The 5-25th AR Bn is conducting a hasty attack to destroy the main body of the 142d MRR. The battalion will be supported in the attack by TF 2-52d IN (Mech) conducting a follow-and-support mission, by TF 3-25th AR conducting support by fire to fix the MRR's movement, and by the 2-25 FA Bn in direct support to the 2d Bde, 25th AD. The battalion commander decides to attack with three companies on line and one in reserve. He intends to destroy the MRR in his zone with an endstate of OBJ LION cleared and the battalion consolidated in the vicinity of checkpoint 21.

Figure 4-7 illustrates the Bn/TF hasty attack scenario. Figure 4-8 outlines the tasks that the Bn/TF hasty attack FCX should, at a minimum, train. Table 4-5 outline the scenario's major events and supporting tasks.

In live simulations, the OPFOR is simulated using the same target array that was in the brigade deliberate attack scenario, only limit the number of targets raised to just the arrays located within and just beyond the TF boundaries. The brigade S2 should control the OPFOR targetry arrays.

In constructive or virtual simulations, use the same OPFOR icons/virtual formations as the movement to contact scenario used. However, position the icons or virtual formations in groups to represent AGMB doctrinal formations, by echelons.

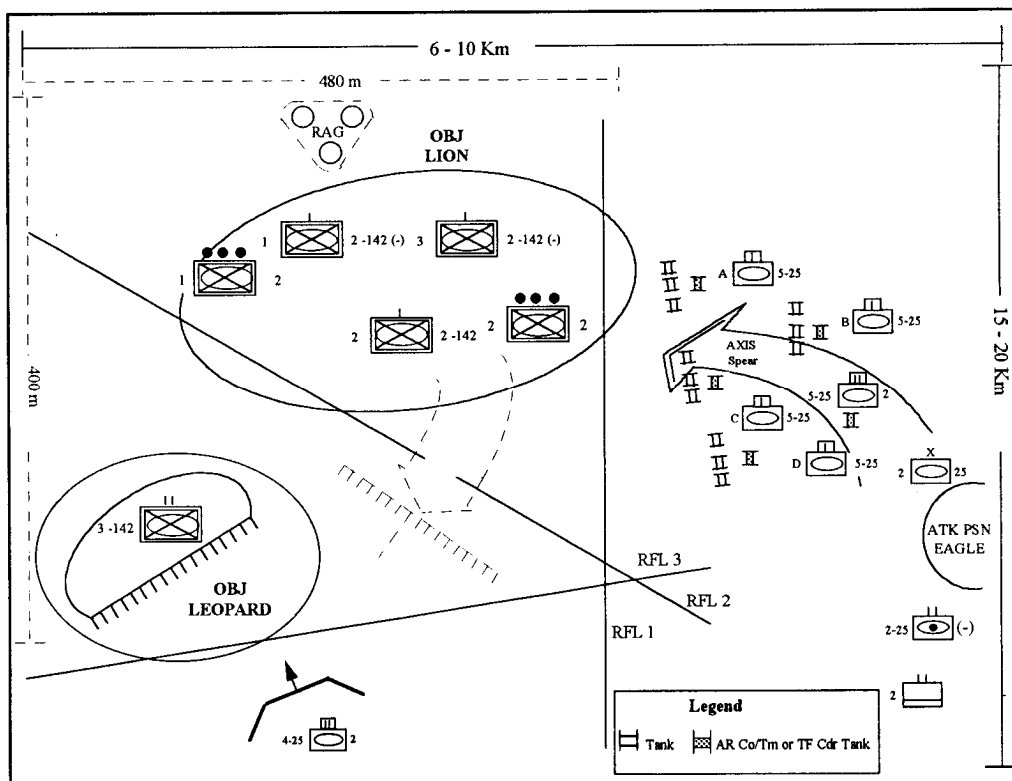


Figure 4-7. Battalion/task force hasty attack scenario.

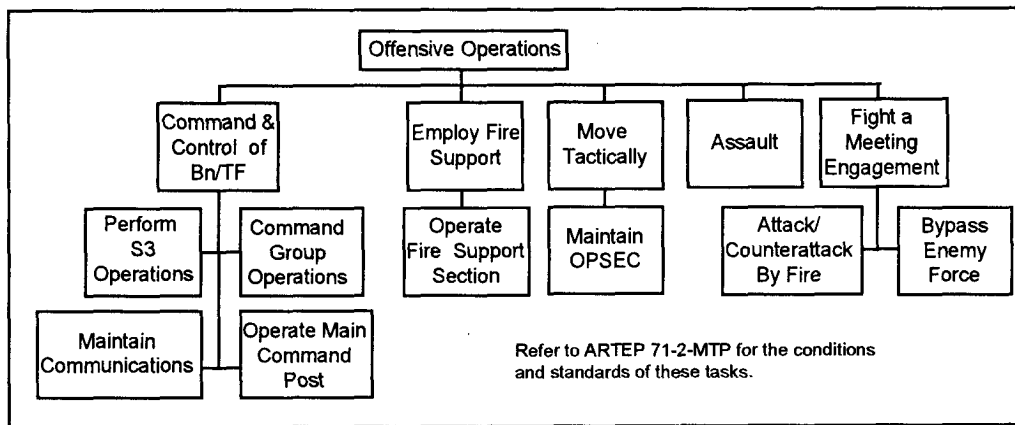


Figure 4-8. Battalion/task force hasty attack tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
TF Moves from LD to Assault Position	<ul style="list-style-type: none"> - Co/Tms Move in TF Formation - Scouts Recon Forward to Templated Enemy Positions
Scout Platoon Confirms MRC's Location	<ul style="list-style-type: none"> - Suppress MRC with Indirect Fires - Employ CAS Against MRC - TF Main Body Moves from Assault Position Towards Objective - TF Defeats CSOPs - Scouts Identify RAG & Reserves
TF Assaults MRC's Position	<ul style="list-style-type: none"> - TF Maneuvers to MRC's Flank - React to Direct & Indirect Fires - TF Breaches Obstacles - TF Assaults & Defeats MRC - Scouts Suppress RAG with Indirect Fires
TF Seizes Objective	<ul style="list-style-type: none"> - TF Clears Objective - TF Conducts Hasty Defense - Consolidate - Reorganizes - TF Prepares for Next Mission
Supporting Tasks (ARTEP 71-3 MTP)	
<ul style="list-style-type: none"> - 71-1-3006 Fight a Meeting Engagement - 71-1-3007 Assault - 71-1-3008 Attack/Counterattack by Fire - 71-1-3009 Defend - 71-1-3021 Bypass Enemy Force - 71-1-3022 Reorganize - 71-1-3023 Consolidate - 71-1-3028 Maintain OPSEC - 71-1-3401 Maintain Communications - 71-1-3901 Command & Control BN/TF - 71-1-3902 Perform S3 Operations - 71-1-3903 Command Group Operations - 71-1-3904 Operate Main Command Post - 71-1-3907 Employ Fire Support - 71-1-3908 Operate Fire Support Section 	

Table 4-5. Battalion/task force hasty attack.

DEFENSE IN SECTOR

TF 3-25th AR is conducting a defense in sector with TF 2-52d IN (Mech) in a screen in the north; 5-25th AR defending in sector, in the west; and 3d Bde, 25th AD in the east. The brigade S2 has confirmed that the 135th MRR will attack through the TF sector from north to south along avenue of approach AA1 using an advance guard formation. The 2d Bde commander has named PL Cat as his no penetration line. He has ordered TF 2-52d IN (Mech) to screen the brigade's FEBA to destroy all MRD and MRR reconnaissance units entering the sector, before the TF withdraws to its reserve position in the south. The 3-25th AR commander wants to channelize the enemy into the western half of the sector and then destroy it with direct and indirect fires in a TF EA. The commander's plan is for B/3-25th AR to conduct defense in sector along the battle handover line (BHL) to destroy the leading CRPs and FSE of the AGMB and then withdrawal along Lane Blue to battle position (BP) B-1, becoming the TF reserve. With a mechanized team defending in east oriented on EA TIGER and a tank team defending in the west oriented on EA PANTHER the commander wants to encourage the AGMB, with obstacles and indirect fire, to enter the eastern half of the sector where the mechanized team will fix and destroy it. With the AGMB failure in the east, the MRR main body should attempt to move through the TF's western sector-where the tank team will fix it in EA PANTHER. If the MRR moves into EA PANTHER, then Company D will move along Axis Steel and occupy and defend BP D-1 orienting into EA PANTHER to support Team A in destroying the MRR main body. If the MRR main body moves through the eastern sector, then Company D moves along Axis Iron to occupy and defend BP D-2 orienting into EA TIGER to assist Team C in the destruction of the MRR. After the MRR is defeated, the TF will assume its original defense in sector positions and begin consolidation and reorganization.

Figure 4-9 illustrates the Bn/TF defense in sector scenario. Figure 4-10 outlines the tasks that the Bn/TF defense in sector FCX should, at a minimum, train. Table 4-6 on page 4-19 outlines the scenario's major events and supporting tasks.

The OPFOR controller should use the same targetry arrays/icons/virtual formations that were used in the brigade defense in sector scenario. However, the OPFOR should be scaled down to an MRR-size array moving into sector-using all of its advance guard formation echelons. The CRP/FSE engagement will take place forward along PL Dog. This echelon's target formation groups need to be from PL Dog forward. The AGMB engagement will be in EA TIGER. The AGMB target formation groups should be positioned from PL Horse through the southern edge of the EA. The MRR main body battle will take place in EA PANTHER. Again, have multiple arrays for each echelon positioned in depth so the controller can simulate each echelon moving into sector prior to direct fire contact being made.

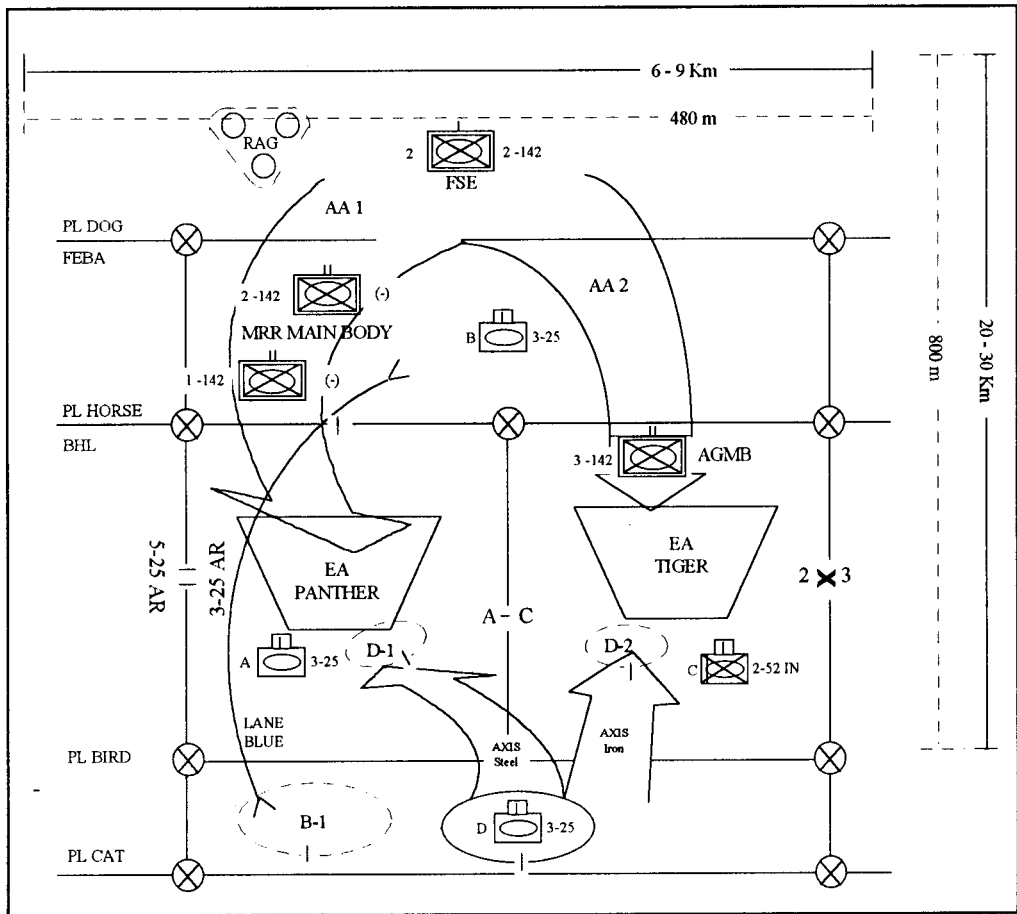


Figure 4-9. Battalion/task force defense in sector scenario.

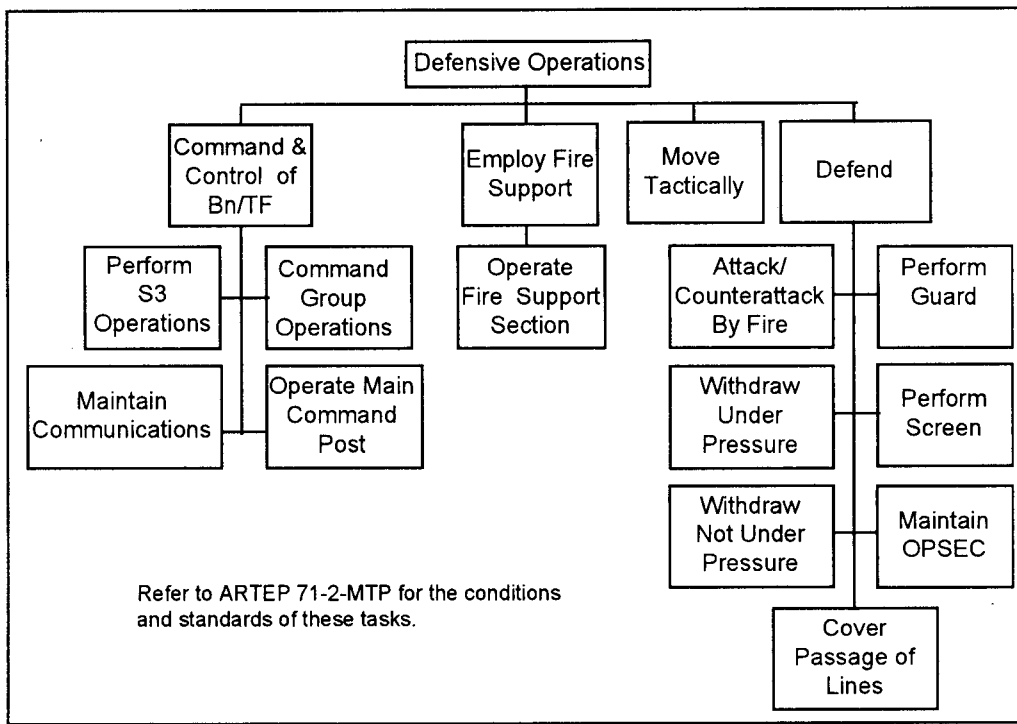


Figure 4-10. Battalion/task force defense in sector tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
TF Counterreconnaissance/ Guard Force	<ul style="list-style-type: none"> - TF Destroys CRPs and FSE Moving thru Sector - Force AGMB to Deploy Early - Withdraw, Closing Obstacle Lanes
AGMB Enters TF's Sector	<ul style="list-style-type: none"> - React to Direct & Indirect Fires - Scouts Identify AGMB's Direction of Travel - Overwatch Obstacles - Channelize AGMB into EA TIGER with Obstacles & Indirect Fires
AGMB Enters EA TIGER/MRR Enters TF's Sector	<ul style="list-style-type: none"> - AGMB Fixed & Defeated in EA TIGER - Scouts Identify MRR's Direction of Travel and Engages with Indirect Fire - Overwatch/Re-seed Obstacles - Engage MRR with CAS & Indirect Fires - Channelize MRR into EA PANTHER with Obstacles, Indirect Fires, & CAS
<p>Supporting Tasks (ARTEP 71-2 MTP)</p> <ul style="list-style-type: none"> - 71-1-3008 Attack/Counterattack by Fire - 71-1-3009 Defend - 71-1-3010 Cover Passage of Lines - 71-1-3011 Withdraw Not Under Pressure - 71-1-3012 Withdraw Under Pressure - 71-1-3020 Perform Guard - 71-1-3023 Consolidate - 71-1-3026 Perform Screen - 71-1-3028 Maintain OPSEC - 71-1-3401 Maintain Communications - 71-1-3901 Command & Control BN/TF - 71-1-3902 Perform S3 Operations - 71-1-3903 Command Group Operations - 71-1-3904 Operate Main Command Post - 71-1-3907 Employ Fire Support - 71-1-3908 Operate Fire Support Section 	

Table 4-6. Battalion/task force defense in sector.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
MRR Enters EA PANTHER	<ul style="list-style-type: none"> - React to Direct & Indirect Fires - Company D Occupies BP D-1 Oriented on EA PANTHER - TF Engages MRR with Direct & Indirect Fires and CAS in EA PANTHER
TF Counterattacks	<ul style="list-style-type: none"> - Identify when the MRR's Attack Stalls - TF Counterattacks, Lead by TF Reserve - Scouts Continue to Engage MRR with Indirect Fires - TF Pursues MRR as it Withdraws from Sector
TF Consolidates/Reorganizes	<ul style="list-style-type: none"> - TF Reestablishes Original Defense Position - TF Clears Enemy from Sector - Consolidate - Reorganize - Prepare for Follow-on Missions

Table 4-6. Battalion/task force defense in sector (continued).

Section III. Company-Level Fire Coordination Exercises

The company/team scenarios are also extensions of the brigade and Bn/TF scenarios. Example scenarios are given of companies or teams for movement to contact, hasty attack, and defense in sector missions.

Task outlines containing all the tasks that a company/team must execute for their FCX are included in this section by the type of mission. At the company/team level, the focus of the FCX is solely on the coordination of direct and indirect fires, with maneuver and C2.

MOVEMENT TO CONTACT

The following is a sample of a company level movement to contact FCX scenario.

Team A/4-25th AR is the advance guard company in TF 4-25th AR movement to contact along Axis Broadsword to destroy the FSE of the approaching AMGB, assisting the TF in destroying the lead MRB of the 142d MRR. TF scouts have suppressed the enemy CRP in sector with indirect fires. Team A bypassed the CRP while moving to fix and destroy the enemy's FSE. The team's avenue of approach is a 10 km long axis (Axis Broadsword) and is 1 to 1.5 km wide. Once contact is made with the FSE, Team A's commander decides to fix the FSE with one tank platoon in support by fire, while his FIST calls for indirect fire to suppress the fixed enemy formation, and then envelop the enemy with the remainder of the team from the west to destroy the remainder of the FSE. The team commander reports to the TF commander when the FSE is contacted, fixed, and later destroyed.

Figure 4-11 illustrates the company movement to contact scenario. Figure 4-12 lists the tasks that the company movement to contact FCX should, at a minimum, train. Table 4-7 outlines the scenario's major events and supporting.

In a live simulation FCX on a range complex or in a training area, the FSE is replicated on the range by vehicle target panels, with lifters. This target array is controlled the same way that it was in the Bn/TF and brigade movement to contact scenarios. Also, the targetry is grouped, with the same arrays in multiple groups, and positioned with the groups in depth. The groups are then raised and lowered to simulate the FSE movement through the zone.

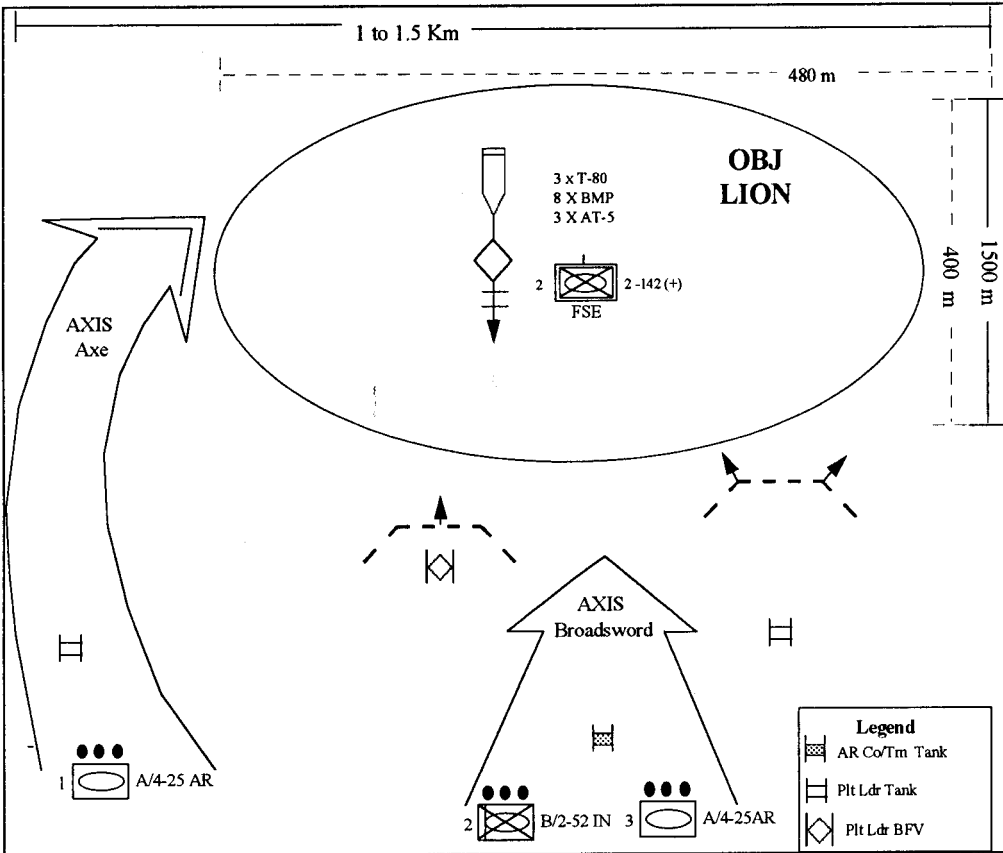


Figure 4-11. Company movement to contact scenario.

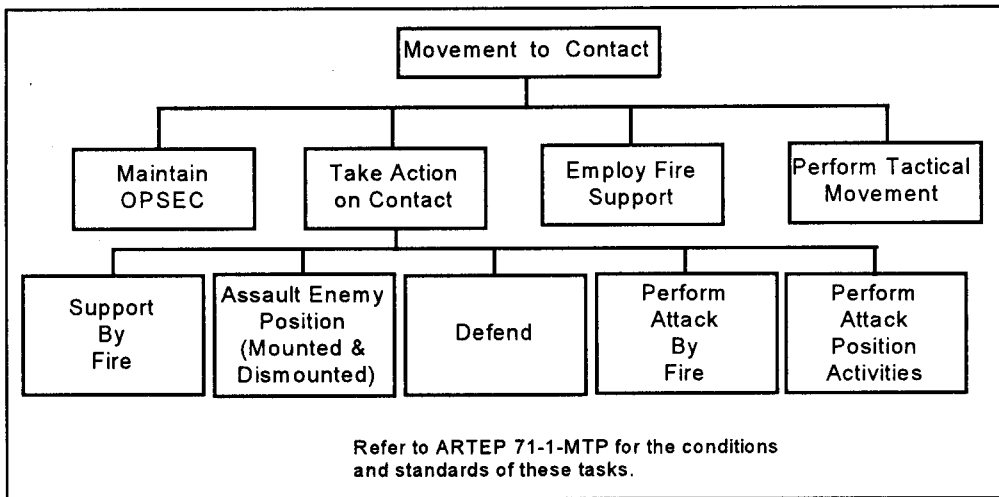


Figure 4-12. Company movement to contact tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
TF Scouts Fixed CRP & Located FSE	<ul style="list-style-type: none"> - Adv Guard Bypasses CRP - Adv Guard Maneuvers to Intercept FSE on Favorable Terrain - Adv Guard Conducts Hasty Breach
TF Adv Guard Makes Contact with FSE	<ul style="list-style-type: none"> - Lead Platoon Establishes SBF Position to Fix FSE - FIST Suppresses FSE with Indirect Fires - React to Direct & Indirect Fires - FSE is Fixed & Suppressed
TF Adv Guard Defeats FSE	<ul style="list-style-type: none"> - One Platoon Conducting SBF - Other Platoons Maneuver to FSE's Flank and Assault the Fixed FSE - SBF Platoons and FIST Shift Fires to Support the Assaulting Platoon
TF Adv Guard Consolidates/ Reorganizes	<ul style="list-style-type: none"> - Adv Guard Consolidates/ Reorganizes at its SBF Position - Report to TF Commander - Rejoins TF Formation, as Ordered
<p>Supporting Tasks (ARTEP 71-1 MTP)</p> <ul style="list-style-type: none"> - 71-2-0304 Perform Actions on Contact - 71-2-0306 Support by Fire (SBF) - 71-2-0326 Assault an Enemy Position (Mounted) - 71-2-0311 Perform an Attack by Fire - 71-2-0313 Cross Contaminated Area - 71-2-1021 Defend - 71-2-0401 Employ Indirect Fires (Offense) - 71-2-0704 Consolidate on the Objective - 71-2-0706 Reorganize on the Objective 	

Table 4-7. Company/team movement to contact.

Under normal range conditions, engaging targets with direct fire would begin when the targets are finally at ranges no greater than 2,500 meters; however, you must scale down the range distances when using MILES, TWGSS/PGS, or subcaliber devices. Consult with the technical manual for your training device and then set up the exercise range with target ranges no further away than the maximum effective range of the device. If your local training areas maneuver space is limited, limit the maneuver elements participating to platoon leaders' and company/team commanders' vehicles. The BOS representative involved should include the company/team FISTV.

When executing an FCX in simulation, the FSE is replicated by one of two ways. In constructive simulations, the FSE is portrayed by electronic icons representing the enemy formation. In virtual simulations, the enemy is shown in virtually simulated threat vehicles, grouped into a reinforced motorized rifle company (MRC). The electronic terrain used in the FCX would be the doctrinal size zone that would be assigned to a company/team in a movement to contact.

In FCXs using simulators, the FSE movement is replicated by programming the enemy's plan of attack (from its LD to its objectives) into the computer system, allowing it to control the FSE until contact is made. This enables the platoon leaders to locate the enemy beyond direct fire range as the FSE moves into zone, allowing the commander to develop the situation prior to any direct fire engagements. As the FSE moves into zone and contact is made, the OPFOR controller can override the computer control and direct the OPFOR to react, according to its doctrine. This technique of moving the FSE icons/formations should be continued until the FSE is defeated or the company/team withdraws.

HASTY ATTACK

Company C/5-25th AR is the main effort in 5-25th AR attack to clear OBJ LION. Currently, the enemy has been fixed in OBJ LION by another TF and direct support artillery is suppressing the enemy with neutralization fires. The battalion commander has ordered the company to attack and destroy a motorized rifle platoon (MRP) in a hasty defensive position on the eastern flank of OBJ LION and then establish a support by fire position orienting on the two remaining MRPs in OBJ LION and provide suppressive fires to assist the assault of the battalion to clear OBJ LION. The company commander's scheme of maneuver is to have 2d Plt establish an attack by fire position to destroy the MRP number three vehicle, while indirect fire begins to isolate vehicle number one from the rest of the MRP. As soon as the artillery is adjusted on to vehicle number one, 1st Plt attacks to destroy vehicles number four and one, in order, while 3d Plt attacks to destroy vehicle number two (1st Plt calling cease fire on the artillery fire when ready to assault vehicle number one). After the destruction of the MRP, 1st Plt occupies the support by fire position in the north, orienting on the northern MRP; and 3d Plt occupies a support by fire position in the south, orienting on the western MRP to assist in the battalion's assault to clear OBJ LION. After OBJ LION is cleared, the company will consolidate at the support by fire position and move to checkpoint 21, where it will begin reorganization.

Figure 4-13 illustrates the company hasty attack scenario. Figure 4-14 lists the tasks that the company deliberate attack FCX should, at a minimum, train. Table 4-8 outlines the scenario's major events and supporting tasks. The OPFOR targetry arrays/icons/formations are identical to those used in the Bn/TF deliberate attack scenario and should be under the Bn/TF or brigade S2's control.

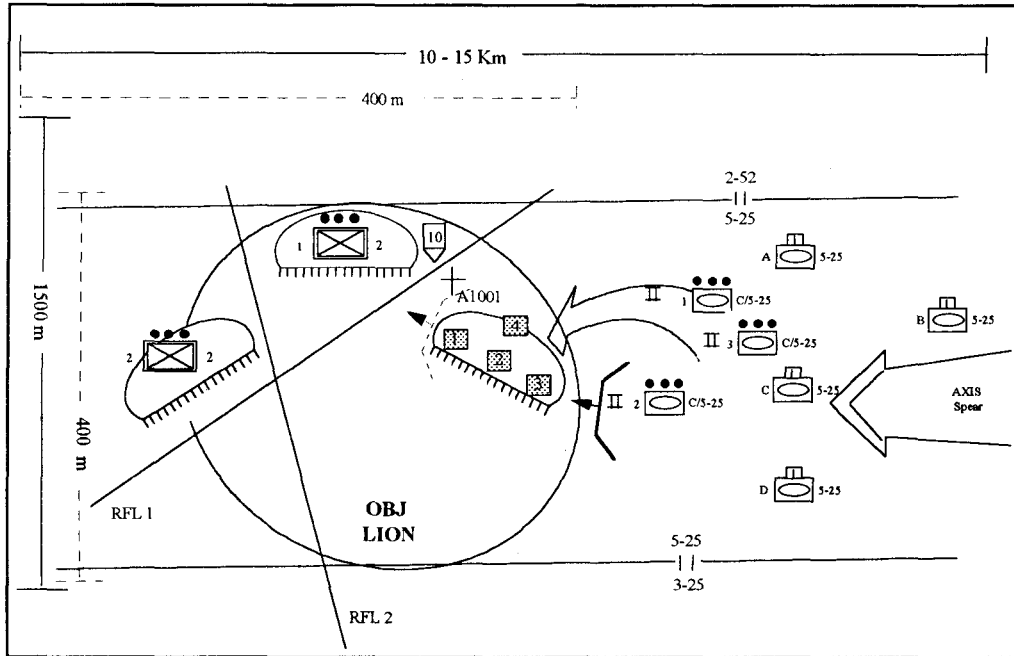


Figure 4-13. Company hasty attack scenario.

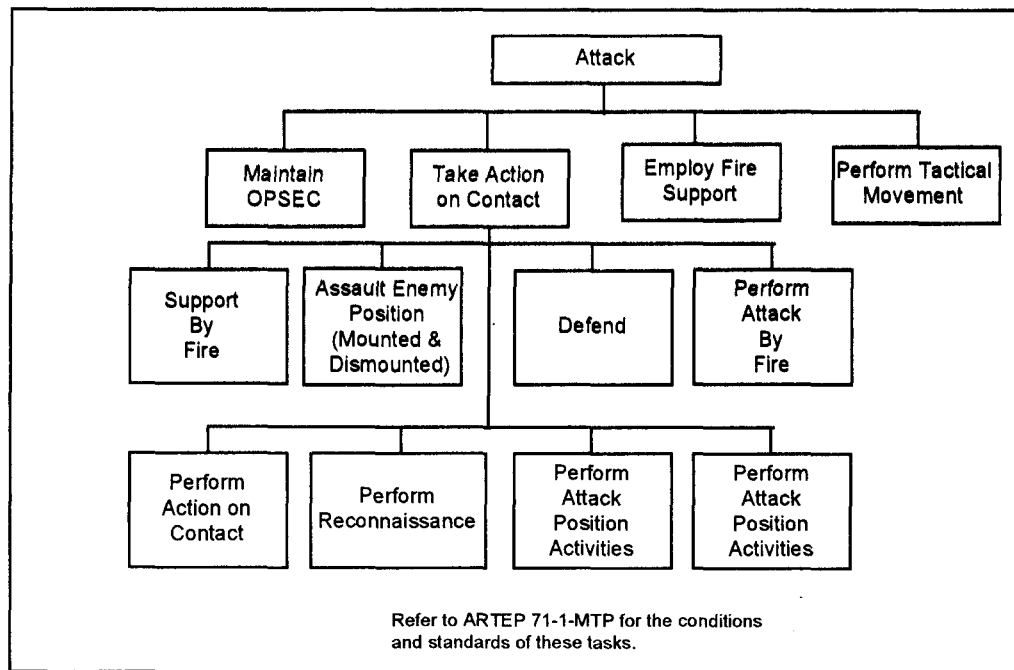


Figure 4-14. Company hasty attack tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Co/Tm Moves Forward from Assault Position	<ul style="list-style-type: none"> - Scouts Confirm MRP's Location - FIST Suppresses MRP with Indirect Fires and Fires to Isolate BMP #1
Co/Tm Assaults MRP	<ul style="list-style-type: none"> - 2d Platoon Begins Attack by Fire to Destroy BMP #3 - 1st Platoon Conducts Assault Breach and Destroys Vehicles #4 & #1 (sequentially) - 3d Platoon Follows 1st Platoon thru the Breach and Destroys BMP #2 - FIST Shifts Fires to Isolate MRP from the Remaining MRC
Co/Tm Conducts SBF to Assist with TF's Assault	<ul style="list-style-type: none"> - 1st & 3d Platoons Conduct SBF to Assist TF's Assault of the MRC - 2d Platoon is Team's Reserve - FIST Shifts Fires, as Needed
Co/Tm Consolidates/Reorganizes	<ul style="list-style-type: none"> - Co/Tm Consolidates at SBF Position - On Order, Co/Tm Moves to CP 21 where it will Reorganize, as needed - Co/Tm Prepares for Follow-on Missions

Supporting Tasks (ARTEP 71-1 MTP)

- 71-2-0306 Support by Fire (SBF)
- 17-2-3010 Assault an Enemy Position (Dismounted)
- 71-2-0326 Assault an Enemy Position (Mounted)
- 71-2-0311 Perform an Attack by Fire
- 71-2-1021 Defend
- 71-2-0401 Employ Indirect Fires (Offense)
- 71-2-0704 Consolidate on the Objective
- 71-2-0706 Reorganize on the Objective

Table 4-8. Company/team hasty attack.

DEFENSE IN SECTOR

Team C, 2-52d IN (Mech) is assigned defense in sector to destroy the AGMB of the 132d MRR as it attacks into the eastern half of the TF 3-25th AR sector. The company commander has established an EA TIGER, where he is going to fix and destroy the AGMB. Supporting the EA, the commander has positioned his three platoons where they can orient their fires on the team's target reference point (TRP) and cover the team's entire sector. Also, the commander has selected positions for Company D, 3-25th AR should it be moved into support Team C in EA TIGER. As soon as the AGMB is destroyed the company will consolidate and reorganize in its BP to prepare for any follow-on missions.

Figure 4-15 illustrates the company defense in sector scenario. Figure 4-16 lists the tasks that the company defense in sector FCX should, at a minimum, train. Table 4-9 outlines the scenario's major events and supporting tasks. The OPFOR controller should use the same targetry arrays/icons/virtual formations that were used in the TF defense in sector scenario. However, limit the arrays to just the AGMB. The OPFOR controller should move his force throughout the TF sector from the BHL at PL Horse to the southern edge of EA TIGER to allow the company to acquire the enemy early and then develop the situation prior to gaining direct fire contact.

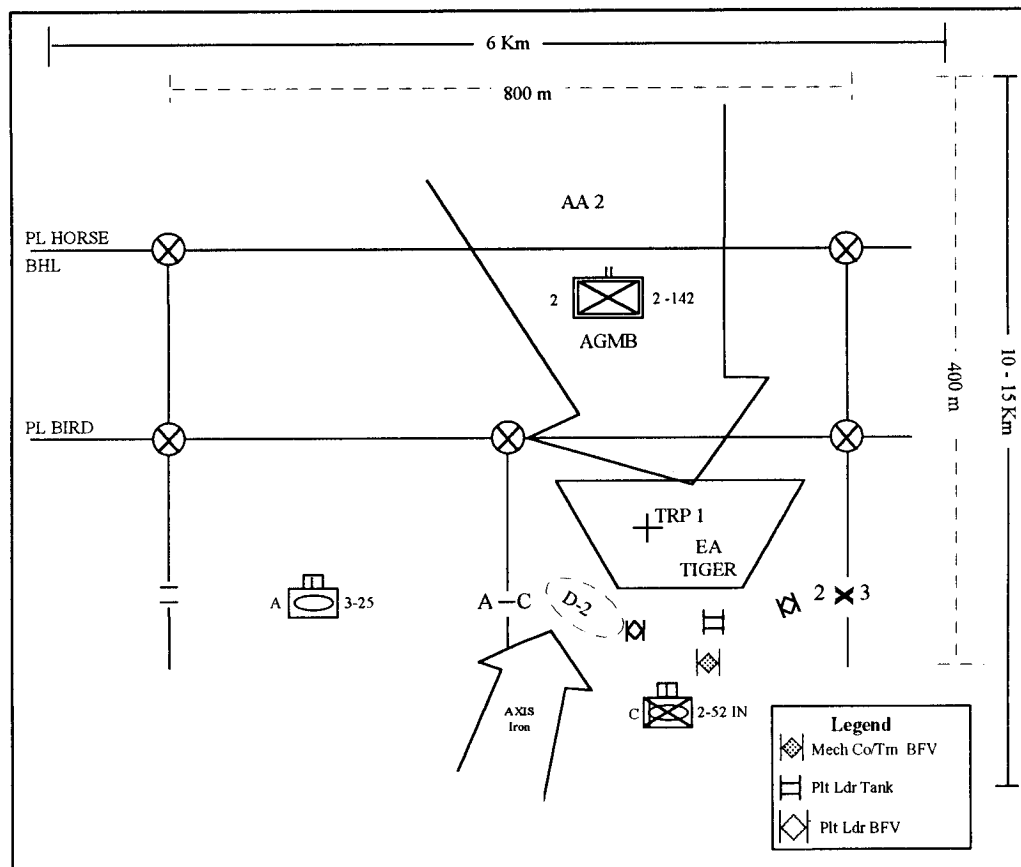


Figure 4-15. Company defense in sector scenario.

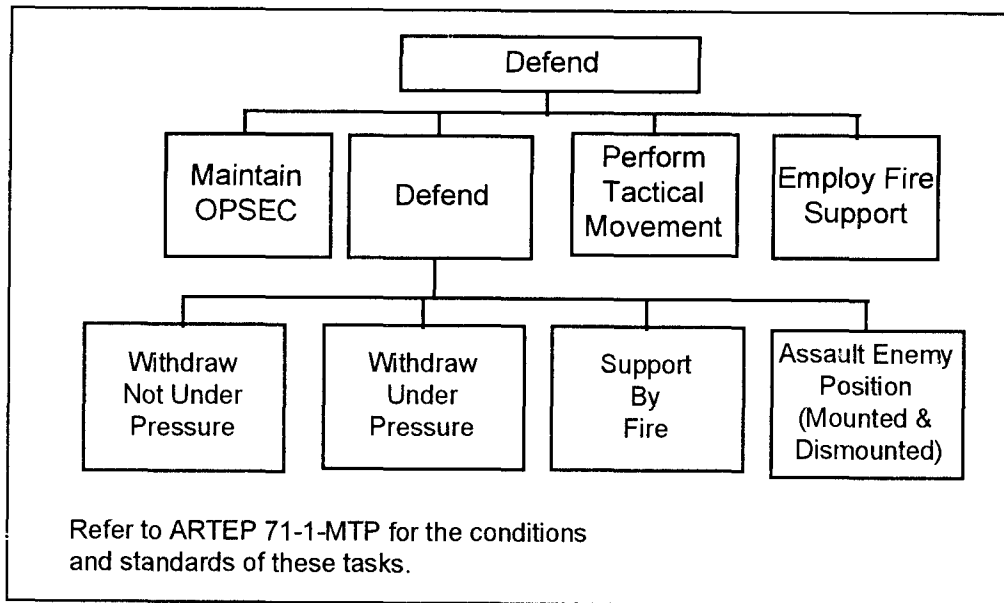


Figure 4-16. Company defense in sector tasks to train.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
AGMB Enters TF Sector	<ul style="list-style-type: none"> - Scouts Engage with Indirect Fires - TF Channelizes AGMB into EA TIGER with Obstacles and Indirect Fires - AGMB Turns Towards EA TIGER - Co/Tm Occupies Hull Down Positions Overwatching EA TIGER
AGMB Enters Co/Tm Sector	<ul style="list-style-type: none"> - OPs Identify AGMB & Call for Indirect Fires to Suppress Enemy and Channelize him Towards the TRP - React to Indirect Fire
AGMB Enters EA TIGER	<ul style="list-style-type: none"> - FIST Calls for Indirect Fire to Support Obstacle Plan and to Separate the MRCs of the AGMB - Co/Tm Engages with Direct Fires - React to Direct & Indirect Fires - Overwatch Obstacles
<p>Supporting Tasks (ARTEP 71-1 MTP)</p> <ul style="list-style-type: none"> - 71-2-0322 Withdraw Not Under Pressure - 17-2-0323 Withdraw Under Pressure - 71-2-0326 Assault an Enemy Position (Mounted) - 71-2-0402 Employ Indirect Fire (Defense) - 71-2-0704 Consolidate on the Objective - 71-2-0706 Reorganize on the Objective - 71-2-1021 Defend (Hasty) 	

Table 4-9. Company/team defense in sector.

MAJOR EVENTS IN SEQUENCE	SUBEVENTS
Co/Tm Defeats AGMB	<ul style="list-style-type: none"> - AGMB's Attack Stalls, Enemy Begins to Withdraw - FIST Shifts Indirect Fires to Enemy's Escape Route(s) - Co/Tm Conducts Localized Counterattack to Clear Sector - React to Direct & Indirect Fires
Co/Tm Consolidates/Reorganizes	<ul style="list-style-type: none"> - Sector is Cleared - Obstacles are Repaired - Consolidates/Reorganizes at BPs - Resupply from Cache - Prepare for Follow-on Missions

Table 4-9. Company/team defense in sector (continued).

Section IV. Summary

In summary, it is important to remember that these scenarios are descriptive and may not be the right solution for every unit. Commanders should use this chapter as an example of a possible solution. The critical tools in developing their own scenario are the commander's METL assessment, his imagination, and the training resources available. Upon the fielding of the Standard Army Training System (SATS) and the TRADOC Educational Data System (TREDS), these systems will be available to assist commanders in producing scenarios for such training.

Appendix

TRAINING RESOURCES REQUIREMENTS

This appendix outlines the resources required to execute an FCX. Section I details the resources required to execute an FCX using constructive simulations—such as JANUS and BBS. Section II addresses all of the resources needed to conduct an FCX using virtual simulations. Section III covers the requirements to execute an FCX in live simulation.

CONTENTS		Page
Section I.	Constructive Simulation	A-1
Section II.	Virtual Simulation	A-11
Section III.	Live Simulation	A-15

Section I. Constructive Simulation

Executing an FCX using JANUS and BBS requires a great deal of personnel and some additional equipment in order to support the training event. This section outlines all of these requirements. It addresses exercises in JANUS and BBS, in order, by echelon of the units being trained.

Commanders should note that the quantities listed below, under equipment and personnel, are only recommended amounts. The equipment listed is the minimum hardware related resources to each simulation system. Most simulation centers/facilities have a site staff that should be able to coordinate with the unit the resources they have available at their specific sites. Each facility should also have a memorandum of instruction (MOI) that should discuss in greater detail the resources necessary to execute the mission, the timelines necessary for planning purposes, and the facility/system training capabilities.

JANUS

Brigade Scenario (JANUS)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bde Senior Staff Trainer	O6	1
Exercise Control Cell			
EC	Control Tm Director	O4/O5	1
Higher HQ and Adjacent Unit Control Cell	FS, Intel, Ops	O4	3
OPFOR Control Cell	Maneuver/FS Controllers	E7	3
TF Cells	Interactors/Controllers	O4/O5	6/6
FS Cell	Interactors/Controllers	O3/E7	1/2
Engr Cell	Interactor/Controller	O3	1
Observer Tm*	Senior Observer	O4	1
	Cmd Grp Observer	O4/O5	1
	TAC CP Observer	O3	1
	Main CP Observer	O4	1
	Intel Cell Observer	O3	1
	Ops Cell Observer	O4	1
	Avn Cell Observer	O4	1
	FS Cell Observer	O3	1

* Observers can be optional based on unit requirements and training objectives.

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
JANUS Workstations	12	1 ea TF, 1-Engr, 1-HACC, 1-EC, 2-FS, 3-OPFOR
Radios	33	EC-2, HACC-3, OPFOR-1, TF-4 ea, Cmd Grp-2, TAC CP-3, Main CP-4, Intel Cell-2, FS Cell-2 Avn Cell-2
TAC CP/Main CP Mock-Ups	2	Main CP and TAC CP
AAR Equipment *		

* Same as Bn/TF JANUS

Battalion/Task Force Scenario (JANUS)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bn/TF Senior Staff Trainer	O5	1
Exercise Control Cell EC	CONWOR Operator	O4/E8	1
Higher HQ and Adjacent Unit Control Cell	FS, Intel, Ops	O4	3
OPFOR Cell	Senior OPFOR Controller	O3/E7	1
	OPFOR FS Controller	E7	1
Fire Control Cell	FS Controller/Bde FSO	O3/E7	1
Maneuver Control Cell	Maneuver Co Controller	O3/E7	4
	Sct Plt Controller	E7	1
Staff Observation Cells			
Main CP Cell	Senior TOC Observer	O4	1
	S3/Ops Observer	O3/O4	1
	FS Observer	O3	1

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
JANUS Workstation	9	JEC, Maneuver, Scts, OPFOR, FS
CP Mock-Ups	1	TOC
Radios	23	ECC-4, TOC-4, Cmd Grp-4, Bn FSO-2, Scts-1, Co-2ea
AAR Equipment		
JANUS Workstation	1	Exercise Playback
JAWS w/RGB Projector	1	Part of JANUS System- Playback
Overhead Projector	1	Slides

Company/Team Scenario (JANUS)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Co/Tm Senior Trainer	O4/O3	1
Exercise Control Cell EC	CONWAR Operator	O4	1
OPFOR	OPFOR Cdr/Maneuver Controller	E7	1
	OPFOR FS Controller	E6	1
Fire Control Cell	FS Controller/Bn FSO	O2/E6	1
Maneuver Control Cell	Maneuver Co FS Controller	O3/E7	1
	Plt Controller	E7	3

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
JANUS Workstation	8	Co, Plts, OPFOR, FS, CONWOR
Radios	10	1 ea-Plt, 2ea-Co Cdr, 2ea-Co FSO, 1-FS Controller, 1-OPFOR 1-CONWOR

AAR Equipment *

* Same as Bn/TF JANUS

BRIGADE/BATTALION SIMULATION

Brigade Scenario (BBS)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bde Senior Staff Trainer	O6	1
HICON	Deputy Exercise Director (2)	O4/O5	1
	G2 Rep (1)	O3	1
	G3 Rep (1)	O4	1
	TAC CP Rep (1)	O3/O4	1
	Avn Rep(l)	O3/O4	1
	Div FSE Rep (1)	O4	1
	RTO	E3/E4	1
OPFOR	OPFOR Cdr (1)	O3	1
	Keyboard Operator	E3/E4	4
Interactors			
Maneuver Bn(s) x 3	Bn Cdr (2)	O4/O5	3
	Bn S2 (1)	O2/O3	3
	Bn S3 (2)	O3/O4	3
	FSO (2)	O2/O3	3
	ALO (2)	O2/O3	3
	ADA Rep (2)	O1/E7	3
	RTO	E3/E4	3

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Artillery Bn	Bn Cdr (2)	O4/O5	1
	Bn S3 (2)	O3/O4	1
	Keyboard Operator	E3/E4	2
	RTO	E3	1
Aviation Attack Bn	Bn Cdr (2)	O4/O5	1
	Bn S3 (2)	O3/O4	1
	RTO	E3	1
CS	ADA Plt Ldr (1)	O1/E7	1
	MI Plt Ldr (1)	O1/E7	1
	RTO	E3	1
Unit Observation Cell *	Senior Observer	O5/O6	1
	Cmd Grp Observer	O4/O5	1
	TAC CP Observer	O3	1
	Main CP Observer	O4	1
	Intel Cell Observer	O3	1
	Ops Cell Observer	O4	1
	FS Cell Observer	O3	1

* Observers can be optional based on unit requirements and training objectives.

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
BBS Workstation	9	1-HICON, 2-OPFOR, 1 ea-Bn, 1-Arty Bn, 1-Avn Bn, 1-CS
Radios	50	Numbers in () next to position is radio allocation

Battalion/Task Force Scenario (BBS)**PERSONNEL**

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bn/TF Senior Staff Trainer	O5	1
HICON	Deputy Exercise Director	O4/O5	1
	Bde S2 Rep	O2/O3	1
	Bde S3 Rep	O3/O4	1
	Bde FSO	O3/O4	1
	Bde Avn Rep	O2/O3	1
	RTO	E3/E4	1
OPFOR	OPFOR Cdr	O2/O3	1
	Keyboard Operator	E3/E4	2
Interactors			
Maneuver Co x 4	Co Cdr	O3	4
	Co XO/ISG	O2/E8	4
	FSO	O1/E6	4
	RTO	E3/E4	4
DS Arty/Mortars	Arty Battery Cdr	O2/O3	1
	XO/ISG	O2/E8	1
	Bn Mortar Plt Ldr	O2/E8	1
	RTO	E3/E4	1
CS	Sct Plt Ldr	O2/E7	1
	ADA Rep	O1/E7	1
	RTO	E3/E4	1

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Unit Observation Cell *	Co OC	O3	4
	Sct Plt OC	E7	1
	TOC OC	O4	1
	Ops OC	O3/O4	1
	FS OC	O3	1

* Observers can be optional based on unit requirements and training requirements.

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
BBS Workstation	8	1-HICON, 1-OPFOR, 1 ea-Co, 1-DS Arty, 1-CS
Radios	19	2-HICON, 1-OPFOR, 1 ea-Co, 1-FSO, 1-DS Arty, 1 ea-FSO, 6-TOC

Company/Team Scenario (BBS)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Co/Tin Senior Trainer	O3/O4	1
HICON	Deputy Exercise Director	O3	1
	Bn S3 Rep	O2/E7	1
	Bn FSO	O2/E7	1
	RTO	E3/E4	1
OPFOR	OPFOR Cdr	O2/E7	1
	Keyboard Operator	E3/E4	1
Interactors Co	Cdr	O3	1
	XO/ISG	O2/E8	1
	FSO	O1/E6	1
	Plt Ldrs	O1/E7	3
Unit Observation Cell *	Co OC	O3	1

* Observer can be optional based on unit requirements and training objectives.

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
BBS Workstation	6	HICON, Plts, Co, OPFOR
Radios	9	1 ea-Plt, 2-Co Cdr, 2-Co FSO, 1-HICON, 1-OPFOR

Section II. Virtual Simulation

This section addresses all of the resources required to execute an FCX in SIMNET-T. These requirements are identical to the support required for an FCX in CCTT. The section is organized by the echelons being trained, from brigade to Bn/TF to company/team.

SIMULATION NETWORKING-TRAINER

Brigade Scenario (SIMNET-T)

PERSONNEL

<u>Requirements</u>	<u>Positions/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bde Senior Staff Trainer	O6	1
Exercise Control Cell EC	Control Cell Director	O4/O5	1
HACC	FS, Intel, Ops	O4	3
OPFOR Control Cell	Maneuver/FS Controllers	O3/E7	4
FS Cell	Controllers	E7	2
Observer Tm *	TAC CP Observer	O3	2
	Main CP Observer	O4	1
	Intel Cell Observer	O3	1
	Ops Cell Observer	O4	1
	FS Cell Observer	O3	1
	Senior DS FA Bn Observer	O5	1
	Bde FSO Observer	O4	1
	DS FA Bn TOC Observer	O4	1
	DS FA Bn FDC Observer	E7	1
	Bde Avn LO	O4	1
	Bn/TF Observer	O5	1

* Observers can be optional based on unit requirements and training objectives.

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
MI Simulators	21	1 ea-Co Cdr, 1 ea-Bn Cdr, 1-Bde Cdr, 1 ea-Co FSO, 1 ea-Bn FSO/ALO
M2/M3 Simulators Tms	9	3ea-Bn Sct Plt. 3-COLT
TOC Mock-ups	3	1-Bde Main CP, 1-TAC CP, 1-DS FA Bn TOC
OC Workstation	4	1-ECC, 1-HACC, 1 FS Cell, 1-OPFOR
Radios	78	4 ea-Sct Plts, 2 ea-Bn Cdr, 2-Bde Cdr, 2 ea-Co Cdr, 4-TAC CP, 8-Main CP, 3-COLTS, 2 ea-Co FSO, 3 ea-Bn FSO, 1 ea-Bn ALO, 3-Bde ALO, 2-FA Bn Cdr, 2-FA Bn TOC
OC EC		1 ea-OC and Controller/Interactor except only one for OPFOR Tm
AAR Equipment		
OCWS	1	Exercise Playback
Signal Converter	1	Shows 3-D Playback
Overhead	1	Slides

Battalion/Task Force Scenario (SIMNET-T)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bn/TF Senior Staff Trainer	O5	1
Exercise Control Cell EC	Exercise Control Tm Chief	O4/O5	1
HACC	FS, Intel, Ops	O4	1
OPFOR	OPFOR Cdr	O3/E7	1
	OPFOR FS Controller	E7	1
FS Control Cell	Assistant FS OC	E7	1
	FS Console Operator	E7	1
Unit Observation Cell Subordinate Co/Tins	Co OC	O3	4
	Co EC	E7	4
Main CP	Main CP Observer	O4	1
	Ops Observer	O4/O3	1
	FS Observer	O3	1
Sct Plt	Sct Plt Observer	E7	1

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
M1 Cbt Veh Simulators	18	Cmd Grp and Tank Co
M2/M3 Cbt Veh Simulators	7	2-Sct Plt, 5-FSOs
or M2/M3 Cbt Veh Simulators	11	4-IN Co, 2-Sct Plt, 5-FSOs

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
TOC Mock-Ups	1	Main CP/TOC
OCWS	9	Co, ECC, FS, Scts, OPFOR-2
Radios	23	ECC-4, TOC-4, Cmd Grp-4, Bn FSO-2 Scts-1, Co-2 ea
AAR Equipment		
OCWS	1	Exercise Playback
Signal Converter	1	Shows 3-D Playback
Overhead	1	Slides

Company/Team Scenario (SIMNET-T)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Co/Tm Senior Trainer	O3/O4	1
Exercise OC Cell	Co OC	O3	1
	EC	E7	1

EQUIPMENT

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
OC Workstation	1	Controls tethered elements, OPFOR, Higher HQ, FS
M1 Cbt Veh Simulator	4	1-Co Cdr, 1ea-Plt Ldr
M2/M3 Veh Simulator	1	1-Co FSO
Radios	9	2 ea-OC, 2 ea-Co Cdr, 2 ea-FSO, 1 ea-Plt Ldr
AAR Equipment OCWS	1	Exercise Playback

Section III. Live Simulation

Executing an FCX using MILES, TWGSS/PGS, or subcaliber devices is very resource intensive. These FCXs require a great deal of personnel and equipment to properly support the exercise. This section outlines all of these requirements.

This appendix also describes the resources required to conduct a 1/10th scale FCX according to the scenarios described in Chapter 4, Tactical Scenarios, using either subcaliber firing devices or MILES/TWGSS/PGS equipment.

Brigade (Live Simulations)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bde Senior Staff Trainer	O6	1
Exercise Control Cell HICON	Deputy Exercise OC	04/05	1
	G2 Representative	03/04	1
	G3 Representative	04	1
	TAC CP Representative	03/04	1
	FSE Representative	03/04	1
	ADCOORD Representative	03/04	1
	RTO	E3/E4	1
OPFOR	OPFOR Cdr	03/04	1
	OPFOR Target Operator	04/E5	1
Range Safety/Ops	Range OIC	03/04	1
	Range Safety Officer	E7/O2	1
	Ammunition NCO	E5	1
	Target NCOIC	E6	1
	Target Detail	E3/E4	4
	Medic	E3/E4	2
OC Grp	Senior Observer	05/06	1
	TOC Observer	03/04	1
	TAC CP Observer	03/04	1
	Avn Observer	04	1
	FSE Observer	03	1
	ADA Observer	03	1
	TACP Observer	03	1
	Bn/TF Observer	03/04	4
	*Fire Marker NCO	E5	1
	*Fire Marker Tm	E3/E4	3

* omit for subcaliber firing

Battalion/Task Force (Live Simulations)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Bn/TF Senior Staff Trainer	O5	1
Exercise Control Cell HICON	Deputy Exercise Director	04/05	1
	Bde S3 Representative	O3	1
	Bde S2 Representative	O3	1
	Bde FSE Representative	O3	1
	Bde ADA Representative	O3	1
	RTO	E3/E4	1
OPFOR	OPFOR Cdr	O3/O4	1
	OPFOR Target Operator	E4/E5	1
Range Safety/Ops	Range OIC	O3/O4	1
	Range Safety Officer	E7/O2	1
	Ammunition NCO	E5	1
	Target NCOIC	E6	1
	Target Detail	E3/E4	4
	Medic	E3/E4	2
Observer Grp	Senior Observer	O4/O5	1
	TOC Observer	O3	1
	FSO Observer	O3	1
	ADA Observer	O2/O3	1
	Company Observer	O3	4/5
	Set Observer	O2	1
	*Fire Marker NCO	E5	1
	*Fire Marker Tm	E3/E4	3

*omit for subcaliber firing

Company/ Team (Live Simulations)

PERSONNEL

<u>Requirements</u>	<u>Position/Remarks</u>	<u>Grade</u>	<u>Qty</u>
Exercise Director	Co/Tm Senior Trainer	04/03	1
Exercise Control Cell HICON	Deputy Exercise Director	03	1
	Bn S3 Representative	03	1
	Bn S2 Representative	02/03	1
	Bn FSO Representative	02/03	1
OPFOR	OPFOR Cdr	02/E7	1
	OPFOR Target Operator	E4/E5	1
Range Safety/Ops	Range OIC	03/04	1
	Range Safety Officer	E7/O2	1
	Ammunition NCO	E5	1
	Target NCOIC	E6	1
	Target Detail	E3/E4	4
	Medic	E3/E4	2
Observer Grp	Senior Observer	03	1
	FIST Observer	01/02	1
	Plt Observer	01/02	3
	*Fire Marker NCO	E5	1
	*Fire Marker Tm	E3/E4	3

* omit for subcaliber firing

EQUIPMENT

Administrative Equipment

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
Tent, GP Medium	1	AAR
Field tables	2	AAR
Folding Chairs	13	AAR
Light Set	2	AAR
3KW Generator	1	AAR
Butcher Paper Board	1	AAR
Dry Erase Boards (with pens)	2	AAR

<u>Noun</u>	<u>Qty</u>	<u>Use</u>
Sand Table	1	AAR
	or	
Range Mapboard	1	AAR
PRC-77	7	Player Controllers FIST/FDC
Receiver/Transmitter	4	Tower Communications
Power Converter	1	Tower Communications
Power Cable	1	Tower Communications
Power Source, either 4.2KW Generator	1	Tower Communications
	or	
MI13/M577	1	
TA312/Wire	200 ft	Tower Communications
1:10 scale BRDM-2	4	Targets
1:10 scale BMP	26	Targets
1:10 Scale T-72	10	Targets

Table A-1. Opposing forces targetry.

Simulations & Target Types Units & Missions	BDE/REGT			BN/TF/SQDN			CO/TM/TRP		
	MTC	ATK	DIS	MTC	ATK	DIS	MTC	ATK	DIS
Constructive:									
BMPs	80	60	180	30	30	90	10	3	20
Tanks	31	20	62	10	10	31	3	1	7
Virtual:									
BMPs	80	60	180	30	30	90	10	3	20
Tanks	31	20	62	10	10	31	3	1	7
Live:									
BMPs	80	60	180	30	30	90	10	3	20
Tanks	31	20	62	10	10	31	3	1	7
<p><u>Note.</u> If training units do not have enough resources to replicate all of these OPFOR vehicles then, scale the OPFOR formation. For example, in a company/team FCX one OPFOR vehicle represents a MRP, a MRC in a Bn/TF FCX, or a MRB in a brigade FCX. Also, as an alternative, the OPFOR controller could use a reduced number of targets and keep presenting these vehicles until he represents enough targets to replicate the OPFOR echelon he requires.</p>									

Each TGT will need-

<u>Noun</u>	<u>Qty</u>
Target Holding Mechanism Tank Gunnery (THM-TG)	1
Battery 12V, Lead-acid battery	1
LTID	1
Battery 6V, BA200U	2
Generator portable, gas 12 VDC	1
Battery, 12 VDC nickel-cadmium (for each transmitter)	1
Can, gas 5 gal	1
<u>MILES Controller Equipment</u>	
M251 Controllers Gun, with green key (per OC)	1

Vehicles

Each vehicle will need-

<u>Noun</u>	<u>Qty</u>
<u>M1/M1A1</u>	
M82 Firing Simulator System Laser	1
<u>M2/M3</u>	
M83 Firing Simulator System Laser	1
TOW Missile Simulator	2
<u>FISTV</u>	
M73 Firing Simulator System Laser	1
<u>HMMWV</u>	
MITS Kit	1
<u>M577</u>	
M63 Firing Simulator System Laser	1

Note. Tank and BFV MILES equipment can be substituted for TWGSS and PGS when the equipment is available. The current TWGSS/PGS fielding plan (March 1995) calls for fielding to be complete by the year 2000. Thru-sight video (TSV) is another training device that should be used if available. The current TSV fielding plan (March 1995) calls for fielding to be complete by the end of 1996.

Subcaliber Gunnery Training Devices

Each vehicle will need-

<u>Noun</u>	<u>Qty</u>
Brewster Training Device	1
M16A1/A2 Rifle with 30 rd clip	1
Each IFV	
Bradley Subcaliber Training Device	1
M16A1/A2 Rifle with 20 rd clip	1

Ammunition/Pyrotechnics

Table A-2. Ammunition and pyrotechnics required.

Echelon Being Trained Ammo and Pyro	BDE /REGT (▲▲■)			BN/TF/SQDN (▲▲▲■)			CO/TM/TRP (▲▲■)		
	MTC	ATK	DIS	MTC	ATK	DIS	MTC	ATK	DIS
(Subcal only) 5.56 mm Ball: Full scale*/ 1/10 scale**	182 60	120 60	363 40	60 20	60 30	182 21	20 7	6 3	41 5
(MILES only)* Hoffman Charges (M1)	131	87	262	54	54	164	14	4	29
ATWESS Charges (M2/3)	51	33	101	6	6	18	6	2	12
All: Artillery Simulators	20			20			20		
Star Clusters:									
Green	6			6			6		
White	6			6			6		
Red	6			6			6		
Smoke Grenades:									
Green	6			6			6		
White	6			6			6		
Red	6			6			6		
Smoke Pots	2			2			2		
<p>* Ammunition requirements for full scale FCXs were calculated using a 1.5 probability of kill (PK) factor measured against the target arrays found in Table A-1.</p> <p>** Ammunition requirements for a 1/10 scale FCX also used the 1.5 PK factor, plus the following factors: in a MTC 1 target = 3 vehicles; in a DATK 1 target = 2 vehicles; and in a DIS 1 target = 9 vehicles.</p>									

GLOSSARY

AAR	after-action review
AD	air defense
ADA	air defense artillery
ADCOORD	air defense coordinator
AGES	air ground engagement system
AGMB	advance guard main body
AGS	armored gun system
AK	Alaska
AL	Alabama
ALO	air liaison officer
APC	armored personnel carrier
AR	armor
ARTEP	Army Training and Evaluation Program
arty	artillery
AT	antitank
atk	attack
ATWESS	antitank weapon effect signature simulator
AVLB	armored vehicle launched bridge
AVN	aviation
BBS	brigade/battalion battle simulation
bde	brigade
BFV	Bradley Fighting Vehicle
BHL	battle handover line
bn	battalion
BOS	battlefield operating system
BP	battle position
C2	command and control
CA	California
CALFEX	combined arms live-fire exercises
CALL	Center for Army Lessons Learned
CAS	close air support
cbt	combat
CCTT	close combat tactical trainer
cdr	commander
cmd	command
co	company
CO	Colorado
COA	course of action
COLT	combat observation lasing team
CONWOR	control workstation
CP	command post
CPX	command post exercise

CRP	combat reconnaissance patrol
CS	combat support
CSOP	combat security outposts
CSS	combat service support
DA	Department of the Army
DATK	deliberate attack
DC	District of Columbia
DIS	defense in sector
div	division
DS	direct support
EA	engagement area
EC	exercise controller
ECC	exercise control cell
enr	engineer
EPW	enemy prisoners of war
ESM	electronic warfare support measures
EUSA	Eighth US Army
EW	electronic warfare
FA	field artillery
FAA	forward assembly area
FASCAM	family of scatterable mines
FC	field circular
FCX	fire coordination exercise
FDC	fire direction center
FEBA	forward edge of the battle area
1SG	first sergeant
FIST	fire support team
FISTV	fire support team vehicle
FM	field manual
FS	fire support
FSB	forward support battalion
FSCoord	fire support coordinator
FSE	forward security element
FSO	fire support officer
FTX	field training exercise
FY	fiscal year
G2	Assistant Chief of Staff (Intelligence)
G3	Assistant Chief of Staff (Operations and Plans)
GA	Georgia
gal	gallon
GER	Germany
grp	group

HACC	higher and adjutant unit control cell
hel	helicopter
HI	Hawaii
HICON	higher control
HMMWV	high-mobility multipurpose wheeled vehicle
HQ	headquarters
IA	Iowa
ID	infantry division
IFV	infantry fighting vehicle
IL	Illinois
IN	infantry
intel	intelligence
ITL	Italy
JAAT	joint air attack team
JAWS	JANUS analysis workstation
JEC	JANUS exercise control cell
km	kilometers
KS	Kansas
KY	Kentucky
LA	Louisiana
LD	line of departure
ldr	leader
LFX	live-fire exercises
LO	liaison officer
LOS	line of sight
LTID	laser target interface device
m	meters
MBA	main battle area
mech	mechanized
METL	mission essential task list
MG	machine gun
MI	military intelligence
MILES	multiple integrated laser engagement system
MO	Missouri
MOI	memorandum of instruction
MOUT	military operations in urban terrain
MPRC	multipurpose range complex
MRB	motorized rifle battalion
MRC	motorized rifle company
MRD	motorized rifle division
MRP	motorized rifle platoon
MRR	motorized rifle regiment

MS	Mississippi
MTC	movement to contact
MTP	mission training plan
NBC	nuclear, biological, chemical
NC	North Carolina
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NJ	New Jersey
NY	New York
obj	objective
OC	observer/controller
OCWS	observer/controller workstation
OH	Ohio
OIC	officer in charge
OK	Oklahoma
OP	observation post
OPCON	operational control
OPD	officer professional development
OPEOR	opposing forces
OPORD	operation order
ops	operations
OPSEC	operations security
PA	Pennsylvania
PGM	precision guided missile
PGS	precision gunnery system
Pk	probability of kill
PL	phase line
p l t	platoon
psn	position
qty	quantity
RAG	Regimental Artillery Group (OPFOR)
rd	round
regt	regiment
rep	representative
RFL	restrictive fire line
RGB	red, green, blue
ROK	Republic of Korea
RTO	radiotelephone operator
S2	Intelligence Officer
S3	Operations and Training Officer
SATS	Standard Army Training System
SAWE	simulated area weapons effects

SBF	support by fire
SC	South Carolina
sct	scout
SIMNET-T	simulation networking-trainer
SOP	standing operating procedures
sqdn	squadron
STX	situational training exercises
TACAIR	tactical air
TAC CP	tactical command post
TACP	tactical air control party
TADSS	training aids, devices, simulators, and simulations
TBD	to be determined
TC	training circular
TF	task force
THM-TG	target holding mechanism tank gunnery
tm	team
TOC	tactical operations center
TOW	tube-launched, optically tracked, wire-guided
TPGID	tank precision gunnery inbore device
TRADOC	United States Army Training and Doctrine Command
TREDS	TRADOC Educational Data System
trp	troop
TRP	target reference point
TSOP	tactical standing operating procedures
TSV	thru-sight video
TTP	tactics, techniques, and procedures
TWGSS	tank weapons gunnery simulation system
TX	Texas
US	United States
USAARMS	United States Army Armor School
USAREUR	US Army Europe
veh	vehicle
WA	Washington
XO	executive officer

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DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

DA Form 2028	Recommended Changes to Publications and Blank Forms. 1 Feb 74.
---------------------	--

A

advance guard formation, 4-8
 advance guard main body (AGMB), 4-2, 4-3, 4-10 thru 4-19, 4-27, 4-29
 after-action review (AAR), 1-2 thru 1-4, A-1 thru A-21
 air defense (AD). *See* battlefield operating system (BOS), air defense.
 air defense artillery (ADA), 1-5, 2-5, A-6, A-17
 air defense coordinator (ADCOORD), A-16
 air defense officer, 4-4
 air ground engagement system (AGES), 1-7
 air liaison officer (ALO), 4-4, 4-10 and 4-11
 antitank weapon effect signature simulator (ATWESS), A-21
 armored personnel carrier (APC), 2-6
 armored vehicle launched bridge (AVLB), 2-5
 Army Training and Evaluation Program (ARTEP), 1-9, 2-8
 avenue of approach, 4-8, 4-17
 aviation, 1-5, 2-2, A-1 thru A-21

B**battalion**

brigade/battalion battle simulation (BBS), A-8 and A-9
 commanders, 1-5, 2-2, 4-14, A-1 thru A-21
 defense in sector, 4-17 thru 4-20
 fire coordination exercises (FCX), 4-5 thru 4-20
 live simulations, A-17
 movement to contact, 4-10 thru 4-13
 scenarios, 4-10 thru 4-20, A-4, A-8 and A-9, A-13 and A-14
 simulation networking-trainer (SIMNET-T), A-13 and A-14
 task force, 1-5, 3-3, 4-10 and 4-11, 4-17, 4-21, 4-25, A-1 thru A-21
battle handover line (BHL), 4-17, 4-27
battle position (BP), 4-17, 4-29
battlefield operating system (BOS), 1-1 thru 1-8, 2-4, 2-8, 3-3 thru 3-6, 4-4, 4-10 and 4-11, 4-24
 air defense (AD), 2-3, 2-6 and 2-7, 4-10 and 4-11
 combat service support (CSS), 1-9, 2-1, 2-3, 2-6
 command and control (C2), 1-1 thru 1-6, 2-2, 2-7, 3-3 thru 3-6, 4-2 and 4-3, 4-7 thru 4-21
 fire support (FS), 1-2, 1-6, 1-8, 3-6, 4-2, 4-12 thru 4-16, 4-19, 4-22, 4-28, A-1 thru A-21
 intelligence, 2-3, A-1 thru A-21
 maneuver, 1-2, 1-4 thru 1-6, 3-3 thru 3-6
 mobility and survivability, 2-3
Bradley Fighting Vehicle (BFV), 1-8, 2-6, 3-2 thru 3-4

brigade

brigade/battalion battle simulation (BBS), A-6 and A-7
commanders, 1-5, 2-2, 2-4, 4-2, 4-6, A-1 thru A-21
defense in sector, 4-8 and 4-9, 4-17
executive officer (XO), 1-5
fire coordination exercises (FCX), 4-1 thru 4-9
fire support officer (FSO), 1-5
fire support coordinator (FSCOORD), 1-5
hasty attack, 4-14 thru 4-16
JANUS, A-2 and A-3
live simulations, A-16
movement to contact, 4-2 thru 4-5
operations, 4-2
scenarios, 4-1 thru 4-9, A-2 and A-3, A-6 and A-7, A-11 and A-12
simulation networking-trainer (SIMNET-T), A-11 and A-12

brigade/battalion battle simulation (BBS), 1-6, 1-9, 2-2 thru 2-5, 4-4, A-1 thru A-21

C

call-for-fire. *See* fire, call-for-fire.

classes of supply, 3-1

close air support (CAS), 1-5, 2-3, 2-5, 3-3, 4-1, 4-3, 4-7 thru 4-9, 4-19 and 4-20

close combat tactical trainer (CCTT), 1-6, 1-9, 2-7 and 2-8, 4-4, A-11

combat observation lasing team (COLT), A-12

combat reconnaissance patrol (CRP), 4-10, 4-13, 4-17 thru 4-21, 4-23

combat service support (CSS). *See* battlefield operating system (BOS), combat service support (CSS).

combat support (CS), 1-9, 2-1 and 2-2, A-1 thru A-21

combined arms live-fire exercise, 1-7, 3-5

combined arms training, 1-9, 4-1

command and control (C2). *See* battlefield operating system (BOS), command and control (C2).

command group, A-1 thru A-21

command post (CP), 2-2, 4-12 thru 4-20, A-4

command post exercise (CPX), 2-2

company

brigade/battalion battle simulation (BBS), A-10
commanders, 1-5, 1-8 and 1-9, 4-24, A-1 thru A-21
defense in sector, 4-27 thru 4-29
fire coordination exercises (FCX), 4-21 thru 4-29
fire support team (FIST), 1-5, 4-24
hasty attack, 4-24 thru 4-26
JANUS, A-5
live simulations, A-18 thru A-21
movement to contact, 4-21 thru 4-24
scenarios, 4-21 thru 4-29, A-5, A-10, A-15
simulation networking-trainer (SIMNET-T), A-15
team, 1-5, 3-3, 4-6, 4-10 thru 4-13, 4-16, 4-21 thru 4-29

components

- active, 1-5, 2-8, 3-4
- reserve, 1-5, 2-8, 3-4

control workstation (CONWOR), A-1 thru A-21

counterreconnaissance, 4-8 and 4-9

course of action (COA), 2-3 and 2-4, 2-7

D

data base, 2-7

defensive operations, 4-2, 4-17, 4-24, 4-28

defense in sector, 4-1, 4-8 thru 4-10, 4-17 thru 4-21, 4-27 thru 4-29. *See also* battalion, brigade, and company defense in sector.

deliberate attack, 4-25

direct fire. *See* fire, direct.

direct support (DS), 4-2, 4-6, 4-24, A-1 thru A-21

E

Eighth US Army (EUSA), 2-8

engagement area (EA), 3-6, 4-17 thru 4-20, 4-27, 4-29

environmental, 2-6, 2-8, 3-1, 3-6, 4-5

executive officer (XO), A-1 thru A-21

exercise controller (EC), A-1 thru A-21

exercises

command post. *See* command post exercises (CPX).

combined arms live-fire. *See* combined arms live-fire exercises (CALFEX).

field training. *See* field training exercises (FTX).

full-scale. *See* full scale, exercises.

live-fire. *See* live-fire exercises (LFX).

situational training. *See* situational training exercises (STX).

weapons simulator. *See* weapons simulator exercises.

F

family of scatterable mines (FASCAM), 2-3

field artillery (FA), A-11 and A-12

field training exercise (FTX), 2-7

fire

call-for-fire, 1-7 and 1-8, 4-1

direct, 1-1 thru 1-8, 2-3 thru 2-5, 3-3 thru 3-5, 4-1 thru 4-10, 4-17 thru 4-20, 4-24, 4-27, 4-29

indirect, 1-1 thru 1-8, 2-3 thru 2-7, 3-3 thru 3-5, 4-7 thru 4-10, 4-13, 4-16 thru 4-21, 4-26, 4-28

fire direction center (FDC), 1-8

fire support (FS). *See* also battlefield operating system (BOS), fire support.

 coordinator (FSCOORD), 1-5

 officer (FSO), 1-5, 4-4, 4-10 and 4-11, A-1 thru A-21

 team (FIST), 1-5, 4-21, 4-23, 4-26, 4-29, A-18

 team vehicle (FISTV), 2-8, 4-24, A-20

forward assembly area (FAA), 4-8

forward edge of the battle area (FEBA), 4-8, 4-17

forward security element (FSE), 4-10, 4-13, 4-17 thru 4-24, A-1 thru A-21

forward support battalion (FSB), 4-2

full-scale

 exercises, 3-6 and 3-7, 4-1

 ranges, 3-4 thru 3-6

 targets, 3-5

G

G2, Assistant Chief of Staff (Intelligence), 4-4, 4-8, A-6

G3, Assistant Chief of Staff (Operations and Plans), A-6

ground surveillance radars, 2-3

H

hasty. *See* also battalion and company hasty attack.

 attack, 4-1 and 4-2, 4-6 and 4-7, 4-10, 4-14 thru 4-16, 4-21, 4-24
 4-26

 defense, 4-3 and 4-4

helicopter, 4-6 thru 4-8

high-mobility multipurpose wheeled vehicle (HMMWV), A-20

higher and adjutant unit control cell (HACC), A-1 thru A-21

higher control (HICON), A-6 thru A-21

homestations, 1-1, 2-7 and 2-8, 4-10

I

infantry, 4-1 thru 4-29

infantry fighting vehicle (IFV), 2-6, A-21

intelligence. *See* battlefield operating system (BOS), intelligence.

Intelligence Officer (S2). *See* S2, intelligence officer.

J

JANUS, 1-6, 1-8, 2-3 thru 2-5, 4-4, A-1 thru A-21

JANUS analysis workstation (JAWS), A-4

JANUS exercise control cell (JEC), A-4

joint air attack team (JAAT), 1-4, 4-2 and 4-3, 4-7 thru 4-9

laser target interface device (LTID), 1-8, 3-2 thru 3-4, A-20
 line of departure (LD), 4-4, 4-11, 4-16, 4-24
 line of sight (LOS), 2-5
 live-fire exercises (LFX), 1-7, 3-1, 3-4 thru 3-7

M

machine guns, 1-6, 2-7, 3-5
 main battle area (MBA), 4-8 and 4-9
 main command post (CP), A-1 thru A-21
 maneuver. *See* battlefield operating system (BOS), maneuver.
 memorandum of instruction (MOI), A-1
 military intelligence (MI), A-7
 military operations in urban terrain (MOUT), 2-4 and 2-5
 mission essential task list (METL), 1-2, 3-2, 3-6, 4-1, 4-30
 mission training plan (MTP), 1-3, 4-10
 mobility and survivability. *See* battlefield operating system (BOS), mobility and survivability.
 motorized rifle battalion (MRB), 4-2, 4-7, A-19
 motorized rifle company (MRC), 4-16, 4-24, 4-26, 4-29
 motorized rifle division (MRD), 4-8 and 4-9, 4-17
 motorized rifle platoon (MRP), 4-24, 4-26, A-19
 motorized rifle regiment (MRR), 4-2 thru 4-10, 4-17 thru 4-20
 movement to contact (MTC), 4-1 thru 4-14, 4-21 thru 4-24, A-15, A-20
See also battalion, brigade, and company movement to contact.
 multiple integrated laser engagement system (MILES), 1-6 and 1-7, 3-1 thru 3-4, 4-24, A-15, A-20
 multipurpose range complex (MPRC), 3-2 thru 3-6

N

nuclear, biological, chemical (NBC), 1-5

O

observers, A-1 thru A-21
 observation post (OP), 4-29
 observer/controller (OC), 1-2 and 1-3, 3-1, A-1 thru A-21
 observer/controller workstation (OCWS), A-14
 operation order (OPORD), 1-3
 operational control (OPCON), 4-2
 Operations and Training Officer (S3). *See* S3, Operations and Training Officer.
 operations security (OPSEC), 4-2 and 4-3, 4-9 thru 4-17, 4-22, 4-28
 opposing forces (OPFOR), 1-4 and 1-5, 2-2 thru 2-7, 3-2 and 3-3, 4-1 thru 4-14, 4-17, 4-24 and 4-25, 4-27, A-1 thru A-21

P

phase line (PL), 4-1 thru 4-29
platoon commander, 1-8
platoon leader, 1-5, A-1 thru A-21
precision gunnery system (PGS), 1-6 thru 1-8, 2-5, 3-2 thru 3-4, 4-24, A-15
probability of kill (Pk), A-21

R

radiotelephone operator (RTO), A-6 thru A-21

S

S2, Intelligence Officer, 4-4, 4-10, 4-17, 4-25, A-1 thru A-21
S3, Operations and Training Officer, 1-5, 4-12 thru 4-19, A-1 thru A-21
simulated area weapons effects (SAWE), 1-7
simulation networking-trainer (SIMNET-T), 1-6, 1-9, 2-6 and 2-7, 3-5, 4-4, A-11 thru A-15
simulations
- constructive, 1-2, 2-2 thru 2-5, 4-1, 4-4, 4-11, 4-24, A-1 thru A-10
live, 1-2, 4-1, 4-4, 4-10, 4-21, A-15 thru A-21
virtual, 1-2, 2-6 thru 2-8, 4-4, 4-4, 4-11, 4-24, A-11 thru A-15
situational training exercises (STX), 3-5
Standard Army Training System (SATS), 4-30
standing operating procedures (SOP), 1-3
subcaliber
Brewster, 3-4, A-21
devices, 3-1, 3-3, 3-7, 4-4, 4-24, A-15
support by fire (SBF), 4-23, 4-26

T

tactical air (TACAIR), 4-2 and 4-3, 4-7 thru 4-9
tactical command post (TAC CP), 4-4, A-1 thru A-21
tactical operations center (TOC), 4-4, 4-10 and 4-11, A-1 thru A-21
tactical standing operating procedures (TSOP), 1-3
tactics, techniques, and procedures (TTP), 1-1, 1-3
tank precision gunnery inbore device (TPGID), 1-6 and 1-7, 3-4, 4-24, A-15, A-20
tank weapons gunnery simulation system (TWGSS), 1-6 thru 1-8, 3-1, 3-4
tanks,
M1, 2-6, 2-8, A-12 thru A-15, A-20
M2, 2-4, 2-6, 2-8, A-12 thru A-15, A-20
M3, 2-6, 2-8, A-12 thru A-15, A-20
target holding mechanism tank gunnery (THM-TG), A-20
target reference point (TRP), 4-27

targets

full-scale, 1-7

half-scale, 1-7

task force (TF), 4-2 thru 4-20, 4-23 thru 4-29, A-1 thru A-21**Telfare**, 1-6, 3-4 and 3-5**thru-sight video (TSV)**, A-20**TRADOC Educational Data System (TREDS)**, 4-30**trainer, mortar, pneumatic device**, 1-8**training**

assessment, 1-2

difficulty, 1-5

force-on-force, 1-7, 1-9, 3-2

frequency, 1-5

live, 1-3, 3-1 thru 3-7

planning, 1-3

rehearse, 1-3

resource, 1-3


units leaders, 1-3

training aids, devices, simulators, and simulations (TADSS), 1-2, 1-6 thru 1-9, 2-1**training methodology**, 1-1 thru 1-5**tube-launched, optically tracked, wire-guided (TOW)**, 1-8, 2-7**U****unit commanders**, 1-2, 1-3**United States Army Europe (USAREUR)**, 1-7**W****weapon simulator exercises**, 3-2 thru 3-4**workstation**, 2-2

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