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ARI TECHNICAL REPORT
TR-79-A21

Field Test of Techniques for Tactical Training of Junior Leaders in Infantry Units (Project EFFTRAIN)

by

Robert T. Root, John F. Hayes,
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July 1979

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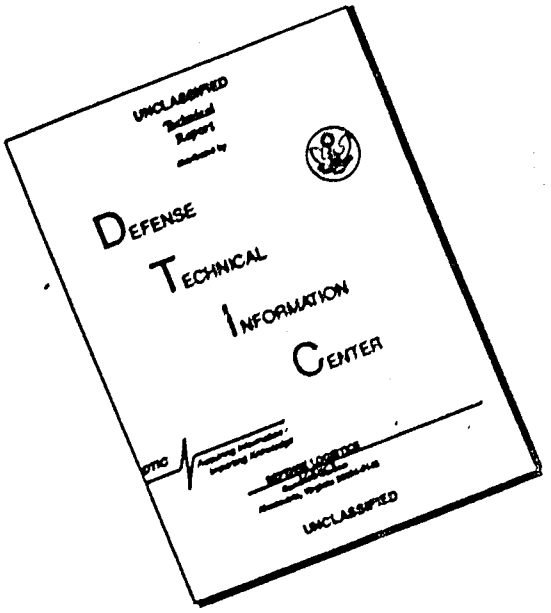

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REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: Technical Report 79-A21	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): FIELD TEST OF TECHNIQUES FOR TACTICAL TRAINING OF JUNIOR LEADERS IN INFANTRY UNITS (PROJECT EFFTRAIN)	5. TYPE OF REPORT & PERIOD COVERED: -- 6. PERFORMING ORG. REPORT NUMBER: --
7. AUTHOR(s): Robert T. Root, John F. Hayes, Larry E. Word, Edgar L. Shriver, and Glenn R. Griffin	8. CONTRACT OR GRANT NUMBER(s): -- (12) 75
9. PERFORMING ORGANIZATION NAME AND ADDRESS: U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Ave., Alexandria, VA 22333	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: (16) 2Q763743A773
11. CONTROLLING OFFICE NAME AND ADDRESS: U.S. Army Training Support Center, TRADOC, Fort Eustis, VA 23604	12. REPORT DATE: Jul 79 (11) 13. NUMBER OF PAGES: 68
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office): -- (14) ARI-TR-79-A21	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

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Engagement Simulation	War games
Tactical training	Tactical training systems
REALTRAIN	Infantry training
Board games	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This field test had three research objectives: (1) to conduct a limited comparison of units trained using new tactical training techniques with similar units who received conventional combat training, (2) to determine the relative value of "process" versus "product" performance measures in the measurement of unit proficiency, and (3) to determine whether these new training techniques could be "handed off" to the using unit with only written documentation.

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One infantry company was trained for 4 weeks with an experimental EFFTRAIN training package--consisting of a board game, field opposition exercises for leaders, and infantry REALTRAIN exercises--and then its performance was compared with that of a control company that conducted training of its own choice for the same period. The performance of the two companies was compared by having elements of each compete against one another in REALTRAIN exercises. To determine how much proficiency was achieved by the experimental group (EFFTRAIN), the criterion situation was set up to give an increasing numerical advantage to the control group (Non-EFFTRAIN).

EFFTRAIN squads and platoons won five of six criterion infantry REALTRAIN exercises against Non-EFFTRAIN units. In a defensive role, EFFTRAIN units inflicted almost twice as many casualties as did Non-EFFTRAIN units in a similar role--69% versus 38%. In an attacking role, EFFTRAIN units inflicted casualties at a rate half again as large as the Non-EFFTRAIN units--78% versus 53%. The results also showed that EFFTRAIN units utilized their simulated indirect fire (mortar) more effectively than their Non-EFFTRAIN counterparts.

Results from this field test show that the EFFTRAIN tactical training program was more effective than a more conventional tactical training program.

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Technical Report 79-A21

FIELD TEST OF TECHNIQUES FOR TACTICAL TRAINING OF JUNIOR LEADERS IN INFANTRY UNITS (PROJECT EFFTRAIN)

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FOREWORD

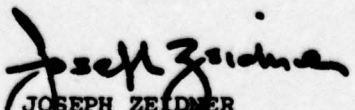
Research initiated by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) in 1972 has led to the development of a family of tactical engagement simulation training techniques, including Squad Combat Operations Exercises (Simulation) (SCOPES) and REALTRAIN. The U.S. Army Training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

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.

The research reported here was the first attempt to integrate these tactical training techniques into a small-infantry-unit training program. This research, conducted in May and June 1975, was responsive to Army Project 2Q763743A773, as part of a larger program of research in tactical training for TRADOC.

This research was made possible through the active support of the Berlin Brigade. Thanks are due the officers and men of the 3rd Battalion, 6th Infantry. The Combat Arms Training Board (CATB) encouraged and supported this research effort. Personnel of the U.S. Army Infantry School and CATB actively assisted in the conduct of the research in U.S. Army, Europe (USAREUR). The valuable contributions of D. L. Hannaman and D. R. Jones of Kinton, Inc., in the field trials are also acknowledged.

The results of this research were made available to TRADOC personnel shortly after completion of the research, who used some of the data to demonstrate increases in tactical performance achievable through effective tactical training. This research augments board game developments accomplished by the Combined Arms Training Developments Agency, Fort Leavenworth, Kans.



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Technical Director

FIELD TEST OF TECHNIQUES FOR TACTICAL TRAINING OF JUNIOR LEADERS IN INFANTRY UNITS (PROJECT EFFTRAIN)

BRIEF

Requirement:

This field test had three research objectives: (1) to conduct a limited comparison of units trained using new tactical training techniques with similar units who received conventional combat training, (2) to determine the relative value of "process" versus "product" performance measures in the measurement of unit proficiency, and (3) to determine whether these new training techniques could be "handed off" to the using unit with only written documentation.

Procedure:

The research objectives were to be met by having one infantry company train for 4 weeks using the experimental EFFTRAIN training package--consisting of a board game, field opposition exercises for leaders, and infantry REALTRAIN exercises--and then comparing its performance with a control company that conducted training of its own choice for the same period. Following the 4-week training period, the performance of the two companies was compared by having elements of the two companies compete against one another in REALTRAIN exercises. To determine the level of gain in proficiency that was achieved by the experimental group (EFFTRAIN), the criterion situation was set up to give an increasing numerical advantage to the control group (Non-EFFTRAIN).

Findings:

EFFTRAIN squads and platoons won five of six criterion infantry REALTRAIN exercises against Non-EFFTRAIN units, in spite of the fact that the criterion situations were set up to give the Non-EFFTRAIN units a force ratio advantage. When in a defensive role, EFFTRAIN units inflicted almost twice as many casualties as Non-EFFTRAIN units in a similar role--69% versus 38%. When in an attacking role, EFFTRAIN units inflicted casualties at a rate half again as large as the Non-EFFTRAIN units--78% versus 53%. The results also showed that EFFTRAIN units utilized their simulated indirect fire (mortar) more effectively than their Non-EFFTRAIN counterparts.

Utilization of Findings:

Results from this field test provide empirical evidence of the greater training effectiveness of an experimental tactical training program (involving board games, a special field opposition exercise for leaders, and infantry REALTRAIN exercises) over a more conventional tactical training program. The results of this research have already been used by TRADOC to demonstrate the benefits of such training. These results also supplement other data demonstrating the benefits of board games (battle simulation) to combat arms unit leader training.

FIELD TEST OF TECHNIQUES FOR TACTICAL TRAINING OF JUNIOR LEADERS IN INFANTRY UNITS (PROJECT EFFTRAIN)

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FIELD TEST OF TECHNIQUES FOR TACTICAL TRAINING OF JUNIOR LEADERS IN INFANTRY UNITS (PROJECT EFFTRAIN)

PURPOSE

The purpose of this report is to document the results of a field tryout of engagement simulation training techniques for small maneuver arms unit leaders. These techniques--two variations of a two-sided board game and a two-sided, free-play tactical exercise without troops [similar to the British tactical exercise without troops (TEWT)]--were combined with platoon-level REALTRAIN exercises during the tryouts in an attempt to determine the optimum procedure for the integration of the individual techniques. This field tryout was conducted during the period 12 May to 13 June 1975 with support of the Berlin Brigade, Berlin, Federal Republic of Germany.

BACKGROUND

Engagement Simulation Training

Historically, Army tactical training exercises in the field involved units engaging "aggressors" in a manner that almost totally lacked tactical realism. As a result, combat arms units could obtain effective training on only a limited number of tactical techniques, and they gained little if any proficiency in making the adaptive decisions necessary in the face of an active opposing force. Tactical training and evaluation were hampered by the lack of a realistic and credible method for simulating battlefield casualties.

The REALTRAIN method of tactical training, developed by the Army Research Institute (ARI) with contractual assistance of personnel from URS/Matrix, Inc., and subsequently from Kinton, Inc., became the first training technique of the type that has come to be known as engagement simulation training. ("Engagement simulation" is a generic term covering training techniques that permit the realistic simulation of the tactical environment.)

The development of low-cost techniques for the simulation of weapons effects and weapon signatures provided the breakthrough necessary to simulate the battlefield in a credible fashion. Casualty assessment techniques were developed for the range of tactical weapons available to infantry and armor units; these techniques include the simulation of the effects of the M16 rifle in the hands of the infantrymen, the simulation of the effects of tank armament, antitank weapons, and the effects of indirect fire.

To complement these simulation techniques, a performance-oriented unit training model was developed, based upon recognized principles of learning. This performance-oriented training model involves the utilization of realistic engagement simulation exercises of increasing tactical complexity for promoting learning.

The REALTRAIN method for troop training is documented for infantry training in Training Circular (TC) 7-2, "Squad Combat Operations Exercises (Simulation)," and for combined arms training in TC 71-5, "REALTRAIN." ARI Report S-4, "REALTRAIN: A Method for Small Combat Arms Unit Training," describes the development of the method and provides an extended description of how the model works, an assessment of the method, and conclusions and recommendations for future refinement.

Development of Leader Training Techniques

Although earlier REALTRAIN developments provided extremely effective and motivating tactical training for troops, research was needed to develop related techniques for junior unit leaders in the maneuver arms. Often field exercises requiring full units provide training for officer and senior NCO personnel only and are counterproductive in terms of lower level troop training and motivation. The objective of this project was to develop and evaluate engagement simulation training techniques for small-unit leaders (company and below) that provide maximum tactical decisionmaking training while minimizing the unnecessary 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 "board game." The concept of board games has a great deal of intuitive appeal:

- They may be used to simulate (to varying degrees of abstraction) "real world" situations;
- They minimize the requirement for equipment resources;
- They minimize the requirement for "expensive" personnel resources;
- They may be reproduced relatively inexpensively;
- They may be used as part of formal training or informally during a soldier's free time, if desired; and
- 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 that they would later apply during REALTRAIN exercises with troops.

Preliminary tests of this gaming technique at Fort Lewis, Wash., during August 1974 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 noncommissioned officers (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 that permitted the unit leader team (platoon and squad leaders) to work together on the game board as they would during an actual engagement. In addition, a new type field exercise, similar to a tactical exercise without troops (TEWT), was developed that used only leader personnel, yet permitted two-sided, free-play simulated combat exercises to be conducted in the field.

It was necessary that the three techniques plus REALTRAIN exercises be integrated into a single comprehensive training procedure that could be used by rifle companies. Such a training method would provide for efficient and effective tactical training by insuring that company personnel at every level are engaged in meaningful training. Using the game and modified TEWT, company commanders, platoon leaders, platoon sergeants, and squad leaders could develop tactical skills without requiring troops in the field. While leaders were developing their skills, squad members could be given REALTRAIN training to develop their appropriate individual and collective skills. When both groups had developed their respective skills separately, they could be brought together for combined REALTRAIN exercises where they could "put it all together."

Techniques Descriptions

During development, the combination of these techniques (including this application of REALTRAIN) was labeled EFFTRAIN--effective and efficient leader training. The simple, two-player game was labeled "TOX I" (Tactical Opposition Exercise); the multiplayer game "TOX II"; and the two-sided, free-play field exercise for cadre only, "FOX" (Field Opposition Exercise). REALTRAIN exercises for platoon level training have no special name; it should be noted, however, that these REALTRAIN exercises were conducted at a level higher than that described in TC 7-2, "SCOPES."

Tactical Opposition Exercise (TOX) I. This version of the game involves two players who sit facing each other at two map boards separated by a visual barrier. The maps, at a scale of 1:3,125, are identical and have the same orientation. A controller sits at the barrier where he can

see both maps and the players' movements (Figure 1). Each game player commands a unit with normal TO&E and capabilities. Tables are provided in the game documentation which tell how fast the pieces can move, how far they can "see" and "hear," and how far each weapon can shoot. Map sheets used in TOX I are representative of the terrain in a unit's normal training area. This allows rules for movement, vision, and hearing to be determined objectively. It also permits the unit to play the game over areas they will subsequently use in REALTRAIN exercises. Players move color-coded pieces to represent men, weapons, and equipment. The controller determines when the simulated units can "hear" or "see" their opponent, when weapons would be used (based on decisions of players), and if hits would be achieved.

The two players have opposing missions; each attempts to accomplish his mission through movement of his pieces and utilization of his weapons over the same terrain. The game advances by short 2- to 5-minute time intervals. Each player is allowed to move any piece a distance on the map board that is within capabilities of the piece to move. The moves of each side are simultaneous during each time interval. Encounters while moving that result in fire fights cause halts until the engagement is resolved.

When one player accomplishes his mission or destroys a sufficient number of his opponent's pieces to render his opponent ineffective, he has "won" the game. Final battle outcome is decided by controller judgment. After the game, the three participants--the two players and the controller--discuss the tactics each side was trying to use and the engagements which resulted.

Tactical Opposition Exercise (TOX) II. TOX I, involving two opposing players and a controller, concentrates all the capabilities of a TO&E unit in one person who plays all the individual roles in the opposition game. Although this provides an ideal situation for the development of tactics and tactical skills, it is unrealistic for a leader to have this level of information and capability in a field environment. He literally can see, hear, and control too much.

The group game (TOX II) is played in basically the same way as TOX I, but it involves a leader and a subordinate on each side with one additional controller to facilitate and arbitrate game play. In TOX II the subordinate on each side plays all subordinate roles and communicates information that he believes is pertinent to the platoon leader via (simulated) radio. The leader plays only the leader role and is provided only cues appropriate for that role. The officer leader is forced to interpret these cues and base his decisions on the information provided to him by his subordinate. This process emphasizes communication and coordination skills and the command and control procedures necessary to conduct a combat mission successfully.

Figure 1. TOX I.

Field Opposition Exercise (FOX). The FOX was developed as an engagement simulation technique to be an economical, yet realistic, means for junior leaders to gain experience in the application of tactics on actual terrain without troops. As conducted in Berlin, 10 participants were required to conduct a FOX: 7 participants (4 cadre from one platoon on the attack, 3 cadre from another platoon on the defense) and 3 controllers. During a FOX, an attack and defense mission was conducted over a lane approximately 1,000 m to 1,500 m long and 200 m to 300 m wide. Symbols affixed to helmets of the participants represented various sized forces. Players and controllers used normal communications and navigation equipment, rifles with scopes together with indirect fire (such as artillery and mortars), boobytraps, and claymore mines, as in a REALTRAIN exercise.

The controller role is similar to that of the REALTRAIN controller. However, he is allowed more subjectivity in the casualty assessment process. Controllers place indirect fire as directed by defense or attack players and assess casualties by both direct and indirect fires.

REALTRAIN. REALTRAIN exercises used with platoon size units are similar to SCOPES exercises, as described in TC 7-2, but involve greater closing distances; more personnel; integral units with officers, NCOs, and troops; and somewhat more complex control procedures. As a training situation, a REALTRAIN exercise permits officers and NCOs to work with troops in integrating their collective skills.

OBJECTIVES

Prior to the developmental tryout in the Berlin Brigade, the four techniques--TOX I, TOX II, FOX, and REALTRAIN--had not been integrated into a cohesive training program. Individual techniques or combinations of up to three techniques had been subjected to limited tryouts within CONUS. The developmental tryout in the Berlin Brigade represented the first effort to field all four techniques as a package. The tryout was designed to represent essentially an examination of the process of tactical skill development of unit leaders (officers and NCOs) across a series of learning experiences. The sample size available for this effort was restricted to three platoons because of limits to the time available and the extensive resources required. Therefore, the tryout concentrated on an intensive examination of changes in leader proficiency as a result of training provided by EFFTRAIN techniques and changes in full unit performance capabilities following subsequent REALTRAIN exercises.

The three research goals were as follows:

1. To conduct a limited comparison of the experimental (EFFTRAIN) training and more conventional training. Performance of the three platoons (from one company) receiving the EFFTRAIN training was compared with that of three platoons (from a second company) that spent approximately as much time in training but

received instruction from the research team only on REALTRAIN at the start of the tryout period.

2. To determine the relative value of "process" and "product" performance data in the measurement of unit proficiency. The lack of a valid and objective method for the measurement of unit performance has hindered unit training research. Related ARI research has been working on this problem; however, this research is only just beginning. The tryout in the Berlin Brigade offered an opportunity to look into the relative value of "process" data (collected during an exercise) and "product" data (collected at its conclusion).

3. To determine whether the developed implementation materials permitted the TO&E infantry unit to implement effectively the EFFTRAIN training. The question of implementability was addressed by providing a complete package of instructional materials to the experimental unit and observing its ability to use them. This was to be done on a nonintervention basis with the research team stepping in only when necessary.

METHOD

Overview

The research objectives were to be met by having one infantry company train for 4 weeks using the experimental training package and then comparing its performance with a control company that had conducted training of its own choice for the same period. Following the 4-week training period, the performance comparison was conducted by having units of the two companies compete against one another in REALTRAIN exercises. To determine the level of gain in proficiency that might be achieved by the experimental group (subsequently called the EFFTRAIN group) the criterion situation was set up to give an increasing numerical advantage to the control group (subsequently called the Non-EFFTRAIN group).

Test Sample

Two companies of the Berlin Brigade were selected as the test companies. A Company, 3rd Battalion, 6th Infantry, was the experimental (EFFTRAIN) group, and B Company of the same battalion was the control (Non-EFFTRAIN) group. These two companies were rated as equivalent in current achievement (ATTs, inspections, etc.), except that B Company was considered to have somewhat more experienced officers and A Company to have more experienced NCOs. Both company commanders were of high caliber. The B Company commander was an experienced company commander, whereas the A Company commander was in his first company command assignment. The companies were at equal personnel strength in grade and numbers.

Training Phase

The training phase of the project lasted for 4 weeks. Figure 2 shows the complete training schedule for A Company. During Weeks 1 and 2, the leaders participated in EFFTRAIN training, and A Company troop personnel received the standard SCOPES orientation that was given to both EFFTRAIN and Non-EFFTRAIN troop personnel to insure they had the minimal skills necessary to participate in the comparison phase. During Weeks 3 and 4, leader and troop personnel trained together in REALTRAIN exercises. (Periods left blank in Figure 2 represent holidays or administrative time not devoted to training.)

The training schedule for B Company is shown in Figure 3. B Company leaders and troops trained together in all their training activities. Their training program was based on the conduct of SCOPES exercises (which the company commander indicated he would have been conducting anyway had he not been involved in the research program). At the outset of the research project a conventional training program was given to the B Company commander as the training he should follow.

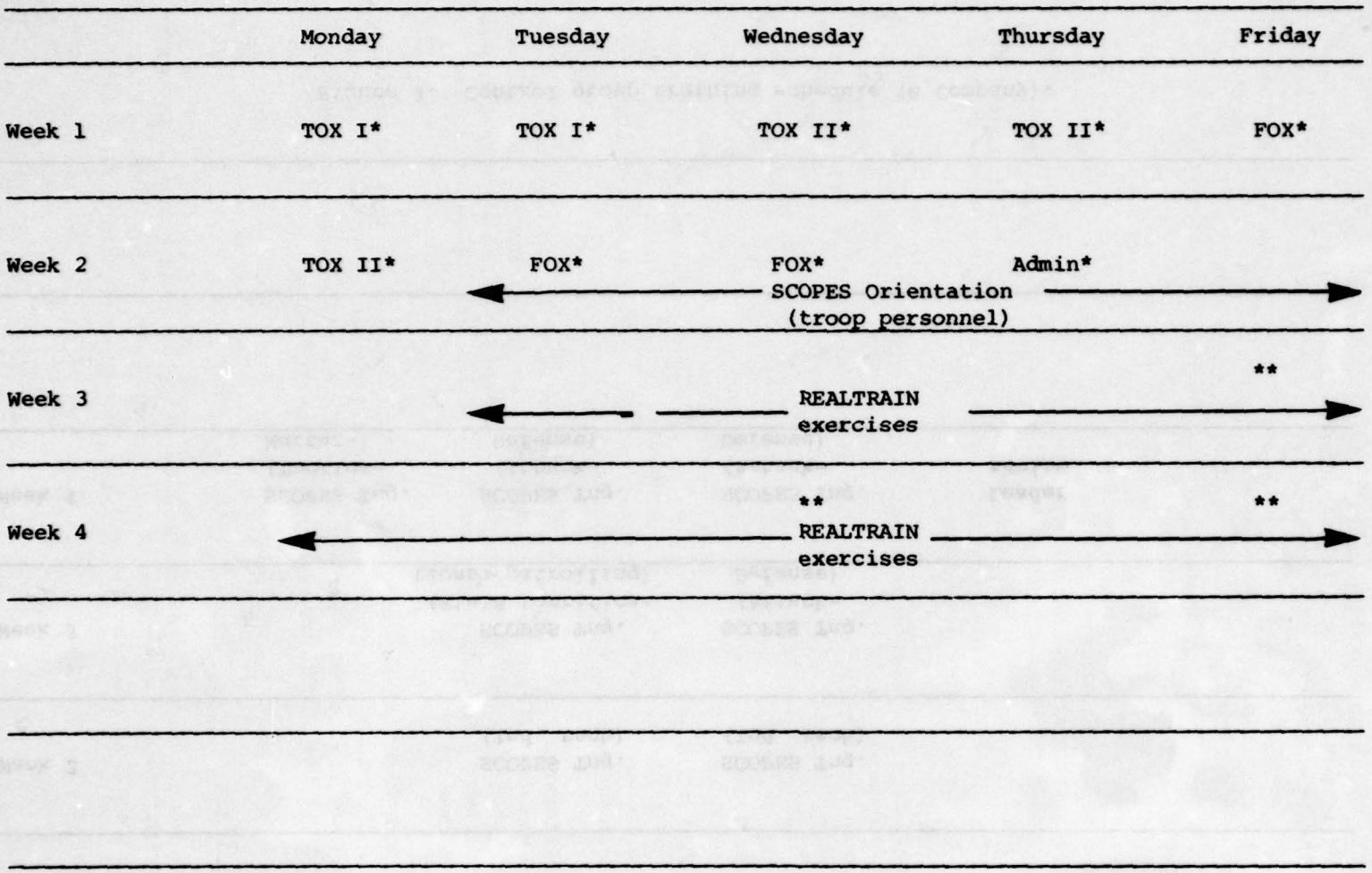
This program was drafted by the Infantry School to represent a typical approved company training program. Upon inspecting it, the B Company commander said that, based on his prior experience with SCOPES training, following such a program would put his people at a disadvantage in competing against A Company. He requested that he be permitted to continue SCOPES training as he had originally planned. Because that program represented a current Army training method and was significantly different from the experimental program, he was permitted to follow it. To have insisted that B Company follow a program in which the commander had no confidence would have had potentially severe morale effects and would have reduced the value of the results more than allowing him to use another program which he could pursue enthusiastically.

The difference in the available training time in the schedule of the two groups was due to the decision of the B Company commander to continue to meet his unit's normal commitments. A Company, on the other hand, was excused from most (but not all) such commitments for the period of the research program.

The B Company training program was also hampered by limited training ammunition. A Company received a special allocation of training ammunition; B Company trained with normal allocations, which limited somewhat the fidelity of the SCOPES exercises used for training.

Evaluation Phase

During Week 5 of the project, the combat proficiency of the EFFTRAIN and Non-EFFTRAIN units was compared by pitting them against one another in a series of criterion test situations.



*Leader personnel only.
**One-half day only available.

Figure 2. Experimental group training schedule (A Company).

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1		← SCOPES Orientation →			
Week 2		SCOPES Tng. (Ind. tech)	SCOPES Tng. (Ind. tech)		
Week 3		SCOPES Tng. (Field fortifications: patrolling)	SCOPES Tng. (Attack-Defense)		
Week 4	SCOPES Tng. (Tactics-Mortars)	SCOPES Tng. (Attack-Defense)	SCOPES Tng. (Attack-Defense)	Leader review	

Figure 3. Control group training schedule (B Company).

The criterion test consisted of six REALTRAIN exercises conducted as offensive/defensive engagements in established exercise lanes of up to 400 m by 1,200 m. The EFFTRAIN company was scheduled to conduct their three attacks first to minimize vicarious learning on the part of the Non-EFFTRAIN platoons. More learning is likely to occur from observing a successful static defense than from observing a successful dynamic attack.

During the criterion engagements the ratios of defending to attacking troops were varied systematically from the typical 3:1 attack/defense ratio advantage of the defense and to evaluate EFFTRAIN trained forces against increasingly unfavorable odds. Table 1 summarizes those odds.

Table 1

Engagement Odds

Battle no.	Experimental group battle role	Proposed odds	Actual unit strength	
			experimental	control
1	Attack	3:1	27	11
2	Attack	2:1	26	18
3	Attack	1:1	27	29
4	Defense	1:3	11	29
5	Defense	1:4	10	35
6	Defense	1:5	11	50

Increasingly unfavorable force ratios for the EFFTRAIN units were used to determine if these units could perform more effectively in simulated combat as a result of EFFTRAIN training than units not having this training. Experimental conditions were weighted against EFFTRAIN units each time a potentially biasing decision was necessary. This assured that any finding of higher performance on the part of the EFFTRAIN forces would indicate a clear superiority.

Performance Measures

To determine the superiority of units involved in the criterion situation, several types of objective measures are employed, as listed below.

Win/Lose Decisions. Each test engagement was permitted to continue until it could be determined that one side had accomplished its mission.

It was recognized that there are several important ramifications of using such a criterion. First, it promotes carrying engagements on beyond the point at which they would reasonably be broken off in actual combat. This results in higher casualty rates than would normally be tolerated. Another factor is that this measure masks the absolute proficiency of a given unit. A bad unit that defeats a worse unit is still a bad unit; in the case where two good units compete against each other, one still loses.

Indirect Fire Effectiveness. The use of artillery is an important factor in battle success; its relative ease of measurement in REALTRAIN provides a reliable indicator of tactical proficiency. Data collected during the course of past exercises has helped establish baseline measures of proficiency. Thus, the number of rounds required to inflict a casualty as well as the percentage of total casualties inflicted with artillery can be used as indexes of unit combat proficiency.

Casualties Inflicted and Incurred. Data on the number of direct fire casualties inflicted and incurred on each side by type of weapon are available from REALTRAIN exercises. Thus, unit progress in employing each major weapon system can be analyzed.

Engagement Effectiveness. By plotting the location of casualties inflicted by the defense, a measure of engagement effectiveness can be generated. A defending unit that engages the offense early and at greater distance from the objective has a better chance of ultimate success. Conversely, an offensive unit that can effectively engage main defensive positions before being engaged by the defending unit has a better chance for success. Distance measures, when combined with information on location of casualties, provided the necessary data.

Tactical Descriptions. Additional information was collected that described the tactical performance of the units on each side. This information dealt with the nature of defensive positions prepared, offensive tactics employed, planning, and command and control procedures. When combined with quantitative data, such as that described above, a verbal description of tactics used and a sketch of major battle actions provide a comprehensive picture of what actually occurred during each battle.

Caveats in Interpreting Results

Because of the difficulties involved in controlling events in a field evaluation of this type, situations can occur and decisions have to be made that can alter the direction of the results. Several such situations occurred during this project. These are reported here in

terms of their suspected direction of influence so that the reader can interpret the results presented in the following section in the proper perspective.

Factors Potentially Increasing Effectiveness of EFFTRAIN Training.

a. The commander of the Non-EFFTRAIN company elected to meet his normal non-training commitments during the period of the project. School quotas, non-tactical mandatory training, detail personnel, etc., reduced available training time and the number of men available at any one time. A Company, on the other hand, "zeroed out" most conflicting requirements during the 5 weeks of the project, so that outside commitments were held to a minimum.

b. The EFFTRAIN unit was authorized an increased amount of training ammunition for their training phase. B Company was restricted to standard training ammunition allowances and had to curtail their training to a degree because of ammunition shortages. (Training ammunition is critical to the effectiveness of REALTRAIN training and efforts are being made by TRADOC to increase Common Table of Allowances (CTA) for training ammunition in recognition of this fact.)

c. While every effort was made to minimize the intervention of research personnel into the experimental training treatment, there were from two to five such personnel physically present with the EFFTRAIN company throughout the 4-week training phase. Contact with the Non-EFFTRAIN company was maintained only through interaction with the commanding officer and for the formal 4-day SCOPES orientation program at the start of the 4-week period.

d. The commander of the EFFTRAIN company was free to select his leaders for the six criterion battles. As a consequence, the same leader conducted the three attacks (Battles 1, 2, and 3), another leader conducted two defenses, and the third leader conducted the third defense.

Factors Potentially Reducing Effectiveness of EFFTRAIN Training. First, during the first few days of the 2-week REALTRAIN phase (Weeks 3 and 4) of EFFTRAIN training, the exercises were affected by difficulties in obtaining timely indirect fire support. An initial effort was made to include a mortar platoon in the exercises by having them use the M-32 Pneumatic Mortar Device. Difficulties employing and integrating this system made indirect fire late and inaccurate, initially negating some of the valuable training the leaders had received in the previous training phase. Although this problem was eventually overcome by employing the technique of artillery simulation described in TC 71-5, the EFFTRAIN unit leaders would probably have been able to achieve a higher degree of overall tactical proficiency in the use of indirect fire had the initial difficulties not been encountered.

Second, there was also a failure to transmit to unit leaders techniques for properly conducting the After Action Review. The consequence was that the full training value of the numerous REALTRAIN exercises was not attained and resulted in reduced proficiency on the part of the EFFTRAIN units.

CONDUCT OF EFFTRAIN TRAINING

This section describes the conduct of the EFFTRAIN training for A Company. Conclusions derived from this first full-scale tryout of EFFTRAIN that affect future modification and implementation are set off by brackets.

The Research Team Mission

The role of the research team was (a) to train A Company personnel in the procedures involved in conducting EFFTRAIN training, (b) to assist as REALTRAIN controllers, (c) to collect data, and (d) to make observations necessary for refining EFFTRAIN upon return. The research team was not to play an active role in the conduct of the EFFTRAIN training (for example, no member of the research team was to conduct an After Action Review). Direct intervention by the research team in the learning process would have unfairly influenced and accelerated the degree of tactical sophistication achieved. Through the EFFTRAIN learning experience, participants were to learn for themselves the capabilities of the weapons available to them and how to use them most effectively. The intent of the field tryout was to determine the course and amount of learning that could be achieved by a typical infantry company using EFFTRAIN techniques after they had been trained on the mechanics of the method.

Discussion of EFFTRAIN Training

Week 1. The first week was spent in training platoon leaders and NCOs on the TOX I and TOX II versions of the map exercise. Although some improvements were noted in individual performance, less progress in individual leader learning was achieved during Week 1 than had been expected. Several factors were considered to contribute to this.

First, insufficient attention was given by controllers to the After Action Review process in which the events in the game serve as major teaching points. Part of this lack of attention was because games tended to end and the After Action Review to start at 1200 and 1700. At those times, after several hours of work, it was difficult to initiate and maintain more than a perfunctory review.

The second factor that appeared to limit learning was pitting inexperienced players against each other. Tactical errors that should have had negative consequences often were not capitalized on by the other side. As soon as these problems manifested themselves, scheduling changes were made that changed game completion times and allowed inexperienced leaders to play against more experienced ones during their early game play. Platoon sergeants proved to be a significant resource in this regard. They represented the primary reservoir of experience within the company. Therefore, it was useful to use them as players, in addition to the training they received themselves; they served, in effect, as subject matter specialists.

A third factor degrading possible training effects was that several unavoidable conflicts caused key personnel to be replaced during a given day's activities, which detracted from overall progress. (Key personnel must participate for a sufficient period in order for this phase to be maximally effective.)

At the request of the commanding officer of A Company, several other modifications were introduced during Week 1. To expand the training benefit of TOX I, he requested that more personnel than planned be given an opportunity to play the game. This was accomplished by setting up additional games and training several more controllers. [Although this gave leaders at the fire team level an opportunity to work in the game, it is not considered appropriate to revise the model to incorporate this aspect. First, the role of controller is crucial to the success of the map exercise and it is not considered likely that a sufficient number of good controllers can normally be obtained from company resources to support numerous simultaneous games. Second, it is considered more important that platoon and squad leaders have an adequate opportunity to work in the game rather than have more people work in the game for a shorter period.]

Another modification made at the company commander's request was to use personnel from the mortar platoon to control TOX I and TOX II artillery play. This provided mortar platoon personnel realistic practice and helped to establish effective interaction between the infantry and mortar platoons. [The practice of using indirect fire specialists should be followed to achieve effective indirect fire simulation.]

Week 2. During the second week, field opposition exercises (FOX) were conducted in which leader personnel (platoon leaders, platoon sergeants, and squad leaders) opposed each other in two-sided engagements. These free-play exercises were well received. Again, the company commander modified them by adding fire team leaders; this was acceptable. The intent of these exercises is to provide continued initial leader training with minimum unnecessary drain on company resources. (If a unit can afford to commit additional resources to this phase, it only serves to increase the overall effectiveness of the training.)

The performance of leader personnel in FOX exercises indicated that the ground environment adds significant complexity to the accomplishment of required leader tasks and responsibilities. There was a strong tendency for leaders to abandon complex tactics they had e lved during TOX I and TOX II until they could begin to handle the minimum essential performance requirements. As leaders came to realize the value of the FOX exercises, their interest in them increased. At the company commander's request, 1 day of games was replaced by additional FOX exercises. A total of 3 days were spent in FOX exercises, running two exercises a day. Also during Week 2, A Company troop personnel were given separate training in REALTRAIN techniques of weapons employment so that they would be ready to participate in tactical training during Weeks 3 and 4.

Week 3. During Week 3, the complete company participated in a series of REALTRAIN exercises with each platoon leader alternating on offense and defense missions. During the first 3 days of the week, an effort was made to integrate the mortar platoon into the exercises by having the company fire missions using a pneumatic firing device on a scale range. Erratic fire missions resulted, and with the resources available it was not possible to track down the major error source. Therefore, a quasi-FDC was used, directly plotting fires and directing artillery throwers to the right position.

The overall effect of the initial difficulties in simulating indirect fires was to set back the confidence of the infantry personnel in using artillery. When indirect fire came in late and off-target and adjustments were ineffective, infantry tended to abandon its use. Retraining on use of indirect fire was necessary, therefore, once the more accurate delivery techniques were installed.

The transition to the more complex environment of operating with troops in the REALTRAIN exercises again appeared to cause the platoon leaders to revert to simpler tactics. The preparation of defensive positions was difficult to accomplish with the available men until practice and organization were accomplished. Leaders' span of control on both offense and defense was initially overtaxed. Although the employment of complex tactics was beginning to improve by the end of Week 3, much remained to be accomplished toward getting the unit functioning at a desired level of proficiency during the fourth and final week of training.

Week 4. During the fourth week of training, which was the second week of REALTRAIN exercises for the EFFTRAIN unit, continued improvement in tactical planning and execution was demonstrated. It was not until this second week of REALTRAIN exercises that most of the problems were worked out for the simulation of indirect fire. When attacking or defending units found that they could rely on the accuracy and timeliness of indirect fire, they began to utilize this capability.

An attempt was made to schedule two REALTRAIN exercises a day; however, because exercises were allowed to go to their logical conclusion, the length of some of the exercises (as long as 6 hours) meant only one could be run. [For a simple attack/defense problem such times, occasioned by overly conservative behavior on the part of the attacking platoon leader, are tactically unacceptable. However, it is felt that such behavior must be considered as a natural stage in the learning process. Unit personnel had become aware of the capabilities of weapons used against them and had developed techniques for countering, or at least minimizing, these effects--dispersion among men during movement and the use of point elements to locate defensive positions. As their confidence in these tactics increased, so did the efficiency with which they were executed (as soon during Week 5).]

RESULTS

The results of the developmental tryout in the Berlin Brigade will be discussed in four parts. The first section will present a summary of the six "battles" between the EFFTRAIN and Non-EFFTRAIN units. Summary data along with descriptions of each engagement are felt to portray accurately what occurred during the six engagements. (Also included are summaries of battles between the EFFTRAIN unit and two other units within the Berlin Brigade that wanted the opportunity to compete against the EFFTRAIN platoons.)

The second section compares the performance of the EFFTRAIN and Non-EFFTRAIN units in terms of major differences in tactical performance as measured by quantifiable indicators.

The third section describes the performance of the EFFTRAIN group during the 4 weeks of EFFTRAIN training as it progressed through each training phase.

The fourth section includes comments from the battalion that provided both the EFFTRAIN and Non-EFFTRAIN units. During a field tryout of the type reported here, "hard" data provide only part of the total picture; the expert judgments of training participants and their superiors must also be analyzed to help determine the exact course continued training program development should take.

Table 2 summarizes the results of the six battles between the EFFTRAIN and Non-EFFTRAIN groups and the two battles between the EFFTRAIN group and the two other units within the Berlin Brigade in terms of "wins" (or "losses"). Table 2 shows that in five out of six battles the EFFTRAIN trained units performed more effectively than the Non-EFFTRAIN units that had received only REALTRAIN engagement simulation training and that in the battles against two additional units, rated "combat ready," EFFTRAIN units were also able to win against odds that were stacked against them.

Table 2

Summary of Eight Engagement Simulation Battles

Battle no.	Mission			
	Attack	Defense	Force ratio	"Winner"
1	EFFTRAIN	Non-EFFTRAIN	2.5:1	EFFTRAIN
2	EFFTRAIN	Non-EFFTRAIN	1.4:1	EFFTRAIN
3	EFFTRAIN	Non-EFFTRAIN	.9:1	EFFTRAIN
4	Non-EFFTRAIN	EFFTRAIN	2.6:1	EFFTRAIN
5	Non-EFFTRAIN	EFFTRAIN	3.5:1	Non-EFFTRAIN
6	Non-EFFTRAIN	EFFTRAIN	4.5:1	EFFTRAIN
7	C-1* Unit (4/6 inf)	EFFTRAIN	3.5:1	EFFTRAIN
8	EFFTRAIN	C-1 (2/6 inf)	1:1	EFFTRAIN

*C-1 indicates a "Combat Ready" unit.

The appendix presents detailed descriptions of each battle and a sketch of the defensive layout and attacker's route of maneuver for that battle.

Quantitative Tactical Results

The objective measurement of unit performance has only recently been subjected to research scrutiny. Engagement simulation techniques for the first time permit the realistic assessment of casualties during tactical training. One of the objectives of the developmental tryout in Berlin was to assess the utility of certain quantitative measures of tactical performance in a REALTRAIN environment. All the objective measures of unit performance involve the study of casualties as a function of the weapons or their tactical employment.

It should be pointed out, however, that with the present data it is not possible to separate out quantitatively the specific contribution to the results of the relative performance of each side in an engagement. For example, for a unit with a low number of casualties it is not always

possible to determine whether the low number was due to poor tactical performance (in terms of maximizing weapons effects) on the part of the opposing unit or to good performance of the first unit in minimizing the effectiveness of enemy weapons.

The results presented below are in terms of mean performance across a number of battles. Because of the limited sample size upon which these results are based and the number of uncontrolled variables potentially influencing the results, data presented should be considered as descriptive. No tests of significance have been run. There is, however, a consistency in the results that cannot be overlooked.

Casualties as a Function of Tactical Mission. Figures 4 and 5 show the number of men starting and finishing each of the six test battles. The figures graphically show the odds facing EFFTRAIN units in the attack (Battles 1, 2, and 3) and in the defense (Battles 4, 5, and 6). They also show the number of men left at the end of each battle.

Table 3 presents a summary of the total casualties inflicted by EFFTRAIN and Non-EFFTRAIN groups for the six criterion battles as a function of tactical mission.

Table 3

Casualties Inflicted by EFFTRAIN and Non-EFFTRAIN Groups by Tactical Mission (totals for three battles)

Group	Battle	No. of attackers	No. of casualties inflicted	Percentage of casualties inflicted
Defending group				
EFFTRAIN	4, 5, 6	114	79	69
Non-EFFTRAIN	1, 2, 3	80	30	38
Attacking group				
EFFTRAIN	1, 2, 3	58	45	78
Non-EFFTRAIN	4, 5, 6	32	17	53

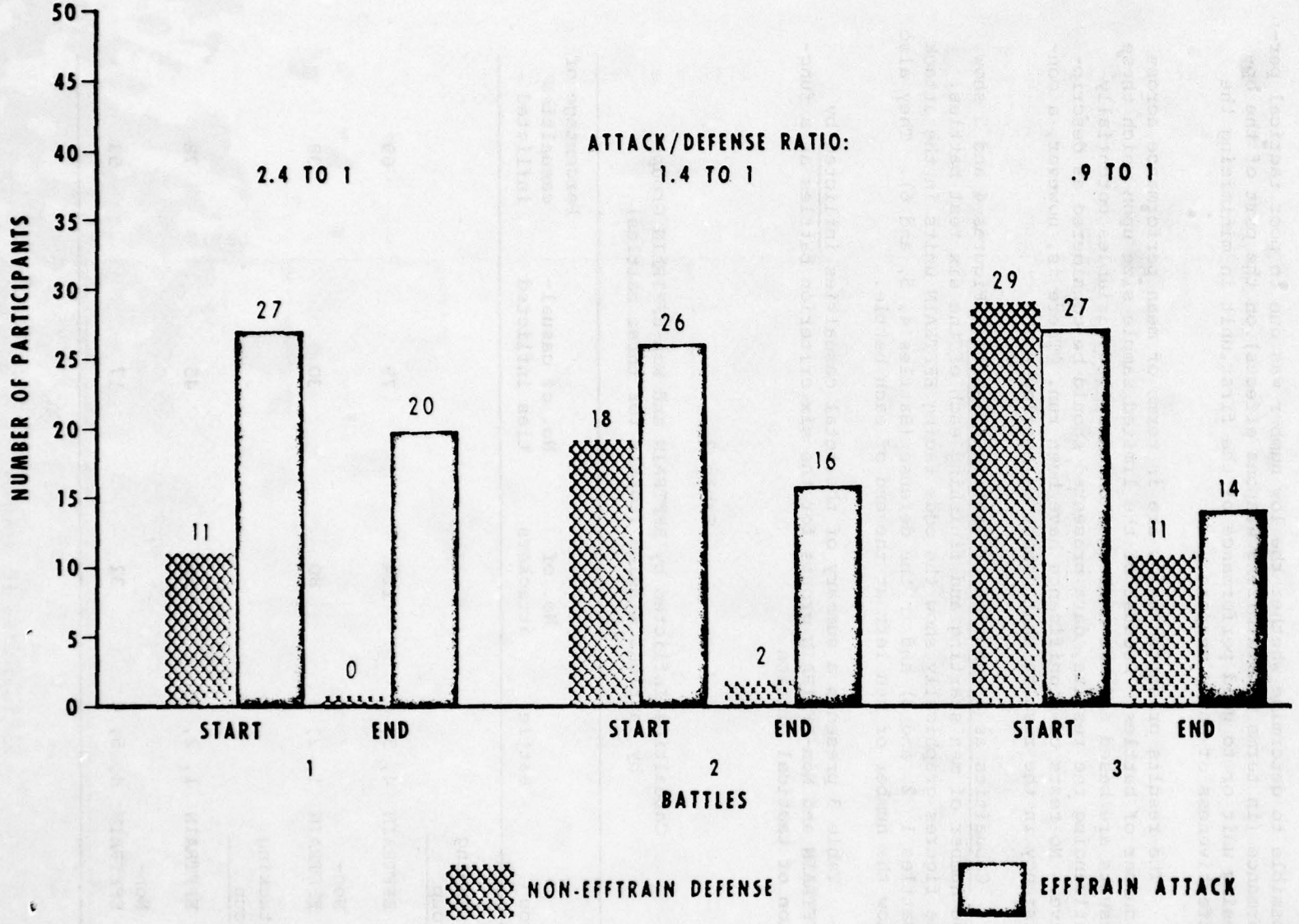


Figure 4. Number of men at the start and end of test Battles 1, 2, and 3.

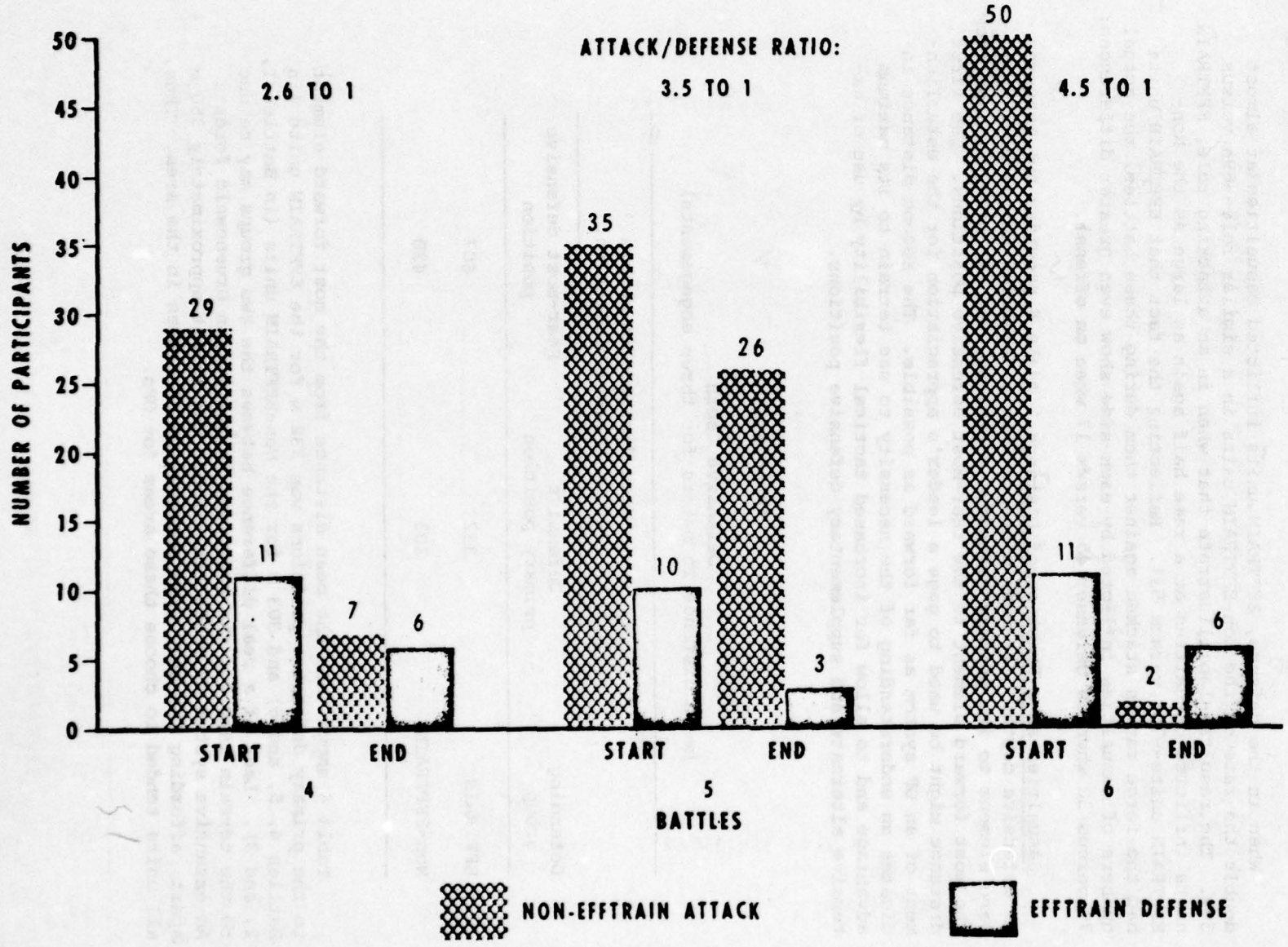


Figure 5. Number of men at the start and end of test Battles 4, 5, and 6.

When in the defense, EFFTRAIN units inflicted casualties at almost double the rate of the Non-EFFTRAIN units in a similar role--69% versus 38%. The results also illustrate that when in an attacking role, EFFTRAIN units inflicted casualties at a rate half again as large as the Non-EFFTRAIN units--78% versus 53%. Reflecting the fact that EFFTRAIN units had the force ratios stacked against them during these battles, the actual numbers of casualties inflicted by each side show even greater differences: 79 versus 30 when on defense; 45 versus 17 when on offense.

Casualties as a Function of Distance. Table 4 provides two measures of defensive depth: (1) mean distance from a defensive unit's most forward element to its primary defensive positions, and (2) mean distance from the most forward element to the rear-most defensive positions. The first distance might be used to gage a leader's appreciation for the establishment of an OP system as far forward as possible. The second distance indicates an understanding of the necessity to use terrain to its maximum advantage and to allow for increased tactical flexibility by use of extensive alternate and supplementary defensive positions.

Table 4

Defensive Depth
(mean distance in meters for three engagements)

Defending group	Mean distance in meters from forward element to:	
	Defensive primary position	Rear-most defensive position
EFFTRAIN	332	607
Non-EFFTRAIN	303	420

Table 4 shows that the mean distance from the most forward element to the primary defensive positions was 332 m for the EFFTRAIN units (in Battles 4, 5, and 6) and 303 m for the Non-EFFTRAIN units (in Battles 1, 2, and 3). Lack of a real difference between the two groups may be due to the terrain used for the exercises in the Berlin Gruenewald forest. An extensive system of roads ran through the forest approximately 350 m apart, affording the only good observation distances in the area. Thus, all units tended to choose these areas for OPs.

There was, however, a fairly large difference in the distance from the most forward positions to the rear-most defensive positions for the two groups--607 m versus 420 m. (In interpreting these results, it should be noted that the defensive leader (Non-EFFTRAIN) in Battle 2 misoriented his defensive positions so that they stretched diagonally across the lane, adding to the measure of defensive depth for this battle.)

Table 5 reflects the relative ability of units to detect the enemy as early as possible. On the average, Non-EFFTRAIN units first detected EFFTRAIN attackers at approximately half the distance that EFFTRAIN groups did (186 m vs. 332 m). More telling, however, is the fact that once Non-EFFTRAIN units detected EFFTRAIN attackers, they were not able to bring fire on EFFTRAIN units until they were less than 100 m in front of their main defensive positions, versus 332 m for the EFFTRAIN units in the defense.

Table 5

Detection and Engagement Distances by Defensive Forces
(mean distance in meters for three engagements)

	From primary defensive positions to:	
Defending group	Mean detection distance	Mean engagement distance
EFFTRAIN	332	332
Non-EFFTRAIN	168	83

Casualties as a Function of Weapons Type. Table 6 shows the percentage of casualties inflicted by each type of weapon for each tactical role. Review of this table shows that the percentage of casualties inflected by each type of weapon is similar for the two groups. For instance, 28% of the casualties inflicted by EFFTRAIN units and 27% of those inflicted by the Non-EFFTRAIN units when in the defense were from indirect fire; 42% and 46% of the casualties inflicted by the EFFTRAIN and Non-EFFTRAIN units, respectively, were from M16 fire. These results indicate that the two sets of units tended to utilize the various weapons in similar ways.[1] However, data presented below show that there were great differences in the effectiveness with which the various weapons were utilized.

[1]It is of interest to look at the distribution of casualties by weapon type as a function of mission--attack or defense--across both EFFTRAIN

Table 6

Casualties Inflicted, by Weapon Category
(percentage of total casualties for
three battles)

Group	Indirect fire	M16	Other
Defense			
EFFTRAIN (Battles 4, 5, 6)	28	42	30
Non-EFFTRAIN (Battles 1, 2, 3)	27	46	27
Offense			
EFFTRAIN (Battles 1, 2, 3)	49	35	16
Non-EFFTRAIN (Battles 4, 5, 6)	47	35	18

In terms of the percentage of the total opposing force killed, the casualties inflicted by each weapon type show major differences in execution between the EFFTRAIN and Non-EFFTRAIN units.

Table 7 shows that the pattern of casualties inflicted was similar for the three weapon categories. For each weapon category, EFFTRAIN units in the defense inflicted casualties at a rate approximately twice that of the Non-EFFTRAIN units; EFFTRAIN units in the attack inflicted casualties at a rate approximately half again as great as the Non-EFFTRAIN units.

(Continued)
and Non-EFFTRAIN groups. Nearly half of the casualties inflicted by units in a defensive role were from M16 fire, approximately one-fourth by indirect fire, and approximately one-fourth by a combination of grenades, machine gun, claymore mines, and the LAW. Looking at the casualties inflicted by units in an attacking role, it may be seen that approximately one-half of the casualties were caused by indirect fire, only one-third by M16 fire, and less than one-fifth by other weapons systems available to the attacking units.

Table 7

Casualties Inflicted, by Weapon Category
(percentage of total opposing force, totals
[in parentheses] for three battles)

Group	Weapon category: Indirect fire	M-16	Other	Casualties
Defending group				
EFFTRAIN (Battles 4, 5, 6)	19 (22)	29 (33)	21 (14)	69 (79)
Non-EFFTRAIN (Battles 1, 2, 3)	10 (8)	18 (14)	10 (8)	38 (30)
Attacking Group				
EFFTRAIN (Battles 1, 2, 3)	38 (22)	28 (16)	12 (7)	78 (45)
Non-EFFTRAIN (Battles 4, 5, 6)	25 (8)	19 (6)	9 (3)	53 (17)

EFFTRAIN units in the defense "killed" 19% of the opposing forces by indirect fire, 29% by M16 fire, and 21% by a combination of other weapons available; Non-EFFTRAIN units inflicted only 10%, 18%, and 10% casualties by indirect fire, M16 fire, and other weapons, respectively.

When in the attack, EFFTRAIN inflicted 38% of casualties by indirect fire; 28% by M16 fire, and 12% by a combination of other weapons; for Non-EFFTRAIN units only 25% of the casualties were inflicted by indirect fire, 19% by M16 fire, and 9% by other weapons.

Indirect Fire Casualties. Units that must win while being outnumbered must be able to use indirect fire effectively. When two sophisticated infantry units are locked in battle, pitting a main attack force against the final defensive line, the best result that either side can expect is a win with heavy casualties incurred. However, if either side can pinpoint the location of the other first and bring heavy concentrations of indirect fire to bear, the results can be quite different.

Table 8

Comparison of Artillery Rounds

Group	Attack missions			Defense missions			Total		
	Rounds fired	Enemy casualties	Rounds per enemy casualty	Rounds fired	Enemy casualties	Rounds per enemy casualty	Rounds fired	Enemy casualties	Rounds per enemy casualty
EFFTRAIN	171	22	7.8	133	22	6.0	304	44	6.9
Non-EFFTRAIN	331	7	47.3	173	8	21.6	504	15	33.6

Table 8 shows that for attack and defensive missions combined EFFTRAIN units required 6.8 rounds for each casualty inflicted, whereas the Non-EFFTRAIN units required 33.6 rounds per enemy casualty. EFFTRAIN units used only 60% as many simulated rounds as the Non-EFFTRAIN units (304 rounds versus 504) yet inflicted almost three times as many casualties (44 casualties versus 15 casualties).

The difference between the two groups in terms of indirect fire effectiveness was the greatest for attack missions; Non-EFFTRAIN units required 47.3 rounds per casualty, whereas EFFTRAIN units required only 7.8 rounds per casualty. For defensive missions, Non-EFFTRAIN units required approximately 3.5 times as many rounds per each casualty as the EFFTRAIN units--21.6 rounds per casualty (Non-EFFTRAIN) versus 6.0 rounds per casualty (EFFTRAIN). Table 7 corroborates this increased ability to employ indirect fire, with EFFTRAIN units almost twice as effective as Non-EFFTRAIN units as shown by the percentage of casualties inflicted, 19% versus 10% for the Non-EFFTRAIN units.

Performance Results During EFFTRAIN

During the first 2 weeks of EFFTRAIN training, leader personnel of A Company received training without troops using successively the two-player game (TOX I), the multiple-player game (TOX II), and Field Opposition Exercises (FOX). During Weeks 3 and 4, leaders and enlisted personnel went through a series of REALTRAIN exercises.

This section presents summary results of leader performance during each of the four phases leading up to the six criterion engagements, against a similar unit receiving only REALTRAIN training (with more limited resources). The measures used to look at leader performance during the four learning phases and the comparison engagements are defensive depth, number of personnel in forward positions, and the percentage of casualties attributable to each weapon category.

Defensive Depth. Table 9 shows the mean distance from the most forward element of a defense to the primary defensive positions established by leader personnel during each phase of EFFTRAIN training and for the test engagements. Table 9 shows that when leaders first went to the field for training (in the FOX) defensive depth decreased markedly from the defensive depths used during game play (TOX I and TOX II). (Interpretation of these results will be delayed until other data have been presented.)

Table 9

Defense Depth for Four Training Phases and for Test Engagements

Training phase	Number of exercises	Mean distance from forward element to primary defense positions (in meters)
TOX I	5	540.0
TOX II	3	633.3
FOX	6	316.7
REALTRAIN exercises	12	379.2
Test engagements	3	332.0

Number of Personnel in Defensive Positions. Table 10 shows the mean number of personnel in forward positions (i.e., in observation posts [OP] or as snipers). Again, the table shows that there was a change in tactical behavior when leaders went to the field for FOX exercises. They tended to place fewer persons out in forward positions, because of the limited number of men involved in a FOX. However, during the REALTRAIN phase of the EFFTRAIN training and the REALTRAIN test engagements, leaders utilized more men in forward positions than they did during the FOX exercises.

Table 10

Mean Number of Persons in Forward Positions for Four Training Phases and for Test Engagements

Phase	Number of exercises	Mean number of persons in forward positions
TOX I	5	2.8
TOX II	3	5.0
FOX	6	1.8
REALTRAIN exercises	12	3.5
Test engagements	3	3.0

Casualties as a Function of Weapon Type. Table 11 shows the percentage of casualties attributable to each weapon type for the four phases of training and the test engagements. (Note that the three weapons categories differ slightly from those in tables in the previous sections.) In the case of indirect fire, performance differences again show up when moving from the FOX to REALTRAIN exercises.

Table 11

Percentage of Casualties by Weapon Category for Four Training Phases and for Test Engagements

	Weapon category		
Phase	Indirect fire	Direct fire	Claymore mines
TOX I	48.8	24.6	26.5
TOX II	64.6	23.9	11.5
FOX	66.2	33.3	0.5
REALTRAIN exercises	29.5	58.9	11.5
Test engagements	35.6	56.2	8.2

Analysis of Training Phase Results. The data above show that leader performance changed markedly when moving from training on a game board to training in the field in a FOX. In the field, leaders initially abandoned complex tactical behaviors, which they had developed during game play, until they could adequately handle the basic elements of tactical performance in a (simulated) battlefield environment. Among the possible reasons are the following:

1. Leaders were overwhelmed when they moved from the map game to a field environment where they could no longer see the forest for the trees. No longer could they deal with map distances; they had to move over real terrain. The field environment added to problems of communication and effective command and control; defensive depth was reduced to manageable proportions.

2. Differences in defensive depth were probably also a function of differences in time allowed for preparation of defensive positions. For TOX I and TOX II it was assumed that 12 to 24 hours were available for defensive preparation; for the FOX only 1.5 to 2 hours were provided. During subsequent REALTRAIN exercises a maximum of 5 hours was provided to the defending unit to "dig in."

3. Indirect fire during TOX I, TOX II, and FOX exercises included the simulated play of both the 105mm howitzer and the 81mm mortar; REALTRAIN exercises during Week 4 of EFFTRAIN training and the test engagements included only the play of the 81mm mortar. Thus, the higher percentage of casualties attributable to indirect fire during TOX I and TOX II games and FOX exercises is probably due to the nature of the resources available.

4. Alternatively, direct fire casualties during TOX I, TOX II, and FOX exercises were probably underestimated because of the difficulty in determining the results of individual actions during game play or during FOX exercises where a single NCO would simulate a squad or fire team.

The data, however, do serve to point out that major changes in behavior occurred when in the field. An engagement simulation exercise without troops (i.e., the FOX) is required so that junior leaders may make "real-world" (as opposed to game-board) mistakes in tactical planning and execution before working in REALTRAIN exercises with their troops.

Participant Comments

Presented below are excerpts from the After Action Report of the 3rd Battalion, 6th Infantry, the parent organization of both A and B Companies.

State of Training.

"At the beginning of the project, both companies were at an above average level of training, having successfully completed both platoon and company ATTs within the preceding 90 days. However, weaknesses were recognized at both platoon and squad level in the areas listed below. These were identified as training objectives in addition to the intended research goal established by the Army Research Institute.

a. Map Reading
b. Tactical Control of Subordinate Units
c. Call for and Use of Indirect Fire
d. Field Fortifications."

Control Company Training.

"Based on the initiatives of the company commander and his subordinate leaders, Company B conducted SCOPES training during the first 4 weeks of the project. This training was conducted almost exclusively in the field and consisted of squad and platoon level SCOPES exercises with After Action Reviews. The training was an extension of the unit commander's initiative, diversification, and imaginative exercises. As a result the platoons and squads of Company B were judged combat ready. The small-unit leaders were confident in their ability to accomplish missions."

Experimental Company Training.

"a. Weeks 1 and 2: EFFTRAIN principles were taught to small-unit leaders by use of both board games (TOX I and II) and field opposition exercises (FOX). During the period soldiers were involved in individual skill training and SCOPES orientations. The TOX and FOX allowed leaders to train without committing the soldier's time with repetitive field exercises. As a result, valuable gains were made in maximizing leader and follower training time. This extensive leader training was reflected by tangible improvements in the leaders ability to:

1. Make timely and accurate use of indirect fire.

2. Maintain dispersion to avoid heavy single mission losses to indirect fires.

3. Exercise channels of communication and methods of control over terrain which seldom permitted eye-to-eye contact between leaders.

4. Modify plans in order to react to spot intelligence reports from forward elements.

b. Weeks 3 and 4: The company bivouacked and conducted advanced SCOPES training exercises. Each platoon was able to participate in a minimum four offensive and four defensive operations with a variety of opposing strengths. Progress noted during this phase was as follows:

1. Despite the "real" pressure generated by the nature of the problem, leaders became more confident in their ability to make timely and accurate decisions.

2. Soldiers practiced and learned the construction and value of field fortifications.

3. All personnel practiced the employment of the claymore mine, the LAW, and hand grenades.

4. Company A was practicing tactical movement--command/control on a much improved basis. For example, casualties from indirect fires fell from five to six per mission to a kill rate of one or two per mission at the end of the fourth week. Booby-trapped claymore mines were being discovered intact instead of (being) tripped.

5. Each individual soldier learned the importance of the succession of command and the need to know the details of the mission when key leaders became casualties. Soldiers were able to regroup/reorganize and continue the mission. As

the EFFTRAIN training program continued, the detailed refinements in procedures and automatic responses within squads and platoons were astonishing."

Comparison Test. After presenting a table on the results of the six competitive engagements (which considered Battle 3 a "draw"), the report states that

"Company B was noticeably less proficient than Company A in the following areas:

a. Use of indirect fire support.

b. Dispersion of troops during movement.

c. Company B defenses were normally both shallow and predictable.

d. Command and control communications in Company B during movement to contact and when receiving direct fires experienced some difficulty."

Collateral and Incorporated Training Values. The following training benefits were felt to have been derived from the unit's exposure to this training:

"a. Mortar Platoon: The continuous exercise of the FDC, FO's and squads in support of all company training produced marked improvement in the overall proficiency of the platoon.

b. Soldiers became familiar with demobilization (sic) techniques. Each claymore and booby trap utilized firing wire and electric blasting caps. Soldiers became skilled at deactivation of those devices. There were no training accidents during the exercise.

c. The value of 'keeping the men informed' was profoundly and practically exercised. Every soldier knew his mission.

d. Land navigation and map reading in dense terrain was much improved during the training.

e. Leaders in Company A were definitely advantaged by the opportunity to experiment with tactics during the TOX and FOX exercises. Leaders could make tactical errors caused by inexperience which would have been costly had the entire platoon or squad been present. As a result, at the outset of 100% platoon and squad training in Week 3, leaders were more competent and confident in their ability to make decisions and do their job.

f. Leadership training in Company A provided leaders with a definite advantage when matched against their counterparts in Company B. This fact was attested to by the winning percentage of Company A. . . .

g. The SCOPES vehicle provided a realistic training situation. Each soldier lives or dies by his leader's decisions and his own ability to move properly in a combat environment. Soldiers would not only get down when told to do so, but would actually crawl for 400 meters in order to reach the objective 'alive.' In this manner, troop interest was maintained at a high level and training objectives were met at a distinctly accelerated rate."

Commander's Comments. The conclusions of the commander of the 3rd Battalion, 6th Infantry, summarize the perceptions of the unit which participated in EFFTRAIN.

"Combat is a kill or be killed proposition that remains a leader's responsibility. Leaders and soldiers must train to win on future battlefields against a numerically superior enemy. The training battlefield must be realistic and provide the opportunity to develop the critical combat skills to employ combined arms units who are aware of the increased lethality of modern weapons; who maximize the protective use of terrain; and, who can communicate responsively. It is evident that the EFFTRAIN system will produce units which are more adept at maximizing the management of all resources and minimizing casualties during the initial phase of combat. EFFTRAIN allowed the soldier, squad leaders, and platoon leaders to 'put it all together' and win through the use of fire power and movement. The EFFTRAIN system created the kill or be killed arena, it created a spirit of competition, it placed peer pressure on poor performers to do better, and it clearly offered job satisfaction. The enthusiasm generated by Companies A and B transcended the training environment and was further manifested in the outstanding results achieved during the HQ USAREUR AGI (Adjutant General Inspection) administered 4 days after completing the field validation of EFFTRAIN. Further evidence of the 'togetherness' of Company A was their selection as the best marching unit during the Annual Berlin 4th of July ceremony. Both units emerged from the EFFTRAIN experience in an improved state of combat readiness."

SUMMARY AND CONCLUSIONS

The developmental tryout in the Berlin Brigade had three research objectives. They were as follows:

1. To conduct a limited comparison of EFFTRAIN and conventional training.

2. To determine the relative value of "process" versus "product" performance data in the measurement of unit proficiency.

3. To determine whether the implementation materials developed permitted a TO&E infantry unit to implement the EFFTRAIN training model effectively.

Data collected and observations made by the research team during the time in Berlin permitted the successful accomplishment of the three research objectives, in addition to providing a great deal of valuable information on the direction of future research in engagement simulation training.

Implementation of EFFTRAIN

The field tryout of EFFTRAIN within the Berlin Brigade represented the first time the four phases of EFFTRAIN--TOX I, TOX II, FOX, and REALTRAIN--had been fielded together. Earlier tryouts had used a combination of no more than three phases.

Experience showed that documentation alone could not be used to introduce a training method such as EFFTRAIN. It was frequently necessary for members of the research team to step in and teach necessary procedures. Officers and NCOs of a TO&E unit should not be expected to read and digest bulky documentation, especially when much of it represents significant changes to existing training procedures. As simple as REALTRAIN and EFFTRAIN exercises appear, their successful conduct depends upon assimilating some basically unfamiliar training concepts and learning rules and techniques, the interrelationships of which are hard to visualize.

During EFFTRAIN training (Weeks 1 through 4), problems with indirect fire control procedures and the proper conduct of After Action Reviews were also encountered. In addition to these problems in implementing EFFTRAIN, other influences on the training provided to A Company and the learning achieved must be considered in properly interpreting the research results. Some factors, such as those described above, served to impede the progress of A Company; others positively influenced the tactical proficiency achieved by A Company.

The EFFTRAIN company was able to devote 4 weeks to training, with minimal distractions. Typical infantry units do not have such time available to them exclusively for training. The training schedule of B Company more nearly typifies the time available for training.

The continued presence of the research team during A Company training undoubtedly accelerated, to some unspecifiable degree, the learning achieved by A Company. Although intervention by the research team into the learning process was to be held to a minimum, their availability for discussion must be recognized as having provided an opportunity for some

amount of "prompting" that would help improve the chance of success in future exercises.[2]

Learning Achievements

The REALTRAIN exercises used as the final phase of EFFTRAIN involved as many as two platoons. Though tactical engagements of this size are considered to be relatively simple by many (especially those concerned with battalion-, brigade-, and division-level operations), the complexity of such engagements and the tactical skills that must be gained by leaders and troops alike were shown very clearly.

The developmental tryout in Berlin did not permit a determination of the relative contribution to leader training to be made by TOX I, TOX II, FOX, and REALTRAIN. However, the general impression of the EFFTRAIN participants and research team members is that TOX I (the two-player game) has a contribution to make; just how and when it should be used for leader training must still be determined.

The contribution of the TOX II (the multiplayer game) is even harder to determine. The fact that it permits more unit personnel to become involved in the tactical learning experience must be countered by the need for increased control personnel.

The field opposition exercises (FOX) was felt to have potential for providing platoon leaders and their senior NCOs a valuable opportunity to learn required tactical skills on the ground without committing valuable troop assets to leader training. The FOX also presents company and battalion commanders a method for directly observing the level of tactical proficiency of their junior leaders, thus serving a valuable evaluation function in addition to its training value.

There was no question as to the training value of the REALTRAIN exercises for both the junior leaders and their men; the only question that arose in the minds of some was whether all learning took place during the REALTRAIN engagements. Comments of participants would indicate otherwise. The commander of A Company felt that the game (particularly TOX I) was useful in focusing the attention of junior leaders on weapon system capabilities and the complexity of conducting a tactical exercise. The commander of the 3rd Battalion, as has been reported before, felt the game

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[2] "Prompting" may legitimately be used to accelerate learning over the rate that can be achieved by pure "discovery learning." With most units having constraints on available training time, "prompting" may be a useful device for achieving more efficient training. In the present study, however, the intent was to see how much learning could be achieved without explicit prompting, realizing that maximum proficiency would not be achieved.

and the FOX led to "tangible improvements" in the use of indirect fire, the development of techniques to minimize the effects of enemy weapons fire, improved command and control, and the ability to react on the spot to enemy actions. REALTRAIN exercises served to reinforce these behaviors and to make the leaders "more confident in their ability to make timely and accurate decisions."

Logical analysis would indicate that TOX I should probably be the starting point for leader training, and that when platoon leaders have developed tactical hypotheses of what should work, they should try them out in the field. The experience in Berlin indicates that although the game is an abstraction of the tactical battlefield, it may be too great an abstraction to be used alone for initial leader training. The game's value may come after an initial FOX or REALTRAIN exercise, through which a leader may see on actual terrain what some of the battlefield constraints will be before developing tactical hypotheses in a game.

There are other ways in which the game could be employed. For instance, at the end of the fourth week, the commander of A Company told one of his platoon leaders, who would be conducting one of the defenses against B Company the next week, to meet with his NCOs over the weekend to "war game" their plans for the next week.

In summary, it is felt that the work in Berlin represented a significant step forward in the research on engagement simulation training techniques for combat arms units. The emphasis in EFFTRAIN was on the training of junior leaders--platoon leaders and their senior NCOs. What was achieved, in effect, was to extend SCOPES to a higher level--platoon level--and to investigate ancillary leader training techniques that do not require the costly commitment of troops.

The work in Berlin provided the opportunity to explore the general contribution made by each of the various training techniques involved, to determine whether modifications were needed to steps in the REALTRAIN training model to reflect the higher level of unit training achieved, and to isolate factors that must be considered when such training is implemented.

Tactical Lessons Learned

The central fact that must be remembered in analyzing the experimental battles in Berlin is that the platoons from A Company won consistently against numerically superior forces. They were able to do this for two reasons. First, leaders at all levels learned to employ effectively the major weapons systems available to them. Second, EFFTRAIN units learned the command and control procedures necessary for efficient execution of the difficult techniques and tactics included.

EFFTRAIN leaders positioned elements as far forward as their communications would allow. To reduce their own vulnerability and to permit continuous observation of the enemy, successive lines of observation posts were established. Within main defensive lines, alternate and supplementary positions were constructed in considerable depth. Preparation of defenses was predicated on increasing the unit's capability to detect and engage the enemy at the greatest possible range while confusing the enemy as to the exact location of the main defensive concentration.

In the offense, EFFTRAIN leaders realized the need to pinpoint the enemy's main defensive positions and bring effective fire on them prior to the main attack force becoming decisively engaged. EFFTRAIN platoons in the attack made use of a point element (with a forward observer) moving well in advance of the main body. This point element had four functions: (1) to locate and neutralize enemy observer post, (2) to clear booby traps from an area of advance, (3) to deceive the enemy as to the actual location of the main attack element, and (4) to pinpoint the enemy's main defensive positions and bring accurate indirect fire on them prior to the main assault. In two of the battles the main body of the EFFTRAIN platoon was committed merely to consolidate on the final objective.

Learning to execute the techniques and tactics discussed above required procedures for command and control that go beyond those normally found at the platoon level in infantry units. Without question, control by the platoon leader was stretched to the limit in these engagements. Therefore, there was increased reliance on NCOs. Individuals in these units developed clear ideas of not only how to function in this environment but to understand why. Individual soldiers also learned to act and react effectively in the absence of close supervision, whether the absence was due to casualties among leaders or as part of a deliberate tactical plan. Strong leadership surfaced in these platoons regardless of the rank of the individual involved.

APPENDIX

BATTLE DESCRIPTIONS

TEST BATTLE # 1

NONEFFTRAIN	versus	EFFTRAIN
Defense - Squad Force (11)		Attack - Platoon (27)

TERRAIN DESCRIPTION - The battle lane used for the first battle was approximately 1100 meters in length and 275 meters wide at its widest point and tailored down to 175 meters on the defensive end of the lane. The majority of the lane consisted of level terrain gradually rising to higher elevations on the defensive end of the lane. All of the terrain was heavily wooded, interspersed with moderate undergrowth. Several prominent terrain features existed in the lane, i.e., the lane was tri-sected by one prominent major dirt road and two trails. A diagram of the battlelane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The mission concept for the defense was the development of *defensive positions within a lane approximately 800 meters in length* which would consist of a main defensive line supplemented by forward security positions. The Non-EFFTRAIN leader elected to develop a liny of defensive positions (perpendicular to the axis of suspected enemy advance) consisting of five bunkers-foxholes with overhead cover with two command detonated claymores to the front of each bunker-foxhole. These defensive positions were constructed in such a manner as to leave approximately 50-75 meters of the defense's right flank without a bunker-foxhole. There were two observation posts (OPs), one on each of the defense's flanks approximately 200 meters forward of the main defensive line. Each OP had communication established with the main defensive line via land line with sound powered telephone (TA-1). There was a major trail just in front of the OPs. The missions of the man in the OPs were to provide early warning and to engage the enemy with rifle fire and artillery if the opportunity occurred. Neither OP was to become decisively engaged and was to pull back to the main defensive line if endangered. Of the eleven personnel who comprised the defense, two were SSGs and two SGTs.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The EFFTRAIN leader organized a five man point element to locate the main enemy force. Once pin-pointed, the EFFTRAIN leader planned to destroy any defensive forces with artillery. The platoon itself would only be used to overrun pockets of resistance that were not destroyed by indirect fire. Movement and coordination between the point and platoon were accomplished by a series of phaselines and check points. The EFFTRAIN leader planned to maintain approximately 200-250 distance between the point element and his main attack body to minimize the effect of possible enemy artillery.

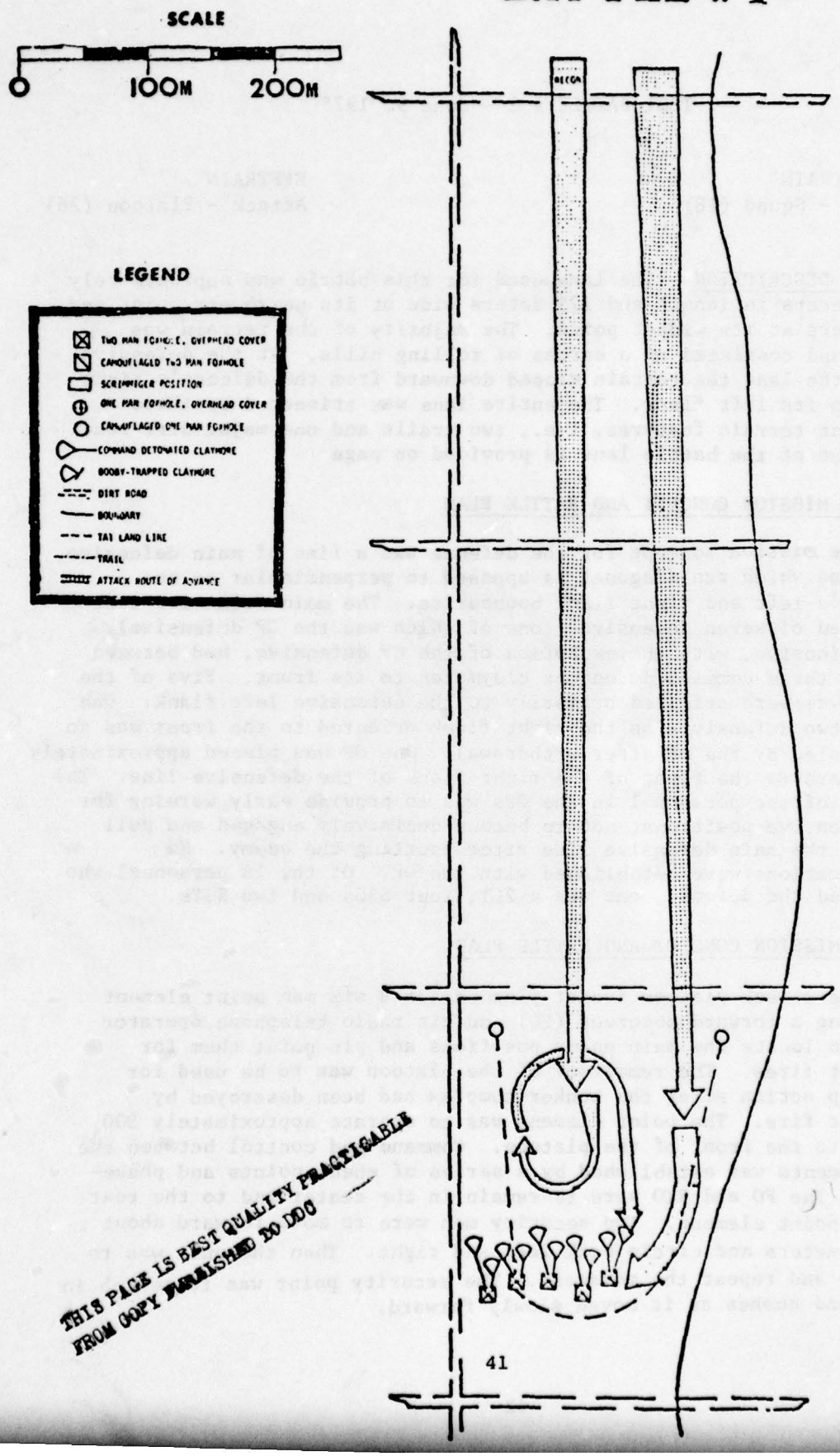
ASSESSMENT OF BATTLE OUTCOME

Assault forces (EFFTRAIN unit) won this battle. At its conclusion, the defense had no personnel remaining while the offense had 20 (74%) of its personnel alive. The exercise concluded 3 1/2 hours after its initiation. The attack forces had used 42 of the 140 rounds of artillery which it had been allocated. The defense (Non-EFFTRAIN unit) had used its entire allocation of indirect fire.

DISCUSSION

Defensive Forces - The defense could not determine enemy location when more than 250 meters away (the OPs were at 200 meters). The offense movement of advance was primarily down the center of the lane, and the defensive OPs were on each defensive flank. Claymores were not employed as destructive early warning devices, but were utilized in a command detonated mode at the main defensive line. Two members of the 27 man attack force were eliminated with the 60 rounds of indirect fire utilized by the Non-EFFTRAIN defense. The defensive forces was located and eliminated at the main defensive line.

Attack Forces - The point element moved along the right center of the battle lane bypassing the enemy OP which was located at the extreme defensive left flank. The point, maintaining security, located the defensive complex and extracted itself before it became decisively engaged. The defensive element at the defensive provided only sporadic fire against the point, thus allowing it to successfully break contact. Once contact was broken the point group ran several indirect fire missions against the defensive complex causing six defensive casualties with 42 rounds. Immediately following the indirect fire the point element attacked the extreme left flank of the defensive complex and overran the machine gun defensive. More artillery was called at the center and right of the complex destroying additional defensives. The remainder of the platoon then linked up with the point element. A coordinated ground attack was lauched from the flank against the remaining defensives eliminating all the defenders.



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TEST BATTLE # 2 - June 9, 1975

NON-EFFTRAIN
Defense - Squad (18)

EFFTRAIN
Attack - Platoon (26)

TERRAIN DESCRIPTION - The lane used for this battle was approximately 1,200 meters in length and 175 meters wide at its narrowest point and 275 meters at its widest point. The majority of the terrain was wooded and consisted of a series of rolling hills. At the defensive end of the lane the terrain sloped downward from the defense's right flank to its left flank. The entire lane was trisected by three prominent terrain features, i.e., two trails and one major dirt road. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The mission concept for the defense was a line of main defensive positions which ran diagonal as opposed to perpendicular to the defense's left and right flank boundaries. The main defensive line consisted of seven defensives (one of which was the CP defensive). Each defensive, with the exception of the CP defensive, had between one and three command detonated claymores to its front. Five of the defensives were oriented primarily to the defensive left flank. One of the two defensives on the right flank oriented to the front was to be occupied by the OP after withdrawal. One OP was placed approximately 150 meters to the front of the right flank of the defensive line. The mission of the personnel in the OPs was to provide early warning for the defensive positions, not to become decisively engaged and pull back to the main defensive line after spotting the enemy. No communications were established with the OP. Of the 18 personnel who comprised the defense, one was a 2LT, four SSGs and two SGTs.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack platoon leader planned for a six man point element including a forward observer (FO) and his radio telephone operator (RTO) to locate the main enemy positions and pin point them for indirect fires. The remainder of the platoon was to be used for clean up action after the bunker complex had been destroyed by indirect fire. The point element was to operate approximately 300 meters to the front of the platoon. Command and control between the two elements was established by a series of check points and phase-lines. The FO and RTO were to remain in the center and to the rear of the point element. Two security men were to move forward about thirty meters and circle back left and right. Then the unit was to move up and repeat the movement. The security point was to search in trees and bushes as it moved slowly forward.

BATTLE #2 -

ASSESSMENT OF BATTLE OUTCOME

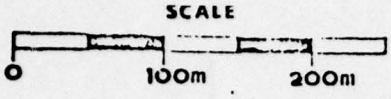
Attack forces (EFFTRAIN) were credited with the win. At the conclusion of the exercise, the defense had two of 18 personnel remaining and the offense had 16 of 26 remaining. The simulated battle concluded approximately three hours after its initiation. The attack force had used 80 of the 140 rounds of indirect fire it was allocated. The defense had used all of the 60 rounds of artillery it had been allocated.

DISUCSSION

Defensive Forces - The defense's early warning system consisted of one OP emplaced on the defense's right flank. No means of communication were established between the main defensive line and the OP. All of the indirect fire support allocated to the defense was utilized resulting in two attack force casualties. The defensive positions were located and destroyed with indirect fire.

Attack Forces - The point element, moving along the left portion of the battle lane, was able to locate and penetrate the left flank defensive. The point knocked out two defensives with small arms fire and then proceeded to utilize indirect fire to eliminate the remaining defensives. The platoon which had maintained a distance of 250 - 300 meters behind the point moved to the center and right flank of the defensive complex to launch a final assault against the remainder of the defensive force from the flank. The platoon was engaged in mop up action against the remaining defensive when the test battle was terminated. (Two defenders had not been found.)

The defense suffered 63% casualties from indirect fire called by the point element. This was approximately half of the indirect fire support available to the attack element. In addition, the attack element had its basic load of small arms munition virtually intact at the close of the problem. This included all four LAWS, 39 of 48 grenades and all 400 rounds of 7.62.



BATTLE #2

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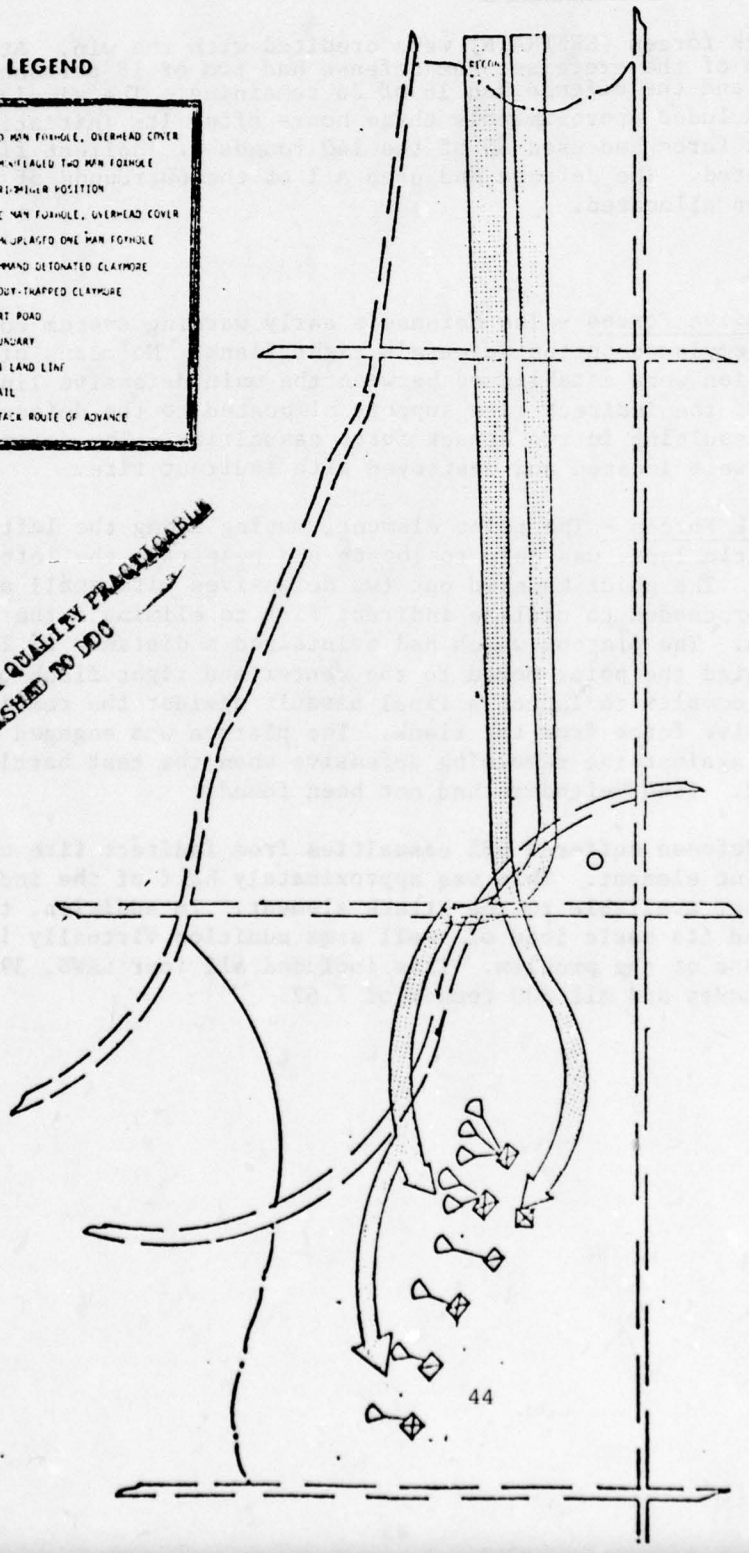


TEST BATTLE #3 - June 10, 1975

NON-EFFTRAIN	versus	EFFTRAIN
Defense - Platoon (29)		Attack - Platoon (27)

TERRAIN DESCRIPTION - The lane used for this simulated battle was approximately 750 meters in length and 275 meters in width. The forward half of the lane (i.e., the first half as the attack forces approached the defense) consisted of level, wooded terrain interspersed with moderate undergrowth vegetation. The other half of the lane consisted of two distinct hills, one located in the center of the lane and the other to the rear of the lane. Between these two hills was a small valley. This area was wooded, interspersed with moderate undergrowth and vegetation. This lane had two prominent terrain features, i.e., two trails. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The mission concept for the defense was to have two lines of defensive positions with two security lines in front of the first line. The first defensive line was established on the military crest of the hill located in the center of the lane. This defensive line consisted of approximately 22 defensives. There were three defensive command detonated claymores to the front of this defensive line. In front of these positions were two security lines consisting of three OPs each. The first security line was approximately 125 meters in front of the first main defensive line and the second security line approximately 100 meters in front of the first. Communications were established with the center man in the first security line via telephone (TA-1) and with the second security line via PRC-77. One command detonated claymore was placed in front of the OP on the extreme right flank of the first security line. The second line of main defensive positions was established approximately 200 to 300 meters behind the first main defensive positions on the military crest of the rear hill. This defensive line consisted of approximately 16 camouflaged one man defensives.

The defensive plan was for the security line to detect the enemy, relay the enemy positions to the FO (located in the second defensive line) but not to decisively engage the enemy and withdraw to the first defensive line. Once the security line had withdrawn to the first defensive line, all personnel were to remain in their positions, engage the enemy with small arms and artillery and withdraw to the second defensive line on command from the officer in charge. The officer's defense was a total of approximately 600 meters in depth. Of the 29 personnel in the defense, one was a 2LT, two SFCs, three SSGs and four SGTs.

Battle #3

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack plan formulated by the EFFTRAIN leader was to use a six man point element to find the main enemy positions and pin-point these positions for use of indirect fire. The command and control between the point and platoon was established by radio, together with the utilization of check points and phaselines. The remainder of the platoon was to be employed only in clean up actions after the defensive complex had been destroyed by artillery. The point element was to operate approximately 200 - 300 meters in front of the platoon in order to provide early warning and to eliminate enemy security positions. The EFFTRAIN leader felt this tactic would minimize the danger of effective indirect fire against his main attack element.

ASSESSMENT OF BATTLE OUTCOME

The outcome of the engagement could be interpreted as a win for the attack force. Each force began the exercise with an almost equal number of men, 27 attackers, 29 defenders. When the engagement was terminated, the attack force had 14 men remaining, the defense 11. The attack force achieved their objective and battled a defensive force their own size to a standstill. The attack force had 90 rounds of artillery remaining compared to seven for the defense.

DISCUSSION

Defensive Forces (Non-EFFTRAIN Unit) - The defense's platoon leader did not utilize all his claymores. Four of fifteen claymores were used. The security line withdrew from their positions at the first sight or sound of the enemy. The leader used a total of 53 of 60 (90%) rounds of the indirect fire support allocated to him resulting in four attack force casualties using most of his artillery on suspected targets.

At one point the defensive platoon leader assumed an offensive posture. The offensive patrol was communicated to half the platoon. The half that were unaware of the offensive mission followed the original order which was to withdraw to the second defensive positions. Having done this, they discovered that half of the defensive element was not in position (i.e., the half which was with the defensive platoon leader conducting an offensive maneuver). Not knowing where the other half of the defensive element was, the defensive element which had withdrawn to the second line of defensive positions left the positions to find the remainder of the defensive force. They were not able to locate the offensive patrol and more than half of their force was lost to enemy small arms and grenades. An interesting sequence of events caused by one man is illustrative of the confusion which resulted from the Non-EFFTRAIN leader's decision to assume an offensive posture. The individual manning an OP on the extreme right flank of the secondary security line did not know what was happening during the exercise. After remaining in his position for approximately one and one half hours, and hearing sporadic

small arms fire and artillery to his left front, he withdrew to the first line of defensive positions. Discovering that these positions were unoccupied and still hearing small arms fire and artillery to his front, he decided to return to his original OP position. As he was doing this, the defensive force which had withdrawn to the second defensive line was maneuvering forward to find the remainder of the defensive forces and spotted the man as he was returning to his original OP position. Initially, this defensive force thought that this man (i.e., one of their own) was a member of the attack force and stalked him for approximately 20 minutes before they realized who he was.

During 50% of the three and one half hours of the test battle the defense was split into two forces, one of which had assumed an offensive posture and the other searching to ascertain the location or status of the remainder of the defensive forces. The change in the defensive plan was not communicated to the entire force. There were remnants of the defensive elements at the rear defensive position when the exercise was halted. Several of the offensive forces had reached their objective behind this defensive position. For this reason, the attack forces were credited with a win.

Attack Forces (EFFTRAIN Unit) - The platoon's point element eliminated two enemy OP positions and a small group of enemy not in prepared positions. The point was moving into the enemy defensive complex when it held up to call in to the platoon leader. The platoon leader ordered the point to proceed, but in the same transmission told the point that he was in heavy contact. This created confusion among the men of the point element. One half of the point element moved back to aid the platoon leader while the other half held in place. The attack platoon soon destroyed the enemy force and continued to move forward. The platoon leader, assuming his point had also moved forward and had not found the defensive complex, continued to advance. He did not make contact with his point element and proceeded on the assumption that previous instructions had been carried out and as he was running short of time, to take the objective. The attack platoon ran into the enemy defensives and in heavy contact broke through with direct fire. As a result the defensive Non-EFFTRAIN element pulled back to their final positions. The attack forces suffered fairly heavy casualties in this direct fire action.

Contact at the final positions was initiated by the first of the two functioning units remaining in the attack platoon. The second unit led by the point element was located at the main defensive line and moving towards contact when the test battle was terminated. This point element had regrouped after the point leader had been unable to link up with the platoon and hearing heavy indirect and direct fire to his front correctly assumed the platoon had bypassed him. As the point team moved forward it collected other attack survivors and under the point team leader's direction reorganized into a squad which included a machine gun team and the 81mm FO. It was this reorganized squad that was moving to reinforce the unit in contact.

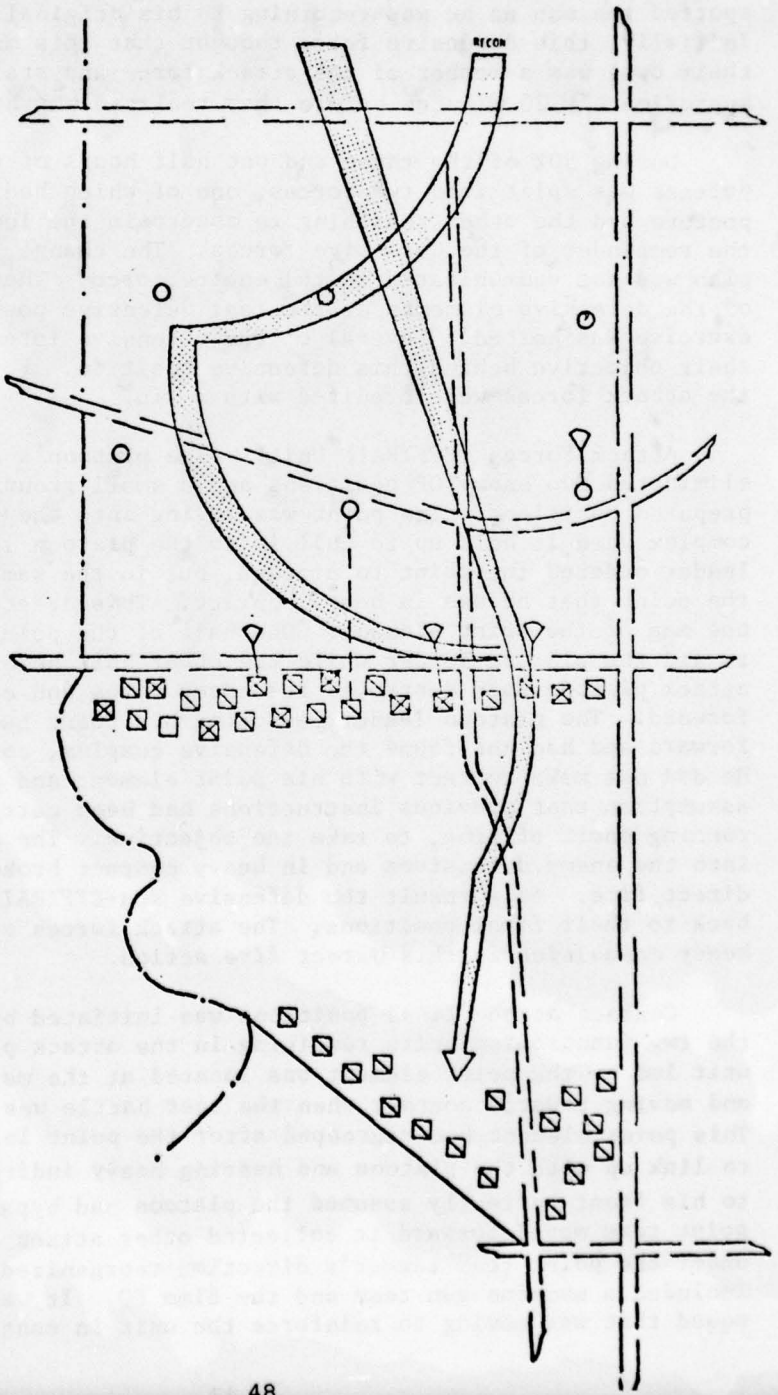
BATTLE #3

SCALE

0 100m 200m

LEGEND

- TWO MAN FOXHOLE, OVERHEAD COVER
- CAMOUFLAGED TWO MAN FOXHOLE
- SKIRMISHER POSITION
- ONE MAN FOXHOLE, OVERHEAD COVER
- CAMOUFLAGED ONE MAN FOXHOLE
- COMMAND DETONATED CLAYMORE
- BOOBY-TRAPPED CLAYMORE
- DIRT ROAD
- BOUNDARY
- TAI LAND LINE
- TRAIL
- ATTACK ROUTE OF ADVANCE



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TEST BATTLE #4 - June 11, 1975

EFFTRAIN	versus	Non-EFFTRAIN
Defense - Squad (11)		Attack - Platoon (29)

TERRAIN DESCRIPTION - The lane used for this battle was approximately 900 meters in length and averaged 250 meters in width. The lane was primarily level, wooded terrain interspersed with moderate undergrowth vegetation. The lane was trisected by two distinct trails. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The mission concept for the defense was the establishment of two lines of security positions and two main defensive lines. The defense was a total of approximately 600 meters in depth. To the extreme front of the defense the leader placed one OP in an individual foxhole with a PRC-77. The order given this OP was to avoid contact with the enemy, radio the enemy's position, adjust artillery and "fall in" to the rear of the enemy as they moved past his position. Approximately 100 meters behind this OP was a line of three security positions, one on either flank and one in the center of the lane, each positioned in an individual foxhole. The OP in the center of the lane had a telephone connected to the first main defensive line located approximately 150 meters behind their positions. Each of these OP positions had one command detonated claymore either to the front or one flank of the position. The order given this security line was to engage the enemy with small arms, grenades, and claymores, call for indirect fire on the force they were holding in place by their action, and then withdraw to the first main defensive line. The first line of main defensive positions consisted of five foxholes with overhead cover. The M60 had been placed in the center of this foxhole line which ran perpendicular to the lane's flank boundaries. When the men in the security positions returned to this line of foxholes, all personnel were to remain in their foxholes, engage the enemy as they advanced on the positions, call indirect fire, and then withdraw to a second line of security and main defensive positions when the EFFTRAIN leader gave the signal (i.e., a long steady blast of a whistle). The security line was located approximately 140 meters to the rear of the first defensive line of foxholes. These security positions were also individual foxholes and were prepared prior to the beginning of the exercise. The men in the security line were to follow the same orders which were given to them regarding the first security positions. The remainder of the defensive personnel were to withdraw to the second line of main defensive positions, await the enemy, and call in artillery or the enemy based on intelligence transmitted from the observer who was originally located on the forward security line and who

would be at this point to the rear of the advancing attack force adjusting artillery. The leader, if forced to withdraw to his last line of defensive positions, had informed his men that if the enemy force advanced that far they would withdraw from the main defensives to a position approximately 75 meters to the rear on a whistle signal. Here, the individuals remaining in the defense were to assume prone positions in the woods and continue engaging the enemy.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack platoon leader planned for a five man point element for the main attack body as it moved to contact. The point was heavily armed to give it the capability to engage enemy defensives. The movement of the platoon was to be controlled by phaselines which were to be preregistered by artillery fire. The point was to move approximately 100-150 meters to the front of the platoon, and the platoon leader planned to deploy this force against any enemy forces encountered by the point element.

ASSESSMENT OF BATTLE OUTCOME

Defense forces under the direction of the EFFTRAIN leader neutralized the opposition attack forces. At the conclusion of the exercise, seven members of the attack force, i.e., 24%, and six members of the defense force (i.e., 55%) were alive. The attack force was disorganized, dispersed and the survivors were not able to locate the defensive positions. The defense had 18% of its artillery allocation remaining (i.e., 11 out of a total of 60 rounds) and the attack force had 9% of its artillery allocation remaining (i.e., 13 out of a total of 140). The test battle was terminated approximately three hours after its initiation, as there was no more offensive action being taken.

DISCUSSION

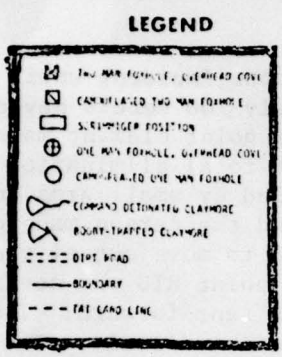
Defensive Forces - (EFFTRAIN unit) - The defense obtained seven casualties with 82% of the total allocation. When the security positions were withdrawn to the first main defensive line, the individual manning the right flank OP failed to withdraw. He did not withdraw because he had not had any contact with the enemy. After the other security personnel had withdrawn to the first main defensive line the EFFTRAIN leader gave the signal (whistle blow) to withdraw to the second main defensive. The man in the right flank OP did not hear the whistle signal and remained in his position. After remaining in this position for some time he began to hear small arms fire and artillery to his rear. He assumed that the enemy had advanced past his position and through the first bunker line. At this point he made the decision to move to his rear hoping to surprise the attack force from the rear. This he did, which resulted in the killing of two members of the attack force before he was KIA. Just prior to withdrawing from the security positions the command detonated claymores were blown. The defensive platoon leader ordered a withdrawal from the first line of defensive positions when the M60 crew suddenly withdrew from their position.

was very little contact with enemy at this time. The M60 team had withdrawn from its position because their M60 was malfunctioning. The individuals in the first defense position blew their claymores before withdrawing.

Attack Forces - The attack forces moved without incident until they crossed their first phase line. Approximately 100 meters beyond this line and 300 meters into the battle lane the point element made contact. The ensuing conflict resulted in almost total elimination of the point element; three individuals were killed by small arms and a fourth by artillery. This artillery also killed the person manning the OP who had called the mission, but had failed to move out of the area. The lone survivor of this contact was the point RTO who advised the platoon leader of the engagement and then was sent forward. The RTO soon ran into the first system and was killed immediately. The RTO had been in the process of running a fire mission when killed and this was to be the last fire mission attempted on an observed target. From that point on fire missions were called on suspected rather than observed targets. The attack element utilized all but 13 of 140 rounds of available artillery with two enemy KIA as the result.

The attack platoon was attacked successfully from the rear and, without forward security, found itself in heavy contact along a defensive skirmish line.

BATTLE #4



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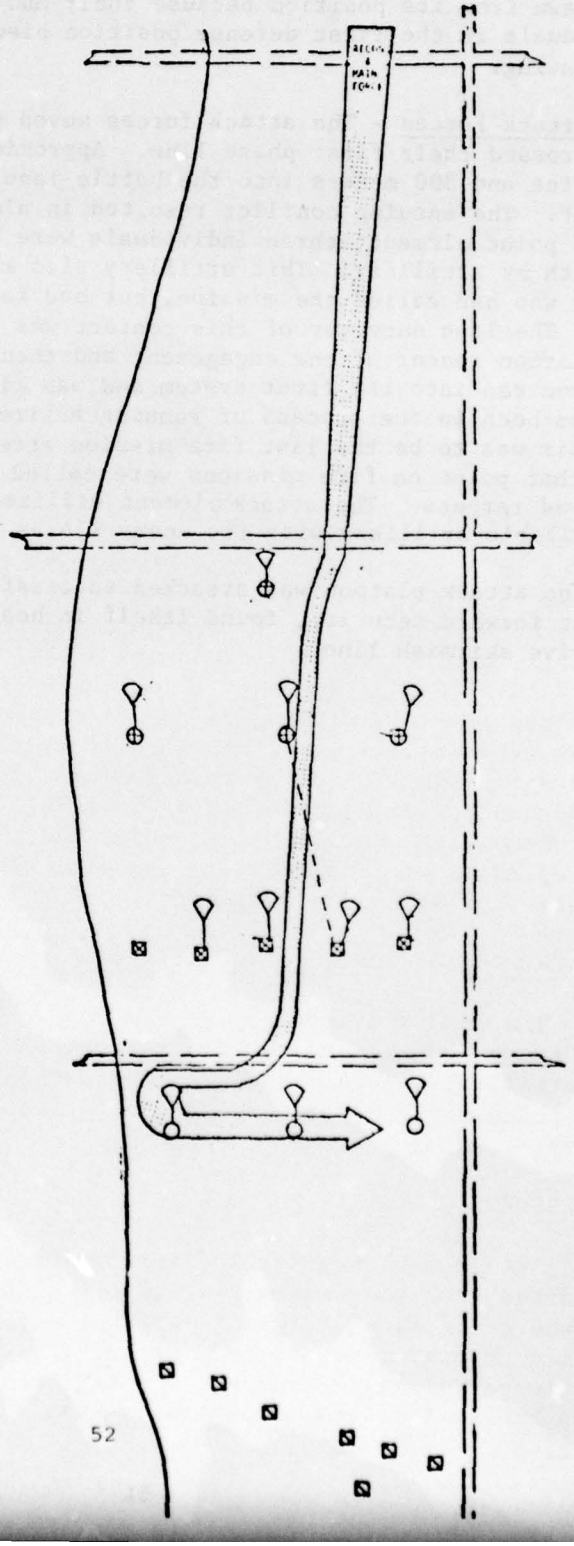


TEST BATTLE # 5 - June 11, 1975

EFFTRAIN	versus	Non-EFFTRAIN
Defense - Squad (10)		Offense - Platoon (35)

TERRAIN DESCRIPTION - The lane used for this battle was approximately 1,100 meters in length, 300 meters at its widest point and 225 meters at its narrowest point. The lane was predominantly level, heavily wooded and interspersed with moderate undergrowth vegetation. Prominent terrain features existed in the lane, including two major dirt roads. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND PLAN

The mission concept for the defense was to have one main defensive line with two security positions to the front. The defensive line was established approximately in the center of the lane on a major dirt road. This defensive line consisted of eight defensives (one of which was the CP defensive) with overhead cover. Each of these defensives, with the exception of the CP defensive, had one or two command detonated claymores. Approximately 300-400 meters in front of these defensives were two OPs, one on either flank. The OP position located on the defensive right flank was manned by the defensive FO who was equipped with a PRC-77. The defensive left flank OP had no means of communications with the EFFTRAIN leader. The order given to the men in these positions was to serve as early warning to the defensive positions, engage the enemy with small arms, direct artillery fires, and withdraw to the main defensive line prior to becoming decisively engaged. Having withdrawn to the main defensive line, all individuals were to engage the enemy with small arms, grenades and claymores while the EFFTRAIN leader adjusted indirect fire support. There were no supplementary security or defensive positions.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The leader's attack plan was to use a point element to locate the enemy and then to utilize the remainder of the platoon, supported by artillery to overrun the enemy positions. Coordination between the point and the platoon was controlled by checkpoints and phase lines.

ASSESSMENT OF BATTLE OUTCOME

Attack forces under the command of the Non-EFFTRAIN leader were credited with the neutralization of the EFFTRAIN defensive forces. At the conclusion of the exercise, the defense had three or 30% of its personnel remaining, whereas the attack forces had 26 or 74% of its personnel remaining. The test battle concluded two and one half hours after its initiation. This was the only loss for an EFFTRAIN unit.

Battle #5

DISCUSSION

Defensive Forces (EFFTRAIN unit) - The defense planned and executed by the EFFTRAIN leader was a total of approximately 300 meters in depth. The EFFTRAIN leader placed his FO in the right flank OP position with a map which had the defensive right flank final protective fires (FPF) marked on it. This FO was the first defensive casualty. The information discovered on the map by the attack forces led to indirect fire missions producing defensive casualties. The defensive platoon leader did not establish communications between himself and his left flank OP. ALthough there were only two PRC-77 (used by the FO and EFFTRAIN leader), TA-1s were available but were not used for this purpose.

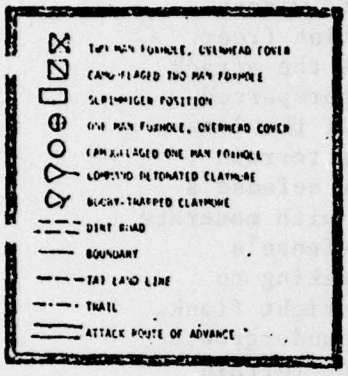
Attack Forces - The attack forces under command of the Non-EFFTRAIN leader were credited with a decisive victory over the opposition forces. The attack platoon's point element, moving along the left of the battle lane, made contact with a defensive OP/FO, neutralizing him. The point element immediately searched the body and found a map which had the enemy's final protective fires (FPF) marked on it. The Non-EFFTRAIN leader ascertained the main defensive line could not be far from the FPF and began to work artillery missions in the area. These fires practically eliminated the right flank of the defensive complex. After this initial contact, the platoon moved forward without incident until it reached the main defensive line. Contact was made at the right flank of the defense (neutralized earlier by artillery fire). Consequently, the attack forces were able to roll up the defensive complex moving from the vulnerable right flank. This ground assault against the remaining defensives was marked by highly effective small unit action utilizing large numbers of grenades.

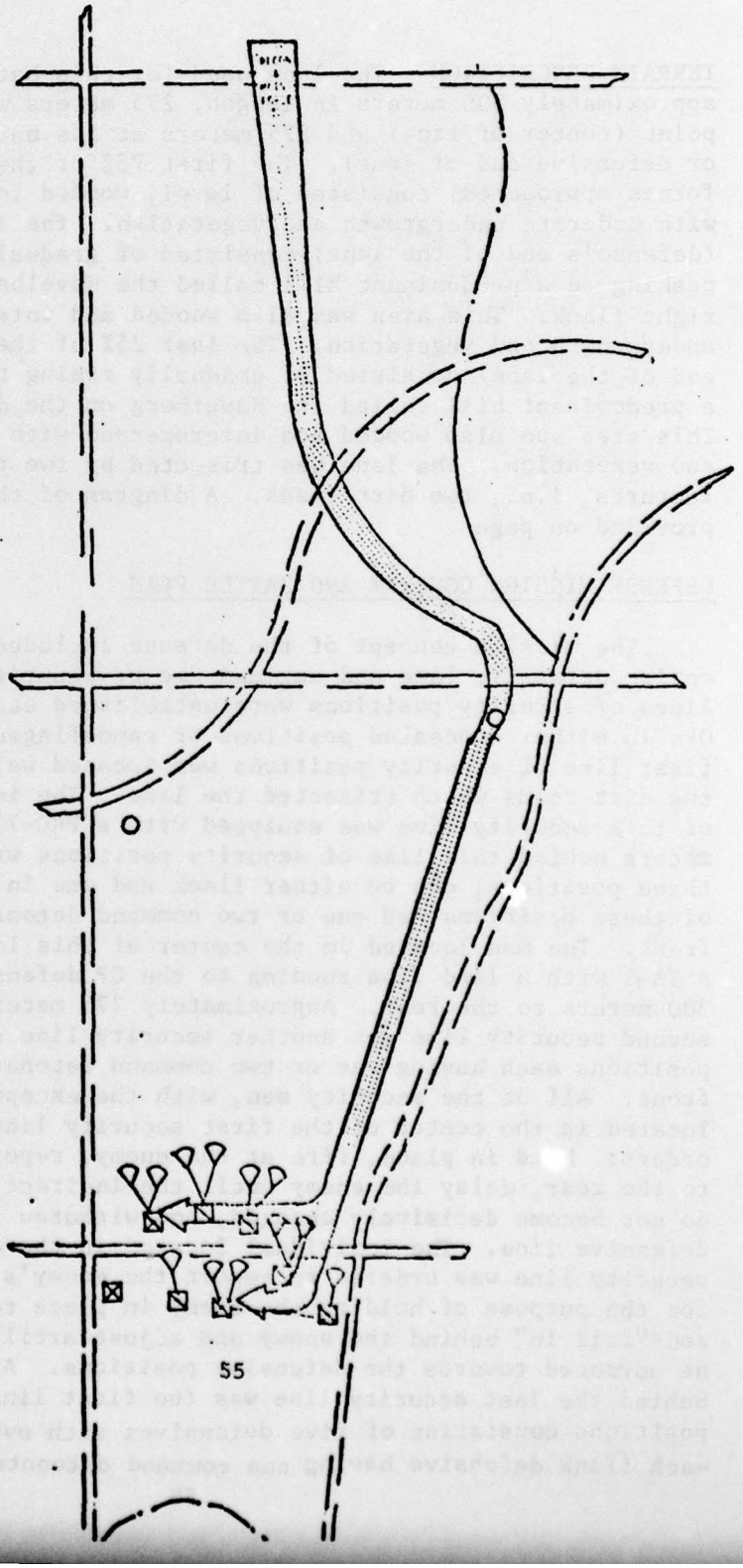
SCALE

0 100m 200m

BATTLE #5

LEGEND





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TEST BATTLE #6 - June 12, 1975

EFFTRAIN	versus	Non-EFFTRAIN
Defense - Squad (11)		Attack - Platoon (50)

TERRAIN DESCRIPTION - The lane used for this battle exercise was approximately 800 meters in length, 275 meters wide at its widest point (center of lane) and 225 meters at its narrowest point (rear or defensive end of lane). The first 75% of the lane (as the attack forces approached) consisted of level, wooded terrain interspersed with moderate undergrowth and vegetation. The last 25% of the lane (defense's end of the lane) consisted of gradually rising terrain peaking to a predominant hill called the Havelberg on the defense's right flank. This area was also wooded and interspersed with moderate undergrowth and vegetation. The last 25% of the lane (defense's end of the lane) consisted of gradually rising terrain peaking to a predominant hill called the Havelberg on the defense's right flank. This area was also wooded and interspersed with moderate undergrowth and vegetation. The lane was trisected by two predominant terrain features, i.e., two dirt roads. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The mission concept of the defense included utilization of the entire defensive lane and maximum use of security positions. Three lines of security positions were established each consisting of three OPs in either concealed positions or camouflaged defensives. The first line of security positions was located well forward near one of the dirt roads which trisected the lane. The individual in the center of this security line was equipped with a PRC-77. Approximately 75 meters behind this line of security positions was another line of three positions, one on either flank and one in the center. Each of these positions had one or two command detonated claymores to their front. The man located in the center of this line was equipped with a TA-1 with a land line running to the CP defensive located approximately 300 meters to the rear. Approximately 275 meters to the rear of the second security line was another security line consisting of three OP positions each having one or two command detonated claymores to their front. All of the security men, with the exception of the individual located in the center of the first security line, were given the same orders: hold in place, fire at the enemy, report the enemy's position to the rear, delay the enemy until the indirect fire arrives on them; do not become decisively engaged, and withdraw to the first main defensive line. The individual located in the center of the first security line was ordered to report the enemy's positions, fire only for the purpose of holding the enemy in place to receive artillery and "fall in" behind the enemy and adjust artillery on the enemy as he advanced towards the defensive positions. Approximately 100 meters behind the last security line was the first line of main defensive positions consisting of five defensives with overhead cover, each flank defensive having one command detonated claymore, the right

center defensive having two command detonated claymores and the left center defensive having none. This defensive line was located on the second dirt roach which trisected the battle lane. Once the security personnel had withdrawn to these positions, they were to hold in place, engage the enemy as they advanced on the defensive positions and delay the attacking force so that indirect fire could be effectively employed and withdraw at the EFFTRAIN leader's signal. Behind these positions approximately 175 meters, were located the defensive secondary positions consisting of five camouflaged defensives without overhead cover. Once the defense had withdrawn to these positions, the orders were the same as they were for the first line of defensive positions. The positions to which the defense would withdraw from these secondary positions were located approximately 130 meters to the rear on the extreme rear boundary of the defense. These final positions consisted of approximately seven open foxholes. If the defense had to withdraw to these positions, the EFFTRAIN leader's orders were to hold in place, and engage the enemy with small arms and indirect fire until any remaining members of the attack force were totally eliminated.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack platoon leader organized two point elements to move forward of the platoon which were to advance in two columns. The point was to operate 100 - 150 meters ahead of the platoon and to apprise the platoon leader in the event of contact. Artillery was planned against suspected enemy targets.

ASSESSMENT OF BATTLE OUTCOME

The defensive force under the control of the EFFTRAIN leader was credited with the neutralization of the opposition attack force. At the conclusion of the exercise, the defensive forces had succeeded in eliminating 96% (i.e., 48 out of 50 personnel) of the attack force and suffered only 45% casualties (i.e., five out of 11 personnel). Although the defensive forces had expended all of its indirect fire support and the attack forces had approximately 32% of its indirect fire support remaining at the conclusion of the exercise, the attack forces had only two personnel remaining, neither of whom knew where they were, neither knew how to call for indirect fire nor the location of a radio. The exercise concluded three hours after its initiation.

DISCUSSION

Defensive Forces - The individual located in the center position of the first security line had a PRC-77. As the enemy advanced on his position, he relayed the enemy's position to the EFFTRAIN leader located approximately 400 meters to the rear, who would in turn call for indirect fire to the front of the center security position. This action was repeated in the same location three times with the sergeant killing six men by M16 and claymore fire and six by indirect fire. The security

personnel to the left and right of this position were doing the same thing but did not have radios to call indirect fire. The individual located in the center position of the second security line had TA-1 communication with the EFFTRAIN platoon leader. Just prior to first detecting the enemy, the individual in the center of the second security line had indirect fire landing to his right flank. Immediately after hearing this fire, he made the decision that he was going to vacate his position, move to his right flank and determine if the man located there had been killed as a result of the indirect fire he had heard. His position was vacant for a total of approximately 20 minutes. After the center security man returned to his position, a large attack force massed directly in front of the position (across the road). The center security man called the EFFTRAIN platoon leader on the TA-1 and requested indirect fire. Three minutes after this individual requested this mission, the attack force began to move across the road directly towards his position. He detonated one of his claymores which killed two of the attack force. He then immediately attempted to raise the EFFTRAIN leader by telephone to determine what happened to the first mission he had requested and request additional indirect fire because it was his opinion that "the entire enemy force was directly to his front." There was no reply on the other end of the land line for approximately 15 minutes. It was later determined that the EFFTRAIN leader had left his position in the first line of defensive bunkers and his TA-1 to "check out" an unoccupied bunker to his left flank. The center security man later raised the EFFTRAIN leader on the telephone after successfully killing two of the enemy with claymores and three with M16 fire. Immediately following this activity, the attack forces again began to advance on his position. The security man decided he would withdraw from his position. Prior to withdrawing, he detonated his one remaining claymore. At this point, he was not engaged with the enemy. The center security man did take his TA-1 with him when he withdrew to an open position approximately 150 meters behind his initial position. Assuming the prone position, he spliced into the land line, attached his TA-1 and contacted the defensive platoon leader. He informed the platoon leader that he had withdrawn from his position and requested an indirect fire mission on top of his initial position. He then waited approximately five minutes in this open position for the indirect fire mission. It did not come. He then moved forward and attempted to detain the enemy with small arms in an open position until the indirect fire mission arrived. He succeeded in killing one of the attackers with his M16 before he was eliminated by small arms fire. Following the demise of the center security man who was using the land line, contact was lost with the attack forces until they were 200 meters in front of the first line of main defensive positions at the third line of security positions. Personnel at these positions engaged the enemy with small arms and claymores and called for indirect fire. Indirect fire was brought in on the remaining attackers and this coupled with the small arms and claymore engagements, succeeded in eliminating the remaining attacking force. In this performance 48 attackers were killed to five defenders lost.

Battle #6

Attack Forces - The two point elements for the attack group made contact sooner than they expected. They were in a moderately vegetated forest with no prominent terrain features to aid in pinpointing the exact enemy location. The contact was along the entire front and the two point elements suffered casualties. In addition the point resonsible for clearing the left flank had moved to the right. As the point elements were pinned down the attack platoon leader moved into the area. The platoon leader and some of his men became casualties from claymores and small arms. This caused a delay which proved costly as artillery began to fall and the platoon suffered additional casualties. At this point command was re-established and ground attacks were launched at the two dug in security positions. Heavy contact ensued and both security positions were overrun after the attack force had taken casualties.

During the initial contact with the enemy the attack force lost 21 men (42%): six by claymore, six by artillery, eight by rifle fire, and two by grenade.

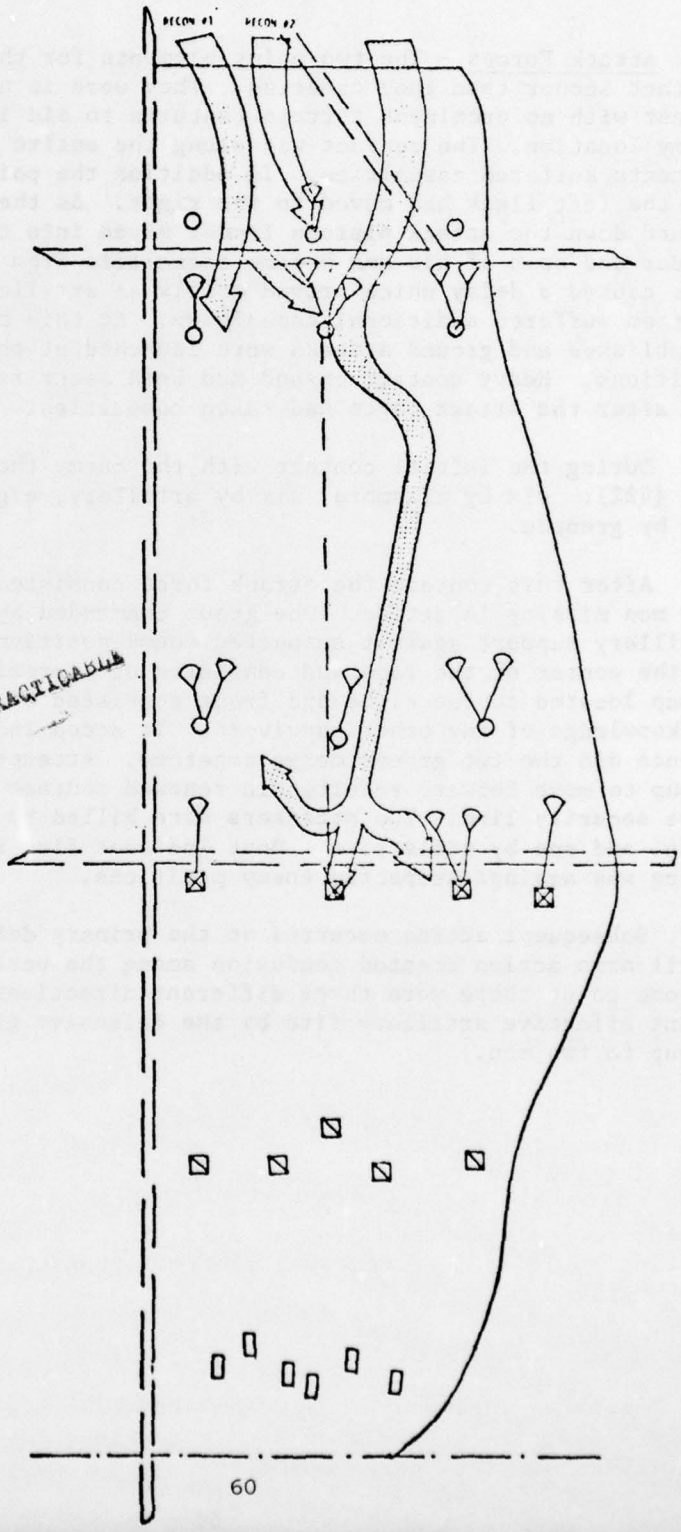
After this contact the attack force consisted of two elements with a few men missing in action. One group commanded by an NCO began to request artillery support against suspected enemy positions. The group was located in the center of the lane and consisted of approximately 15 men. The other group located to the right and front consisted of eight or nine men with no knowledge of any other survivors. It acted independently and only by chance did the two groups merge together. Attempts by the right attack group to move forward resulted in renewed contact along the second defensive security line. Two attackers were killed by artillery, one by claymore, and one by rifle fire. Most indirect fire requested by the attack force was against suspected enemy positions.

Subsequent action occurred at the primary defensive position. Heavy small arms action created confusion among the personnel of the attack force. At one point there were three different directions of attack. At this point effective artillery fire by the defensive group reduced the attack group to two men.

SCALE

BATTLE #6

LEGEND



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FOLLOW-ON TEST BATTLE #7 - June 23, 1975

Non-EFFTRAIN	versus	EFFTRAIN
Offense - Platoon (39)		DeFense - Squad (11)

TERRAIN DESCRIPTION - The lane used for this battle was approximately 1,300 meters in length, 250 meters in width at its narrowest point and 400 meters at its widest point. The terrain was generally flat and densely wooded. Some relief existed at the defensive end of the lane. The land was trisected with three major dirt roads. Visibility extended approximately 100 meters at these roads. A diagram of the battle lane is provided on page

DEFENSIVE MISSION CONCEPT AND BATTLE PLAN

The defensive platoon sergeant's concept gave priority to early detection of the enemy and to making maximum use of his indirect fires. He used forward elements along the major roads to increase his observation. He planned to use two men in OP positions who would communicate to an NCO with hand, arm and voice signals. The NCO was to relay information via radio to the platoon sergeant. A gully on the left flank of the defense which could not be observed was boobytrapped with four claymore mines. Oher command detonated claymores were emplaced to protect the OP positions. A second OP line was prepared which was occupied by three additional personnel. Wire communications were established from this line to the platoon sergeant. Instructions to the men in the OP line were to remain in place and engage the enemy with direct fire weapons only if their position was threatened. Positions for all personnel were prepared on the main defensive line in the event they were forced to withdraw. Alternate positions were prepared to the rear of this line as an additional fall back position. The positions were concealed with overhead cover and fields of fire out approximately 75-100 meters.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack platoon leader planned to move his main element preceded by a point squad approximately 50 meters to his front up the offensive right boundary. Upon detection of enemy positions, he planned to initially employ indirect fire and follow up with an assault with a portion or all of his maneuver elements. He planned to penetrate the defense on the flank and then enfilade the remaining positions. Indirect fires were plotted along the major roads and on objective.

ASSESSMENT OF BATTLE OUTCOME

Defensive forces destroyed the attacking platoon in front of the two OP lines. Three riflemen from the attack force were left when the problem was terminated but they were unable to advance. The defense

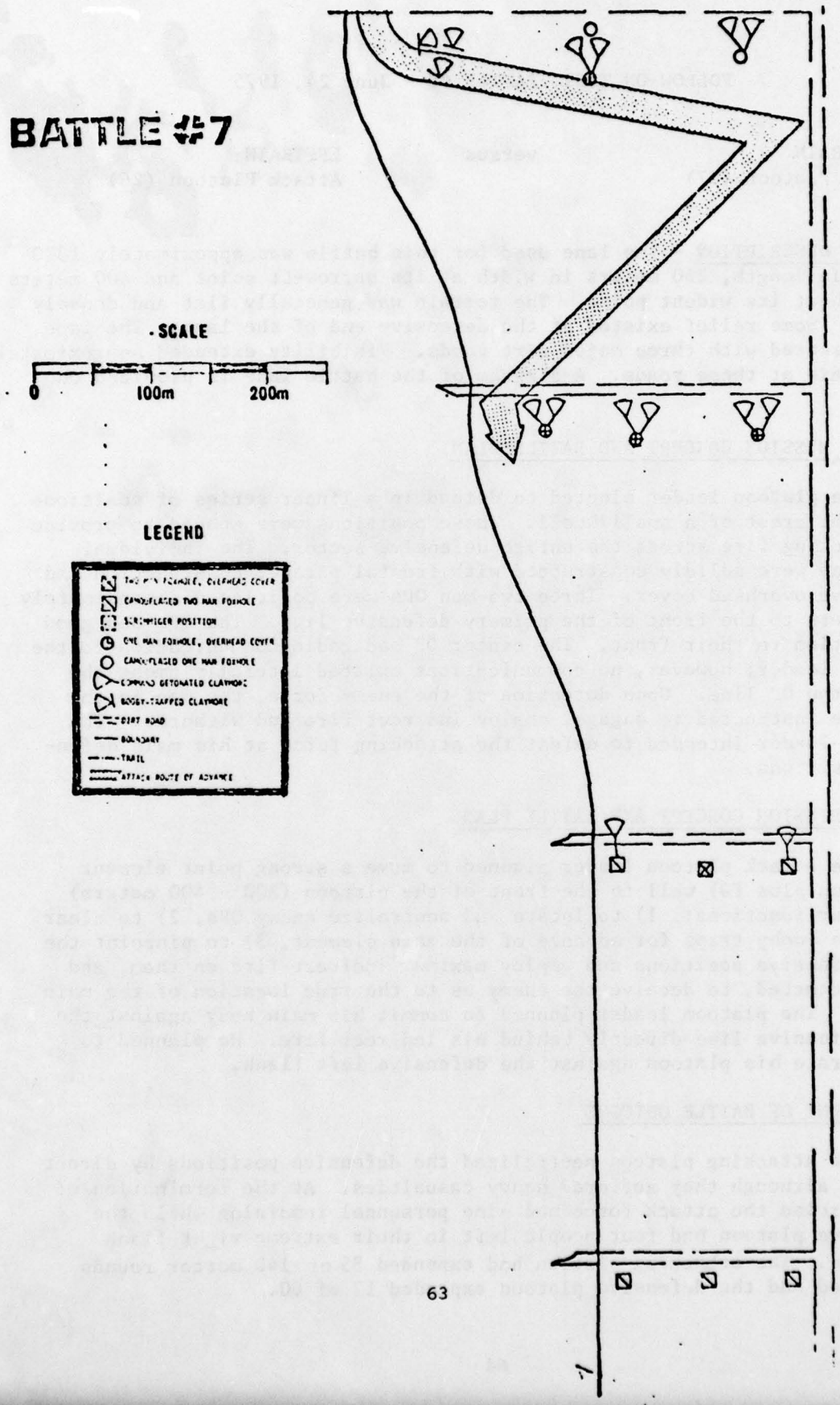
forces lost one man, manning an OP, to M-16 fire. The attack force used 11 out of 140 rounds of indirect fire. The Defenders employed 40 rounds of their 60 round allocation.

DISCUSSION

Defensive Forces - Execution of the defense closely followed the platoon sergeant's plan. The forward OP line pinpointed the attack forces' main element approximately 700 meters in front of the primary defensive positions. The first fire mission caused the attacking platoon to displace so quickly that security was sacrificed. Thus, the initial mortar rounds, the claymore ambush and effective direct fire from the left flank OP resulted in one third of the platoon becoming casualties including the platoon sergeant and FO. Failure of the attacking elements to sweep this area to eliminate the OP line allowed the defense to maintain contact with attack elements to further reduce their number with indirect fire. The attack element then entered an open area in front of the second OP line and were pinned down by effective fire from one position. Several fire for effects were adjusted in this area resulting in destruction of the attacking element.

Attack Forces - The attack platoon leader failed to execute a basically sound plan. His point element did not follow the specified route along the right boundary. The main body of the platoon quickly closed up on the point so that the platoon was moving as one group. To shift toward the right boundary, the platoon broad-sided itself along the first major road allowing men in the OP line to determine the exact size and location of the attack element. A mortar round was initially adjusted in front of the platoon, but this procedure of "walking rounds" in front of the point was not continued. When defensive indirect fire initially fell on the rear of the platoon, the entire force crossed the road en mass. Lead elements including the FO tripped the claymore ambush losing four men who had bunched up after corssing the road. Casualties from M-16 fire from the left defensive OP added to the confusion. The platoon leader reorganized his elements, but failed to clear the line of security positions as he proceeded on with his mission. He also failed to make use of indirect fire after losing his FO in the initial ambush. The platoon leader was using a map but had no compass and subsequently the unit proceeded diagonally back and forth across the lane. Defense indirect fire continued to follow the platoon but was ineffective. The platoon again moved broadside across the lane where they came in contact with the second OP line. One OP position began to fire effectively into the platoon with little or no offensive reaction. As a result, multiple casualties were taken from the flank as elements continued to cross this open area. Additional boobytrap casualties occurred to the attack force in this area. Indirect fire was then adjusted eliminating the remainder of the platoon. The only offensive fire mission was called by the remaining riflemen and would have landed on their own position. However, the simulated battle was terminated before it was fired. The assault force lost six personnel to booby traps, nine to indirect fire, 17 to M-16 fire and four to grenades.

BATTLE #7



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FOLLOW-ON TEST BATTLE #8 - June 24, 1975

NONEFFTRAIN	versus	EFFTRAIN
Defense Platoon (27)		Attack Platoon (26)

TERRAIN DESCRIPTION - The lane used for this battle was appoximately 1300 meters in length, 250 meters in width at its narrowest point and 400 meters in width at its widest point. The terrain was generally flat and densely wooded. Some relief existed at the defensive end of the lane. The lane was trisected with three major dirt roads. Visibility extended approximately 100 meters at these roads. A diagram of the battle lane is provided on page

DEFENSE MISSION CONCEPT AND BATTLE PLAN

The platoon leader elected to defend in a linear series of positions along the crest of a small knoll. These positions were spaced to provide interlocking fire across the entire defensive sector. The individual positions were solidly constructed with frontal parapet construction and extensive overhead cover. Three two-man OPs were positioned approximately 400 meters to the front of the primary defensive live. The OPs had good observation to their front. The center OP had radio communication to the platoon leader; however, no communications existed laterally among the men in the OP line. Upon detection of the enemy force, the men in the OPs were instructed to engage, employ indirect fire and withdraw. The platoon leader intended to defeat the attacking force at his main defensive positions.

ATTACK MISSION CONCEPT AND BATTLE PLAN

The attack platoon leader planned to move a strong point element (five men plus FO) well to the front of the platoon (300 - 400 meters) with four functions: 1) to locate and neutralize enemy OPs, 2) to clear possible booby traps for advance of the main element, 3) to pinpoint the main defensive positions and employ maximum indirect fire on them, and 4) if detected, to deceive the enemy as to the true location of the main attack. The platoon leader planned to commit his main body against the main defensive line directly behind his indirect fire. He planned to concentrate his platoon against the defensive left flank.

ASSESSMENT OF BATTLE OUTCOME

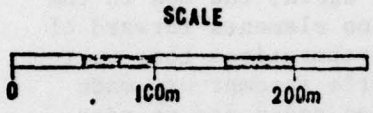
The attacking platoon neutralized the defensive positions by direct attack, although they suffered heavy casualties. At the termination of the exercise the attack force had nine personnel remaining while the defensive platoon had four people left in their extreme right flank position. The attacking platoon had expended 85 of 140 mortar rounds allocated and the defensive platoon expended 17 of 60.

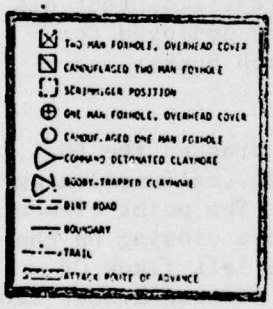
DISCUSSION

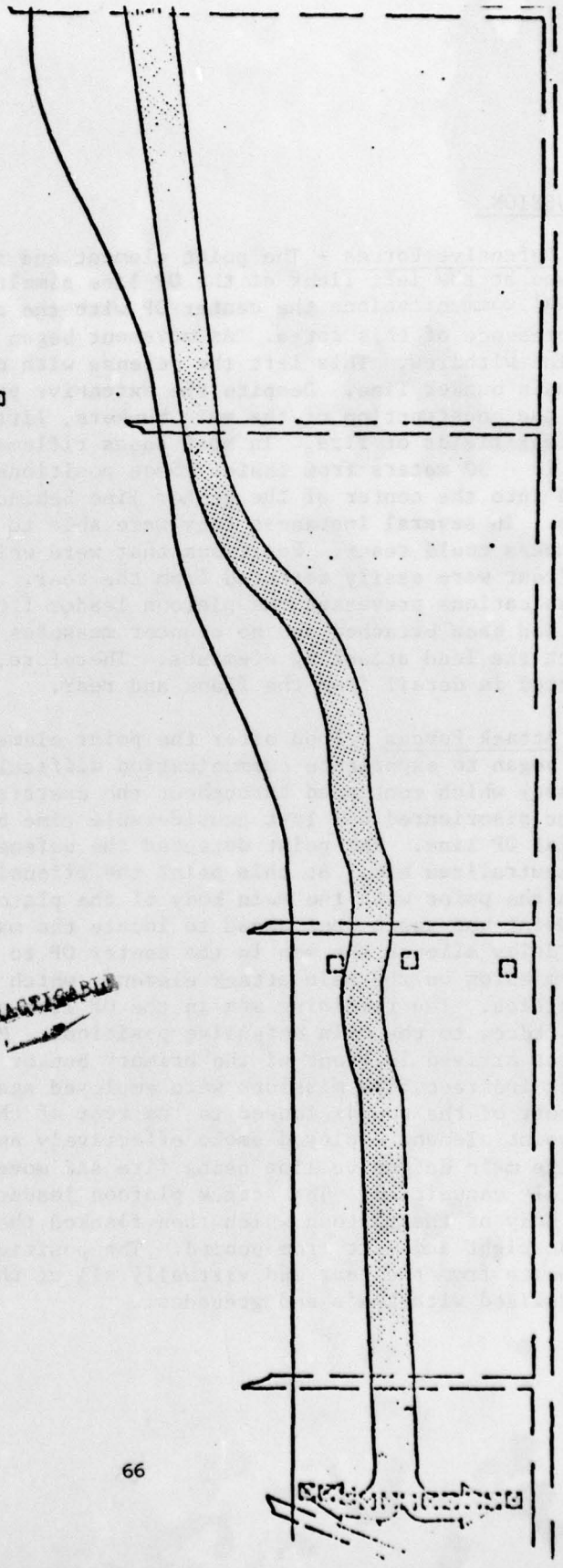
Defensive Forces - The point element and attacking main body arrived at the left flank of the OP line simultaneously. Without lateral communications the center OP with the radio was unaware of the presence of this force. As movement began again, the men in the OP line withdrew. This left the defense with no elements forward of the main bunker line. Despite the extensive preparations that went into the construction of the main bunkers, little attempt was made to clear fields of fire. In most cases riflemen could see no more than 20 - 30 meters from inside these positions. The point element moved into the center of the bunker line behind a heavy screen of smoke. In several instances they were able to grenade bunkers before defenders could react. Positions that were well camouflaged from the front were easily detected from the rear. A lack of lateral communications prevented the platoon leader from realizing that his line had been breached and no counter measures were employed to reject the lead attacking elements. Therefore, each bunker was defeated in detail from the flank and rear.

Attack Forces - Soon after the point element crossed the LD they began to experience communication difficulties (malfunctioning handset) which continued throughout the exercise. The point element became disoriented and lost considerable time before closing on the initial OP line. The point detected the defensive left flank OP and neutralized him. At this point the offensive platoon leader closed up on the point with the main body of the platoon unintentionally. The point was again sent ahead to locate the main defensive positions. This delay allowed the men in the center OP to direct one indirect fire mission on the main attack element, which resulted in four casualties. The remaining men in the OP line then engaged with rifles and witdrew to the main defensive positions. Most of the attacking element arrived in front of the primary bunker line undetected. Attack indirect fire missions were employed against these positions, but most of the rounds landed to the rear of these defensives. However, the point element employed smoke effectively and breached the center of the main defensive line using fire and movement and suffering no friendly casualties. The attack platoon leader followed up with the main body of the platoon which then flanked the remaining defensives to the right and left from behind. The positions were relatively easy to locate from the rear and virtually all of these emplacements were neutralized with LAW's and grenades.

BATTLE #8







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