Research Report 1443

The Development of a Single Tank Tactical Exercise for Training M1 Tank Commanders

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An analysis was conducted of the basic NCO course for training M1 tank commanders (19K BNCOC) in terms of the crawl-walk-run approach to training. The results of the analysis showed only partial correspondence between tasks trained in the classroom and those trained in the field. To increase the correspondence between tasks included in different phases of training, two versions of a new tactical exercise were developed. In contrast to previous field exercises, which were conducted in a platoon context, the new exercise was designed for implementation by a single tank. A field version of the exercise was designed to make student performance more observable by instructors. A second version of the exercise was designed for implementation on a battlefield simulation in order to facilitate the transition from classroom to field training.

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FOREWORD

The Army Research Institute Fort Knox Field Unit has been involved in the development of innovative approaches to training for both the Armor community and the Army as a whole. This effort has recently been given special emphasis through formation of the Training Technology Field Activity (TTFA), a partnership among the Army Research Institute (ARI), the U.S. Army Training and Doctrine Command (TRADOC), and the U.S. Army Armor Center and School (USAARMC). The purpose of the TTFA is to increase the effectiveness and efficiency of training through the application of new technologies.

Initial efforts of the Fort Knox TTFA are being concentrated on 19K BNCOC, the Noncommissioned Officer Education System (NCOES) course that prepares sergeants (E5) to serve as M1 tank commanders. The existing course content was analyzed in terms of the crawl-walk-run approach to training. Training conducted in the classroom was related to training conducted during field exercises in order to identify the degree to which the course incorporated this approach. New field exercises that focused on single tanks (rather than on a tank platoon) were developed to increase the correspondence among course events. In addition, supplemental versions of these exercises were developed for implementation on SIMCAT (Simulation in Combined Arms Training), a computer-controlled, platoon-level battlefield simulation for conducting research on command and control training. The purpose of these supplemental exercises was to better prepare students for the run phase of training and to make field exercises more efficient. This report describes the analysis of the course content and the development of new exercises for implementation both in the field and on SIMCAT.

This effort is part of the Fort Knox Field Unit's research program to apply new training technology to Armor skills training. The Field Unit's overall mission is to improve methodology basic to the derivation of Armor training and evaluation requirements and procedures, individual and collective training in Armor schools and operational units, and systems for integrating and managing Armor training. A Memorandum of Agreement covering the application of training technology to Armor skills training was signed by Headquarters, TRADOC, USAARMC, and ARI on 4 November 1983. This research has been briefed to the Deputy Commanding General, USAARMC (1986), and continuous coordination has been effected throughout this developmental period with the Technical Director, USAARMC. These exercises were developed for SIMCAT in cooperation with the Fort Knox Noncommissioned Officers Academy for use in the MOS 19K Basic Noncommissioned Officers Course.

EDGAR M. JOHNSON
Technical Director

THE DEVELOPMENT OF A SINGLE TANK TACTICAL EXERCISE FOR TRAINING M1 TANK COMMANDERS

EXECUTIVE SUMMARY

Requirement:

To develop a tactical exercise for the Basic Noncommissioned Officer (19K BNCOC) course for M1 tank commanders that would enhance observation of task performance and would be consistent with the crawl-walk-run approach in training.

Procedure:

An analysis of the basic NCO course for M1 tank commanders was conducted in terms of the crawl-walk-run approach to training. The results showed that there was only partial correspondence between the tasks trained in the classroom and those trained in the field. The utility of the field exercises was further limited by the fact that the exercises were conducted within a platoon. Not only were the students not trained to perform task commander tasks in this context, the tasks performed in the field varied somewhat from student to student. Moreover, performance of the tasks was not observable by instructors within the platoon context.

Findings:

A single tank exercise was developed for implementation on SIMCAT (Simulation in Combined Arms Training) and in the field. While the lack of a platoon context provided less realism, it was more consistent with the crawl-walk-run approach to training; students could learn to control their tanks in simulated and real field environments before learning how to coordinate with other tanks. At the same time, this context would enable each student to perform the same tank commander tasks and would allow an instructor to be inside the tank during the exercise.

Utilization of Findings:

The Single Tank Tactical Exercise can be used in 19K BNCOC to increase the correspondence between classroom and field training and to improve the observation of student performance. The approach can serve also as a model for implementing the crawl-walk-run approach to training in the development of field exercises.

THE DEVELOPMENT OF A SINGLE TANK TACTICAL EXERCISE FOR TRAINING M1 TANK COMMANDERS

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THE DEVELOPMENT OF A SINGLE TANK TACTICAL EXERCISE FOR TRAINING M1 TANK COMMANDERS

INTRODUCTION

This report describes the development of the Single Tank Tactical Exercise (STTX) for the M1 Basic NCO Course. The exercise is intended as an alternative to the Situational Training Exercises (STX) and the Field Training Exercise (FTX) currently administered during 19K BNCOC. It was developed in accordance with the crawl-walk-run approach to training to ensure that there would be a systematic and orderly progression from training in the classroom to training in the field.

Two different versions of the STTX were developed--a version for implementation in the field and a version for implementation on SIMCAT (Simulation in Combined Arms Training), a platoon level simulation developed by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI).

THE 19K BNCOC CURRICULUM

Tasks Trained in 19K BNCOC

The tasks that are to be trained in 19K BNCOC are listed in the Program of Instruction (POI) for that course. Since the POI is updated periodically, the course content changes occasionally. An examination was made of the POI dated 11 October 1985 since it was the most current version of the POI available at the time of the analysis.

A total of 51 tasks were listed in the POI (see Appendix A). These included 42 skill level 3 tasks, 4 NCO-critical skill level 1 tasks, 1 NCO-critical skill level 2 task, and 4 skill level 4 tasks.

The tasks were clustered into the following areas:

- NCO Responsibilities/Training
- Land Navigation
- Nuclear, Biological, and Chemical Defense
- Military Communications
- Tactics
- Mine Warfare and Electronic Countermeasures

- Maintenance
- Gunnery Skills

In addition, the course content included Situational Training Exercises, a Field Training Exercise, and several blocks of instruction for which no specific tasks were listed (i.e., Duties and Responsibilities of an NCO, Training Management, Multiple Integrated Laser Equipment Systems).

The 19K BNCOC course schedule and the STX/FTX annexes were also examined. Besides the 51 tasks listed in the POI, three additional tasks were included in the course schedule and five additional tasks were contained in the STX/FTX annexes (see Appendix A). These apparent discrepancies among the tasks contained in the different documents reflects the different dates on which the documents were published.

Tasks Trained in the Field

An examination of the STX/FTX annexes revealed that 22 of the 59 tasks trained in 19K BNCOC were not included among the tasks to be trained or tested in the field (see Appendix B). These 22 tasks could be clustered into four groups. The first group was comprised of tasks reflecting tank commander duties as a supervisor or trainer. These tasks may not have been included in field training either because they were not normally performed in the field or because they were perceived as relatively unimportant. The second group consisted of map reading tasks, while the third consisted of tasks that were incompatible with MILES target engagement simulation. Since MILES does not allow simulation of the tank commander's .50 caliber machinegun, the smoke grenade, or indirect fire, tasks requiring simulation of these effects may have been excluded from the field exercises. The final group consisted of tasks that had been added to 19K BNCOC but had not yet been incorporated into the STX/FTX.

THE CRAWL, WALK, AND RUN PHASES OF TRAINING

Military leaders and training developers frequently assume that efficient military training progresses systematically through three phases--crawl, walk, and run. While the desirability of this approach to training is commonly accepted, the characteristics of each phase have not been clearly defined. The following descriptions were prepared for use in analyzing the events occurring in 19K BNCOC in accordance with the crawl-walk-run approach.

Crawl Phase

During the crawl phase of training, a student is introduced to various tasks. The student will probably listen to a description of a task and will watch a demonstration of how it is performed. The student may even be talked through the task step-by-step, but will not be given much of an opportunity to practice it. This opportunity will usually be provided during the walk phase of training.

Walk Phase

The walk phase usually takes place in the classroom although it can also take place in a motor pool, on a firing range, on a simulator, or even in the field. The factor that distinguishes the walk phase from the crawl phase of training is the greater opportunity for practice. The task does not have to be performed in a realistic context nor be integrated with other tasks during this phase. Ideally, the student would continue to practice a task until reaching the required standard of performance.

Run Phase

It is during the run phase of training that the student learns to perform the task in a realistic context and to integrate the task with other tasks that are performed in the same context. During the run phase, the soldier practices the integrated performance of these tasks in a realistic context that closely parallels the context in which the tasks will eventually be performed on the job.

ANALYSIS OF 19K BNCOC IN TERMS OF THE CRAWL-WALK-RUN APPROACH

An analysis was performed to determine the extent to which the instructional activities of 19K BNCOC conformed to the crawl-walk-run approach to training.

Analytic Procedure

Lesson plans and STX/FTX annexes were examined to determine whether the existing training activities qualified as crawl, walk, or run events. Using the criteria described above, it was evident that crawl and walk events were included in the lesson plans for classroom training while run events appeared primarily in the STX/FTX annexes. Two project staff members independently judged whether or not each of the three phases was satisfactorily represented in these documents. Lesson plans for nine of the tasks were not available; thus, crawl and walk activities could not be evaluated for these tasks. In addition, there were 22 tasks not included in the STX/FTX annexes; consequently the run phase could not be

evaluated for these tasks. After rating all tasks, the staff members compared their results and resolved differences in judgments to their mutual satisfaction.

Findings

The results of the analysis are presented in Table 1. The table lists each of the tasks trained in 19K BNCOC. Phases were rated as satisfactorily represented (S), unsatisfactorily represented (U), or part S/part U (?). The latter designation indicated that some parts of the task were trained satisfactorily and some not.

Crawl Phase. The judges found the crawl phase of training difficult to assess. Basic research issues concerning this phase of training (e.g., what knowledges are essential for task performance, and what is the appropriate mode of knowledge instruction) are unresolved. However, the lesson plans for each task appeared to provide reasonable introductions. Therefore, the analysis failed to identify any training deficiencies in descriptions of crawl phase activities.

Walk Phase. The walk phase activities for five tasks were judged to be inadequate since the lesson plans do not provide for actual practice of the tasks. Soldiers are only required to answer questions about the performance of three of the tasks ("Analyze Terrain Using the Five Military Aspects of Terrain," "Direct Consolidation and Reorganization on the Objective," and "Prepare for an NBC Attack,") and for part of a fourth task (the "Remove" portion of "Install/Remove a Hasty Protective Minefield"). Soldiers are only required to locate minefield positions on a map for the install portion of the task "Install/Remove a Hasty Protective Minefield." Although these activities were judged to be inadequate as walk phase activities, their use is understandable given the difficulties involved in practicing these tasks in the classroom. The task "Initiate Unmasking Procedures" was judged to be inadequate because there are no clear indications in the lesson plans that soldiers are to practice performing the task.

Run Phase. Eleven tasks were judged to be inadequate at the run phase as a result of unrealistic initiating cues or performance conditions. For example, a series of map reading tasks were trained prior to land navigation training. The stated purpose of these exercises was to allow the student to practice map reading skills in a field environment. However, the tasks were not cued by events in the tactical scenario. Instead, the students performed the tasks because they were told to do so by the instructor.

The run phase criteria were difficult to apply when judging the adequacy of two tasks--"Install and Remove a Caliber .50 M2 HB Machinegun" and "Supervise Maintenance on Individual and TO7E Equipment." Both tasks are cued by the instructor during the STX. Consequently, their adequacy for the run phase of training must be judged on the likelihood that commands to perform these tasks would be given during the

Table 1

Training Phases of Tasks Trained in 19K BNCOC

Task	Training Stages[a] Crawl	Walk	Run	Notes
Analyze Terrain Using the Five Military Aspects of Terrain	S	U	U	
Boresight a Caliber .50 M2 HB Machinegun	S	S	NS	
Boresight and System Calibrate an M1 Tank	S	S	NS	
Call For/Adjust Indirect Fire	NL	NL	NL	
Conduct Performance Counseling with a Subordinate	S	S	NS	
Conduct Training	NL	NL	NL	
Conduct Troop Leading Procedures for an Operation	NL	NL	NS	
Construct a Field Expedient Antenna	S	S	U	
Determine Azimuths Using a Protractor and Compute Back Azimuths	S	S	NS	
Determine Directions Using Field Expedient Method	S	S	U	
Determine a Location on the Ground by Terrain Association	S	S	U	
Determine a Magnetic Azimuth Using a Compass	S	S	U	
Direct Consolidation and Reorganization on the Objective	S	U	S	
Direct Machinegun Engagements	S	S	S	
Direct Main Gun Engagements	S	S	S	
Encode and Decode Messages Using a KTC 600 Tactical Code	S	S	?	Run is unsatisfactory for "encode" portion (STX A); satisfactory for "decode" portion (STX B).
Engage Targets With Caliber .50 M2 HB Machinegun	S	S	NS	
Engage Targets with the M240 Coax MG from the Commander's Weapon Station	S	S	S	
Engage Targets with the Main Gun from the Commander's Weapon Station	S	S	S	

(table continues)

Task	Training Stages[a] Crawl	Walk	Run	Notes
Establish, Enter, and Leave a Radio Net	S	S	S	
Estimate Range	S	S	U	
Evaluate the Conduct of Training	NL	NL	NS	
Fire an M250 Grenade Launcher	S	S	NS	
Identify Adjoining Map Sheets	S	S	NS	
Identify Terrain Features on a Map	S	S	NS	
Implement Mission Oriented Protective Posture (MOPP)	S	S	S	
Initiate Unmasking Procedures	S	U	S	
Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy	S	S	NS	
Install Hot Loop Wire Communications	S	S	S	
Install/Remove a Caliber .50 M2 HB Machinegun	S	S	U	"Run" may not apply.
Install/Remove a Hasty Protective Minefield	S	U	S	
Issue a Fire Command	NL	NL	NS	
Issue a Platoon Fragmentary Order	NL	NL	NS	
Locate an Unknown Point on a Map or on the Ground by Intersection	S	S	NS	
Locate an Unknown Point on a Map or on the Ground by Resection	S	S	NS	
Navigate from One Point on the Ground to Another Point	S	S	?	
Orient a Map Using a Compass	S	S	U	
Orient a Map to the Ground by Map/Terrain Association	S	S	U	
Perform TC's After Firing Checks	S	S	U	
Perform TC's Preventative Maintenance Prepare-to-Fire Checks and Services	S	S	S	
Prepare Commander's Weapon Station (CWS) for Operation	S	S	S	

(table continues)

Task	Training Stages[a] Crawl	Walk	Run	Notes
Prepare for an NBC Attack	S	U	S	
Prepare and Issue an Oral Operation Order (OPORD)	S	S	S	
Prepare and Submit NBC-1 Reports	S	S	?	Instructor cues task in STX B; should be self-initiated as in STX C.
Prepare and Submit NBC-4 Reports	S	S	S	
Prepare to Conduct Training	NL	NL	NS	
Provide Input Concerning the Status of Training	NL	NL	NS	
Read and Report Radiation Dosages	S	S	S	
Recognize Electronic Countermeasures (ECM) and Implement ECCM (ECCM)	S	?	S	
Secure Commander's Weapon Station	S	S	S	
Select Firing Positions	S	S	S	
Set Headspace and Timing on a Caliber .50 M2 HB Machinegun	S	S	S	
Supervise Maintenance on Individual and TOE Equipment	S	S	U	"Run" may not apply to task.
Use an AN/PDR-27 Radiac Set	S	S	S	
Use an Automated Communications-Electronics Operations Instructions (CEOI)	S	S	S	
Use an IM-174 Series Radiacmeter	S	S	S	
Use the KTC 1400 Numerical Cipher/Authentication System	S	S	?	"Run" is unsatisfactory in land nav. portion of STX B but satisfactory in establishing net (all three STXs).
Use the M256 Chemical Detector Kit	S	S	S	
Zero a Caliber .50 M2 HB Machinegun	S	S	NS	

[a]Legend is as follows:
S = Present in course and satisfactory
U = Present in course but not satisfactory
? = Partly satisfactory/partly unsatisfactory
NL = LP not available
NS = Not in STX/FTX

type of combat mission represented by an STX. Since the machinegun would normally be removed and installed only for maintenance, it was judged unlikely that the gun would be installed and removed in response to a command during a combat mission. Similarly, it was judged unlikely that maintenance of other individual and TO&E equipment would be performed in response to a command during a combat mission. Thus, it may be more appropriate to conduct the run phase of training for these tasks outside of an STX scenario.

ANALYSIS OF STX/FTX EVENTS

Situational Training Exercise

The 19K BNCOC Situational Training Exercise (STX) is scheduled to last five days and is the penultimate event in the course. The STX is designed to allow students to practice tasks in a realistic combat setting after having received classroom instruction on these tasks. The 19K BNCOC STX is actually a complex of three exercises corresponding to three ARTEP missions--(a) STX A--Conduct a Tactical Road March and Occupy an Assembly Area, (b) STX B--Conduct a Movement to Contact and Hasty Attack, and (c) STX C--Conduct Defensive Operations.

According to the STX annexes, students are organized into tank crews (except for drivers who are to be provided for M1 tanks). Students are rotated through the different crew positions so that each student receives a chance to serve as the tank commander. Although the students function as a crew and perform the collective tasks as prescribed in the ARTEP missions, only the student acting as the tank commander is scored on the individual tasks embedded within the collective tasks. The STX annexes provide test standards for 33 individual tasks. The introduction to each STX annex stresses the fact that students are supposed to repeat the performance of any task that is not performed to the required standards, and that they should continue practicing the tasks until performance is acceptable. Thus, each STX event is, in reality, both a training and testing event.

The training/testing experiences described in the STX annexes are summarized in Table 2 for each of the 33 tasks over all three STXs. It is clear from the table that there is considerable overlap in training/testing experiences among the four student tank commanders in a tank. All students are allowed some practice on 20 of the 33 tasks. Overlap presents a problem, however, due to the fact that students are trained/tested as crews. For example, students tested later in the rotation can learn from the experiences of students tested earlier. In addition, examination of the event sequences in the STX annex indicates that the individual task training/testing events often occur in the same order across students. That is especially true in STX B wherein the same four threat targets for the direct-engagement task appear in the same order

for each student in the tank. These "surprise" targets are thus highly predictable by the time the last student cycles through the engagements.

Despite the considerable overlap among students, Table 2 also indicates that the four students assigned to a tank have somewhat different training/ testing experiences during the STXs. The table shows that several types of discrepancies occur. First, tasks are unevenly distributed across the four student tank commanders. TC #1 performs nearly all of the tasks (32), whereas TC #4 performs fewer than two-thirds of the tasks (20). TC #2 and TC #3 fall in between by performing 23 tasks each. The second discrepancy is that students do not receive the same number of opportunities to perform the task. Of the 20 tasks that are common to all students, there are 11 cases in which individuals differ in terms of the number of repetitions they receive. The third discrepancy is that some students perform just part of a task while others perform the entire task. For instance, TC #1 is provided an opportunity to practice both the encoding and decoding portions of the task "Encode and Decode Messages Using the KTC 600D Tactical Operations Code" (although each portion is performed at a different time during the STX), while the other students receive practice on only the encoding portion of the task. Similar differences can be noted for two other tasks: "Implement a Mission-Oriented Protective Posture" and "Install and Remove a Caliber .50 M2 HB Machinegun."

Field Training Exercise

The 19K BNCOC Field Training Exercise (FTX) is a three-day event that integrates the previous STXs into one exercise. The FTX resembles the previous STXs in that student TCs are tested on individual tasks that are embedded in collective tasks. A unique feature of the 19K BNCOC FTX is that it serves as an end-of-course test. Students failing any test objective are retrained and retested. However, students are allowed a maximum of only two test trials. In contrast to the previous STXs, then, FTX events primarily serve testing rather than training purposes.

Table 3 presents the results of an analysis of the FTX annex similar to the one presented for the STX annexes. The table indicates that there is much less overlap in FTX experiences than in STX experiences. This is because each student performs a smaller fraction of the total number of tasks: Of the 36 tasks tested in the FTX, each TC performs fewer than half that number. Again, TC #1 performs the greatest number of tasks (16), followed by TC #4 (15), TC #3 (14), and then TC #2 (12). Consequently, the FTX is not a comprehensive end-of-course test.

Discrepancies Between the STX and FTX

The FTX is designed as a test of what is learned in the STX. Thus, the tasks trained and tested in the STX should be tested in the FTX and tasks that are tested in the FTX should be trained and tested in the STX. Examination of the STX and FTX requirements indicate that they, in fact,

Table 2

Tasks in STX and Frequency of Performance by Individual Tank Commanders

Tasks	Tank Commander #1	#2	#3	#4
Analyze Terrain Using the Five Military Aspects of Terrain	1	1	1	1
Construct a Field Expedient Antenna	0	1	0	0
Determine a Location on the Ground by Terrain Association	1	1	1	1
Determine a Magnetic Azimuth Using a Compass	1	1	1	1
Direct Consolidation and Reorganization on the Objective	1	2	2	2
Direct M240 Coax Machinegun Engagements on an M1 Tank	5	5	4	5
Direct Main Gun Engagements on an M1 Tank	9	9	9	10
Encode and Decode Messages Using a KTC 600 Tactical Code	2[a]	1[b]	1[b]	1[b]
Engage Targets with the M240 Coax MG from the Commander's Weapon Station (CWS) of an M1 Tank	1	1	1	1
Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) of an M1 Tank	1	1	1	1
Establish, Enter, and Leave a Radio Net	3[c]	3[c]	3[c]	2[c]
Implement Mission Oriented Protective Posture (MOPP)	3[d]	0	2e	0
Initiate Unmasking Procedures	2	1	1	1
Install and Remove a Caliber .50 M2 HB Machinegun	3[f]	1[g]	0	0
Install and Remove a Hasty Protective Minefield	1[h]	0	1[h]	0
Install Hot Loop Wire Communications	1	0	1	0
Navigate from a Point on the Ground to Another Point	2	3	3	3
Orient a Map Using a Compass	1	1	1	1
Orient a Map to the Ground by Map/Terrain Association	1	1	1	1

(table continues)

Tasks	Tank Commander #1	#2	#3	#4
Prepare the Commander's Weapon Station (CWS) of an M1 Tank for Operation	4	3	3	2
Prepare and Issue an Oral Operation Order	4	3	3	2
Prepare and Submit an NBC-1 Report	1	0	0	0
Prepare for an NBC Attack	1	0	0	0
Read and Report Radiation Dosages	1	0	0	0
Recognize Electronic Countermeasures (ECM) and Implement ECCM (ECCM)	1	1	1	1
Secure Commander's Weapon Station (CWS) of an M1 Tank	1	1	0	0
Select Firing Positions	3	3	3	3
Supervise Maintenance on Individual and TOE Equipment	2	0	0	0
Use an AN PDR-27 Radiac Set	1	0	0	0
Use an Automated Communications-Electronics Operations Instructions (CEOI)	3	3	3	2
Use an IM-174 Series Radiacmeter	1	0	0	0
Use the KTC 1400 Numerical Cipher/Authentication System	3	2	2	2
Use the M256 Chemical Detector Kit	2	0	0	0

[a]Two repetitions consist of one trial of "encode" and one trial of "decode" portions of the task.
[b]The "encode" portion of task is trained/tested.
[c]The "enter" and "leave" portions of the task are trained/tested.
[d]Three repetitions consist of one trial each of implementing Levels 2, 3, and 4 MOPP.
[e]Two repetitions consist of one trial each of implementing Levels 3 and 4 MOPP.
[f]Two repetitions consist of one trial of "install" and one trial of "remove" portions of the task.
[g]The "remove" portion of the task is trained/tested.
[h]The "install" portion of the task is trained/tested.

Table 3

Tasks in FTX and Frequency of Performance by Individual Tank Commanders

Tasks	Tank Commander #1	#2	#3	#4
Analyze Terrain Using the Five Military Aspects of Terrain	1[a]	0	0	0
Construct a Field Expedient Antenna	0	1	0	0
Determine a Location on the Ground by Terrain Association	0	0	1	0
Determine a Magnetic Azimuth Using a Compass	0	1	0	0
Determine Directions Using Field Expedient Methods	0	0	0	1
Direct Consolidation and Reorganization on the Objective	0	0	0	1
Direct M240 Coax Machinegun Engagements on an M1 Tank	1	2	2	1
Direct Main Gun Engagements on an M1 Tank	2	3	2	2
Encode and Decode Messages Using a KTC 600 Tactical Code	0	0	2[b]	0
Establish, Enter, and Leave a Radio Net	1[c]	1[c]	1[c]	2[c]
Estimate Range	0	0	0	1
Implement Mission Oriented Protective Posture (MOPP)	1[d]	0	0	0
Initiate Unmasking Procedures	0	1	0	0
Install and Remove a Caliber .50 M2 HB Machinegun	2[e]	0	0	0
Install and Remove a Hasty Protective Minefield	0	0	1[f]	0
Install Hot Loop Wire Communications	1	0	0	1
Navigate from a Point on the Ground to Another Point	1	1	1	1
Orient a Map Using a Compass	1	0	0	0
Orient a Map to the Ground by Map/Terrain Association	0	1	0	0
Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services	1	0	0	0

(table continues)

Tasks	Tank Commander #1	#2	#3	#4
Perform Tank Commander's Preventative Maintenance After-Firing Checks and Services	0	0	1	0
Prepare the Commander's Weapon Station (CWS) of an M1 Tank for Operation	1	0	0	0
Prepare and Issue an Oral Operation Order	2	1	1	1
Prepare and Submit an NBC-1 Report	1	0	0	0
Prepare and Submit an NBC-4 Report	0	0	0	1
Prepare for an NBC Attack	0	0	1	1
Read and Report Radiation Dosages	0	0	0	1
Recognize Electronic Countermeasures (ECM) and Implement ECCM (ECCM)	0	0	0	1
Secure Commander's Weapon Station (CWS) of an M1 Tank	1	0	0	0
Select Firing Positions	0	1	2	0
Supervise Maintenance on Individual and TOE Equipment	1	0	0	0
Use an AN/PDR-27 Radiac Set	0	0	0	1
Use an Automated Communications-Electronics Operations Instructions (CEOI)	1	1	1	2
Use an IM-174 Series Radiacmeter	0	0	1	0
Use the KTC 1400 Numerical Cipher/Authentication System	0	0	1	0
Use the M256 Chemical Detector Kit	0	1	0	0

[a]Two repetitions consist of one trial of "install" and one trial of "remove" portions of the task.
[b]Two repetitions consist of one trial of "encode" and one trial of "decode" portions of the task.
[c]The "enter" and "leave" portions of the task are tested.
[d]Implement Level 4 MOPP.
[e]Two repetitions consist of one trial of "install" and one trial of "remove" portions of the task.
[f]The "install" portion of the task is tested.

have 31 tasks in common. However, seven tasks are unique to either the STX or the FTX. These are listed in Table 4. Another source of discrepancy between STX and FTX is the fact that individual students perform only a subset of the tasks in the STX and FTX. Because students perform a larger proportion of the tasks in the STX than in the FTX, there are many cases where a particular student practices a task in the STX but is not tested on it in the FTX. A more serious problem is the discrepancy where a particular student is tested on a task that he has not had a chance to practice in the STX. Table 5 lists five instances of this sort of discrepancy and identifies the student TC not getting training.

Table 4

Tasks Unique to Either the STX or the FTX

Discrepancy	Task
Unique to STX	
	Engage Targets with the M240 Machinegun from the CWS
	Engage Targets with the Main Gun from the CWS
Unique to FTX	
	Determine Directions Using Field Expedient Methods
	Estimate Range
	Perform Tank Commander's Prepare-to-Fire Checks and Services
	Perform Tank Commander's After-Firing Checks and Services
	Prepare and Issue an NBC-4 Report

Table 5

FTX Tasks for Which Particular Students Are Not Trained in the STX

Tasks	TCs Not Trained
Install Hot Loop Wire Communications	#3
Prepare for NBC Attack	#3, #4
Read and Report Radiation Dosages	#4
Use an IM-174 Series Radiacmeter	#3
Use an M256 Chemical Detector Kit	#2

STX/FTX OBSERVATIONS

In addition to examining descriptions of STX/FTX events in the annexes, the implementation of these exercises was monitored for one training cycle during November and December 1985. The following observations were made.

Motor Pool and Road March

Equipment for the exercises was issued, inventoried, and signed for in a motor pool. No training was conducted in the motor pool except for an OPORD that was issued to designated tank commanders covering movement to the training site in the field. Although the road march was supposed to be tactical, it was actually conducted as an administrative road march.

Individual Tasks

While MILES equipment was being boresighted and maintenance was being conducted, students were required by instructors to perform individual tasks such as compass/map reading, CEOI, and NBC tasks. No checklists were used, but the evaluation criteria seemed to be consistently applied. Students who could not perform the tasks were given remedial training and were retested.

Tactical Exercises

The STX and FTX were conducted simultaneously for 19E and 19K crews with M1 and M60A3 elements alternating in the offense and defense. The OPORD was based on STX C as described in Annex C. Although terrain played a major role in determining maneuver and defensive positions, the exercises were primarily free play.

Evaluators followed the student tanks in Infantry Fighting Vehicles. There were one or two evaluators per student tank. Remediation was given in a debriefing following the exercise although one instance was observed in which an evaluator stopped the exercise when events got out of control. No scoresheets were observed to be in use during the exercise. However, the evaluators appeared to be extremely knowledgeable. They were familiar with the materials in the STX annexes and generally followed the checklist items in the debriefings. Situational events such as a friendly nuclear strike, air support, and chemical attack were integrated into the exercises and directed by the senior control NCO. No differences were observed between the STX and FTX.

Use of Time

Approximately half of the time during the STX/FTX appeared to be spent on administrative events in which no training was taking place. There were numerous equipment breakdowns and major maintenance delays. Radios sometimes did not work and had to be replaced. Some MILES equipment did not function reliably. Vehicles got stuck and had to be retrieved. Refueling had to take place whenever the fuel trucks arrived since the trucks were supporting exercises at several different training sites. Similarly, meals were provided whenever food arrived. Since mess support came from two different units, there were frequently two interruptions for each meal.

Two injuries, although minor, required evacuation and reporting. The range control was shut down until it was certain that there was compliance with all safety requirements.

It should be noted that these types of events are normal for field exercises and that none of the STX/FTX events were sacrificed because of them.

Platoon Orientation

The tactical exercises were oriented on platoon-level performance. Despite the fact that the students had not been trained to perform platoon tasks during their classroom instruction, the tanks were required to move in a platoon formation and to function as a platoon. Some platoon-level training was provided on a sand table prior to the exercises, but the training was primarily lecture. Students merely watched while platoon activities were explained. The students were

provided no opportunities to practice platoon operations prior to their participation in the field exercises.

SINGLE TANK TACTICAL EXERCISE

Requirements for a Revised STX/FTX

Single Tank Context. The current STX is conducted as a platoon exercise. This is due to the fact that tanks normally operate in combat as platoons rather than as individual weapon systems. While this requirement is consistent with combat realism, it is inconsistent with the program of instruction for the Basic Noncommissioned Officer Course. All of the tasks in the POI are individual tasks. Consequently, the students must be provided training on platoon operations prior to their participation in the STX. While some training is provided on a sand table, the students are not given an opportunity to practice platoon skills prior to participating in the STX. Thus, the focus of the exercise shifts from the individual task orientation provided in the classroom to the platoon orientation provided in the field. In terms of the crawl-walk-run approach to training, it would be more appropriate to conduct field training within the context of a single tank than to introduce a platoon orientation for the first time in the course.

Performance Observability. The scorers or observers on the current STX ride in a separate vehicle and observe performance from this vehicle. For adequate training, the scorers must be able to observe the performance of the student. This is necessary if the instructors are to provide accurate feedback based on the observed performance of the student rather than on inferences obtained from observing the tank.

Performance Consistency. During the present exercise, the mix of tasks that are performed vary from student to student. Ideally, each student should perform the same tasks.

Performance Scoring. The instructors in 19K BNCOC apparently observed student performance during the field exercises without recording their observations on a scoresheet. While the instructors appeared to be skilled observers, the time that elapsed between the start of an exercise and the after action review made it likely that many aspects of performance were overlooked during feedback. Moreover, observing performance without the use of a scoresheet increases opportunities for observer bias such as the halo effect.[1] It would be preferable for instructors to use a simple scoresheet as a record of the tasks that were adequately and inadequately performed. Not only would the scoresheet serve as an

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[1]The halo effect operates when judgments made prior to an exercise distort observations of performance during the exercise and/or subsequent memories of that performance.

outline for the after action review, it is essential if a field exercise is to serve as an end-of-course test.

Feedback Focus. Since the instructor cannot observe the performance of the student tank commander during the STX/FTX, feedback must be based on the actions of the tank rather than on the actions of the student. The instructor may therefore be unaware of many student performance deficiencies, particularly deficiencies that do not lead to immediate consequences that can be externally observed. Given this inability to directly observe student performance coupled with the platoon context provided by the exercise, there can be a tendency to focus feedback on the role of the tank within the platoon. Since feedback of this nature would be unrelated to the POI, it would be preferable to focus feedback on the performance of the student on the tasks that were trained in the course.

Exercise Stations

The Single Tank Tactical Exercise (STTX), which has been designed to meet the criteria for a revised STX/FTX described above, is contained in an ARI document (O'Brien, Campbell, & Drucker, 1986). The exercise requires an individual tank to move through an exercise course containing twelve different stations. Each tank participates as a single tank rather than as part of a platoon so that the tasks performed during the exercise are those that are trained during 19K BNCOC. Since the events at each station are identical from tank to tank, each student performs exactly the same set of tasks. To facilitate scoring and feedback, the scorer rides in the tank in the loader's position rather than in separate vehicle.

Station 1: Prepare for Operations. During this part of the Single Tank Tactical Exercise, the student performs 12 tasks involved in preparing the tank for combat operations. The student is first told to prepare his station for tactical operations by installing the caliber .50 machinegun, powering up the commander's weapon station, and performing prepare-to-fire preventative maintenance checks and services (PMCS). The student is to check (and adjust if necessary) the headspace and timing of the caliber .50 machinegun. While at this station, the student is also told to boresight and system calibrate the main gun, and to boresight and zero the .50 caliber machinegun. When these tasks are completed, the student will receive a briefing by the platoon leader. The student will then conduct troop leading procedures (e.g., alert his crew, make a reconnaissance, plan the mission) and issue an operations order. The student then will be provided a communications-electronics operation instruction (CEOI) and information about his unit and the radio net. He will enter a radio net, use a CEOI, and use the KTC-1400 authentication system.

Station 2: Engage OPFOR Tank from Commander's Weapon System. An OPFOR tank will be detectable from Station 2. Prior to reaching Station 2, however, the gunner will be told to respond "Cannot Identify"

when given a fire command by the student. The student will then engage the OPFOR tank with the main gun from the commander's weapon station. After engaging the tank, the student will be asked his location by the platoon leader. To provide this information, the student will determine his location on the ground by terrain association and will encode the message containing the location using KTC 600 Tactical Operations Code.

Station 3: OPFOR Indirect Fire. Prior to reaching Station 3, the student will be told that green smoke indicates possible chemical attack. A green smoke grenade will be released when the student reaches Station 3. The student is to implement mission-oriented protective posture (MOPP) and issue an NBC-1 report in response to this smoke. When asked by the platoon leader to find out what chemical agents, if any, are present, the student will use the M256 chemical detector kit. Upon reporting negative results to the platoon leader, the student will be directed to initiate unmasking.

Station 4: Report of Nuclear Burst. The student will be told that he has seen a large fireball and a mushroom-shaped cloud and is to take appropriate action. The student at this time should issue an NBC-1 report to the platoon leader, use the IM-174 radiac set, and submit an NBC-4 report after having coded the message using the KTC-600 Tactical Operations Code.

Station 5: OPFOR Machinegun Fire at Road Obstacle. Prior to reaching Station 5, the student will be told that he will be operating without a gunner and that his .50 caliber machinegun is inoperable. Upon reaching the station, the student will encounter an obstacle on the road which he is to engage from the commander's weapon station with the coaxial machinegun.

Station 6: OPFOR Tank Blocking Route of March. Prior to reaching Station 6, the student will be told that he will have artillery support available for a specified period of time. He will also be told that the FO/FIST will be monitoring the platoon net and will be given the FO/FIST call sign. Upon reaching Station 6, the student will see an OPFOR tank moving out of line of sight. The student must then call for and adjust indirect fire. The OPFOR tank will then reappear and must be engaged by the student using the main gun.

Station 7: Possible Chemical Contamination. A green smoke grenade will be set off in the vicinity of the tank. The student will implement a mission-oriented protective posture (MOPP) and issue an NBC-1 report. When issuing the report, the student will be told to identify the chemical agents using the M256 chemical detector kit. Upon reporting no evidence of contamination, the student will be directed to initiate unmasking procedures.

Station 8: OPFOR Electronic Counter-Measures. A prerecorded jamming signal loop tape will be played for approximately 10 minutes at a prearranged time. The student will be expected to recognize the signal as jamming and to respond to it appropriately.

Station 9: OPFOR Sniper at Road Obstacle. Prior to arriving at this station, the student will be told that the coaxial machinegun is inoperative. After being fired upon by a sniper, the student will be expected to engage the sniper with the .50 caliber machinegun. After submitting a report to the platoon leader, the student will be told by the instructor to determine the location of the tank by resection.

Station 10: OPFOR Tank Encounter During Road Obstacle Bypass. The student will encounter a roadblock that cannot be readily bypassed. Upon reporting this information to the platoon leader, the student will be told to linkup with the platoon. This will require a bypass of 700-1000 meters. The student will be expected to decode the platoon leader's message and to plot the linkup point on the map. Once on the bypass, a OPFOR tank will become visible. The student will be expected to engage this tank with the main gun.

Station 11: Defend Battle Position and Close Operations. Upon arriving at the linkup site, the instructor will tell the student to take up a defensive firing position. Once the position is occupied, the student will be expected to perform a number of tasks. For example, the student will be told by the evaluator to analyze the terrain using the five military aspects of terrain and to give a verbal report of the analysis. In addition, the student will be asked to read and report radiation doses, orient a map using a compass, locate a designated terrain feature on the map, call for and adjust indirect fire, and install a hasty minefield. When two OPFOR patrols appear, the student will be expected to direct a machinegun engagement. Prior to the arrival of an OPFOR tank, the student will be told that his laser rangefinder is inoperative. Upon detecting the OPFOR tank, the student will be expected to engage it with the main gun. The student will be told to remove the minefield, leave the radio net, secure the commander's weapon station, and remove the .50 caliber machinegun.

Station 12: Night Operations. Prior to closing operations, the student will move into a night defensive position and report OPFOR activity in the platoon sector.

DIFFERENCES BETWEEN STX/FTX AND SINGLE TANK TACTICAL EXERCISE

Individual Tank Versus Platoon Orientation

The STX and FTX in 19K BNCOC are both conducted as platoon exercises even though platoon tasks were not in the POI. Instruction on the performance of platoon tasks is given on a sand table prior to the start of the STX/FTX. This instruction is primarily lecture in format and provides the students no opportunity to practice platoon tasks prior to the STX/FTX. In contrast, the Single Tank Tactical Exercise is not conducted in a platoon context. While it is generally true that tanks do

not operate alone in combat, platoon tasks are trained in units and are not an integral part of the 19K BNCOC curriculum. Since the students in 19K BNCOC are not trained to perform platoon tasks, the STX should be conducted as a single tank exercise. The purpose of the exercise is to enable students to practice in a more realistic context the tasks that were trained in the classroom. While this does not provide the maximum amount of realism, it is consistent with the "crawl-walk-run" approach to training. Students in 19K BNCOC should not attempt to operate their tanks in a complex platoon context until they have demonstrated that they can control their tanks when operating alone.

Observability of Tank Commander Performance

During an STX/FTX, instructors follow the tanks in separate vehicles that are capable of traversing the terrain. While this approach allows the instructors to keep up with the tanks, it provides them little opportunity to observe the performance of the students. While the instructors can make inferences about the performance of each student tank commander by observing the performance of the tank, this is less adequate than actually observing the performance of the tank commander. For an instructor to provide adequate remedial training during a field exercise, the instructor should be able to observe the performance of the student. For this reason, the instructor will be physically located inside the tank during a Single Tank Tactical Exercise. Since there is little need for the loader during the STTX, the instructor would be located inside the turret in place of the loader. From this location, the instructor will be able to directly observe the actions of the student tank commander and will be able to listen to the student interact with the other crewmembers on the intercom.

Consistency in Performed Tasks

During the examination of the STX/FTX Annexes, it was apparent that many of the tasks included in the exercises were to be performed by some of the students, but not by all. In several cases, part of a task was to be performed by one student, while another part of the same task was to be performed by another student. Thus, if the STX/FTX was implemented as described, not all students would be provided an opportunity to perform each of the tasks comprising the exercise. On the other hand, the Single Tank Tactical Exercise is designed so that each student would perform all of the tasks in the exercise.

Remedial Training

During an STX/FTX, each student receives an after action review after having served as the tank commander. While this provides the student with feedback on the adequacy of his performance, it does not provide sufficient opportunity to receive remedial training on tasks that were not performed to the required standards. Following the Single Tank

Tactical Exercise, the instructor not only conducts an after action review, but also provides any remedial training that is required. The student is then provided an opportunity to repeat the entire exercise in order to practice all of the tasks that comprise the exercise.

Combined Missions

Three separate STXs are conducted during 19K BNCOC, each representing a different mission. These missions are then combined during the FTX enabling the students to practice the transition from one mission to another. In contrast, the Single Tank Tactical Exercise combines the separate missions into a single exercise eliminating the need for a separate FTX.

Performance Scoring

While the FTX is treated as an end-of-course test for 19K BNCOC, the performance of the students cannot be observed by the instructors and is not formally scored. The exercise therefore cannot adequately serve as the end-of-course test. In contrast, students who participate in the Single Tank Tactical Exercise can be observed, and score sheets are to used by the instructors. The intent is to treat the STTX as a training exercise in which performance is scored so that adequate feedback and remedial training can be given. Since performance records would be maintained during the STTX, the second implementation of the exercise can serve more adequately as an end-of-course test than can the present FTX.

SIMCAT VERSION OF THE SINGLE TANK TACTICAL EXERCISE

Reasons for the SIMCAT Version of the Single Tank Tactical Exercise

The Situational Training Exercises, the Field Training Exercise, and the Single Tank Tactical Exercise are all intended to serve as the run phase of training since they provide students an opportunity to perform tank commander tasks in a relatively realistic context. They also provide students an opportunity to integrate the performance of these tasks. However, even though the students perform these tasks in the classroom during the crawl and walk phases of training, they are often unable to perform many of the tasks to the required standard. This failure may be due in part to forgetting, but it is probably also due to lack of sufficient practice.

While the realism provided during field exercises is undoubtedly an important aspect of armor training, these exercises are too complex and too expensive to serve as contexts for the crawl and walk phases of training. If students cannot perform critical tank commander tasks prior to field training, then the training structure should be revised so that

the students can in fact perform these tasks before participating in a field exercise.

Since the lesson plans for all but four tasks were found to be adequate, this suggests that the transition from the walk to the run phase of training may be too extreme. What may be needed is an opportunity to provide additional practice in a context that shares some aspects of both the walk and run phases of training. This opportunity is provided by computer-based simulation techniques.

The Role of SIMCAT in Armor Training

SIMCAT is a low-cost, computer-based, battlefield simulation that was developed by ARI in order to conduct research on command and control training methodologies. On SIMCAT soldiers can control the movement of a simulated tank that is superimposed over a tactical map shown on a television monitor, fire the tank's main gun and the coaxial machinegun, and communicate on a simulated platoon net. While SIMCAT was not designed to be a high-fidelity representation of the battlefield, many of the tasks in 19K BNCOC can be performed on SIMCAT. By training 19K BNCOC students on SIMCAT prior to their participation in a field exercise, students may be able to practice many tank commander tasks on a low-cost battlefield simulation rather than on a relatively high-cost tank. And since battlefield situations can be created much quicker on SIMCAT than in the field, it will be easier for students to repeat the performance of a task until the required standard is reached.

Description of the SIMCAT Exercise

The SIMCAT version of the Single Tank Tactical Exercise is contained in the Research Product "Training Armor Skills: The Development of Tactical Leadership Exercises for SIMCAT" (O'Brien, 1986). Annex B to the Research Product contains four versions of the exercise differing primarily in the specific route over which the tank will move and the order in which the tasks will be performed. The four exercises can be conducted simultaneously so that four tank commanders can be trained at one time.

Each SIMCAT exercise contains eight events. Each event requires the student to perform several tank commander tasks. The tasks that are performed during each event are as follows:

- START POINT
  - Enter a radio net
  - Use an automated CEOI
  - Use KTC 1400 numerical cipher/authentication system

- ENGAGE A T72 TANK
  - Send a contact report
  - Send a radio message
  - Acquire and identify target
  - Issue a fire command
  - Send a SPOT report

- ENGAGE A BMP
  - Send a contact report
  - Send a radio message
  - Acquire and identify target
  - Issue a fire command
  - Send a SPOT report

- BYPASS A MINEFIELD
  - Check location of minefield
  - Select movement route around minefield using a map
  - Direct driver around minefield

- EVADE OPFOR INDIRECT FIRE
  - Direct hatches be closed
  - Direct driver to accelerate through indirect fire
  - Direct MOPP 4
  - Use M256 chemical detector kit
  - Prepare/submit NBC 1 report
  - Encode/decode messages using KTC 600 tactical operations code
  - Send a radio message
  - Direct MOPP 2
  - Direct hatches be opened

- CALL FOR AND ADJUST INDIRECT FIRE
  - Acquire and identify target
  - Request fire
  - Adjust fire

- ELECTRONIC COUNTERMEASURES
  - Identify technique
  - Attempt to transmit through jam
  - Change to alternate frequency
  - Submit interference report

- RELEASE POINT
  - Submit a SITREP
  - Send a radio message
  - Encode/decode messages using KTC 600 tactical operations code
  - Use an automated CEOI
  - Use KTC 1400 numerical cipher/authentication system
  - Leave a radio net

Implementation of the Single Tank Tactical Exercise on SIMCAT

A modified version of the Single Tank Tactical Exercise was conducted by ARI during its research on the use of battlefield simulation for training armor skills. While the analysis of the data are not complete, preliminary observations have shown that SIMCAT can provide a context for practicing some tasks that are normally performed in the field. Its potential importance in training may be due more to the context which it provides than to its fidelity. Tasks such as map reading, encoding and decoding messages, and reporting can be practiced without the need for battlefield simulation. But without the proper context, the performance of these tasks is somehat artificial. The context, whether on SIMCAT or on the battlefield, provides cues that result in greater realism. The student who practices a task in the classroom when simply told to do so by an instructor receives little experience in recognizing that the task should be performed. For example, a student can practice giving a contact report when told to do so by an instructor, but may fail to perform the task when actually detecting an opposing force. Similarly, the student may be unable to perform the task when there is a simultaneous need to engage the opposing force. While SIMCAT may lack many aspects of the actual battlefield, it can provide many cues that provide a more adequate context for the performance of tank commander tasks than can be provided in the classroom.

CONCLUSIONS

The Need for Direct Observation of Student Performance During Field Exercises

In 19K BNCOC, the classroom has been found to be an adequate context for training activities at the crawl stage and for most activities at the walk stage. To some extent, field exercises have been found to provide a suitable context for training at the run stage. However, some changes ought to be implemented to increase the benefits obtained from training in the field. Instructors must be located where they can actually observe the performance of the student and where they can provide immediate feedback. At the time of the analysis, the instructors rode in a separate vehicle and could not observe the students. By placing the instructor inside the tank, the instructor will not only be in a better position to observe the performance of the student, the instructor will be in a better position to provide immediate feedback and, if necessary, to stop the exercise. Placing the instructor in the loader's position would be especially desirable given that live ammunition is not used during a field exercise in 19K BNCOC.

The Need for Greater Consistency Between Classroom and Field Training

Training can also be improved by maintaining a closer correspondence between the tasks performed during each phase of training. The purpose of the run phase is not to train the student to perform new tasks. Its purpose is to train the student to perform previously learned tasks in a more realistic context and to integrate the performance of these tasks with that of other tasks performed in the same context. Conducting a field exercise in a platoon context during 19K BNCOC requires the student to perform platoon tasks for which they were not previously trained. To maintain correspondence between the different phases of training, platoon tasks would either have to be trained in the classroom or eliminated from field exercises. Since the purpose of 19K BNCOC is to train students to perform the individual tasks performed by tank commanders, it would be desirable to conduct field exercises within a single tank context than to train platoon tasks in the classroom. Student tank commanders can learn to perform platoon tasks during unit training using the crawl-walk-run approach just as they learn to perform individual tasks during institutional training following that approach. Introducing collective tasks during field exercises in 19K BNCOC is equivalent to conducting training at the crawl phase in a learning context best suited for the run phase.

A Four-Phased Approach to Training

Finally, the crawl-walk-run approach to training may prove to be inadequate as a model for designing training for 19K BNCOC. A four-phased model may be more appropriate than the current three-phased model. For example, a crawl-walk-jog-run model could replace the crawl-walk-run model. The critical point is not that a three-phased model is wrong, but that field training is too complex and too expensive for training soldiers initially to perform tasks under realistic conditions or to integrate the performance of different tasks. Once soldiers can perform individual tasks to the required standards (that is, once they have successfully completed the walk phase of training), they can practice performing these tasks under more lifelike conditions by practicing on simulators rather than in the field. It is not only easier to introduce many types of combat cues on a simulator than in the field (e.g., indirect fire, NBC conditions), it is easier for the student to repeatedly practice the performance of a task on the simulator. Within a given period of time, for example, a student will be able to give many more spot reports and NBC-1 reports on a simulator than in the field. If it is likely that the student is going to fail to meet the performance standards during the first several attempts to perform a task in the field, participation in a field exercise can be delayed until the student has demonstrated mastery of the task on a simulator. In short, the student should not try to run (participate in a field exercise) until being able to jog (perform tasks successfully on a simulator).

REFERENCES

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APPENDIX A
TASKS TRAINED IN 19K BNCOC

Tasks Contained in POI

Analyze Terrain Using the Five Military Aspects of Terrain
Boresight a Caliber .50 M2 HB Machinegun
Boresight and System Calibrate an M1 Tank
Call for/Adjust Indirect Fire
Conduct Performance Counseling with a Subordinate
Conduct Training
Conduct Troop Leading Procedures for an Operation
Determine Azimuths Using a Protractor nd Compute Back Azimuths
Determine a Location on the Ground by Terrain Association
Determine a Magnetic Azimuth Using a Compass
Direct Consolidation and Reorganization on the Objective
Direct Machinegun Engagements
Direct Main Gun Engagements
Encode and Decode Messages Using a KTC 600 Tactical Code
Engage Targets With Caliber .50 M2 HB Machinegun
Engage Targets with the M240 Coax MG from the Commander's Weapon Station
Engage Targets with the Main Gun from the Commander's Weapon Station
Establish, Enter, and Leave a Radio Net
Estimate Range
Evaluate the Conduct of Training
Fire an M250 Grenade Launcher
Identify Adjoining Map Sheets
Identify Terrain Features on a Map
Implement Mission Oriented Protective Posture (MOPP)
Initiate Unmasking Procedures
Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy
Install/Remove a Caliber .50 M2 HB Machinegun
Install/Remove a Hasty Protective Minefield
Issue a Platoon Fragmentary Order
Locate an Unknown Point on a Map or on the Ground by Intersection
Locate an Unknown Point on a Map or on the Ground by Resection
Navigate from One Point on the Ground to Another Point
Orient a Map Using a Compass
Orient a Map to the Ground by Map/Terrain Association
Perform TC's Preventative Maintenance Prepare-to-Fire Checks and Services
Prepare Commander's Weapon Station (CWS) for Operation
Prepare and Issue an Oral Operation Order (OPORD)
Prepare and Submit NBC-1 Reports
Prepare and Submit NBC-4 Reports
Prepare to Conduct Training
Provide Input Concerning the Status of Training
Read and Report Radiation Dosages
Recognize Electronic Countermeasures (ECM) and Implement ECCM (ECCM)
Secure Commander's Weapon Station
Select Firing Positions

Supervise Maintenance on Individual and TOE Equipment
Use an Automated Communications-Electronics Operations Instructions (CEOI)
Use an IM-174 Series Radiacmeter
Use the KTC 1400 Numerical Cipher/Authentication System
Use the M256 Chemical Detector Kit
Zero a Caliber .50 M2 HB Machinegun

Tasks Contained in 19K Schedule

Install Hot Loop Wire Communications (Also in STX/FTX Annex)
Issue a Fire Command
Set Headspace and Timing on a Caliber .50 M2 HB Machinegun

Tasks Contained in STX/FTX Annex

Construct a Field Expedient Antenna
Determine Directions Using Field Expedient Method
Install Hot Loop Wire Communications (Also in 19K Schedule)
Prepare for an NBC Attack
Perform TC's After Firing Checks/Services
Use an AN/PDR-27 Radiac Set

APPENDIX B
TASKS NOT TRAINED IN THE FIELD

Tasks Not Appropriate for Field Training/Testing

Conduct Performance Counseling with a Subordinate
Conduct Training
Evaluate the Conduct of Training
Prepare to Conduct Training
Provide Input Concerning the Status of Training

Basic Map Reading Skills and Knowledges

Determine Azimuths Using a Protractor and Compute Back Azimuths
Identify Adjoining Map Sheets
Identify Terrain Features on a Map
Locate an Unknown Point on a Map or on the Ground by Intersection
Locate an Unknown Point on a Map or on the Ground by Resection

Incompatible with MILES

Boresight a Caliber .50 M2 HB Machinegun
Call for/Adjust Indirect Fire
Engage Targets with Caliber .50 HB Machinegun from the Commander's Weapon Station (CWS)
Fire an M250 Smoke Grenade Launcher
Set Headspace and Timing on a Caliber .50 M2 HB Machinegun
Zero a Caliber .50 M2 HB Machinegun

Tasks Recently Added to 19K BNCOC

Conduct Troop Leading Procedures
Estimate Range
Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy
Issue a Fire Command
Issue a Platoon Fragmentary Order