

2

AD-A156 801

Research Product 84-11

Fire Commands for the M1 Tank

ARI Field Unit at Fort Knox, Kentucky
Training Research Laboratory

May 1984

DTIC FILE COPY

DTIC
ELECTE
JUL 24 1985
S
D



85 7 24 07

U. S. Army Research Institute for the Behavioral and Social Sciences

Approved for public release; distribution unlimited.

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the
Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

L. NEALE COSBY
Colonel, IN
Commander

Technical review by

Scott E. Graham
Donald R. Lampton

SFC Blair, SFC Jacqueth, SFC Middleton, and SFC Coswell
USAARMC, Weapons Department, Fort Knox, KY

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input checked="" type="checkbox"/>
Unannounced Classification	<input type="checkbox"/>
Distribution/	
Availability Codes	
Data and/or	
Dist. Special	
A-1	

NOTICES

FINAL DISPOSITION: This Research Product may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: This Research Product is not to be construed as an official Department of the Army document in its present form.

RE: For Research Purpose Only, Not For
Distribution

The above statement no longer applies. The
information on pages having that statement
is now in the public domain.
Per Mr. Bill Harlow, ARIBSS

RE: Meaning of Key Word, BNCOC
Basic NCO Course



REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Research Report 84-11	2. GOVT ACCESSION NO. AD-A156801	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Fire Commands for the M1 Tank	5. TYPE OF REPORT & PERIOD COVERED Final Report	
	6. PERFORMING ORG. REPORT NUMBER --	
7. AUTHOR(s) Kraemer, Ronald E.	8. CONTRACT OR GRANT NUMBER(s) --	
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue Alexandria, VA 22333-5600	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q263743A794 Task 3.314 (FY 84) Work Unit 100	
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue Alexandria, VA 22333-5600	12. REPORT DATE May 1984	
	13. NUMBER OF PAGES 309	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) --	15. SECURITY CLASS. (of this report) Unclassified	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE --	
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) --		
18. SUPPLEMENTARY NOTES --		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Armor training; Tank gunnery; Cross training. M1 (Abrams); Fire commands; Unit training Sustainment training; Tank commander; Battlefield scenarios Individual skills training; Tank gunner; Self-study guides. Skills sustainment; BNCOC		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Research was conducted to develop tank gunnery sustainment training materials for M1 Abrams tank crewmembers. The research product developed consists of six booklets for use by tank commanders in maintaining their knowledge and skills in issuing fire commands. The first booklet presents an overview of fire command knowledges while the remaining booklets provide practice in classifying threats; ammunition/weapon selection, sequence of initial fire commands; single target engagements, and multiple/simultaneous engagements, respectively.		

Research Product 84-11

Wire Commands for the M1 Tank

Ronald E. Kraemer

Submitted by
Donald F. Haggard, Chief
ARI Field Unit at Fort Knox, Kentucky

Approved as technically adequate
and submitted for publication by
Harold F. O'Neil, Jr., Director
Training Research Laboratory

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333

Office, Deputy Chief of Staff for Personnel
Department of the Army

May 1984

Army Project Number
2Q263743A794

Education and Training

Approved for public release; distribution unlimited.

PREVIOUS PAGE
IS BLANK

FIRE COMMANDS FOR THE M1 TANK

CONTENTS

	Page
BOOKLET 1: OVERVIEW OF FIRE COMMANDS	vii
BOOKLET 2: CLASSIFYING THREATS	147
BOOKLET 3: AMMUNITION/WEAPON SELECTION	177
BOOKLET 4: FIRE COMMAND ELEMENTS AND SEQUENCE	199
BOOKLET 5: SINGLE TARGET ENGAGEMENTS	231
BOOKLET 6: MULTIPLE/SIMULTANEOUS TARGET ENGAGEMENTS	259

PREVIOUS PAGE
IS BLANK 

FIRE COMMANDS for the
M1 TANK

BOOKLET **1**

OVERVIEW OF FIRE
COMMANDS



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11-A

PREVIOUS PAGE
IS BLANK



TABLE OF CONTENTS

TANK COMMANDER TRAINING NOTE 1

USER'S GUIDE 5

SECTION I: PREPARING FOR FIRE COMMANDS . 9

SECTION II: FIRE COMMANDS FOR MACHINE-
GUN ENGAGEMENTS - SINGLE
TARGET 35

SECTION III: FIRE COMMANDS FOR SINGLE
TARGET MAIN GUN ENGAGE-
MENTS - PRECISION GUNNERY . 55

SECTION IV: FIRE COMMANDS FOR SINGLE
TARGET MAIN GUN ENGAGE-
MENTS - DEGRADED MODE
GUNNERY 87

SECTION V: ENGAGEMENTS INVOLVING
MANY TARGETS 115

SECTION VI: REPEATING/CORRECTING
FIRE COMMANDS 139

OVERVIEW OF
M1 TANK FIRE COMMANDS

TANK COMMANDER'S TRAINING NOTES

This set of booklets deals with fire commands for the M1 tank. There are 6 booklets in the set. When a crewmember has finished the complete set he will be able to:

ISSUE THE CORRECT FIRE COMMANDS FOR THE MAIN GUN OR ANY MACHINE GUN IN EITHER SINGLE, MULTIPLE OR SIMULTANEOUS ENGAGEMENTS

OVERVIEW OF THE BOOKLETS

The set of booklets has been organized from simple to complex. That is, the first booklet provides general information about M1 fire commands. The rest of the booklets provide increasingly difficult fire command problems which require solution. The booklets are as follows:

- BOOKLET 1 - Overview of Fire Commands
- BOOKLET 2 - Classifying Threats
- BOOKLET 3 - Ammunition/Weapon Selection
- BOOKLET 4 - Sequence of Initial Fire Command

BOOKLET 5 - Single Target Engagements
BOOKLET 6 - Multiple/Simultaneous
Engagements

PURPOSE OF THE BOOKLETS

The set of booklets has been designed to help you train. The booklets may be used to:

- SUSTAIN YOUR OWN SKILLS
- CROSS-TRAIN OTHER PERSONNEL

These booklets have not been designed as initial training. In other words, crewmen using them must have certain skills. These skills are:

- Knowledge of Soviet Bloc weapon systems capabilities
- Knowledge of M1 systems and nomenclature
- Familiarity with FM 17-12-1, Tank Gunnery

When a crewmember has these existing skills, he will be ready to use this set of booklets.

USING THE BOOKLETS

There are a number of different ways you can use these booklets:

1. FOR INDIVIDUAL STUDY - You can give the booklets to a crewmember and require that they be completed. The instructions at the beginning of the booklets will explain how they are to be used.
2. AS A TEST OF PERFORMANCE - You can select scenarios from booklets 2, 3, 4, 5 and 6. Modify those scenarios by changing the picture or the situation. Provide the modified scenario to one of your crewmembers. When he has selected or provided answers, check the answers with your correct answers (you must also decide on the correct answers for your modified scenario).
3. AS A METHOD OF COMPETITION - You might choose to have crewmembers within your crew, or within different crews, compete on the scenarios. To do this, provide the same scenario to each crewmember. Keep a record of who is able to correctly answer the most questions.

OVERVIEW OF
M1 TANK FIRE COMMANDS

USER'S GUIDE

This is booklet 1 in a set of 6 booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set, you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE, OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to prepare a correct fire command, a TC must be aware of certain kinds of target and gunnery information. Also, he must know what statements to make, and his crew's responses, if a fire command is to be useful. With that information, he will be able to prepare and announce a fire command which results in target destruction.



THIS BOOKLET

This booklet will provide the general information required to prepare a fire command. It will also tell you how to announce a fire command, including crew responses, for the following kinds of engagements:

- Machine-gun - Single Targets
- Main Gun - Precision Gunnery
- Main Gun - Degraded Mode Gunnery
- Main Gun - Many Targets

HOW TO USE THIS BOOKLET

1. Read each section within the booklet carefully.
2. Pay special attention to the examples provided.
3. Many pages in the booklet have questions on them. Be sure you answer the questions and check your answers.
4. Refer to:
 - "Tank Combat Tables - M1"
FM 17-12-1if you have any further questions.

BEFORE YOU USE THIS SET OF BOOKLETS

Before using this set of booklets, you should have some existing knowledge related to fire commands, you should have:

- Knowledge of Soviet Bloc weapon capabilities
- Knowledge of M1 systems and nomenclature
- Familiarity with FM 17-12-1

A COMMENT ON THE BOOKLET SET

The fire commands discussed in this set of booklets are considered to be the most commonly used on the battle field. There are other fire command variations which are not discussed. These other variations include:

- Where the tank commander cannot quickly lay the main gun for direction and elevation.
- Where wingman reactions and procedures are involved.
- Where weapon stoppages occur.

These variations, and others, are discussed
in FM 17-12-1.

SECTION I

PREPARING FOR FIRE COMMANDS

Before constructing fire commands, a tank commander requires specific information about targets and tank gunnery. The information is needed to construct each fire command. This section reviews that information. In this section you will find brief descriptions of:

- A. THE FIRE COMMAND
- B. CLASSES OF TARGETS
- C. AMMUNITION/WEAPON CHOICES
- D. PERSONNEL TO OPERATE WEAPONS
- E. SINGLE, MULTIPLE, AND SIMULTANEOUS ENGAGEMENTS
- F. INITIAL AND SUBSEQUENT FIRE COMMANDS
- G. ENGAGEMENT TECHNIQUES

PREPARING FOR FIRE COMMANDS

A. THE FIRE COMMAND

A fire command is used to provide information to the tank crew. The TC issues a fire command to tell the crew members:

- WHAT IS GOING TO HAPPEN
- WHO IS EXPECTED TO DO WHAT

His crew's responses during and after the fire command help him to decide:

- IF THE PREPARATIONS FOR THE ENGAGEMENT ARE COMPLETE
- WHEN THE ENGAGEMENT SHOULD BE ENDED

With a well-stated and understood fire command, the crew's chances of success (survival) are high. With a poorly-stated fire command, the crew's chances of success (survival) are seriously reduced.

The issuing of a fire command is not difficult. The difficult part is assessing the tank/battle situation so that you can prepare the best fire command.

QUESTIONS

1. A purpose of the fire command is to:
 - A. Detect the most dangerous threat.
 - B. Tell the crew what they are to do.
 - C. Identify and kill the enemy.
 - D. Describe the status of gunnery.

2. If the crew does not understand the fire command:
 - A. They may not know which target to engage.
 - B. They may not know who will engage the target.
 - C. They may not survive the battle.
 - D. All of the above.

3. The difficult part of a fire command is:
 - A. Issuing the fire command.
 - B. Preparing the fire command.
 - C. Assuring its survival.
 - D. All of the above.

4. Crew responses to a fire command help you decide:

- A. If the engagement should begin.
- B. If engagement preparations are complete.
- C. Who will do what in the engagement.
- D. Whether your tank will survive.

Answers: 1.B 2.D 3.B 4.B

PREPARING FOR FIRE COMMANDS

B. CLASSES OF TARGETS

Targets are classed as one of three kinds. The first kind is MOST DANGEROUS THREAT. A MOST DANGEROUS THREAT is one which:

- CAN KILL YOU,
- HAS SEEN YOU, and
- IS PREPARING TO ENGAGE YOU

The TC must identify the MOST DANGEROUS THREAT without hesitation.

The second kind of target is DANGEROUS THREAT. A DANGEROUS THREAT is one which:

- CAN KILL YOU
- HAS NOT SEEN YOU, or
- IS NOT PREPARING TO ENGAGE YOU

The third kind of target is LEAST DANGEROUS THREAT. A LEAST DANGEROUS THREAT is one which:

- CANNOT KILL YOU, but
- CAN REPORT YOU TO ONE THAT DOES

As a general rule, the TC should identify and engage the MOST DANGEROUS THREAT(s) first, followed by the DANGEROUS THREAT(s), and finally the LEAST DANGEROUS THREAT(s).

QUESTIONS

1. A DANGEROUS THREAT is one which:
 - A. Can kill you and has not seen you.
 - B. Cannot kill you and has not seen you.
 - C. Is preparing to engage you.
 - D. None of the above.

2. A LEAST DANGEROUS THREAT is one which:
 - A. Cannot kill you.
 - B. Can engage you.
 - C. Can kill you and has seen you.
 - D. None of the above.

3. Usually, the threat you engage first is:
 - A. MOST DANGEROUS.
 - B. DANGEROUS.
 - C. LEAST DANGEROUS.
 - D. None of the above.

4. You must identify the MOST DANGEROUS THREAT:
 - A. After issuing a fire command.
 - B. After other possible targets.
 - C. Without hesitation.
 - D. None of the above.

Answers: 1.A 2.A 3.A 4.C

PREPARING FOR FIRE COMMANDS

C. AMMUNITION/WEAPON CHOICES

The M1 tank is armed with a variety of weapons and ammunition types. Each weapon and ammunition type has been designed to defeat specific targets at specific ranges.

TO SURVIVE, YOUR FIRE COMMAND MUST USE THE BEST AMMUNITION/WEAPON FOR EACH TARGET!

AMMUNITION FOR THE MAIN GUN

For the main gun, you have a choice of two types of ammunition:

- Kinetic Energy
 - SABOT
- Chemical Energy
 - HEAT

The selection of ammunition is based upon the target and the target range. The following chart presents each main gun ammunition type and the rules for its selection.

YOU MUST MEMORIZE THE CONTENTS OF THIS CHART

MAIN GUN

BEST CHOICE AGAINST TARGETS

AMMUNITION/ WEAPON	RANGE	TANKS	APC	LIGHTLY ARMED TARGETS				TROOPS	FORTS BUNKERS	CHOPPER	AIRCRAFT
				VEHICLE	ANTI-TANK DISMOUNTED*	TRUCKS					
SABOT	3000M	BEST	2nd BEST	2nd BEST	DO NOT USE	DO NOT USE	DO NOT USE	2nd BEST	BEST	DO NOT USE	
HEAT	3000M (LESS ACCU- RATE AFTER 2000M)	2nd BEST	BEST	BEST	2nd BEST	2nd BEST	2nd BEST	BEST	2nd BEST	DO NOT USE	

*This includes: Manpack SAGGER, APG, RPG, etc.

MACHINEGUNS

There are three machine guns on the M1 tank:

- M240 at the loader's station
- M240 (COAX) at the gunner's station
- Cal .50 or M240 at the tank commander's station

Each machinegun is effective against certain targets at certain ranges. The following chart presents information on each machinegun and the rules for its selection.

YOU MUST MEMORIZE THE CONTENTS OF THIS CHART

MACHINE GUNS

BEST CHOICE AGAINST TARGETS

AMMUNITION/ WEAPON	MAX EFFECT RANGE	TANKS	LIGHTLY ARMORED VEHICLES						
			APC	ANTI-TANK VEHICLE	TRUCKS	TROOPS	FORTS BUNKERS	CHOPPER	AIRCRAFT
CALIBER 50 (TC)	1800 * METERS (Tracer Burnout is 2150 meters)	DO NOT USE	BEST (ONLY WHEN MAIN GUN IN USE AGAINST TANK)	BEST	BEST	BEST	DO NOT USE	2nd BEST (BEST WEAPON IS YOUR MAIN GUN)	BEST
M240 (COAX) (GUNNER)	900M	DO NOT USE	DO NOT USE	2nd BEST	2nd BEST	2nd BEST	DO NOT USE	DO NOT USE	DO NOT USE
M240 (LOADER)	900M	DO NOT USE	DO NOT USE	3rd BEST	3rd BEST	3rd BEST	DO NOT USE	3rd BEST	2nd BEST

*This includes: Manpack Sagger, APG, RPG, etc.

QUESTIONS

MAIN GUN

1. What is the BEST ammunition to use against a T-72 at 2200 meters?
 - A. Cal .50.
 - B. COAX.
 - C. HEAT.
 - D. SABOT.

2. What is the BEST ammunition to use against an APC at 2000 meters?
 - A. Cal .50.
 - B. COAX.
 - C. HEAT.
 - D. SABOT.

3. What is the BEST ammunition to use against an anti-tank vehicle at 2500 meters?
 - A. Cal .50.
 - B. M240.
 - C. HEAT.
 - D. SABOT.

4. What is the BEST ammunition to use against troops at 3500 meters?

- A. HEAT.
- B. Cal .50.
- C. M240.
- D. SABOT.

MACHINEGUNS

5. What is the BEST machinegun to use against troops at 1200-1800 meters?

- A. Cal .50.
- B. COAX.
- C. M240.

6. What is the BEST machinegun to use against trucks at 800 meters?

- A. Cal .50.
- B. COAX.
- C. M240.

7. What is the BEST machinegun to use against aircraft?

- A. Cal .50.
- B. COAX.
- C. M240.

Answers: 1.D 2.C 3.C 4.A 5.A 6.B 7.A

PREPARING FOR FIRE COMMANDS

D. PERSONNEL TO OPERATE WEAPONS

Under normal conditions, specific crewmembers are responsible for firing specific weapons:

- GUNNER -- fires the main gun and COAX
- LOADER -- fires the M240
- TANK COMMANDER -- fires the CAL .50 or M240 in TC mount

Under some conditions, the TC may choose to fire the main gun or COAX instead of the gunner. These conditions are:

- THERE IS A FAILURE AT THE GUNNER'S STATION
- THE GUNNER CANNOT ENGAGE THE TARGET

QUESTIONS

1. Under normal conditions, the coax is fired by the:
 - A. Loader.
 - B. Gunner.
 - C. Tank commander.

2. The tank commander might fire the main gun if:
 - A. There is a power control handle failure at the gunner's station.
 - B. The loader is injured.
 - C. The coax is not operating properly.
 - D. The tank is hull or turret down.

3. The gunner is usually responsible for firing the:
 - A. M240 or Cal .50.
 - B. Main gun and Cal .50.
 - C. Coax and main gun.
 - D. M240 and main gun.

Answers: 1.B 2.A 3.C

PREPARING FOR FIRE COMMANDS

E. SINGLE, MULTIPLE AND SIMULTANEOUS ENGAGEMENTS

The modern day battlefield will be very complex. A tank may be up against a single target. More likely, it will be up against many targets.

YOU MUST BE PREPARED FOR ENGAGEMENTS
WITH SINGLE TARGETS OR MANY TARGETS IF
YOU ARE TO SURVIVE

SINGLE TARGETS

Engagements with single targets are called SINGLE engagements. When conducting single engagements, a crew will be able to focus their attention on the single target.

MANY TARGETS

There are two ways in which a crew can engage more than one target. They are SIMULTANEOUS engagements and MULTIPLE engagements.

- SIMULTANEOUS ENGAGEMENTS - Where a tank must fire at two or more targets at the same time with different weapons. For example, the main gun against a T-72 and the Cal .50 against a SAGGER ATGM.

- MULTIPLE ENGAGEMENTS - Where a tank crew must fire at two or more targets with the same weapon. For example, the main gun against a T-72 and then the main gun against another T-72.

QUESTIONS

1. When you must engage two tanks with the main gun, you will conduct a:
 - A. Single engagement.
 - B. Simultaneous engagement.
 - C. Multiple engagement.
2. When you must engage a tank and troops at the same time, you will conduct a:
 - A. Single engagement.
 - B. Simultaneous engagement.
 - C. Multiple engagement.
3. When you must engage only an anti-tank vehicle, you will conduct a:
 - A. Single engagement.
 - B. Simultaneous engagement.
 - C. Multiple engagement.
4. Using the Cal .50 and main gun against two different targets would be a:
 - A. Single engagement.
 - B. Simultaneous engagement.
 - C. Multiple engagement.

Answers: 1.C 2.B 3.A 4.B

PREPARING FOR FIRE COMMANDS

F. INITIAL AND SUBSEQUENT FIRE COMMANDS

There are two kinds of fire commands. They are INITIAL fire commands and SUBSEQUENT fire commands. They are defined as follows:

- INITIAL FIRE COMMAND - This is used to first engage a specific target. If your gunnery is accurate, only the initial fire command will be needed for an engagement.
- SUBSEQUENT FIRE COMMAND - This fire command follows an initial fire command. It is used only if the initial fire command did not end the engagement (the target was not destroyed).

QUESTIONS

1. A subsequent fire command:
 - A. Follows every initial fire command.
 - B. Follows some initial fire commands.
 - C. Never follows an initial fire command.
 - D. None of the above.

2. An initial fire command:
 - A. Is used only for the first battlefield target.
 - B. Is used for every new battlefield target.
 - C. Is used only for main gun engagements.
 - D. Is used only for machine gun engagements.

3. If the first fire command did not destroy a target, you would usually issue:
 - A. An initial fire command.
 - B. A subsequent fire command.
 - C. A mixed initial/subsequent.
 - D. None of the above.

Answers: 1.B 2.B 3.B

PREPARING FOR FIRE COMMANDS

G. DIRECT FIRE TECHNIQUES

There are two techniques of direct fire: precision gunnery and a degraded mode gunnery. Each is briefly described below:

- PRECISION GUNNERY - Is the engagement of a target using the full capability of the fire control system. During a precision engagement the fire control system provides an automatic, full ballistic solution for the ammo selected.
- DEGRADED GUNNERY - Is a result of a malfunction of any component of the fire control system which prevents the computer from automatically applying a full ballistic solution. The most common form of degraded mode gunnery is the battlesight technique. A second is when the GAS must be used to start or complete an engagement.

QUESTIONS

1. The two techniques of direct fire are:
 - A. Precision gunnery.
 - B. Battlesight gunnery.
 - C. Degraded mode gunnery.
 - D. All of above.

2. If range cannot be measured with the laser, LRF is not working, the crew will use:
 - A. Precision gunnery.
 - B. Battlesight gunnery.
 - C. Degraded mode gunnery.
 - D. None of above.

3. If range can be measured with the laser, LRF and GPS/TIS are operational, and target is within battlesight range, the crew will use:
 - A. Precision gunnery.
 - B. Battlesight gunnery.
 - C. Degraded mode gunnery.
 - D. None of above.

4. If the GAS is used during an engagement, the tank crew is using:
- A. Precision gunnery.
 - B. Battlesight gunnery.
 - C. Degraded mode gunnery.
 - D. All of above.
5. The most common form of degraded mode gunnery is:
- A. Precision.
 - B. Battlesight.
 - C. GAS.
 - D. All of above.

Answers: 1.C 2.C 3.A 4.C 5.B

SECTION II

FIRE COMMANDS FOR MACHINEGUN ENGAGEMENTS
SINGLE TARGETS

This section will present general information on fire commands for single target machine-gun engagements. It will review the following key points:

- A. THE INITIAL FIRE COMMAND
- B. CREW RESPONSES TO INITIAL FIRE COMMANDS
- C. YOUR REACTIONS TO CREW RESPONSES
- D. ENDING A MACHINE GUN ENGAGEMENT



SINGLE TARGET MACHINEGUN ENGAGEMENTS

A. THE INITIAL FIRE COMMAND

A correctly stated initial fire command has up to five elements (parts). They are:

- ALERT AND/OR WEAPON IF TC IS TO FIRE
- AMMUNITION/WEAPON
- TARGET DESCRIPTION
- EXECUTION
- DIRECTION (optional)

Each element helps the TC explain the engagement to his crew.

THE ALERT ELEMENT

The first element of the initial fire command is announced by naming a crewmember or weapon. For example, the TC might announce:

- GUNNER
or
- LOADER
or
- CALIBER FIFTY

The ALERT element serves two purposes. The first purpose is to tell the crew that an engagement is going to take place. The second purpose is to tell who will be involved in the engagement.

For example:

- IF the TC announces GUNNER--and wants the gunner to fire the weapon, he has told who will make the engagement.
- IF the TC announces CALIBER FIFTY--he has told the crew he will be using his weapon for the engagement.

THE AMMUNITION/WEAPON ELEMENT

The second element of the initial fire command tells the crew which ammunition/weapon will be used for the engagement. For example, the TC might announce:

● SABGT or ● COAX or ● "240"

THE TARGET DESCRIPTION ELEMENT

The third element of the initial fire command identifies the target to the gunner/loader. If there are several similar targets it tells the gunner/loader which target to engage first. Most targets can be designated by the following terms:

<u>TYPE TARGET</u>	<u>ANNOUNCED AS</u>
Tank or tank-like target	TANK
Unarmored vehicle	TRUCK
Armored personnel carrier . . .	PC
Helicopter	CHOPPER
Fixed-wing aircraft	PLANE
Personnel	TROOPS
Machinegun	MACHINEGUN
Antitank Gun, Antitank missile, or Towed Artillery Piece . . .	ANTITANK
For all other targets, use the briefest possible term which clearly describes the target.	

At times, there may be combination targets, such as a truck-mounted antitank guided missile system. They can be identified by combining terms, e.g., ANTITANK TRUCK.

At other times, there may be multiple targets. Here, the TC identifies the number of targets he acquires, e.g., GUNNER--COAX--TWO TRUCKS. He then designates which target to engage first, e.g., RIGHT TRUCK. The TC may continue the fire command until all targets are destroyed or no longer visible.

IMPORTANT

Once the TC has laid the main gun on the target, he will announce ON and release the override. This is not an element of the fire command, but a crew duty. ON tells the gunner where the target is located.

THE DIRECTION ELEMENT

The fourth element is omitted by the TC if he can lay the gun for direction and elevation. If he cannot, he can use the:

- Traverse method. The TC tells the gunner TRAVERSE--LEFT (or RIGHT). The gunner traverses rapidly in the direction announced. As the gun tube nears the target, the TC announces STEADY and the gunner slows his traverse. When the gun tube is on target, the TC announces ON.
- Reference point and deflection. The target reference point must be one that the gunner can recognize easily. For example, the TC's command might be REFERENCE POINT--BRIDGE--TRAVERSE RIGHT. The gunner identifies the reference point and traverses right, looking for the target.

● COMMANDER'S GPS EXTENSION METHOD

TC acquires a target and observes through the GPS extension. He then uses the traverse method to lay the gun on target.

● CALIBER FIFTY TRACER METHOD

This method is the least desirable in laying the gun for direction. It should be used when immediate target suppression is necessary and the gunner cannot identify the target. To use this method, main gun and .50 must be in same target area so gunner can see tracers. The TC will announce the first three elements of the fire command followed by "WATCH MY TRACER." For example:

```
GUNNER  
SABOT  
TANK . . .  
          UP (Loader)  
          CANNOT IDENTIFY (gunner)  
WATCH MY TRACER
```

THE EXECUTION ELEMENT

This element tells the crew who will engage the target and when the target will be engaged. The following four examples show all possible EXECUTION elements.

<u>EXECUTION ELEMENT</u>	<u>WHO</u>	<u>WHEN</u>
FIRE	The crewmember named in the alert element.	NOW
FIRE AND ADJUST	The crewmember named in the alert element. He will also adjust his own fire and continue firing until target destroyed or until told to end the engagement.	NOW
AT MY COMMAND	The crewmember named in the alert element.	Upon hearing FIRE or FIRE AND ADJUST
FROM MY POSITION	The TC will take the engagement.	NOW

Here is an example of an initial fire command for machinegun engagement:

<u>TC COMMANDS</u>	<u>ELEMENTS</u>
GUNNER	Alert
COAX	Ammunition/ Weapon
TROOPS	Target
DIRECT FRONT --- ON . . .	Description Direction is optional. Also, ON is not an element, but a crew duty performed by the TC to help the gunner identify the same target.
FIRE	Execution

QUESTIONS

1. For the ALERT element of machinegun engagements, the TC would:
 - A. Select a weapon.
 - B. Name a crewmember.
 - C. Execute the fire command.
 - D. End the engagement.

2. If four trucks are on the battlefield, the best target description might be:
 - A. TRUCKS.
 - B. FOUR TRUCKS, LEFT TRUCK.
 - C. FOUR TRUCKS.
 - D. LEFT TRUCK.

3. A helicopter target is always announced as:
 - A. HELICOPTER.
 - B. PLANE.
 - C. AIRCRAFT.
 - D. CHOPPER.

4. FIRE AND ADJUST means:
 - A. Crewmember is to conduct engagement on his own.
 - B. A subsequent fire command will be issued.
 - C. A new ALERT element will be given.
 - D. The target description is incorrect.

5. The ALERT element for a loader engagement is:
 - A. LOADER MACHINEGUN.
 - B. LOADER.
 - C. MACHINEGUN.
 - D. LOADER, TWO-FORTY.

6. What can the TC announce when he has laid the COAX machinegun on the target?
 - A. STEADY.
 - B. ON.
 - C. OUT.
 - C. GO.

Answers: 1.B 2.B 3.D 4.A 5.B 6.B

SINGLE TARGET MACHINEGUN ENGAGEMENTS

B. CREW RESPONSES TO INITIAL FIRE COMMANDS

Certain crewmembers are required to respond to certain fire command elements. Two kinds of responses are made. These are:

- During the fire command
- After the fire command (after the execution element)

RESPONSES DURING THE INITIAL FIRE COMMAND

Crew responses during the initial fire command helps the TC make sure the crew is preparing for the engagement. For machine gun engagement there is one response during the initial fire command. It is the IDENTIFICATION response:

The IDENTIFICATION response is made by that crewmember named in the alert element. For example, the TC announces:
LOADER
TWO-FORTY
TROOPS
DIRECT FRONT
The loader will respond by saying:
IDENTIFIED

The IDENTIFICATION response always occurs before the TC gives the execution element of the fire command.

Putting the IDENTIFICATION response with the initial fire command, this might occur:

GUNNER COAX TROOPS	IDENTIFIED (gunner)
FIRE	

EXCEPTION TO RESPONSES DURING THE INITIAL FIRE COMMAND

When the TC is firing his machine gun, he does not make any responses during the initial fire command.

RESPONSES AFTER THE INITIAL FIRE COMMAND

There are three responses after the initial fire command. They are:

- | |
|---|
| <ul style="list-style-type: none">● ENGAGEMENT START● OBSERVATION● ADJUSTMENT |
|---|

The responses are as follows:

- ENGAGEMENT START response - following the TC's execution element, the crewmember engaging the target will announce:

ON THE WAY

This tells the TC the engagement will now start by the crewmember firing.

- OBSERVATION response - the only announced machinegun observation made by the TC, gunner, or loader is when the target is hit. They would announce:

TARGET

- FIRE ADJUSTMENT response - a fire adjustment response may be given by any crewmember if he thinks the person firing needs assistance. The adjustment may be for range and/or deflection.
 - FOR THE COAX - the adjustment is given by the TC. This adjustment is optional. It is given if he thinks the gunner needs assistance. He might observe the burst as over. He might then issue an adjustment response of:

BRING IT DOWN (range adjustment)

If he observes the burst as left, he might announce:

BRING IT RIGHT (deflection adjustment)

- FOR THE TANK COMMANDER'S AND LOADER'S MACHINEGUN - the adjustment is given by any crewmember and is optional. As with the COAX, it is given if a crewmember thinks the person firing needs assistance.

EXCEPTION TO THE RESPONSES AFTER THE INITIAL FIRE COMMAND

When the TC fires his machinegun, he does not make the engagement start or observation response.

COMBINED RESPONSES

If the during and after responses are combined with the initial fire command, it might sound like this:

GUNNER
COAX
TROOPS...
 IDENTIFIED (gunner)
 (identification)
FIRE
 ON THE WAY (gunner)
 (engagement start)
BRING IT DOWN (TC) (range adjustment)
BRING IT RIGHT (TC) (deflection
 adjustment)

Or, it might sound like this:

LOADER
TWO-FORTY
TROOPS...
 IDENTIFIED (loader)
FIRE
 ON THE WAY (loader)

QUESTIONS

1. "During the fire command" crew response comes right after the:
 - A. ALERT element.
 - B. AMMUNITION/WEAPON element.
 - C. TARGET DESCRIPTION element.
 - D. EXECUTION element.

2. The IDENTIFICATION response tells the TC that:
 - A. The ammunition has been selected.
 - B. The gunner is ready to fire.
 - C. The target has been found.
 - D. None of the above.

3. ON THE WAY is the:
 - A. ENGAGEMENT START response.
 - B. OBSERVATION response.
 - C. IDENTIFICATION response.
 - D. None of the above.

4. For the COAX, the fire adjustment response is normally made by the:
 - A. Loader.
 - B. Gunner.
 - C. Tank Commander.
 - D. Any crewmember.

Answers: 1.C 2.C 3.A 4.D

SINGLE TARGET MACHINEGUN ENGAGEMENTS

C. TC REACTION TO CREW RESPONSES AFTER THE FIRE COMMAND

In machinegun engagements, the TC's reactions to crew responses after the initial fire command are limited. If the crewmember conducting the engagement announces an observation response of:

TARGET

the TC should check his observation to assure its accuracy. If the target was destroyed, he would end the engagement.

If the TC does not think the target was destroyed, he would:

- Remain silent (and the engagement will continue), or
- Make an adjustment response, or
- End the engagement

QUESTIONS

1. If the TC disagrees with the crewmember's observation of TARGET, he can:
 - A. Remain silent or give a subsequent fire command.
 - B. End the engagement or give a subsequent fire command.
 - C. Remain silent or end the engagement.
 - D. Give a subsequent fire command.

2. The OBSERVATION response of TARGET means:
 - A. The target has been identified.
 - B. The target has been hit.
 - C. The target has disappeared.
 - D. None of the above.

Answers: 1.C 2.B

SINGLE TARGET MACHINEGUN ENGAGEMENTS

D. ENDING A MACHINEGUN ENGAGEMENT

If the target has been destroyed, the TC's command to end a gunner's coax, the engagement would be:

CEASE FIRE

If the target has not been destroyed, and the TC decides to end the engagement, his command would be:

CEASE FIRE

or

LOADER CEASE FIRE

The above applies to all machinegun engagements except when FIRE AND ADJUST is given. In this case the crewmember firing the machinegun may also end the engagement (if he believes the target has been destroyed). He ends the engagement by announcing:

- LOADER COMPLETE (if loader using machinegun), or
- TC COMPLETE (if TC machinegun used), or
- TARGET, CEASE FIRE (if gunner using COAX)

QUESTIONS

1. CEASE FIRE means:
 - A. Target destroyed, stop firing.
 - B. Target hit, stop firing.
 - C. Target lost, stop firing.
 - D. None of the above.

2. For the gunner to end a COAX engagement after the TC has announced FIRE AND ADJUST, he would announce:
 - A. CEASE FIRE.
 - B. TARGET, CEASE FIRE.
 - C. COAX, CEASE FIRE.
 - D. Nothing. TC would CEASE FIRE.

3. To end a loader machinegun engagement, the TC will announce:
 - A. LOADER, CEASE FIRE.
 - B. LOADER, TARGET DESTROYED.
 - C. TARGET, CEASE FIRE.
 - D. LOADER, MISSION COMPLETE.

Answers: 1.A 2.B 3.A

SECTION III

FIRE COMMANDS FOR SINGLE TARGET MAIN GUN PRECISION GUNNERY ENGAGEMENTS

The next three sections will provide general information on fire commands for main gun engagements. This section will focus on single target precision gunnery. It will review the following key points:

- A. THE INITIAL FIRE COMMAND
- B. CREW RESPONSES TO INITIAL FIRE COMMANDS
- C. THE INITIAL FIRE COMMAND - SPECIAL CASES
- D. DIRECT FIRE ADJUSTMENT
- E. ENDING THE ENGAGEMENT

SINGLE TARGET MAIN GUN ENGAGEMENTS

A. THE INITIAL FIRE COMMAND

ELEMENTS AND SEQUENCE OF THE INITIAL FIRE COMMAND

The basic elements and sequence of the initial fire command for single target main gun engagement using precision gunnery are the same as for machineguns:

- ALERT
- AMMUNITION/WEAPON
- TARGET DESCRIPTION
- DIRECTION (optional)
- EXECUTION

For example, an initial fire command might be announced by the TC as:

- GUNNER (ALERT)
- SABOT (AMMUNITION/WEAPON)
- TANK . . . (TARGET DESCRIPTION)
- FIRE (Execution)

Notice that for main gun precision gunnery engagements:

- The type of main gun ammunition is named in the AMMUNITION/WEAPON element.
- The GUNNER is always named in the ALERT element.

QUESTIONS

1. Which of these fire commands is in the proper order for engaging a single target with the main gun using precision gunnery?
 - A. GUNNER
SABOT
TANK . . .
FIRE
 - B. TANK
GUNNER
SABOT . . .
FIRE
 - C. SABOT
TANK
GUNNER . . .
FIRE
 - D. None of the above
2. For main gun precision gunnery engagements, when is the gunner in the alert command announced:
 - A. Seldom
 - B. Usually
 - C. Always
 - D. None of the above

Answers: 1.A 2.C

SINGLE TARGET MAIN GUN ENGAGEMENTS
PRECISION GUNNERY

B. CREW RESPONSES TO INITIAL FIRE COMMANDS

As with machinegun engagements, there are responses during and after the initial fire command.

RESPONSES DURING THE INITIAL FIRE COMMAND

There are two responses during the initial fire command. They are the IDENTIFICATION and LOAD responses.

- IDENTIFICATION - The identification response for single target main gun engagements is the same as that for machinegun engagements. The response is:

IDENTIFIED

and is announced by the gunner.

- LOAD - This response is given by the loader to tell the TC that the main gun is loaded according to his command. The response by the loader is

UP

An example of an initial fire command for a single target main gun engagements using precision gunnery, including the responses during the command, would be:

```
GUNNER
SABOT
TANK . . . UP (loader)
          IDENTIFIED (gunner)
FIRE
```

EXCEPTIONS TO RESPONSES DURING INITIAL FIRE COMMAND

- RANGE - This response is applicable when the TC is in the fully-open or protected-open position. It is announced after lasing by the gunner to permit the TC to evaluate the range without having to drop down to the GPS extension. The response given is the range displayed in the GPS/TIS. For example:

```
TWO FIVE HUNDRED
```

- RELEASE. When TC feels the range to target is not correct, he will tell the gunner to rerange to the target. He does this by announcing:

```
RELEASE
```


If the range still does not appear correct, the TC presses the MANUAL RANGE BATTLE SGT button to automatically feed a pre-indexed battlerange into the fire control system. To make changes to this range data, the TC uses the MANUAL RANGE ADD/DROP switch until satisfied the range displayed is correct, then announces:

FIRE

RESPONSES AFTER THE INITIAL FIRE COMMAND

There are three responses after the initial fire command. They are: the ENGAGEMENT START response, the OBSERVATION response, and the RELOAD response.

- ENGAGEMENT START - The engagement start response is the same as for machinegun engagements. The person conducting the engagement (gunner or TC) announces:

ON THE WAY

This tells the TC and the crew that the main gun is going to fire and the engagement will start.

- OBSERVATION - An observation is a mental notation by the gunner or TC of where the round went in relation to the target. There are five (5) observations: OVER, SHORT, LOST, DOUBTFUL, and TARGET. Any observation the gunner has MUST be announced. For example:

Round, tracer, or its effects are observed above the target, gunner announces:

OVER

Round, tracer, or its effects falls between the firing tank and target, gunner announces:

SHORT

Neither round nor its effects are observed, gunner announces:

LOST

Round or its effects are seen passing to the left or right of the target, but appear correct for range, gunner announces:

DOUBTFUL

Round hits any part of target, gunner announces:

TARGET

- RELOAD - After the main gun has fired, the loader reloads the main gun. When the reloading is finished, he announces:

UP

COMBINED RESPONSES

If during and after responses are combined with the initial fire command for single target main gun engagements using precision gunnery, it might sound like this:

GUNNER	
SABOT	
TANK . . .	UP (loader)
	IDENTIFIED (gunner)
FIRE	ON THE WAY (gunner)
	TARGET (gunner)
	UP (loader)

or

GUNNER	
HEAT	
APC . . .	UP (loader)
	IDENTIFIED (gunner)
FIRE	ON THE WAY (gunner)
	TARGET (gunner)
	UP (loader)

QUESTIONS

1. After announcing GUNNER, SABOT, TANK, what would the TC expect to hear from his crew and by whom?
 - A. HEAT UP (gunner)
IDENTIFIED (loader)
 - B. SABOT UP (driver)
IDENTIFIED (gunner)
 - C. IDENTIFIED (loader)
SABOT UP (gunner)
 - D. UP (loader)
IDENTIFIED (gunner)

2. Compared to machinegun engagements, which of the following "responses during initial fire command" is new?
 - A. UP
 - B. IDENTIFIED
 - C. RELOAD
 - D. RELEASE

3. After the execution element has been given, what does the gunner say to indicate that he will fire the gun?
 - A. FIRING
 - B. ON THE WAY
 - C. READY
 - D. None of the above

4. When the main gun is reloaded what should the TC expect to hear?
- A. SABOT (HEAT) UP
 - B. UP
 - C. SABOT (HEAT)
 - D. AMMUNITION
5. Which of the following observations are announced?
- A. SHORT, OVER, LOST
 - B. TARGET and LOST
 - C. OVER, DOUBTFUL, TARGET
 - D. ALL OBSERVATIONS
6. When the TC is in the full-open or protected open position, which of the following responses is announced by the gunner during initial fire command?
- A. RANGE
 - B. RELEASE
 - C. TARGET
 - D. UP

Answers: 1.D 2.A 3.B 4.B 5.D 6.A

SINGLE TARGET MAIN GUN ENGAGEMENTS
PRECISION GUNNERY

C. THE INITIAL FIRE COMMAND - SPECIAL CASES

The ammunition loaded in the main gun may or may not be the best for the target the crew is engaging. Depending on whether it is the best, the way in which the TC will give the initial fire command may vary. Three ammunition situations are possible:

- THE BEST AMMUNITION IS LOADED.
- THE BEST AMMUNITION IS NOT LOADED, YOU CHOOSE TO FIRE AND THEN CHANGE AMMUNITION.
- THE BEST AMMUNITION IS NOT LOADED, YOU CHOOSE TO RELOAD WITH THE BEST AMMUNITION.

● BEST AMMUNITION IS LOADED

The initial fire command and responses, described earlier, are used without change. For example:



```

GUNNER
SABOT
TANK . . .
          UP
          IDENTIFIED
FIRE
          ON THE WAY
          TARGET
          UP      (SABOT reloaded)

```

In this case, SABOT was previously loaded in the main gun.

▲ BEST AMMUNITION IS NOT LOADED, YOU CHOOSE TO FIRE AND THEN CHANGE AMMUNITION

For example, the TC is going to engage a T-72 tank. HEAT is loaded in the main gun. He decides to engage with HEAT and then changes to SABOT. The initial fire command and responses might be:

```

GUNNER
HEAT
TANK . . .
          UP
          IDENTIFIED
FIRE
FIRE SABOT
          ON THE WAY
          TARGET
          SABOT UP

```

Notice the difference in this fire command. In the AMMUNITION/WEAPON element the TC announces HEAT, which is already loaded in the main gun. After his execution command, he announces:

FIRE SABOT

This tells the loader to load SABOT in preparation for a next engagement. The loader tells the TC that he has loaded SABOT by announcing:

SABOT UP

Here is another example:

GUNNER
SABOT
ANTITANK . . .
 UP
 IDENTIFIED
FIRE
FIRE HEAT
 ON THE WAY
 OVER
 HEAT UP

• BEST AMMUNITION IS NOT LOADED, YOU CHOOSE TO RELOAD WITH THE BEST AMMUNITION

For example, the tank is going to engage an antitank. SABOT is loaded in the main gun. The TC wants HEAT to be used for the engagement. He decides that the SABOT round should be unloaded and HEAT loaded before the engagement. His initial fire command might be:

```
GUNNER  
HEAT  
ANTITANK . . .  
          HEAT UP  
          IDENTIFIED  
  
DE  
          ON THE WAY  
          TARGET  
          UP (HEAT reloaded)
```

In this example, the loader's response during the initial fire command is:

```
HEAT UP
```

This response tells the TC that the loader has removed the SABOT round and replaced it with a HEAT round.

QUESTIONS

1. You're facing a T-72 tank and you have a HEAT round in your main gun. You want to fire and then change to the best ammunition. What would your initial fire command be?
 - A. GUNNER
SABOT
TANK . . .
FIRE
 - B. GUNNER
HEAT
SABOT
TANK . . .
 - C. GUNNER
HEAT
TANK . . .
FIRE
FIRE SABOT
 - D. None of the above

2. You're waiting to ambush a T-72 tank and you have a HEAT round in your main gun. You want to change to the best ammunition before firing. What would the initial fire command and "during" responses be?

A. GUNNER
SABOT
TANK . . .

SABOT UP
IDENTIFIED

FIRE

B. GUNNER
HEAT
TANK . . .

HEAT UP
IDENTIFIED

FIRE
FIRE SABOT

C. GUNNER
HEAT
SABOT
TANK . . .

SABOT UP
IDENTIFIED

FIRE

D. None of the above

Answers: 1.C 2.A

SINGLE TARGET MAIN GUN ENGAGEMENTS
PRECISION GUNNERY

D. DIRECT FIRE ADJUSTMENT

The goal of tank gunnery is to achieve a rapid first-round hit which destroys the target. When a gunner or TC fires a round and misses the target, he must adjust for the next round. This is called direct fire adjustment.

The three basic techniques for adjusting direct fire are:

- REENGAGE (SABOT)
- STANDARD ADJUSTMENT (HEAT)
 - Standard Mil (GPS)
 - Range Change (GAS)
- COMMANDER'S ADJUSTMENT
 - Subsequent Fire Command

● REENGAGE TECHNIQUE

This is the ONLY method of adjustment for SABOT during a precision gunnery engagement. Here is the procedure the gunner MUST follow:

- Announce observation
- Announce REENGAGING
- Relay reticle on target
- Lase to the target
- Announce range (THREE ONE FIVE ZERO)
- Pause long enough for TC to evaluate solution
- Announce ON THE WAY
- Fire at the target

NOTE: An incorrect ballistic solution may be computed for several reasons: wrong ammo selected, wrong range, computer failure, or unknown failure in one or more input units. To minimize such failure:

- Double-check AMMUNITION SELECT.
- If there is an "F" in reticle, conduct a computer check as soon as possible after engagement.
- If "F" remains, repeat computer check after every engagement until turret mechanics can solve problem.

● STANDARD ADJUSTMENT TECHNIQUE (HEAT)

The standard adjustment is a one-mil change for both deflection (left/right) shift or range correction. When using the GPS or TIS,

it is called the STANDARD MIL CHANGE. When using the GAS (telescope), it is called the STANDARD RANGE CHANGE. This is because the telescope has range lines and a change of one-mil must be converted to 200 meters.

Here is the procedure the gunner MUST follow:

- Announce observation
- Announce intended correction:
 - If "short," ADD ONE or TWO HUNDRED (GAS)
 - If "over," DROP ONE or TWO HUNDRED (GAS)
 - If "doubtful," LEFT (RIGHT) ONE
 - If a combination of deflection and range announce both; e.g., RIGHT ONE, DROP ONE
- Pause momentarily for TC to evaluate solution
- Announce ON THE WAY
- Fire at the target

NOTE: The words "mil" and "meter" are not included in the announcement. Also, when both a deflection shift and range change are required, the deflection shift is announced first, followed by range change.

● COMMANDER'S ADJUSTMENT TECHNIQUE

When the TC thinks the gunner needs help or disagrees with the gunner's intended adjustment, he will issue a SUBSEQUENT FIRE COMMAND. This MUST be done rapidly; hesitation during an engagement can be fatal!

A subsequent fire command contains up to four elements:

- ALERT
- DEFLECTION CORRECTION
- RANGE CORRECTION
- EXECUTION

The alert and execution elements are always given. The deflection and range correction elements are given, if necessary.

There are three situations that require different subsequent fire commands. They are:

- TC HAS A DEFINITE OBSERVATION
- BOTH TC AND GUNNER HAVE AN OBSERVATION OF LOST (DOUBLE LOST SITUATION)
- TWO (2) CONSECUTIVE SABOT ROUNDS HAVE MISSED THE TARGET

The procedure for each situation is:

● TC HAS A DEFINITE OBSERVATION

- Announce GUNNER
- Announce deflection correction, if necessary
 - RIGHT (LEFT) ONE (no more than 5)
- Announce range correction, if necessary
 - ADD (DROP) ONE or TWO HUNDRED (GAS) (TC may double or half these)
- Announce FIRE

NOTE: The TC may use a one-mil range correction when firing SABOT, provided he has a definite observation.

● BOTH TC AND GUNNER HAVE AN OBSERVATION OF LOST (DOUBLE LOST SITUATION)

- When Firing SABOT:
 - Remain silent and allow gunner to reengage
- When Firing HEAT:
 - Announce GUNNER-REENGAGE
 - Evaluate the new range data
 - Announce FIRE
 - or
 - Announce GUNNER-CEASE FIRE
 - Move to turret down, or hide position
 - Check out fire control system

NOTE: If TC feels SABOT round was fired with incorrect range data, he can announce GUNNER - REENGAGE, evaluate new range data, and FIRE.

● WHEN TWO (2) CONSECUTIVE SABOT ROUNDS HAVE MISSED THE TARGET

- Announce CEASE FIRE
- Issue new initial fire command using HEAT with the GAS. For example:
GUNNER, HEAT, TANK, ONE NINE HUNDRED, FIRE

RESPONSES TO THE SUBSEQUENT FIRE COMMAND

The responses given after the subsequent fire command are similar to the responses after the initial fire command.

The responses are:

- REENGAGEMENT START response - The REENGAGEMENT START response is announced by the person conducting the reengagement

ON THE WAY

The response tells the crew that the main gun will be fired and the reengagement started.

- OBSERVATION response - The OBSERVATION response occurs during the engagement. It is the same as the OBSERVATION response after the initial fire command.
- RELOAD response - The RELOAD response is announced by the loader. The response tells that the main gun has been reloaded. The RELOAD response is:

UP

REMEMBER: When two consecutive SABOT rounds miss the target, the TC will announce CEASE FIRE and issue a degraded mode fire command using the GAS and HEAT ammo.

A complete REENGAGE direct fire adjustment with responses might be:

<u>TC</u>	<u>GNR</u>	<u>LDR</u>
	SHORT - REENGAGING	
	THREE ZERO TWO ZERO	
	ON THE WAY	
	TARGET - REENGAGING	
CEASE FIRE		UP

A complete STANDARD MIL direct fire adjustment with responses might be:

<u>TC</u>	<u>GNR</u>	<u>LDR</u>
	SHORT	
	LEFT ONE, ADD ONE	
	ON THE WAY	
	TARGET - REENGAGING	
		UP
CEASE FIRE		

A complete COMMANDER'S ADJUSTMENT direct fire adjustment with responses might be:

<u>TC</u>	<u>GNR</u>	<u>LDR</u>
RIGHT ONE	} Subsequent fire command	
DROP TWO		
FIRE		
	ON THE WAY (reengagement)	
	TARGET (observation)	
		UP (reload)

or

<u>TC</u>	<u>GNR</u>	<u>LDR</u>
GUNNER-REENGAGE		
	THREE ZERO TWO ZERO(range)	
FIRE		
	ON THE WAY (reengagement)	
	LOST (observation)	
		UP (reload)
CEASE FIRE		
GUNNER		
HEAT		
TANK . . .		

(continued)

	IDENTIFIED	UP
TWO ONE HUNDRED FIRE		
	ON THE WAY TARGET-REENGAGING	UP
CEASE FIRE		

QUESTIONS

1. The ONLY method of direct fire adjustment for SABOT during a precision gunnery engagement is:
 - A. STANDARD ADJUSTMENT
 - B. REENGAGE
 - C. COMMANDER'S ADJUSTMENT
 - D. None of the above

2. The STANDARD ADJUSTMENT using the GPS is:
 - A. One mil in deflection, only
 - B. One mil in deflection and range
 - C. One mil in range, only
 - D. Two mils in both deflection and range correction.

3. If a SABOT round fell "short" of target, the gunner's announcement would be:
 - A. SHORT, ADD ONE
 - B. ADD ONE
 - C. REENGAGE
 - D. Remain silent and reengage

4. Which of the following elements are ALWAYS announced in a subsequent fire command?
 - A. Alert
 - B. Deflection correction
 - C. Range correction
 - D. Execution

5. If TC has a DEFINITE OBSERVATION that the round went "over" the target, which of the subsequent fire commands should he give?
 - A. GUNNER, DROP ONE HUNDRED, FIRE
 - B. GUNNER, DROP ONE, FIRE
 - C. OVER, DROP ONE, FIRE
 - D. GUNNER - REENGAGE

6. If TC and gunner both have an observation of LOST after firing a SABOT round, the TC should:
 - A. Remain silent.
 - B. Issue a subsequent fire command.
 - C. Announce CEASE FIRE.
 - D. Any of the above.

7. If two consecutive SABOT rounds miss the target, the TC should:
- A. Remain silent.
 - B. Announce CEASE FIRE.
 - C. Issue a new command using HEAT and GAS.
 - D. Both B and C.

Answers: 1.B 2.B 3.A 4.A,D 5.B 6.A 7.D

SINGLE TARGET MAIN GUN ENGAGEMENTS
PRECISION GUNNERY

E. ENDING THE ENGAGEMENT

Ending a main gun engagement is the same as that for ending a machinegun engagement. If the target has been destroyed, the TC's command to end the engagement is:

CEASE FIRE

If the target was missed after firing two consecutive SABOT rounds or has not been destroyed and the TC decides to end the engagement, his command is:

CEASE FIRE

NOTE: The TC is no longer required to announce his observation during a target engagement. Once the target is destroyed, however, he has the option to announce his observation before ending the engagement. For example:

TARGET - CEASE FIRE

SECTION IV

FIRE COMMANDS FOR SINGLE TARGET MAIN GUN ENGAGEMENTS DEGRADED MODE GUNNERY

This is the second of three sections which provide general information on fire commands for main gun engagements. This section will focus on single target degraded mode gunnery. It will review the following key points.

- A. TYPES OF INITIAL FIRE COMMANDS
- B. THE INITIAL FIRE COMMAND
- C. CREW RESPONSES TO THE INITIAL FIRE COMMAND
- D. THE INITIAL FIRE COMMAND SPECIAL CASES
- E. DIRECT FIRE ADJUSTMENT
- F. ENDING THE ENGAGEMENT



SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

A. TYPES OF INITIAL FIRE COMMANDS

There are three types of initial fire commands that a TC can give when using degraded mode gunnery. They are:

- Battlesight Fire Commands
- Degraded Fire Commands
- Combination (precision to degraded gunnery)

BATTLESIGHT FIRE COMMANDS

This is the most common degraded mode gunnery fire command. It can be used before an engagement or during an engagement. In some cases, it may even be used with a full-up system. Battlesight is preindexed by the crew when:

- Loader loads the announced round
- Gunner sets the AMMUNITION SELECT switch to the announced ammunition
- TC depresses MANUAL RANGE BATTLESIGHT button

Recommended battlesight ranges are:

- SABOT -- 1200 meters
- HEAT -- 900 meters

DEGRADED FIRE COMMANDS

This type of degraded mode fire command contains only the minimum additional information required to perform a particular action. It is issued to compensate for failed or malfunctioning components of the fire control system. For example:

- LRF failure
- Stabilization System failure
- Loss of Symbology
- Crosswind Sensor failure
- Cant Sensor failure
- Lead Angle Sensor failure
- GPS failure
- Turret Power failure

How to deal with each of these degraded mode conditions is covered in a separate set of training booklets.

COMBINATION FIRE COMMANDS

This type of degraded mode fire command is given any time during a precision gunnery

engagement when an equipment malfunction is noticed. When the gunner detects a malfunction during a precision gunnery engagement, he notifies the TC. When the TC detects or is notified by the gunner of a malfunction, he tells the gunner what action to take. For example:

<u>TC</u>	<u>GNR</u>
DEGRADED -	MALFUNCTION - NO LEAD
APPLY MANUAL LEAD	
FIRE	

QUESTIONS

1. Which of the following initial fire commands is NOT a degraded mode fire command?
 - A. Battlesight
 - B. Precision
 - C. Degraded Mode
 - D. Combination

2. What is the recommended battlesight range for SABOT?
 - A. 900 meters
 - B. 1100 meters
 - C. 1200 meters
 - D. 1600 meters

3. Which type of fire command is issued to compensate for a failed or malfunctioning fire control system component?
 - A. Battlesight
 - B. Precision
 - C. Degraded Mode
 - D. Combination

4. Which of the following initial fire commands is issued by the TC when he detects a malfunction during a precision gunnery engagement?

- A. Battlesight
- B. Precision
- C. Degraded Mode
- D. Combination

Answers: 1.B, 2.C, 3.C, 4.D

SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

B. THE INITIAL FIRE COMMAND

ELEMENTS AND SEQUENCE OF THE INITIAL FIRE
COMMAND

A correctly stated battlesight fire command is very similar to that for machineguns and single target main gun engagements using precision gunnery. The only difference is:

- TC announces BATTLESIGHT instead of AMMUNITION/WEAPON element. For example:

GUNNER		GUNNER		GUNNER
BATTLESIGHT	<u>Vs</u>	SABOT		<u>or</u> COAX
TANK		TANK		TROOPS

A correctly stated degraded mode fire command may contain an additional (5th) element; range. It is used when the gunner fires from the GAS or when he manually indexes range into the commander's control panel. It is announced in the fire command after the TC announces direction (optional) or target description. For example:

GUNNER HEAT TANK . . .	UP IDENTIFIED
LEFT (optional) ONE TWO HUNDRED FIRE	ON THE WAY

or

GUNNER SABOT TANK . . .	UP IDENTIFIED
INDEX ONE TWO HUNDRED FIRE	

Range data is always announced in the fire command in even hundreds, thousands, or digit by digit. For example:

<u>RANGE</u>	<u>ANNOUNCED AS</u>
900m	"NINE HUNDRED"
2,000m	"TWO THOUSAND"
1,100m	"ONE ONE HUNDRED"
860m	"EIGHT SIX ZERO"
3,040m	"THREE ZERO FOUR ZERO"

Since a combination fire command occurs during a precision gunnery engagement, there are no differences in initial fire command elements and sequence.

QUESTIONS

1. What is announced by the TC for the AMMUNITION/WEAPON element in a battlesight fire command?
 - A. AMMUNITION
 - B. RANGE
 - C. BATTLESIGHT
 - D. INDEX

2. What is announced by the TC for a degraded mode fire command when using the GAS?
 - A. AMMUNITION
 - B. RANGE
 - C. BATTLESIGHT
 - D. INDEX

3. Which of the following TC announcements tells the gunner to use the GAS?
 - A. GUNNER-BATTLESIGHT-TANK
 - B. GUNNER-SABOT-TANK-INDEX THREE ZERO FOUR ZERO
 - C. GUNNER-HEAT-TANK-ONE EIGHT HUNDRED
 - D. GUNNER-GAS-RANGE

4. How is 960 meters announced by the TC?

- A. ZERO NINE SIXTY
- B. NINE SIX ZERO
- C. NINE HUNDRED SIXTY
- D. ZERO NINE HUNDRED SIX ZERO

ANSWERS: 1.C 2.B 3.C 4.B

SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

C. CREW RESPONSES TO THE INITIAL FIRE COMMAND

As with machinegun and single target precision main gun engagements, there are crew responses before and after the initial fire command.

RESPONSES DURING THE INITIAL FIRE COMMAND

There are two responses during the initial fire command for single target main gun engagements using degraded mode gunnery. They are the:

- IDENTIFICATION response
- and
- LOAD response

Both responses are the same as for single target main gun engagements using precision gunnery. For example:

GUNNER	
BATTLESIGHT	
TANK . . .	
	UP (loader)
	IDENTIFIED (gunner)
FIRE	



NOTE: Battlesight ammunition, whether SABOT or HEAT, is predetermined and MUST be known by the crew at all times.

RESPONSES AFTER THE INITIAL FIRE COMMAND

Responses after the initial fire command are almost the same as for single target main gun engagements using precision gunnery:

- ENGAGEMENT START response
- OBSERVATION response
- RELOAD response

The only difference is for combination fire commands. That is, when a malfunction occurs during a precision gunnery engagement. When the malfunction is detected by the gunner, he will announce:

MALFUNCTION

then the situation. For example:

NO LEAD or NO RETICLE or NO RANGE etc.

When the TC detects or is notified of a malfunction, he will announce:

DEGRADED

then the action to be performed. For example:

APPLY MANUAL LEAD	or	INDEX TWO ZERO THREE ZERO	etc.
-------------------	----	------------------------------	------

COMBINED RESPONSES

If the during and after responses are combined with the BATTLESIGHT fire command, it might sound like this:

GUNNER BATTLESIGHT TANK . . .	UP IDENTIFIED
FIRE	

If the during and after responses are combined with the COMBINED fire command, it might sound like this:

GUNNER SABOT MOVING TANK . . .	UP IDENTIFIED
FIRE	MALFUNCTION- NO LEAD
DEGRADED - APPLY MANUAL LEAD	

QUESTIONS

1. After giving the first three elements of the initial battlesight fire command using SABOT, what would the TC expect to hear from his crew?
 - A. UP (loader)
IDENTIFIED (gunner)
 - B. IDENTIFIED (loader)
UP (gunner)
 - C. SABOT (loader)
IDENTIFIED (gunner)
 - D. AMMO (loader)
IDENTIFIED (gunner)

2. When the gunner detects a malfunction, his responses are:
 - A. MALFUNCTION, then the situation
 - B. DEGRADED, then the required action
 - C. "F", then the solution to problem
 - D. DEGRADED, then the situation.

3. What is the TC response on being notified of a malfunction by the gunner?
 - A. MALFUNCTION, then the situation
 - B. DEGRADED, then the required action
 - C. "F", then the solution to problem
 - D. DEGRADED, then the situation

4. What is the TC response when he detects a malfunction?

- A. MALFUNCTION, then the situation
- B. DEGRADED, then the required action
- C. "F", then the solution to the problem
- D. DEGRADED, then the situation

Answers: 1.A 2.A 3.B 4.B

SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

D. THE INITIAL FIRE COMMAND-SPECIAL CASES

The same three special cases apply to degraded mode gunnery as they did to precision gunnery. Situations could be as follows:

- THE BEST AMMUNITION IS LOADED
- THE BEST AMMUNITION IS NOT LOADED,
YOU CHOOSE TO FIRE AND THEN CHANGE
AMMUNITION
- THE BEST AMMUNITION IS NOT LOADED,
YOU CHOOSE TO RELOAD WITH THE BEST
AMMUNITION

The modifications to the TC's fire command, and to the loader's responses, are the same as for single target main gun engagements using precision gunnery for the first two situations.

For the situation where "the best ammunition is not loaded, the TC chooses to reload with the best ammunition," there is a difference. He announces the ammunition he wants loaded immediately after announcing BATTLESIGHT. For example, suppose he had SABOT loaded but wanted HEAT. He would announce:



GUNNER
BATTLESIGHT HEAT
TRUCK . . .

The loader would then unload the SABOT round and load a HEAT round. When he has completed loading the round, moved out of the path of recoil, and placed the main gun safety switch in FIRE, he would announce:

HEAT UP

Here is an example of what the complete fire command would sound like:

GUNNER BATTLESIGHT HEAT TANK . . .	IDENTIFIED HEAT UP (SABOT re- moved, stowed, and HEAT reloaded and ready for firing)
FIRE	ON THE WAY TARGET-REENGAGING UP
CEASE FIRE	

SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

E. DIRECT FIRE ADJUSTMENT

When the gunner or TC fires a main gun round and misses the target, he must adjust for the next round. This is called DIRECT FIRE ADJUSTMENT.

In degraded mode gunnery, there are only two techniques for adjusting direct fire. They are:

- STANDARD ADJUSTMENT (HEAT)
 - Standard Mil (GPS)
 - Range Change (GAS)
- COMMANDER'S ADJUSTMENT
 - Subsequent Fire Commands

The procedures for adjusting direct fire using these two techniques are the same as those for precision gunnery engagements.

RESPONSES AFTER THE SUBSEQUENT FIRE COMMAND:

Except for the observation response, the responses given by the crew after a degraded mode subsequent fire command are the same as those for after a precision gunnery fire command. They are:

- | | |
|--------------------------|---|
| ● REENGAGEMENT START . . | ON THE WAY |
| ● OBSERVATION | (together with
intended cor-
rection if
firing HEAT) |
| ● RELOAD RESPONSE . . . | UP |

REMEMBER: After two consecutive SABOT rounds have missed the target, the TC will announce CEASE FIRE and issue a degraded mode fire command using the GAS and HEAT ammo. Thus, there is no "intended correction" announced, only the gunner's observation.

COMBINED DEGRADED MODE FIRE COMMAND, DIRECT FIRE ADJUSTMENT, AND CREW RESPONSES

An example of an initial battlesight fire command with commander's adjustment and crew responses might be:

GUNNER	
BATTLESIGHT	
TANK . . .	
	UP
	IDENTIFIED
FIRE	
	ON THE WAY
	LOST-REENGAGING
	UP
(continued)	

GUNNER	(Alert)
LEFT ONE	(Deflection correction)
DROP TWO	(Range correction)
FIRE	(Execution)
	ON THE WAY
	TARGET-REENGAGING
CEASE FIRE	

or:

GUNNER	
BATTLESIGHT	
TANK . . .	
	UP
	IDENTIFIED
FIRE	
	ON THE WAY
	SHORT-ADD ONE
	UP
	ON THE WAY
	TARGET-REENGAGING
CEASE FIRE	

in the last example, the TC would have to announce CEASE FIRE if the target was missed with the second round and issue a new fire command using the GAS and HEAT ammo.

Here is another example:

GUNNER SABOT TANK . . .	UP (loader) IDENTIFIED (gunner)
ONE EIGHT HUNDRED FIRE	ON THE WAY TARGET-REENGAGING (gunner's response) UP
GUNNER- ADD ONE FIRE	(TC's authority to correct for range)
CEASE FIRE	ON THE WAY TARGET-REENGAGING

Here is another example:

GUNNER SABOT TANK . . .	UP IDENTIFIED
INDEX THREE ONE HUNDRED FIRE	ON THE WAY

(continued)

GUNNER- ADD TWO FIRE	SHORT - ADD ONE UP
CEASE FIRE	ON THE WAY TARGET-REENGAGING

NOTE: After the TC announces CEASE FIRE, the loader would continue to reload the ammo announced in the fire command and announce UP.

SINGLE TARGET MAIN GUN ENGAGEMENTS
DEGRADED MODE GUNNERY

F. ENDING THE ENGAGEMENT

Ending degraded mode gunnery engagements is announced by the TC, the same as in machine-gun and main gun precision gunnery engagements. For example:

If the target was hit/destroyed:

CEASE FIRE

If the target was missed with two consecutive SABOT rounds or if the TC decides to end the engagement, his command is:

CEASE FIRE

REMEMBER: The TC may announce TARGET before announcing CEASE FIRE if he observed the target being hit/destroyed. It's optional.

QUESTIONS

1. If the gunner's observation was TARGET and the TC agrees but wants to hit the target again, he would probably:
 - A. Announce TARGET FIRE.
 - B. Announce REENGAGE.
 - C. Announce REPEAT.
 - D. Remain silent.

2. What would the gunner's response be in the situation presented in #1 above?
 - A. ON THE WAY
 - B. REENGAGING
 - C. GUNNER-REENGAGE
 - D. LASING

3. If the gunner announces ADD TWO HUNDRED, but the TC disagrees, the TC would probably:
 - A. End the engagement.
 - B. Issue subsequent fire command.
 - C. Remain silent.
 - D. Issue initial fire command.

4. If the gunner or TC miss the target after firing two consecutive SABOT rounds, what should be the TC's next command?
- A. REENGAGE
 - B. GUNNER-REENGAGE
 - C. Remain silent
 - D. CEASE FIRE
5. Which of the following crew responses after the subsequent fire command is different for degraded mode gunnery?
- A. Reengagement Start
 - B. Reload
 - C. Observation
 - D. None

Answers: 1.D 2.B 3.C 4.D 5.C

SECTION V

ENGAGEMENTS INVOLVING MANY TARGETS

Future tank battlefields will be complex. Instead of a single target, the crew may have to engage two or more (multiple) targets with one weapon system. They may have to engage one or more targets with two or more weapon systems at the same time (simultaneously).

This section will discuss fire commands for engagements involving many targets. The section will focus on the following key points:

- A. MULTIPLE ENGAGEMENTS
- B. SIMULTANEOUS ENGAGEMENTS
- C. COMBINED MULTIPLE AND SIMULTANEOUS ENGAGEMENTS

ENGAGEMENTS INVOLVING MANY TARGETS

A. MULTIPLE ENGAGEMENTS

If the crew must fight many targets, the TC may choose to use a:

- MULTIPLE ENGAGEMENT
- or
- SIMULTANEOUS ENGAGEMENT

KINDS OF MULTIPLE ENGAGEMENTS

There are two kinds of multiple engagements. The first kind is where there are many targets and the TC wants the gunner to pick the targets and their order of engagement. That kind of multiple engagement is called an:

- OPPORTUNITY MULTIPLE ENGAGEMENT

The second kind of multiple engagement is where the TC will pick the targets and their order of engagement. That kind of multiple engagement is called a:

- SEQUENCED MULTIPLE ENGAGEMENT

Multiple engagements refer to the presence of more than one main gun target. Dependent upon the status of the tank they may be fired using either:

- PRECISION GUNNERY
- or
- DEGRADED MODE GUNNERY

OPPORTUNITY MULTIPLE ENGAGEMENT - PRECISION GUNNERY

The only difference between this type of multiple target engagement and any of the single target engagements using precision gunnery is that the TC announces:

TARGETS OF OPPORTUNITY

for the target description element of the initial fire command. All other parts of an OPPORTUNITY MULTIPLE ENGAGEMENT are identical. For example:

GUNNER	
SABOT	
TARGETS OF OPPORTUNITY	
	UP
	IDENTIFIED
FIRE	
	ON THE WAY
	TARGET - NEXT TANK
	UP
	ON THE WAY
	TARGET - NEXT TANK
	UP
CEASE FIRE	

NOTE: The gunner must ensure when moving from one target to the next that he releases the palm switch (dumps lead solution) to eliminate false leads. Also, the gunner should not release to subsequent targets unless the TC commands RELEASE.

SEQUENCED MULTIPLE ENGAGEMENTS

● PRECISION GUNNERY

Issuing the fire command for a SEQUENCED MULTIPLE ENGAGEMENT using precision gunnery is easy. The initial fire command (including during and after responses) remains the same. However, the TC must make sure that:

- The target description includes two or more targets and that the MOST DANGEROUS target is named first. For example:

TWO TANKS, LEFT TANK

- During the gunner's identification response, saying IDENTIFIED means that he has seen all three targets and has the first engagement target (Left Tank) in his sights.

For SEQUENCED MULTIPLE ENGAGEMENTS, the subsequent fire commands and engagements are also the same.

The only different actions taken for a SEQUENCED MULTIPLE ENGAGEMENT are the following: The TC must announce the next target to be engaged and an execution command after the initial target has been destroyed. The gunner then announces that he has identified the next target. For example:

```
GUNNER
SABOT
TWO TANKS, LEFT      (2 or more targets,
TANK . . .           target for engage-
                       ment named)
                       UP
                       IDENTIFIED (saw two tar-
                               gets and will
                               engage left
                               tank first)
FIRE
                       ON THE WAY
                       TARGET- REENGAGING
                       UP
RIGHT TANK            (first target
                       destroyed, next
                       target names)
                       IDENTIFIED (next target
                               identified)
FIRE                  (execution)
```

(continued)

ON THE WAY
TARGET-REENGAGING
UP
CEASE FIRE

Here is an example of a complete fire command for a SEQUENCED MULTIPLE ENGAGEMENT using precision gunnery with direct fire adjustments.

GUNNER
HEAT
TWO APCs, LEFT
APCs . . .
UP
IDENTIFIED
FIRE
ON THE WAY
SHORT - ADD ONE
UP
- - - -
(TC agrees by
remaining silent)
ON THE WAY
TARGET - REENGAGING
UP
RIGHT APC
IDENTIFIED
FIRE
ON THE WAY
LOST - REENGAGING
UP

(continued)

GUNNER DROP TWO (Commander's Adjustment)
FIRE
ON THE WAY
TARGET - REENGAGING
UP
CEASE FIRE

In the above example, both APCs were destroyed and the tank commander and gunner performed/directed fire adjustment.

SEQUENCED MULTIPLE ENGAGEMENTS

- DEGRADED MODE GUNNERY

1. BATTLESIGHT FIRE COMMAND

SEQUENCED MULTIPLE ENGAGEMENT procedures for battlesight fire commands are the same as those for precision gunnery.

The only exception is that BATTLESIGHT is announced instead of the AMMUNITION/WEAPON. For example (assuming SABOT is Battlesight ammo):

GUNNER BATTLESIGHT TWO TANKS, LEFT TANK . . .	UP IDENTIFIED
FIRE	ON THE WAY TARGET - REENGAGING UP
RIGHT TRUCK	IDENTIFIED
FIRE	ON THE WAY TARGET - REENGAGING UP
GUNNER - RIGHT ONE ADD ONE (TWO HUNDRED if using GAS) FIRE	ON THE WAY TARGET - REENGAGING UP
CEASE FIRE	

Notice in the above example that the COMMANDER'S ADJUSTMENT (subsequent fire command) was necessary in order to destroy the second tank. Also, notice that the TC would announce ADD TWO HUNDRED, rather than ADD ONE if the gunner was using the GAS.

2. DEGRADED MODE FIRE COMMANDS

SEQUENCED MULTIPLE ENGAGEMENT procedures for degraded mode fire commands are almost the same as those for precision gunnery. The difference is that the TC must announce the range. This is done when the gunner fires from the GAS or when he indexes range into the computer. When using the GAS, the TC must announce the range for each target engaged. For example:

```
GUNNER
3ABO1
TWO TANKS, LEFT
  TANK . . .
                UP
                IDENTIFIED
ONE FOUR HUNDRED (estimated range for
                  1st target)
FIRE
                ON THE WAY
                TARGET - REENGAGING
                UP
RIGHT TANK
                IDENTIFIED
ONE NINE HUNDRED (estimated range for
                  2d target)
FIRE
                ON THE WAY
                TARGET - REENGAGING
                UP
CEASE FIRE
```

If the TC announced INDEX ONE TWO HUNDRED in the initial fire command, he would not announce the range to the second target unless it were outside the 200 meter range band.

3. COMBINED FIRE COMMANDS

SEQUENCED MULTIPLE ENGAGEMENT procedures for combined fire commands are almost the same as those for precision gunnery. The only exceptions occur in the TC and gunner responses when they detect a malfunction. For example:

GUNNER	
SABOT	
TWO MOVING TANKS,	
LEFT TANK	UP
	IDENTIFIED
FIRE	ON THE WAY
	TARGET - REENGAGING
(TC agrees)	UP
	ON THE WAY
	MALFUNCTION -NO LEAD
DEGRADED -	
APPLY MANUAL LEAD	ON THE WAY
	TARGET - REENGAGING
	UP
CEASE FIRE	

Remember, when the gunner detects a malfunction he announces MALFUNCTION and the situation, if known. The TC would then announce DEGRADED and the action he wants the gunner to take to complete the engagement.

QUESTIONS

1. The two types of multiple target engagements are called:
 - A. Opportunity and sequenced.
 - B. Opportunity and battlesight.
 - C. Sequenced and battlesight.
 - D. Battlesight and precision.

2. In a sequenced multiple engagement, the targets are selected by:
 - A. The gunner.
 - B. The tank commander.
 - C. Either the gunner or tank commander.
 - D. None of the above.

3. When the TC wants the gunner to pick the targets and order of sequence, he will announce:
 - A. TARGETS - START FIRING
 - B. FIRE AND ADJUST
 - C. TARGETS OF OPPORTUNITY
 - D. GUNNER-REENGAGE

4. When the gunner announces IDENTIFIED in a two-tank multiple target engagement, he is telling the TC that:
 - A. He has identified just the first tank target.
 - B. He has identified both tank targets.
 - C. He will fire and adjust.
 - D. He has identified just the second target.

5. When the gunner traverses to the second target in a two tank multiple target engagement, he must:
 - A. Release control of turret to the TC.
 - B. Dump the lead solution.
 - C. Announce IDENTIFIED when on target.
 - D. Release each time.

6. In a COMBINED FIRE COMMAND, what would the gunner announce to inform the TC that he has lost the reticle?
 - A. DEGRADED - TIS
 - B. MALFUNCTION - DEGRADED
 - C. DEGRADED - MALFUNCTION
 - D. MALFUNCTION - NO RETICLE

Answers: 1.A 2.B 3.C 4.B 5.B 6.D

ENGAGEMENTS INVOLVING MANY TARGETS

B. SIMULTANEOUS ENGAGEMENTS

Simultaneous engagements occur when more than one weapon must be used to engage one or more targets at the same time. The most common simultaneous engagement is when the main gun and the TC's machinegun must be used together. In this case the TC gives control of the main gun to the gunner while he fires his machinegun. For example:

GUNNER	
SABOT	
TANK . . .	UP
	IDENTIFIED
FIRE AND ADJUST	
CALIBER FIFTY	

The FIRE AND ADJUST command means that the gunner has charge of the main gun target engagement until the TC completes his engagement. CALIBER FIFTY means that the TC is going to fire his machinegun.

In a simultaneous engagement, the initial fire command is the same as for single target engagements except for FIRE AND ADJUST and CALIBER FIFTY. The response for the initial fire command also remains the same.

When a simultaneous engagement is conducted, the gunner continues to fire until his target is destroyed. When he believes the target is destroyed he will announce:

CEASE FIRE

In the same way, the TC continues firing his machinegun until the target is destroyed. When he believes it is destroyed, he announces:

TC COMPLETE

If the TC announces TC COMPLETE before the gunner has destroyed his target, the TC auto-
matically resumes control of the main gun en-
gagement.

An example of a simultaneous engagement firing command might be:

GUNNER	
HEAT	
APC	
	UP
	IDENTIFIED
FIRE AND ADJUST	
CALIBER FIFTY	
	ON THE WAY
	SHORT - ADD ONE
	UP
	ON THE WAY (gunner
	fires without TC
	command)
	TARGET-CEASE FIRE
	(gunner)
	UP
TC COMPLETE (TC target destroyed)	

In the above example, the gunner destroyed his target before the TC was completed.

Another example:

GUNNER	
SABOT	
TANK . . .	UP
	IDENTIFIED
FIRE AND ADJUST	
CALIBER FIFTY	ON THE WAY
	SHORT - REENGAGING
	UP
	ON THE WAY
TC COMPLETE	
	SHORT - REENGAGING
	UP
CEASE FIRE	

In this example, the TC announced TC COMPLETE before the gunner had destroyed the target. The TC then resumed control of the main gun engagement.

REMEMBER: If the gunner missed the target after firing two consecutive rounds, the TC would announce CEASE FIRE and issue a degraded mode fire command using HEAT and the GAS.

QUESTIONS

1. In a simultaneous engagement, the main gun is controlled by:
 - A. The tank commander.
 - B. The gunner.
 - C. Either the gunner or tank commander.
 - D. None of the above.

2. When the TC has finished his machinegun engagement, he:
 - A. Announces TC COMPLETE.
 - B. Takes control of main gun.
 - C. Both a and b.
 - D. Neither a nor b.

3. The execution command for a simultaneous engagement is:
 - A. FIRE.
 - B. FIRE AND ADJUST.
 - C. CONTINUE FIRING.
 - D. REENGAGE.

Answers: 1.B 2.C 3.B

This page intentionally blank.

ENGAGEMENTS INVOLVING MANY TARGETS

C. COMBINED MULTIPLE AND SIMULTANEOUS
ENGAGEMENTS

COMBINING THE MULTIPLE AND SIMULTANEOUS
ENGAGEMENTS

Sometimes the battlefield becomes so complicated that the TC must conduct both a MULTIPLE and SIMULTANEOUS ENGAGEMENT at the same time. The following example will help explain:

```
GUNNER
SABOT
TWO TANKS, RIGHT (multiple engagement)
TANK . . .
      UP
      IDENTIFIED
FIRE AND ADJUST (simultaneous
CALIBER FIFTY engagement)
      ON THE WAY
      TARGET- LEFT TANK IDENTIFIED
      UP
      ON THE WAY
TC COMPLETE (TC resumes control)
      SHORT-REENGAGING
      UP
      ON THE WAY
      TARGET- REENGAGING
      UP
CEASE FIRE
```

During some MULTIPLE SIMULTANEOUS engagements the TC may temporarily stop firing his caliber .50 to assist the gunner. The two most common situations are:

- When the targets are more than 200 meters apart in range
- When the gunner cannot identify the second target

The TC should enter into this type of engagement ONLY as a last resort. Whenever possible, the TC should keep his attention on the engagement requiring the tank's main gun.

QUESTIONS

1. How far apart in range should the targets be before the TC stops firing his machine-gun and assist the gunner?
 - A. 100 meters
 - B. 150 meters
 - C. 200 meters
 - D. More than 200 meters

2. When should the TC enter a MULTIPLE-SIMULTANEOUS engagement?
 - A. Anytime desired
 - B. As a last resort
 - C. Never
 - D. Always

Answers: 1.D 2.B

This page intentionally blank.

SECTION SIX

REPEATING/CORRECTING FIRE COMMANDS

In a tank the TC may announce the wrong fire command or a crewmember will not hear his correct fire command. Other times, the TC will make an error in the fire command and want to make a correction. This section will review those problems by covering the following key points:

- A. REPEATING ELEMENTS OF THE FIRE COMMAND
- B. CORRECTING ERRORS IN FIRE COMMAND ELEMENTS
- C. CORRECTING ERRORS IN FIRE COMMAND SEQUENCE

A. REPEATING ELEMENTS OF THE FIRE COMMAND

Any time a crewmember does not hear an element of the fire command, he will ask the TC to repeat it. He will do that by announcing the element he did not hear, in the form of a question. For example, suppose the TC announced this initial fire command:

GUNNER HEAT APC . . .

and the gunner did not hear the target description. The gunner would say:

TARGET DESCRIPTION?

which would tell the TC to repeat the target description (APC).

B. CORRECTING ERRORS IN FIRE COMMAND ELEMENTS

To correct an element in the fire command the TC first announces:

CORRECTION

He then repeats the entire fire command from where he made the error.

For example, suppose the TC announced the following initial fire command:

LOADER
HEAT
TANK . . .

After he gave the target description, he noticed that he had made a mistake in the alert element.

To correct the error, the TC must announce CORRECTION and then repeat everything in the fire command from the point where he made the error. In the above example, he would correct the error by announcing:

CORRECTION GUNNER HEAT TANK . . .
--

Remember, to correct an error in a fire command element, you repeat the entire fire command from where you made the error.

There is one exception to correcting an error in a fire command element. It is:

IF FACED WITH A MOST DANGEROUS TARGET AND YOU MAKE AN ERROR IN AMMUNITION (THE WRONG AMMUNITION IS LOADED), THEN FIRE IT. MAKE YOUR CORRECTION IN THE NEXT OR SUBSEQUENT FIRE COMMAND.
--

C. CORRECTING ERRORS IN FIRE COMMAND SEQUENCE

Sometimes a TC might issue a fire command which is out of sequence. For example, he might announce:

GUNNER
TANK
SABOT . . .

when he meant to announce:

GUNNER
SABOT
TANK . . .

When this kind of "sequence" error occurs, the TC only makes a correction if he believes the error has confused his crew. Crewmembers will question commands that confuse them. If you must make a correction, announce CORRECTION and repeat the entire fire command.

QUESTIONS

1. Your planned fire command was GUNNER, HEAT, TRUCK. By accident you announce GUNNER, SABOT, TRUCK and then realize you have made a mistake. SABOT is loaded. You should now:
 - A. Announce HEAT, TRUCK, GUNNER.
 - B. Announce GUNNER, HEAT, TRUCK.
 - C. Announce CHANGE TO HEAT.
 - D. Fire the SABOT round.

2. You have just announced a fire command in the wrong sequence. Your crew understands what you meant. You should:
 - A. State the correct fire command.
 - B. Announce MISTAKE.
 - C. Do nothing.
 - D. None of the above.

3. The gunner did not hear your ammunition element. He should:
 - A. Announce AMMUNITION.
 - B. Announce REPEAT?
 - C. Fire the round.
 - D. Watch the loader.

4. If you want to correct an error in fire command sequence, you should:
 - A. State the entire correct fire command.
 - B. State the elements out of sequence.
 - C. Ask who does not understand.
 - D. None of the above.

Answers: 1.D 2.C 3.A 4.A

This MI Fire Command booklet is a
prototype training document. For
comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-IK
Steele Hall
Fort Knox, KY 40121

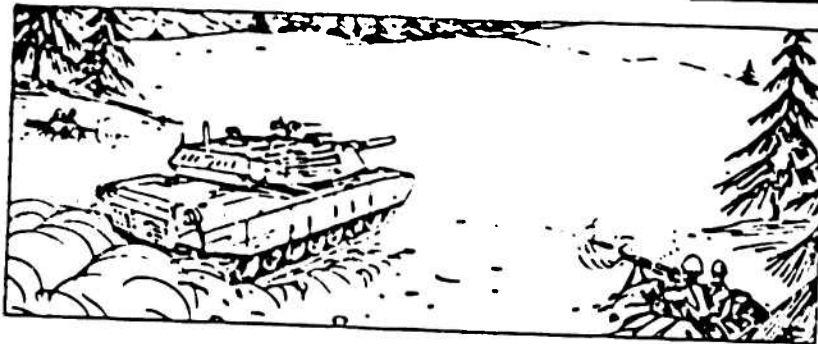
Autovon: 464-4932
Commercial: (502) 624-4932

FIRE COMMANDS for the
M1 TANK

CLASSIFYING THREATS

BOOKLET

2



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11-B

PREVIOUS PAGE
IS BLANK



BOOKLET NUMBER 2

CLASSIFICATION OF THREATS

USER'S GUIDE

This is booklet number 2 in a set of six booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to construct and issue the correct fire command, you must be able to classify targets on the battlefield. They are classified according to their threat. The classification will help you decide which target to engage.

1

THIS BOOKLET

This booklet will give you practice in classifying threats according to:

- MOST DANGEROUS THREAT
- DANGEROUS THREAT
- LEAST DANGEROUS THREAT

The booklet contains battlefield scenarios. Each scenario includes:

- A picture of the battlefield.
- A short written description of the battlefield situation.
- A question for you to answer.

2

HOW TO USE THIS BOOKLET

1. Look at the scenario picture.
2. Read the written description.
3. Read the question following the description.

SOME QUESTIONS ARE FOLLOWED BY A LIST OF POSSIBLE ANSWERS. FOR THESE QUESTIONS, YOU SHOULD SELECT THE CORRECT ANSWER.

SOME QUESTIONS DO NOT HAVE ANSWERS. FOR THESE QUESTIONS YOU MUST PROVIDE YOUR OWN ANSWER.

4. Check your answer with the Answer Key on the page following the scenario.
5. Refer to:
 - FM 17-12-1, if you have any further questions.
6. Complete the rest of the scenarios.

BEFORE YOU USE THIS BOOKLET

Before you use this booklet, be sure you have completed booklet 1 of this set.

SCENARIO 1



5

THE SITUATION

- You are turret down in a well protected deliberate defensive position.
- Primary target is enemy armor.
- SABOT is loaded as battlesight ammunition.
- M1 is fully operational.
- A platoon of T-72 tanks is advancing toward you at a range of 1800 to 2000 meters. They do not see you.
- A HIND-D helicopter mounting SAGGERS is on the right at a range in excess of 3000 meters.
- He does not see you.

What is (are) the MOST DANGEROUS threat(s) in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
The center T-72	The left T-72	The right T-72	The chopper	None of the targets

6

SCENARIO 1 ANSWER

The correct answer is E: NONE of the targets.

In order to be MOST DANGEROUS a target must:

- SEE YOU
- BE PREPARING TO ENGAGE YOU
- BE ABLE TO KILL YOU

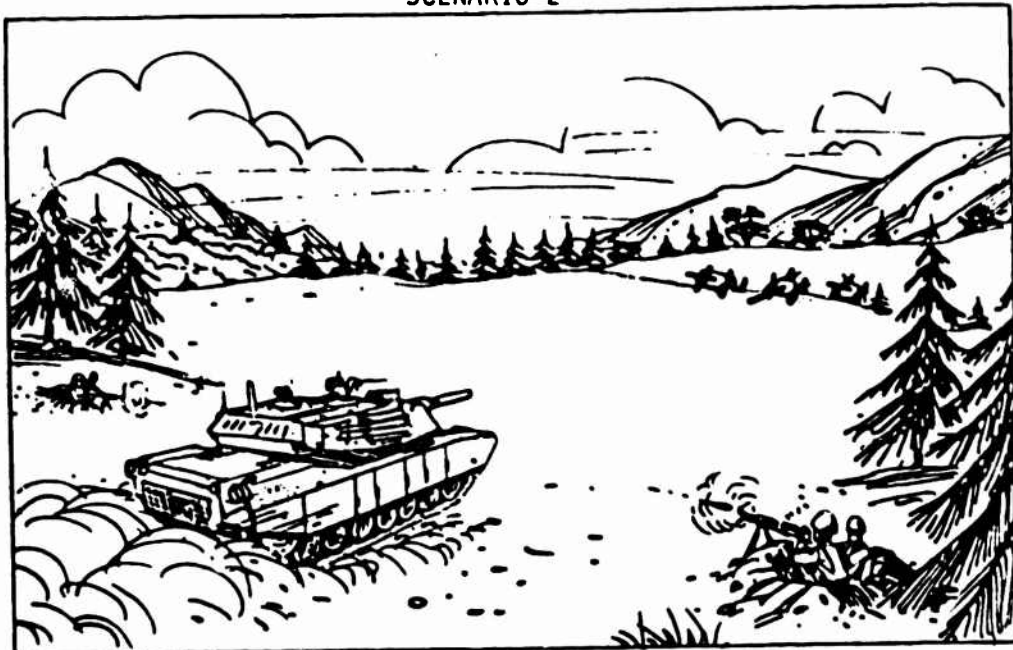
7

WRONG ANSWERS

A.	} The target has not seen you and is not preparing to engage you.
B.	
C.	
D.	

8

SCENARIO 2



9

THE SITUATION

- You are in a deliberate attack, moving through woods.
- You have penetrated the enemy's security zone and forward defensive positions. You are now into his main belt.
- M1 is fully operational.
- General purpose machineguns (7.62 mm) in foxholes are on your left and right at about 500 meters.
- Machineguns have started firing at you.
- Three T-12-A antitank guns are direct front at about 1000 meters. One T-12A brings the gun to aim at you.

What is (are) the MOST DANGEROUS threat(s) in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
The left MG firing at you	The right MG firing at you	The T-12A that is aiming at you 10	All of the targets

SCENARIO 2 ANSWER

You should have selected C: The T-12A that is aiming at you.

The T-12A aiming at you is the MOST DANGEROUS threat because:

- IT CAN KILL YOU
- IT HAS SEEN YOU
- IT IS PREPARING TO ENGAGE YOU

11

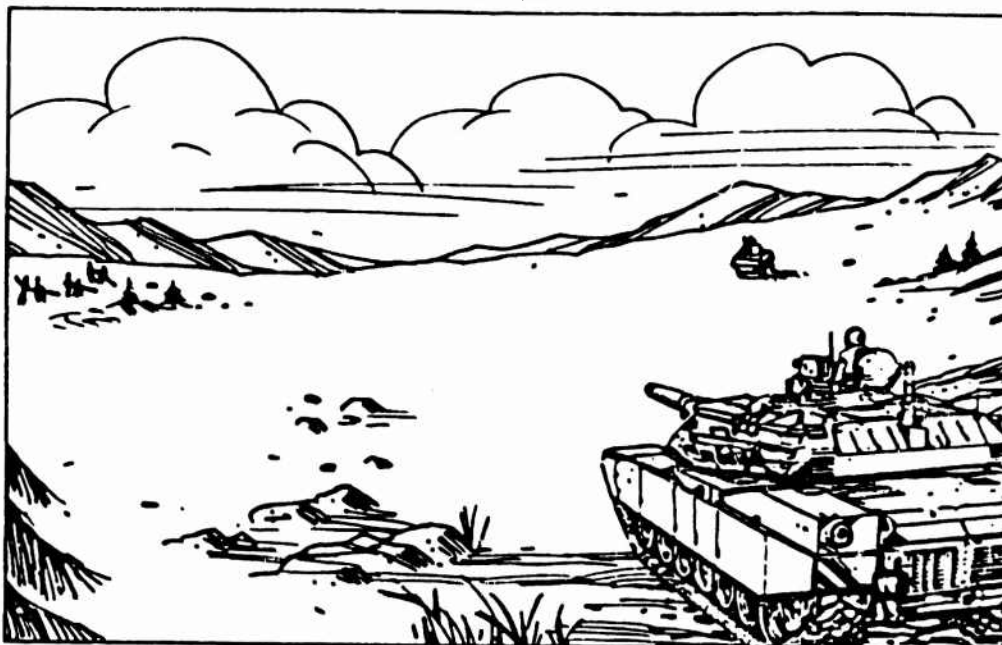
WRONG ANSWERS

- | | |
|--------------|--|
| A. }
B. } | The machineguns cannot kill you. |
| C. | The machineguns cannot kill you and the other T-12A's have not seen you yet. |

12

153

SCENARIO 3



13

THE SITUATION

- You are in a hasty defensive position.
- You are not well concealed.
- M1 is fully operational.
- SABOT is the battlesight ammunition.
- A BDRM mounting SAGGER is on the right at 1500 meters. He has stopped and looks like he is preparing to fire at you.
- There are three SPG-9 (Recoilless Antitank Gun) teams to your left at 2000 meters. One has seen you and is setting up to fire.

Which target(s) is (are) the MOST DANGEROUS threat(s)?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
All are MOST DANGEROUS	The SPG-9 that has seen you is MOST DANGEROUS	The SPG-9 and BDRM are both MOST DANGEROUS	The BDRM is MOST DANGEROUS

14

SCENARIO 3 ANSWER

The correct answer is D: The BRDM is MOST DANGEROUS.

The BDRM is MOST DANGEROUS because:

- IT CAN KILL YOU
- IT HAS SEEN YOU
- IT IS PREPARING TO ENGAGE YOU

15

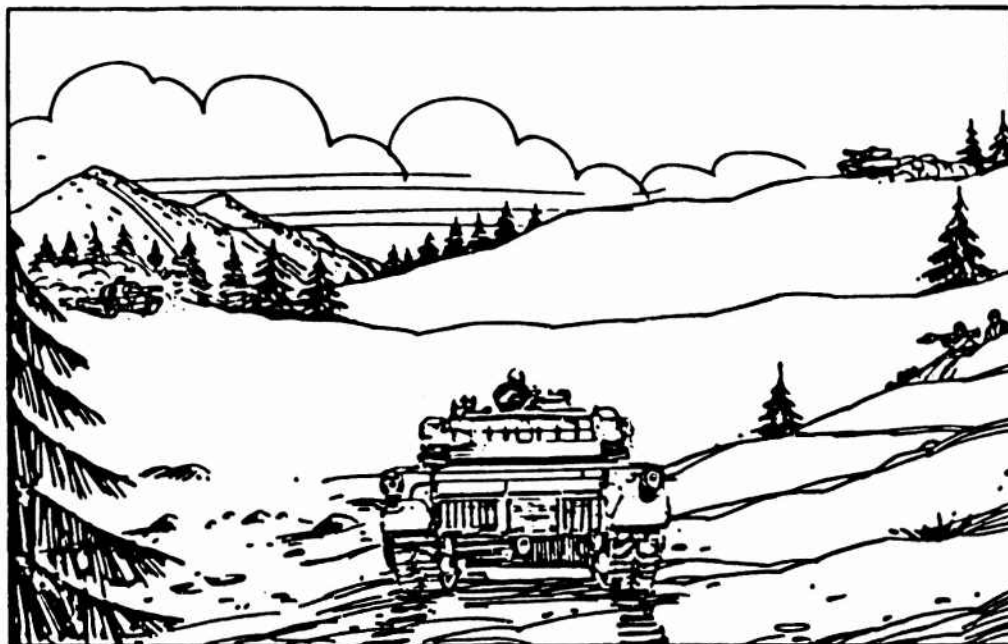
WRONG ANSWERS

- | |
|---|
| <p>A. Not all of the targets are MOST DANGEROUS.</p> <p>B. The SPG-9 effective range is 1000 meters.</p> <p>C. The SPG-9 is not MOST DANGEROUS.</p> |
|---|

16

155

SCENARIO 4



17

THE SITUATION

- You are in a traveling overwatch maneuver.
- Your mission is to destroy enemy armor.
- SABOT is loaded as battlesight ammunition.
- An RPG-7 is to your right, at 1000 meters, and is aiming at you.
- An SP-122 (Self-Propelled Howitzer) is giving indirect fire.
- He is about 2500 meters in front of you but does not see you.
- A T-72 comes out of the woods to your left about 1200 meters away. He is aiming at you.

Which target(s) is (are) MOST DANGEROUS?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
The RPG-7 at 1000m	The T-72 at 1200m	The RPG-7 and T-72	The RPG-7 and SP-122	All the targets

18

SCENARIO 4 ANSWER

The correct answer is B: The T-72.

The T-72 is the MOST DANGEROUS threat because:

- IT CAN KILL YOU
- IT SAW YOU
- IT IS PREPARING TO SHOOT

19

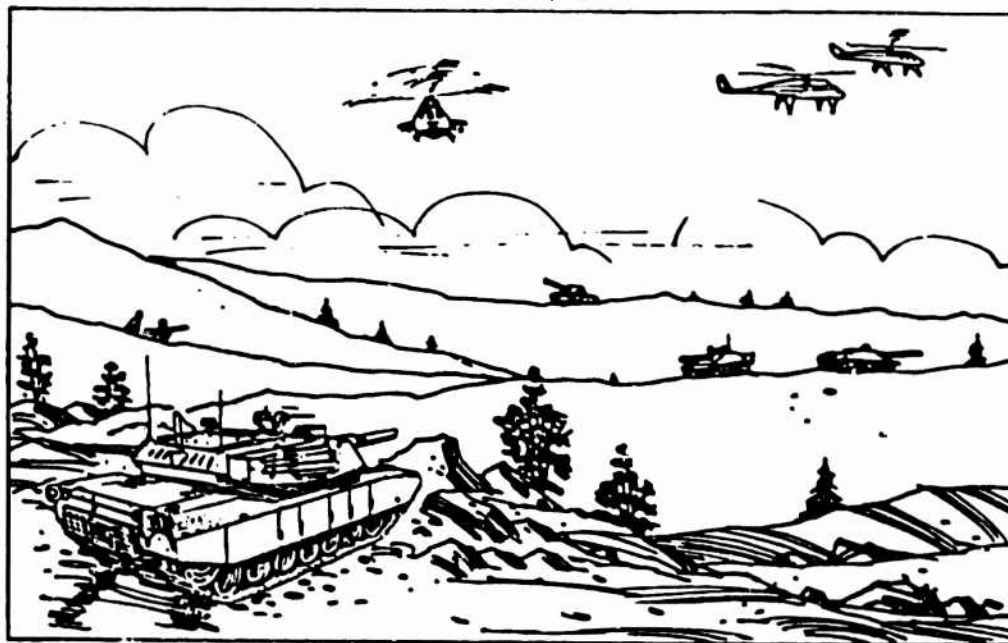
WRONG ANSWERS

- | |
|---|
| <p>A. The maximum effective range of the RPG-7 is 500m for stationary targets and 300m for moving targets</p> <p>C. The RPG-7 is beyond its effective range.</p> <p>D. } The SP-122 is not a MOST DANGEROUS THREAT. He does
E. } not see you.</p> |
|---|

20

157

SCENARIO 5



21

THE SITUATION

- You are in a well protected defensive position.
- Your sector is under heavy attack.
- An SPG-9 is on your left at 750 meters and does not see you.
- A HIP-E (helicopter) mounting SWATTER antitank guided missiles is hovering 1000 meters away and aims at you.
- Two MI-10 heavy lift choppers, retreating in the distance, have dropped ASU-85 assault vehicles. The closest ASU-85, at 1500 meters, is aimed at you.
- A T-72 at 4000 meters is approaching.

Which targets are MOST DANGEROUS threats?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
The SPG-9 and M-10 chopper	The HIP-E chopper and closest ASU-85	The T-72 and HIP-E chopper	The SPG-9 and the closest ASU-85

22

SCENARIO 5 ANSWER

The correct answer is B: The HIP-E chopper and closest ASU-85.

These targets are the MOST DANGEROUS threats because:

- IT CAN SEE YOU
- IT IS PREPARING TO ENGAGE YOU
- IT CAN KILL YOU

23

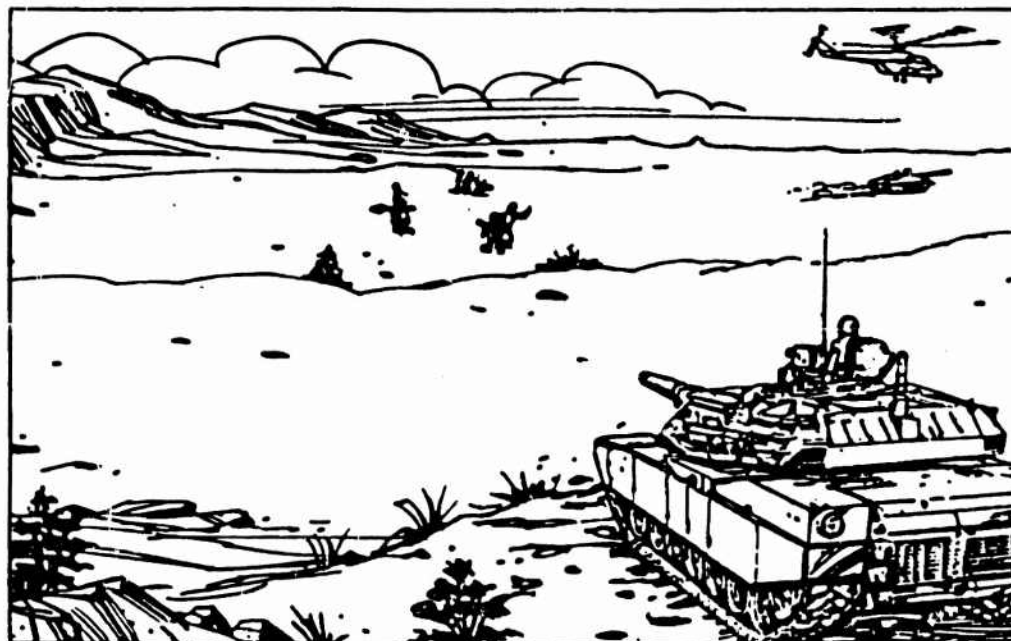
WRONG ANSWERS

- A. The SPG-9 has not seen you and the MI-10 chopper cannot kill you.
- C. The T-72 is too far away to engage you.
- D. The SPG-9 has not seen you.

24

159

SCENARIO 6



25

THE SITUATION

- M-1 is fully operational in a hasty defense.
- Enemy troops and assault equipment are air-dropped.
- Two RPG-7 teams are directly in front, about 1000 meters.
- One of them is aimed at you. This is RPG Team 1.
- A manpack SAGGER team, about 1200 meters away, is behind the RPG's and seems to have seen you.
- An ASU-85 assault gun, about 2500 meters away, is moving to your right.
- An MI-6 heavy lift helicopter is flying away to the right.

What are the MOST DANGEROUS threats in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
RPG team 2 and the ASU-85	RPG team 1 and the MI-6	ASU-85 at 2500m	SAGGER team at 1200m

26

SCENARIO 6 ANSWER

The correct answer is D: SAGGER team at 1200 m

This target is MOST DANGEROUS because:

- IT CAN SEE YOU
- IT IS PREPARING TO ENGAGE YOU
- IT CAN KILL YOU

27

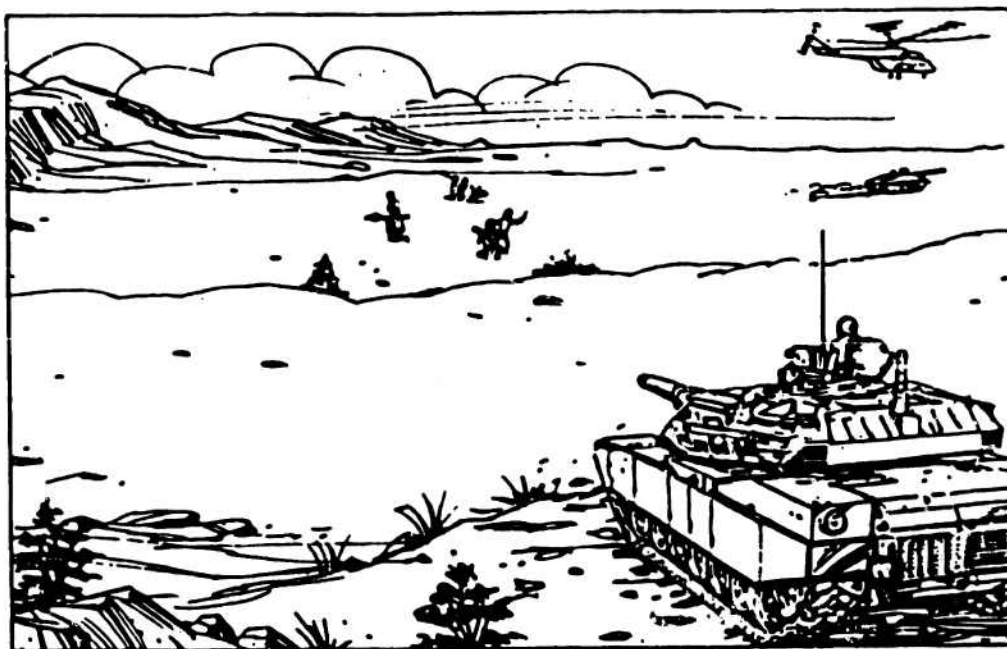
WRONG ANSWERS

- | |
|---|
| <p>A. RPG-7 team 2 is outside its effective range and not ready to engage you. The ASU-85 is moving, so it cannot engage you.</p> <p>B. The RPG-7 and MI-6 cannot kill you at this range.</p> <p>C. The ASU-85 cannot engage you when it is moving.</p> |
|---|

28

161

SCENARIO 7



29

THE SITUATION (continued)

- M-1 is fully operational in a hasty defense.
- Enemy troops and assault equipment are air-dropped.
- Two RPG-7 teams are directly in front, about 1000 meters.
- RPG-7 Team 1 is aimed at you.
- A manpack SAGGER team, about 1200 meters away, is behind the RPGs. They are ready to launch.
- An ASU-85 assault gun, about 2500 meters away, is moving to your right.
- An MI-6 heavy lift helicopter is flying away to the right.

What is the DANGEROUS threat(s) in this situation? (NOT MOST DANGEROUS.)

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
The SAGGER	The ASU-85	ASU-85 and the MI-6	RPG team 2 and the MI-6

30

SCENARIO 7 ANSWER

The correct answer is B: The ASU-85

It is a DANGEROUS threat because:

- IT CAN SEE YOU
- IT CAN KILL YOU
- IT IS NOT PREPARING TO ENGAGE YOU

31

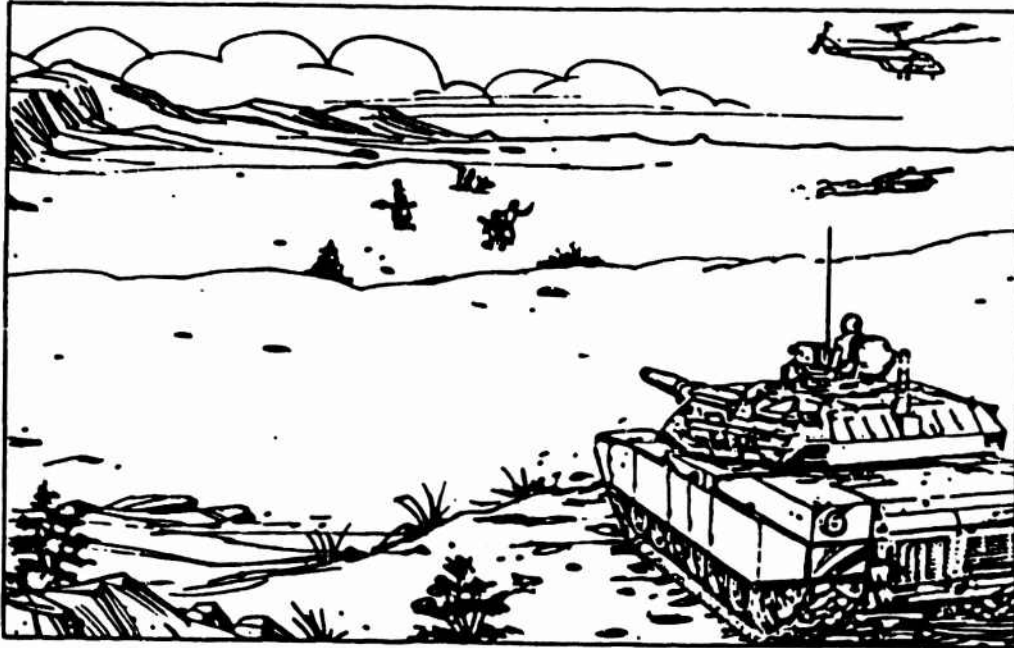
WRONG ANSWERS

- | | |
|----|---|
| A. | This target is MOST DANGEROUS because it saw you, is ready to engage you, and can kill you. |
| C. | } The MI-6 is not a DANGEROUS threat because he cannot kill you. RPG-7 is too far away. |
| D. | |

32

163

SCENARIO 8



33

THE SITUATION (continued)

- M-1 is fully operational in a hasty defense.
- Enemy troops and assault equipment are air-dropped.
- There are two RPG-7 teams directly in front, about 1000 meters.
- RPG-7 Team 1 is aimed at you.
- A manpack SAGGER team, about 1200 meters away, is behind the RPGs. They are ready to launch.
- An ASU-85 assault gun, about 2500 meters away, is moving to your right.
- An MI-6 heavy lift helicopter is flying away to the right.

Which target(s) is (are) the LEAST DANGEROUS threat in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
RPG team 1 and MI-6	RPG team 1 and ASU-85	SAGGER team at 1200m	ASU-85 and RPG team 2

34

SCENARIO 8 ANSWER

You should have selected A: RPG Team 1 and MI-6.

The MI-6 heavy lift helicopter is a LEAST DANGEROUS threat because it cannot kill you. An RPG team is LEAST DANGEROUS because it cannot penetrate M1 armor at this range.

35

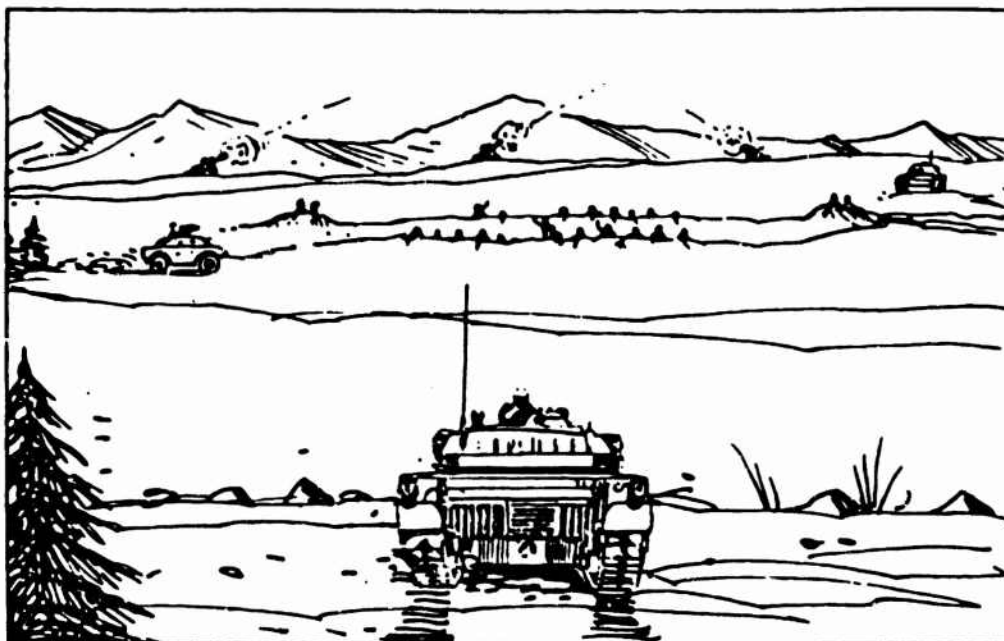
WRONG ANSWERS

B.)	} These threats <u>are not</u> LEAST DANGEROUS because one or more <u>can</u> kill you.
C.)	
D.)	

36

165

SCENARIO 9



37

THE SITUATION

- You have just entered the enemy's security zone in a deliberate attack.
- To your left, at a range of 1000 meters, you see a BDRM mounting SAGGERS. He is moving and not aimed at you.
- Direct front at 1500 meters are dug in troops. Troops are flanked by machinegun positions. Troops see you but do not fire.
- 152mm howitzers, at 3500 meters, are giving indirect fire. To your right, at 1200 meters is a PT-76. He has stopped and is aiming at you.

In this situation, which target(s) is (are):

1. MOST DANGEROUS?
2. DANGEROUS?
3. LEAST DANGEROUS?

(Sorry, no choices are given. Write down your answers, then turn the page.)

38

SCENARIO 9 ANSWER

Your answers should have been:

MOST DANGEROUS

- PT-76

DANGEROUS

- BDRM
- 152mm howitzers

LEAST DANGEROUS

- Troops
- Machine guns

39

The PT-76 is the MOST DANGEROUS threat because it:

- Can kill you
- Has seen you
- Is preparing to engage you

The BDRM mounting SAGGER and the 152mm howitzers are the DANGEROUS threats because they:

- Can kill you, but
- Have not seen you yet

The troops and machine guns are the LEAST DANGEROUS threats because they:

- Cannot kill you

40

SCENARIO 10



41

THE SITUATION

- You are well concealed in a turret down, deliberate defensive position.
- M-1 is fully operational.
- A platoon of T-72s is approaching, direct front, range 1500 meters. The center T-72 is not pointed in your direction, but he can kill you.
- Behind the tanks is a large group of troops.
- On your right, at 500 meters, is an SPG-9. It is set up and has a clear shot at you through the trees.
- Behind the SPG-9 at 1000 meters, is a BMP mounting SAGGER.
- The BMP is moving to your direct front.

In this situation, which target(s) is (are):

1. MOST DANGEROUS?
2. DANGEROUS?
3. LEAST DANGEROUS?

42

SCENARIO 10 ANSWER

Your answers should have been:

MOST DANGEROUS

- SPG-9

DANGEROUS

- T-72s (all 3)
- BMP mounting SAGGER

LEAST DANGEROUS

- Troops

43

The SPG-9 is the MOST DANGEROUS threat because it:

- Can see you
- Is preparing to engage you
- Can kill you

The T-72s and the BMP are DANGEROUS threats because they:

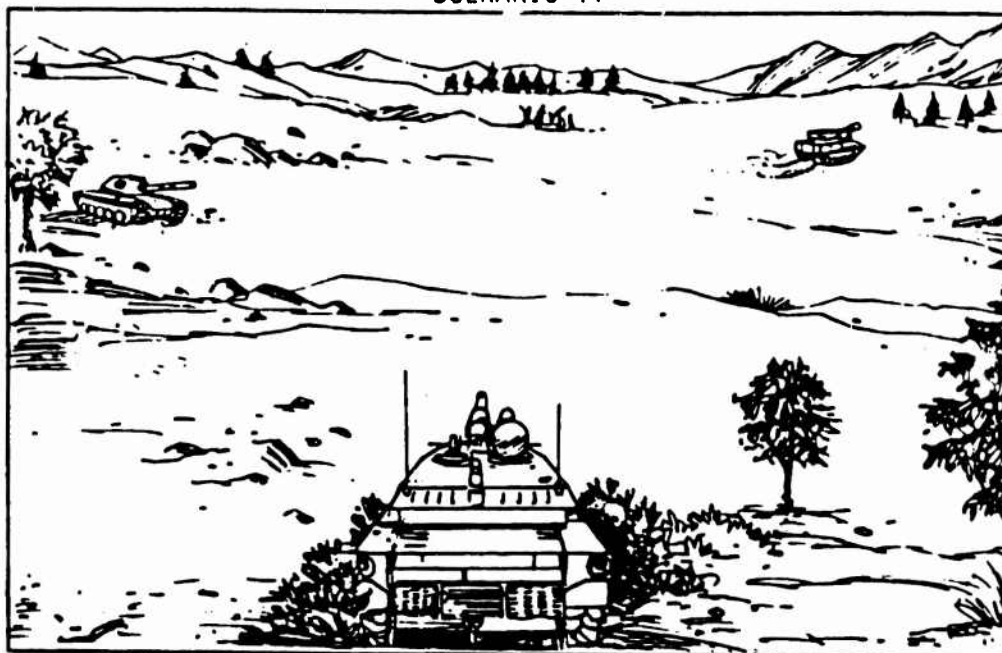
- Can kill you, but
- Have not seen you

The troops are LEAST DANGEROUS because they:

- Cannot kill you

44

SCENARIO 11



45

THE SITUATION

- You are in a bounding overwatch.
- M1 is fully operational.
- Round loaded is SABOT.
- A T-72 is off to your left, range 1700 meters.
- A 122 mm self-propelled howitzer is to your right, range 2500 meters.
- Almost direct front is a T-12A antitank gun, range more than 3000 meters.
- The T-72 has seen you.
- The howitzer and antitank gun have not seen you.

How should the T-72 be classified?

How should the 122 mm self-propelled howitzer be classified?

How should the T-12A be classified?

46

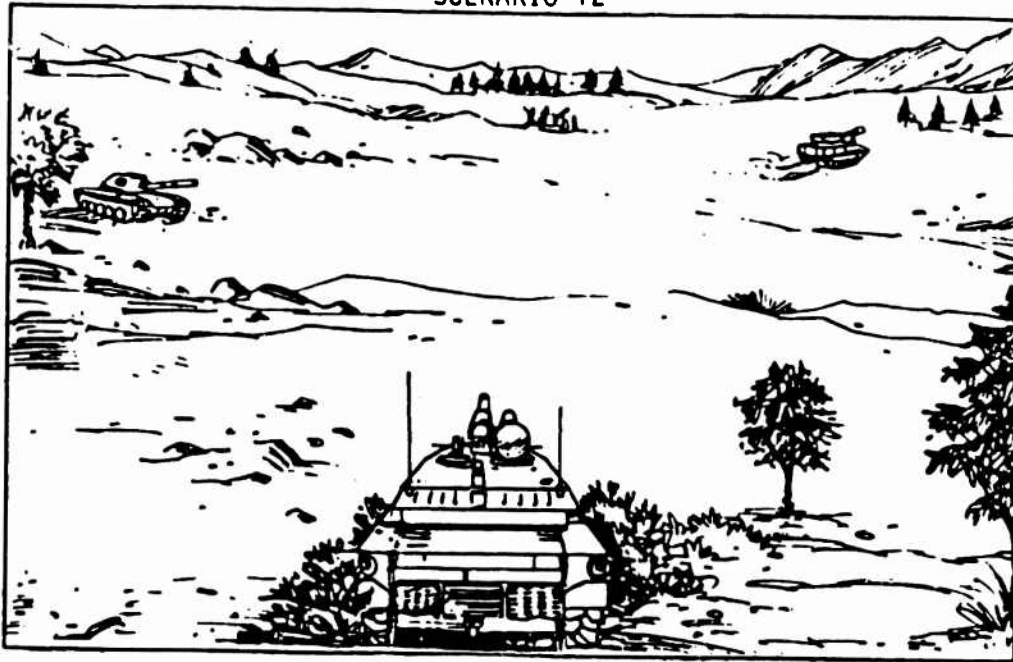
SCENARIO 11 ANSWER

- The T-72 is a MOST DANGEROUS threat because:
 - It sees you.
 - It can kill you.
 - It is preparing to engage you.

- The howitzer is a DANGEROUS THREAT because it:
 - Can kill you.
 - Has not seen you.

- The antitank gun is a DANGEROUS THREAT because it:
 - Can kill you.
 - Has not seen you.

SCENARIO 12



49

THE SITUATION (Continued)

- You are in a bounding overwatch.
- M1 is fully operational.
- Round loaded is SABOT.
- A T-72 is off to your left, range 1700 meters.
- A 122 mm self-propelled howitzer is to your right, range 2500 meters.
- Almost direct front is a T-12A antitank gun, range more than 3000 meters.
- The T-72 has seen you.
- The howitzer and antitank gun have not seen you.

Which threat must you engage first?

What is your fire command?

What are the crew responses?

(No choices this time. Write down your answer, then turn the page.)

50

SCENARIO 12 ANSWER

- The MOST DANGEROUS threat is always engaged first. In this situation, the MOST DANGEROUS threat is the T-72.

51

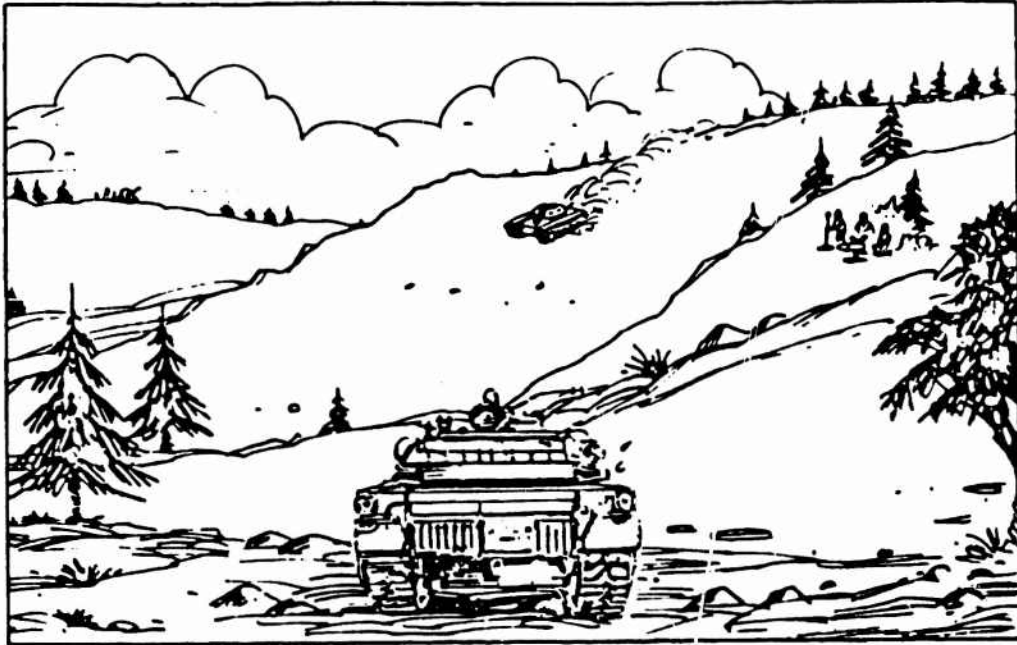
(Continued)

- The fire command and crew responses should be:

TC:	GUNNER SABOT TANK. . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	CEASE FIRE

52

SCENARIO 13



53

THE SITUATION

- You are in a deliberate attack.
- Your mission is to destroy enemy armor.
- Round loaded is SABOT.
- You are advancing rapidly.
- Your M1 is fully operational.
- You see a dismounted SAGGER team off to your right, range 750 meters. It is ready for launch. The crew has seen you.
- There is a T-62 directly in front of you, range 1400 meters.
- His tube swings toward you.
- A T-12 antitank unit to your left is providing area fire. The unit is located more than 3000 meters from you.

Which target(s) is (are) classified as MOST DANGEROUS?

Which target(s) is (are) classified as DANGEROUS?

Which target(s) is (are) classified as LEAST DANGEROUS?

54

SCENARIO 13 ANSWER

- The T-62 and the SAGGER are both MOST DANGEROUS threats because:
 - They have seen you.
 - They can kill you.
 - They are preparing to engage you.

- The T-12 is a DANGEROUS threat because it:
 - Has not seen you.
 - Can kill you.

- None of the targets described in this situation can be classified as LEAST DANGEROUS. All of the targets present can kill you.

55

This M1 Fire Command booklet is a prototype training document. For comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-IK
Steele Hall
Fort Knox, KY 40121

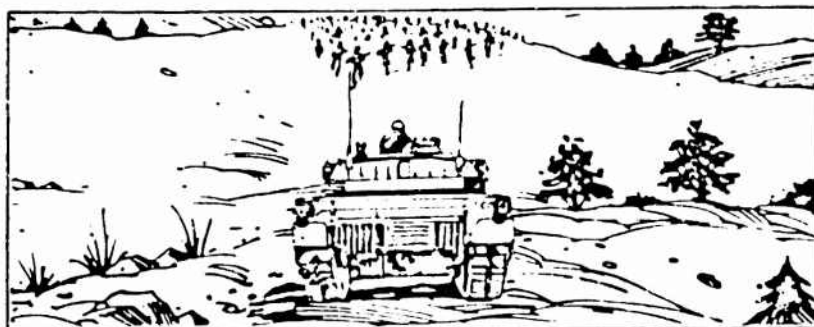
Autovon: 464-4932
Commercial: (502) 624-4932

FIRE COMMANDS for the
M1 TANK

BOOKLET

AMMUNITION/WEAPON
SELECTION

3



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11- C

PREVIOUS PAGE
IS BLANK

BOOKLET NUMBER 3

AMMUNITION/WEAPON SELECTION

USER'S GUIDE

This is booklet number 3 in a set of six booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to issue the correct fire command, you must be able to select the best ammunition/weapon for the target you are going to engage.

1

THIS BOOKLET

This booklet will give you practice in selecting ammunition/weapons for engaging different targets.

The booklet contains battlefield scenarios. Each scenario includes:

- A picture of the battlefield.
- A short written description of the battlefield situation.
- A question for you to answer.

2

HOW TO USE THIS BOOKLET

1. Look at the scenario picture.
2. Read the written description.
3. Read the question following the description.

SOME QUESTIONS ARE FOLLOWED BY A LIST OF POSSIBLE ANSWERS. FOR THESE QUESTIONS, YOU SHOULD SELECT THE CORRECT ANSWER.

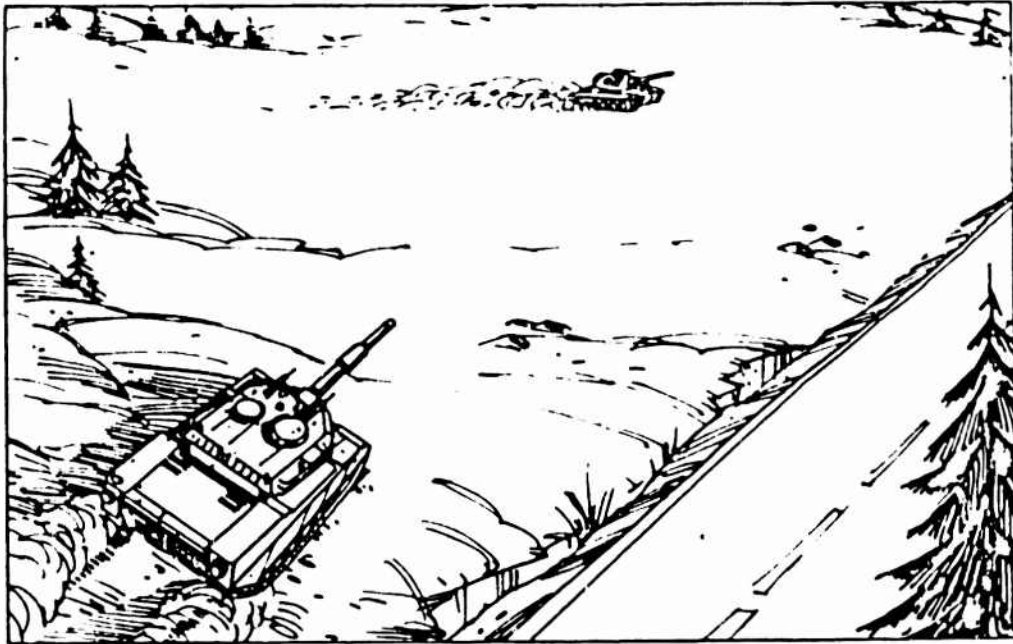
SOME QUESTIONS DO NOT HAVE ANSWERS. FOR THESE QUESTIONS YOU MUST PROVIDE YOUR OWN ANSWER.

4. Check your answer with the Answer Key on the page following the scenario.
5. Refer to:
 - FM 17-12-1
 - if you have any further questions.
6. Complete the rest of the scenarios.

BEFORE YOU USE THIS BOOKLET

Before you use this booklet, be sure you have completed booklet 1 of this set.

SCENARIO 1



5

THE SITUATION

You are in a deliberate attack.
A T-72 is direct front at 1000 meters.
The main gun is loaded.

What is the BEST ammunition to use against the target at this range?

- | | | | | |
|----------|----------|----------|----------|----------|
| <u>A</u> | <u>B</u> | <u>C</u> | <u>D</u> | <u>E</u> |
| SABOT | HEAT | HEP | COAX | CAL. 50 |

6

SCENARIO 1 ANSWER

You should have selected A: SABOT

SABOT is the primary round for use against armor at ALL RANGES. SABOT rounds are kinetic energy ammunition; no explosives are needed for penetrating the target. There are five SABOT rounds in the current inventory for the M1 tank. Each has a special use based on the target's:

- type of armor protection
- angle of attack
- range
- profile

Refer to 17-12-1 to learn about these rounds.

7

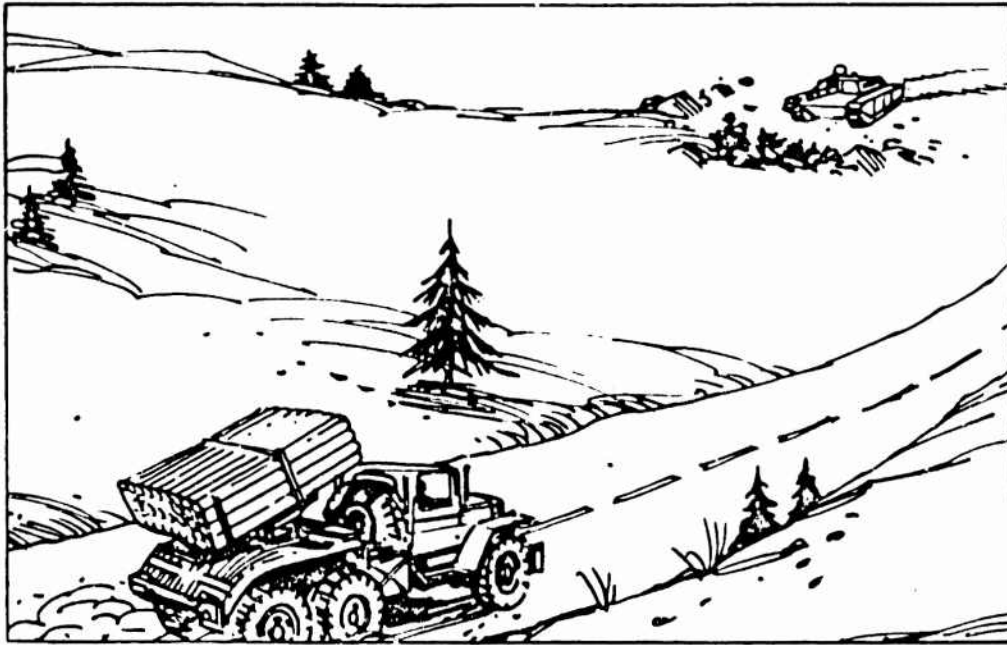
WRONG ANSWERS

B. HEAT is the secondary armor defeating round. It is used if you are out of SABOT or if it is in the gun and you do not have time to reload.

C. }
D. } Not designed to defeat armor.
E. }

8

SCENARIO 2



9

THE SITUATION

- You are in a deliberate attack.
- A BM-21 truck mounting a 122 mm rocket launcher is approaching at 1600 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the target at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SABOT	HEAT	CAL .50	BEEHIVE	COAX

10

132

SCENARIO 2 ANSWER

You should have selected C: CAL .50

The CAL .50 is the best weapon to use against trucks and personnel at some 1800 meters, its maximum effective range. In fact, the maximum range of the CAL .50 exceeds 6500 meters.

11

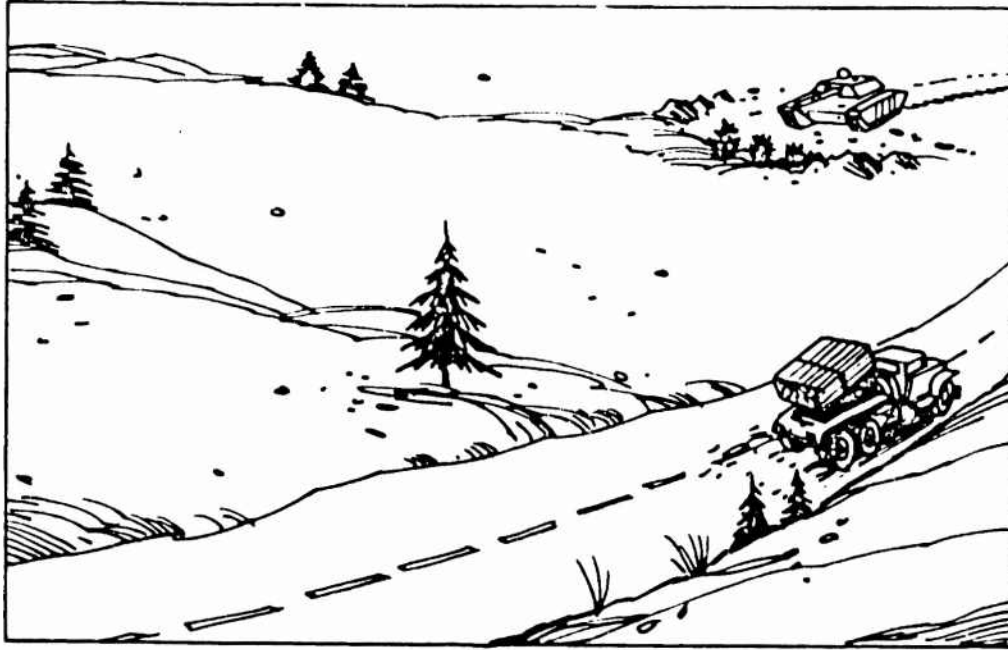
WRONG ANSWERS

- A. Not recommended.
- B. Second best ammo.
- D. No longer in current inventory for M1.
- E. Target is out of coax's maximum effective range (900 meters).

12

183

SCENARIO 3



13

THE SITUATION

- You are in a deliberate attack.
- A BM-21 mounting 122 mm rocket launchers is approaching at 400 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the BM-21 at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
HEAT	HEP	BEEHIVE	CAL .50	COAX

14

184

SCENARIO 13 ANSWER

You should have selected E: COAX

The COAX is very accurate and effective at a range of 400 meters.

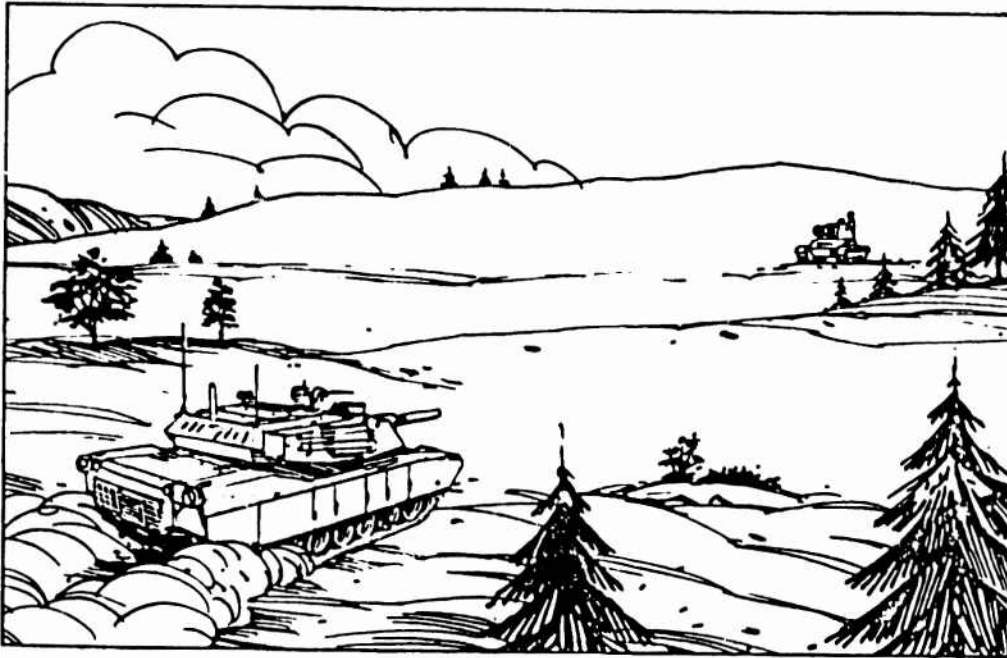
By using the coax you will: (1) save the CAL. 50 ammo; (2) There is a lot more 7.62 ammo than CAL. 50 ammo on the M1; (3) CAL. 50 is fired by the TC who should be continuing to search for other targets.

- [faded text]
- [faded text]
- [faded text]

WRONG ANSWERS

- A. Third best. However, main gun ammo should be conserved and used against armor-defeating targets.
- B. } No longer in inventory for M1.
- C. }
- D. Second best. Should save CAL .50 ammo for targets at greater ranges.

SCENARIO 4



17

THE SITUATION

- You are in a deliberate attack.
- A 152 mm self propelled howitzer is direct front at 1500 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the target at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SABOT	HEAT	HEP	M240	COAX

18

186

SCENARIO 4 ANSWER

You should have selected A: SABOT

SABOT is the best round to use against armor-protected targets such as TANKS and TANK-LIKE vehicles (like the 152mm SP howitzer).

19

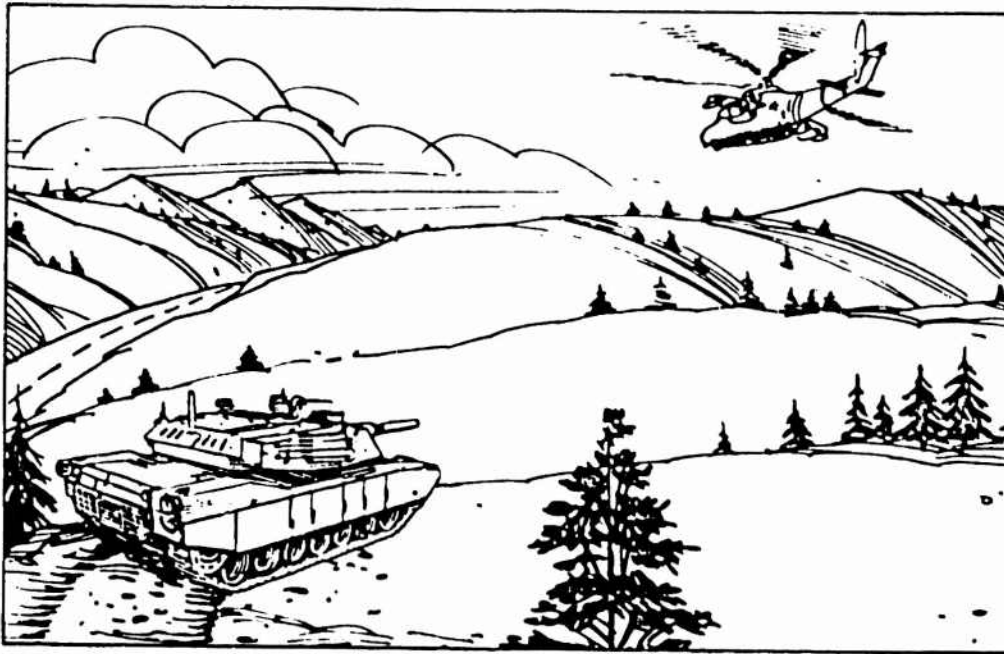
WRONG ANSWERS

- | | |
|----|---------------------------------|
| B. | Second best ammo to use. |
| C. | No longer in MI ammo inventory. |
| D. | } Not designed to defeat armor. |
| E. | |

20

187

SCENARIO 5



21

THE SITUATION

- You are in a deliberate attack.
- A HIND-D helicopter, at 700 meters, is hovering 100 meters above the ground.
- The main gun is loaded.

What is the BEST ammunition to use against the helicopter at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SABOT	HEAT	BEEHIVE	CAL. 50	COAX

22

1&8

SCENARIO 6



25

THE SITUATION

- You are in a deliberate attack.
- A T-12A antitank gun is direct front at 2000 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the T-12A at this range?

- | | | | | |
|----------|----------|----------|----------|----------|
| <u>A</u> | <u>B</u> | <u>C</u> | <u>D</u> | <u>E</u> |
| SABOT | HEAT | HEP | BEEHIVE | CAL. 50 |

26

189

SCENARIO 6 ANSWER

You should have selected B: HEAT

HEAT is the best ammunition to use against antitank targets that are vehicle or dismounted. When HEAT hits a target, the shaped charge inside the round is set off. A high speed jet stream is then formed which penetrates the armor. In doing so, the interior wall of the target shatters like glass (spalling) resulting in target destruction.

Note: HEAT is not as accurate as SABOT at ranges beyond 2000 meters due to its slower muzzle velocity. However, because it works on the chemical energy principle and not striking velocity, it is equally effective at 4000 meters as it is at 200 meters.

27

WRONG ANSWERS

- | | |
|----|---|
| A. | Not recommended against lightly-armored vehicles. |
| C. | } Not in current M1 ammo inventory. |
| D. | |
| E. | Target is beyond maximum effective range of Cal .50 machinegun. |

28

190

SCENARIO 7



29

THE SITUATION

- You are in a deliberate attack.
- A man pack SAGGER is being set up at 1100 meters.
- The main gun is loaded.

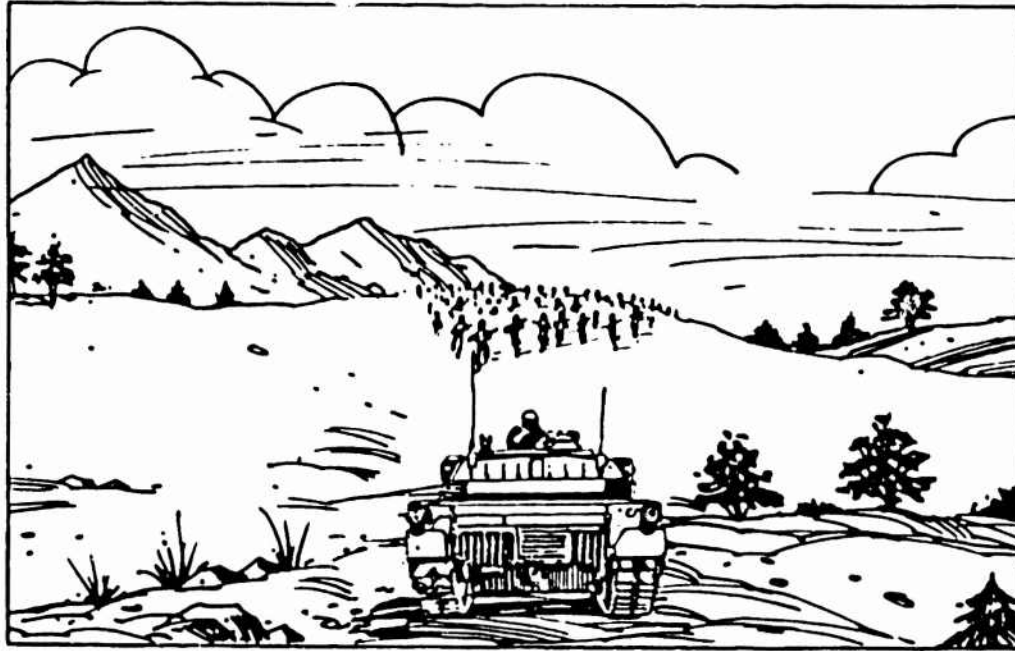
What is the BEST ammunition to use against the SAGGER at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
HEP	BEEHIVE	CAL. 50	COAX	M240

30

191

SCENARIO 8



33

THE SITUATION

- You are in a deliberate attack.
- Enemy troops are ahead at 1600 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the troops at this range?

A
HEP

B
BEEHIVE

C
CAL. 50

D
COAX

E
M240

34

192

SCENARIO 8 ANSWER

The correct answer is C: CAL .50

The maximum effective range of Cal .50 machinegun is right at 1800 meters. If the target was around 900 meters, the IC should consider firing the COAX (M240), mainly to conserve the small number of Cal .50 rounds available on the M1 tank.

35

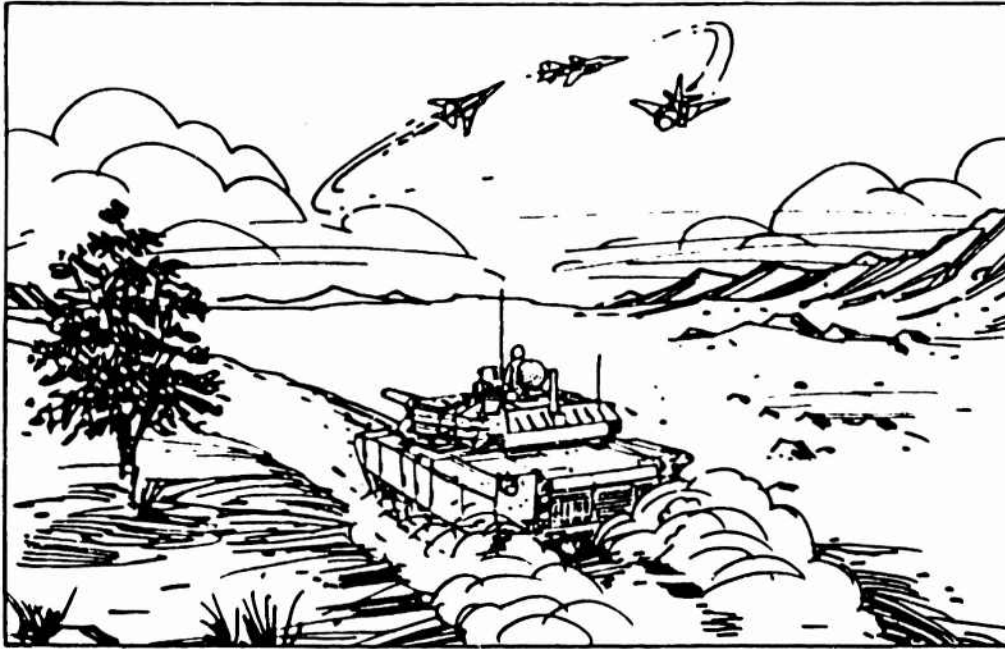
WRONG ANSWERS

- | | |
|-----|---|
| A.} | Not part of current ammo in M1 inventory. |
| B.} | |
| D.} | Not within the maximum effective range of weapons (900 meters). |
| E.} | |

36

193

SCENARIO 9



37

THE SITUATION

- You are in a traveling overwatch maneuver.
- Three MIG-23 FLOGGER aircraft make a low level run over your position.
- The MIG's turn and start back at you.
- The main gun is loaded.
- All hatches are open and all crew members are acting as observers.

What is the BEST ammunition/weapon to use against the MIG's?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
CAL. 50 and Loader's M240	SABOT and HEAT	HEP and CAL. 50	CAL. 50 and COAX	Loader's M240 and COAX

38

194

SCENARIO 9 ANSWER

The correct answer is A: CAL. 50 and Loader's M240.

The CAL..50 and loader's M240 are used for aerial targets. Because they can be moved quickly to follow aircraft, use a high rate of fire and long bursts.

NOTE: The loader's M240 should only be fired at targets left of main gun center line to avoid damaging thermal shrouds, bore evacuator, or muzzle reference system collimator. It is not used against point targets, since it has no reticle.

39

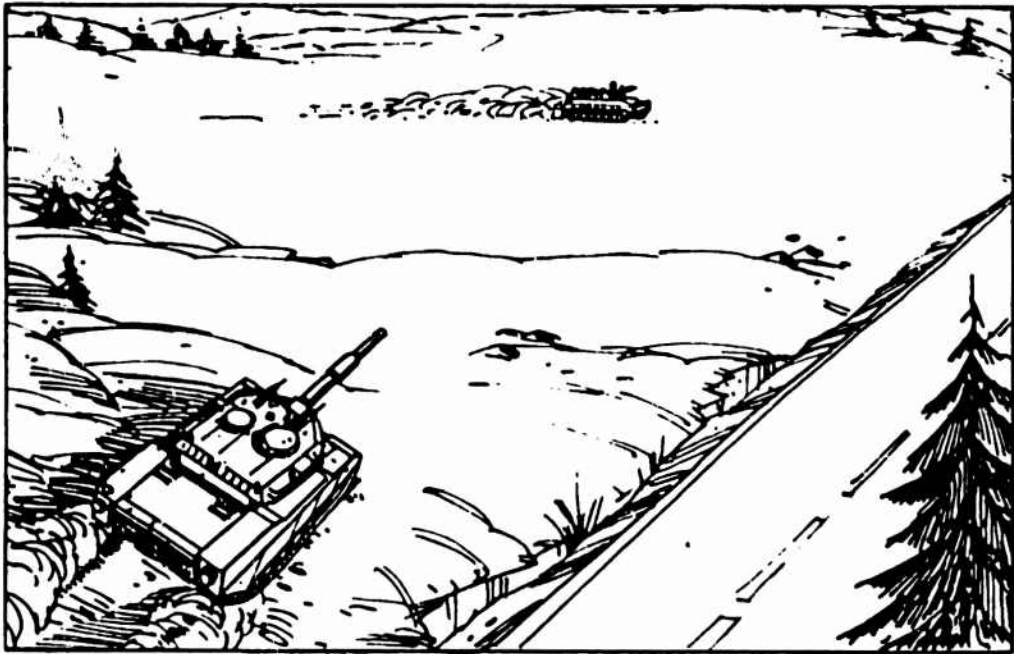
WRONG ANSWERS

- | | |
|----|--|
| B. | Not recommended. |
| C. | Partially correct, but HEP is no longer in M1 ammo inventory. |
| D. | } Partially correct, but COAX will not be able to follow the aircraft as it passes overhead. |
| E. | |

40

195

SCENARIO 10



41

SITUATION

- You are in a deliberate attack.
- A BMP mounting SAGGER is direct front at 1000 meters.
- The main gun is loaded.

What is the BEST ammunition to use against the BMP at this range?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
SABOT	HEAT	HEP	CAL. 50	COAX

42

196

SCENARIO 10 ANSWER

You should have selected B: HEAT.

It is the primary round against lightly armored personnel carriers (APCs), such as the BMP.

Remember. A SABOT round works on principle of striking velocity, whereas a HEAT round works on the chemical energy principle. It causes interior target destruction by spalling and the jet stream.

43

WRONG ANSWERS

- A. Not recommended; used against tank or tank-like targets.
- C. Not in current inventory of M1 ammo.
- D. Effective out to about 400m, but used only if the main gun is being used against an armor-defeating threat.
- E. Target is beyond maximum effective range of COAX and would not penetrate BMP exterior.

44

197

This M1 Fire Command booklet is a
prototype training document. For
comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-IK
Steele Hall
Fort Knox, KY 40121

Autovon: 464-4932
Commercial: (502) 624-4932

FIRE COMMANDS for the
M1 TANK

BOOKLET

FIRE COMMAND ELEMENTS
and SEQUENCE

4



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11-D

BOOKLET NUMBER 4

FIRE COMMAND ELEMENTS AND SEQUENCE

USER'S GUIDE

This is booklet number 4 in a set of six booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to issue a fire command, you must announce all elements of the fire command in their proper sequence.

1

THIS BOOKLET

This booklet will give you practice in selecting the proper sequence of fire command elements for main gun/machinegun targets.

The booklet contains battlefield scenarios. Each scenario includes:

- A picture of the battlefield.
- A short written description of the battlefield situation.
- A question for you to answer.

2

HOW TO USE THIS BOOKLET

1. Look at the scenario picture.
2. Read the written description.
3. Read the question following the description.

SOME QUESTIONS ARE FOLLOWED BY A LIST OF POSSIBLE ANSWERS. FOR THESE QUESTIONS, YOU SHOULD SELECT THE CORRECT ANSWER.

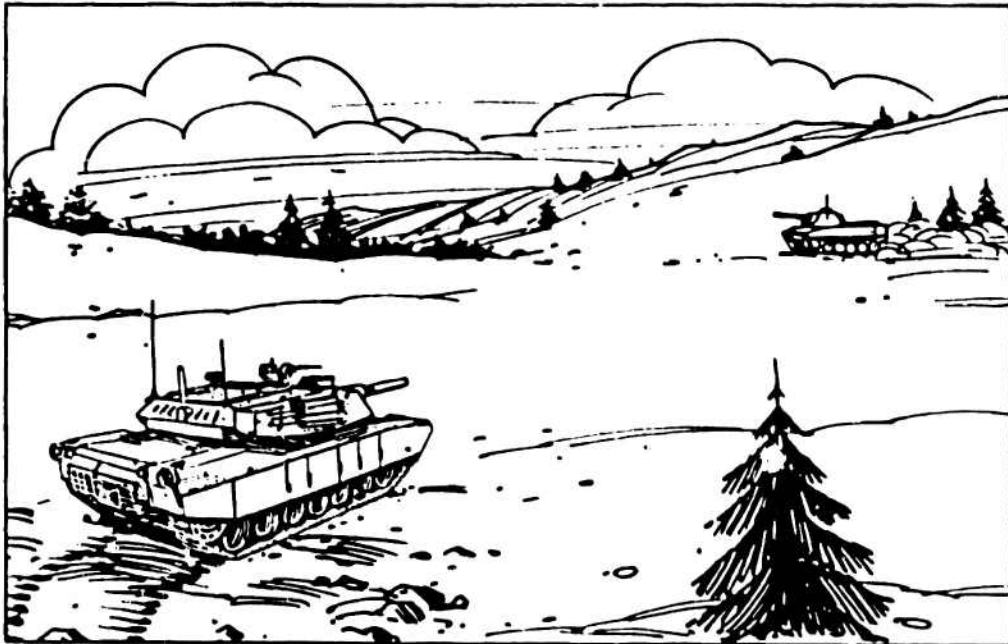
SOME QUESTIONS DO NOT HAVE ANSWERS. FOR THESE QUESTIONS YOU MUST PROVIDE YOUR OWN ANSWER.

4. Check your answer with the Answer Key on the page following the scenario.
5. Refer to:
 - FM 17-12-1if you have any further questions.
6. Complete the rest of the scenarios.

BEFORE YOU USE THIS BOOKLET

Before you use this booklet, be sure you have completed booklet 1 of this set.

SCENARIO 1



5

THE SITUATION

- You are in a deliberate offense.
- A single PT-76 light tank starts across the field, range 1200 meters.
- Your M1 is fully operational.
- Round loaded is SABOT.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
GUNNER	MOVING TANK	SABOT	GUNNER
SABOT	SABOT	GUNNER	MOVING TANK
MOVING TANK	GUNNER	MOVING TANK	SABOT

6

SCENARIO 1 ANSWER

Your correct answer is: A: GUNNER
SABOT
MOVING TANK

This fire command has the first three elements in the correct sequence. The elements are:

- ALERT
- AMMUNITION/WEAPON
- DESCRIPTION

7

WRONG ANSWERS

B.)	} Elements are not in correct sequence.
C.)	
D.)	

8

SCENARIO 2



9

THE SITUATION

- You are advancing in a bounding overwatch maneuver.
- Your M1 is fully operational.
- Round loaded is HEAT.
- You see a dismounted SAGGER crew preparing the missile at 2000 meters.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
MISSILE	HEAT	GUNNER	GUNNER
GUNNER	MISSILE	MISSILE	HEAT
HEAT	GUNNER	HEAT	MISSILE

10

204

SCENARIO 2 ANSWER

The correct answer is D:

GUNNER
HEAT
MISSILE

The elements of this command are in the right order. The elements are:

- ALERT
- AMMUNITION/WEAPON
- DESCRIPTION

11

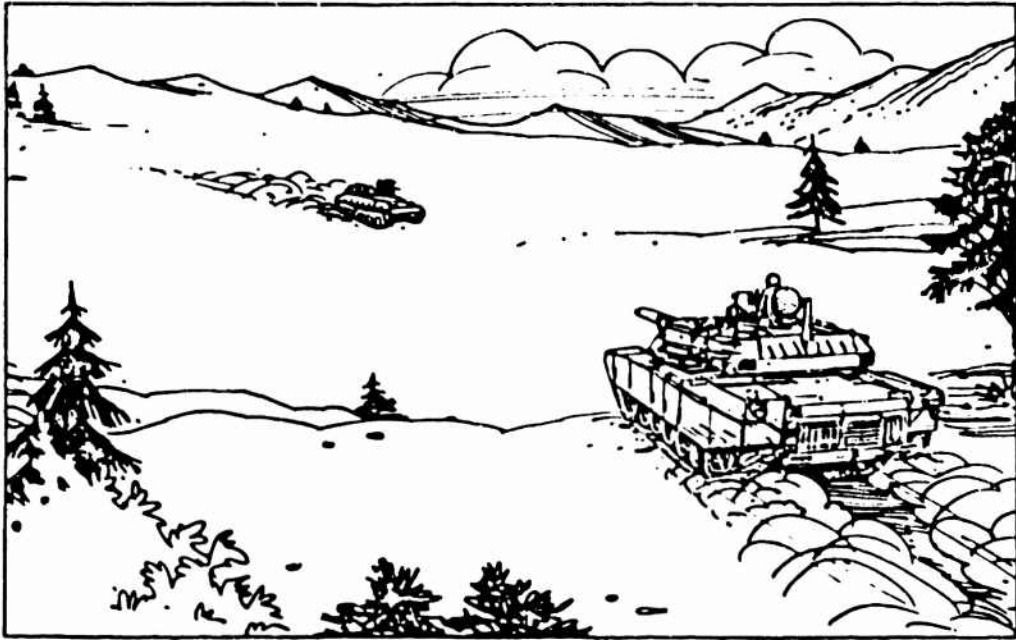
WRONG ANSWERS

A. } B. } C. }	Incorrect sequence of elements.
----------------------	---------------------------------

12

205

SCENARIO 3



13

THE SITUATION

- M1 is fully operational in a hasty attack.
- Round loaded is HEAT.
- A BMP mounting SAGGER at 2000 meters is coming straight at you.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
DRIVER STOP	GUNNER	GUNNER	MOVING PC
GUNNER	HEAT	HEAT	HEAT
PC	PC	MOVING PC	GUNNER
HEAT			

14

SCENARIO 3 ANSWER

The correct answer is C: GUNNER
HEAT
MOVING PC

This command contains the correct elements in the correct order.

15

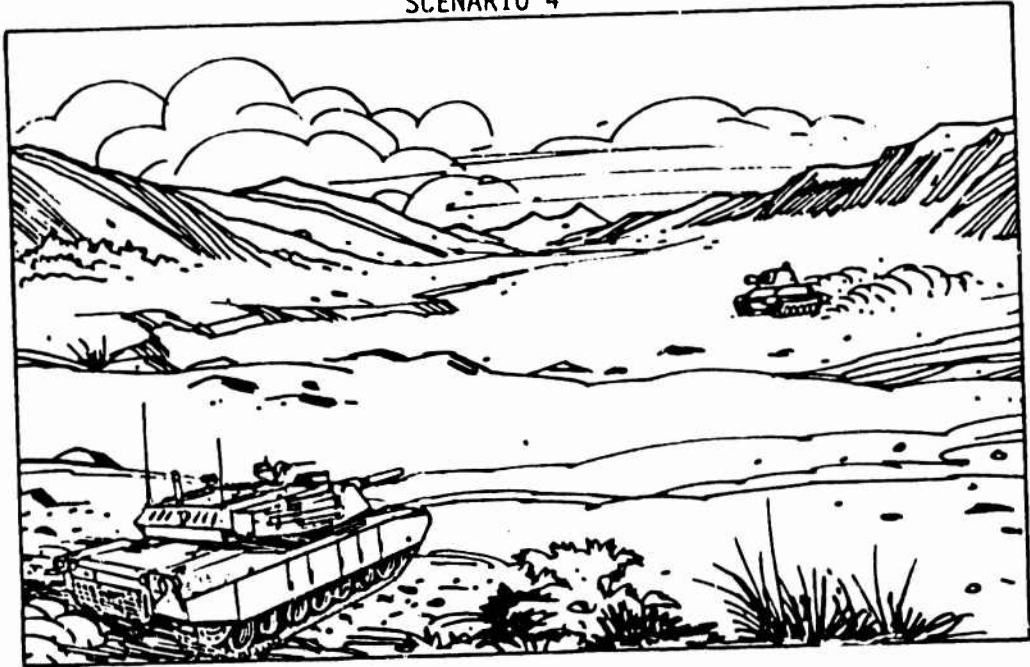
WRONG ANSWERS

- A. Incorrect elements, incorrect sequence.
- B. Incorrect target description.
- D. Incorrect sequence.

16

207

SCENARIO 4



17

THE SITUATION

- You are attacking and have advanced to the enemy's main defensive belt.
- M1 is fully operational.
- Round loaded is SABOT.
- A self-propelled howitzer is direct front, at 2000 meters.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
GUNNER SELF-PROPELLED HOWITZER SABOT	GUNNER TANK SABOT	GUNNER SABOT TANK	GUNNER SABOT SELF-PROPELLED HOWITZER

18

208

SCENARIO 4 ANSWER

The correct answer is C: GUNNER
SABOT
TANK

This fire command has the correct elements in the right sequence. Remember that a self-propelled howitzer is a tank-like target and should be announced as TANK in the fire command.

19

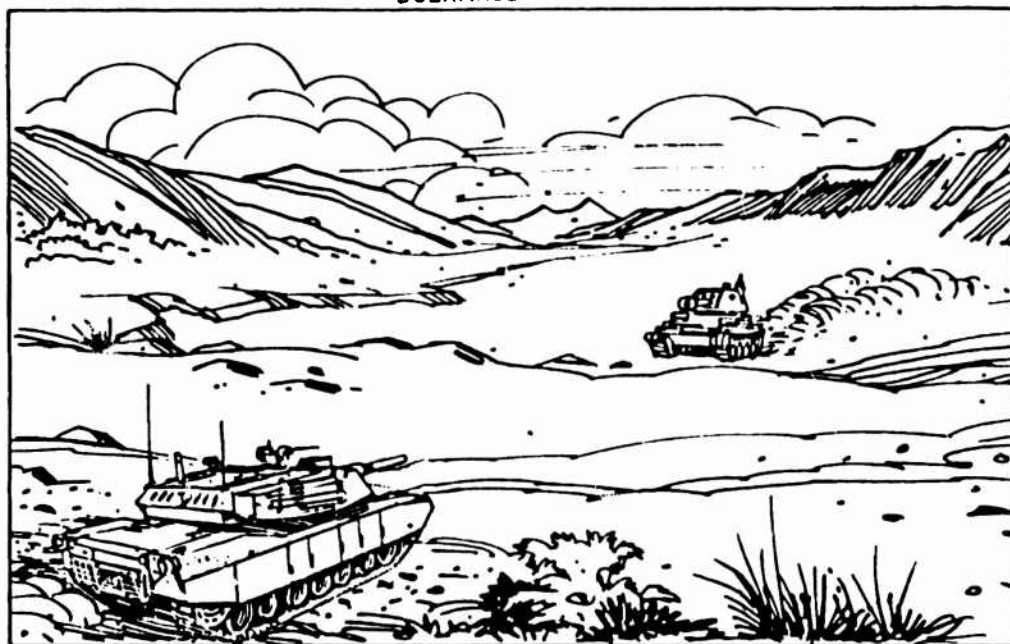
WRONG ANSWERS

- | |
|---|
| <p>A. Wrong target description, incorrect sequence of elements.</p> <p>B. Incorrect sequence of elements.</p> <p>D. Wrong target description.</p> |
|---|

20

209

SCENARIO 5



21

THE SITUATION

- You are attacking and have advanced to the enemy's main defensive belt.
- Your laser rangefinder is not operational; "F" in GPSE.
- Round loaded is SABOT; 2000 is displayed in GPSE.
- A self-propelled howitzer is direct front at 1000 meters.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
GUNNER SABOT TANK	GUNNER SABOT TANK INDEX ONE THOUSAND	GUNNER SABOT TANK ONE THOUSAND	GUNNER BATTLESIGHT TANK

22

210

SCENARIO 5 ANSWER

The correct answer is D: GUNNER
BATTLESIGHT
TANK

This fire command is correct because it has the right elements in the right order. The elements are:

- ALERT
- AMMUNITION/WEAPON (in this case, BATTLESIGHT)
- DESCRIPTION

Remember. This technique is the quickest and most preferred when targets are within battlesight range; 900 meters for HEAT, 1200 for SABOT.

23

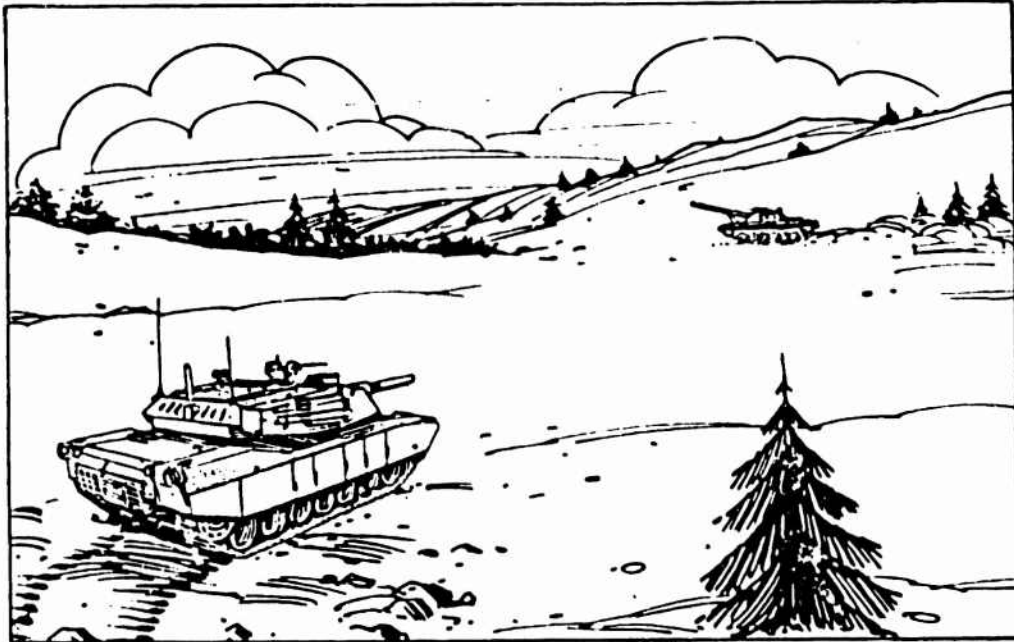
WRONG ANSWERS

- | |
|---|
| <p>A. Incorrect. Assumes a full-up fire control system.</p> <p>B. Requires time that is not available in this situation.</p> <p>C. Requires less time, but fails to take advantage of fire control system capabilities.</p> |
|---|

24

211

SCENARIO 6



25

THE SITUATION

- You are halted during a bounding overwatch maneuver.
- "F" remains in the GPSE; LRF has failed.
- GPSE range display shows 2000; SABOT is loaded.
- You see a T-72 moving across your direct front at 1000 meters.
- He has spotted you and is preparing to engage.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
GUNNER SABOT TANK	GUNNER SABOT TANK ONE THOUSAND	GUNNER SABOT TANK INDEX ONE THOUSAND	GUNNER BATTLESIGHT TANK

26

212

SCENARIO 6 ANSWER

Your correct answer is D: GUNNER
BATTLESIGHT
TANK

An "F" in the GPSE and the same range data after lasing means the laser rangefinder has failed. The quickest and most preferred method is the use of BATTLESIGHT, a degraded mode gunnery technique or method of target engagement.

27

WRONG ANSWERS

- A. That is the correct fire command for precision gunnery, but with the LRF out you need to consider degraded mode gunnery techniques.
- B. This fire command would be used if the GPS was inoperative.
- C. Not necessary since target is within battlesight range.

28

213

SCENARIO 7



29

THE SITUATION

- You are in a deliberate defense, turret down and well concealed.
- M1 is fully operational.
- Round loaded is HEAT.
- A T-72 at 1000 meters is detected. It does not see you.

What is your fire command?

A
GUNNER
HEAT
TANK

B
GUNNER
SABOT
TANK

C
GUNNER
HEAT
TANK ...
FIRE
FIRE SABOT

D
LOADER LOAD
SABOT THEN
HEAT

30

214

SCENARIO 7 ANSWER

The correct answer is B: GUNNER
SABOT
TANK

- In this situation, you are well concealed and the T-72 HAS NOT see you.
- You have enough time to unload the HEAT round and reload with SABOT, the BEST round for armor.
- The way you reload is to announce SABOT in the AMMUNITION element.
- The Loader will respond "SABOT UP", and the Gunner will change AMMUNITION SELECT switch from HEAT to SABOT.

31

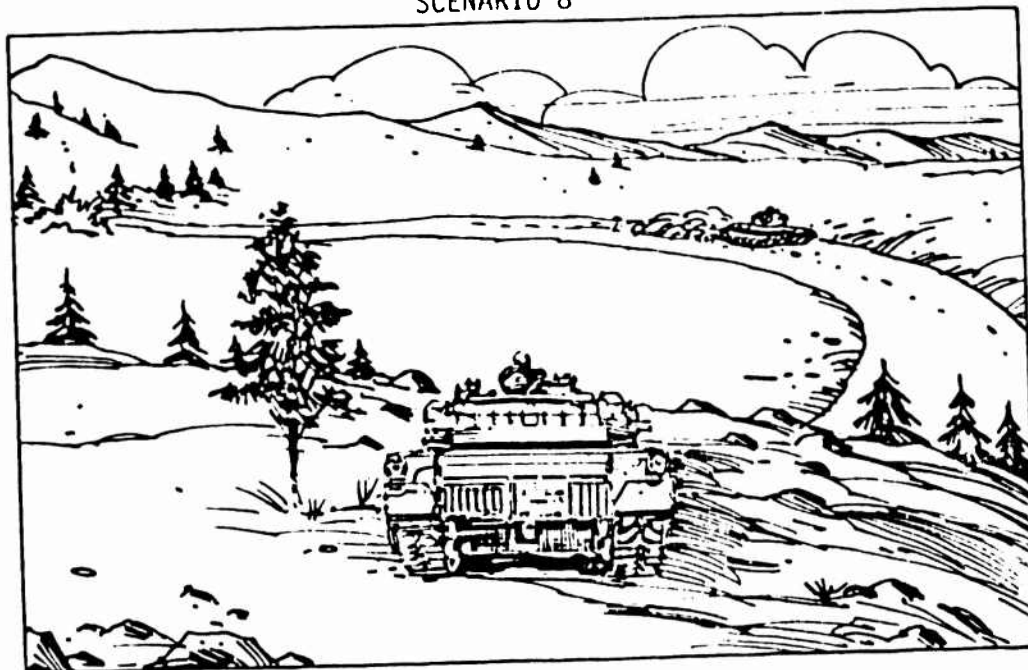
WRONG ANSWERS

- | |
|---|
| <p>A. HEAT is the 2d best round against armor. With time available, you should switch to SABOT.</p> <p>C. This is what you would do if you did not have time to change ammo.</p> <p>D. This is not a proper fire command element.</p> |
|---|

32

215

SCENARIO 8



22

THE SITUATION

- You are in a hasty defense, turret up and not well concealed.
- MI is fully operational.
- Round loaded is HEAT.
- You see a T-72 at 2000 meters.
- He has detected you and is preparing to engage.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
GUNNER	GUNNER	GUNNER	GUNNER
HEAT	SABOT	HEAT	TANK
TANK	TANK	TANK . . .	HEAT
		FIRE	
		FIRE SABOT	

34

216

SCENARIO 8 ANSWER

The correct answer is C: GUNNER
HEAT
TANK . . .
FIRE
FIRE SABOT

- You are detected and DO NOT have enough time to unload the HEAT round and reload with SABOT.
- You must shoot NOW, and reload with the BEST round for your next shot.
- The fire command tells the loader what kind of ammo to put in next, and for the Gunner to change his AMMUNITION SELECT switch.

35

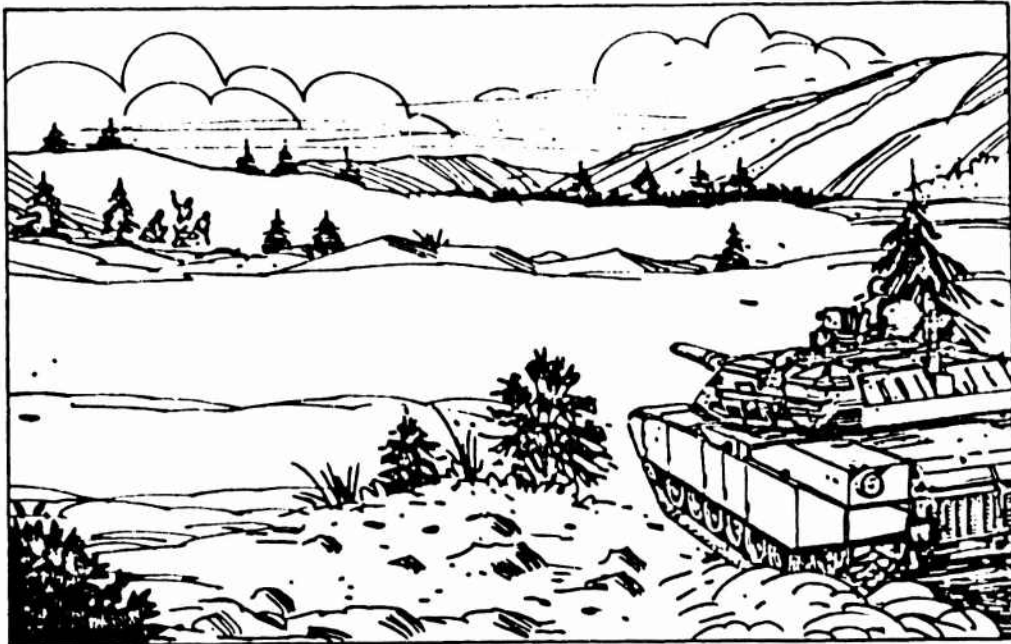
WRONG ANSWERS

- | |
|--|
| <p>A. If you announce this, the loader will reload the next round with HEAT.</p> <p>B. If you announce this, the loader will immediately unload the HEAT round, reload with SABOT, and announce SABOT UP. You'll lose a lot of time in getting off your first shot. This is NOT a good idea.</p> <p>D. Incorrect sequence of elements.</p> |
|--|

36

217

SCENARIO 9



37

THE SITUATION

- You are in a traveling overwatch maneuver.
- M1 is fully operational.
- Round loaded is SABOT.
- You see a manpack SAGGER team to your left at 750 meters.

What is your fire command?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
CAL .50 ANTITANK TEAM	LOADER M240 ANTITANK TEAM	GUNNER BEEHIVE ANTITANK TEAM	GUNNER COAX ANTITANK TEAM

38

218

SCENARIO 9 ANSWER

The correct answer is D: GUNNER
COAX
ANTITANK TEAM

This fire command contains the correct elements in the correct sequence. Use the target description that will convey the most information to your crew. In this case, the fire command could have used the target description SAGGER or MISSILE Team.

WRONG ANSWERS

- A. If you wanted to use the CAL .50, you could; however, it is not the most preferred weapon.
- B. The loader's M240 does not have an aiming reticle. Therefore it should be used only for area or aerial targets.
- C. BEEHIVE ammo is no longer included in the M1 ammunition inventory. Even if it was, it would have to have been preloaded to be considered for this engagement.

SCENARIO 10



THE SITUATION

- You are in a deliberate attack and have penetrated the enemy's forward defensive position.
- M1 is fully operational.
- Round loaded is SABOT.
- You see a BM-21 mounting 122 mm rocket launchers to your left at 1400 meters.

What is your fire command?

A
GUNNER
SABOT
TRUCK

B
GUNNER
COAX
TRUCK

C
GUNNER
CALIBER FIFTY
TRUCK

D
CALIBER FIFTY

SCENARIO 10 ANSWER

The correct answer is D: CALIBER FIFTY

Whenever the TC is going to engage a target with his Cal .50 machinegun, he only announces CALIBER FIFTY.

43

WRONG ANSWERS

- A. Not a bad choice, but save your main gun ammo and take him out with your CAL. 50.
- B. No, the truck is at 1400 meters. That's a little too far for the 7.62 mm. Remember, the COAX and M240 have a maximum effective range of 900 meters.
- C. No way! The gunner can't fire the CAL. 50 from his position.

44

221

SCENARIO 11



45

THE SITUATION

- M1 is fully operational.
- Round loaded is SABOT.
- Gunner has reported a Howitzer at 2000 meters.
- You have issued the fire command GUNNER-SABOT-TANK.
- You have announced ON and released the override.

What are the crew responses?

LOADER:

- A. UP B. HEAT C. SABOT UP D. SABOT

GUNNER:

- A. IDENTIFIED B. TARGET C. CANNOT IDENTIFY D. HOWITZER

46

222

SCENARIO 11 ANSWERS

The correct answers are: LOADER--A. UP
GUNNER--A. IDENTIFIED

The loader will always identify when the main gun is loaded for firing by announcing "UP". Once the gunner has observed the target announced by the TC, he will announce IDENTIFIED. If he cannot detect it or sees a target different from that announced by the TC, the gunner will announce CANNOT IDENTIFY.

47

WRONG ANSWERS

LOADER:

- B.
- C. } No such command.
- D. }

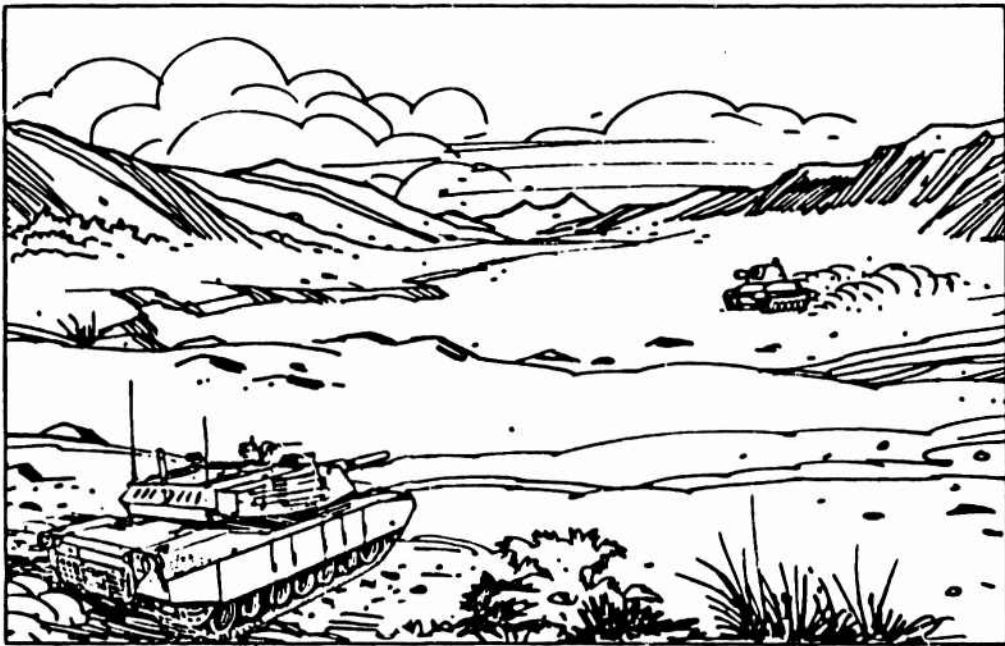
GUNNER:

- B. Wrong type of response. TARGET is an observation.
- C. Not likely since gunner reported target.
- D. Describes the target, but does not tell the TC you have acquired it.

48

223

SCENARIO 12



10

THE SITUATION (continued)

- Gunner lays on target and lases.
- GPSE indicates range is 1100 meters.
- You disagree.

What command should you give to the gunner?

A
FIRE

B
RELEASE

C
REENGAGE

D
CEASE FIRE

SCENARIO 12 ANSWER

The correct answer is B: RELEASE

The TC will always make sure that the range data is correct, in his estimation. If it is not correct, he will announce RELEASE to have the gunner lase again. If it is still not correct, the TC should:

- Press the MANUAL RANGE BATTLE SET button.
- Use the MANUAL RANGE ADD/DROP switch until the correct range is displayed in GPSE.
- Announce FIRE.

51

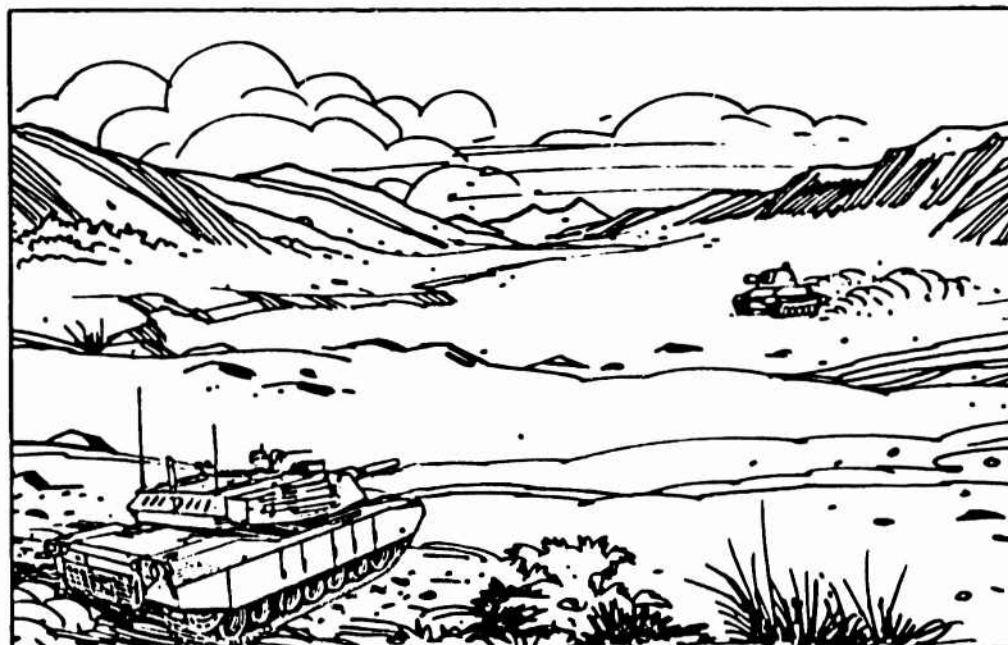
WRONG ANSWERS

- | |
|---|
| <p>A. NU! The range to target is about 900 meters short.</p> <p>C. This is a direct fire adjustment command.</p> <p>D. NOT if you want to stay alive.</p> |
|---|

52

225

SCENARIO 13



53

THE SITUATION (continued)

- The range display shows 2000 and you command FIRE.
- Gunner announces ON THE WAY and fires.
- SABOT round falls short of target.

What are the crew responses?

LOADER:

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
UP	SABOT	SABOT UP	AMMO

GUNNER:

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
SHORT	SHORT - ADD ONE	SHORT - REENGAGING	DROP ONE

54

226

SCENARIO 13 ANSWERS

The correct answers are: LOADER--A. UP
GUNNER--C. SHORT - REENGAGING

NOTE: When firing SABOT, the only method of direct fire adjustment is the reengage technique. When firing HEAT, the gunner or TC, if they have an observation of SHORT, OVER, and DOUBTFUL, will announce their intended correction(s). For example:

SHORT - ADD ONE

55

WRONG ANSWERS

LOADER:

- B. Not a loader response.
- C. ONLY if TC changed from HEAT to SABOT.
- D. Announced if loader didn't hear or forgot the ammo announced by the TC.

GUNNER:

- A. No longer announced by itself. When firing SABOT ammunition, gunner must also announce REENGAGING.
- B. Announced if HEAT was fired, but it wasn't.
- D. Intended correction is wrong, not announced when firing SABOT.

56

227

SCENARIO 14



57

THE SITUATION (continued)

- Gunner relays and releases to the target.
- TC agrees with range; remains silent.
- Gunner announces ON THE WAY and fires.
- Round hits the target, dead center.
- The loader announces UP.

What are the other crew responses?

GUNNER:

A
REENGAGING -
TARGET

B
TARGET

C
TARGET -
REENGAGING

D
CEASE FIRE

TC:

A
TARGET

B
LOST

C
TARGET -
CEASE FIRE

D
CEASE FIRE

58

SCENARIO 14 ANSWERS

The correct answers are: GUNNER--C. TARGET - REENGAGING
TC--D. CEASE FIRE

The gunner should announce his observation and intentions to reengage the target until the TC either ends the engagement or issues a subsequent fire command.

The TC only has to announce CEASE FIRE to end the engagement if he feels the target is destroyed. He may announce his observation beforehand (TARGET), but it is not necessary.

Remember. If the target was not hit, the TC should:

- Announce CEASE FIRE.
- Issue a new fire command using HEAT ammo and the GAS.

59

WRONG ANSWERS

GUNNER:

- A. Wrong sequence.
- B. Incomplete response (observation only).
- D. ONLY announced by gunner if he has been told to FIRE and ADJUST by TC.

TC:

- A. } Do absolutely nothing for the engagement.
- B. }
- C. Okay, but not necessary.

60

229

This M1 Fire Command booklet is a
prototype training document. For
comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-1K
Steele Hall
Fort Knox, KY 40121

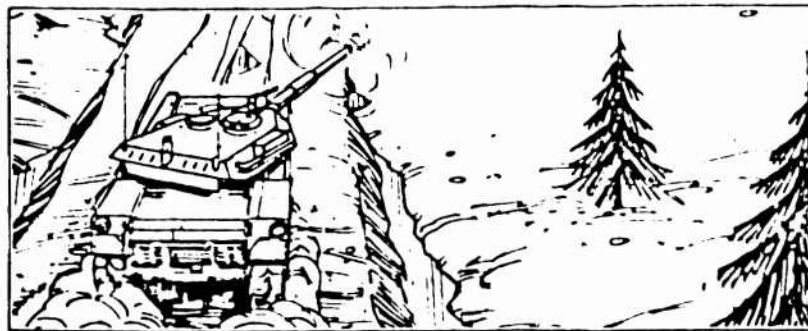
Autovon: 464-4932
Commercial: (502) 624-4932

FIRE COMMANDS for the
M1 TANK

SINGLE TARGET ENGAGEMENTS

BOOKLET

5



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11-E

BOOKLET NUMBER 5

SINGLE TARGET ENGAGEMENTS

USER'S GUIDE

This is booklet number 5 in a set of six booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN
OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE
OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to win on the battlefield, you must be able to construct a correct fire command.

1

THIS BOOKLET

This booklet will give you practice in constructing fire commands for single target engagements.

The booklet contains battlefield scenarios. Each scenario includes:

- A picture of the battlefield.
- A short written description of the battlefield situation.
- A question for you to answer.

2

HOW TO USE THIS BOOKLET

1. Look at the scenario picture.
2. Read the written description.
3. Read the question following the description.

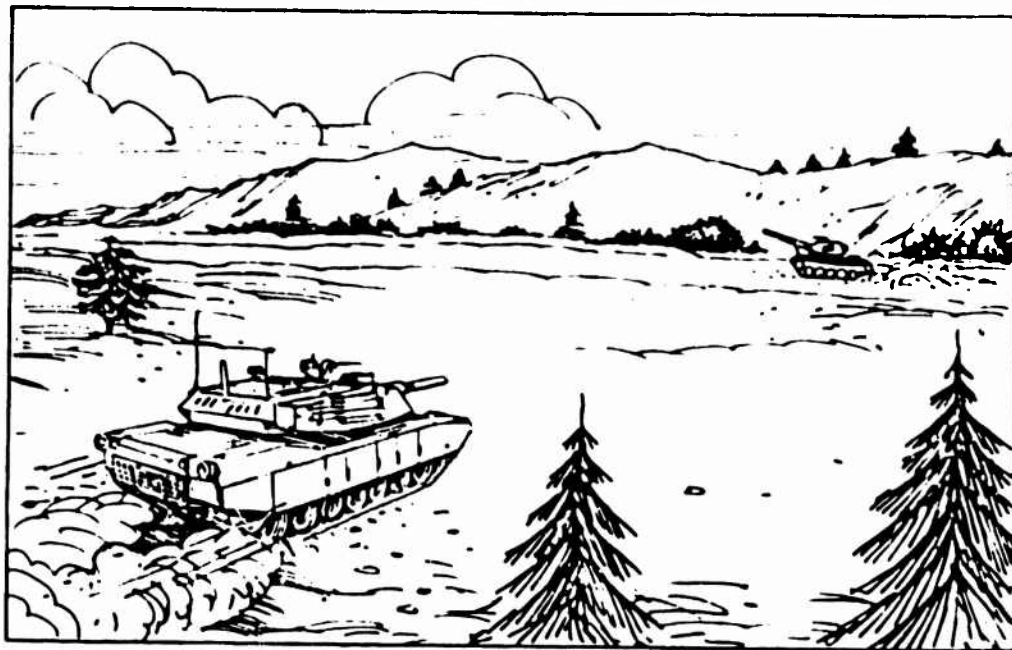
NONE OF THE QUESTIONS HAVE ANSWERS.
YOU MUST PROVIDE YOUR OWN ANSWER.

4. Check your answer with the Answer Key on the page following the scenario.
5. Refer to:
 - FM 17-12-1if you have any further questions.
6. Complete the rest of the scenarios.

BEFORE YOU USE THIS BOOKLET

Before you use this booklet, be sure you have completed booklet 1 of this set.

SCENARIO 1



5

THE SITUATION

- You are in a hasty attack.
- You meet a T-72 moving off to your right, about 1880 meters away.
- The T-72 sees you.
- Round loaded is SABOT.
- M1 is fully operational.

What is your fire command?

What are the crew responses?

(Assume a first round hit.)

For these scenarios you are to write down your answers on a separate sheet of paper, then turn the page to compare answers.

6

SCENARIO 1 ANSWER

Your fire command should look like this:

TC:	GUNNER SABOT MOVING TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET- REENGAGING
Loader:	UP
TC:	CEASE FIRE

This fire command is correct because it contains all of the right elements and crew responses in the correct order.

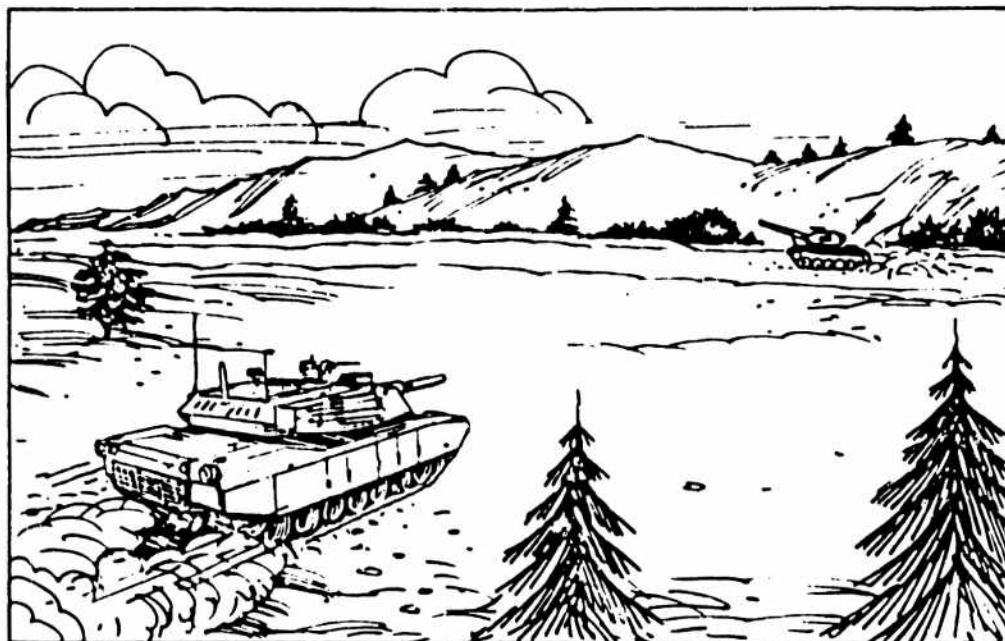
7

WRONG ANSWERS

NOTE:

If you made a mistake in this booklet on fire command and/or crew responses, refer back to Booklet #1 "OVERVIEW OF FIRE COMMANDS" for an explanation. For more information, refer to FM 17-12-1.

SCENARIO 2



9

THE SITUATION

- You are in a hasty attack.
- You meet a T-72 moving in from your right, range 1500 meters.
- The T-72 sees you.
- Round loaded w/ HEAT.
- M1 is fully operational.

What is your fire command?

What are the crew responses?

(Assume a first round hit.)

10

236

SCENARIO 2 ANSWER

The best fire command is:

TC: GUNNER
HEAT
MOVING TANK . . .

Loader: UP

Gunner: IDENTIFIED

TC: FIRE
FIRE SABOT

Gunner: ON THE WAY
TARGET-REENGAGING

Loader: SABOT UP

TC: CEASE FIRE

11

Your fire command should include the information that says the tank is moving.

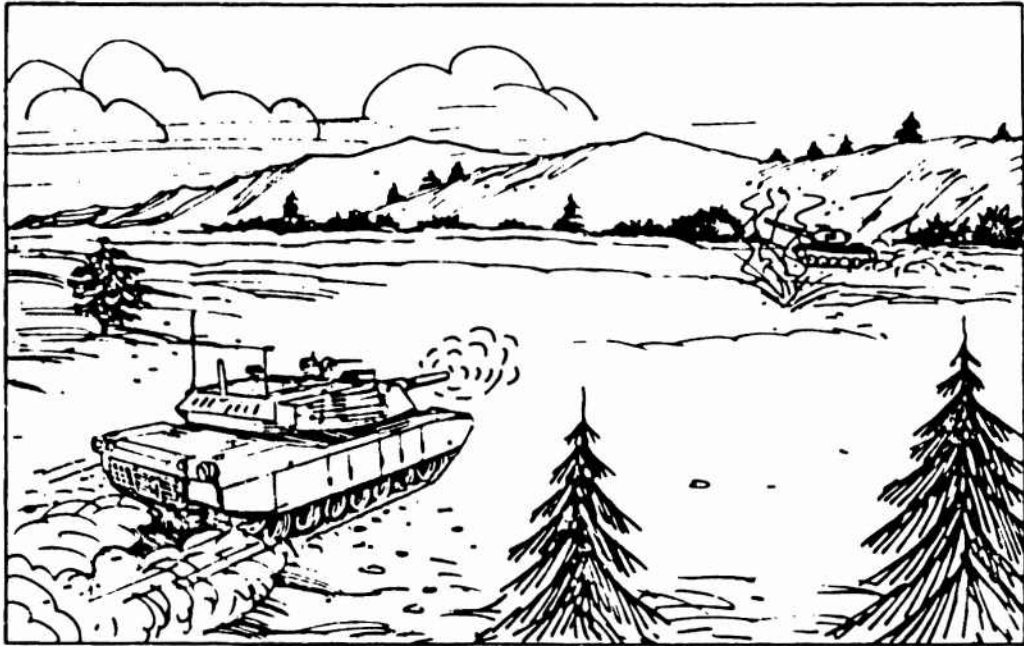
You should fire off the HEAT round that is in the tube because the T-72 is a MOST DANGEROUS THREAT (he can kill you, he has seen you, and he is preparing to engage you).

You should also tell the loader you want your next round to be SABOT in case you have to reengage this target.

12

237

SCENARIO 3



13

THE SITUATION (Continued)

- You are in a hasty attack.
- M1 is fully operational.
- You just fired a SABOT round at the T-72, range 1880 meters.
- The round falls short. Gunner announces SHORT-REENGAGING.
- You agree with the gunner's observation.

What is your next command, if any?

14

238

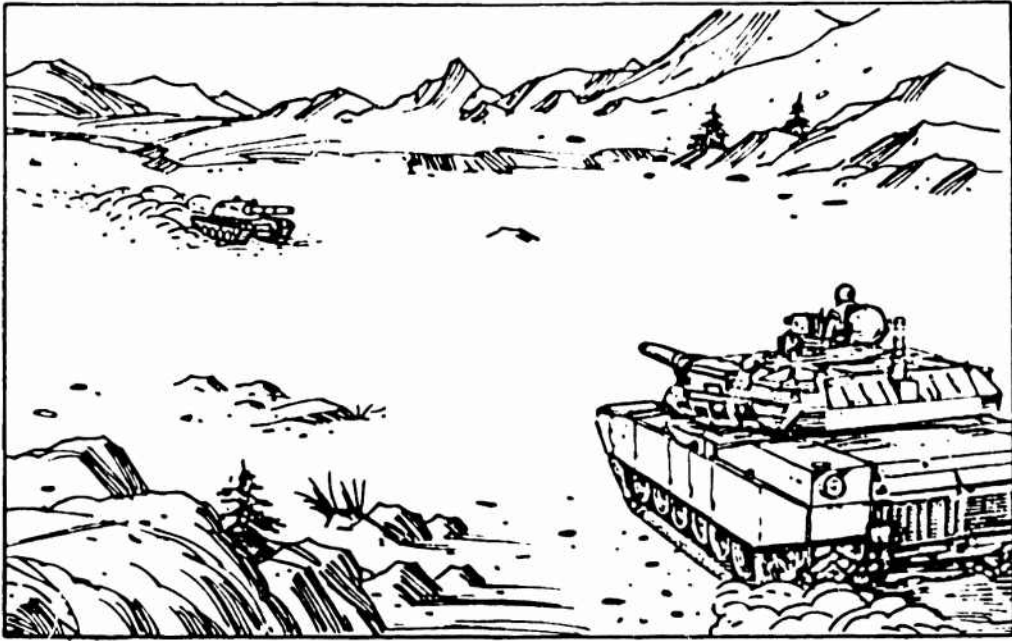
SCENARIO 3 ANSWER

You remain silent.

Your M1 is fully operational. The direct fire adjustment made when using precision gunnery, firing SABOT, is to REENGAGE. If the TC had a definite observation, he could issue a subsequent fire command.

As long as you remain silent the gunner will continue to fire at the target and the loader will reload with the ammunition announced in the initial fire command.

SCENARIO 4



17

THE SITUATION

- You are in a hasty attack.
- Round loaded is SABOT.
- You see a T-62 at 1200 meters.
- LRF has failed; "F" is in GPSE.
- Range in GPSE remains unchanged; 2810.

What is your fire command? What are the crew responses?
(Assume a first round hit.)

18

240

SCENARIO 4 ANSWER

The correct fire command is:

TC:	GUNNER BATTLESIGHT TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	CEASE FIRE

19

It is very important to know that in this engagement you would use the BATTLESIGHT technique, a method of degraded mode gunnery. You should realize BATTLESIGHT is needed because:

- "F" symbol is in the GPSE, and
- Range data in GPSE does not change after lasing.

This tells you the laser rangefinder has FAILED.

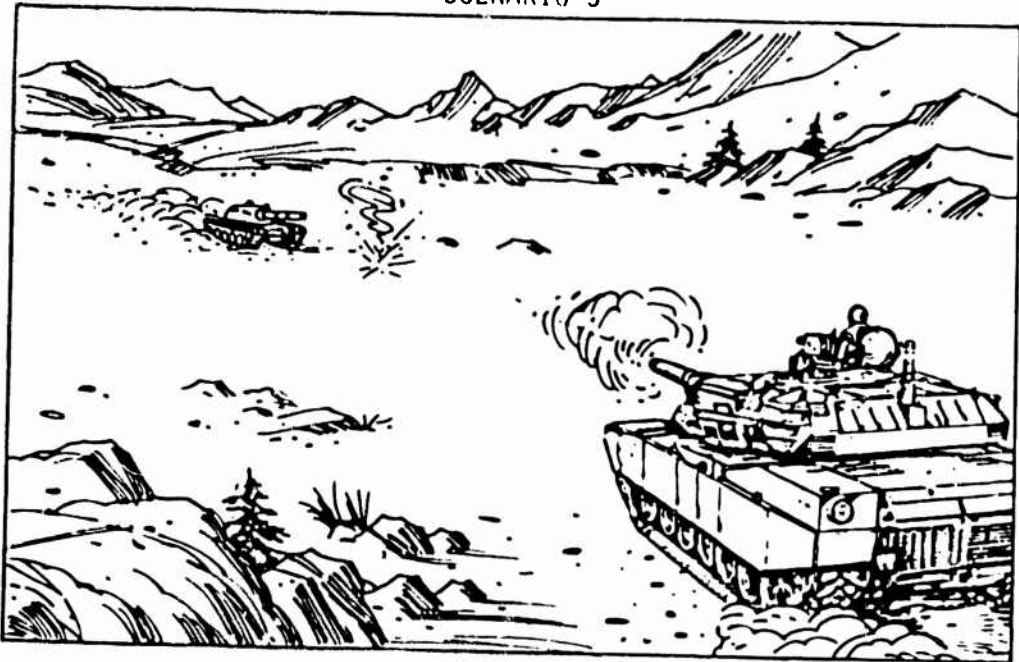
- Target is MOST DANGEROUS.
- You MUST respond immediately.

This tells you to use BATTLESIGHT.

20

241

SCENARIO 5



21

THE SITUATION

- Pretend you just fired a SABOT round at the T-62 using BATTLESIGHT and the round misses; LRF is out.
- The gunner announces SHORT-REENGAGING.
- Your observation agrees with his.

What is your next fire command, if any, in this situation?

22

242

SCENARIO 5 ANSWER

You should remain silent.

REMEMBER:

The reengage method of direct fire adjustment is performed with a fully operational fire control system. In this scenario, the LRF has failed. However, due to obscuration and time of flight it is almost impossible to observe SABOT at ranges under 2000 meters.

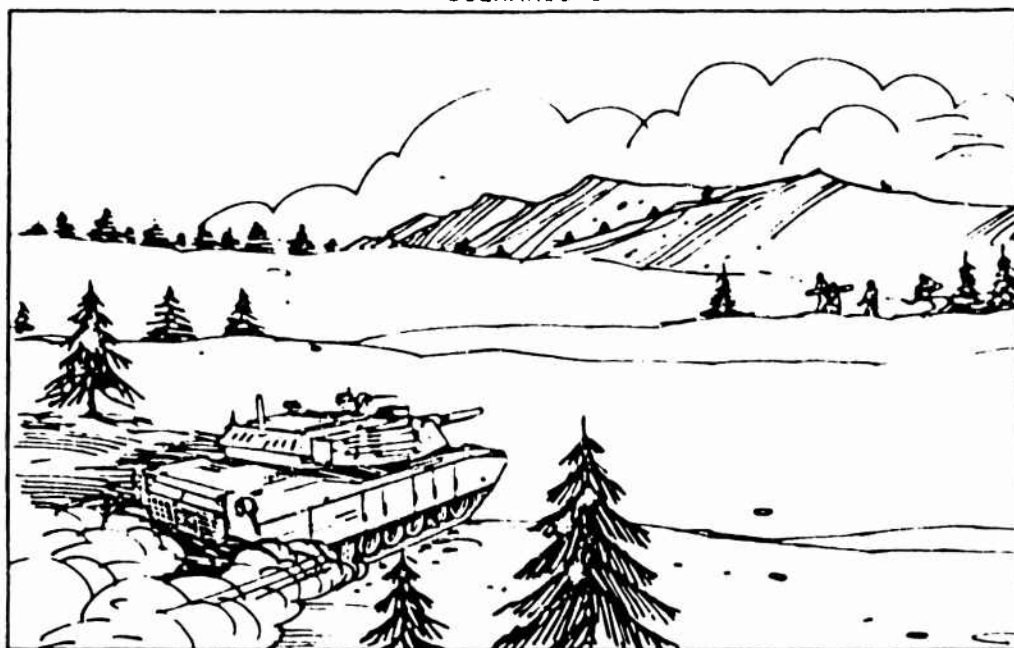
23

According to FM 17-12-1, you may give a subsequent fire command, using a 1-mil correction for range only, if you had a definite observation.

24

243

SCENARIO 6



25

THE SITUATION

- You are in a deliberate attack.
- M1 is fully operational.
- Round loaded is SABOT.
- You see an SPG-9 recoilless anti-tank gun set up and ready to fire at you, range 1000 meters.

What is your fire command? What are the crew responses?
(Assume target destruction with first shot.)

26

244

SCENARIO 6 ANSWER

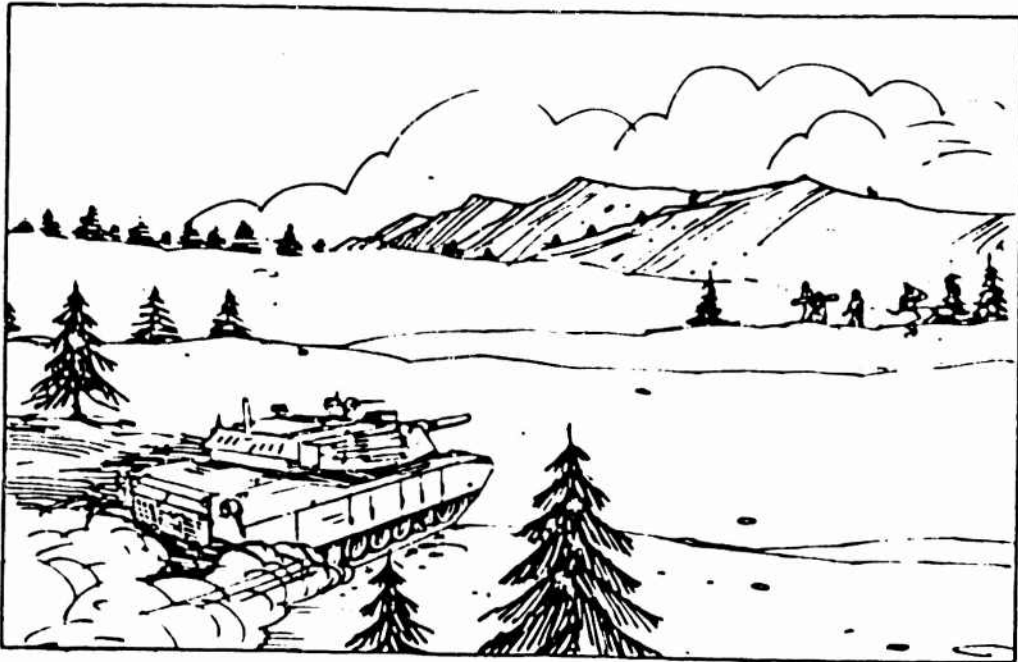
You should engage the SPG-9 with your CAL. 50. It is out-of-range for the COAX (900 meters maximum for the 7.62 mm).

The fire command should be:

TC: CALIBER FIFTY

TC COMPLETE

SCENARIO 7



29

THE SITUATION

- You are in a deliberate attack.
- LRF has failed; "F" is in GPSE.
- Range in GPSE remains unchanged; 2810.
- Round loaded is HEAT.
- You see an SPG-9 recoilless antitank gun that is set up and ready to fire at you, range 750 meters.

What is your fire command? What are the crew responses?

30

246

SCENARIO 7 ANSWER

The BEST fire command is:

TC: GUNNER
COAX
ANTITANK . . .

Gunner: IDENTIFIED

TC: FIRE

Gunner: ON THE WAY
TARGET

TC: CEASE FIRE

31

Yes, you could have used the CAL .50, but the target was within the effective range of the COAX. The M1 carries more of the 7.62mm ammo than it does CAL .50. It's better to save the CAL .50 ammo for targets that are out of maximum effective range of the COAX.

32

247

SCENARIO 8



33

THE SITUATION (Continued)

- You are engaging the SPG-9 at a range of 750 meters with the COAX.
- The gunner fires one burst (20-30 rounds),
- Rounds strike short of the target and to the right.

What commands could you give to assist the gunner?

34

248

SCENARIO 8 ANSWER

You should have said something like:

- BRING IT LEFT
- BRING IT UP

Remember: TC announces adjustment of COAX fire in the shortest possible terms. On completion of the engagement, the TC will announce CEASE FIRE.

35

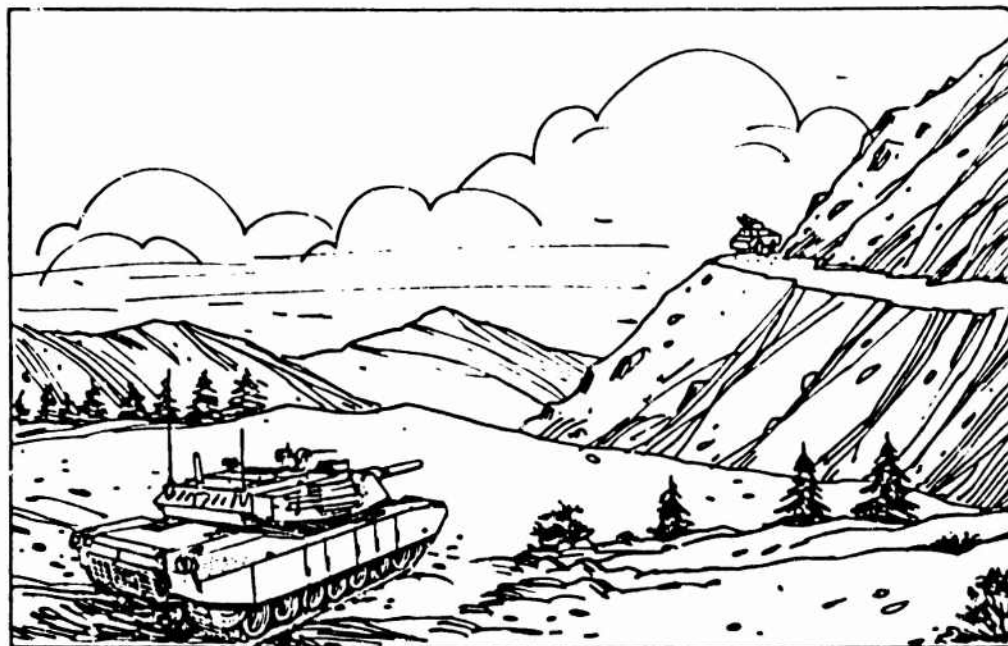
IMPORTANT:

When firing the COAX against point or area targets, the gunner or tank commander should lase to the target's center-of-mass. If not, the range data from the previous engagement will become part of the ballistic solution. The turret controls are then used after the initial burst to adjust fire.

36

249

SCENARIO 9



37

THE SITUATION

- You are in a bounding overwatch.
- You see a BRDM mounting SAGGER missiles, range 2000 meters.
- He is stopped and preparing to launch a missile.
- M1 is fully operational.
- Round loaded is SABOT.

What is your fire command?
What are the crew responses?

(Assume a first round hit.)

38

250

SCENARIO 9 ANSWER

The best fire command is:

TC:	GUNNER SABOT ANTITANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE FIRE HEAT
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	HEAT UP
TC:	CEASE FIRE

39

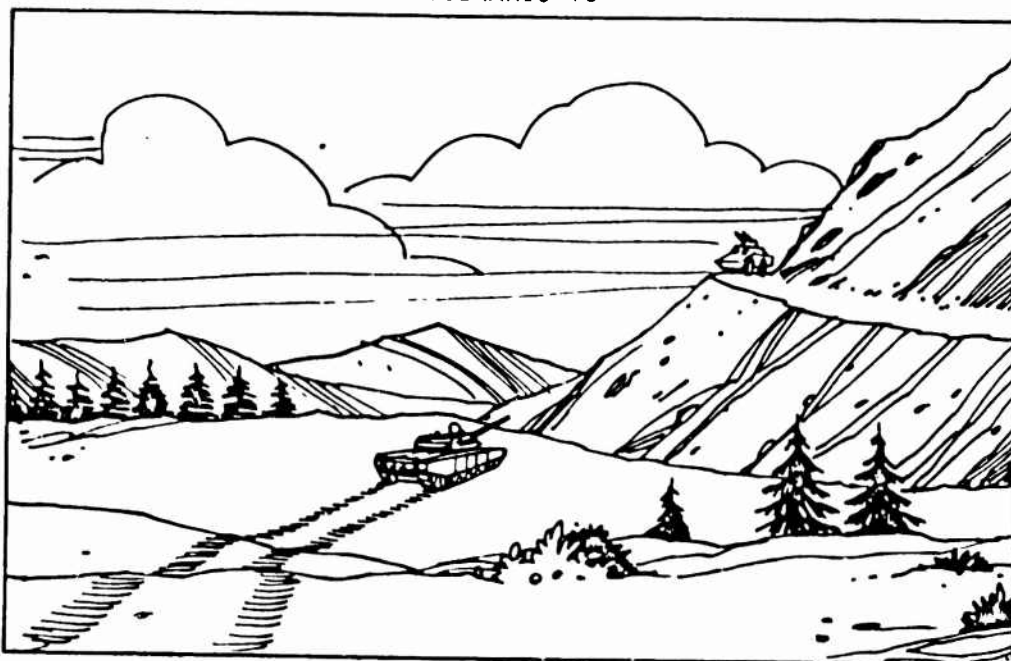
This is a MOST DANGEROUS THREAT situation. Therefore, you must fire the SABOT round at the BRDM without delay.

Since HEAT is the best ammo for the target, and the loader can load the HEAT round just as quickly as a SABOT round, change ammo just in case you have to fire a second round.

40

251

SCENARIO 10



41

THE SITUATION

- You are conducting a bounding overwatch maneuver.
- You see a BRDM mounting SAGGER missiles at 1000 meters.
- He is stopped and preparing to fire at you.
- LRF is not operational; "F" is in GPSE.
- Range in GPSE remains unchanged; 2010 meters.
- Round loaded is HEAT.

What is your fire command?

What are the crew responses?

(Assume a first round hit.)

42

252

SCENARIO 10 ANSWER

The best fire command is:

TC:	GUNNER BATTLESIGHT TANK . . .
Gunner:	IDENTIFIED
Loader:	UP
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	CEASE FIRE

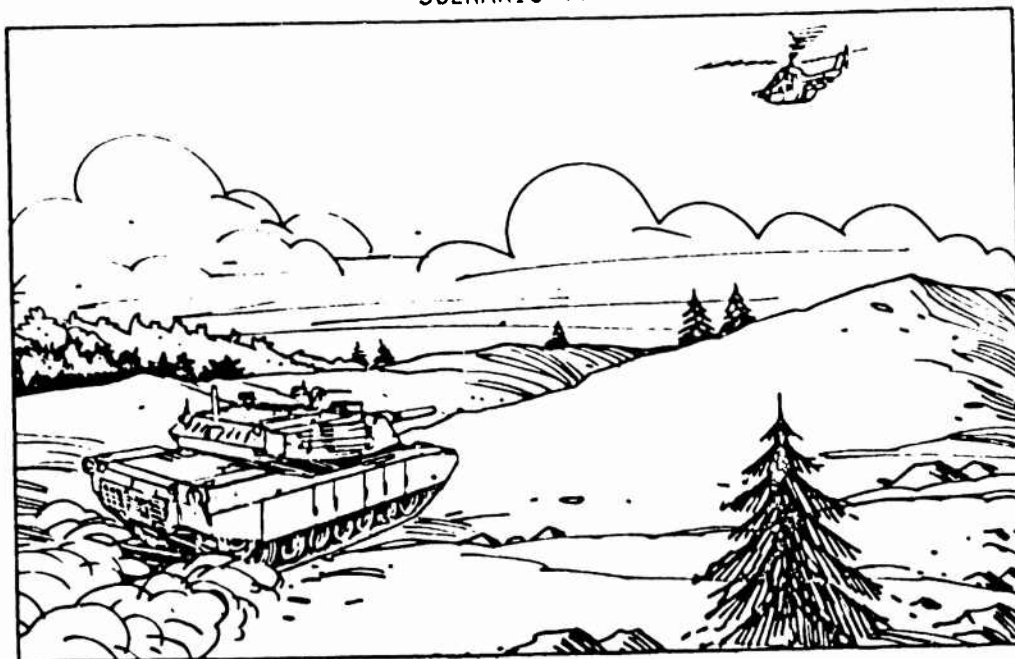
43

The BRDM is within the maximum effective range of the Cal .50 target. It could be used to engage the target, but is not the preferred choice given the threat is MOST DANGEROUS.

44

253

SCENARIO 11



45

THE SITUATION

- You are in a traveling overwatch.
- All crewmembers are acting as observers.
- M1 is fully operational.
- Round loaded is SABOT.
- A HIND-D helicopter mounting SAGGER missiles begins a pass at you, about 400 meters high, at a range of 1000 meters.

What is your fire command?

What are the crew responses?

(Assume a first round hit.)

46

254

SCENARIO 11 ANSWER

The best fire command is:

TC: GUNNER
SABOT
CHOPPER . . .

Loader: UP

Gunner: IDENTIFIED

TC: FIRE

Gunner: ON THE WAY
TARGET - REENGAGING

Loader: UP

TC: CEASE FIRE

47

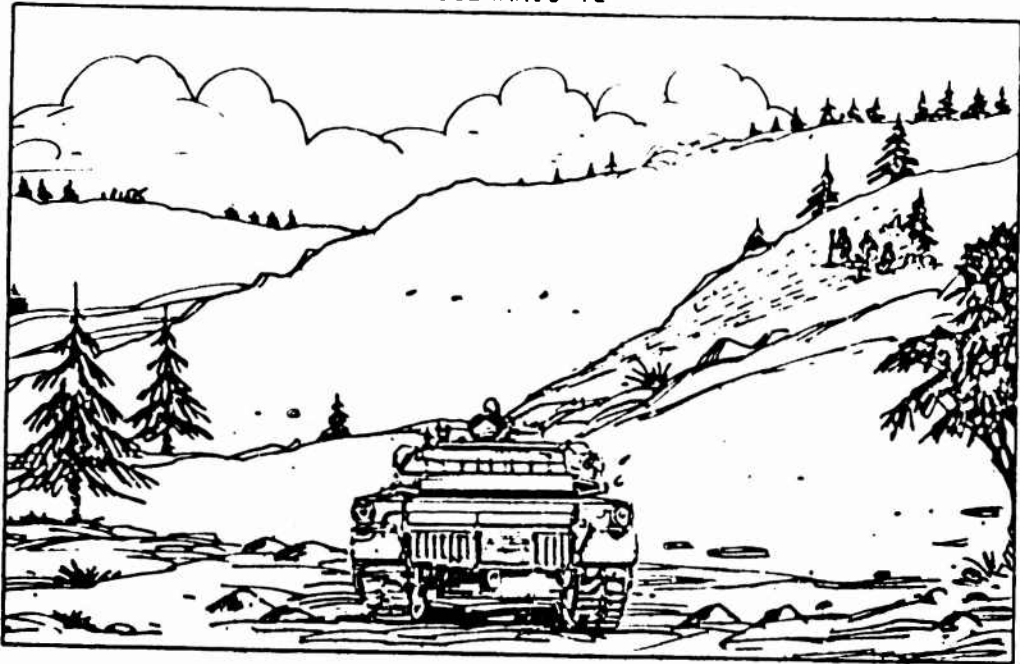
The HIND-D helicopter is a MOST DANGEROUS THREAT. It is heavily armored and should be engaged with the main gun. Which main gun ammo is BEST is debatable, but since SABOT is already loaded, it should be used to complete the engagement.

This is a very difficult engagement. The driver MUST be prepared to take evasive action if the target is not destroyed.

48

255

SCENARIO 12



49

THE SITUATION

- You are in a traveling overwatch maneuver.
- All crewmembers are acting as observers.
- Suddenly, without saying a word or giving warning, the loader opens fire on an RPG-7 to the right of the main gun center line. He destroys it. The loader turns to you and says "I got that sucker."

Identify what's wrong here!

50

256

SCENARIO 12 ANSWER

There are several errors in this scenario.

1. When the loader is acting as an observer, he should report the target to the tank commander. He MUST NOT initiate his own fire commands.
2. The loader's machinegun does not have an aiming reticle; therefore, it should be used only for area or aerial targets.
3. The loader's machinegun should only be fired at targets to the left of the main gun center line. This is necessary to avoid damaging thermal shrouds, bore evacuator, or the MRS.

This M1 Fire Command booklet is a
prototype training document. For
comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-IK
Steele Hall
Fort Knox, KY 40121

Autovon: 464-4932
Commercial: (502) 624-4932

FIRE COMMANDS for the
M1 TANK

BOOKLET

MULTIPLE/SIMULTANEOUS
TARGET ENGAGEMENTS

6



FOR RESEARCH PURPOSE ONLY

NOT FOR DISTRIBUTION

US ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

RP 84-11-F



BOOKLET NUMBER 6

MULTIPLE/SIMULTANEOUS TARGET ENGAGEMENTS

USER'S GUIDE

This is booklet number 6 in a set of six booklets. The set deals with issuing fire commands on the M1 tank. When you have finished the complete set you will be able to:

ISSUE A CORRECT FIRE COMMAND FOR THE MAIN GUN OR ANY MACHINEGUN IN EITHER SINGLE, MULTIPLE OR SIMULTANEOUS TARGET ENGAGEMENTS.

BACKGROUND

In order to win on the battlefield, you must be able to construct a correct fire command.

1

THIS BOOKLET

This booklet will give you practice in constructing fire commands for multiple and simultaneous engagements.

The booklet contains battlefield scenarios. Each scenario includes:

- A picture of the battlefield.
- A short written description of the battlefield situation.
- A question for you to answer.

2

HOW TO USE THIS BOOKLET

1. Look at the scenario picture.
2. Read the written description.
3. Read the question following the description.

SOME QUESTIONS ARE FOLLOWED BY A LIST OF POSSIBLE ANSWERS. FOR THESE QUESTIONS, YOU SHOULD SELECT THE CORRECT ANSWER.

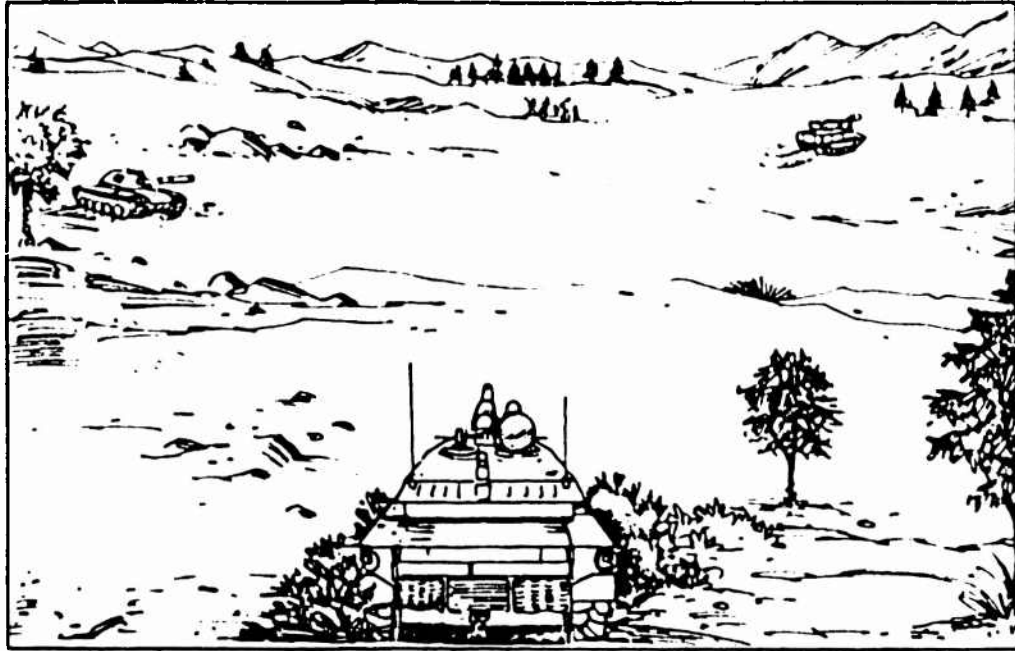
SOME QUESTIONS DO NOT HAVE ANSWERS. FOR THESE QUESTIONS YOU MUST PROVIDE YOUR OWN ANSWER.

4. Check your answer with the Answer Key on the page following the scenario.
5. Refer to:
 - FM 17-12-1if you have any further questions.
6. Complete the rest of the scenarios.

BEFORE YOU USE THIS BOOKLET

Before you use this booklet, be sure you have complete booklet 1 of this set.

SCENARIO 1



5

THE SITUATION

- You are in a bounding overwatch maneuver.
- M1 is fully operational.
- Round loaded is SABOT.
- A T-72 is detected to your left at 1700 meters; he sees you.
- A 122 mm self-propelled howitzer is moving away at 2500 meters.
- At your direct front is a T-12A antitank gun at more than 3000 meters.

What kind of target engagement is required in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Multiple target	Simultaneous target	Single target	Multiple/Simultaneous

6

SCENARIO 1 ANSWER

You should have selected A: Multiple target

This is a multiple target engagement because the main gun should be used against all three targets.

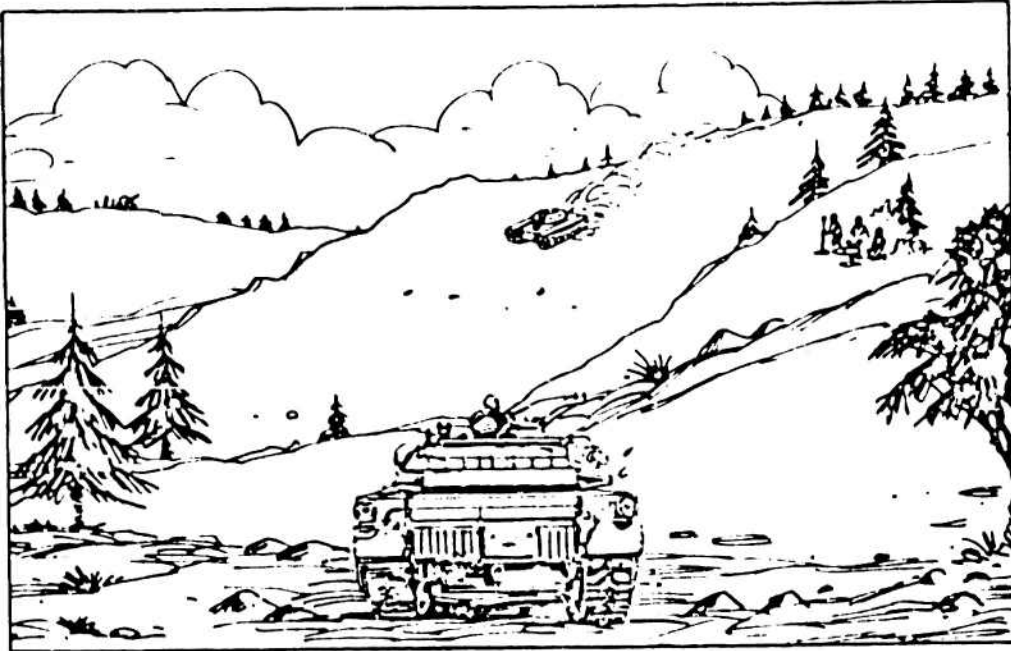
7

WRONG ANSWERS

- | |
|--|
| <p>B. TC should not be engaging targets beyond the maximum effective range of the CAL .50.</p> <p>C. There is more than one target.</p> <p>D. See B above.</p> |
|--|

8

SCENARIO 2



9

THE SITUATION

- You are in a deliberate attack.
- Your mission is to destroy enemy armor.
- Round loaded is SABOT.
- You are advancing rapidly.
- Your M1 is fully operational.
- You see a dismounted SAGGER team off to your right, range 750 meters. It is ready for launch. The crew has seen you.
- There is a T-62 directly in front of you, range 1400 meters. His tube swings toward you.
- A T-12 antitank unit to your left is providing area fire. The unit is located more than 3000 meters from you.

What kind of target engagement is required in this situation?

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Multiple target	Simultaneous target	Single target	Multiple/Simultaneous

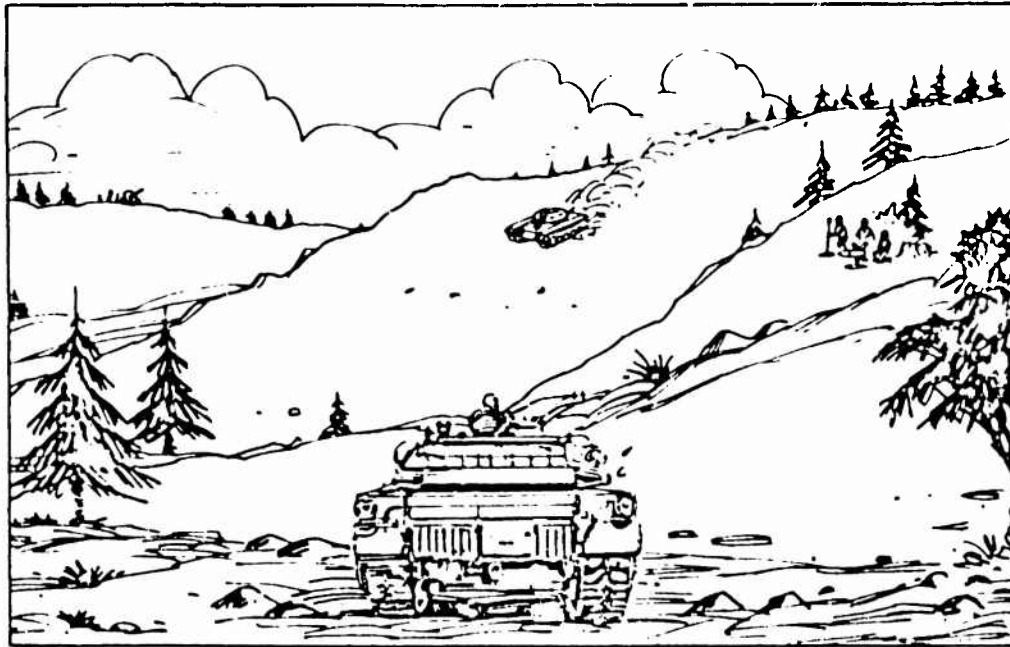
10

SCENARIO 2 ANSWER

The correct answer is D: Multiple/simultaneous

There are two MOST DANGEROUS threats. Both must be engaged quickly if the tank crew is to survive. The third target is a DANGEROUS threat which will engage you once the firing starts. You must prepare the crew to engage all targets.

SCENARIO 3



13

THE SITUATION (Continued)

- You are in a deliberate attack.
- Your mission is to destroy enemy armor.
- Round loaded is SABOT.
- You are advancing rapidly.
- Your M1 is fully operational.
- You see a dismounted SAGGER team off to your right, range 750 meters. It is ready for launch. The crew has seen you.
- There is a T-12 directly in front of you, range 1400 meters. His tube swings toward you.
- A T-12 antitank unit to your left is providing area fire. The unit is located more than 3000 meters from you.

What is your fire command?

What are the crew responses?

(Sorry, no choices. Write down your answer, then turn the page.)

14

266

SCENARIO 3 ANSWER

The fire command and crew responses for this multiple/simultaneous engagement should be:

TC: GUNNER
SABOT
TWO TANKS, RIGHT TANK. . .

Loader: UP

Gunner: IDENTIFIED

TC: FIRE AND ADJUST, CALIBER FIFTY

Gunner: ON THE WAY
TARGET
LEFT TANK IDENTIFIED

Loader: UP

TC: TC COMPLETE

Gunner: ON THE WAY
TARGET-REENGAGING

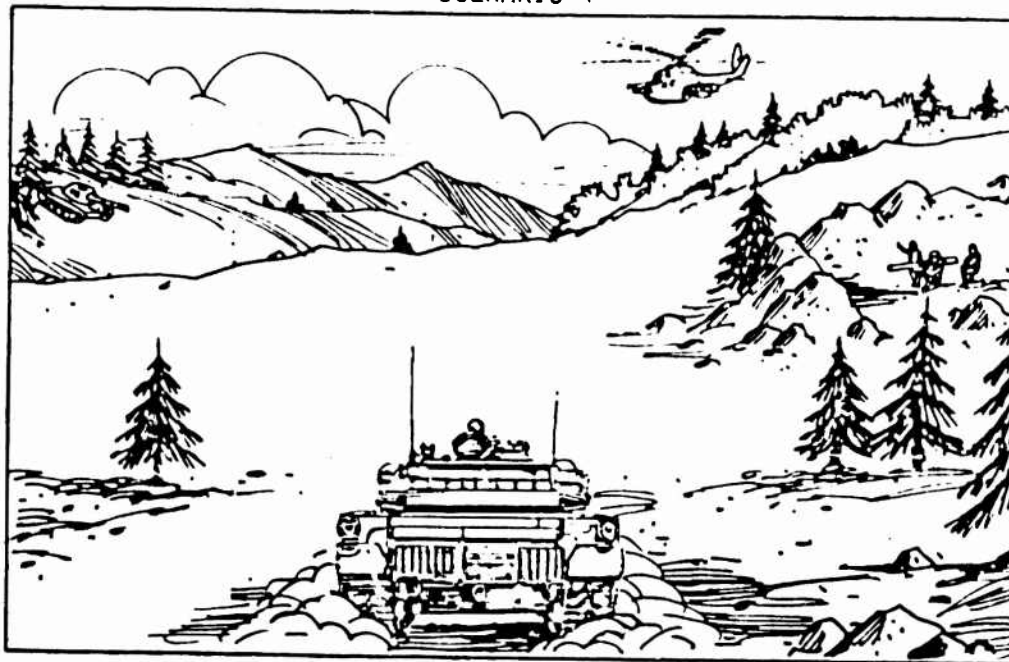
Loader: UP

TC: CEASE FIRE

15

NOTE: The TC should enter into a simultaneous or multiple simultaneous engagement only as a last resort. Whenever possible, the TC should keep his attention focused on the engagement requiring the tank's main gun.

SCENARIO 4



17

THE SITUATION

- You are under heavy attack. Enemy forces have overrun many friendly defensive positions.
- You are trying to re-group and establish a good defensive position. You are not there yet.
- You see a 73 mm recoilless antitank gun set up in some woods off to your right. Its range is about 1000 meters. He is ready to shoot.
- A T-72 is coming through the woods off to your left, over 4000 meters away.
- A HIND helicopter with SAGGER ATGM mounted on rails comes over the tree line, sees you, and lines up for a launch.
- Round loaded is SABOT.
- M1 is fully operational.

What type of engagement is required? What is your fire command?
What are the crew responses?

(Assume first round hits.)

18

268

SCENARIO 4 ANSWER

This would be a SIMULTANEOUS engagement because there are two (2) MOST DANGEROUS threats. (The HIND and 73 mm recoilless antitank gun). The T-72 is DANGEROUS at 4000 meters.

The fire command and crew responses should be:

TC:	GUNNER SABOT CHOPPER . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE AND ADJUST, CALIBER FIFTY
Gunner:	ON THE WAY TARGET - CEASE FIRE
Loader:	UP
TC:	TC COMPLETE

NOTE: The TC should now issue a fire command to engage the T-72 detected earlier at more than 3000 meters away. This would be a single target engagement, and the fire command and crew responses (assuming a 1st round hit) would be:

TC:	GUNNER SABOT MOVING TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	CEASE FIRE

SCENARIO 5



21

THE SITUATION

- You are in a traveling overwatch.
- All crewmembers are acting as observers.
- The M1 is fully operational.
- Two MIG-23s make a pass over you, turn around, and start back toward you.

What type of engagement is required?

What is your fire command?

What are the crew responses?

(Assume first round hits.)

22

270

SCENARIO 5 ANSWER

This is a simultaneous engagement using both the loader's M240 and the TC's CAL. 50 against the aircraft.

The fire command and crew responses should be:

TC: LOADER
 TWO FORTY
 AIRCRAFT, TWELVE O'CLOCK ...

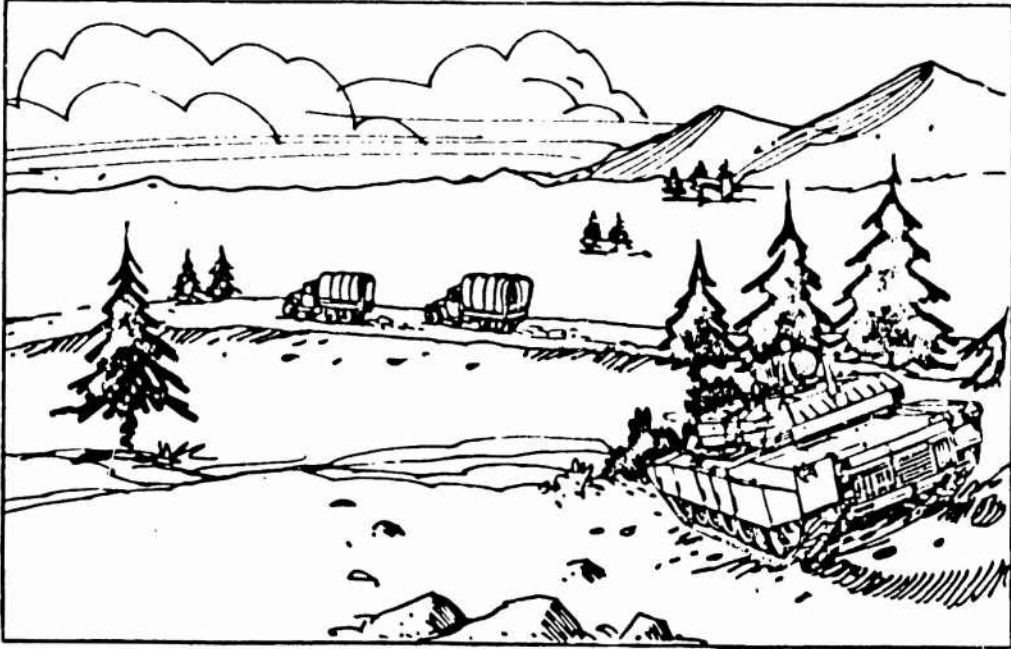
Loader: IDENTIFIED

TC: FIRE AND ADJUST, CALIBER FIFTY

Loader: ON THE WAY

TC: TC COMPLETE
 LOADER - CEASE FIRE

SCENARIO 6



25

THE SITUATION

- You are in a deliberate defense.
- Your orders are to engage all hostile units.
- You are turret down, and there is a stand of trees off to your right which screens you from the road.
- Round loaded is SABOT.
- There are now two trucks moving down the road about 800 meters away, 20 meters apart.

What type of engagement is required? What is your fire command?
What are the crew responses?

(Assume first round hits.)

26

272

SCENARIO 6 ANSWER

This could be a simultaneous engagement using both the COAX and CAL .50 machineguns. Your fire command and crew responses would be:

TC: GUNNER
COAX
TWO MOVING TRUCKS, LEAD TRUCK . . .

GUNNER: IDENTIFIED

TC: FIRE AND ADJUST, CALIBER FIFTY

GUNNER: ON THE WAY
TARGET - CEASE FIRE

TC: TC COMPLETE

27

This could be a multiple engagement using just the COAX. Your fire command and crew responses would be:

TC: GUNNER
COAX
TWO MOVING TRUCKS . . .

Gunner: IDENTIFIED

TC: FIRE AND ADJUST

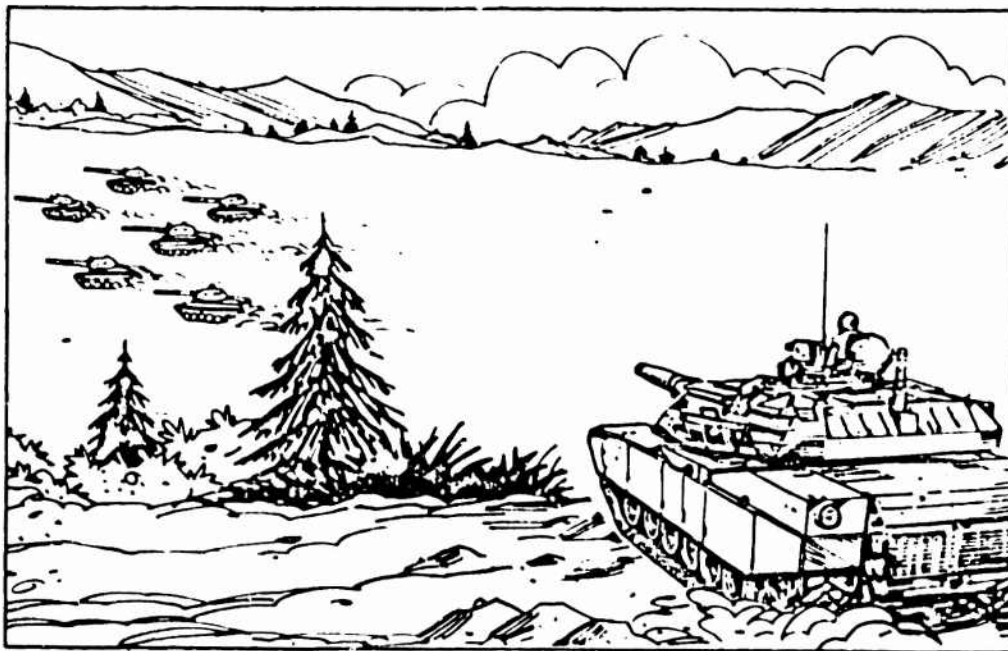
Gunner: ON THE WAY
TARGET - RIGHT TRUCK
ON THE WAY
TARGET - CEASE FIRE

NOTE: In this example, the TC directed the gunner to engage both targets by firing and adjusting fire on his own. If the TC wanted, he could have directed the engagement.

28

273

SCENARIO 7



29

THE SITUATION

- You are in a deliberate attack.
- Your primary mission is to destroy enemy armor.
- Your M1 is fully operational.
- You see six T-62 tanks, at a range of about 2000 meters. They are retreating.

What is your fire command?

What are the crew responses?

(Assume first round hits.)

30

274

SCENARIO 7 ANSWER

Since there are many targets close together, the best thing to do is allow the gunner to engage the targets on his own as rapidly as possible. The fire command that does that is "TARGETS OF OPPORTUNITY." The fire command and crew responses should be something like this:

TC: GUNNER
SABOT
TARGETS OF OPPORTUNITY

Loader: UP

Gunner: IDENTIFIED

TC: FIRE AND ADJUST

Gunner: ON THE WAY
TARGET-NEXT TANK

Loader: UP

(continued)

31

Gunner: ON THE WAY
TARGET- NEXT TANK

Loader: UP

Gunner: ON THE WAY
SHORT-REENGAGING

TC: GUNNER-
ADD ONE
FIRE

Loader: UP

Gunner: ON THE WAY
TARGET-NEXT TANK

Loader: UP

Gunner: ON THE WAY
TARGET-NEXT TANK

Loader: UP

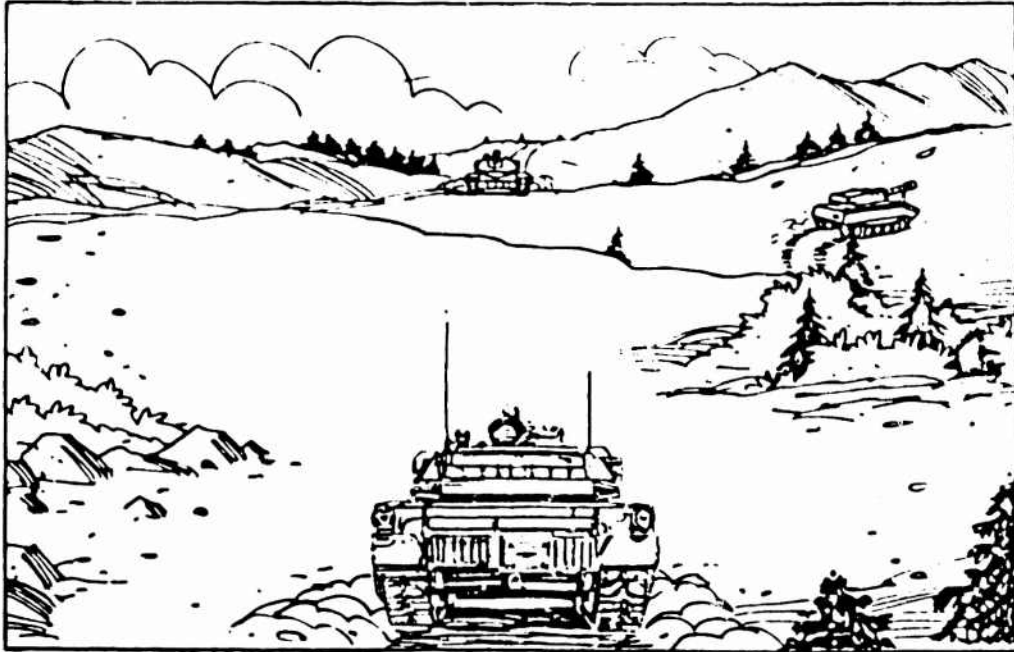
Gunner: ON THE WAY
TARGET- NEXT TANK

TC: CEASE FIRE

32

275

SCENARIO 8



33

THE SITUATION

- You are attacking and have penetrated the outer ring of enemy defenses.
- Except for the LRF not providing accurate range data, the system is operational.
- Round loaded is HEAT.
- Off to your right, at a range of about 900 meters, is a 122mm self-propelled howitzer. He does not see you.
- The gunner reports a T-72 approaching your direct front at about 1200 meters.

What is the MOST DANGEROUS threat?

What is your INITIAL fire command and crew responses up to the point where the gunner says ON THE WAY?

34

276

SCENARIO 8 ANSWER

The MOST DANGEROUS threat is the T-72. Since the laser rangefinder has failed and the threat is immediate, you should engage the target using the BATTLESIGHT method of degraded mode gunnery. Since there are two targets, your fire command and crew responses should be:

TC: GUNNER
BATTLESIGHT
TWO MOVING TANKS . . .

Loader: UP

Gunner: IDENTIFIED

TC: FIRE, FIRE SABOT

Gunner: ON THE WAY

35

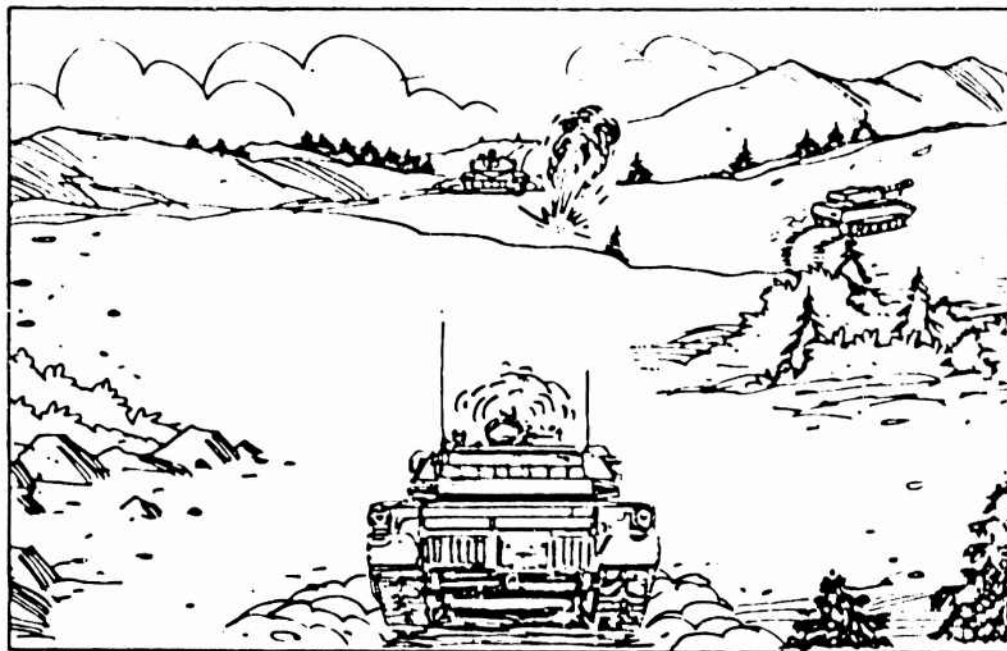
Remember: The TC must depress the MANUAL RANGE BATTLESIGHT button to induce the range. Battlesight range for HEAT ammo is 900 meters. If the TC feels the range is closer to 1200 meters, he should definitely use the ADD/DROP toggle switch to enter that range while viewing through the GPSE. In this scenario, let's assume the TC did not induce the additional 100 meters.

NOW TURN THE PAGE TO SEE THE RESULTS OF THIS FIRST SHOT.

36

277

SCENARIO 9



37

THE SITUATION

- The picture shows where you observe the first round hitting.
- The gunner reports SHORT-REENGAGING.
- The loader announces UP.

Based on the results shown above, what specific fire adjustment command, if any, would you issue?

38

278

SCENARIO 9 ANSWER

In this situation you should not issue a subsequent command. As soon as the gunner has selected SABOT using the ammunition select switch, you should depress the MANUAL RANGE BATTLESIGHT button (to induce the 1200 meter solution) and announce FIRE.

39

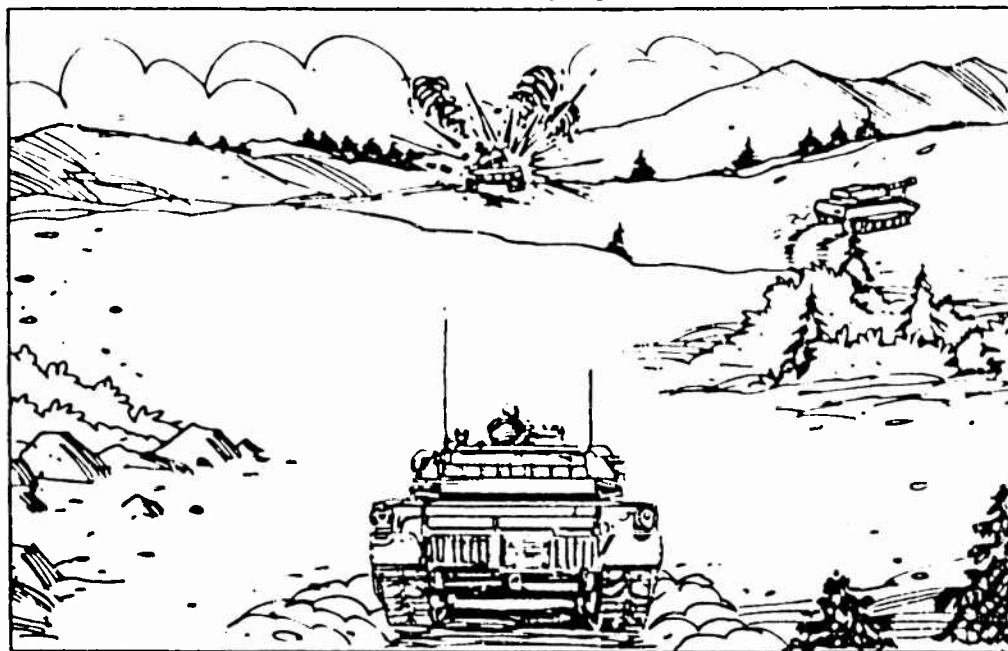
Remember: The gunner must select SABOT before you depress the MANUAL RANGE BATTLESIGHT button. If not, you will maintain the 900 meter HEAT battlesight solution.

NOW TURN THE PAGE TO SEE THE RESULTS OF THE SECOND SHOT.

40

2/9

SCENARIO 10



41

THE SITUATION

- ZAP!! Your second shot blasts the T-72.
- The loader announces UP.
- The gunner announces TARGET—REENGAGING.
- The howitzer has turned and is preparing to engage you.

What is your response and next fire command?

What are the crew responses?

(Do not assume a first round hit.)

42

280

SCENARIO 10 ANSWER

The fire command and crew responses should be:

TC: RIGHT TANK . . .

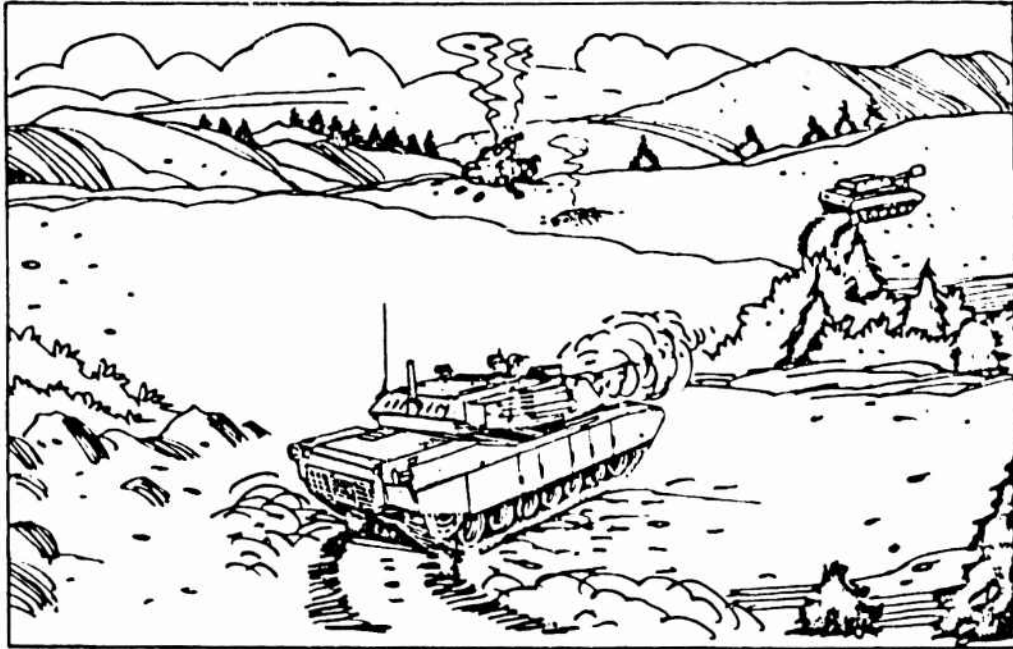
Gunner: IDENTIFIED

TC: FIRE

Gunner: ON THE WAY

Remember: The next target that had to be engaged was the 122 mm self-propelled howitzer, a tank-like vehicle. The 1200 meter battlesight range previously induced into the fire control solution still remains in the system. Therefore, since the howitzer is at 1100 meters, it is not necessary to depress the MANUAL RANGE BATTLESIGHT button again or to drop 100 meters using the ADD/DROP toggle switch.

SCENARIO 11



45

THE SITUATION

- A round was fired at the 122mm self-propelled howitzer.
- The gunner announces: LOST-REENGAGING.
- You too are unable to see the effects of the SABOT round.

What should you do?

46

282

SCENARIO 11 ANSWER

You do not issue a subsequent fire command when both you and the gunner "LOST" a SABOT round. You should remain silent and allow the gunner to reengage.

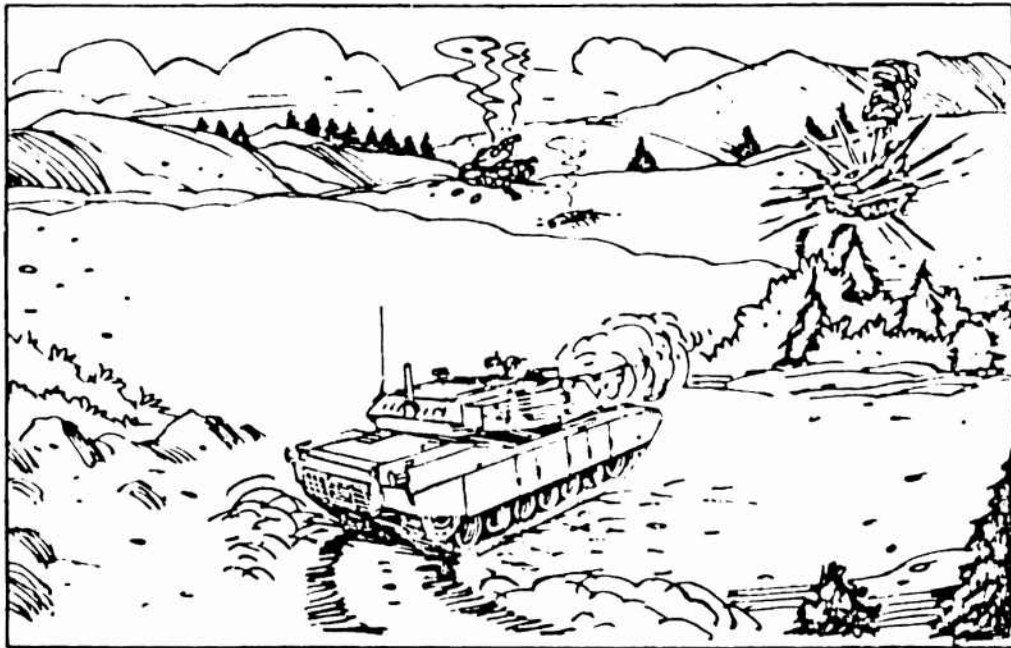
47

Note: When firing HEAT, and both you and the gunner are unable to see the effects of the round (LOST), the TC must issue a subsequent fire command: GUNNER-REENGAGE.

48

283

SCENARIO 12



49

THE SITUATION

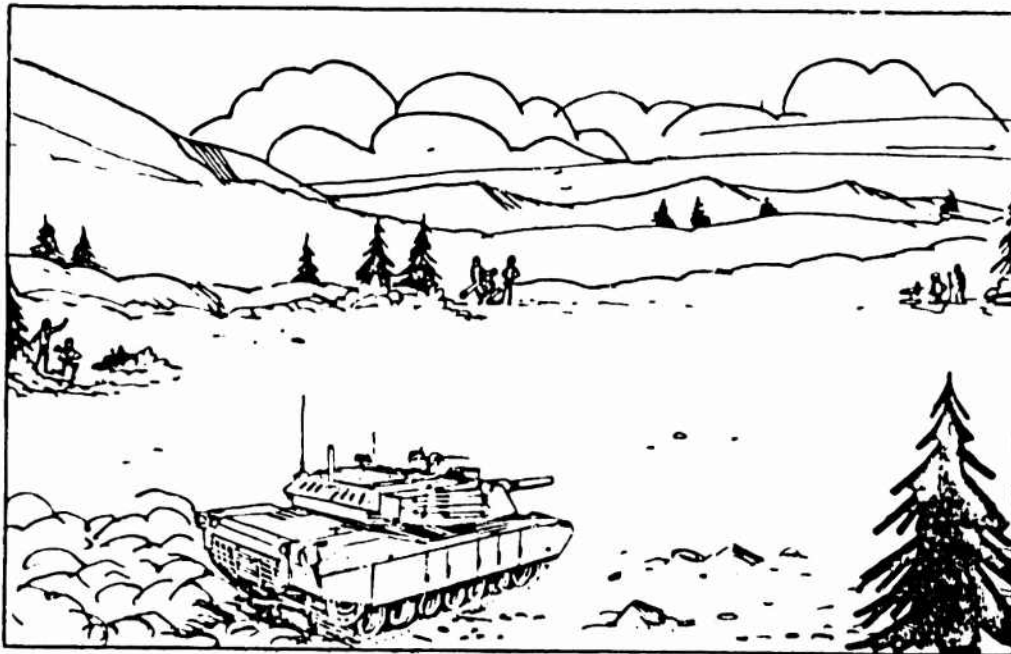
- The situation looks great!
- Good shooting!
- You scored a direct hit!
- The gunner reports TARGET-REENGAGING.
- You announce CEASE FIRE.
- The engagement is over.

No questions this time. Go to the next scenario.

50

284

SCENARIO 13



51

THE SITUATION

- You are the lead element in a traveling movement.
- Your M1 is fully operational.
- Round loaded is HEAT.
- All crewmembers are acting as observers.
- Suddenly you come upon enemy troops.
- There is an RPG-7 off to your left at 1000 meters.
- An SPG-9 73mm recoilless gun is left front, 1200 meters.
- Direct front there is a manpack SAGGER team ready for launch, range 1250 meters.
- All these targets see you and are preparing to engage you.

What is your fire command?

What are the crew responses?

(Assume first round hits.)

52

285

SCENARIO 13 ANSWER

You are faced with two (2) MOST DANGEROUS threats; the manpack SAGGER team, the SPG-9 73mm Recoilless Rifle. You must engage these targets right away, then engage the RPG team. The fire command and crew responses for this multiple/simultaneous target engagement should be:

TC: GUNNER
HEAT
SAGGER TEAM . . .

Gunner: IDENTIFIED

TC: FIRE AND ADJUST, CALIBER FIFTY

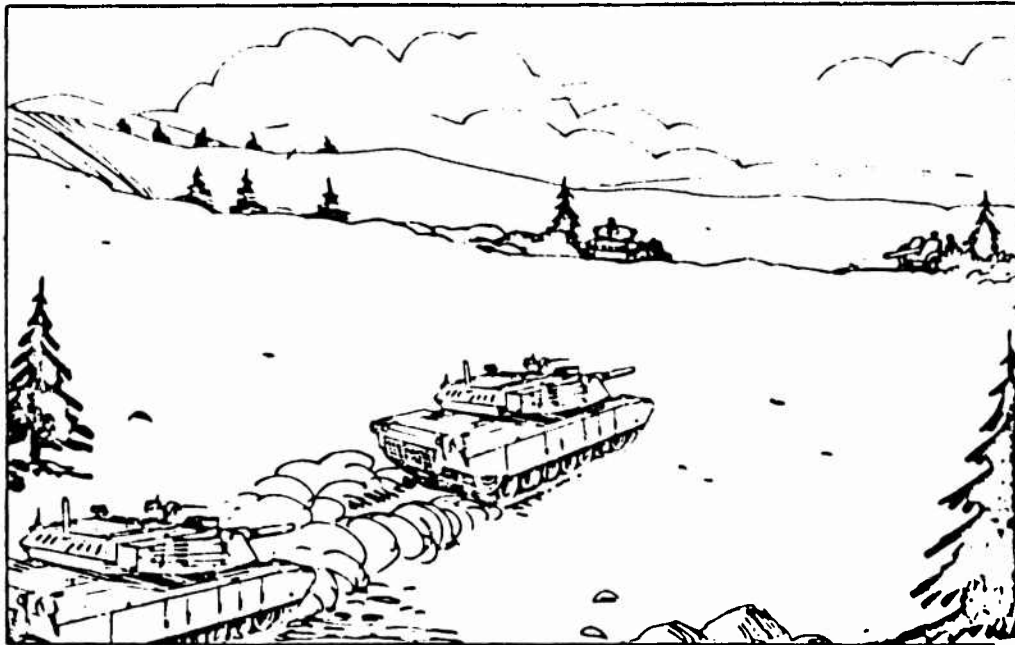
Gunner: ON THE WAY
TARGET - CEASE FIRE

Loader: UP

TC: TC COMPLETE

Note: If the crew survives this engagement, it is very lucky. The TC must engage the SPG-9 and the RPG-7. After the gunner destroys the man-packed SAGGER team, he should assist the TC.

SCENARIO 14



55

THE SITUATION

- You are the lead element in a bounding overwatch maneuver.
- The LRF is not operational for determining range.
- Round loaded is SABOT.
- You see a T-72 left front at 1000 meters.
- There is a T-12A antitank gun, right front, at 1000 meters.
- They both see you.

What are your fire commands?

What are the crew responses?

(Assume first round hits.)

56

287

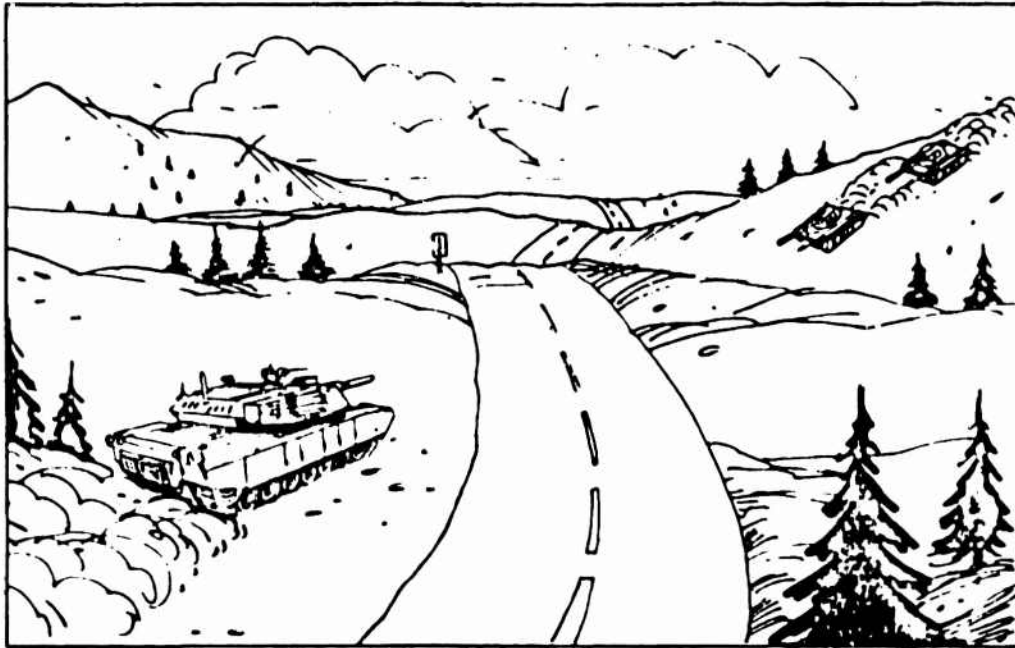
SCENARIO 14 ANSWER

You must issue a fire command for a simultaneous engagement since BOTH of these targets are MOST DANGEROUS threats. You also must use the BATTLESIGHT method of degraded mode gunnery because your laser rangefinder has failed. The correct fire command and crew responses should be:

TC:	GUNNER BATTLESIGHT TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE AND ADJUST, CALIBER FIFTY
Gunner:	ON THE WAY TARGET - CEASE FIRE
Loader:	UP
TC:	TC COMPLETE

57

SCENARIO 15



59

THE SITUATION

- You have penetrated the enemy's security zone.
- M1 is fully operational.
- Round loaded is SABOT.
- Two T-72s are coming from your right, at 1500 meters.
- They see you and are preparing to engage.
- You issue this fire command:

TC: GUNNER
 SABOT
 TWO MOVING TANKS, LEAD TANK . . .
Loader: UP
Gunner: CANNOT IDENTIFY

What should your next fire command be?
What are the crew responses?

(Assume first round hits.)

50

289

SCENARIO 15 ANSWER

You must take over the engagement yourself IMMEDIATELY. You announce:

TC: FROM MY POSITION
ON THE WAY
TARGET-NEXT TANK

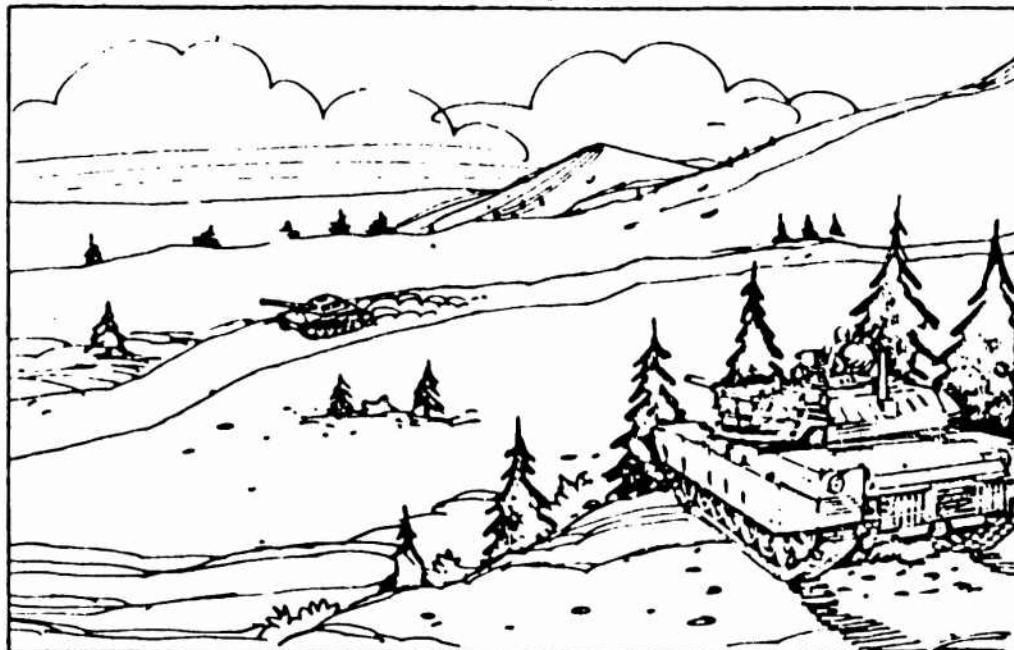
Loader: UP

TC: ON THE WAY
TARGET - CEASE FIRE

NOTE: The gunner must remember to switch back to 10X on the GPS whenever he "cannot identify" a target announced in the TC's fire command.

Reminder: If the gunner identifies the target after the TC fires, he should announce IDENTIFIED. This permits the TC to turn over the engagement so he can search for additional targets that may be in the area.

SCENARIO 16



63

THE SITUATION

- You are in a bounding overwatch.
- Round loaded is SABOT.
- The LRF is unable to determine range.
- There is a T-72 at 1100 meters.
- You issue the following fire command:

TC: GUNNER
 SABOT
 TANK . . .

What should you do next?

What is the fire command and crew responses?

64

291

SCENARIO 16 ANSWER

The fire command: GUNNER
SABOT
TANK . . .

was incorrect! It is a fire command for precision mode gunnery. You know the laser rangefinder has failed. That means you must issue fire commands for degraded mode gunnery. Once you realize your mistake, you must announce "CORRECTION," and proceed as follows:

TC	BATTLESIGHT TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING

(continued)

65

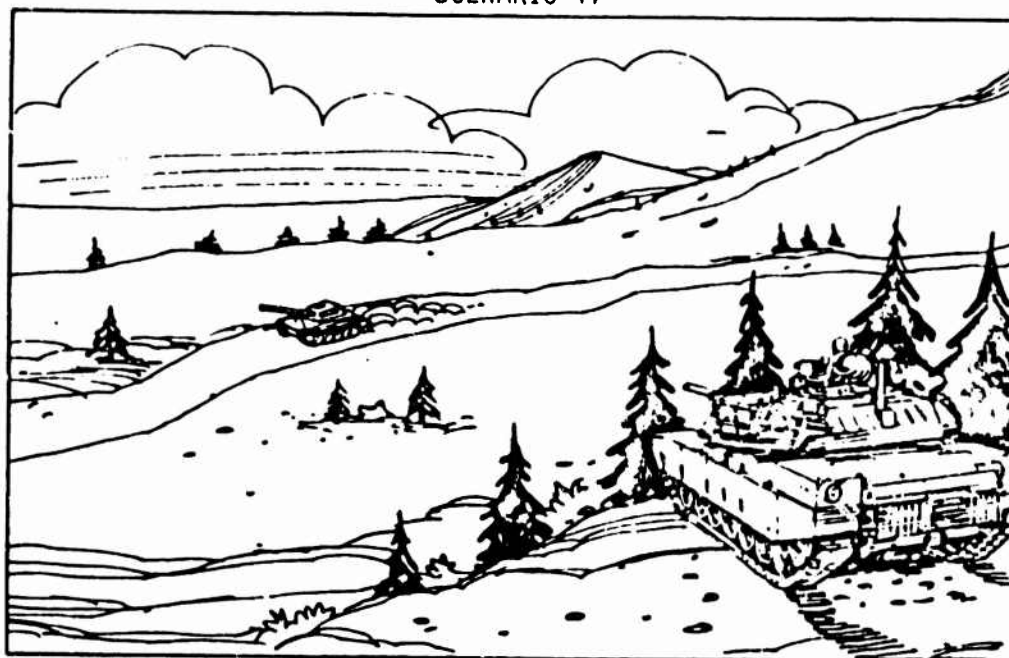
Loader:	UP
TC:	CEASE FIRE

Remember, corrections are given from the point where the mistake occurred in the fire command. No need to repeat GUNNER.

66

292

SCENARIO 17



67

THE SITUATION

- You are in a similar situation.
- Round loaded is SABOT.
- LRF is unable to determine range.
- There is a T-72 at 1000 meters.
- You announce the following fire command:

TC: GUNNER
 BATTLESIGHT
 TANK . . .

- The loader reports UP.
- The gunner announces: TARGET-REENGAGING.

What should you do next?

What is the next series of commands and crew responses?

68

293

SCENARIO 17 ANSWER

The Gunner either did not understand or hear the TARGET DESCRIPTION element of your fire command. All you have to do is repeat that element. You announce:

TC: TANK

Now the fire command and crew responses can proceed as normal.

Gunner: IDENTIFIED

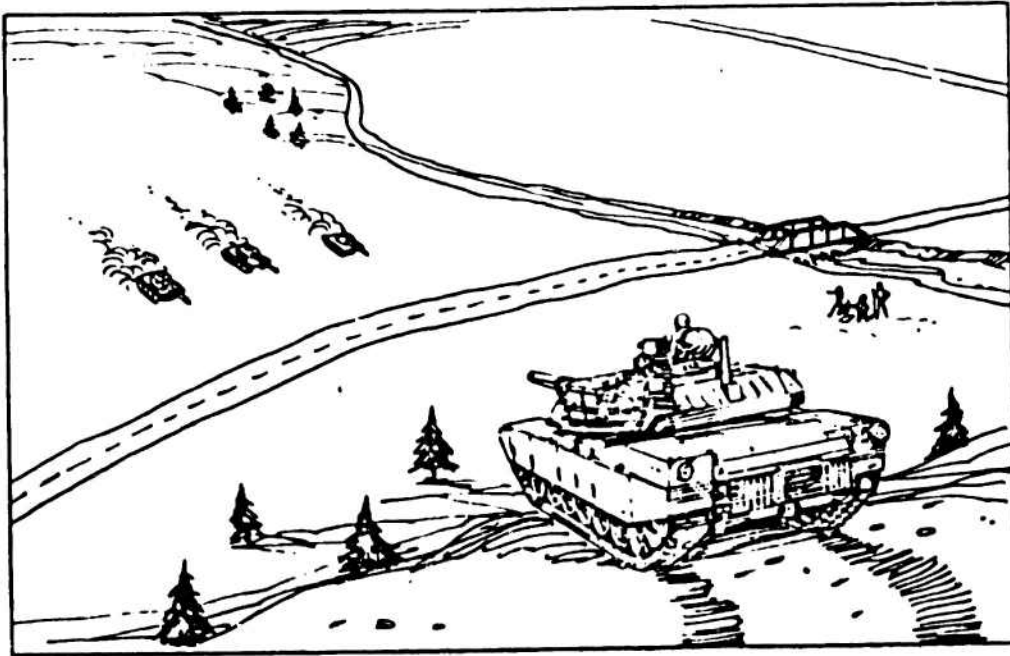
TC: FIRE

Gunner: ON THE WAY
TARGET - REENGAGING

Loader: UP

TC: CEASE FIRE

SCENARIO 18



71

THE SITUATION

- You are in a bounding overwatch maneuver.
- Round loaded is SABOT.
- M-1 fully operational.
- You see three T-72 tanks, direct front at 2000 meters.
- They see you.
- You also see a manpack SAGGER ATGM being set up for a launch at you, range 1000 meters.

What are your fire commands and crew responses?

(Assume first round hits.)

72

295

SCENARIO 18 ANSWER

In order to destroy the T-72s and SAGGER ATGM, you must issue a fire command for a MULTIPLE/SIMULTANEOUS engagement. Your fire command and crew responses should be:

TC: GUNNER
SABOT
THREE MOVING TANKS, LEFT TANK . . .

Loader: UP

Gunner: IDENTIFIED

TC: FIRE AND ADJUST, CALIBER FIFTY

Gunner: ON THE WAY
TARGET-LEAD TANK IDENTIFIED

Loader: UP

Gunner: ON THE WAY
TARGET-LAST TANK IDENTIFIED

(continued)

73

Loader: UP

TC: TC COMPLETE

Gunner: ON THE WAY
TARGET-REENGAGING

Loader: UP

TC: CEASE FIRE

74

296

SCENARIO 19



75

THE SITUATION

- You are in a deliberate attack.
- M1 is fully operational. Round loaded is SABOT.
- Two T-72 tanks are detected moving in at 1800 meters.

What is your fire command for the entire engagement?
What are the crew responses?

76

297

SCENARIO 19 ANSWER

Both T-72 tanks are MOST DANGEROUS threats. The only weapon capable of defending them is the main gun. Good luck.

The fire command and crew responses should be:

77

TC:	GUNNER SABOT TWO TANKS, LEFT TANK . . .
Loader:	UP
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	RIGHT TANK
Gunner:	IDENTIFIED
TC:	FIRE
Gunner:	ON THE WAY TARGET - REENGAGING
Loader:	UP
TC:	CEASE FIRE

78

This M1 Fire Command booklet is a
prototype training document. For
comments or questions contact:

Mr. Ronald E. Kraemer
ARI Field Unit-Ft Knox
ATTN: PERI-IK
Steele Hall
Fort Knox, KY 40121

Autovon: 464-4932
Commercial: (502) 624-4932