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SMALL COMBAT ARMS UNIT LEADER TRAINING TECHNIQUES: RULES OF PLA--ETC(U)

JAN 79 E L SHRIVER , G R GRIFFIN

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**Small Combat Arms Unit Leader  
Training Techniques:**

**Rules of Play for Two Player/Multiplayer  
Infantry Mapboard Games**

**Engagement Simulation Technical Area**

**January 1979**

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The objective of this project was to develop and evaluate simulation techniques for training small unit leaders which would provide maximum tactical decision-making training while minimizing the unnecessary, and often wasteful, participation of lower level troops. The fundamental approach of this research effort has been to take some of the basic instructional principles underlying engagement simulation and to develop abstractions of field exercises for leaders training. → next page		

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20. Initial efforts led to the development of a mapboard game. The "board game" initially developed was a two-sided, free-play map exercise for teaching infantry tactics to small unit leaders at the platoon level. As originally conceived, junior officers could play the game to develop tactical skills which they would subsequently apply during REALTRAIN exercises with troops.

It was found, however, that for the benefits of this training to be fully realized, leaders had to have an opportunity to learn to work with their NCOs and then to practice what they had learned in the field both with and without troops. A variation of the basic game simulation was developed which would permit the unit leader team (platoon and squad leaders) to work together on the game board as they would during an actual engagement.

Concurrently with the development of the multiperson infantry mapboard game, the development of a field training technique that would further focus on leader/subordinate interaction processes was explored. A small unit leader field opposition exercise involving only key leader personnel (without troop support) on each side was developed. The rationale for the development of the exercise was that it would provide training for leader/group interaction processes in a way that the mapboard games did not and could not.

Current Army doctrine emphasizes the importance of the integration of mechanized infantry, armor, and anti-armor elements in conducting successful tactical operations against a deployed enemy. Therefore, a combined arms mapboard game that would provide junior officers with the opportunity to become familiar with the nature of these combined arms operations was also developed.

The products of this research have been: (1) an infantry squad/platoon level game for two-player or multiplayer use; (2) an infantry squad/platoon level field opposition exercise; and (3) a combined arms platoon/company level mapboard game. This report contains documentation in the infantry squad/platoon level game. Separate reports document the other two training techniques. ARI Research Report 1219 summarizes the research activities conducted in the development of these research products.

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SMALL COMBAT ARMS UNIT LEADER TRAINING TECHNIQUES:  
RULES OF PLAY FOR TWO PLAYER/MULTIPLAYER INFANTRY MAPBOARD GAMES

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Tactical Skill Acquisition & Retention

FOREWORD

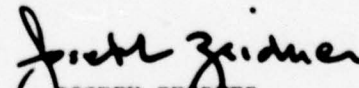
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The US Army Training and Doctrine Command (TRADOC) has identified small unit tactical engagement simulation training as one of its highest behavioral science research priorities. Research initiated by the US Army Research Institute for the Behavioral and Social Sciences (ARI) in 1972 has led to the development of a family of tactical engagement simulation training techniques, including Squad Combat Operations Exercises (Simulation) (SCOPES) and REALTRAIN.

Early in this research program it became evident that special tactical training techniques were necessary for training the leaders of small combat arms units. Often field exercises requiring full units were found to provide training mainly for officer and senior NCO personnel and to provide little effective training for lower level troops. This led to the development of tactical training techniques specifically directed at the training of small unit leaders. The first techniques developed were a board game and a field opposition exercise involving only leader personnel (using engagement simulation procedures) for infantry squads and platoons.

Army doctrine emphasizes the importance of the integration of mechanized infantry, armor, and anti-armor elements into a combined arms force. Therefore, a combined arms mapboard game that would provide officers with the opportunity to become familiar with the nature of these combined arms operations was also developed.

This research was part of a larger research program designed to improve tactical training in units. The entire program has been responsive to the requirements of RDTE Project 2Q763743A773 and, at its inception, the Combat Arms Training Board (CATB) which is now the TRADOC System Manager for Tactical Engagement Simulation (TSM-TES) of the TRADOC Training Support Center. The research reported here augments board game developments accomplished by the Combined Arms Training Developments Agency, Fort Leavenworth, Kansas.

  
JOSEPH ZEIDLER  
Technical Director

## INTRODUCTION

Armywide introduction of SCOPES and REALTRAIN engagement simulation as tactical training techniques provided the Army methods for tactically training small infantry, armor, and anti-armor units under conditions approaching those of real combat. In engagement simulation tactical training exercises, platoon, squad, or combined arms team size units can engage in free play exercises, actively opposing forces that have been given a conflicting mission in order to insure contact between the two forces.

The simulated combat environment provided by SCOPES and REALTRAIN places on the small unit leader many of the heavy behavioral demands of actual combat. Leaders must make decisions quickly regarding events that are occurring in real time as a joint function of the actions being taken by both sides. Individual tactical skills that must be learned by the small unit leader include: anticipation of enemy actions, planning concerted actions against the enemy, placing personnel in locations most likely to give them an advantage over the enemy, planning for use of the most effective weapons in a given situation, command and control, and contingency planning as more information about enemy and friendly actions is received. Simulation of combat provides a series of specific situations for small unit leaders to learn what are and what are not effective tactical behaviors.

Even during the initial development of the first engagement simulation techniques by a joint ARI, TRADOC and contractor team, it became evident that the training of small unit leaders required special research attention.

While earlier REALTRAIN developments provided effective and motivating tactical training for troops, research was needed to develop related techniques for unit leaders in the maneuver arms. Often field exercises requiring full units provide training only for officer and senior NCO personnel and may be counterproductive in terms of lower level troop training and motivation.

The objective of this research project was to develop and evaluate simulation techniques for training small unit leaders which would provide maximum tactical decision-making training while minimizing the unnecessary, and often wasteful, participation of lower level troops.

The fundamental approach of this research effort has been to take some of the basic instructional principles underlying the REALTRAIN method and to develop abstractions of field exercises for leader training.

Initial efforts led to the development of a mapboard game. The concept of "board games" has a great deal of intuitive appeal:

- o They may be used to simulate (to varying degrees of abstraction) "real world" situations.
- o They minimize the requirement for equipment resources.
- o They minimize the requirement for "expensive" personnel resources.
- o They may be reproduced relatively inexpensively.
- o They may be used as part of formal training or informally during a soldier's free time, if he so desires.
- o "Games" are inherently motivating because of their competitive aspects and the interpersonal interactions involved.

The "board game" initially developed was a two-sided, free-play map exercise for teaching infantry tactics to small unit leaders at the platoon level. As originally conceived, junior leaders could play the game to develop tactical skills which they would subsequently apply during REALTRAIN exercises with troops.

Preliminary tests of this gaming technique showed it to have value in providing infantry officers an opportunity to practice tactics in response to realistic, real-time demands of combat situations. It was found, however, that for the benefits of this training to be fully realized, leaders had to have an opportunity to learn to work with their NCOs and then to practice what they had learned in the field both with and without troops. Therefore, a variation of the basic game simulation was developed which permitted the unit leader team (platoon and squad leaders) to work together on the game board as they would during an actual engagement.

Concurrently with the development of the multiperson infantry map-board game, the development of a field training technique that would further focus on leader/subordinate interaction processes was explored. A small unit leader field opposition exercise involving only key leader personnel (without troop support) on each side was developed. The rationale for the development of the exercise was that it would provide training for leader/group interaction processes in a way that the map-board games did not and could not. It was recognized, however, that the conduct of the field opposition exercise would be somewhat more expensive in terms of time and resources than would either of the two mapboard games, although less expensive than full-scale engagement simulation exercises.

Current Army doctrine emphasizes the importance of the integration of mechanized infantry, armor, and anti-armor elements in conducting successful tactical operations against a deployed enemy. Therefore, a combined arms mapboard game was also developed that would provide junior officers with the opportunity to become familiar with the nature of these combined arms operations.

The products of this research have been: (1) an infantry squad/platoon level game for two-player or multiplayer use; (2) an infantry squad/platoon level field opposition exercise; and (3) a combined arms platoon/company level mapboard game. This report contains documentation in the infantry squad/platoon level game. Separate reports document the other two training techniques. ARI Technical Report \_\_\_\_ summarizes the research activities conducted in the development of these research products.

## TABLE OF CONTENTS

<u>Title</u>	<u>Page</u>
1.0 OVERVIEW	1
2.0 GENERAL DESCRIPTION	2
2.1 Participants	2
2.2 Game Time Frames and Action Sequence	2
2.3 Game Force Size	3
3.0 GAME MATERIALS	
3.1 Playing Surfaces	3
3.2 Playing Pieces	5
3.3 Cue Pieces	7
3.4 Movement Pieces	7
3.5 Number Randomizer	7
3.6 Hit, Casualty, and Detection Probability Table	8
3.7 Indirect Fire Sheafs	8
3.8 Mine Casualty Overlay	8
3.9 Indirect Fire Player's Aid	12
3.10 Controller's Aid	12
3.11 Visual Barrier	12
4.0 GAME PLAY	16
4.1 Player Responsibilities	16
4.2 Controller Responsibilities	17
5.0 INDIRECT FIRE, CASUALTY ASSESSMENT, AND INDIRECT FIRE SUPPRESSION	30
5.1 Indirect Fire Effects	34
5.2 Special Controller Notes	36
6.0 VICTORY CONDITIONS	37

TABLE OF CONTENTS  
(Continued)

<u>Title</u>	<u>Page</u>
7.0 AFTER-ACTION REVIEW (AAR)	38
8.0 ALTERNATIVE GAME MODULES	40
9.0 TOX II - The Group Game	41
9.1 Introduction	41
9.2 Participants	42
9.3 TOX II (Group Game) Player Controller Configuration	42
9.4 TOX II Group Game Play	42

## 1.0 OVERVIEW

The EFFTRAIN Infantry Mapboard Game or Tactical Exercise (TOX) is played by three people--two players and a controller. The two players sit facing each other at two map boards separated by a visual barrier. The maps are exactly alike and are oriented the same way. The two men represent a defense leader and an attack leader. Each commands an army unit with normal TO&E and weapon capabilities, represented by movable plastic playing pieces. A 3:1 ratio of offense to defense is used. The players have conflicting missions, and each attempts to accomplish his mission through movement of his pieces and use of his weapons.

The controller sits at the barrier where he can see both maps, and the moves of the players. He determines when pieces would be seen or heard by opponent pieces, when weapons would be used, and whether hits would be achieved.

The game moves by time intervals established by the controller, and each player is allowed to move any piece a distance on the mapboard that is within the capabilities of the piece for the terrain it is on. The moves of both sides are simultaneous during each time interval. Encounters while moving which result in fire fights cause halts in that spot until the engagement is resolved. Figures which indicate personnel movement rates, detection, and weapon capabilities are provided in this document.

When a player has accomplished his mission or destroyed a sufficient number of his opponent's pieces to render the opponent ineffective, he has won the game. The controller usually stops the game at a point when the outcome would be obvious to all concerned; however, players often like to play to the last man. After the

game there is an after-action review in which the three participants discuss the tactics each side was trying to use, and the engagement that resulted.

Before attempting to play the game, a novice should read through the material presented here, and become very familiar with the capabilities of men and weapons and the rules of the game. Before attempting to control a game, personnel must become thoroughly familiar with the rules of the game and the responsibilities of the controller.

The sections which follow provide a detailed description of the game materials and how to play. The rules do not dictate doctrine or tactics, but are based on the effectiveness and capabilities of men and equipment on real missions in the field. They have been reviewed and accepted by many experienced Army personnel.

## 2.0 GENERAL DESCRIPTION

### 2.1 Participants

The game requires two players who fill the roles of defense and offense "leaders", and at least one other person, called the controller. The controller plays a variety of roles for the players: superior, subordinate, umpire, fire direction center, etc. It is recommended that an assistant controller be utilized, when possible, to assume the indirect fire responsibilities.

### 2.2 Game Time Frames and Action Sequence

Game play is divided into segments called time frames. These are usually one minute in length, but can be increased or decreased to suit game conditions.

During a given time frame both players can move any of their pieces a distance that is within their capabilities, or take any action that could occur within such a time period.

Game action occurs in the following sequence:

- o Movement of personnel and equipment.
- o Exchange of "cue" information between player leader and subordinate (the controller acting as subordinate relays situation information to the player leader, based on what a playing piece might hear or see-- but the controller forwards this information only if the piece would have the communication capability to make such a report).
- o Direct fire weapon firing and assessment of casualties.
- o Indirect fire impact, assessment of casualties, and evaluation of suppression.

### 2.3 Game Force Size

In the infantry game, force size is flexible. Two basic force sizes are available:

Module 1 - A platoon-minus element in the defense versus an infantry platoon in the offense.

Module 2 - A platoon in the defense versus a company-minus in the offense.

The TO&E of these opposition forces is at Figure 1.

## 3.0 GAME MATERIALS

### 3.1 Playing Surfaces

Two playing surfaces are provided. Each consists of two topographic two-dimensional maps on which the pieces are moved, and several aids used by both

Figure 1

DESCRIPTION	SYMBOL	PERSONNEL REPRESENTED	PLATOON MINUS	RIFLE PLATOON	RIFLE CO. MINUS <sup>a</sup>
M-16		1	2	13	76
M-16/TA-1 Phone		1	2	3	-
M-16/M-203		1	2	6	18
M-16 and M-72 LAW		1	2	6	18
M-16 and Bangalore		1	0	1	3
M-16 and Starlight Scope		1	1	2	3
M-16 and Squad Radio		1	2	4	12
M-16 and PRC-77		1	1	1	4
M-60 MG		1	1	2	6
M-47 Dragon		1	1	3	9
Hand Grenade <sup>b</sup>		-	-	-	-
M-16A1 AP Mine		-	5*	15*	-
M-18A1 AP Mine		-	5*	15*	-
WD-1 Wire		-	1000 m*	1000 m*	-
Concertina		-	25 m*(4)	25 m*(8)	-
Number Personnel			14	41	149
Number Playing Pieces			28	79	149

\*Available for use in a defensive posture.

<sup>a</sup>Mortar platoon, composed of platoon Hqs. and three 81mm mortar squads (23 individuals) is assumed to be supporting the advancing company force from a rear position. Mortar platoon FOs (3) are assumed to be forward with the main element.

<sup>b</sup>It is assumed that each man carries three hand grenades.

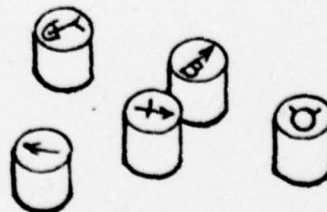
the players and the controller. The maps are produced by means of a photographic process, and are protected by clear plastic. The maps represent portions of United States military reservations expanded to a scale of 1:4,000. Playing aids on the playing surface include:

- o Organization and equipment chart
- o Rate of movement chart
- o Indirect fire casualty assessment chart
- o Detection distance chart
- o Weapons characteristics and effects chart
- o Casualty summation chart on which pieces are placed when they are eliminated from the game.

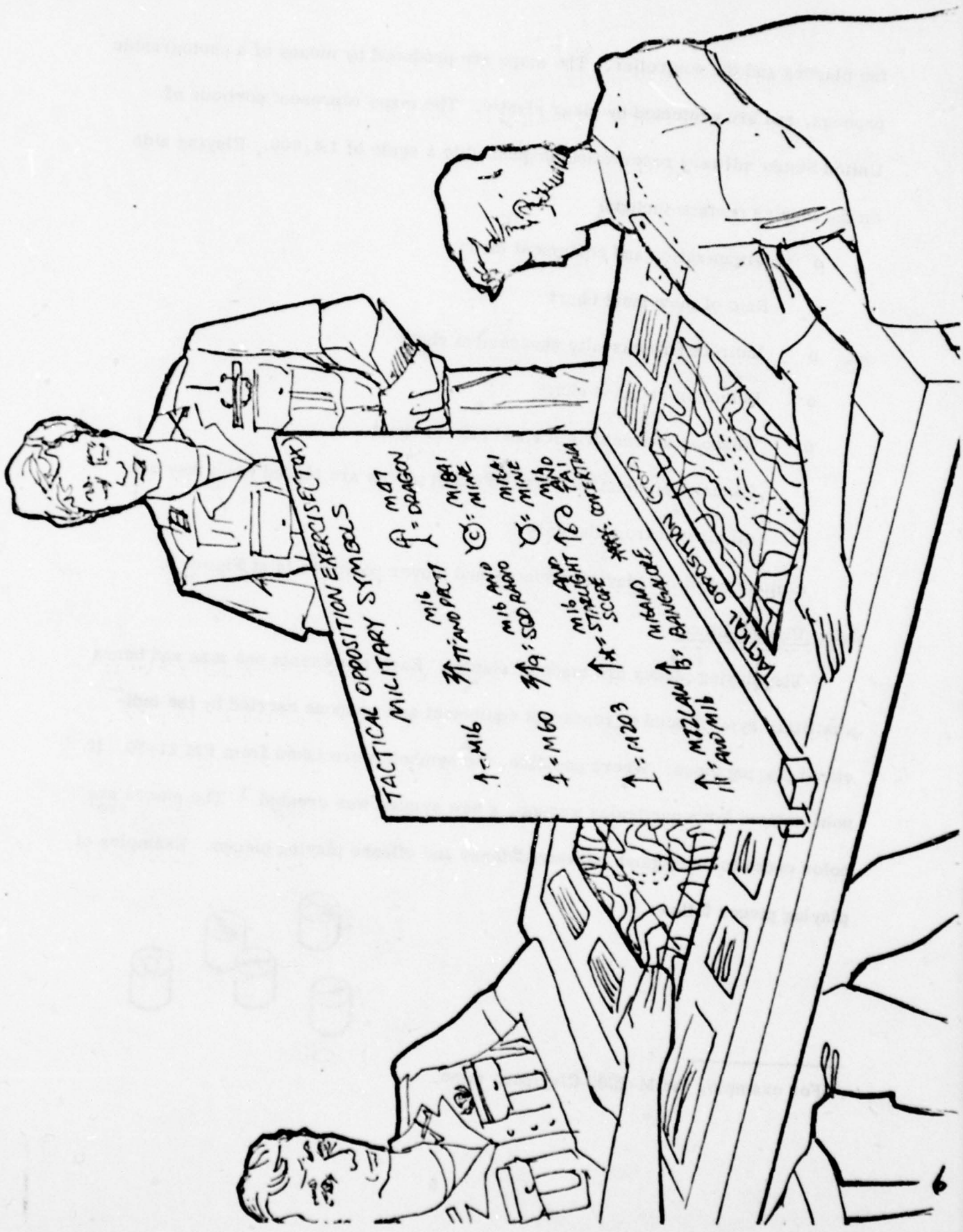
A pictorial of the playing surfaces and player positions is at Figure 2.

### 3.2 Playing Pieces

The playing pieces are made of plastic. Each represents one man and bears a military symbol used to represent equipment and weapons carried by the individual playing piece. Where possible, the symbols were taken from FM 21-30. If none existed for a particular weapon, a new symbol was created.<sup>1</sup> The pieces are color coded to distinguish between defense and offense playing pieces. Examples of playing pieces follow:



<sup>1</sup> For example, the M-203, Claymore mine.



TACTICAL OPPOSITION EXERCISE SYMBOLS

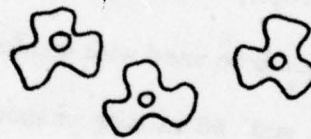
↑ = M16  
 ↗ = M17 AND PRTT  
 ↘ = M18 AND M19  
 ↖ = M20 AND M21  
 ↓ = M22  
 ↕ = M23 AND M24  
 ↗ = M25 AND M26  
 ↘ = M27 AND M28  
 ↖ = M29 AND M30  
 ↓ = M31 AND M32  
 ↕ = M33 AND M34  
 ↗ = M35 AND M36  
 ↘ = M37 AND M38  
 ↖ = M39 AND M40  
 ↓ = M41 AND M42  
 ↕ = M43 AND M44  
 ↗ = M45 AND M46  
 ↘ = M47 AND M48  
 ↖ = M49 AND M50  
 ↓ = M51 AND M52  
 ↕ = M53 AND M54  
 ↗ = M55 AND M56  
 ↘ = M57 AND M58  
 ↖ = M59 AND M60  
 ↓ = M61 AND M62  
 ↕ = M63 AND M64  
 ↗ = M65 AND M66  
 ↘ = M67 AND M68  
 ↖ = M69 AND M70  
 ↓ = M71 AND M72  
 ↕ = M73 AND M74  
 ↗ = M75 AND M76  
 ↘ = M77 AND M78  
 ↖ = M79 AND M80  
 ↓ = M81 AND M82  
 ↕ = M83 AND M84  
 ↗ = M85 AND M86  
 ↘ = M87 AND M88  
 ↖ = M89 AND M90  
 ↓ = M91 AND M92  
 ↕ = M93 AND M94  
 ↗ = M95 AND M96  
 ↘ = M97 AND M98  
 ↖ = M99 AND M100

TACTICAL OPPOSITION TOP

It should be noted that the playing pieces are not to scale; on the 1:4,000 scale they are approximately 25 meters in diameter. Thus, one man on the map surface occupies a much larger area than he would in the real world.

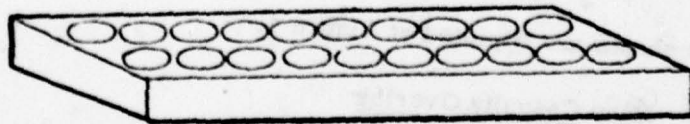
### 3.3 Cue Pieces

Cue pieces are small green beads used by the controller to provide a player with information about the detection of enemy personnel. These are placed on the playing surface and moved by the controller to indicate an enemy force that has been detected by the opposition. The use of the cue pieces minimizes the amount of written or oral information exchange necessary between players and the controller.



### 3.4 Movement Pieces

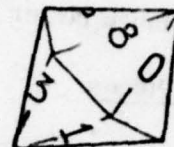
Movement pieces, approximately 3/4" wide and 3" long, are provided for the manipulation of multiple playing pieces. These devices allow the movement of up to 20 playing pieces simultaneously. Playing pieces can be arranged in formation within the movement piece.



### 3.5 Number Randomizer

A 10-sided die that displays numbers in a random order is provided for use in determining casualties and weapons detection. Players are allowed to roll the die

themselves to determine the outcome of a particular situation. The number in the up position is the one used. The number randomizer is used in conjunction with the Hit, Casualty, and Detection Probability Table.



### 3.6 Hit, Casualty, and Detection Probability Table

This device is used by the controller to determine weapon hits, assess casualties, and determine the probability of detection weapons that have been fired. Detailed instructions for its use are contained on the table itself. Figure 3 (A and B) depicts the Hit, Casualty, and Detection Probability Table. It was constructed so that it could be used with either the infantry game or a combined arms game. TOW, tank, and .50 caliber weapons on the table are not normally utilized in the infantry game.

### 3.7 Indirect Fire Sheafs

Plastic indirect fire overlays are provided to indicate the casualty area for various indirect fire weapons and sheafs. Areas of coverage (to scale) of indirect fire sheafs are depicted at Figure 4.

### 3.8 Mine Casualty Overlay

The mine casualty overlay is a device used in association with the Hit, Casualty, and Detection Probability Table to assess personnel casualties resulting from the

Figure 3A

INFANTRY WEAPONS

CASUALTY HIT AND DETECTION PROBABILITIES				
0-50 50-100 100-150 150-200 200-250 250-300	M-16	↑	<input type="checkbox"/> WEAPONS FIRING (Single or 3 round bursts)	A. Double detection probability if weapon fires on auto. Casualty probability remains the same! B. If targets have cover reduce casualty probability by 1/2.
0-50 50-100 100-150 150-200 200-250 250-300	M-203	↑	<input type="checkbox"/> ROUNDS FIRED (Point or area targets per minutes)	A. Parapet loophole — hit on parapet will not normally result in casualties. B. Tanks stationary, double hit probability, however tanks will not be neutralized, or immobilized. C. APC stationary, double hit probability, for APC occupant casualty assessment reduce figure by 1/2. M-203 will not normally immobilize an armored vehicle. D. For moving targets, Tanks, APC's, reduce hit probability by 1/2.
0-30 30-50	M-67 Hand Grenade	⊗	<input type="checkbox"/> GRENADES THROWN (At a specific target)	A. If target has cover reduce hit and casualty probability by 1/2.
0-100 100-200 200-300 300-400 400-500 500-600	M-60	↑	<input type="checkbox"/> 90 SLOW <input type="checkbox"/> 100 SUSTAINED <input type="checkbox"/> 200/500 RAPID ROUNDS PER MINUTE <input type="checkbox"/> 40 SLOW <input type="checkbox"/> 100 SUSTAINED <input type="checkbox"/> 200/500 RAPID ROUNDS PER MINUTE	A. Casualty probability is for exposed targets without cover. B. Hit probabilities double for large targets, Tanks, APC's, etc. But casualties are not assessed (unless men are exposed). C. For targets with cover reduce casualties by 1/2.
0-200 200-400 400-600 600-800 800-1000 1000-2000 1200-1400 1400-1600	50 Cal. M2 (APC) M85 (Tank)	⊕	<input type="checkbox"/> 40 SLOW <input type="checkbox"/> 100 SUSTAINED <input type="checkbox"/> 200/500 RAPID ROUNDS PER MINUTE	A. Casualty probabilities are for exposed personnel and APC occupants within 600 meters. B. Hit probabilities double against large targets... Tanks APC's etc. However casualties are not assessed beyond 600 meters (unless men are exposed). C. APC's can be neutralized by large quantity of 50 cal. fire at close range — (within 600 meters).

INSTRUCTIONS

- SINGLE WEAPON ENGAGEMENT**
- Select the number of weapons, or weapon rounds and the Distance to the target.
  - Read the hit probability. If equal to or more than 1.0 use the hit probability estimate to assess casualties to the target. If the hit probability is less than 1.0 spin the die for determination of hit. For example if hit probability is 0.8 then a roll resulting in numbers one (1) through six (6) is a hit. Numbers 7, 8, 9 equals a miss (0 = missing). Assess one (1) casualty for a hit.
  - If the number of targets is less than the number of casualties implied by the hit/casualty probability then all targets are neutralized!
  - The direction probability of the weapon firing is the hit and casualty probability.
  - Consult guidance information associated with each weapon for help in assessing casualties.

**SIMULTANEOUS ENGAGEMENT... Two opposed forces, varied and multiple weapon engagement.**

- Select the number of weapons, weapons rounds and Distance.
  - Read the hit probabilities and casualties occurring by weapon type.
  - Add the casualties incurred for each opposed force.
  - For forces with cover reduce their casualties 1/2 (from figures associated with casualty probabilities).
  - Continue until one sides casualties equal its personnel force!
- AMBUSH... Two opposed forces, varied and multiple weapons one side engages first.**
- Assess casualties to the engaged Infantry group first.
  - Then proceed as above in Simultaneous Engagement rules for remaining force!

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Figure 3B

# ANTI-ARMOR WEAPONS

## DEFINITION OF TERMS:

### HIT PROBABILITY

A proportion expressing the chance of hitting a specific target based on weapon type, number of weapons and or rounds fired with consideration for target size, hardness, target distance and daylight visibility conditions.

NUMBER OF MEN/VEHICLES	AP	AT
	M	V
1-2		
3-4		
5-6		
7-8		
9-10		

### Mines

AP M-18A1, M-16A1  
(Tripmine)  
AT M-15, M-19, M-21  
(Pressure)

### CASUALTY PROBABILITY

A proportion expressing the number of casualties expected based on weapon type, weapon characteristics, number of weapons or rounds fired with consideration for target size, target hardness, target distance and daylight visibility conditions. For the M-16, M-203, M-40, 50 Cal. and M-67, Detection means identification of the target area. For the M-16, M-203, M-40, 50 Cal. and M-67, Detection means identification of the weapon firing location.

### MINES (Per 25 Meters)

Personnel If detonation, 50% of men in mine casualty overlay area are casualties. For Command Detonated AP mines, assume detonation, assess casualties as above.  
 AP mines will have no effect on personnel in Tanks/APCs.  
 AT mines will completely neutralize Tanks, APC's and all occupants.  
 Remember to deduct detonated mines from original total for succeeding personnel/vehicles.

### Law

M-72 A2

### LAW'S FIRING (At identical targets)

The M-72 law is a one shot weapon.  
 Law hit will immobilize tanks, 2 Laws needed to neutralize tank completely.  
 Law hit will destroy an APC and 50% of occupants will become casualties, 2 Law hits needed to neutralize all occupants.  
 2 Law hits required to neutralize paratrooper for hole and occupants.

### Tow

M-220

### TOWS FIRING (At identical targets)

Projectile rate of speed 200 m/sec.  
 Reload time 30 sec.  
 Warhead will defeat any known armor, resulting in total destruction/neutralization of APC/Tank and occupants.

### Dragon

M-47

### DRAGONS FIRING (At identical targets)

Projectile rate of speed 100 m/sec. Reload time and warhead capabilities as per low.  
 1 Dragon hit will destroy paratrooper for hole and occupants.

### Tank

M-60 Series and Sheridan

### TANKS FIRING (At identical targets)

For 50 Cal. and M-60 Co/At use M-80 - 50 Cal. data on reverse side.  
 Probabilities are for HE, ADS rounds.  
 Assume neutralization of target and occupants if hit.  
 For Shillelagh missile use low hit probabilities.

DETONATION PROBABILITY	S	M	D
0-50			
50-100			
100-150			
150-200			

DISTANCE	S	M	D
0-500			
500-1000			
1000-1500			
1500-2000			
2000-2500			
2500-3000			

DISTANCE	S	M	D
0-500			
500-1000			
1000-1500			
1500-2000			
2000-2500			
2500-3000			
3000-4000			

DIST	S	M	D
0-500			
500-1000			

DISTANCE	S	M	D
0-500			
500-1000			
1000-1500			
1500-2000			
2000-2500			
2500-3000			
3000-4000			

## INSTRUCTIONS

- Select the weapon type and the target distance. (In the case of AP/AT mines select the number of mines employed in a 25 meter area and the number of men and or vehicles crossing that specific area.)
- Read the hit probability for detonation probability for mines). If less than 1 roll die. For example if the hit or detonation probability is 0.8 then any number 1 through 8 resulting from the roll indicates a hit or mine detonation. Resulting numbers 7, 8, 9, indicate a miss, overcorrection, 0 a misfire. Assess casualties/per the guidance information associated with each weapon type.
- For Detection of weapon firing a separate roll of the die should be executed.

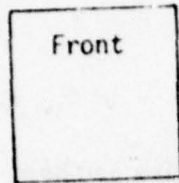
\*Exercise Detection probability for each major weapon firing.

## ABBREVIATIONS

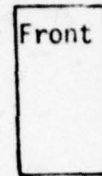
- LAW, TOW, DRAGON, AND TANKS:**
- S Stationary Target hit probability
  - M Moving Target hit probability
  - D Detection probability of weapon firing
- MINES:**
- AP Anti Personnel
  - AT Anti Tank
  - M Men
  - V Vehicles

Figure 4

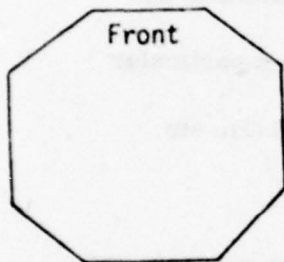
81, 105, 107 Indirect Fire Sheafs  $\pm$  Probable Errors  
Range and Deflection<sup>a/±</sup>



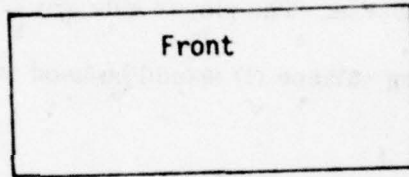
81 Parallel (Normal)  
Width 95m x 90m Depth



81 Converged  
Width 45m x 90m Depth



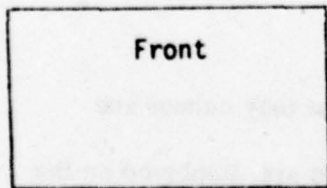
105 Parallel (Normal)  
Width 150m x 140m Depth



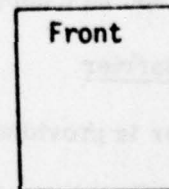
105 Open  
Width 220m x 90m Depth



105 Converged  
Width 45m x 90m Depth



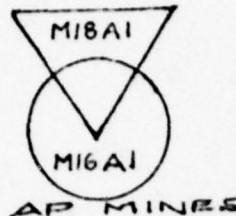
107 Parallel (Normal)  
Width 176m x 100m Depth



107 Converged  
Width 86m x 100m Depth

<sup>a/±</sup> 2 probable errors account for 82% of the probable error.

detonation of anti-personnel mines. (For convenience, the indirect fire sheafs and the mine casualty overlay have been combined into a single playing aid.)



### 3.9 Player's Aid

An aid is provided for each player to assist him in his planning and help him to keep track of the indirect fire rounds he has used (see Figure 5). It is encased in plastic and may be written on with grease pencils. Notes or fire requests written on this aid may be shown to the controller, thus facilitating the game communication process. The player aids are keyed to match a particular playing surface. Playing surface (1) should be used with player aid (1), etc.

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### 3.11 Visual Barrier

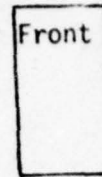
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Figure 4

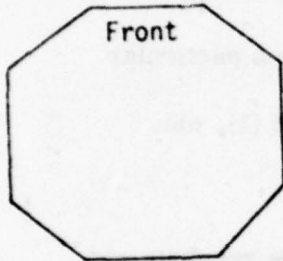
81, 105, 107 Indirect Fire Sheafs  $\pm$  Probable Errors  
Range and Deflection<sup>a/</sup>



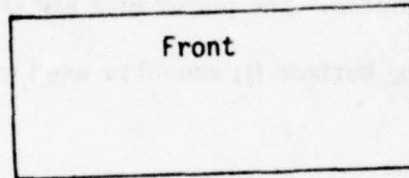
81 Parallel (Normal)  
Width 95m x 90m Depth



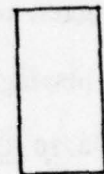
81 Converged  
Width 45m x 90m Depth



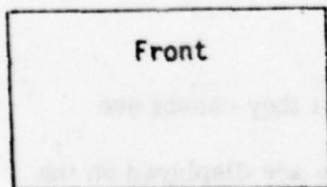
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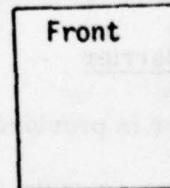
105 Open  
Width 220m x 90m Depth



105 Converged  
Width 45m x 90m Depth



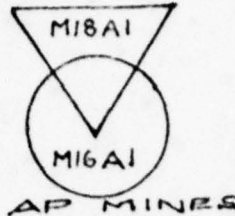
107 Parallel (Normal)  
Width 176m x 100m Depth



107 Converged  
Width 86m x 100m Depth

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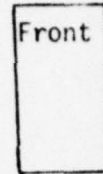
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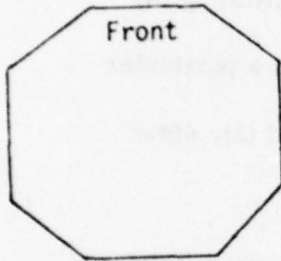
81, 105, 107 Indirect Fire Sheafs <sup>+</sup> Probable Errors  
Range and Deflection <sub>a/</sub>



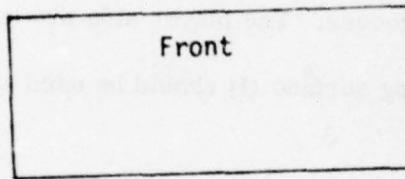
81 Parallel (Normal)  
Width 95m x 90m Depth



81 Converged  
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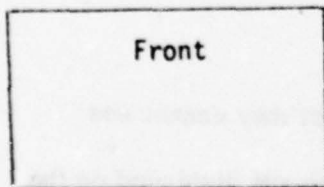
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Width 150m x 140m Depth



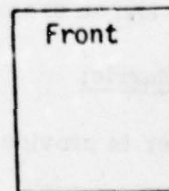
105 Open  
Width 220m x 90m Depth



105 Converged  
Width 45m x 90m Depth



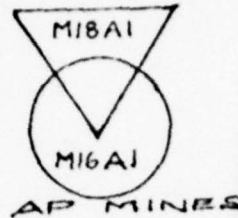
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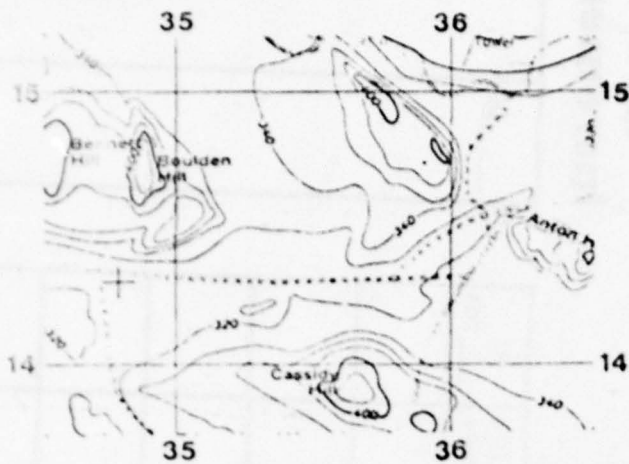
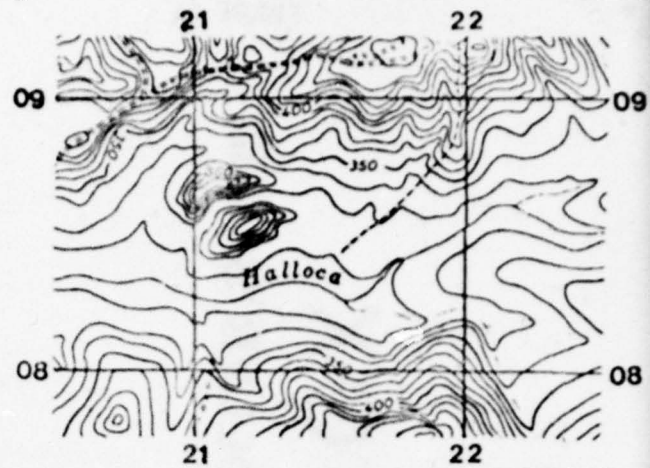


FIGURE 5



**TOX**

**PLAYER'S AID ②**

105/107 ____ rds	81 ____ rds

**Fire Request**

for:  105/107       BATTERIES  
 81       SECTIONS

1. IDENTIFICATION: This is \_\_\_\_\_
2. WARNING: Fire Mission
3. LOCATION (Coordinates or Adjustment):  
 \_\_\_\_\_  
 DIRECTION (Azimuth): \_\_\_\_\_ °
4. TARGET DESCRIPTION:
 

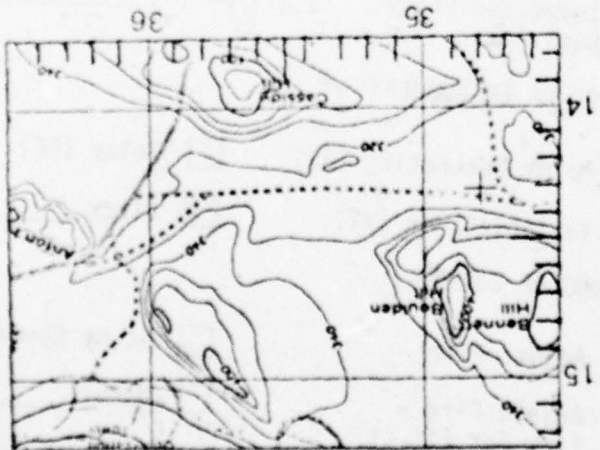
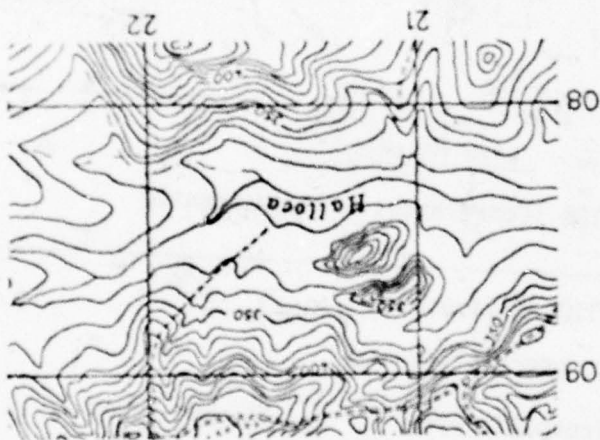
<input type="checkbox"/> Troops in Open	<input type="checkbox"/> Marker Round
<input type="checkbox"/> Enemy Bunkers	<input type="checkbox"/> H & I
<input type="checkbox"/> Suspected Enemy Positions	<input type="checkbox"/> Other: _____
5. METHOD OF ENGAGEMENT:
 

<input type="checkbox"/> Point Detonating (PD)	<input type="checkbox"/> Delay (DE)
<input type="checkbox"/> Variable Time (VT)	<input type="checkbox"/> Other _____
6. METHOD OF CONTROL:
 

<input type="checkbox"/> Adjust Fire	<input type="checkbox"/> At My Command
<input type="checkbox"/> Adjust Fire - Fire For Effect	<input type="checkbox"/> Other _____

FIGURE 6A

# TOX CONTROLLER'S AID



## Offense Indirect Fire

LOCATION	TYPE FUZE	TIME DUE	105/107 rds	81 rds

## Defense Indirect Fire

LOCATION	TYPE FUZE	TIME DUE	105/107 rds	81 rds

## Time Increment

	00
--	----

Figure 6B

Number Men Under Indirect Fire Sheaf

Casualty * Percentage	1	2	3	4	5	6	7	8	9	10
05	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00
10	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
20	-	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00
25	-	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	3.00
30	1.00	1.00	1.00	1.00	2.00	2.00	2.00	3.00	3.00	3.00
45	1.00	1.00	2.00	2.00	2.00	3.00	3.00	4.00	4.00	5.00
50	1.00	1.00	2.00	2.00	3.00	3.00	4.00	4.00	5.00	5.00
60	1.00	1.00	2.00	3.00	3.00	4.00	4.00	5.00	6.00	6.00
75	1.00	2.00	2.00	3.00	4.00	5.00	5.00	6.00	7.00	8.00
90	1.00	2.00	3.00	4.00	5.00	6.00	7.00	7.00	8.00	9.00
100	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00

Number Casualties

\* Based on Indirect Fire Casualty Assessment Table (Figure 13).

## Indirect Fire

Casualty Assessment Example

Situation: The controller has impacted the 105 artillery sheaf on the playing surface as requested by the defensive player. The controller indicates "12 rounds, 105, VT" to both players. The controller then counts the number of men under the sheaf (6 attackers in the open). Referring to the Indirect Fire Casualty Assessment Table (Figure 13), the controller notes that for 12 rounds 105, VT, open conditions, 60 percent of the personnel under the sheaf will become casualties. By the chart above, 4 attackers become casualties. (The remaining 2 attackers will be suppressed 1 minute.)

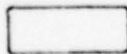
under the barrier, which is inserted in the slot. The barrier was depicted in Figure 2.

#### 4.0 GAME PLAY

##### 4.1 Player Responsibilities

Players utilize their personnel and weapons systems to obtain a military advantage by neutralizing enemy forces, while attempting to minimize friendly casualties. For example, defenders can achieve an advantage by placing defense pieces in parapet foxhole positions with overhead cover for added protection from indirect fire. Note that for game play nothing more sophisticated than parapet foxholes with overhead cover (OHC) should be allowed. When TA-1s are used, the player is responsible for drawing the wire (using a grease pencil) from phone to phone on the playing surface. He also draws the foxhole positions on the playing surface with grease pencil. These should not be larger than the examples given.

Parapet Foxhole



Parapet Foxhole OHC



The defender who can position "fighting elements" forward of the primary defense position, to observe and detect the location of the advancing enemy for neutralization by indirect fire, gains an advantage. The attacker who can avoid enemy indirect fire, and pinpoint the location of the primary defensive positions for neutralization by indirect fire, gains an advantage.

#### 4.2 Controller Responsibilities

The controller's role is crucial to the successful use of the Tactical Opposition Exercise. The controller coordinates all the elements of the game, and is an active but impartial part of the game environment for player participants. He relays information that would be acquired by any of the playing pieces representing men and equipment. He assumes the roles of commander and subordinate for both players. He delivers indirect fire on both playing surfaces, and assesses casualties according to the rules of the game. He acts to prevent either player from violating the rules of the game, and attempts to keep the pace of the game at an acceptable tempo.

In summary, the duties of the controller are many and varied. The basic functions he must perform before, during, and at the conclusion of each game are listed below and discussed in detail in the following paragraphs and later subsections.

- o Issuing OPORDS
- o Establishing weather conditions
- o Evaluating defense and offense plans
- o Advancing time frames
- o Evaluating movement
- o Evaluating and reporting detections
- o Assessing direct fire and mine casualties
- o Assessing indirect fire casualties and suppression
- o Conducting after-action review

#### 4.2.1 Issuing Operations Orders

Prior to the start of each game, one player must be assigned the role of offense leader and one the defense role. The controller must then issue informal OPORDS to each player. At this time he ought to specify how many minutes the players have to plan their individual operations. This is especially applicable in the case of the defense leader--if he were given as much time as he wished, he could conceivably take up to an hour to establish his defense. It is recommended that in initial games, players be given no more than 20 minutes in which to plan their operations; in later games, as players become more proficient, preparation time should be limited to 10 or 15 minutes. Finally, the controller should set a time by which the attack leader must complete his assigned objective or mission.

Operations Orders (OPORDS) are not provided with the game. If they are desired, they should be prepared by the unit commander or his designee. Normally, however, they are left to the controller, who provides enough information orally to set the stage for the game.

Missions can be varied from game to game, but the initial games should include simple attack and defense missions. In issuing the defense and offense missions the following elements should be considered:

- o Areas of Operations. Sector boundaries for game play are marked on the maps. The controller must insure that defense and offense sectors "match" so that an engagement will occur. These boundaries should be drawn on the map surface with a grease

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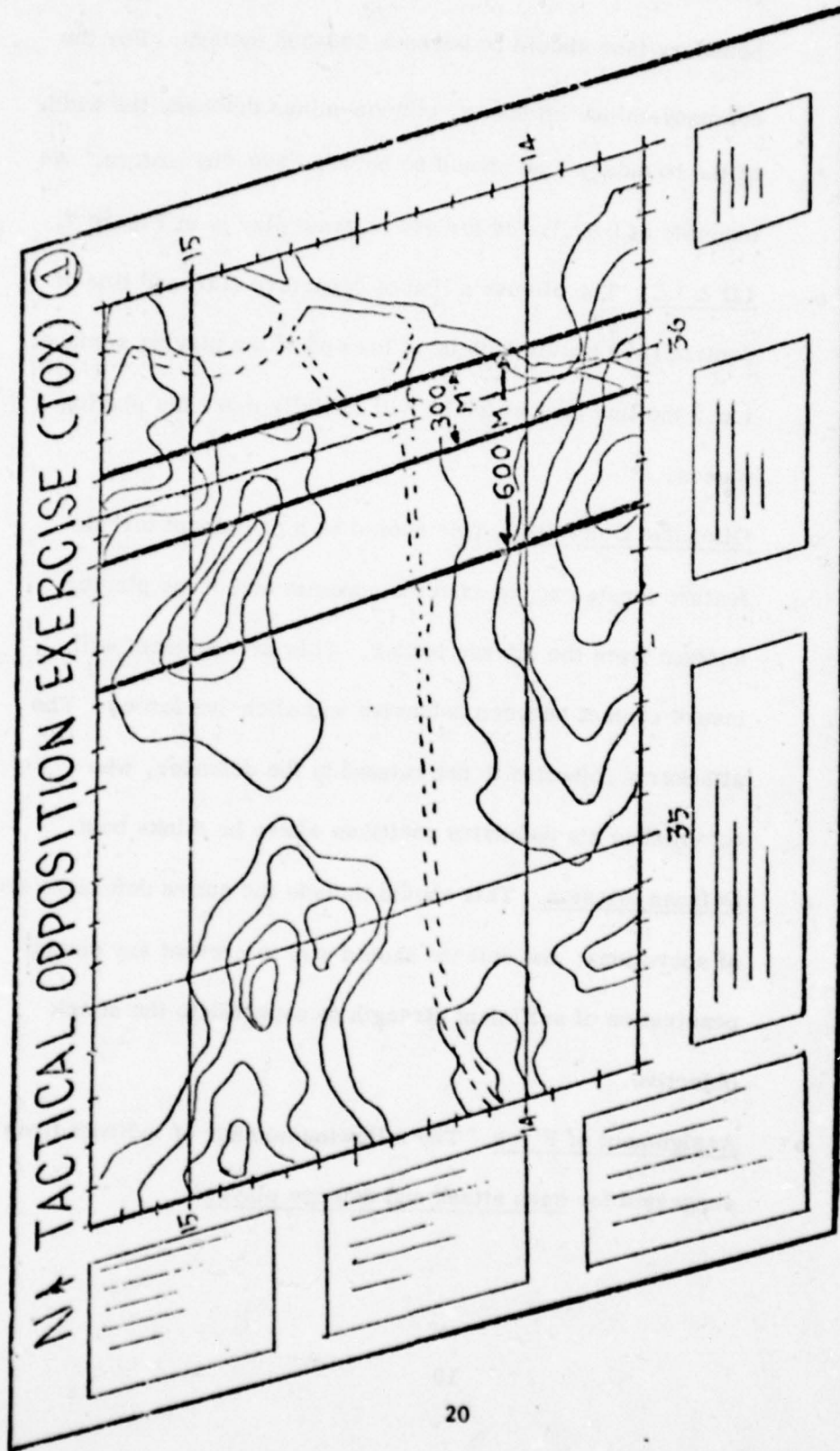
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pencil. The boundaries differ by game module. For the platoon attack versus platoon-minus defense, the width of the boundary lane should be between 200-300 meters. For the company-minus attack vs. platoon-minus defense, the width of the boundary lane should be between 500-600 meters. An example of boundaries for use in game play is at Figure 7.

- o LD & LC. The offense's line of departure (LD) and line of contact (LC) should both be at his end of the playing surface, i.e., the line past which he will initially move his playing pieces.
- o Offensive Objective. This should be a prominent terrain feature located at the extreme opposite end of the playing surface from the offense leader. This arrangement will insure contact between defensive and offensive forces. The attacker's objective is not related to the defender, who establishes his defensive positions where he thinks best.
- o Defense Mission. This should include the entire defensive area of operations; the defense should aim to prevent any enemy penetration of sufficient strength to consolidate the attack objective.
- o Assignment of Fires. The following number of indirect fires are suggested for each attack and defense player:

Figure 7



200-300 meters for Module 1  
500-600 meters for Module 2

	<u>81</u>	<u>105 or 107 (not both)</u>
Module 1: Platoon-minus vs. platoon	40	60
Module 2: Platoon vs. company-minus	80	120

Other missions, such as delay, retrograde, and exploitation, may be given in subsequent games. The unit commander, however, must be careful in specifying victory conditions for a mission, or the game may result in an unresolvable situation.

#### 4.2.3 Establishing Weather Conditions

Weather conditions (including wind strength and direction) are specified by the controller and should be based on the actual weather conditions outside on the day the game is played. This will allow variation and objective determination of weather conditions in game play. Exact weather data can be obtained from the local phone company.

#### 4.2.4 Evaluating Defense and Offense Plans

In order to control the game objectively, the controller needs to know both the offense and the defense plans and, particularly, what action each will take on making contact with the enemy. He must, therefore, confer with each leader individually, but secretly, prior to the start of the game.

#### 4.2.5 Advancing Time Frames

The controller begins the game by stating to both players, "The time is now 1400 hours" (example). This may be the current time, or one selected by the attacker or specified in his OPORD. The controller then specifies a time increment of between 1 and 5 minutes by stating, "The time is now 1402—take 2

minutes' worth of moves." It is recommended that the time increments be longer (2 to 5 minutes) when it is obvious to the controller that there is no possibility of an engagement or detection or other action (don't forget artillery), and shorter (1 minute, or even 15 or 30 seconds) when engagements or detections are imminent. The longer time increments will tend to expedite game play, and the shorter time increments will increase play objectivity. However, the controller should be cautious not to give clues inadvertently, i.e., long time increments should not always be indicative of no detection or contact, nor short increments of imminent engagement.

The controller must record each time increment so that he will not lose track of game time, or fail to impact an indirect fire mission. This can be done by marking each time increment on the controller playing aid, Figure 6.

#### 4.2.6 Evaluating Movement

After a time increment has been given, the offensive player can begin to move his playing pieces. The defensive player may move his playing pieces if he so chooses. When movement is complete, the controller must determine whether a player has exceeded the maximum distance any playing piece could have moved during the time increment. This is done by referring to the Rate of Movement Table, Figure 8. Rates of movement indicated in the Table have been tested in the field and reviewed by experienced infantry officers. Speeds should be reduced by one-half in darkness.

Figure 8

INFANTRY RATE OF MOVEMENT <sup>a/</sup>	
25 M/MIN	<input type="checkbox"/> (ALL CONDITIONS - SUSTAINABLE INDEFINITELY)
50 M/MIN	<input type="checkbox"/> (WOODS/OPEN GRADES FROM 30-50% - SUSTAINABLE INDEFINITELY)
100 M/MIN	<input type="checkbox"/> (WOODS/GRADES FROM 20-30% - SUSTAINABLE 15 MIN; ROADS - SUSTAINABLE 1 HOUR)
150 M/MIN	<input type="checkbox"/> (WOODS, BRUSH 0-20% SLOPES, MUD - SUSTAINABLE 2 MIN; ROADS - SUSTAINABLE 15 MIN)
200 M/MIN	<input type="checkbox"/> (ROADS/OPEN TERRAIN - SUSTAINABLE FOR 2 MIN)
300 M/MIN	<input type="checkbox"/> (ROADS/OPEN TERRAIN - SUSTAINABLE FOR 1 MIN)

a/ Reduce movement rates by  $\frac{1}{2}$  in darkness.

#### 4.2.7 Evaluating and Reporting Detections

The distance at which units can be detected increases with unit size, noise level, and speed of movement. Figure 9 indicates the detection distances for the conditions specified therein. The controller must refer to the Detection Distances Chart (Figure 9) to determine when pieces are detected. Light conditions and movement rates are important considerations in this determination.

The controller should indicate auditory detections to the player by pointing, and writing a note such as: "This piece hears moving troops/a vehicle/automatic fire/or whatever, in this area or in this direction," but the controller does this only if the piece has a communication device! If no commo is present, the controller should carry out the mission of the playing piece. For example, if the mission of (man with M-203) is to observe and report, then the controller should move the piece at a realistic rate of speed via time increments to a location where the information can be conveyed--i.e., to the piece representing the player or FO with commo  $\uparrow$  9 (man with M-16 and 1 squad radio). Example 2: If a piece  $\uparrow$  1 (man with M-16 and M-72) has a mission to engage bunkers, then the controller will carry out this mission as he believes appropriate.

Visual detections of infantry are indicated by placing cue pieces on the player's map at the infantry location. Use of these pieces expedite information transfer. The controller, without speaking, simply places these cues in their exact location, if the opposing player would be able to detect the infantry.

It is important to note that at night visual detection distances are reduced by one-half but sound detection remains the same.

The controller must watch the players carefully to be sure that they do not exceed the acceptable speeds. His eyeball judgment is generally accurate enough, though he may use a grid rule if he is unsure. However, constant measurements will tend to slow the game, and the controller should learn to rely on his unaided judgment as soon as possible.

If a player chooses to move his pieces less than maximum distance, the controller should ascertain how the pieces are moving. For instance, after a short skirmish, the defensive player may choose to have his people crawl. If the player does not inform the controller of his action, the controller may incorrectly assume that the men represented by the playing pieces are in an upright position, and therefore easier to detect than if they were crawling. The controller should be apprised not only of how a player's personnel are moving but in what formation they are moving (i.e., bounding overwatch, file or column), and he should know the distance between members of an advancing element. The manner of movement is extremely important when determining whether any pieces could be detected by the opposing force, or when assessing casualties from direct fire, indirect fire, or anti-personnel mines. If either force could have detected any movement or sounds of the enemy, the controller conveys this cue to the appropriate player by placing cue pieces in the proper location on the detecting player's playing surface.

When moving pieces encounter, detect enemy, or are detected and a fire engagement begins, the controller must resolve this engagement before movement can continue.

Figure 9

## INFANTRY DETECTION DISTANCES-- VISUAL AND SOUND <sup>a/</sup> <sub>b/</sub>

Rate of Travel	NUMBER OF MEN				
	1 Man	3 Men	Fire Tm	Squad	Plt
Mtrs/Min.	WOODS, HEAVY BRUSH (Visual Detection Distances)				
0 (not moving)	5	15	25	35	48
25 (crawling)	30	40	50	70	100
50	55	65	75	95	150
75	80	90	100	120	150
100	100	107	120	135	150
200	130	135	150	150	150
	OPEN, HIGH GRASS (Visual Detection Distances)				
0 (not moving)	10	30	50	70	100
25 (crawling)	60	80	100	150	200
50	550	650	750	950	1700
75	800	900	1000	1200	1800
100	1050	1150	1250	1450	1850
200	1250	1325	1350	1600	2000

a/ In darkness, reduce visual detection distances by  $\frac{1}{2}$ ; sound distances remain the same.

b/ Sound detection for men on foot will not exceed 300m.

#### 4.2.8 Assessing Direct Fire and Mine Casualties, and Detection of Firing Weapon Location

Controllers should refer to the Weapon Characteristics/Effects Chart, Figure 10, to determine the normal effectiveness range of direct fire weapons. This Chart also contains effectiveness data for anti-personnel mines and hand grenades. This information is provided for planning purposes and to acquaint personnel with the effectiveness of weapons in normal use. It must be remembered that effectiveness is downgraded under conditions of limited visibility and in wooded areas. The ranges provided in the figure are based on actual experience under optimum conditions in heavily wooded terrain.

Probability of hitting the target decreases as the range increases. This was taken into account in the design of the Hit, Casualty, and Detection Table (Figure 4). To determine the probability of a hit (or detonation of trip-wired mines), the controller must use the Hit, Casualty, and Detection Probability Table in conjunction with the 10-sided die. Specific directions for use of the Table are on the aid itself. The Table also shows how to determine whether the location of a firing weapon has been detected by forces receiving fire.

#### 4.2.9 Controller Judgment

Substantial effort has been devoted to the development of controller aids to increase game objectivity. There will be occasions, however, when controllers must make personal judgment decisions concerning weapon effectiveness, detection, and engagement outcomes. Such judgments must be based on controller experience and will become a part of the discussion of the After-Action Review (paragraph 7.0).

FIGURE 10

# NORMAL WEAPON CHARACTERISTICS / EFFECTS RANGE

WEAPON	RANGE		NIGHT NORMAL CONDITION	NIGHT ARTIFICIAL ILLUMINATION	NIGHT STARLIGHT SCOPE	ROUNDS/ MINUTE	APPROX. BURST DIAMETER
	DAYLIGHT OPEN	DAYLIGHT WOODS					
M-16	300 m	50-75 m	50 m	100-150 m	100/300 m	NA	NA
M-60	600 m	100 m	50 m	150 m	300 m	200 rapid 100 sustd.	NA
M-203	Area-300 m Point-150 m	50-75 m	50 m	Area-150 m	NA	7	HE = 5 m
M-72	200 m	50-75 m	50 m	100 m	NA	NA	10 m
M-47	1000 m	50-75 m	--	--	NA	NA	10 m
Hand Grenades:							
M-26	40 m	40 m	40 m	40 m	NA	NA	15 m
M-33	45 m	45 m	45 m	45 m	NA	NA	15 m
M-118A1 Claymore			50 - 100 meters to front		NA	NA	Front-50 m Rear-16 m
M-16A1			50 meter radius		NA	NA	30 m
81 mm			4,747 meters			6	20 m
105 mm			11,000 meters			3	34 m
107 mm			Approx. 6,000 meters depending on elevation angle & change			9	34 m

#### 4.2.10 Communications

Communications between the controller and the players are necessary throughout the game. It is also necessary that communications on each side be secure from the opposition. The best method, considering security and cost, is writing notes. These may be written with grease pencil on the backs of the two plastic-encased planning maps. On occasions when the opposition is already aware of the information, it can be given by word and action. For example: "You are receiving fire from here." (Accompanied by pointing).

The controller must provide only that information which the pieces could hear or see, and then only if communications equipment would be available to relay the information to the commander.

PRC-77 radios may be used as an alternative method of game communications. In that case four radios are needed: one for each player (on different NETS) and two for the controller (one on each of the player's NETS). This configuration requires the controller to shift from one radio to the other throughout game play. Should the player want the controller to come up on his push, he must signal the controller. Cues can be given to players by the controller over the radio, as can indirect fire missions. Because of the close proximity of the radios being used, the frequencies must be as far apart as possible to eliminate the possibility of overriding frequencies. It is also recommended that players use PRC-77 headsets as opposed to handsets. This will free the players' hands to move playing pieces, etc. Ear plugs or a radio playing music as background noise should also be used to lessen the likelihood of players hearing one another's communications. When radios are being used, the controller should give cues using call signs which represent

the players' playing pieces. Fire mission requests should be delivered and received using normal SOP. This exercises and reinforces the learning of common procedures.

#### 5.0 INDIRECT FIRE, CASUALTY ASSESSMENT, AND INDIRECT FIRE SUPPRESSION

A number of 81-mm, 107-mm mortar, or 105-mm artillery rounds are provided in the informal operations order for supporting each assault or defense operation. The player can obtain the support by requesting it from the controller, who also acts as the fire direction center for each side. The request must be complete, or delivery may be delayed while the controller asks for missing elements.

Fire requests are carried out by the controller, who places the appropriate fire sheaf on the playing surface at the location specified in the request. He does this immediately after any direct fire engagements have been resolved for that time frame. Pieces within the sheaf may become casualties and surviving pieces may be suppressed.

An ordinary mission specifying target location by coordinates will be delivered in three minutes. Previously planned or registered targets or adjustments from a registered target will be delivered in two minutes; repeats of the last mission or subsequent adjustments will be delivered in one minute. If so desired, targets can be registered before game time. Fires "held on command" will be delivered in one minute upon final request.

Fire requests should contain all the essential elements of Figure 11. However, unless the game is being used to exercise the correct procedure, the requirements can be relaxed.

Figure 11

INDIRECT FIRE REQUEST<sup>a/</sup>

<u>REQUEST ELEMENT</u>	<u>EXAMPLE</u>	<u>WHEN OMITTED</u>
a. Identification	"Hot One, This is Red Dog"	Never
b. Warning	"Fire Mission, Battery 2"	Never
c. Target Location and Direction		Never
Coordinates	Grid 712 684 direction 63° (magnetic)	
From a known point	From Target AF 1000 "Direction 63° add 500 left 100"	
d. Target Description	"Troops in Open"	In registration
e. Method of Engagement	"Danger close; VT HE, in effect"	Area mission
f. Method of Control	Adjust fire or fire for effect. Either can be "At my command"	Never

<sup>a/</sup>During game play number of rounds desired is normally given after the warning element in terms of the batteries required; and if not ordered otherwise, the artillery will fire one round of WP and await adjustment request.

Adjustments are made with reference to the observer<sup>1</sup>-target-line and the impact point. In these games the OTL is estimated in degrees by the player leader, and the point is also given via a 6-digit coordinate or a previously registered target. In the latter case a typical adjustment might be: "From registration delta direction 180<sup>0</sup> add 300 meters left 300 meters." It may be necessary for a player to point out his observer so that the OTL will be correct.

Number of rounds is given in multiples of a battery or sections (such as "Artillery Battery 2, 12 rounds" or "81 Mortar Section 2, 6 rounds" immediately after the warning element.

Fires are delivered by placing the fire overlay (see Figure 12) down on the playing surface. "Front" must be placed forward; this will insure proper sheaf orientation. The battery is assumed to be behind the player, firing parallel with the sector boundaries. Both players should be told where the rounds come down if they have men with communication capability in a position to see the explosions. Also, the number and type of rounds impacting should be identified.

Calculation of casualties has been simplified through the use of a table and calculation example on the reverse side of the controller playing aid. Casualties are assessed by entering Figure 13 with the multiple of a battery or mortar section, fuse-type, and cover condition. The intersection of these indices will be the percentage of those personnel under the overlay who become casualties. A simplified method of calculating casualties is on the back of the controller playing aid (Figure 6), together with a calculation example.

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<sup>1</sup>It is easier for the controller and players to work from registration points. Early games should use them, shifting to coordinates later to provide map reading opportunities, and to see how the increased delivery time affects operations.

Figure 11

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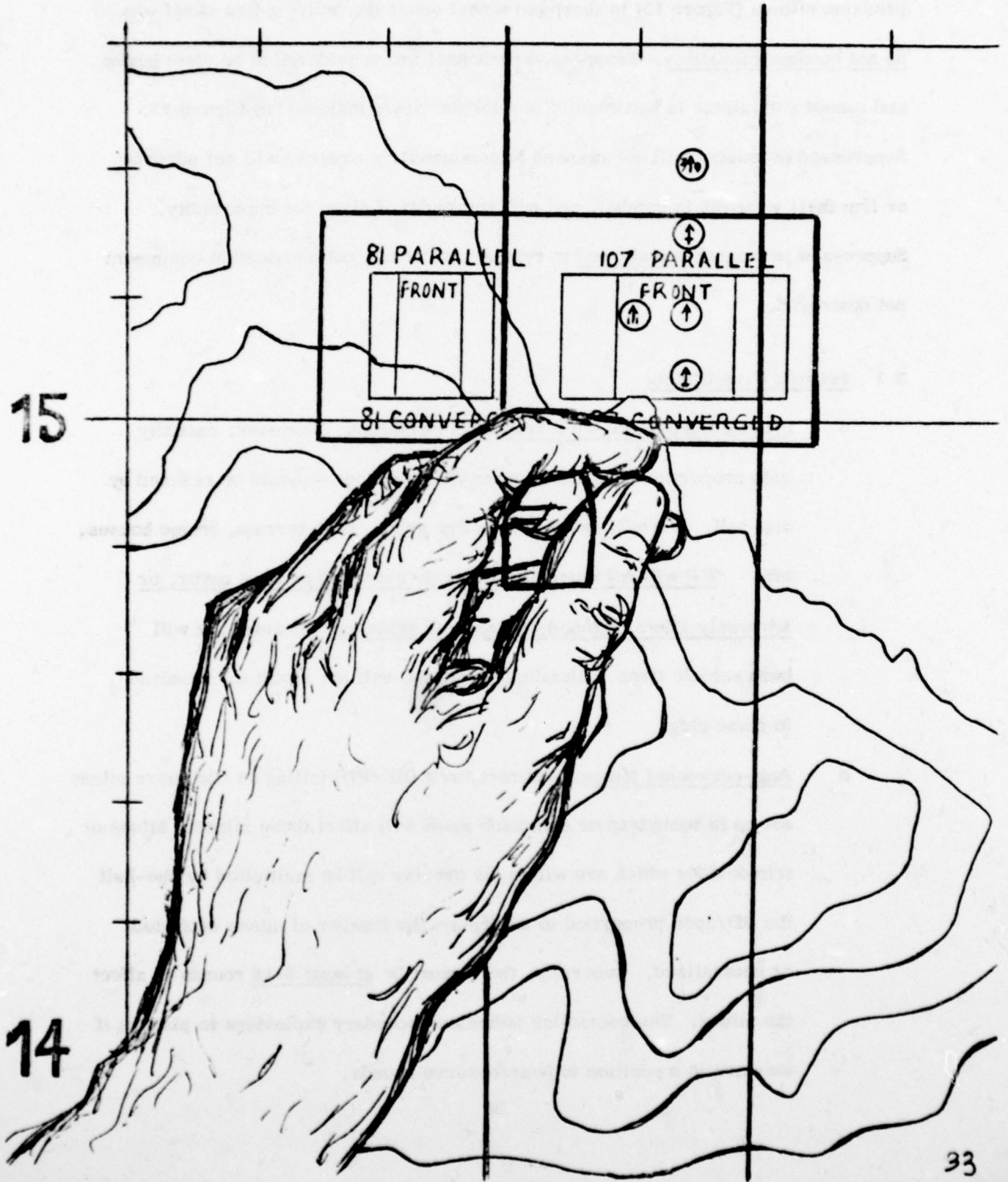
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FIGURE 12

# N↑ TACTICA



After assessing indirect fire casualties, the controller must apply suppression effects (Figure 13) to those personnel under the indirect fire sheaf who do not become casualties. Suppressed personnel are considered to be disoriented and cannot participate in battle activities for the times indicated in Figure 13. Suppressed personnel will not respond to commander's orders, will not advance or fire their weapons in combat, and will surrender if given the opportunity. Suppressed personnel are allowed to retreat and/or use communication equipment not destroyed.

#### 5.1 Indirect Fire Effects

- o Special Importance--WP results in casualties. However, casualty rate proportion--Figure 13 open VT conditions--should be reduced by one-half. WP will cause fire on dry grass, bush terrain, frame houses, etc. WP will not normally penetrate overhead or hard cover, or adversely affect buttoned-up armored vehicles. However, it will burn vehicle tires. Illumination and HC will not result in casualties in game play.
- o Anti-personnel Mines. Indirect fires (HE/PD) falling on Claymore mines set up in boobytrap or command mode will affect these mines. Mines or trip devices which are within the overlay will be multiplied by one-half the PD/open proportion to determine the number of mines activated or neutralized. Generally, there must be at least 6-12 rounds to affect the mines. The controller indicates secondary explosions to players if they are in a position to hear/observe rounds.

FIGURE 13

## INDIRECT FIRE CASUALTY ASSESSMENT

MULTIPLES OF A BATTERY	1	2	3	4	5										
MORTAR SECTION	2 (6)	4 (12)	6 (18)	8 (24)	10 (30)										
FUSE TYPE	VT	PD	DE	VT	PD	DE	VT	PD	DE	VT	PD	DE			
OPEN	30	25	15	60	50	30	90	75	45	100	100	60	100	100	75
PARAPET FOXHOLES	20	15	05	40	30	10	60	45	15	80	60	20	100	75	25
PARAPET FOXHOLES, OHC	00	15	05	00	30	10	10	45	15	10	60	20	15	75	25

VT=Variable Time (Air Burst) PD=Point Detonating DE=Delay, Mine Action OHC=Overhead Cover

### FIRE DELIVERY TIMES

- A. Target of Opportunity (Grid Coordinates) - **3 minutes**
- B. FPF, REGistration, Adjustment from Registration Point, Preplanned Fires - **2 minutes**
- C. Subsequent adjustments to A, B. above - **1 minute**
- D. On Command Fires - **1 minute**

### FIRE SUPPRESSION / MINUTE INCREMENTS

Cover	# Rounds			
	1-3	6-12	18-24	30-36
Open	-	1	2	4
Foxholes, OHC	-	-	1	2

\* Suppressed personnel are disoriented and cannot participate in battle activities for the times indicated.

- o Wire Barriers. An extreme amount of artillery is required to breach wire. Thus, in game play, wire will not normally be breached by mortar or artillery.
- o Casualties. Any proportion .30 or above will result in one individual being assessed as a casualty and removed from game play.
- o Illumination - 81/107/105. Illumination round will illuminate an area 1200 meters in diameter on a clear night. On foggy/rainy nights the area illuminated will decrease to 400 meters in diameter.
- o Projectile Signature Characteristics

HE, Quick, Point Detonating Fuse: Black smoke discolored by dirt. Loud blast may be heard for miles.

HE, Mine Action, Delay Fuse: Eruption of a vertical column of earth, very little smoke. Explosion is muffled, audible for 3-5,000 meters.

HE, VT: Flash, sharp explosion, puff of black smoke above the ground.

WP: Fountain of brilliant white smoke, burning phosphorous. Small particles of phosphorous are spread upward and outward as a pillar of smoke forms and rises. May be visible for great distances at night. Is audible to 1000 meters.

## 5.2 Special Controller Notes

- o When a player requests fire, wait the required time interval and then deliver the rounds on the opposing player's board. Next, deliver

the rounds on requesting player's board and indicate "Splash!"

Assess casualties to both sides as appropriate. Indicate general number of rounds to each player.

- o If a player decides to withdraw an artillery request, he must do so more than one minute before it is to be delivered. Otherwise, splash the rounds.
- o If a player does not indicate number of rounds, type, fuse setting, etc., provide one marking round, WP, at the requested position.
- o If a player asks for only 1 or 2 rounds, assume that impact will be at the center of the overlay.

#### 6.0 VICTORY CONDITIONS

The game should continue until there is no doubt in the controller's mind as to the outcome of the battle activity. Categories of outcomes are as follows:

##### Platoon-Minus Defense vs. Platoon Attack

###### WIN

- o Destruction of the attacking force and/or retreat of the attacking force.

###### WIN

- o Destruction of the defending force with the survival of at least 1 squad of attackers.

or

- o Penetration and/or bypass of the defensive force with survival of at least  $\frac{1}{2}$  of the attackers.

### Platoon Defense vs. Company-Minus Attack

#### WIN

- o Destruction of the attacking force and/or retreat of the attacking force.

#### WIN

- o Destruction of the defending force with the survival of at least 1 platoon of attackers.

or

- o Penetration and/or bypass of the defensive force with survival of at least  $\frac{1}{2}$  of the attackers.

As a general rule, attacking forces will withdraw when: 2 squads become casualties in the platoon attack and 2 platoons become casualties in the company-minus attack.

Outcomes where both sides are destroyed can be termed a tie.

#### 7.0 AFTER-ACTION REVIEW (AAR)

At the conclusion of each game, an After-Action Review must be conducted by the game participants. The normal sequence of this review follows:

- o Once the game is called, players leave their playing pieces on the map surface and the visual barrier between the two players is removed.
- o Each player briefly describes his intended tactics.
- o What actually happened during the course of the game is then reviewed by the players and the controller. This is done by discussing the major occurrences in sequence. Alternative actions and potential outcome should be reviewed at this time to reveal better tactics, i.e., "What else could you have done and what might the outcome have been?"

- o The pros and cons of the tactics and indirect fire missions employed by each player should also be discussed.

The After-Action Review is an important part of the effectiveness of this training technique. The controller is responsible for leading the review, facilitating the exchange of information and promoting discussion by posing appropriate questions, e. g. , "Why did you take this action instead of that?" Without his overall picture of the game, the review has a tendency to be brief, and a lot of information which should be exchanged by the players can be overlooked. If the training is to be effective, the review must be considered as an integral part of the exercise, and must be conducted as seriously as the actual playing of the game.

The game controller should be aware of a potentially serious pitfall in the conduct of the AAR. He should remember that unit success (mission accomplishment) is not always the product of good tactical planning and execution. Likewise, unit failure (heavy casualties) is not invariably the result of poor tactical planning and execution. Casualties may occur in any engagement when an individual or unit commits a tactical error. This is particularly likely in initial training exercises which are characterized by mistakes on both sides. When higher levels of training have been attained, casualties may be inflicted by one force or the other because of exceptionally effective execution of tactical skills. It is possible, then, for the results in a given situation to be attributed to either good execution by one force, poor execution by the other, or a combination of the two. Failure to recognize these subtle distinctions can reduce the effectiveness of the AAR.

Using mission accomplishment as the single criterion for the evaluation of tactical decisions can be equally dangerous. For example, suppose the leader of a unit, in a movement to contact, quickly deploys his force across a large open area in order to occupy a piece of key terrain. This excellent position allows him to subsequently defeat the opposing force. A superficial evaluation of this situation might lead the senior controller to conclude the AAR by reinforcing the leader's decision and the unit's aggressive movement. However, the analysis would not be complete without a discussion of the risk that accompanied the decision. The unit probably sacrificed security to increase their speed. In the example situation the decision resulted in success. On another day with slightly different terrain and against a different enemy, the unit might have been destroyed crossing the open area.

A good AAR should make all participants aware that there are no "doctrinal" solutions that always work. Every decision involves trade-offs. The goal in training is to provide leaders with an understanding of these risks coupled with a knowledge of what has been successful (or unsuccessful) in similar situations.

#### 8.0 ALTERNATIVE GAME MODULES

In addition to the primary game modules described at paragraph 2.3, extra playing pieces have been provided so that various combat attachments may be used in game play. For example, a Tank Platoon (3 tanks) could be made available to the attacking force and 2 additional M-47 Dragon antitank weapons could be provided to the defender. Such attachments can provide experience in the use of armor and anti-armor weapons in a heavily wooded environment.

In the play environment depicted by the game playing surfaces, tanks cannot exceed 5 mph off-road in forested areas (approximately 100 meters per minute). On roads, trails, open or grassy areas, tank speeds should be limited to 15 mph or approximately 400 meters per minute. Alternatively the LAW (M-72) and Dragon (M-47) cannot be fired through forested areas for more than 75-100 meters without impacting on trees or brush. Note that large amounts of indirect fire are required to neutralize tanks. (See Figure 13.)

It is suggested that imagination be used to enhance the game to meet particular needs.

## 9.0 TOX II - THE GROUP GAME

### 9.1 Introduction

The two person game allows player participants to assume all the personnel roles associated with the accomplishment of a given defense or attack mission. The player leader is in a "know all-see all" position relative to his subordinate personnel. As such, the simple game facilitates the development of tactical concepts, and the effective use of indirect fire. The TOX II exercise requires the interaction of a platoon leader and a subordinate to accomplish a stated mission objective. The TOX II enables player participants to become aware of the difficulties associated with:

- o Communications
- o Control and coordination

- o Leadership and subordinate interaction
- o Danger (inaccuracy) of indirect fire

#### 9.2 Participants

The TOX II or Group Game uses 5-6 participants, to include as a minimum:

- o 2 platoon leaders - one leader in the attack, one leader in the defense.
- o 2 squad leaders - one attack subordinate, one defense subordinate.
- o 1-2 controllers - one direct fire controller, one indirect fire controller (reference paragraph 2.1).

One platoon leader assumes the defense responsibilities and the other the attack responsibilities. One squad leader is assigned to each of the platoon leaders. It is recommended that each squad leader be a member of the platoon leader's platoon. Unit integrity can thereby be maintained, and the game can serve as a unit-leader training technique.

The personnel combination recommended here is only one of several feasible alternatives. For example, there could be two squad leaders on one side and only one on the other. One controller instead of two could be used; however, this may slow the pace of the game considerably.

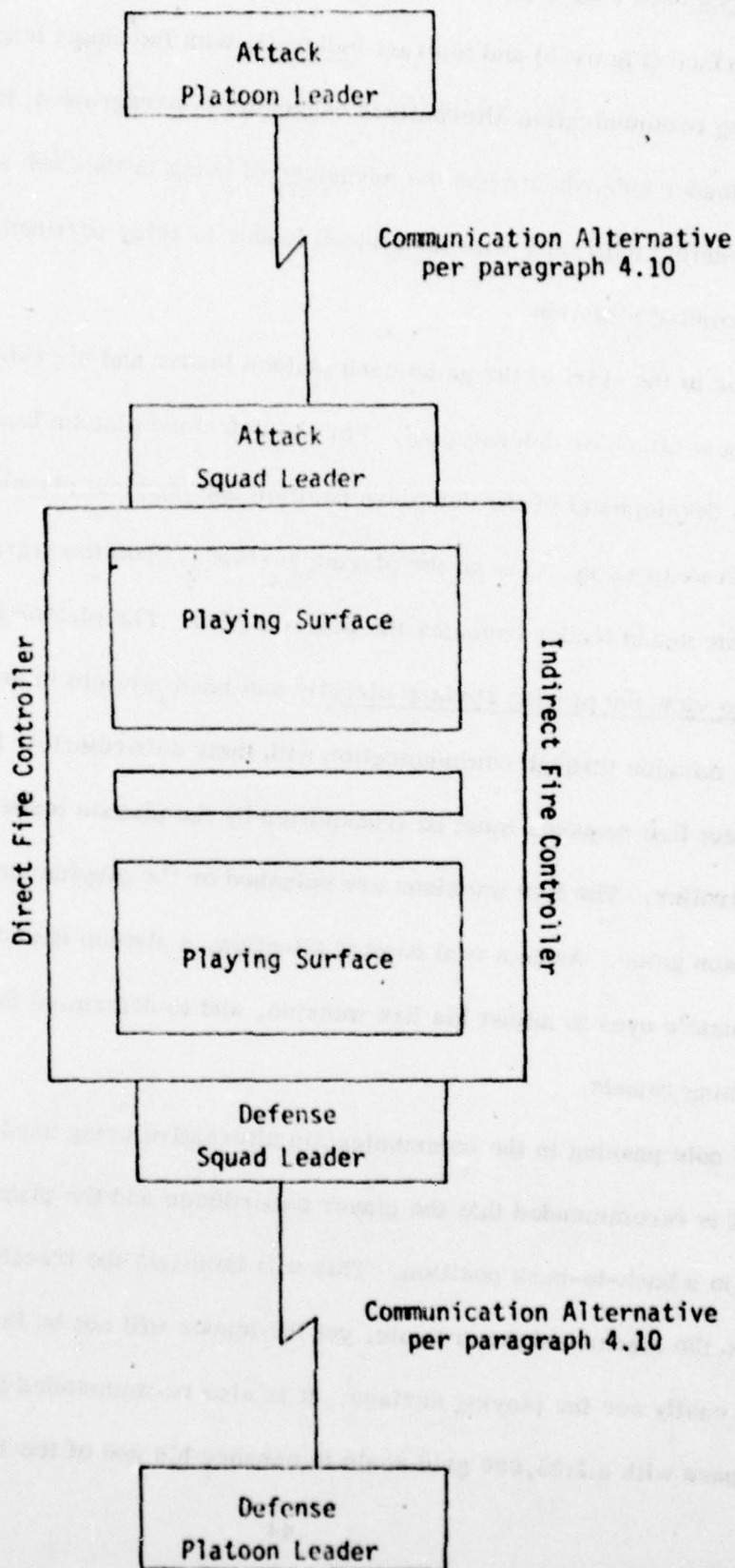
#### 9.3 TOX II (Group Game) Player Controller Configuration

Recommended controller and player positions are depicted at Figure 14.

#### 9.4 TOX II Group Game Play

The TOX II is played in the same manner as the two-person game except that the platoon leaders do not actively participate on the playing surface or manipulate

Figure 14



playing pieces once play begins. The platoon leaders must work from the playing aid map surface (Figure 5) and interact indirectly with the squad leader participants, using communication alternatives suggested in paragraph 4.10. In effect, the squad leader subordinate has the advantage of being in the "see all-know all" role, interacting indirectly with the platoon leader to relay pertinent information about the combat situation.

Prior to the start of the game each platoon leader and his subordinate(s) develop their attack or defense plan. For the defensive platoon leader this includes the actual development of the defensive position and physical placement of playing pieces and weapons systems on the playing surface. Upon the start of the game the subordinate squad leader executes the leader's plan. The platoon leaders are not allowed to view the playing surface directly and must attempt to accomplish their assigned mission through communication with their subordinate. In the group game all indirect fire requests must be transmitted by the platoon leader to the indirect fire controller. The fire missions are splashed on the playing surface as in the two-person game. As in a real combat situation, a platoon leader may use his subordinate's eyes to adjust his fire mission, and to determine the exact location of incoming rounds.

If note passing is the communication alternative being used in group game play, it is recommended that the player subordinate and the platoon leader be placed in a back-to-back position. This will facilitate the transfer of information between the leader and subordinate, yet the leader will not be in a position where he can easily see the playing surface. It is also recommended that the leader employ a compass with a 1:25,000 grid scale to enhance his use of the 1:25,000 playing map.