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GUIDELINES FOR PREPARING ARMOR PLATOON DRILLS AND TACTICAL LEADERSHIP EXERCISES VOLUME I: FINAL REPORT

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and

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The purpose of this research was to adapt drill development guidelines so that they would be suitable for use by armor units, to incorporate tactical platoon leader training into these guidelines, and to implement the revised methodology for drill development by preparing a set of drills for tank platoons and leadership exercises for tank platoon leaders. A review was conducted of the drill development guidelines prepared by ARI and by TRADOC. The need for modified and new guidelines for armor training was determined. Supplemental

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guidelines were prepared including guidelines for the preparation of tactical leadership exercises for platoon leaders, and the guidelines were implemented in the preparation of a prototype battle exercise comprised of tank platoon drills and platoon leader exercises. In addition, assistance was provided to the ARI Field Unit at Fort Knox and to the Directorate of Training Development of the U.S. Army Armor School in the preparation of armor platoon drills based on the Division 86 concept.

Volume II of this report, Tank Platoon Battle Exercise "Conduct Tactical Movement", has been published as ARI Research Product 83-08.

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VOLUME I:

FINAL REPORT

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Requirements for Combat Arms Tactical Training

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FOREWORD

Battle drills are used to train small units to perform procedural tasks. Guidelines have been prepared by the U.S. Army Training and Doctrine Command (TRADOC) and by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to assist training developers in the preparation of drills. This guidance covers such topics as the selection of tasks for drill training, the preparation of training objectives, and documentation needed to support drill training. Since these guidelines were initially designed for the preparation of infantry squad drills, their applicability to other combat arms and to other types of units had to be examined.

This report deals with guideline changes needed for the preparation of drills for tank platoons. Suggestions are given for an alternate method for selecting tasks for drill training, integrating individual and crew tasks into platoon drills, preparing documents to support drill training, conducting drills during opportunity training, and providing feedback during drill training. In addition the report presents a model for integrating drills with tactical leadership training for platoon leaders. The report also presents a methodology for combining battle drills and platoon leader exercises into a battle exercise to allow platoons to practice the transition from one task to another and to practice the drilled tasks in a more realistic context. These guidelines were used to prepare a prototype battle exercise dealing with tactical movement; this prototype, which contains both battle drills and platoon leader exercises, is contained in Volume II of this report (see ARI Research Product 83-08).

The guidelines for preparing tank platoon battle drills are useful to training developers who must prepare drills for armor units. The model for preparing platoon leader exercises is useful to training developers who must prepare programs for training tactical leadership. The prototype drills will be useful to trainers who must train tank platoons to conduct tactical movement, and the prototype platoon leader exercises will be useful to trainers who must train tank platoon leaders to perform the tactical leadership tasks involved in tactical movement.

EDGAR M. JOHNSON
Technical Director

GUIDELINES FOR PREPARING ARMOR PLATOON DRILLS AND TACTICAL LEADERSHIP EXERCISES. VOLUME I: FINAL REPORT

BRIEF

Requirement:

The Army's service schools were directed by TRADOC to prepare drills for training small units (e.g., squads, platoons) to perform procedural tasks. Guidelines for the preparation of drills were developed by the Army Research Institute (ARI) Field Unit at Presidio of Monterey, California for use by the Army Training and Doctrine Command (TRADOC). These guidelines, which were developed and evaluated for light infantry squads, concerned the selection of tasks for drill training and the preparation of drills. The guidelines were intended to integrate individual and collective training. The purpose of this project was to adapt these guidelines for the development of tank platoon drills, to develop a training model that would integrate drills with leadership training, and to prepare a set of prototype drills and leadership training exercises to demonstrate the model.

Procedure:

A review was conducted of the drill development guidelines contained in ARI and TRADOC documents. The need for modified or new guidelines for armor training was determined. Supplemental guidelines were prepared, including guidelines for the preparation of tactical leadership exercises for tank platoon leaders, and they were implemented in the preparation of a prototype battle exercise comprised of related tank platoon drills and platoon leader exercises. In addition, assistance was provided to the Directorate of Training Developments (DTD) of the U.S. Army Armor School in the preparation of armor platoon drills based on the Division 86 concept.

Findings:

The review of existing drill development guidelines suggested (a) that armor tasks should be selected for drill training based on the results of an analysis of armor missions and an analysis of the suitability of tasks for drill training, (b) that crew tasks, as well as individual crewmen tasks and leadership tasks, should be incorporated into the drills, (c) that armor drills should be flexible enough so that each drill task could be trained separately or in an integrated sequence of drills representing a meaningful segment of combat, (d) that this sequence have the flexibility to include tactical leadership training, (e) that the drills should be suitable for opportunity training, and (f) that the role of evaluation and feedback in drill training be expanded. These conclusions led to the development of supplemental guidelines for the preparation of platoon battle exercises comprised of related tank platoon drills and platoon leader exercises. Each drill can be conducted separately or as a part of a battle exercise incorporating tactical training for platoon leaders.

Utilization:

The guidelines for the preparation of tank platoon drills can be used by training developers to prepare battle drills for tank platoon training. The guidelines for the preparation of platoon leader exercises can be used by training developers to design tactical leadership training for tank platoon leaders. The model integrating platoon and platoon leader training can be used by training developers as a model for incorporating leadership training into collective training. The prototype battle drills can be used by armor units to train platoons to perform tasks involved in tactical movement, and the prototype leadership exercises can be used to train platoon leaders to make tactical decisions required for tactical movement. The battle drills developed jointly with the U.S. Army Armor School are included in Appendix C of this volume, and a tank platoon battle exercise "Conduct Tactical Movement" is included in Volume II, published as ARI Research Product 83-08.

GUIDELINES FOR PREPARING ARMOR PLATOON DRILLS AND TACTICAL LEADERSHIP EXERCISES. VOLUME I: FINAL REPORT.

CONTENTS

	Page
INTRODUCTION	1
CHARACTERISTICS OF DRILL TRAINING	3
EXISTING GUIDELINES FOR DRILL DEVELOPMENT	5
SUPPLEMENTAL GUIDELINES FOR ARMOR PLATOON TRAINING	7
Selection of Tasks for Drill Training	7
Integration of Tasks in Drill Training	8
Role of Soldier's Manual Tasks in Drill Training	10
Platoon Leader Exercises	10
Battle Exercises	10
Role of Drills in Opportunity Training	11
Role of Evaluation and Feedback in Drill Training	12
Documents Supporting Drill Training	13
IMPLEMENTATION OF DRILL DEVELOPMENT GUIDELINES FOR ARMOR PLATOON TRAINING	15
Preparation of the Tank Platoon Battle Exercise "Conduct Tactical Movement"	15
Preparation of the U.S. Army Armor School Battle Drills	25
COMPARISON BETWEEN DRILL DEVELOPMENT METHODOLOGIES	29
Level of Detail	29
Selection of Tasks for Drill Training	29
Drill Preparation	30
Performance Steps	31
SUMMARY AND CONCLUSIONS	33
The Requirements for Task Standardization in Drill Training	34
Quantitative Standards in Drill Training	35
Real-Time and Realism in Tactical Leadership Training	36
REFERENCES	39
APPENDIXES	
A. Review of Existing Guidelines for Drill Development	A-1
B. Cross-Check Method for Identifying Crew and Platoon Leader Task Relationships to Platoon Battle Drills	B-1
C. U.S. Army Armor School Tank Platoon Battle Drills	C-1

INTRODUCTION

Guidelines for the preparation of battle drills for Army training are contained in two documents--(1) TRADOC Pamphlet 310-8, Collective Front-End Analysis for Development of the Army Training and Evaluation Program (ARTEP) and a Method for Development of Drills (DA, USATRADOC, HQ, 1981) and (2) Guideline for Designing Drill Training Package (Hiller, Hardy, and Meliza, 1982) which was developed by the U.S. Army Research Institute (ARI) Field Unit at Presidio of Monterey, California. The guidelines contained in these documents are designed to assist the training developer in the selection of tasks for drill training and in the preparation of drills, and to assist the trainer in the conduct of the drills. A set of prototype drills for light infantry squads was prepared by ARI using these guidelines.

The purpose of the present project was to determine the need for special guidelines for developing drills for tank platoons, to prepare these guidelines, and to demonstrate them by using the guidelines to prepare a set of prototype drills for tank platoons. It was also the purpose of the project to develop a model that would incorporate tactical leadership training into drill training. The following activities were performed to accomplish these objectives: (1) an analysis was made of the drill concept to identify the characteristics of drill training, (2) an intensive review was conducted of the two existing sets of guidelines for the preparation of drills, (3) the need for modified and/or new guidelines for the preparation of drills and tactical leadership exercises for armor training was determined, and the guidelines were prepared, and (4) prototype armor drills and tactical leadership exercises were prepared using these guidelines. In addition, assistance was provided to the Directorate of Training Developments of the U.S. Army Armor School (DTD) in the preparation of a set of tank platoon drills based on the Division 86 concept.

CHARACTERISTICS OF DRILL TRAINING

A drill is defined in TRADOC Pamphlet 310-8 as "a standardized non-negotiable technique/procedure involving the application of a practiced reflex action or rote memory." An essential characteristic of a drill suggested in this definition is the consistent performance of the drilled task. The term "standardized" implies that the task must be performed exactly the same way each time. This characteristic is further emphasized by the use of the term "non-negotiable." A task that is non-negotiable is one in which the performer does not have the authority to alter the manner in which the task is done. Consistency of task performance is especially important in the performance of collective tasks, particularly when the composition of the unit or group performing the task varies from occasion to occasion. Given the relatively high rate of personnel turbulence in today's Army, it is particularly important that soldiers be trained to perform a task in exactly the same way regardless of where the training is given. By training uniformly, performance standards can be maintained even when personnel turnover is high.

A second characteristic of a drill suggested in this definition is the role of repetition in drill training. A drill is a training technique in which a task is performed again and again. This characteristic is implied by the use of the phrase "practiced reflex action" and is emphasized by the phrase "rote memory." The term "practiced reflex action" suggests that the goal of drill training is to practice a task until it becomes habitual. An assumption is made that when this goal is reached, the drilled task can be performed correctly even during combat stress. The term "rote memory" suggests that the performance of the task must become sufficiently automatic that it can be performed without the need for additional direction during the performance of the task. This, again, can be accomplished through the use of repetition or practice.

Participants in the Collective Training Workshop organized by the Army Training Board defined a drill as "a standardized procedure which integrates individual and collective tasks and which trains, by means of repetition, a collective task which is a predetermined response to an initiating cue" (Bauer, 1982). While this definition emphasizes consistency of performance and the role of practice in drill training, it also emphasizes the opportunity for training both individual tasks and collective tasks at the same time. This characteristic of a drill is not specified in the definition contained in TRADOC Pamphlet 310-8, but it is explicitly stated in the document that drills enable soldiers "to perform to collective standards while simultaneously reinforcing and/or training...Soldier's Manual tasks, leader tasks, and collective tasks." Hiller et al., (1982) claim that the heavy training load created by the need to train large numbers of individual and collective tasks can be managed more efficiently by integrating individual and collective training. They suggest two ways in which this can be done — (1) by imbedding individual task training into collective training efforts and (2) by identifying which individual tasks should be trained prior to collective training and by training these tasks in advance. While the latter technique would not enable both types of tasks to be trained simultaneously, Hiller et al., (1982) assert that the technique would result in greater training efficiency by better preparing soldiers for collective training.

EXISTING GUIDELINES FOR DRILL DEVELOPMENT

Two sets of guidelines are currently available to assist the training developer prepare drills. One set is contained in TRADOC Pamphlet 310-8 (DA, USATRADOC, HQ, 1981) and focuses heavily on the selection of tasks for drill training. The guidelines state that the results of an analysis should be examined to identify the individual, collective, and leadership tasks that are necessary to accomplish a unit mission. Once identified, these tasks are to be examined to determine their suitability for drill training. After the tasks are selected, they are to be broken down into a sequence of steps, and the conditions and standards are to be determined. Resources for conducting the drill are to be identified, and instructions for an evaluation are to be prepared. The drill contents should undergo school review, external unit review, or field validation. Additional guidelines contained in Appendix H of TRADOC Pamphlet 310-8 concern the selection of the primary trainer for trainees at different skill levels, writing the task statement, describing the conditions, and preparing performance standards.

A second set of guidelines for drill preparation is contained in a document prepared by the ARI Field Unit at Presidio of Monterey, California, Guideline for Designing Drill Training Package (Hiller et al., 1982). This document states that the purpose of drill training is to enable individual and collective skills to be trained at the same time. This integration of individual and collective training would be accomplished by developing collective training exercises based on training objectives which reflect individual as well as collective skills. The small unit leader would be the primary trainer and therefore could not participate in tactical decision making and communication chores. The procedure for selecting tasks for drill training specifies that candidate drills should be identified by examining chunks of battle taken from ARTEP. Soldier's Manual (SM) tasks would be integrated into the drill by identifying leader SM tasks and unit member SM tasks that should be trained before the drill, SM tasks that are completely covered by drill standards, and SM tasks that are partially covered by drill standards. Once the tasks are selected, training objectives would be prepared.

Guideline for Designing Drill Training Package (Hiller et al., 1982) recommends that four documents be prepared to support the planning, preparation, and conduct of drill training. A Drill Trainer's Guide would be used by the trainer to plan and prepare for drill training. Among its contents would be a list of SM tasks that must be trained prior to the drill, training resources needed to conduct the drill, and the ARTEP missions that are supported by the drill. Detailed information would also be provided on how to conduct the drill in the field. A Drill Trainer's Guide Outline would be used by the trainer when executing the drill. It would contain the training objectives, directions for conducting an orientation, directions for conducting a demonstration of the task, a summary of the set-up directions, and directions for a walk-thru. Suggested variations under which the drill should be conducted would also be contained in it. A Drill Evaluator's Checklist would be used by the training supervisor to evaluate a unit when it goes for record. It would contain a statement of the task, conditions, and standards. The fourth document, the Drill Training Management Guide, would be used by the training manager to plan and schedule drill training. It

would explain the purpose and advantages of drill training, and tell how the other three documents are to be used for the conduct of drills. It would also explain the activities of the trainer in preparing for drill training, conducting the drills, and conducting the evaluation. The document also would contain information on the order in which the drills are to be conducted and the specific resources needed for each drill.

A more detailed description of the information contained in the two sets of drill development guidelines is presented in Appendix A.

SUPPLEMENTAL GUIDELINES FOR ARMOR PLATOON TRAINING

The existing guidelines for the development of drills were prepared for use in the preparation of drills for light infantry squads. Differences between armor and infantry operations made it important to determine the suitability of these guidelines for the preparation of tank platoon drills. Armor operations require more terrain and fuel than light infantry operations, and it is more difficult to observe tank crewmen than infantrymen. In addition, armor operations must be conducted under radio listening silence, creating problems in communications. To determine what changes would be needed in guidelines for preparing tank platoon drills, an analysis was made of the present guidelines, and the requirements for armor drills were identified.

Selection of Tasks for Drill Training

The initial guidance presented in TRADOC Pamphlet 310-8 and in Guideline for Designing Drill Training Package specified that drill tasks should be selected by examining ARTEP and identifying chunks of combat that contain at least one collective task. The recommended methodology also specified that conditions and standards in ARTEP be examined to ensure that the drill tasks would require the same actions under different conditions. If the actions varied with conditions, separate drills would be needed. There are two difficulties involved in implementing the methodology -- (1) ARTEP tasks are not always accurately defined and (2) conditions may be described under standards. Both the identification of conditions and standards appear to be difficult jobs requiring extensive analysis.

An alternate method for selecting tasks for drills is therefore suggested. The method requires that the tasks be selected from the results of an analysis of armor combat operations rather than from ARTEP. Such an analysis, which was conducted by HumRRO earlier in this project, began by identifying the company operations conducted during offense, defense, and support activities (Drucker and O'Brien, 1981b). Tank company operations performed during the offense included Movement to Contact and Hasty Attack, while those performed during the defense included Defend Battle Position and Withdraw. Those performed during support activities included Occupy Forward Assembly Area and Tactical Movement.

Each company operation was then broken down into phases. A company operation phase is a cluster of coordinated activities that are conducted during a company operation and which have a unique subgoal. Each company operation phase was then further subdivided into its component platoon operations. For example, the company operation Hasty Attack was divided into a Suppressive Fire phase and a Fire and Maneuver phase. Two platoon operations were identified as occurring during the Suppressive Fire phase--Engage Enemy on Objective and Shift Suppressive Fires. Similarly, two platoon operations were identified as occurring during the Fire and Maneuver phase--Conduct Fire and Maneuver and Conduct the Assault. Each platoon operation was then examined to identify the platoon tasks that are performed during the operation. For example, during the platoon operation Engage Enemy on Objective, the following platoon tasks are performed--Move Into Suppressive

Fire Position and Open Fire. During the platoon operation Shift Suppressive Fires, the following two platoon tasks are performed--Shift Suppressive Fires and Cease Fire.

Since a platoon task is short enough to be easily repeated, but is complete in itself, it is recommended that battle drills be developed for the platoon tasks that meet the requirements for drill training. Thus, the 114 platoon tasks identified in the HumRRO analysis of armor operations (Drucker and O'Brien, 1981b) would serve as candidate drills.

Integration of Tasks in Drill Training

An important characteristic of drills described in TRADOC Pamphlet 310-8, in the ARI guidelines, and by the participants of the Collective Training Workshop is their ability to accommodate the integration of individual and collective training. It was stated in the ARI guidelines that integration of training can be accomplished either by training individual tasks during the drill or by training them prior to the drill. When individual tasks are trained during the drill, simultaneous integration of training is achieved since both types of tasks are being trained at the same time. When individual tasks are trained prior to the drill, sequential integration of training is achieved. While sequential integration of training does not allow for the conservation of training resources by enabling individual and collective training to be conducted at the same time, it does help to assure that the individual tasks being trained in preparation for collective training are those that are required for the performance of the collective tasks.

Criteria for determining whether an individual task should be trained during a drill or prior to it are presented in the Guideline for Designing Drill Training Package (Hiller et al., 1982). According to this document, the individual tasks that should be trained prior to a drill are those whose performance during a drill would otherwise create a safety hazard, those that are more suitable for training in the classroom (e.g., those that require training aids), those that are difficult to train or that require a long time to train, those that are difficult to observe and evaluate, and those that are performed by the leader. All other individual tasks that would be performed during the drill could be trained during the drill itself. Simultaneous integration of individual and collective training during a tank platoon drill, however, presents unique difficulties since most individual crewman tasks are performed inside tanks and cannot be observed by a trainer during the drill. Thus, tank platoon drills are more suitable for sequential than simultaneous integration of individual and collective training.

Some individual tasks can be trained simultaneously during a tank platoon drill, however, since their performance is either observable or the consequences of their performance are observable. These are platoon leader tasks in which the platoon leader communicates by radio or through the use of hand and arm signals. While many platoon leader tasks, such as decision making tasks, are not procedural and should not be included in drill training, others are procedural and are suitable for drill training. The ARI guidelines specify that leadership tasks should be taught prior to the drill rather than during it, but this appears to be a consequence of the role

envisioned for the leader. The ARI guidelines state that the unit leader should be the trainer. Since the leader is responsible for the conduct of the drill, then it is important that this person be trained in the performance of leadership tasks prior to the drill. However, if the unit leader is a participant in the drill rather than a trainer, then this requirement for prior training would be eliminated.

Different levels of collective tasks can also be integrated in drill training. In the case of tank platoons, there are two types of collective tasks that must be trained--crew tasks and platoon tasks. Since some platoon tasks require the performance of crew tasks, integration of crew and platoon tasks during training is possible. This integration can be either simultaneous or sequential. The same guidelines developed for integration of individual and collective tasks by ARI appear to be valid for determining whether crew tasks should be trained during or prior to platoon task training. Crew tasks that would be trained during or prior to the drill would be those whose performance would create a safety hazard, those that are more suitable for training in the classroom, those that are difficult to train or that require a long time to train, and those that are difficult to observe or evaluate. The guideline pertaining to tasks performed by the leader would not apply. All other crew tasks that would be performed during the drill could be trained during the drill itself.

The integration of either individual and collective training or the integration of collective training at one level (e.g., crew training) with collective training at another level (e.g., platoon training) requires that tasks be identified for training and their sequencing be determined. A cross-check method for identifying the crew tasks and platoon leader tasks that should be integrated into tank platoon drills and for determining their sequencing was prepared by the ARI Field Unit at Fort Knox and is contained in Appendix B of this volume of the report. The purpose of the cross-check method was to specify the sequence of steps that should be followed when selecting crew and platoon leader tasks for integrated drill training and for determining whether this integration should be simultaneous or sequential. The cross-check method consists of the following ten steps: (1) selecting a set of tactically related platoon tasks, (2) identifying the platoon leader tasks that are performed during each platoon task, (3) determining whether or not the platoon leader tasks meet the requirement for drill training, (4) developing the standards for each task, (5) identifying the crew tasks that are performed during each platoon task, (6) preparing a matrix showing which crew and platoon leader tasks are performed during each platoon task, (7) verifying the accuracy of the matrix and identifying issues which need discussion with subject matter experts (SMEs), (8) discussing the matrix and the issues with SMEs and revising the matrix as a consequence of these discussions, (9) classifying the platoon leader tasks and crew tasks for simultaneous or sequential integrated training, and (10) reviewing the matrix with SMEs to verify its contents.

Role of Soldier's Manual Tasks in Drill Training

Guideline for Designing Drill Training Packages (Hiller et al., 1982) described three types of Soldier's Manual tasks--tasks to be trained before the drills (both leader and unit member), tasks covered by the drill standards that could be scored during the drill, and optional tasks that could be trained during the drill. Since crewman tasks performed during armor drills would not be observable by a trainer and/or evaluator, the only Soldier's Manual tasks incorporated into armor drills would be prerequisite tasks that would have to be learned prior to the drill. It was felt that adequate training of SM tasks during the drill would require feedback for efficient learning to occur. Since neither the trainer not an evaluator can observe the performance of crewman tasks, these tasks could not be formally trained within the battle drill structure. However, informal training of SM tasks is possible by allowing each tank commander to critique the members of his crew following each run of the drill. Training objectives should not be provided to the tank commanders since they would be participating in the drill as trainees and could not formally train the other members of their crews. Nevertheless, tank commanders are responsible for training their crews. Since each TC would be in the best position to observe the performance of his crew, time should be made available for each TC to informally assess the performance of his crew and to provide feedback.

Platoon Leader Exercises

In Guideline for Designing Training Drill Training Package (Hiller et al., 1982) a distinction is made between the role of the unit leader during drill training and his role in ARTEP. During ARTEP the unit leader is trained to analyze the situation, select a course of action, coordinate with elements outside of the unit, issue commands, and correct unit deficiencies (if time permits). In essence, the unit leader is being trained during ARTEP. This is in contrast with his role during drill training. In his role as a trainer, the unit leader would direct the actions of his unit and correct performance deficiencies. Guideline for Designing Drill Training Package further specifies that the tasks selected for drill training must be small enough and precise enough so that tactical decision making by the trainer is either excluded or minimized.

The tactical decision making capabilities of the platoon leader in a tank platoon can play a major part in determining the success or failure of the platoon in combat. Since the platoon leader is often relatively inexperienced, it is as important, if not more important, to train him to make tactical leadership decisions as it is to train the remaining members of the platoon to perform drill tasks. Just as battle drills enable platoons to practice the performance of tasks so that these tasks can be mastered, a training mechanism is needed to enable platoon leaders to practice decision making tasks so that these tasks too can be mastered.

Since drills are only suitable for training tasks that are procedural, they cannot be used to train platoon leaders to make tactical decisions. There is a need, therefore, for a specialized technique for training tactical decision making. The development of such a technique was one of the goals of this project and led to the preparation of a set of platoon leader exercises that could be conducted in conjunction with platoon drills.

Battle Exercises

A battle drill is a training technique for training a segment of combat (using the ARI guidelines) or for training a platoon task (using the newly developed supplemental guidelines). In either case, the drill focuses on a relatively small aspect of combat and is conducted without a scenario. While a drill may result in improved performance or mastery of the drill task, being scenario free a drill does not enable the unit to practice the task in a realistic context. While participation in ARTEP may provide some opportunity to practice the drill task with more realism, the heavy emphasis on evaluation during ARTEP would prevent a unit from repeating a task until it is mastered.

The solution to this problem, is to link several battle drills together in a realistic sequence. Each drill task would be learned separately, but they would later be combined during a battle exercise. A battle exercise would consist of the tasks that would normally occur together during actual combat. In contrast to a drill which does not require a scenario, a battle exercise would require a scenario to ensure the integration of the separate drills into a meaningful sequence.

A battle exercise, however, would also contain platoon leader exercises so that the platoon leader could practice tactical decision making while his platoon practices drill tasks. To accomplish this, a scenario would be prepared that would require a platoon leader to make a decision once his platoon completes a drill task. By carefully controlling the situation described in the scenario, the training developer can ensure that the appropriate platoon leader decision would result in a command leading to the next drill. The new drill would similarly be followed by a platoon leader exercise which in turn would result in a decision leading to still another drill in the sequence. Both the drills and the decision making skills would have to be practiced prior to the battle exercises since the exercise would be an inappropriate vehicle for teaching the basic skills required to perform platoon tasks or to make tactical decisions. The purpose of the exercise would be to enable both the tank crewmen and the platoon leader to further practice their existing skills in a combat-like situation in which the transition from one task to another is carried out more realistically.

Role of Drills in Opportunity Training

Drill training, as it is described in the ARI guidelines, is a relatively formal procedure. Detailed planning is required prior to conducting the drills and extensive support, such as training areas and OPFOR troops, are needed during the drills. While this approach to training will help to assure that the correct tasks are chosen for training and that they are properly taught, its formality limits the flexibility of the trainer for conducting training. There are many opportunities for training that are available to a unit besides periods scheduled for training, but these opportunities are too random in occurrence and too short in duration to be suitable for drill training as described in the ARI guidelines. A mechanism is needed that would enable the trainer to utilize these opportunities for training as time and space are available.

Opportunity training involving drills requires the trainer to follow somewhat different techniques than would be followed in more formal drill training. The trainer would need to examine the unit schedule in order to identify opportunities for drills. For example, if the unit were scheduled to move from one location to another along a road, it could conduct herringbone or coil halt formation drills. If the unit were scheduled to move from one location to another cross-country, it could conduct different movement formation drills (e.g., traveling overwatch, bounding overwatch) or drills involving actions that could occur while moving cross-country in combat (e.g., react to air attack). Since such training would not provide an opportunity for a demonstration or a walk-thru, the drills would have to be conducted formally before they could be used for opportunity training. In addition, there would probably be less time available to formally evaluate performance and to provide detailed feedback to the unit. Also, the drills would probably have to be conducted by the unit commander (e.g., the platoon leader) rather than by an outside trainer. However, opportunity training using drills would be an especially useful technique for sustaining the skills that are learned in more formal drill training.

Role of Evaluation and Feedback in Drill Training

The ARI guidelines for drill training contain instructions for preparing a Drill Evaluator's Checklist. The checklist is to be used by an evaluator when the unit goes for record, but not during other repetitions of the drill. During these other repetitions, the guidelines specify that the trainer should observe the drill using the standards that are presented in the Drill Trainer's Guide Outline. If the drilled task is performed incorrectly, the drill should be stopped, feedback should be given, and the drill should then be repeated. The trainer is also encouraged to coach the unit while it is performing the drill.

Because of the high costs involved in armor training, evaluation and feedback should play a larger role in tank platoon drills. In particular, it is recommended that the trainer use a checklist each time the drill is performed, and that the information contained in the checklist be used by the trainer to provide feedback to the unit at the end of the drill. This recommendation, of course, would not apply to any situation in which the platoon leader both participates in the drill and serves as a trainer. The use of the checklist during each repetition of the drill should not only increase the likelihood that the trainer would observe actions that are performed correctly and incorrectly, it would also help to assure that unit is given complete feedback on how well it did. The use of the checklist during each repetition of the drill does not reduce the need for feedback and coaching during the drill itself. These techniques should be used, but coaching should be reduced gradually so that the unit can learn to perform the drilled task without direction. When the platoon leader is both a participant and a trainer, it is important that he know the performance standards. He should try to remember how well the standards were met, and should provide feedback at the end of the drill based on memory.

Documents Supporting Drill Training

The ARI guidelines specified that four documents be prepared to support the planning, preparation, and conduct of battle drill training. These documents are a Drill Trainer's Guide, a Drill Trainer's Guide Outline, an Evaluator's Checklist, and a Drill Training Management Guide. The examination of these four documents revealed that the Drill Trainer's Guide contained most of the information presented in the Drill Trainer's Guide Outline and much of the information presented in the Drill Training Management Guide. It is therefore recommended that the Drill Trainer's Guide Outline be eliminated completely and that the duplicate information contained in the Drill Training Management Guide be eliminated from the Drill Trainer's Guide. This would reduce the number of documents needed to support drill training and at the same time reduce the size of the Drill Trainer's Guide so that it could serve the same function as the Drill Trainer's Guide Outline. If these changes were to be made, the Drill Training Management Guide would contain only information needed for planning and preparing battle drills, while the Drill Trainer's Guide would contain only information needed for conducting the drills. The final five sections of the Drill Trainer's Guide (i.e. Drill Preparation, Pretest, Presentation, Practice, and Perform) would remain in that document, while the first four sections (i.e. Responsibilities, Training Objective, Trainer/Evaluator Preparation, and Mandatory Squad Member Soldier's Manual Task Preparation) would be shifted to the Drill Training Management Guide. The Evaluator's Checklist would stay unchanged.

Since the documents supporting drill training can be prepared more efficiently for an entire battle exercise, and since the contents or use of these documents would be modified using the new supplemental guidelines, the following changes should be made in their titles: (1) the Drill Trainer's Guide should become the Exercise Trainer's Guide, (2) the Evaluator's Checklist should become the Exercise Scorer's Checklist, and (3) the Drill Training Management Guide should become the Exercise Management Plan.

IMPLEMENTATION OF DRILL DEVELOPMENT GUIDELINES FOR ARMOR PLATOON TRAINING

Two armor platoon training products were developed during the present project. The first was the battle exercise Conduct Tactical Movement which was prepared using the supplemental guidelines. The battle exercise is presented in Volume II of this report. The second product was a set of armor platoon battle drills prepared jointly with the ARI Field Unit at Fort Knox and the Directorate of Training Developments of the U.S. Army Armor School. This jointly prepared product was based on the battle drill outline developed by the participants in the Workshop on Collective Training conducted by the Army Training Board from 18-21 May, 1982 (Bauer, 1982). A copy of the jointly prepared drills is contained in Appendix C in this volume of the report.

Preparation of the Tank Platoon Battle Exercise "Conduct Tactical Movement"

TRADOC Pamphlet 310-8, the ARI guidelines, and the newly developed supplemental guidelines were used to prepare a prototype battle exercise, Conduct Tactical Movement, consisting of eight battle drills and five platoon leader exercises. The prototype battle exercise comprises Volume II of this report. The references used to prepare the battle exercise were TT 71-1/2, The Abrams Battalion, Division 86, Volume II: Company and Platoon (U.S. Army, USATRADOC, 1982) and FM 71-1, The Tank and Mechanized Infantry Battalion Company Team (Department of the Army, Headquarters, 1977).

Selection of Battle Drills. The first step in preparing the battle exercise Conduct Tactical Movement was to select the battle drills that would be contained in it. Platoon tasks performed during armor operations are presented in Mission-Based Analyses of Armor Training Requirements, Volume V: Relationship Among Collective and Individual Tasks in Tank Platoon Operations (O'Brien & Drucker, 1981). Fifteen tasks are listed as normally occurring during the company operation Conduct Tactical Movement. These tasks are:

- Platoon Crosses Line of Departure
- Platoon Conducts Specified Movement
- Platoon Moves in Traveling Overwatch
- Platoon Moves in Traveling
- Platoon Corrects Interval Between Tanks
- Platoon Corrects Speed of Tanks
- Platoon Orients Main Guns
- Platoon Maintains Alert Air Guards
- Platoon Continues Appropriate Movement
- Platoon Executes Coil
- Platoon Executes Herringbone
- Platoon Continues Coil or Herringbone
- Platoon Moves Out in Previous Formation
- Platoon Moves in Bounding Overwatch
- Platoon Crosses Critical Points

An examination of this list of platoon tasks suggested the need for modification. Three tasks were judged to be the continuation of other tasks

on the list, and they were therefore eliminated as possible drills. These platoon tasks were Platoon Continues Appropriate Movement, Platoon Continues Coil or Herringbone Formation, and Platoon Moves Out In Previous Formation. Seven tasks were judged to be subtasks of other platoon tasks in the list, and they were also eliminated. Three of the remaining tasks, however, appeared to define the company operation Conduct Tactical Movement (Platoon Moves in Traveling, Platoon Moves in Traveling Overwatch, and Platoon Moves in Bounding Overwatch) and two of the remaining tasks were judged likely to occur during the operation although they were not an integral part of it. These two tasks, Platoon Executes Coil Formation, and Platoon Executes Herringbone Formation, were therefore included in the battle exercise. The final three tasks selected for the battle exercise (Platoon Reacts to Indirect Fire, Platoon Reacts to Air Attack, and Platoon Negotiates Defile) were not on the original list, but they were judged to have a high likelihood of occurring during tactical movement.

Selection of Platoon Leader Exercises. Once the battle drills were selected, the next step in the preparation of the battle exercise was to select the leadership tasks for the platoon leader exercises. An analysis was made of the platoon leader actions that would be required to initiate each drilled task. The purpose of this analysis was to identify the specific platoon leader decision that would result in a command to begin each drilled task in the battle exercise. The analysis focused first on the three platoon movement formations--traveling, traveling overwatch, and bounding overwatch. It was noted that the formation that should be used by the platoon is determined by a platoon leader decision regarding the formation in which the platoon should move. This determination is made by the platoon leader by comparing the existing enemy conditions with tactical movement principles. For example, one tactical movement principle states that the platoon should move in traveling if enemy contact is unlikely. (In some exceptional cases, as when time is critical and speed is necessary for mission accomplishment, other environmental conditions could override the enemy condition). On the basis of this analysis, the platoon leader task Platoon Leader Determines Movement Formation was selected as the platoon leader exercise to initiate the three movement drills.

The analysis next focused on the two unscheduled halt formations--coil and herringbone. It was noted that the formation that should actually be used by the platoon is determined by a platoon leader decision regarding the terrain that is available when the order to halt is given to the platoon leader. This determination is made by the platoon leader by comparing the available terrain with tactical unscheduled halt principles. One such principle states that the platoon should execute the coil formation if off road maneuver is possible; otherwise it should execute the herringbone formation on the shoulders of the road. After this decision is made by the platoon leader, a signal is given to the platoon designating the location for the halt and specifying the formation to be executed. On the basis of this analysis, the platoon leader task Platoon Leader Determines Location for Unscheduled Halt was selected as the platoon leader exercise to initiate the two unscheduled halt drills.

The next step in the analysis was to focus on two battlefield conditions which are unpredictable and which require an immediate platoon leader response--enemy indirect fire and air attack. It was noted that the platoon

response to each of these conditions is determined by a decision made by the platoon leader regarding the terrain available when the condition occurs. This determination is made by comparing the available terrain with movement principles pertaining to reacting to indirect fire and reacting to air attack. One such principle specifies that the platoon should move rapidly out of an impact area when attacked by indirect fire. After this decision has been made, the platoon leader is to alert the platoon to the threat and signal a movement direction. A similar principle and platoon leader response apply to the reaction of the platoon leader to an air attack. On the basis of this analysis, the platoon leader tasks Platoon Leader Reacts to Indirect Fire and Platoon Leader Reacts to Air Attack were selected as the platoon leader exercises to initiate the two immediate response drills.

The final step in the analysis was to focus on a battlefield condition in which only one response was appropriate--the response made when encountering a defile. It was noted that for this condition, the appropriate platoon response is determined by the platoon leader's knowledge of the proper method for passing through a defile. This knowledge relates to the movement principle stating that when a platoon encounters a defile, it should move through it using the step-by-step bounding overwatch procedure. The only decision that can be made by the platoon leader in this situation is to change the existing movement formation to bounding overwatch (unless the platoon is already moving in bounding overwatch). On the basis of this analysis, the platoon leader task Platoon Leader Reacts to Defile was selected as the platoon leader exercise to initiate the platoon drill Platoon Negotiates Defile.

Preparation of the Exercise Management Plan. The Exercise Management Plan for the battle exercise Conduct Tactical Movement is contained in Appendix A of Volume II of this report. The Management Plan consists of ten sections and contains several tables and figures. Included as an enclosure to the Exercise Management Plan in Appendix A is the lesson plan "Decision Making for Tactical Movement." Participation in this class is a prerequisite for platoon leader participation in the platoon leader exercises.

The following is a description of the Management Plan.

> Section 1: Introduction. This section states that the Exercise Management Plan is to be used for planning and implementing the battle exercise Conduct Tactical Movement.
>
> Section 2: Purpose. The purpose of the Exercise Management Plan was described as providing information to the training manager and the company trainer for planning and implementing the exercise.
>
> Section 3: Scope. The remaining sections of the Exercise Management Plan are listed here.
>
> Section 4: Training Responsibilities. This section lists the specific responsibilities of the Training Manager, the Trainer, and the Tank Commanders in planning and conducting the battle exercise. The responsibilities of the Training Manager are to schedule the training

activities, to provide support, and to establish time and distance standards. The responsibilities of the Trainer are to ensure that the training prerequisites are met, to request training time and training support, to identify opportunity training time, and to administer and score the platoon leader exercises and the battle drills. The responsibility of the tank commanders is to make sure that prerequisites are mastered before the conduct of the drills.

While it is recognized that the realities of training will usually result in the assignment of the platoon leader as the trainer, it was felt that an outside trainer, such as the company commander, would be preferable. The platoon leader in a tank platoon is also the commander of his tank. Since the platoon leader's tank represents one-fourth of the fire power in the four tank platoon designated in Division 86, it is important that the platoon leader and his crew participate in the drills as trainees. Many platoon leaders have relatively little experience and can benefit from participation in the drill. Consequently, the drills were designed to be flexible. It is intended that a company level officer serve as trainer, if at all possible. However, the drills were prepared in such a way that the platoon leader could conduct them if a company level officer were not available for training.

Section 5: Relationship to ARTEP. The ARTEP tasks during which the drill tasks would normally be performed are listed here. The information needed to prepare this section came from personal experience, descriptions of missions and tasks in ARTEP, and descriptions of armor operations in FM 71-1, The Tank and Mechanized Infantry Company Team.

Section 6: Training Prerequisites. This section contains lists of individual and collective tasks that must be mastered prior to conducting the exercise. Included are platoon leader tasks, platoon sergeant tasks, tank commander tasks, individual crewmen tasks, crew tasks, and platoon tasks. Task numbers and references are also given. The information needed to identify these prerequisites came from personal experience and from descriptions of armor operations contained in FM 71-1, The Tank and Mechanized Infantry Company Team.

Section 7: How to Train. General descriptions of how to conduct the platoon leader exercises, the battle drills, and the platoon battle exercises are contained in this section.

Section 8: Scheduling Training. This section contains descriptions of how the battle drills and platoon leader

exercises can be conducted as either opportunity training or scheduled training. A recommended training sequence is shown in a figure. The figure depicts the temporal relationship between the mastery of prerequisites, planning and conducting the platoon leader exercises and the platoon battle drills, planning and conducting the battle exercises, planning and conducting the battle exercises under various scenarios, and the relationship between platoon leader exercises and platoon drills.

Opportunity training can be conducted on an unscheduled basis whenever the platoon has time for performing a drill. Since it is unscheduled, only drills that have already been learned can be practiced during opportunity training. Such drills should be conducted by the platoon leader and formal evaluation with the Evaluator's Checklist should not be included.

Section 9: Support Requirements. This section lists the personnel, communications and equipment support, the training area requirements, and ammunition required to conduct each of the battle drills. The training area requirements are shown on a separate figure contained in this section.

Section 10: Scenario Requirements. Although battle drills can be conducted without scenarios, battle exercises and platoon leader exercises require them. This section provides an operational sketch map and a scenario with variations. Four different sequences are presented for conducting training.

Section 11: Training and Evaluation Plan. This section contains examples of training and evaluation plans for battle drills and battle exercises. These plans, which are prepared by the training manager, are intended to serve as control measures to ensure effective and efficient training.

The following is a description of the lesson plan "Decision Making for Tactical Movement" which is an enclosure to the Exercise Management Plan.

Section 1: Introduction. This section presents the reasons for participating in the class on decision making and presents the objectives and standards. The stated purposes of the class are to familiarize the platoon leaders with the strengths and weaknesses of three movement formations, the characteristics of events that could occur during tactical movement, movement principles, and the problem solving process.

Section 2: Explanation. This section contains descriptions of the strengths and weaknesses of each movement formation; the characteristics of events that

occur during tactical movement (i.e. indirect fire, air attack, and defiles); and principles that must be followed during tactical movement, unscheduled halts, movement during indirect fire, and movement through a defile. It also lists the steps that are involved in problem solving.

Section 3: Discussion. This section contains instructions and information needed to conduct discussions of six different tactical situations which could occur during tactical movement. Drawings are provided for transparencies that should be used with each tactical situation.

Section 4: Review: This section contains an outline for summarizing the class and presents the closing statement that should be made to the class.

Preparation of the Exercise Trainer's Guide. The Exercise Trainer's Guide for Conduct Tactical Movement is contained in Appendix B of Volume II of this report. In developing the Guide, it was felt that some platoon leaders would be too inexperienced as trainers to work effectively with an outline. Therefore, it was decided to include in the Exercise Trainer's Guide sufficient detail to reduce the amount of time that platoon leaders would need to prepare for training. While this added length to the Exercise Trainer's Guide, it was felt that the benefits that could be derived from a detailed set of instructions would far outweigh the disadvantages.

The Exercise Trainer's Guide contains two parts. The first part is a brief introduction and contains three sections--Introduction, Purpose, and Scope. The second part contains the eight drills and the five platoon leader exercises that comprise the battle exercise Conduct Tactical Movement. The drills and platoon leader exercises are presented in the sequence in which they would be performed when the complete battle exercise is conducted.

The following is a description of the three sections in the first part of the Exercise Trainer's Guide.

Section 1: Introduction. This section explains that the Exercise Trainer's Guide contains the procedures for implementing the battle exercise, the separate platoon leader exercises, and the separate battle drills.

Section 2: Purpose. This states that the purpose of the Exercise Trainer's Guide is to provide the trainer with a training tool to enable him to conduct training with very little preparation.

Section 3: Scope. This section outlines the contents of the Exercise Trainer's Guide.

The following is a description of the second part of the Exercise Trainer's Guide which contains the battle drills and platoon leader exercises.

Battle Drills: Each drill presents a rather detailed set of instructions informing the trainer how to implement the drill and describes the actions that must be taken. The drills contain the following sections.

Section 1: Training Objective. This section tells how the trainer should explain the training objectives to the platoon members and contains both the task statement and the conditions for the drill. The standards are contained in another section of the drill which is merely referenced in this section. The conditions contained in the Exercise Trainer's Guide represent the conditions under which the drill task is likely to occur during combat. They are not the conditions under which drill training must be conducted. The conditions for training are generally very minimal. Terrain must be suitable for the conduct of the drill and tanks must be available, but little else is required. The conditions that are contained in the Guide are important nevertheless for the conduct of the battle exercise as an integrated training exercise. The battle exercise requires a scenario, and the conditions listed in the Guide must be represented in that scenario.

The standards are contained in the Walk-thru instead of in the Training Objective section to reduce redundancy. It was felt that it would be easier for the trainer to turn to another section while describing the training objectives than during the walk-thru.

Section 2: Orientation. This section provides the trainer with information pertaining to the importance of the task in combat. It also lists major characteristics of the task that are to be stressed during the orientation and the principles underlying the standards for task performance. The inclusion of principles is unique among battle drills. They are included so that the trainees can understand the basis for the various standards. Without an understanding of the principles, soldiers probably would be less likely to grasp the significance of the standards and therefore probably would show less retention.

Section 3: Demonstration. This section lists the main points that should be made during a demonstration of the drill. Each platoon member should be told to attend to the actions of the tank that corresponds to his own. The

demonstration should then show how each of the performance standards are met. This section also contains diagrams depicting such factors as tank configuration within the platoon and gun tube orientation.

Section 4: Walk-thru. This section is divided into two parts. The first part deals with actions that should be taken by the trainer prior to the walk-thru. It lists the points that must be made during an explanation of how to conduct the walk-thru and lists the points that should be emphasized. The second part deals with actions that should be taken by the trainer during the walk-thru. It also lists the standards for both the platoon and the platoon leader (if an outside trainer is used), and contains coaching tips.

An attempt was made to develop quantitative rather than qualitative standards. It was recognized, however, that quantitative standards cannot be rigid. Standards, such as those involving time and distances, vary with situations and unit SOP. Nevertheless, they are important since the trainer/evaluator cannot tell when the performance standards have been met without quantitative measures. Therefore many standards contain blank spaces for quantitative standards to be inserted by the battalion training officer.

Section 5: Practice, Scoring, and Feedback. This section contains three parts. The first part, Practice, provides instructions for the trainer on how to conduct practice. It lists the information that should be presented to the platoon prior to conducting practice, and lists the actions that the trainer must perform during the drill. Included are the actions which the platoon leader should observe in order to apply the performance standards. The second part, Scoring, contains instructions for scoring the drill. The third part, Feedback, provides instructions for the trainer pertaining to feedback during the drill and at the end.

The newly developed guidelines take a more formal approach to feedback than do other drill training methodologies. It was felt that feedback was an essential part of drill training and should occur both during and after each practice run. The trainer should use the standards and coaching tips contained in the walk-thru to provide feedback during each practice run. Feedback during the walk-thru or practice run can be given by radio and the trainer can stop the exercise if necessary. While feedback given at the end of each practice run can be given without using the Exercise Scorer's Checklist, having the completed checklist available would be expected to ensure that the feedback would be more accurate and more complete. However, if the platoon

leader acts as trainer, it would probably be impossible for him to conduct the drill, control his tank, and also complete the checklist.

Section 6: Crosstraining. A reminder is given in this section to allow the platoon sergeant to act as the platoon leader during the drill.

Section 7: Precautions. This section lists the precautions that the platoon must take during the conduct of the drill.

Platoon Leader Exercises: Like the battle drills, the platoon leader exercises present a rather detailed set of instructions informing the trainer how to implement the exercises and describing the actions that must be taken. The platoon leader exercises cannot be conducted when the platoon leader is the trainer; they must be conducted by the company commander or by another officer who is qualified to train platoon leader tactics. In addition, the platoon leader exercises cannot be conducted until the platoon leader has participated in a class on decision making for tactical movement. The lesson plan for this class is contained as an enclosure to Appendix A in Volume II of this report. The class is designed to familiarize the platoon leader with the strengths and weaknesses of the three movement formations; the characteristics of events that are likely to occur during a tactical movement (i.e., indirect fire, air attack, and defile); and movement principles for tactical movement, unscheduled halt formations, movement during indirect fire, movement during an air attack, and movement through a defile. The lesson plan also contains a section describing the problem solving process that should be used by the platoon leader when making tactical decisions.

The platoon leader exercises contain the following sections:

Section 1: Training Objective. This section tells how the trainer should explain the training objectives to the platoon leader and contains both the task statement and the conditions for the exercise. The standards are listed in the Exercise Scorer's Checklist which is referenced in this section.

Section 2: Explanation. This section contains a reminder for the trainer to tell the platoon leader to recall his participation in the class on tactical movement decision making. It also contains the points that should be made when explaining to the platoon leader how the exercise will be conducted. The section also contains a reminder for the trainer to emphasize that problem solving process is sequential and logical and that time is essential for tactical decision making.

Section 3: Application. Contained in this section are instructions to the trainer for conducting each subexercise contained in the platoon leader exercise. These instructions require the trainer to begin the first subexercise by reading the scenario to the platoon leader

and telling the platoon leader to have his crewmen mount their tanks and move out. The remaining instructions for the first sub-exercise and the instructions for the other sub-exercises then require the trainer to transmit an action cue to the platoon leader (or to direct an OPFOR to execute non-verbal cues) to initiate the platoon leader decision. The section also contains instructions for the trainer to monitor the response to the cues to determine whether or not the correct decision was made.

Section 4: Scoring and Feedback. This section tells the trainer how to score the exercise and how to present feedback to the platoon leader. The exercise is scored by monitoring the platoon leader's execution signals to the platoon and by asking two questions at the end of the exercise. The questions are contained in the Scorer's Checklist. Feedback is to be given to the platoon leader at the end of the exercise.

Section 5: Crosstraining. This section contains a reminder to allow the platoon sergeant to serve as acting platoon leader during the exercise if time permits.

Preparation of Exercise Scorer's Checklist. The Exercise Scorer's Checklist is contained in Appendix C of Volume II of this report. The Checklist contains two parts. The first is a description of the Checklist and a summary of its use. It contains the following three sections:

Section 1: Introduction. This explains who should use the Checklist.

Section 2: Purpose. This section explains the reasons for using the Checklist.

Section 3: Scope. This contains an explanation of how the Checklist should be used.

The second part of the Exercise Scorer's Checklist contains the scoresheets on which the scorer records observations made during platoon battle drills and platoon leader exercises. Each scoresheet for a platoon leader exercise contains a task statement and a list of the conditions. It then presents a summary of the procedure for scoring the exercise. The summary states that during the conduct of each sub-exercise, the scorer should score the adequacy of the platoon leader decision by monitoring the execution signal to the platoon. The summary further states that at the end of each variation or at the end of the battle exercise, the instructor should ask the platoon leader two questions pertaining to the decision making process that was used. The specific questions are also contained in the Scorer's Checklist. Each scoresheet also contains spaces to record whether or not each decision was adequate and whether or not the correct answer to each question was given. Space is provided for additional comments.

Each scoresheet for a battle drill contains a task statement and the conditions for the drill. Performance standards are then listed for the

platoon and for the platoon leader. Each standard is followed by observable actions that should be used when applying the standard. When quantitative standards are required, blank spaces are presented which should be filled in by the trainer prior to the drill. A section for comments is also contained in the Checklist.

Preparation of the U.S. Army Armor School Battle Drills

At the request of the Directorate of Training Developments (DTD) of the U.S. Army Armor School, DTD and ARI, assisted by HumRRO, jointly developed a set of tank platoon drills. These drills are contained in Appendix B. The set includes nine drills: (1) Column Formation, (2) Coil Formation, (3) Herringbone Formation, (4) Wedge Formation, (5) Line Formation, (6) Action Left (Right, Front, Rear), (7) Move Left (Right, Rear), (8) Conduct Bounding Overwatch, and (9) React to Air Attack.

The contents of the drills were based on the results of the Workshop on Collective Training conducted by the Army Training Board from 18-21 May 1982. The participants at the workshop agreed that a drill should contain the following sections (Bauer, 1982):

- Introduction to the specific drill
- ARTEP tasks supported by the drill
- SM tasks which are integrated with the collective tasks
- Tasks that must be trained prior to the drill
- Tasks that are trained during the drill
- Training Objectives
  - Task(s)
  - Conditions
  - Standards (both Platoon Leader and Unit)
  - Performance Steps
- How to train each drill
- Initiating cues
- References (related training)
- Additional resources needed

Selection of Battle Drills. The first step in the preparation of the Armor School battle drills was the selection of tasks for drill training. The selection was made by a group consisting of representatives from DTD, ARI, HumRRO, and the Command, Staff, and Doctrine Department of the Armor School (CS&D). Two existing lists of platoon tasks were examined--a list derived from the analysis of armor operations conducted for ARI by HumRRO and a list prepared by the Analysis Division of DTD. Each list was read aloud, item by item, and any participant was able to nominate a task for further consideration. When the candidate tasks were selected, the group went through the list of candidate tasks and considered whether or not each task was procedural and whether or not the performance of each task was influenced by combat conditions. The result was the selection of five tasks to represent movement drills--column formation, coil formation, herringbone formation, wedge formation, and line formation. Four other tasks were chosen at a later time by examining the task lists again.

Selection of Drill Contents. Once the drill tasks were selected, representatives from DTD and HumRRO implemented the decisions made at the ATB workshop. It was agreed that the drills would contain three sections--an introduction, a list of prerequisites, and an outline of the drills. The introduction would contain an overview of the drill concept and a discussion of the role of drills in training. It would also contain a discussion of how to implement the drills in training. The general prerequisite section would list leader tasks, Soldier's Manual tasks, crew tasks, and platoon tasks that would have to be mastered prior to conducting any of the drills. The third section would describe the drills themselves.

Battle Drill Preparation. The preparation of the drills was a team effort. Each drill was prepared in draft form using personal experience and information contained in TT 71-1/2, The Abrams Battalion, Division 86, Volume II: Company and Platoon (U.S. Army, USATRADOC, 1982); FM 71-1, The Tank and Mechanized Infantry Company Team (Department of the Army, Headquarters, 1977); and FM 71-2, The Tank and Mechanized Infantry Battalion Task Force (Department of the Army, Headquarters, 1977). Each drill was reviewed several times, and revisions were made when necessary. Since armor doctrine was still being developed for Division 86, representatives from CS&D were frequently asked to join the group as consultants on task performance.

The U.S. Army Armor School drills differed significantly from the tank platoon drills that were prepared by HumRRO and from the infantry drills that were prepared by the ARI Field Unit, Presidio of Monterey, California. Reviewers from CS&D and DTD felt that the ARI and HumRRO drills were too detailed, and that the drills would be easier to use if prepared in outline form. CS&D also emphasized that the drills should not contain quantitative standards, even if the standards were not specifically stated. They felt that quantitative standards, such as time and distance, varied with conditions and could not be written with precision. Consequently, the drills were prepared in outline form and contain only qualitative standards.

The first part of the drill package, Drill Introductory Material, contains the following sections:

> Section 1: Overview. This section presents introductory material concerning the purpose of drill training and the role of the platoon leader/platoon sergeant in drill training.
>
> Section 2: Platoon Drills in Training. This section describes the types of tasks that are suitable for drill training, the role of repetition in training, and the procedural nature of drills.
>
> Section 3: Platoon Drills and Standardization. This section expands on the procedural nature of drill tasks and explains the need for general rather than specific conditions in the training objectives.
>
> Section 4: Prerequisite Training. The need for mastery of prerequisite individual and collective tasks is explained here.

Section 5: Evaluation in Training. This section explains that the trainer must determine whether or not the platoon has met the training standards, and that a checklist will not be required.

Section 6: Drill Contents. The organization of the remaining parts of the document is explained in this section.

Section 7: How to Train. This section provides a set of guidelines for conducting drill training. The guidelines outline the activities that the trainer must perform in preparing for drill training, explaining the task to the trainees, demonstrating how to perform the task, explaining how training is to be conducted, conducting a walk-thru, conducting practice, and evaluating performance.

The second part of the drill training package, General Prerequisites, is a table listing the prerequisite tasks for all the drills contained in the training package. The section is organized into two parts, individual tasks and ARTEP (collective) tasks. The first part lists the title, number, and reference for each leader and Soldier's Manual task that must be mastered prior to the drills, while the second part provides this information for crew tasks and platoon tasks.

The third part of the drill training package, Platoon Battle Drills, contains the nine battle drills that were developed. Each drill contains the following seven sections:

Section 1: Description. This section contains a description of when the drill task is performed in combat, a brief statement telling how it is performed, and a summary of the advantages and disadvantages associated with the task. A reference to more detailed information is also given.

Section 2: Drill to ARTEP Task Linkage. The ARTEP tasks that are supported by the drill are listed in this section.

Section 3: Specific Prerequisites. This section contains additional prerequisites, if any, that are specific to the task.

Section 4: How to Train. A reference is made to the How to Train section in the Drill Introductory Material as a reminder to the trainer that a suggested method for using the drill package is contained earlier in the document.

Section 5: Performance Objectives. This section contains the task statement, conditions, and standards. The conditions list the minimal conditions required to conduct the drill; they are not the conditions during which the task is normally performed during combat. A

figure showing the performance of the task is included in this section.

Section 6: Initiating Cue. This section contains a figure depicting the hand and arm or the flag signal that can be used to initiate the drill, and describes the voice command that can be used.

Section 7: Performance Steps. This section contains a sequential list of the performance steps involved in performing the task by tank. Steps that must be performed throughout the drill (such as maintaining observation) are depicted with an asterisk.

COMPARISON BETWEEN DRILL DEVELOPMENT METHODOLOGIES

Two drill development methodologies were developed and implemented during the project. The first methodology was an adaptation of the ARI guidelines and the guidelines contained in TRADOC Pamphlet 310-8 for preparing tank platoon drills. The second was an implementation of the outline for preparing battle drills prepared by the participants in the Workshop on Collective Training conducted by the Army Training Board. The following is a discussion of some differences between the two methodologies and their effects on the prototype drills that were produced.

Level of Detail

One of the criticisms that have been made of ARTEP is that it provides only a general outline of training requirements and leaves much work for both the training developer and the trainer. ARTEP provides task statements, conditions, and standards for different missions, but the user must implement this information when developing training. To overcome this problem, an attempt was made during this project to create a drill development methodology that would reduce the work load of the training developer and the trainer. It was intended that the armor drills based on the adaptation of the guidelines presented in TRADOC Pamphlet 310-8 contain a relatively large amount of detail. This level of detail is reflected by the size of the prototype drills that were developed for the battle exercise Movement to Contact.

Reviewer reactions to this level of detail were generally unfavorable. The comment was made by some reviewers that officers know how to train and would ignore much of the information contained in the prototype drills.

In response to these criticisms, a different approach was taken in the preparation of the U.S. Army Armor School drills. The goal was to provide only information that would be needed by the trainer to conduct the drill. Relatively little information was presented for the training developer. There were no separate documents such as a Drill Training Management Guide, a Drill Trainer's Guide or an Evaluator's Checklist. Each drill merely contained a short description of the task telling when and how the task was performed in combat, a list of ARTEP tasks during which the drill task would be performed, and the prerequisite individual and collective tasks that must be learned prior to the drill. In addition, the training objectives, the initiating cues, and the performance steps were included.

Selection of Tasks for Drill Training

While it is generally agreed that only procedural tasks can be trained using drills, there appear to be differences of opinion concerning just how procedural a task must be to be trained using this method. Advocates of one position define a procedural task as any task which is performed in a fixed sequence of steps. Variations in performance can be tolerated as long as the step sequence remains unchanged. This definition allows some flexibility for the effects of terrain and other situational factors on task performance. Advocates of a more extreme position define a procedural task as one in which

the steps must be performed not only in the same order but also in exactly the same way regardless of conditions. If situational factors have any effects at all on the performance of the task, then the task cannot be trained using drills.

The precise definition that is adopted has a profound effect on the tasks that are selected for drill training. If the position is taken that a procedural task is one in which the performance steps can vary in different situations as long as they follow a fixed sequence, then most tasks performed in armor operations are suitable for drill training. If, on the other hand, the position is taken that each step must be performed in exactly the same way regardless of the situation, then relatively few tasks can be trained using drills.

The position that allowed for variation in the performance of each step was adopted when selecting the drills for the battle exercise Movement to Contact. If this position were not adopted, then in fact there could be no battle exercises since there would be too many gaps between drill tasks for a meaningful exercise to be conducted. A more rigid position was taken in the selection of tasks for the U.S. Army Armor School drills. As a consequence, only nine tasks were identified as being suitable for drill training, and there was not even a consensus among the participants that all nine were suitable.

The eventual solution to this difference among approaches remains to be found in the development and implementation of the drills selected by each approach. If drills can be successfully developed and implemented for tasks that require only a fixed sequence of steps, then there is no need to adopt a more rigid position. If, on the other hand, drills cannot be written for tasks that would be rejected when using the more rigid definition, or if these drills cannot be implemented, then the rigid approach should be adopted.

Drill Preparation

Different approaches were used to prepare the two sets of prototype battle drills. In the preparation of the battle exercise Conduct Tactical Movement, the drills were written by one of the staff members working alone. When a drill or a set of drills was completed, a staff review was conducted. Suggestions were made for revision of the drills, and the process was repeated until the final product was accepted by the whole team.

A different approach was used to prepare the U.S. Army Armor School drills. Since these drills were developed by representatives from different organizations, a team approach was adopted. The participants worked together to prepare the drills, reviewing and revising the drafts as they were being prepared.

Each of these approaches had its own advantages and disadvantages. The advantage of the individual approach was that it was quicker. During the team approach, more time was spent expressing differences of opinion, resolving these differences, or waiting while one or more members of the group was interrupted for other matters. However, the team approach had the advantage of enabling differences of opinion to surface immediately. During the

individual approach, when there was a difference of opinion between the developer of the drills and the reviewers, the entire set of materials would have to be revised if the opinions of the reviewers prevailed. During the team approach, very little revision was necessary because the disagreements surfaced as the drills were being written.

Performance Steps

The Armor School drills contain a table showing the sequence of steps to be followed by each tank when performing the drill task. The drills prepared for the battle exercise Movement to Contact did not contain this information. The preparation of the table was especially useful because differences of opinion frequently surfaced on how the drill tasks were to be performed. Although all of the tasks selected for the Armor School drills were supposedly highly procedural, there were frequent discrepancies among the reference materials that were used to prepared the drills and among the participants. Doctrinal specialists from CS&D were frequently consulted in order to resolve these differences. Thus, the preparation of performance steps would not only be expected to assist the trainer during the conduct of the drills, the discrepancies between doctrinal sources that surfaced during the preparation of the performance steps made it obvious that a rigid viewpoint concerning the definition of a procedural task would almost certainly result in the selection of almost no tasks for drill training.

SUMMARY AND CONCLUSIONS

The purpose of this project was to determine the need for special guidelines for the development of battle drills for tank platoons and to prepare these guidelines if needed. The concern over the possible need for modified or additional drill development guidelines for armor training stemmed from numerous factors such as the difficulties involved in observing tank crewmen during a drill and the large support requirements for tank platoon drills (e.g., fuel, personnel, equipment, terrain). It was also the purpose of this project to develop a model which would enable tactical leadership training to be conducted concurrently with tank platoon drills during an integrated training exercise.

The major changes recommended in the guidelines for drill development concerned the selection of tasks for drill training, the integration of crew tasks and platoon leader tasks in drill training, the role of feedback, the documents to be used to support drill training, the development of a methodology for identifying and sequencing crew tasks and platoon leader tasks into drill training, the role of Soldier's Manual tasks in drill training, the role of drills in opportunity training, and the development of battle exercises containing drills for related platoon tasks that normally occur during the same platoon operation. In addition, a model was developed for platoon leader exercises that could be taught separately and later integrated into the battle exercise.

The following were among the recommended changes in guidelines for drill development:

1. Platoon tasks identified during analyses of armor missions should be used as candidate tasks for drill training.

2. Crew tasks as well as individual tasks should be integrated into drill training.

3. If possible, platoon leaders should be trained during drills. This would require that a company level officer serve as trainer.

4. Drills should be conducted under radio listening silence to allow the platoon to practice hand and arm signals and to reduce reliance on radio communications. The use of the radio should be limited to providing feedback to the trainees.

5. Feedback should be given after each performance of a drill. The Scorer's Checklist should be used by the trainer as a source of feedback information.

6. The Drill Trainer's Guide Outline should be eliminated as a document to support drill training. Information that is needed by the trainer during the conduct of a drill should be contained in an Exercise Trainer's Guide, while information needed prior to the drill should be contained in the Exercise Management Plan.

7. The use of drills should not be limited to formal training but should be conducted as opportunity training when it is possible to do so.

8. After the separate drills have been learned, they should be conducted in a sequence of related drills in order to provide experience in the transition from one platoon task to another and to provide a more realistic context for drill training.

9. If the opportunity permits, the battle exercise should be used to train platoon leaders to perform tactical tasks. The decisions made during a platoon leader exercise can be used as the stimulus to initiate a drill.

10. Since individual crewman tasks cannot be observed during the conduct of a drill, tank commanders should be allowed sufficient time after each performance of a drill to provide feedback to their crews.

During an examination of existing drill guidelines and during the preparation of the guidelines and prototype drills, various problems and observations surfaced. These are discussed below.

The Requirements for Task Standardization in Drill Training

A battle drill is a specialized training technique that is particularly useful for training units to perform procedural tasks. During a drill, a unit must repeat a task under a variety of conditions until it can perform the task automatically and with a minimum of communications. Inherent in this concept of drill training is the requirement that the task to be trained must be performed in exactly the same way during each performance of the task. While this requirement may be an important one conceptually, in practice few tasks are so standardized that they would be performed in exactly the same manner each time. Variations in terrain, weather, mission, and other conditions would prevent any such degree of consistency. The difficulties involved in identifying highly procedural tasks surfaced during the coordinated effort to prepare battle drills for the U.S. Army Armor School. Few highly procedural tasks could be identified, and many of these may have been too simple to require extensive drill training.

While the role of battle drills in unit training is potentially an important one, this potential can only be realized if greater flexibility is adopted in the selection of tasks. While it is true that tasks must be procedural for drill training to occur, the exact nature of this requirement is subject to interpretation. During the preparation of the prototype drills, no difficulties were experienced as long as the task to be trained followed a specific sequence of steps. It was not necessary that each step always be performed in exactly the same way. For example, during bounding overwatch, it is important that the bounding section or bounding platoon move to an overwatch position with certain characteristics. It is not necessary that the section or platoon always move to the same overwatch position or that it move the same distance.

In summary, if drills were limited to tasks that are so standardized that they would always be done in exactly the same manner, very few collective tasks would qualify for drill training. Fortunately, no need for such strict requirements was found when selecting tasks for drill training.

Quantitative Standards in Drill Training

An important principle pertaining to training is that standards must be prepared for each task that is to be learned. The standards define how well the task must be performed. Without standards, there can be no assurance that the trainees can perform the task to the required level.

The preparation of standards for platoon tasks creates unusual difficulties since many of the actions in the performance of platoon tasks are very situationally dependent. An example of this difficulty can be seen in the preparation of standards for the distance between tanks during tactical movement. Since tanks can be too close or too far apart, it is clear that standards do exist. But the standards vary from situation to situation. Tanks that are too close in some circumstances (e.g., in a desert environment) may be too far apart in other circumstances (e.g., in a jungle environment), even though the distances are identical. Because of the degree to which such standards are situationally dependent, there has been resistance to their use. Furthermore, different approaches have been used even when standards are adopted. One approach has been to present the dimension for the standard, but to omit the specific quantitative value. The training manager or some other expert would establish the quantitative values and these would be used during training. Another approach has been to state that the values should be in accordance with the unit SOP. One difficulty with this approach is that the SOP is more likely to apply to generalized situations, and may be inappropriate in the specific situation in which training is occurring. For example, while a unit SOP may deal with distances between tanks in rolling terrain, there can be no assurance that the standards in the SOP would be proper for the specific terrain in which a drill is being conducted. An even more extreme approach has been to state that if the situation is so situationally dependent that the standards can change, then the task is not suitable for drill training.

The approach taken during the preparation of the prototype battle exercise was that the dimensions for the standards should be presented in the Scorer's Checklist, but that the battalion training manager should designate the specific values. The approach taken during the preparation of the Armor School Drills was that the specific standards should be determined by the trainer (i.e., the platoon leader) or by the unit SOP.

Since it is important that standards be applied during training, the problem of quantification is important. There is a need to examine the various approaches in more depth and to determine if these differences in approach lead to differences in performance. If not, then perhaps the issue is moot. If so, then it important to determine which approach is most appropriate or to develop an improved approach to the problem.

Real-Time and Realism in Tactical Leadership Training

One of the objectives of this research was to develop a model for training tactical leadership concurrently with tank platoon drills. The procedure for making tactical decisions in armor operations is described in FM 71-1, Armor Operations (DA, Headquarters, 1966). It specifies that tactical decisions should be based on an estimate of the situation. This estimate is to be made using a five-step procedure which requires the leader to (1) analyze the mission to determine the task to be accomplished and its purpose, (2) analyze all of the factors that affect the mission using the factors of METTT (mission, enemy, terrain and weather, and troops available), (3) analyze different courses of action in terms of the ability of the enemy to oppose them, (4) analyze different courses of action in terms of all factors, identifying the advantages and disadvantages of each course, and (5) decide which course of action offers the best chance of success.

While these steps provide a comprehensive model of decision making, the steps are too complex and time consuming to serve as a realistic model for decision making in combat operations that require instantaneous decisions. A commander simply cannot be expected to perform such a detailed set of analyses when only seconds are available for a decision that could decide the outcome of the mission. On the other hand, if careful decision making were not taught, then perhaps the leader would never learn how to make adequate tactical decisions. The problem, in short, is how to train the leader to make the proper tactical decisions in the amount of time that is available for these decisions during combat.

The approach adopted in the present project was to emphasize both comprehensive and rapid decision making. The leadership training model included both classroom exercises and field exercises. The classroom lesson on decision making for tactical movement emphasized the careful consideration of the factors involved in an estimate of the situation. Only in the platoon leader exercises was speed emphasized. The platoon leader exercises provided an opportunity for the platoon leader to implement the lessons learned in the classroom, and to do so in a realistic context and in real-time. Whether this approach to tactical leadership training will succeed remains to be determined.

Another problem in tactical leadership training is the conflict between the lack of realism in the classroom and the cost of conducting training in the field. While classroom training is comparatively inexpensive, the platoon leader is deprived of an opportunity to respond to the perceptual cues (including partial and conflicting cues) that occur during actual combat and which add realism to training. On the other hand, field exercises would require such extensive support that they would be an inefficient method for training platoon leaders in the basic procedures involved in tactical

decision making. By using the classroom to present the basic principles, and by using a set of classroom exercises for initial decision making practice, greater efficiency could be achieved. By then implementing these principles in platoon leader exercises, platoon leaders would also have an opportunity to experience the realism that could more readily be attained in the field.

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APPENDIX A

REVIEW OF EXISTING GUIDELINES FOR DRILL DEVELOPMENT

TRADOC Pamphlet 310-8

Chapter 4 of TRADOC Pamphlet 310-8 contains a description of the battle drill concept, definitions of various types of drills, a discussion of the benefits and advantages of drills, and a brief set of guidelines for drill development. The guidelines specify that the results of an analysis should be examined to identify the individual, collective, and leadership tasks that are necessary to accomplish the unit mission. Training sources should then be examined to determine which of these tasks are suitable for drill training. The following factors should be taken into account when determining their suitability: (1) the frequency with which the tasks are performed during combat missions, (2) the degree to which the tasks are critical to at least one mission and/or whether they are performed during several missions, (3) whether the tasks are performed in a series of steps with little or no deviation, (4) whether there is a need for the tasks to be performed as immediate reactions, and (5) whether the tasks correspond to the definition of a drill stating that a drill is a standardized non-negotiable technique/ procedure involving the application of a practiced reflex action or rote memory.

The guidelines further state that once the tasks for drill training are selected, they should be examined to determine whether any of them could be combined into a single drill. When this is done, each drill task should be broken down into a sequence of steps, and the conditions and standards for the task should be determined. The resources needed to conduct the drill should then be identified, and instructions for an evaluator should be prepared along with a diagnostic evaluation checklist. The next step, according to the guidelines, should be to verify the drill contents by internal school review, external unit review, or field validation. The drill contents should then be examined to verify that all individual tasks in the drills are included in the Soldier's Manual, and that all collective tasks are included in the ARTEP.

Appendix H in TRADOC Pamphlet 310-8 contains an additional description of the drill concept and more detailed procedures for the development of drills. A three-step developmental procedure is described in which the first step is to select tentative drills from ARTEP tasks. The final selection is made from among the tentative drills during step two, while training objectives are prepared during step three. Since drills can be used only to train tasks that are standardized, the guidelines specify that it is important to examine the conditions and standards for each ARTEP task considered for selection during step one. It is recommended that the different conditions under which an ARTEP task can be performed be listed in an audit trail. The standards should then be entered for each set of conditions. Each combined set of standards and conditions should then be examined to determine whether it corresponds to the characteristics of a drill. That is, it must contain at least one collective task, it must cover a small but meaningful slice of the battle (i.e. it must be complete), and it must not require an inordinate amount of time to perform. Thus, several tentative drills may emerge from a single ARTEP task, each one corresponding to a different slice of the battle.

The final drill tasks are selected from among the tentative tasks in step two of the developmental procedure. Two sets of guidelines are presented that deal with the final selection of tasks. The first set of guidelines concerns duplication among drills. The guidelines state that the list of tentative tasks should be examined to identify and eliminate any duplications. The second set of guidelines concerns tasks that do not meet the criteria for drill training because they only cover individual skills, they are too long, or they do not cover a meaningful slice of the battlefield. Tasks that are too long can be broken down into two or more separate tasks. Those that do not cover a meaningful slice of the battlefield, and presumably those that do not include at least one collective task, can be combined with other tasks to form one that does meet the requirements for drill training. It is also suggested in this section of TRADOC Pamphlet 31-8 that when a training developer feels that other individual tasks should be included in a drill, that they be incorporated by varying the conditions so that the drill calls for those particular individual tasks.

During step three, training objectives should be prepared by writing a task statement, the conditions, and the standards for each drill. Guidelines are given for selecting the primary trainer for trainees at different skill levels, writing the task statement, describing the conditions, and preparing the performance standards.

ARI Guidelines

Guidance for the preparation of battle drills is also contained in a document prepared by the ARI Field Unit at Presidio of Monterey, California, Guideline for Designing Drill Training Package (Hiller, Hardy, and Meliza, 1982). This document states that the purpose of drill training is to enable individual and collective skills to be trained at the same time. Since ARTEP focuses only on collective training, individual training would have to be integrated into collective training exercises. This would be accomplished by requiring that these exercises be based on training objectives that reflect individual as well as collective skills. The small unit leader would be the primary trainer and therefore could not participate in tactical decision making and communication chores. Once a drill is begun, it would be repeated until all of the individual and collective tasks contained in the drill have been mastered.

Chapter 2 of the ARI Guideline is similar to Appendix H in TRADOC Pamphlet 310-8 since it concerns the selection of drills and the preparation of training objectives. A four-step procedure is described in the ARI document in which the first step is to examine chunks of battle taken from ARTEP in order to select candidate drills. An audit trail worksheet would be used in which the developer first enters the ARTEP task name. The ARTEP conditions and standards would be read to identify all actions performed during the conduct of the ARTEP task. A set of actions that corresponds to the definition of a drill would then be assigned a name and entered into the audit trail worksheet. Each set of actions would serve as a candidate drill. The candidate drills would be examined next to see if they should be broken into smaller drills. Finally, the activities that the soldiers do during each candidate drill would be recorded on the worksheet.

The second step in the selection of drills and the preparation of training objectives would be to review the candidate drills in order to eliminate overlap and duplication. The third step would be to integrate Soldier's Manual (SM) tasks into the drill by identifying Leader SM tasks that should be trained before the drill, unit member SM tasks that should be trained before the drill, SM tasks that are completely covered by drill standards, and SM tasks that are partially covered by drill standards. The tasks identified for training before the drill are used to prepare leader/trainers and soldiers for drill training. The tasks identified as being covered by drill standards can be scored as having been successfully accomplished once the drill has been mastered. Those that are partially covered are optional tasks which can be trained during the drill.

The final step in the selection of drills and the preparation of training objectives would be to prepare the drill training objectives for the drill developer. The objectives should include (1) a statement of the ARTEP mission/tasks that the drill supports and any drills that should be trained prior to conducting the one being developed, (2) the drill title, (3) a description of the drill task, (4) the tactical situation under which the drill is to be performed including the friendly situation, the enemy situation, and other tactical conditions, (5) set-up directions including a description of the training site, OPFOR support, initial placement of the unit, special instructions, and attached weapons systems, (6) directions on how or when to start the drill and how or when to end it, and (7) performance standards containing the steps that soldiers must perform when executing the drill correctly.

The third chapter of the ARI Guideline contains guidance for preparing three documents that would support the planning, preparation, and conduct of drill training--the Drill Trainer's Guide, the Drill Trainer's Guide Outline, and the Drill Evaluator's Checklist. The final chapter contains guidance for preparing a Drill Training Management Guide to be used by training managers to plan and schedule drill training.

The Drill Trainer's Guide is intended to be used by the trainer to plan and prepare for drill training. It contains nine sections. In Section 1, the primary trainers and evaluators, and their alternates, are identified. Section 2 contains the training objective for the drill (i.e., the task statement, the friendly and enemy conditions, and the standards). Preparation information for the trainer and evaluator are contained in Section 3. This section lists the leader SM tasks that must be mastered by the trainer prior to the drill, the training resources required to conduct the drill, other drills that should be trained prior to the execution of the drill being planned, and the ARTEP missions that are supported by the drill. The Soldier's Manual tasks that must be trained prior to the drill and those that can be trained at the trainer's option are listed in Section 4. The remaining five sections tell the trainer how to conduct the drill in the field. Section 5, Orientation, summarizes the information that is to be given to the trainees concerning the training objectives and the importance of the task. Section 6 is a reminder for the trainer to pretest the trainees when appropriate. Section 7 contains instructions for conducting a optional demonstration of the drill, a summary of the set-up directions, and directions for a walk-thru. The latter contains the performance standards that should be met during the drill and a list of coaching tips. The next section is a reminder

to conduct practice according to the walk-thru instructions and contains suggested variations under which the drill should be conducted. The final section is a reminder that the trainees should be evaluated for record.

The Drill Trainer's Guide Outline is intended to be used by the trainer when executing the drill. It contains much of the same information that is contained in the Drill Trainer's Guide, but some of it is reduced. The Drill Trainer's Guide Outline contains seven sections, all but one of which are contained in the Drill Trainer's Guide. Section 1 contains the training objective, but the standards are not given; a reference is made instead to the Walk-thru which contains the standards. Orientation, the second section, contains a brief summary of the information contained in the Orientation portion of the Drill Trainer's Guide. It is essentially a reminder for the trainer to tell the trainees why the task is important and briefly summarizes a few points to be stressed. The third section, Caution, is not in the Drill Trainer's Guide. It is a reminder for the trainer to discuss safety precautions that are to be followed during the drill. Section 4 pertains to the pretest and refers to the Set-up Directions and the Talk-thru. Presumably the information contained in these other two sections will enable the trainer to set up a test situation and will provide the standards that should be used for scoring. The remaining three sections, Presentation, Practice, and Perform are identical to Sections 7-9 of the Drill Trainer's Guide.

The Drill Evaluator's Checklist is intended for use by the training supervisor to evaluate a unit when it goes for record. It contains a statement of the task, the conditions, and the standards. The standards are similar to these contained in the Drill Trainer's Guide and in the Drill Trainer's Guide Outline, but they can be rewritten to help the evaluator focus on particular aspects of performance. The rewriting essentially involves separating the standards when more than one standard of performance is written in a single statement. Two columns labeled GO and NO GO are printed alongside the standards and are to be used by the evaluator to record whether or not the unit has successfully met each performance standard.

The fourth chapter of the ARI Guideline contains guidance for preparing the Drill Training Management Guide. The purpose of the Drill Training Management Guide is to explain the drill training concept to users, to describe the training materials and to explain how they are to be used, and to provide information to help the trainer and the supervisor plan drill training.

The Drill Training Management Guide contains nine sections. The first section, Introduction, explains that the purpose of drill training is to link Soldier's Manual tasks and ARTEP mission training. The second section describes the drill concept, while the third describes the advantages of drills. Section 4, ARTEP Mission Preparation, explains how drills prepare soldiers and units for ARTEP mission training and contains a table showing which ARTEP missions are supported by each drill. The fifth section, Integration and Individual and Collective Training, lists the ways in which drills integrate individual and collective training. The next section, Drill Training System, contains two sets of flow charts. The first depicts the activities of the supervisor in preparing his unit for drill training, in evaluating the execution of the drills, and in evaluating unit performance. The second depicts the activities of the trainer in preparing for drill

training, conducting the drills, and conducting the evaluation. Section 7, Drill Training Package, describes the Drill Trainer's Guide, and Drill Trainer's Guide Outline, and the Drill Evaluator's Checklist and explains how they are to be used in preparing for and conducting the drills. The next section, Planning/Scheduling Drill Training, contains two tables and a figure to aid the training manager select the drills for training. The first table is a list of all available drills, while the figure is a flow-chart depicting the order in which the drills should be conducted. The second table is a chart specifying the specific resources required for each of the drills.

The final section, Planning/Scheduling SM Task Training, describes ways in which Soldier's Manual task training is related to drill training. Some Soldier's Manual tasks must be trained prior to the drill for such reasons as safety and efficiency, while other SM tasks need not be trained nor evaluated prior to the drill. Some of the latter SM tasks could be performed during the drill, but successful completion of the drill would not necessarily mean that these tasks had been successfully performed. These are termed Optional Tasks, and they can be trained during the drills at the Trainer's option to bring soldiers to standard. Three tables are presented pertaining to the three types of Soldier's Manual tasks. The first table shows which SM tasks must be trained and evaluated prior to each drill, while the second table shows which tasks can be assumed to have been successfully performed during the drill if the drill itself were successfully completed. The final table designates the optional SM tasks that can be trained during each drill.

Light Infantry Squad Drills

The guidelines contained in Guideline for Designing Drill Training Package (Hiller et al., 1982) were used by the ARI Field Unit at Presidio of Monterey, California to prepare a drill training package for light infantry squads. The Drill Trainer's Guide contains 16 different drills. The same set of 16 drills is also contained in the Drill Trainer's Guide Outline, but the size was reduced to 5 1/2 by 4 1/2 inches so that it can easily be put into a pocket. The Drill Evaluator's Guide, which contains the standards for the set of 16 drills, was also reduced in size. The Drill Trainer's Guide Outline and the Drill Evaluator's Guide are each packaged in distinctive colors, blue and red respectively, so that they can be easily recognized.

The Light Infantry Squad Drill Training Package was tried out at Camp Pendleton in November 1981. The results of observations and questionnaire responses indicated that the Trainer's Guide Outline and the Evaluator's Checklists were judged to be useful despite some initial skepticism.

APPENDIX B

CROSS-CHECK METHOD FOR IDENTIFYING CREW AND PLATOON LEADER TASK RELATIONSHIPS TO PLATOON BATTLE DRILLS[1]

Introduction

The platoon battle drills are devised to provide training for combat platoons in platoon tasks and to provide for integrated crew and individual leader training so that the platoon tasks will be performed predictably and well. TP 310-8 and the ARI (Field Unit-Presidio of Monterey (POM) Guideline for Designing Drill Training Package emphasize that leader, individual and collective tasks are trained and evaluated during and prior to drill training (DA, USATRADOC, HQ, 1981; Hiller et al., 1982).

Since the Platoon Leader must often train his own platoon, the beginning of his work with platoon drills is likely to be largely cognitive learning--what to train and how to train -- while the later repetitions of the drill will be adding to his skills as part of the unit action. In our current experience with the development of platoon battle drills we have found that there is a continuous process of classifying, analyzing and consolidating platoon leader (PL) tasks and crew tasks associated with the drill in development. For example, several platoon leader tasks may be identified (from different sources) in connection with related drills. Further information may indicate that two or more are actually the same task. Questions are repeatedly raised, such as:

1. Is this leader task a decision task? . . . or procedural? . . . or other?

2. Is this a platoon task, crew task, or individual task?

3. Is this a task, a subtask, or step?

4. Should this task be trained before the drill task is trained? . . . during the drill?

5. Are these two tasks the same?

The purpose of this section is the presentation of a cross-check method for integration of platoon training with individual platoon leader training and crew training. The cross-check is intended to be used by the training developer in defining and designing training and for planning training module applications. (With some modifications, it may also be used to show relationships with other unit training (e.g., ARTEP).) The goal will be to manifest: (1) training support relationships, e.g., the training at crew level which is used in platoon tasks; (2) training sequence relationships, e.g., which training should come first; (3) redundancy and commonality, i.e., same tasks under different titles or same crew tasks occurring in different platoon tasks; and (4) reference sources. The tasks and training modules of interest are, primarily, Platoon Tasks (and platoon battle drills), Platoon Leader tasks, and crew tasks (and crew drills).

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[1]Prepared by Dr. Robert W. Bauer, ARI Field Unit, Fort Knox.

The definition of "task" for the purposes of this paper, will be a revision of O'Brien's earlier definition of task and subtask, ". . . a function, procedure or action which a system must accomplish to complete a mission. Tasks are identified and ranked in descending order as duties, tasks, and subtasks. If a task is complex it is . . . subdivided for clarity and ease in identifying training requirements. The subdivisions of a task are called subtasks." (O'Brien, et al., 1975.)

It is also generally agreed that a task is a work segment having a recognizable beginning and ending and that it is usually sufficiently large in scope to contain within it a number of subtasks and/or steps. Thus, Turning the Power Switch On is definable in terms of beginning and ending, but is too small in scope to be considered a task. Instead it may be considered a step in the subtask Starting. On the other hand Tank Swims/Fords a Water Obstacle may be regarded as a crew task or as a subtask of the more comprehensive crew task, Terrain Driving.

Background

For this paper, the definition of a task will be: . . . a work segment (function, procedure or action) having a recognizable beginning and ending point, which an individual or group of individuals normally accomplishes in order to complete a mission. The word task will be used broadly to refer to duties, tasks and subtasks, but the scope will be large enough to include a relatively large number of steps and, usually, more than one subtask. A task may be defined as an individual task or as a unit (collective) task. A unit task at one organizational unit level may be recognized as a unit subtask at a higher organizational level. For example, the crew task, "Crew performs NBC detection: may be regarded as a subtask of the platoon task "Platoon reacts to indirect fire."

TP 310-8 and the POM* Guideline for Designing Drill Training Package call for development of drill tasks out of ARTEP task listings (DA, USATRADOC, HQ, 1981; Hiller et al., 1982). Since complete mission-task analyses are usually not available, current ARTEP documents are not usually based upon a thorough collective task analysis (or Collective Front-End Analysis), and there is no assurance that the task lists available are definitive. In the case of the armor platoon drills currently in development by ARI a collective mission and task analysis had been completed and another CFEA was underway (Drucker and O'Brien, 1981(a) USAARMS, DTD, Analysis Division, 1982). These collective analyses became the basic references, and when the ARTEP 71-2 became available it was referenced, in turn for the training connections between the drills and the ARTEP unit training.

More immediately pertinent training relationships are those between the platoon drill task and the associated crew tasks (including available crew drills). Since, in the behavior of an armor platoon, it is often difficult or impossible to observe what individual crewmen are doing, the behavior of the whole crew (and tank) became the link between the platoon unit and the

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[1]Presidio of Monterey Field Unit, US Army Research Institute for the Behavioral and Social Sciences.

individual crewmen. However, the platoon leader's individual leader task behaviors are such important contributors to platoon behavior that at least some of these leader task performances must be observed, if possible, as parts of or causes of platoon behaviors. Fortunately, leader performances are generally more available to observation than the performances of loaders, gunners or drivers. Platoon leader commands are audible on radio or visible (hand signals) during radio silence. Platoon behaviors are usually resulting "products" of platoon leader behaviors. Some platoon leader tasks are such integral parts of platoon behavior that they should be observed, if possible, in any training or evaluation of the unit's performance. If these integral platoon leader tasks are predictable and procedural in nature, they can be included in the drill training concept. If, on the other hand, these platoon leader tasks are less structured and more variable in content or sequence (e.g., decision tasks), they may be performed within a drill or within a series of drills, if necessary, but they will not fit into the drill concept. Therefore the training of these more variable platoon leader tasks must be separated from the platoon drill training. If the platoon leader task can be trained separately from the platoon, then it is probably more economical to assure its adequate performance by individual leader training or testing prior to the platoon drill.

A similar logic applies to the crew tasks. Some of these tasks or subtasks are relatively predictable and procedural and can fit well into the platoon drill concept. Some will require an interaction with other tank crews (e.g., crew maintains intervals) and may be realistically performed in the context of the platoon drill. Others may be feasible for separate training or so essential to the adequate performance of the platoon drill that their prior training or testing is warranted even though they may also be performed during the drill (e.g., crew conducts terrain driving as essential to platoon moves in bounding overwatch).

Development of the Cross-Check Method

The first effort to identify leader tasks and standards followed the recommendation of task analysts that decomposition of a task into its subtasks is generally helpful in clarifying requirements. A set of armor platoon tasks was taken from a prior mission analysis of the team operation -- movement to contact. Operational phases were identified with potential platoon tasks (and possible drill development). For each platoon (collective) task, a small number of platoon leader (individual) tasks and subtasks were identified in discussion with armor experts. Decision tasks were separated from execution tasks as much as possible in this breakout and in those to follow. For example, the collective task, CT_1, Platoon moves in traveling yielded two individual Platoon Leader (PL) Tasks, Leader Tasks, LT_{11} and LT_{12}

LT_{11}, PL selects movement technique;

LT_{12}, PL directs move in traveling.

At this point in development, it was advantageous to include any reasonable task or subtask with the option that decomposition and recomposition (merging of tasks and subtasks) could be reiterated in any sequence until a small but

relatively complete list of subtasks was organized under a list of tasks. The goal was to identify a short list of rather comprehensive tasks with enough detail (usually within the lists of subtasks) to indicate the nature of the task requirements completely.

LT_{11} was classified tentatively as a decision task and excluded from the drill training, whereas LT_{12} was presumed to be included in the drill, and subjected to further analysis. Then LT_{12} was decomposed into several subtasks -- the first effort yielded six -- in consultation with experienced armor officers and analysts. Further, it was found that the decision task, LT_{11} and each subtask of LT_{12} could be restated in terms of the dimensions of observation and measurement necessary for the standard. Thus, each task or subtask could be identified with at least one requirement or standard, which would represent good performance. With regard to each subtask the standard was written in operational terms, i.e., it was stated in observable and, if possible, measurable terms (place, time, distance, direction, etc.).*

The examples which follow show the results of analysis of collective tasks associated with the Team Operation Phase, Movement. The collective task in each case was associated with two or three leader tasks, and these leader tasks or leader subtasks derived from them were associated with operational performance requirements -- standards. (See Table 1.)

The next step involved the construction of a task matrix (Table 2) in which the Platoon Tasks were cross-referenced to Crew Tasks (and available Crew Drills) and Platoon Leader Tasks (and Platoon Leader Exercises, currently in development). The matrix, like the earlier task-subtask list, was also developed in several iterations, expanding and consolidating, using the mission analysis previously completed for this purpose, the latest ARTEP, and available platoon and crew drills training packages. (DA, ARTEP 71-2, 1981; Iron Horse Battle Drills, Draft, Undated; USATRADOC, Tank Crew Drills M60A3 Tank, 1979; USATRADOC, M1 Drills, 1981; USAARMS, DTD, Analysis Division, DIV 86 Abrams Tank Battalion Collective Task Inventory (Draft), 1982.) If several subtasks could be merged into one subtask or task, this was generally considered desirable in the interest of parsimony. However, these consolidations as well as the final Platoon Leader Task List were to be reviewed once more with the participation of subject matter experts (SMEs).

The matrix elements were referenced to their source documents as appropriate, and checked against the previous task lists. Missing items were added to yield an amended Platoon Leader Task List and a complete Task Matrix. Items added during this check are shown in italics in Table 1 and Table 2.

The Task Matrix could also serve as an initial guide to the sequence of training. Letters placed above or below a diagonal line running through each cell indicated whether the PL task (above) or the crew task (below) were considered feasible for training during (D), prior only (P), or prior and during (P&D).

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* Standards generally specify not only the dimensions of performance to be measured but also the criterion or cut-off level of performance on each dimension. At this point in development, the standards specified only dimension and direction, not criterion level.

As a check on the face validity of the decisions made at this point another review by SMEs was necessary. The review of the Platoon Leader Task List, mentioned above, was done at this time. This was also used as an opportunity to further evaluate the initial selection of platoon leader tasks for inclusion in drill training.

Summary of the Cross-Check Method

The method was developed to identify and classify individual platoon leader tasks and collective crew tasks associated with platoon tasks under consideration for drill training development. The method provided a way to show links to the current ARTEP and to show training support relationships, tentative training sequences and reference sources. It was useful in the effort to reduce task redundancy and develop operational standards of task performance.

The cross-check method included the following steps.

1. Select a set of tactically related unit tasks, e.g., platoon tasks in movement to contact.

2. For each platoon task, identify (with the help of any relevant training texts and SMEs) the platoon leader tasks that are essential to the platoon task. Consolidate overlapping and identical platoon leader tasks into logical work segments which satisfy the task definition above. Repeat analysis (decomposition) and consolidation (recomposition) of platoon leader tasks until a comprehensive list of discriminable tasks has been derived.

3. Classify the leader tasks as variable PL tasks or procedural PL tasks.

4. For each leader task or subtask describe an operational performance requirement which can be used in measuring adequacy of performance -- an observable dimension of a standard. Each task or subtask should have at least one standard dimension. The resulting document is called a Platoon Leader Task List. (Standard dimensions are often easier to define for subtasks.)

5. Next, using the mission analyses, current ARTEP and available drills as source references, compile a crew task (and crew drill) list. Repeat decomposition and consolidation until a comprehensive list of different tasks has been derived.

6. Next, construct a Task Matrix as per Table 2 in which Platoon Tasks are cross-referenced to Crew Tasks and Crew Drills on the left and Platoon Leader Tasks on the right.

7. Compare the Task Matrix against the Platoon Leader Task List to ensure that all tasks on one are also on the other. Annotate any questions or problems for further discussion with SMEs.

8. Use discussion with SMEs to resolve any remaining problems and revise the Task Matrix and Platoon Leader Task List as a consequence of discussion.

9. Classify the PL tasks and crew tasks in the preferred sequence for training in relation to the platoon battle drill, i.e., prior only (P), during only, or prior and during (P&D).

Tasks which (in the judgment of the training developer) must be trained prior to the drill performance are marked (P); tasks which may be trained initially in the drill training are marked (D); if both are most desirable, marking is (P&D). These are training developer and/or SME judgments and can be revised after training experience.

10. Review the PL Task List and the Task Matrix with several SMEs (independently) to resolve any remaining problems and validate final lists.

It may be necessary to reiterate the correction of the PL Task List and the Task Matrix several times in order to achieve a final consolidated task list, fully referenced. In the Tables 1 and 2 which follow, the italicized tasks are those which were added to an earlier version either because of (a) disagreement between PL Task List and Task Matrix or (b) additional tasks suggested by the Division 86 Abrams Tank Battalion Collective Task Inventory.* Some analysts may prefer to make two Task Matrices, one for Platoon Tasks by Crew Tasks and another for Platoon Tasks by Platoon Leader Tasks. The writer found it feasible to do both together as in Table 2, organizing the crew tasks and platoon leader tasks into topical sets across the page, as they might be grouped in training sequences.

*Received in late March 1982 as this Working Paper was undergoing revision.

Table 1

Platoon Leader Tasks Associated with Selected Platoon Tasks, Platoon Battle Drills (PBD) and Platoon Leader Exercises (PLE). (Team Operation: Movement to Contact. Team Operation Phase: Movement. Platoon Operation: Move in traveling.)

	FORM OF TRAINING	
CT_1*: Platoon moves in traveling.	PBD	
PL TASKS (LT)		**STANDARDS (S)**
PL SUBTASKS (LST)		
✓ LT_{11} PL selects movement technique -- traveling	PLE	S_{11} Traveling is to be selected for cross-country movement if enemy contact is low probability or terrain and ground cover do not permit use of traveling overwatch or bounding overwatch
✓ LT_{12} PL directs move in traveling	PBD	
LST_{121} PL directs transition into start traveling		S_{121} PL directs start traveling correctly (place, time, formation) as indicated by METTT
[*Merged into LT_{12}*]		
✓ LST_{122} PL uses visual signals to control movement (mounted in radio silence)		S_{1223} PL C executed only by hand and arm signals
✓ LST_{123} PL selects covered and concealed routes		S_{123} PL directs employment of covered, concealed routes providing minimal exposure

*CT = collective task (platoon task in this paper)

✓ checked against Task Matrix

✓ LST_{124} PL designates sectors of fire and suspected OPFOR locations	S_{124} PL directs guns oriented to cover assigned sectors and suspected positions
✓ LST_{125} PL reports to CO (if feasible in tactical situation) (i) crossing LD, CP; (ii) SITREP; SPOTREP; NBCREP	S_{125} PL reports to CO are prompt, accurate and minimal. LD & CP crossings reports within 30 seconds; contact and action reports as soon as possible
✓ LST_{126} PL assesses changes in tactical situation	S_{126} PL adjusts speeds, MOPP as appropriate to changes in tactical situation
✓ *LST_{127}* *PL executes ground navigation*	*S_{127}*
✓ *LST_{128}* *PL controls speeds, intervals, and formation of tanks*	*S_{128}* *PL corrects errors in speeds intervals promptly, generally maintaining formation*
✓ *LST_{129}* *PL directs air/ground security*	

		FORM OF TRAINING	
CT_2:	Platoon moves in traveling overwatch	PBD	
PL TASKS (LT)			STANDARDS (S)
	PL SUBTASKS (LST		
✓ LT_{21}	PL selects movement technique -- traveling overwatch	PLE	S_{21} Traveling overwatch is to be selected for cross-country movement if enemy contact is low to medium probability and if terrain and ground cover permit
✓ LT_{22}	PL directs move in traveling overwatch	PBD	
✓ LST_{221}	PL directs transition into start traveling overwatch [*Merged into LT_{22}*]		S_{221} PL directs change into start traveling overwatch correctly (time, place, formation) as indicated by METTT
✓ LST_{222}	PL controls speeds, intervals and formation of tanks		S_{222} [See S_{128}]
✓ LST_{223}	PL selects covered and concealed routes		S_{223} [See S_{122}]
✓ LST_{224}	PL designates sectors of fire and suspected OPFOR locations		S_{224} [See S_{124}]
✓ LST_{225}	PL reports to CO (if feasible in tactical situation) (i) crossing, critical points (ii) SITREP; SPOTREP; NBC REP		S_{225} [See S_{125}]
✓ LST_{226}	PL assesses changes in tactical situation		S_{226} [See S_{126}]

✓ LST_{227}
[*Same as* LST_{127}]

✓ LST_{228}
PL conducts section techniques of movement

✓ LST_{229}
PL directs overwatch from a battle position

✓ LST_{230}
PL directs air/ground security

	FORM OF TRAINING	
CT_3: Platoon moves in bounding overwatch	PBD	
PL TASKS (LT)		**STANDARDS (S)**
PL SUBTASKS (LST)		
✓ LT_{31} PL selects movement technique -- bounding overwatch	PLE	S_{31} Bounding overwatch is to be selected for cross-country movement if enemy contact is high probability and if terrain and ground cover permit
✓ LT_{32} PL directs platoon move in bounding overwatch	PBD	
LST_{321} PL directs transition into start bounding overwatch [*Merged into LT_{32}*]		S_{321} PL directs change in start bounding overwatch correctly (time, place, formation) as indicated by METTT
✓ LST_{322} PL controls speeds, intervals		S_{322} [See S_{128}]
✓ LST_{323} PL (lead platoon) selects covered and concealed routes		S_{323} [See S_{123}]
✓ LST_{324} PL designates sectors of fire and suspected OPFOR locations		S_{324} [See S_{124}]
✓ LST_{325} PL reports to CO; crossing LD, CPs, submits SITREP, SPOTREP, NBC-1 REP		S_{325} [See S_{125}]
✓ LST_{326} PL assesses changes in tactical situation		S_{326} [See S_{126}]

✓ LST_{327}
PL (overwatch platoon) selects overwatch positions affording hull or turret defilade, separation and adequate fields of fire

S_{327}
Overwatch positions selected afford hull or turret defilade, separation and adequate fields of fire

✓ *LST_{328}*
[Same as LST_{127}]

✓ *LST_{329}*
[Same as LST_{228}]

✓ *LST_{330}*
PL directs overwatch from a battle position

✓ *LST_{331}*
PL directs air/ground security

		FORM OF TRAINING	
CT_4:	Platoon executes coil (or) platoon executes herringbone	PBD	
PL TASKS (LT)			STANDARDS (S)
	PL SUBTASKS (LST)		
✓ LT_{41}	PL selects unscheduled halt formation (coil or herringbone)	PLE	S_{41} PL selects coil if sufficient transversable area available, otherwise selects herringbone
✓ LT_{42}	PL directs unscheduled halt	PBD	$S_{42/43}$ PL reassigns fire sectors to cover suspected OPFOR positions
✓ LT_{43}	PL directs execute coil	PBD	
✓ LT_{44}	PL directs execute herringbone	PBD	
✓ *$LST_{431/441}$*	*PL directs unscheduled at halt maintenance*		
✓ *$LST_{432/442}$*	*PL selects and establishes section/platoon battle positions*		

		FORM OF TRAINING	
CT_5: Platoon reacts to indirect fire		PBD	
PL TASKS (LT)			STANDARDS (S)
	PL SUBTASKS (LST)		
✓ LT_{51}	PL determines reaction to indirect fire	PLE	S_{51} PL must direct continued movement, though route may be altered by consideration of impact areas, likely observation points, cover, etc.
	Not a decision task- merged into a drill below		
✓ LT_{52}	PL directs react to indirect fire	PBD	
	✓LST_{521} PL assesses changes in tactical situation		S_{521} PL directs close hatches, and any necessary changes in speeds, interval and MOPP
	✓LST_{522} PL checks and receives communications on tactical effects		S_{522} PL receives reports on damage, NBC check, impact area. (NBC check may be deferred if higher priorities tasks are required)
	✓LST_{523} PL reports to CO (as above, LST_{125})		S_{523} See S_{125}
	✓*LST_{524} PL uses voice signals*		
	✓*LST_{525} PL monitors NBC detection*		
	✓*LST_{526} PL supervises tactical dosimetry operations*		

TABLE 2: TASK MATRIX

PLATOON TASKS (DRILLS)

CREW TASKS (DRILLS (CD-X))			PLATOON EXECUTES COIL OR HERRINGBONE 1	PLATOON REACTS TO INDIRECT FIRE 2, 3, 5	PLATOON MOVES IN BOUNDING OW 1, 2, 3, 5	PLATOON MOVES IN TRAVELING OW 1, 2, 3, 5	PLATOON MOVES IN TRAVELING 1, 2, 3, 5	PLATOON LEADER TASKS (EXERCISES (PLE-X))
					P	P	P	PL SELECTS MOVEMENT TECHNIQUE (PLE-X) 1, 3
CREW CONDUCTS GROUND NAVIGATION			D	P&D	P&D	P&D	P&D	PL EXECUTES GROUND NAVIGATION 3
CREW CONDUCTS TERRAIN DRIVING 1, 2, 5			P&D	P&D	P&D	P&D	D P&D	PL DIRECTS MOVE IN TRAVELING
CREW MAINTAINS INTERVALS			D D	D D	D D	D D	D D	PL CONTROLS SPEEDS INTERVALS & FORMATION
TANK BREACHES OBSTACLES 5					P&D P&D	P&D P&D	P&D P&D	PL USES VISUAL SIGNALS TO CONTROL MOVEMENT (MOUNTED) 2,3
TANK CROSSES A WATER OBSTACLE 1, 2, 4, 5 (CD-X)					P&D	P&D	P&D	
CREW PREPARES TANK FOR WATER CROSSING 1,4 (CD-X)				P	P	P	P	
						D		PL DIRECTS MOVE IN TRAVELING OVERWATCH
CREW SELF-RECOVERS M60A3/M1 TANK 2				D	D D	D D	D	PL CONDUCTS SECTION TECHNIQUES OF MOVEMENT 2
CREW RECOVERS M60A3/ M1 TANK BY SIMILAR VEHICLE 5			D	D	D	D	D	PL SELECTS & ESTABLISHES SEL/PLT BATTLE POSITIONS (OW POSITIONS) 2, 3
					D	D		PL DIRECTS OVERWATCH FROM A BATTLE POSITION 5
					D			PL DIRECTS MOVE IN BOUNDING OVERWATCH
				D	D	D	D	PL SELECTS COVERED & CONCEALED ROUTES
CREW SELECTS FIRING POSITIONS			P&D D	P&D	P&D D	P&D D	P&D	PL SELECTS AIR/GROUND SECURITY
CREW MAINTAINS AIR SECURITY			P&D D	P&D D	P&D D	P&D D	D	PL PREPARES PLATOON FIRE PLANS 2, 3
CREW COVERS SECTOR OF FIRE (GROUND)			D D	D D	D D	D D	D D	
			D	D	D	D	D	PL ASSESSES CHANCES IN TACTICAL SITUATION

[1] Drucker & O'Brien. "Mission Based Analyses of Armor Training Requirements, (7 Vol) HumRRO Draft Report, Feb 81.

[2] DA, ARTEP 71-2, 23 Nov 81.

[3] Iron Horse Battle Drills. Armor (see also Mech Inf Drills).

[4] (CD-X) TC 17-15-13, Tank Crew Drills M60A3 Tank, Sep 79.

[5] Division 86 Abrams Tank Battalion Collective Task Inventory, Mar 82. (Tasks not referenced were derived from SME recommendations.)

PLATOON TASKS (DRILLS)

CREW TASKS (DRILLS (CD-X))			PLATOON EXECUTES COIL OR HERRINGBONE 1	PLATOON REACTS TO INDIRECT FIRE 2, 3, 5	PLATOON MOVES IN BOUNDING OW 1, 2, 3, 5	PLATOON MOVES IN TRAVELING OW 1, 2, 3, 5	PLATOON MOVES IN TRAVELING 1, 2, 3, 5	PLATOON LEADER TASKS (EXERCISES (PLE-X))	
			P	D	D	D	D	PL SELECTS UNSCHEDULED HALT FORMATION (PLE-X)	
			D					PL DIRECTS UNSCHEDULED HALT	
CREW PERFORMS AT HALT MAINTENANCE			D D	D				PL DIRECTS UNSCHEDULED AT HALT MAINTENANCE	
TANK OCCUPIES COVERED & CONCEALED POSITIONS			D		D	D		PL DIRECTS EXECUTE COIL	
								PL DIRECTS EXECUTE HERRINGBONE	
TANK MOVES BUTTONED UP 2				P&D D				DETERMINES REACTION TO INDIRECT FIRE (PLE-X) 1	[*Not a decision task - merged below.*]
CREW PERFORMS PROTECTIVE MASK DRILLS (CD-X) 4				D P&D				PL DIRECTS REACT TO INDIRECT FIRE	
CREW REACTS TO INDIRECT FIRE 2, 3, 5				D D				PL CHECKS AND RECEIVES COMMO ON TACTICAL EFFECTS	
				P&D				PL USES VOICE SIGNALS	
CREW PERFORMS NBC DETECTION				P&D P&D				PL GETS REPORT ON NBC DETECTION 3	
CREW DECONTAMINATES WEAPONS/VEHICLES 3				P&D				PL SUPERVISES TACTICAL DOSIMETRY OPERATIONS 3	

APPENDIX C U.S. ARMY ARMOR SCHOOL TANK PLATOON BATTLE DRILLS[1]

I. DRILL INTRODUCTORY MATERIAL

A. OVERVIEW

This platoon drill manual contains some of the basic procedures that your platoon will need to survive in combat and defeat the enemy. As platoon leader/platoon sergeant, you are responsible for training your platoon to perform these platoon drills as a unit in support of company operations. You must also ensure that your tank commanders have adequately trained their crews and that the individuals in those crews can perform their Soldier's Manual tasks. They will need to be skilled as crews and as individuals in order to perform the tasks necessary to support missions at platoon level.

B. PLATOON DRILLS IN TRAINING

Since the platoon drill is a rather specialized training procedure, the concept may need some explanation. Normally, an action that is of relatively short duration and is performed in the same way each time can be trained in the drill format. If you examine every task that a platoon does in combat in response to a command, you will find most of the tasks are too complex and varied to be trained as a drill. But there are some tasks that are performed in the same way or in almost the same way each time they are done. They would be basic tasks that your platoon would have to perform to get the more complex actions started, continued, or finished. These basic tasks should be trained using drills. Examples of drill tasks include "Execute Wedge," "Execute Action Left," and "Execute Coil." They're not the entire operation, but they serve as links or building blocks in more complex actions. Drills should be trained repeatedly so that each element of the platoon can meet the performance standards quickly and without additional direction. This basic knowledge of what each member of the platoon will do in a particular situation is the heart of the team concept. Because the basic procedures remain constant and are well trained, the platoon is able to adapt to varying conditions and still function as a team.

C. PLATOON DRILLS AND STANDARDIZATION

The steps in a platoon drill must be followed correctly so that all armor platoons will perform the drill in precisely the same way. It is your responsibility to ensure

[1]Prepared by the Directorate of Training Developments and the U.S. Army Research Institute for the Behavioral and Social Sciences with assistance from the Human Resources Research Organization (HumRRO).

that your platoon is trained to execute the performance steps to the standards as stated in the drill. The statement of conditions in the drills is deliberately kept to a minimum so that the drills can be conducted in almost any location with a minimum of support requirements. During initial drill training little emphasis is placed on conditions. As training progresses, conditions such as NBC environment, limited visibility, etc. can be introduced as variations. More complex situations will be introduced when the drills are incorporated into more involved ARTEP platoon missions and tasks.

D. PREREQUISITE TRAINING

Platoon drills require the integration of tasks at the individual level (to include leader tasks) and the collective level (to include crew drills). Each member of the platoon must be able to perform his individual tasks and the crews must be able to conduct their collective tasks before the platoon can conduct a platoon drill. This integration of individual and collective tasks means that those individual and collective tasks that are prerequisites for satisfactory performance must be mastered prior to conduct of the platoon drill.

E. EVALUATION IN TRAINING

The fact that you are the trainer of your platoon means that you are also the primary and most important evaluator of your platoon. You must decide when your platoon has or has not met the performance standards. You must be completely familiar with all of the individual/collective tasks and crew drills (prerequisites to the performance of platoon drills) and with all of the platoon drills your platoon must perform. Since the primary purpose of this manual is to assist you in training your platoon, you will not be required to complete a checklist for use in evaluation. From the practical standpoint, tasks are generally performed too rapidly to allow you, as evaluator, to physically check off the steps that have been accomplished. Again, it is your business to know those steps. How often should you evaluate your platoon? Your evaluation will be an ongoing effort, occurring as a part of training.

F. DRILL CONTENTS

The following is an explanation of the organization of parts two and three of this manual.

PART II.

General Prerequisites. This section is a listing of all the tasks that must be mastered prior to conducting any of the drills in this manual. Listed with each task is the reference for locating more information on the task. This section is divided into:

1. Individual Tasks - Prerequisite tasks performed by the inidividual soldier. There are two types of individual tasks:

a. Leader Tasks - Tasks that you, as the platoon leader/platoon sergeant, must perform during a drill. If you do not know your job and you are leading and directing the actions of those under your command, then, performance of the entire platoon suffers. The platoon cannot fully demonstrate its skills if you are not completely competent in the performance of your skills.

b. Soldier Manual Tasks - Tasks performed by the individual soldier that become the building blocks of other tasks.

2. Collective Tasks - Prerequisite tasks which require coordination between two or more people for satisfactory performance. Collective tasks will be divided into:

a. Crew Tasks - Tasks requiring coordination between two or more members of the same crew. If the crew task can be trained by using an existing crew drill, the reference to the drill will be listed.

b. Platoon Tasks - Tasks requiring coordination between two tanks within the same platoon. If the prerequisite for a platoon task can be met by using an existing platoon drill, the reference to the drill will be listed.

PART III.

Drills. This is the section which actually contains the platoon drills. Each drill will contain the following parts:

1. Drill Title: A phrase which identifies the drill.

a. Drill Description: A brief statement which describes the drill. Included might be a description of the tasks, some commonly accepted characteristics of the task, along with some possible circumstances under which this task might be performed in combat. The doctrinal reference is also added for more detailed information.

b. Drill to ARTEP Task Linkage: This section is a list of the ARTEP tasks, by title and number, that will be supported by the drill.

c. Specific Prerequisites: A listing of any additional tasks that would be necessary for initial training of a particular task. Tasks listed here are in addition to those listed in Part II, General Prerequisites.

d. How to Train: A reference to a section that presents some principles pertaining to drill training.

e. Performance Objective: The performance objective identifies (1) Task, (2) Conditions, and (3) Standards.

(1) Task: A specific statement of the collective task trained by the drill.

(2) Conditions: A statement of the minimum conditions under which the drill can be conducted. As training progresses, variations should be introduced so that the platoon can practice the taks under different conditions.

(3) Standards: A statement which identifies the measurable or observable actions that indicate successful performance of the task. Accomplishment of the task to the standards is central to the overall standardization of drills.

f. Initiating Cue: A signal, normally given by the platoon leader/platoon sergeant, which causes the platoon to begin the performance steps necessary to complete a particular drill. Initiating cues may be given by voice (normally FM radio), hand-and-arm signals, or flag signals.

g. Performance Steps: A listing of the steps that must be performed in order to complete a particular drill. The performance of these steps as they are written is also critical for the standardization of drills.

G. HOW TO TRAIN

The guidelines for drill training are like those for any type of training. You should explain each task, demonstrate it, and require the platoon to practice the task until the performance standards are met. But there are some special principles that pertain especially to drills. For example, you should coach the platoon during the drill, but reduce coaching as they improve, until the platoon can perform the task without it.

The following outline lists some training tips that should help you conduct a drill.

1. Prepare for drill training.

a. Refer to the general and specific prerequisite section, of the particular drill to be trained, to identify the individual and collective tasks that must be mastered for the drill.

b. Determine whether or not the platoon can perform the prerequisite tasks.

c. Provide training on prerequisite tasks as needed.

2. Explain the task.

a. Describe the performance objectives.

b. Describe the task and explain when it is performed during combat.

c. Explain any unfamiliar terms or signals that will be used during training.

d. Answer questions.

3. Demonstrate how to perform the task.

a. Explain how to perform the task.

b. Demonstrate the task using a chalk board, sand table, or any other appropriate training aid.

c. Describe what each tank in the platoon must do when performing the task.

d. Answer questions.

4. Explain how training will be conducted.

a. Explain that the platoon will continue to repeat the drill even after the performance standards are met.

b. Explain that radio silence will be maintained whenever possible (except for c below).

c. Explain that coaching by the platoon leader/platoon sergeant will be provided by means of radio during the drill.

d. Explain that the platoon must eventually perform the task without coaching.

e. Explain that TCs will be given time to critique their crew.

f. Describe the initiating cues that will be used to start the drill.

5. Conduct a walk-thru.

a. Conduct the drill slowly, explaining step-by-step (over the radio) what each tank must do.

b. Evaluate platoon performance and correct immediately any major flaws you detect during the walk-thru.

6. Conduct practice.

a. Coach the platoon during each run (gradually reduce coaching as the platoon improves) until the platoon can perform the drill without it.

b. If the platoon makes a major mistake, stop the drill, provide correction, and begin again.

c. Continue to repeat the drill until you think the platoon can perform it automatically.

d. Perform the drill under different conditions to enable the platoon to perform the task under more than one condition. The initiating cue should be varied and the platoon should start movement drills from different formations.

e. Provide feedback to the platoon by describing what was done correctly and what was done incorrectly.

f. Provide time for the TCs to critique their crews on performance of individual and crew tasks.

g. Do not require the platoon to perform the drill quickly at first; however, eventually they must be able to perform it to the performance standards.

7. Evaluation.

a. Use the performance standards for each drill to determine when the platoon can perform the task.

b. If external evaluation is required, request the company commander to evaluate the platoon after you have determined the performance standards are met.

Note. For more information on training you may refer to the Platoon Trainer's Workshop of the Battalion Training Management System (BTMS-AC-80-2).

II. GENERAL PREREQUISITES

A. INDIVIDUAL TASKS

1. Leader Tasks (Platoon Leader/Platoon Sergeant)

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-140-4016	Conduct Platoon Techniques of Movement	FM 17-19E/J4
071-326-3049	Conduct Troop Leading Procedures	FM 17-19K4

2. Soldier's Manual Tasks

a. S/L 3 and above.

TASK NUMBER	TASK TITLE	TASK REFERENCE
071-331-0820	Analyze Terrain Using the 5 Military Aspects of Terrain	FM 17-19E3
171-127-1001	Select Firing Position	FM 17-19E3
171-140-2006	React to Direct/Indirect Fire as a Vehicle Commander	FM 17-19E3
171-132-3001	Supervise Operator/Crew Maintenance	FM 17-19E3
171-140-3002	Conduct a Tactical Inspections	FM 17-19E3

b. S/L 1 and 2 and above.

TASK NUMBER	TASK TITLE	TASK REFERENCE
071-326-0608	Communicate Using Visual Signaling Techniques	FM 17-19E1/2
113-571-1005	Send/Receive Radiotelephone Messages	FM 17-19E1/2
113-587-2033	Operate Radio AN/VRC-64 or AN/VRC-2 w/Intercom System	FM 17-19E1/2
171-139-1005	Drive a Tank Over Various Types Terrain (M48-M60 Series Tanks)	FM 17-19E1/2
171-126-1050	Drive an M1 Tank	FM 17-19K1
171-139-1006	Start an M60 Series Tank	FM 17-19E1/2
171-139-1043	Stop the Tank and Tank Engine	

171-329-1011	Orient a Map on the Ground by Map Terrain Association
171-132-1501	Perform Before Operations Preventive Maintenance Checks and Services on Turret M60A3
171-132-1502	Perform During Operations Preventive Maintenance Checks and Services on Turret M60A3
171-132-1511	Perform Before Operations Preventive Maintenance Checks and Services on Hull M60A3
171-132-1509	Perform During Operations Preventive Maintenance Checks and Services on Hull M60A3
171-127-1510	Place the Turret Into Power Operation
171-127-1516	Operate M35E1 Gunner's Sight on M60A3
171-121-1008	Acquire and Identify Targets

B. ARTEP TASKS

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1. Crew Tasks

TASK NUMBER	TASK TITLE	TASK REFERENCE
3-II-1-1	Perform Vehicle Operator Maintenance	ARTEP 71-2
3-II-1-2	Refuel the Vehicle	
3-II-1-3	Load Ammunition on the Vehicle	
3-II-1-4	Conduct Prepare-to-Fire Checks/ Prepare Weapons	
3-II-1-5	Prepare Personal and Individual Equipment	
3-II-1-6	Combat Load the Vehicle	
3-II-3-1	Participate in a Tactical Road March	
3-II-3-3	Conduct Terrain Driving	
3-II-3-4	Ascend and Descend a Steep Grade	
3-II-3-5	Cross a Vertical Obstacle	
3-II-3-6	Cross a Ditch	

2. Platoon Tasks

TASK NUMBER	TASK TITLE	TASK REFERENCE
3-IV-1-1	Prepare for Operations	ARTEP 71-2
3-IV-1-4	Maintain Local Security	ARTEP 71-2
3-IV-1-6	Conduct Tactical Movement	ARTEP 71-2

III. PLATOON BATTLE DRILLS

A. COLUMN FORMATION DRILL

1. DESCRIPTION: The column formation is used when the entire platoon is moving along the same route. In this formation, the tanks in the platoon move one behind the other as shown in figure 1. Moving in column provides speed, security, and maximum fire to the flanks, but permits less fire to the front. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: This drill will support the following missions/tasks in ARTEP 71-2:

a. Move:

(1) Cross start point/line of departure (3-IV-1-3).
(2) Conduct a tactical road march (3-IV-1-5).

b. Attack:

(1) Conduct a passage of lines (3-IV-2-2).
(2) Move (3-IV-2-1).
(3) Bypass (3-IV-2-12).

c. Defend:

(1) Conduct a rearward passage of lines (3-IV-3-10).
(2) Move (3-IV-3-1).

3. SPECIFIC PREREQUISITES: None.

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

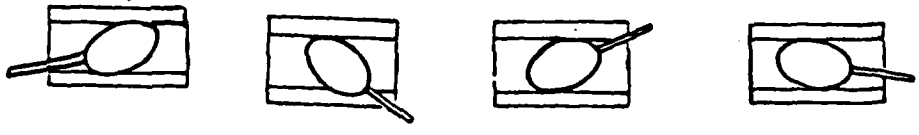
a. Task: Execute column formation.

b. Conditions:

(1) A tank platoon in moving or stationary formation.
(2) Terrain suitable for movement into a column formation.

c. Standards:

(1) Platoon moves into the column formation without delay.
(2) Tanks are positioned as shown in figure 1.
(3) Vehicle intervals are in accordance with platoon leader direction/unit SOP.
(4) Main weapons are oriented as shown in figure 1.
(5) Platoon maintains ground and air security.
(6) Platoon maintains radio listening silence when in open hatch mode.



TK 4 | TK 3 (PS) | TK 2 | TK 1 (PL)

Figure 1. Tank Platoon in Column Formation

6. INITIATING CUE:

a. Hand and arm signal/flag signal (see figure 2).

b. Voice command (FM radio) - Platoon call sign, command "BRAVO 6 ROMEO, EXECUTE COLUMN."

Figure 2. Hand and Arm Signal/Flag Signal for Execute Column Formation

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Moves in the desired direction.	Moves to close on tank 1.	Moves to close on tank 2.	Moves to close on tank 3.
b.	Maintains movement speed.	Assumes position behind tank 1.	Assumes position behind tank 2.	Assumes position behind tank 3.
c.	Maintains movement speed.	Maintains directed interval.	Maintains directed interval.	Maintains directed interval.
	Orients main gun to the front.	Orients main gun to the left.	Orients main gun to the right.	Orients main gun to the rear.
*	Maintains observation in assigned sector.	Maintains observation in assigned sector.	Maintains observation in assigned sector.	Maintains observation in assigned sector.
*	Maintains radio listening silence.	Maintains radio listening silence.	Maintains radio listening silence.	Maintains radio listening silence.

*This action must be performed throughout the drill.

E. COIL FORMATION DRILL.

1. DESCRIPTION: The coil formation is used by a platoon when it conducts an unscheduled halt where off-route maneuver is possible. In this formation, the tanks are arranged in a circular pattern as shown in figure 3. The coil formation provides maximum ground and air security by allowing 360 degree coverage. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: This drill will support the following ARTEP mission/task in ARTEP 71-2:

Move.

Conduct a tactical movement (3-IV-1-6).

3. SPECIFIC PREREQUISITES:

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-127-1002	Occupy Firing Positions	17-19E1/2
171-326-0513	Select Temporary Battlefield Positions	17-19E1/2
171-127-1001	Select Firing Positions	17-19E3

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute coil formation.

b. Conditions:

(1) A tank platoon moving in any formation.
(2) Terrain which is suitable for off-route movement and provides 360 degree coverage.
(3) An initiating cue.

c. Standards:

(1) Platoon moves into coil formation without delay.
(2) Tanks are positioned as shown in figure 3.

(3) Vehicle dispersion is in accordance with PL direction/ unit SOP.
(4) Platoon occupies firing positions that maximize available cover and concealment and provide good fields of fire.
(5) Platoon maintains ground and air security.
(6) Platoon maintains radio-listening silence when in open hatch mode.

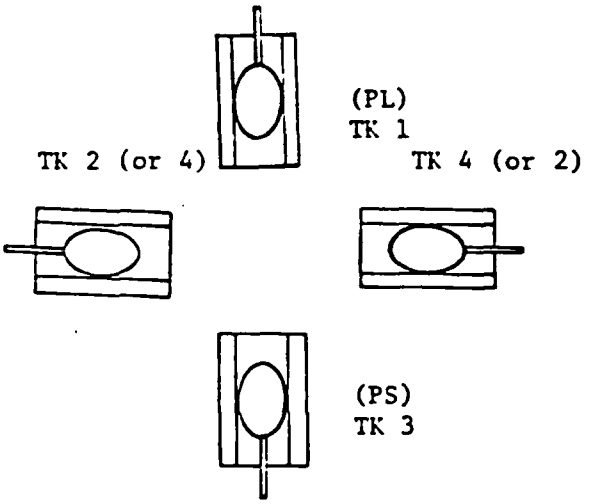


Figure 3. Tank Platoon in Coil Formation

6. INITIATING CUES:

a. Hand and arm/flag signal (see figure 4).

b. Voice Command (FM radio) - Platoon call sign "BRAVO 6 ROMEO, EXECUTE COIL."

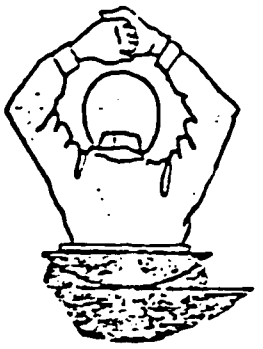


Figure 4. Hand and Arm Signal/Flag Signal for Execute Coil Formation

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Moves off the route of movement and begins describing a 360° circle, gun tube oriented out from circle.	Falls in behind tank 1 and takes up prescribed interval.	Falls in behind tank 2 and takes up prescribed interval.	Falls in behind tank 3 and takes up prescribed interval.
b.	When platoon is generally in a circle, halts and faces out from circle.	When tank 1 faces out from circle, halts and faces out from circle.	When tank 2 faces out from circle, halts and faces out from circle.	When tank 3 faces out from circle, halts and faces out from circle.

c.	Moves to occupy a firing position which maximizes cover, concealment and fields of fire in assigned sector.	Moves to occupy a firing position which maximizes cover, concealment and fields of fire in assigned sector.	Moves to occupy a firing position which maximizes cover, concealment and fields of fire in assigned sector.	Moves to occupy a firing position which maximizes cover, concealment and fields of fire in assigned sector.
d.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.
	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.

*This action must be performed throughout the drill.

C. HERRINGBONE FORMATION DRILL

1. DESCRIPTION: The herringbone formation may be used by a platoon moving in a column formation along a route when it conducts a scheduled halt or when it conducts an unscheduled halt where it is unable to move off the route. In a herringbone, the tanks in the platoon are arranged on both sides of a route as shown in figure 5. This formation enables the platoon to adopt a hasty defensive posture from a march column. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: This drill will support the following ARTEP mission:

Move.

Conduct a Tactical Roadmarch (3-IV-1-5).

3. SPECIFIC PREREQUISITES:

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-127-1002	Occupy Firing Positions	17-19E1/2
171-326-0573	Select Temporary Battlefield Positions	17-19E1/2
171-127-1001	Select Firing Positions	17-19E3

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute herringbone formation.

b. Condition:

(1) A tank platoon moving in a column formation.
(2) An initiating cue.

c. Standards:

(1) Platoon moves into herringbone formation without delay.
(2) The tanks are positioned on both sides of the route as shown in figure 5.

(3) Platoon clears route of march if directed by platoon leader.
(4) Vehicle dispersion is maintained in accordance with PL direction/unit SOP.
(5) Platoon maintains ground and air security.
(6) Platoon maintains radio listening silence when in open hatch mode.
(7) Gun tubes are oriented in assigned sector.

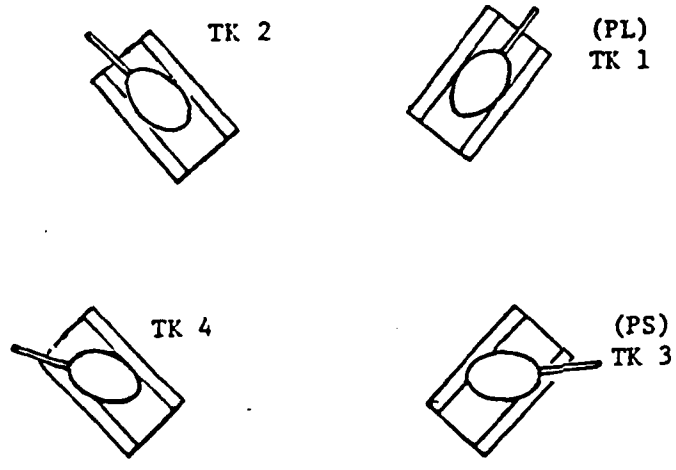


Figure 5. Tank Platoon in Herringbone Formation

6. INITIATING CUES:

a. Hand and arm/flag signal (see figure 6).

b. Voice command (FM radio) - Platoon call sign, "BRAVO 6 ROMEO EXECUTE HERRINGBONE."

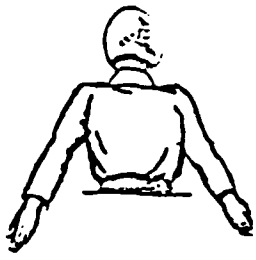


Figure 6. Hand and Arm/Flag Signal for Herringbone Formation

7. PERFORMANCE STEPS:

(AFTER PL GIVES INITIATING CUE)

	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Moves to the right and oblique from the route of movement (approx 30-45°).	Moves to the left and oblique from the route of movement (approx 30-45°).	Moves to the right and oblique from the route of movement (approx 30-45°).	Moves to the left and oblique from the route of movement (approx 30-45°).
	Orients gun tube over front slope.	Orients gun tube over front slope (generally).	Orients gun tube over front slope (generally).	Orients gun tube over front slope (generally).
	Maintains dispersion.	Maintains dispersion.	Maintains dispersion.	Maintains dispersion.
b.	Clears route as necessary.	Clears route as necessary.	Clears route as necessary.	Clears route as necessary.
c.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.
	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.

*This action must be performed throughout the drill.

D. WEDGE FORMATION DRILL

1. DESCRIPTION: The wedge formation is used for tactical cross-country movement. In this formation the tanks in the platoon move as shown in figure 7 and maintain their positions relative to each other utilizing the wingman concept. The wedge formation permits excellent fire to the front and good fire to each flank. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The wedge formation supports the following ARTEP missions:

a. Move:

(1) Move in Bounding Overwatch (3-IV-1-9)
(2) Move in traveling (3-IV-1-7).
(3) Move in traveling overwatch (3-IV-1-8).
(4) Cross SP/LD (3-IV-1-3).
(5) Move (3-II-4-1).

b. Attack:

(1) Move (3-IV-2-1).
(2) Conduct a hasty attack (3-IV-2-8).
(3) Assault (3-IV-2-11).
(4) Conduct Passage of Lines (Forward) (3-IV-2-2).
(5) Bypass (3-IV-2-12).

c. Defend:

(1) Move (3-IV-3-1).
(2) Conduct Passage of Lines (Rearward) (3-IV-3-10).
(3) Conduct Fire and Maneuver (3-IV-3-8).

3. SPECIFIC PREREQUISITES: Knowledge of wingman concept. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute wedge formation.

b. Conditions:

(1) A tank platoon in any moving or stationary formation.
(2) Terrain suitable for movement into a wedge formation.
(3) An initiating cue.

c. Standards:

(1) Platoon moves into a wedge formation without delay.
(2) Tanks are positioned generally as shown in figure 7.
(3) Vehicle intervals are in accordance with platoon leader direction/unit SOP.
(4) Main guns are oriented in the same general direction as shown in figure 7.
(5) Platoon maintains ground and air security.
(6) Platoon maintains radio listening silence when in open hatch mode.

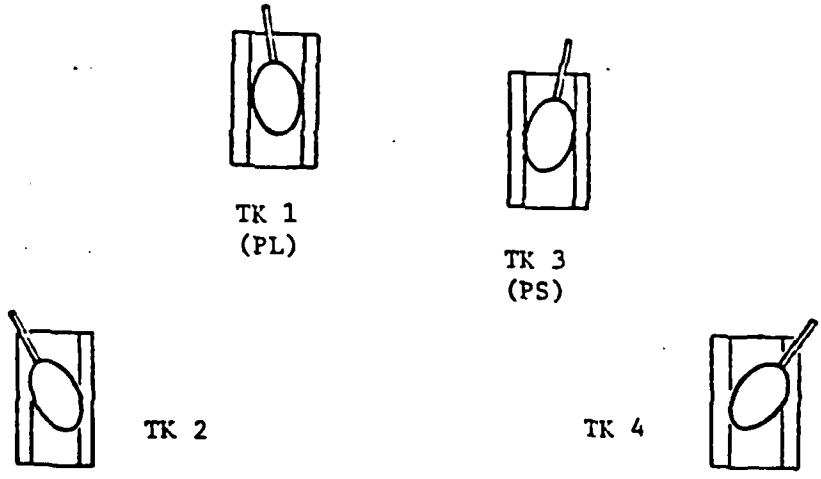


Figure 7. Tank Platoon in Wedge Formation

6. INITIATING CUES:

a. Hand and arm/flag signal (see figure 8).

b. Voice command (FM radio) - Platoon call sign, "BRAVO 6 ROMEO EXECUTE WEDGE."

Figure 8. Hand and Arm/Flag Signals for Wedge Formation

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PS)	TANK 4
a.	Takes up the direction of travel.	Moves to the left rear of tank 1.	Moves to the right rear of tank 1.	Moves to the right rear of tank 3.
	Orients the main gun toward the front.	Orients the main gun toward left front.	Orients the main gun toward the front.	Orients the main gun toward right front.
b.	Maintains orientation on axis of advance. Adjusts lateral dispersion.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.
c.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.
	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.

*This action must be performed throughout the drill.

E. LINE FORMATION DRILL

1. DESCRIPTION: The line formation is used primarily when the platoon assaults an objective. It can also be used when the platoon must cross open terrain as quickly as possible. In this formation the tanks are aligned laterally as shown in figure 9. This formation maximizes fire power to the front. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The line formation supports the following ARTEP missions:

a. Move:

(1) Move (3-II-4-1).
(2) Conduct tactical movement (3-IV-1-6).

b. Attack:

(1) Move (3-IV-2-1).
(2) Conduct a Hasty Attack (3-IV-2-8).
(3) Assault (3-IV-2-11).

3. SPECIFIC PREREQUISITES: None.

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute line formation.

b. Condition:

(1) Platoon moving in any formation.
(2) Terrain suitable for movement into a line formation.
(3) An initiating cue.

c. Standards:

(1) Platoon moves into line formation without delay.
(2) Tanks are aligned as shown in figure 9.
(3) Lateral dispersion is in accordance with PL direction/unit SOP.
(4) Main guns are oriented toward the front.

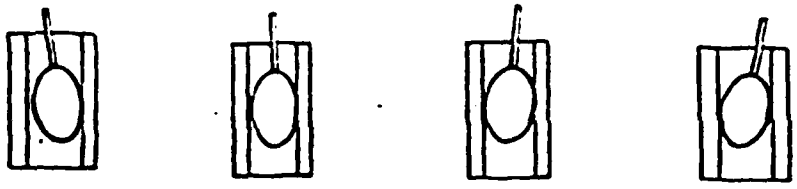


Figure 9. Tank Platoon in Line Formation

6. INITIATING CUES:

a. Hand and arm/flag signal (see figure 10).
b. Voice command (FM radio) - Platoon call sign, "BRAVO 6 ROMEO EXECUTE LINE."

Figure 10. Hand and Arm/Flag Signal for Line Formation

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Takes up the direction of travel.	Moves on line to the left of the platoon leader's tank.	Moves on line to the right of the platoon leader's tank.	Moves on line to the right of the platoon sergeant's tank.
	Orients the main gun toward the front.	Orients the main gun toward the front.	Orients the main gun toward the front.	Orients the main gun toward the front.

b.	Maintains orientation on axis of advance. Directs lateral dispersion.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.	Maintains lateral dispersion in accordance with PL direction/ unit SOP.
c.	Maintains all around observation.	Maintains all around observation.	Maintains all around observation.	Maintains all around observation.

F. ACTION LEFT (RIGHT, FRONT, REAR).

1. DESCRIPTION: This action is performed during a tactical movement when the enemy is detected to the left (right, front, rear) of the direction of movement. During this action, the platoon orients its guns toward the enemy and assures that its fire is not masked by friendly elements. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The action left (right, front, rear) drill supports the following ARTEP missions:

a. Move.

(1) Conduct tactical roadmarch (3-IV-1-6).
(2) Move in traveling (3-IV-1-6).
(3) Move in traveling overwatch (3-IV-1-8).
(4) Move in bounding overwatch (3-IV-1-9).

b. Attack.

(1) Take action on contact (3-IV-2-6).
(2) Move (3-IV-4-1).

c. Defend.

Move (3-IV-3-1).

3. SPECIFIC PREREQUISITES:

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-140-2006	React to Direct/Indirect Fire as a Vehicle Commander	FM 17-1923

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute action left (right, front, rear).

b. Conditions:

(1) A tank platoon moving along a route.
(2) Terrain suitable for action left (right, front, rear).
(3) An initiating cue.

c. Standards:

(1) Platoon orients gun tubes in direction indicated in command, without delay (see figure 11).
(2) Individual tank fire is not masked by friendly elements.
(3) Tank crews search for enemy targets in direction indicated by command.

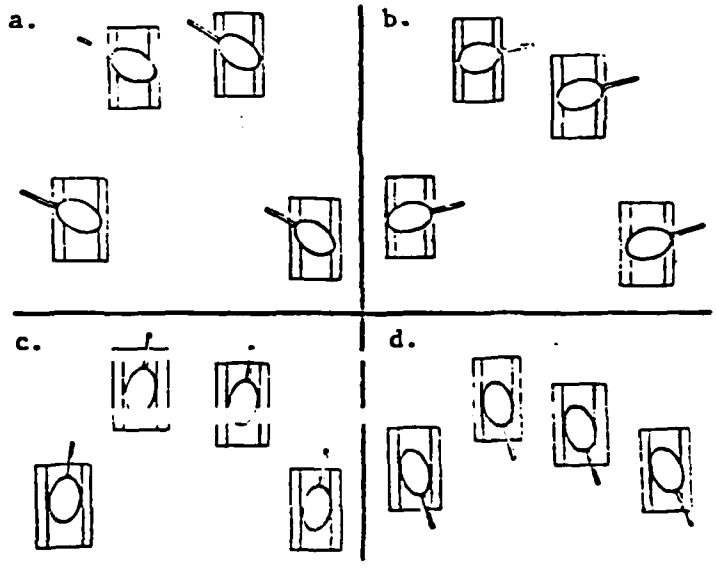


Figure 11. a. Action Left, b. Action Right, c. Action Front, and d. Action Rear.

6. INITIATING CUES:

a. Hand and arm signal/flag signal (see figure 12).

b. Voice command (FM radio) - Platoon call sign, "BRAVO 6 ROMEO, ACTION LEFT (RIGHT, FRONT, REAR)."

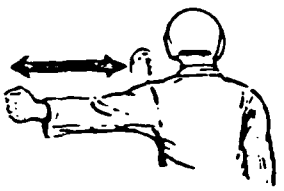


Figure 12. Hand and Arm Signals/Flag Signals for Action Left (Right, Front, Rear).

7. PERFORMANCE STEPS:

(AFTER PL GIVES INITIATING CUE)

	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Orients gun tube in the direction commanded.	Orients gun tube in the direction commanded.	Orients gun tube in the direction commanded.	Orients gun tube in the direction commanded.
b.	Moves, if necessary, to assure fire would not be masked by friendly elements.	Moves, if necessary, to assure fire would not be masked by friendly elements.	Moves, if necessary, to assure fire would not be masked by friendly elements.	Moves, if necessary, to assure fire would not be masked by friendly elements.
c.	Searches designated sector for targets.	Searches designated sector for targets.	Searches designated sector for targets.	Searches designated sector for targets.
d.	Continues to move.	Continues to move.	Continues to move.	Continues to move.

G. MOVE LEFT (RIGHT, REAR).

1. DESCRIPTION: This maneuver is performed during tactical movement when the platoon leader decides to change the direction of movement to the left (right, rear). During the maneuver, the platoon alters its direction of movement while maintaining its movement formation. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The move left (right, rear) drill supports the following ARTEP missions:

a. Move.

(1) Move (3-II-4-1).
(2) Conduct tactical roadmarch (3-IV-1-6).
(3) Move in traveling (3-IV-1-7).
(4) Move in traveling overwatch (3-IV-1-8).
(5) Move in bounding overwatch (3-IV-1-9).

b. Attack.

(1) Move (3-IV-2-1).
(2) Conduct hasty attack (3-IV-2-8).
(3) Take action on contact (3-IV-2-6).
(4) React to indirect fire (3-IV-2-5).
(5) Bypass (3-IV-2-12).
(6) Conduct fire and maneuver (3-IV-2-7).
(7) Disengage (3-IV-2-13).

c. Defend.

(1) Move (3-IV-3-1).
(2) Disengage (3-IV-3-9).
(3) React to indirect fire (3-IV-3-4).
(4) Conduct fire and maneuver (3-IV-3-8).

3. SPECIFIC PREREQUISITES:

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-127-1002	Occupy Firing Position	FM 17-19E1/2
171-326-0513	Select Temporary Battlefield Positions	FM 17-19E1/2
171-127-1001	Select Firing Positions	FM 17-19E3
171-140-2006	React to Direct/Indirect Fire as a Vehicle Commander	FM 17-19E3

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute move left (right, rear).

b. Conditions:

(1) A platoon moving in any formation.
(2) Terrain suitable for movement to the left (right, rear).
(3) An initiating cue.

c. Standards:

(1) Platoon turns in direction indicated without delay (see figure 13).
(2) Gun tubes are oriented towards likely enemy positions.
(3) Tanks maintain their relative position within the formation.

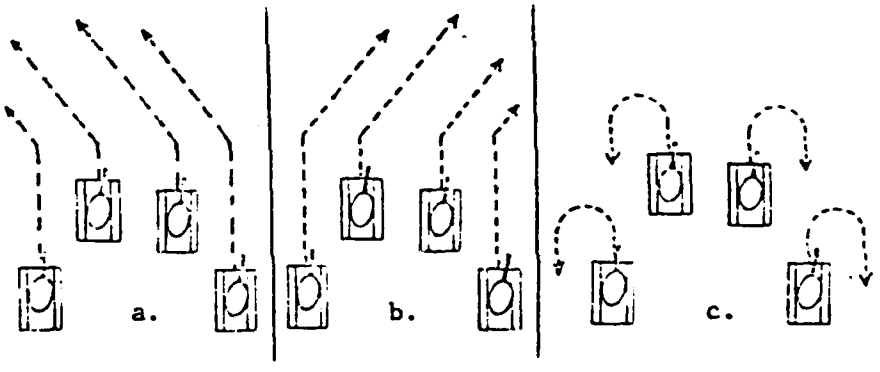


Figure 13. a. Move Left, b. Move Right, and c. Move to the Rear.

6. INITIATING CUES:

a. Hand and arm signal/flag signal (see figure 14).

b. Voice command (FM radio) - Platoon call sign, command "BRAVO 6 ROMEO, MOVE LEFT (RIGHT, TO THE REAR)."

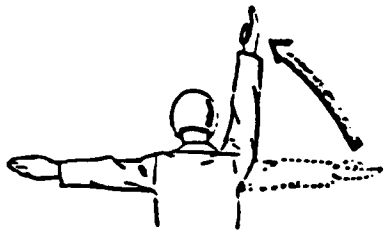


Figure 14. Hand and Arm Signal/Flag Signal for Move Left (Right, Rear).

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
	Assumes new direction of travel.	Assumes new direction of travel while maintaining position relative to tank 1.	Assumes new direction of travel while maintaining position relative to tank 1.	Assumes new direction of travel while maintaining position relative to tank 3.
*	Maintains gun orientation towards likely enemy positions.	*Maintains gun orientation towards likely enemy positions.	*Maintains gun orientation towards likely enemy positions.	*Maintains gun orientation towards likely enemy positions.
*	Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.	*Maintains ground and air security.

*This action must be performed throughout the drill.

H. CONDUCT BOUNDING OVERWATCH

1. DESCRIPTION: Bounding overwatch is a moving technique used by a platoon when enemy contact is expected. During bounding overwatch, one section remains in an overwatch position while the other section moves to a position from which it can overwatch the movement of the first section. While this is the slowest moving technique, it provides the most security to the platoon. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The bounding overwatch drill supports the following ARTEP missions:

a. Move.

(1) Move (3-II-4-1).
(2) Move in bounding overwatch (3-IV-1-9).
(3) Provide Overwatch (3-II-4-2).

b. Attack.

(1) Move (3-IV-2-1).
(2) Take action on contact (3-IV-2-6).
(3) Conduct fire and maneuver (3-IV-2-7).
(4) Conduct hasty attack (3-IV-2-8).
(5) Bypass (3-IV-2-12).
(6) Disengage (3-IV-2-13).

c. Defend.

(1) Move (3-IV-3-1).
(2) Disengage (3-IV-3-9).
(3) Conduct fire and maneuver (3-IV-3-8).

3. SPECIFIC PREREQUISITES:

TASK NUMBER	TASK TITLE	TASK REFERENCE
171-127-1002	Occupy Firing Position	FM 17-19E1/2
171-326-0513	Select Temporary Battlefield Positions	FM 17-19E1/2
171-127-1001	Select Firing Positions	FM 17-19E3
171-140-2006	React to Direct/Indirect Fire as a Vehicle Commander	FM 17-19E3

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: Execute bounding overwatch.

b. Conditions:

(1) A tank platoon moving in wedge formation.
(2) Terrain suitable for cross-country movement.
(3) An initiating cue.

c. Standards:

(1) One section maintains overwatch while other section bounds (see figure 17).
(2) Available cover and concealment are used when bounding.
(3) Bounding section occupies position that is supportable by overwatch section.
(4) Overwatch positions provide good fields of fire and, when available, cover and concealment.
(5) Air security is maintained.
(6) Main guns are oriented toward likely enemy positions.
(7) Radio listening silence is maintained when in open hatch mode.

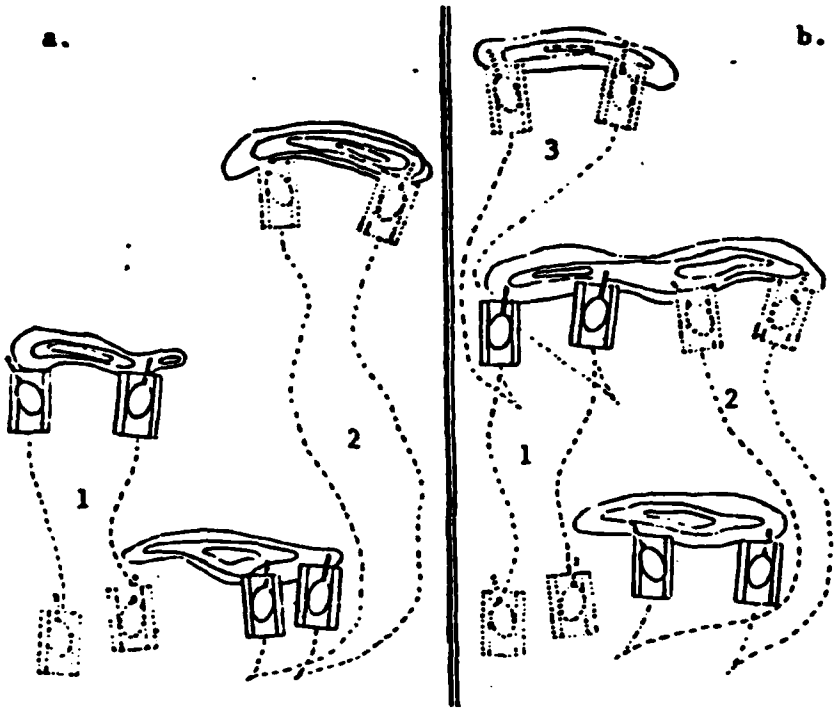


Figure 15. Example of Bounding Overwatch.
a. Alternate Bounds
b. Successive Bounds

6. INITIATING CUES:

a. Hand and arm signal/flag signal (see figure 16).

b. Voice command (FM radio) - Platoon sergeant's call sign, "ROMEO FIVE SEVEN"; command, "MOVE UP ON MY LEFT.

—OR—

Platoon's sergeants call sign, "ROMEO FIVE SEVEN"; command, "COVER MY MOVE."

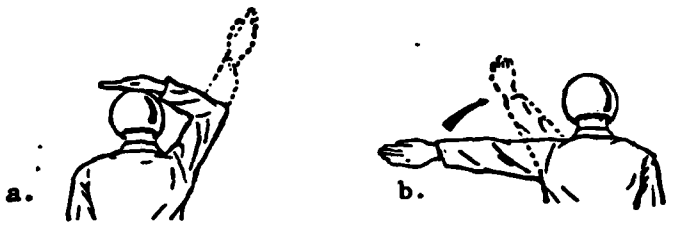


Figure 16. Hand and Arm Signal/Flag Signals for Execute Bounding Overwatch. (a. Cover My Move. b. Move Up On My Left.)

7. PERFORMANCE STEPS:

(AFTER PL GIVES INITIATING CUE)

	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
		—OR—		
	TANK 3 (PSG)	TANK 4	TANK 1 (PL)	TANK 2
a.			Occupies overwatch position.	Occupies overwatch position.
b.	Bounds to next overwatch position.	Bounds to next overwatch position.	Maintains overwatch.	Maintains overwatch.
c.	Occupies overwatch position.	Occupies overwatch position.	Maintains overwatch.	Maintains overwatch.
d.	Maintains overwatch.	Maintains overwatch.	Bounds to next overwatch position.	Bounds to next overwatch position.
*	Orients guns on likely enemy positions.	*Orients guns on likely enemy positions.	*Orients guns on likely enemy positions.	*Orients guns on likely enemy positions.

*	Maintains air security.	*Maintains air security.	*Maintains air security.	*Maintains air security.
*	Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.	*Maintains radio listening silence.

*This action must be performed through the drill.

I. REACT TO AIR ATTACK

1. DESCRIPTION: This action is taken by a tank platoon during a tactical road march or during cross-country movement when the platoon is attacked by enemy aircraft. During the action, the platoon disperses and prepares to engage the aircraft. After this action, the platoon may engage the aircraft. (Reference: Training Text 71-1/2, The Abrams Battalion, Vol II.)

2. DRILL TO ARTEP TASK LINKAGE: The react to air attack drill supports the following ARTEP missions:

a. Move.

(1) Conduct a tactical road march (3-IV-1-5).
(2) Move in traveling (3-IV-1-7).
(3) Move in traveling overwatch (3-IV-1-8).
(4) Move in bounding overwatch (3-IV-1-9).
(5) Move (3-II-4-1).

b. Attack.

Move (3-IV-3-1).

c. Defend.

Move (3-IV-3-1).

3. SPECIFIC PREREQUISITES: None.

4. HOW TO TRAIN: See page 5.

5. PERFORMANCE OBJECTIVES:

a. Task: React to air attack.

b. Conditions:

(1) A tank platoon in a tactical road march or moving cross-country.
(2) An initiating cue.

c. Standards:

(1) Platoon accelerates without delay.
(2) Tanks move obliquely to the direction of movement (see figure 19).

(3) Distance between tanks is increased.
(4) Tank commander prepares to fire upward in the general direction of reported air attack.

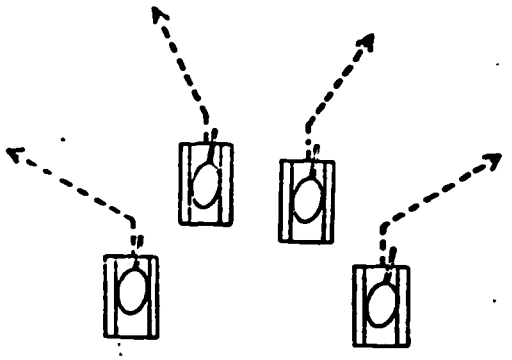


Figure 17. Tank Platoon Reacting to Air Attack.

6. INITIATING CUES:

a. Hand and arm signal/flag signal (see figure 20).

b. Voice command (FM radio) - Platoon call sign, "BRAVO 6 ROMEO, AIR ATTACK ____ O'CLOCK."

Figure 20. Hand and Arm Signal/Flag Signal for React to Air Attack

7. PERFORMANCE STEPS:

	(AFTER PL GIVES INITIATING CUE)			
	TANK 1 (PL)	TANK 2	TANK 3 (PSG)	TANK 4
a.	Accelerates.	Accelerates.	Accelerates.	Accelerates.
b.	Moves obliquely to left.	Moves obliquely to left and increases distance from Tank 1.	Moves obliquely to right.	Moves obliquely to the right and increases distance from Tank 3.
	Prepares to shoot.	Prepares to shoot.	Prepares to shoot.	Prepares to shoot.

APPENDIX A

REFERENCES

ARTEP 71-2, Mechanized Infantry/Tank Task Force

Training Text 71-1/2, The Abrams Battalion

FM 17-19E1/2, Soldier's Manual for MOS 19E Skill Level 1 and 2

FM 17-19E3, Soldier's Manual for MOS 19E Skill Level 3

FM 17-19E4, Soldier's Manual for MOS 19E Skill Level 4

FM 17-19E/TG, M48/M60 Armor Crewman Trainer's Guide

FM 21-60, Visual Signals

BTMS-AC-80-2, Platoon Trainer's Workshop

Note. FM 17-19K, Soldier's Manuals are not referenced here due to their draft status and minimal availability in the field. These soldier's manuals will be incorporated in the final Armor platoon battle drills.