Research Report 1404

Design of the Basic Noncommissioned Officer Course for M1 Tank Commanders (19K BNCOC)

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March 1985

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Research Report 1404	2. GOVT ACCESSION NO. AD-A170 834	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DESIGN OF THE BASIC NONCOMMISSIONED OFFICER COURSE FOR M1 TANK COMMANDERS (19K BNCOC)		5. TYPE OF REPORT & PERIOD COVERED Interim April - November 1984 6. PERFORMING ORG. REPORT NUMBER --
7. AUTHOR(s) John E. Morrison, Eugene H. Drucker, and Richard E. O'Brien		8. CONTRACT OR GRANT NUMBER(s) MDA903-83-C-0346
9. PERFORMING ORGANIZATION NAME AND ADDRESS Human Resources Research Organization 1100 South Washington Street Alexandria, VA 22314		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q263743A794 331 4101
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue Alexandria, VA 22314-5600		12. REPORT DATE March 1985 13. NUMBER OF PAGES 322
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) --		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE --

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

--

18. SUPPLEMENTARY NOTES

Contracting Officer's Representative, Donald M. Kristiansen.

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

Army Training	Tank	Job Analysis
Computer Aided Instruction	Leadership Training	
Training Devices	Technology Transfer	

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

Training requirements for the 19K30 duty position (M1 tank commander) were previously analyzed to identify tasks which should be trained in the Basic Noncommissioned Officer Course for M1 tank commanders (19K BNCOC). The present report describes the development of a course outline in which the tasks are clustered and sequenced for training. The report also includes a description of the activities that were performed as part of this developmental effort including (a) a review of existing task documentation and the

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Unclassified
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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development of additional task documentation, (b) the preparation of a description of typical 19K BNCOC entrants, (c) the development, administration, and results of a procedure for selecting tasks for training using a Delphi panel of training experts, and (d) the identification of the relationship between procedural and nonprocedural tasks performed by tank commanders.

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for the Department of the Army

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March 1985

Army Project Number
2Q263743A794

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FOREWORD

The ARI Fort Knox Field Unit has been involved for approximately 10 years in the development of innovative approaches to training for the armor community and the Army as a whole. During the past year, this effort has been given special emphasis through formation of the Training Technology Field Activity (TTFA), a partnership among ARI, Training and Doctrine Command, and the U.S. Army Armor Center and School. The purpose of the TTFA is to increase the effectiveness and efficiency of training through the application of appropriate new technologies.

Initial efforts of the Fort Knox TTFA are being concentrated on the institutional program for training M1 tank commanders. Before introducing new technologies into the training program, it is necessary to ensure that the appropriate groundwork in analysis, design, and development has been accomplished. A previous report presented the results of the analysis phase by providing a review and supplement of available job and task analyses for the M1 tank commander duty position. The present report builds on the analysis phase by presenting a general design for an M1 tank commander training program. It contains recommendations for tasks to be trained and approaches to training these tasks in an integrated fashion. Future reports will address the development of selected aspects of the technology-based training program and will recommend approaches for subsequent programs. The present report should be of interest to training developers and managers in the armor community and throughout the Army training system.

EDGAR M. JOHNSON
Technical Director

DESIGN OF THE BASIC NONCOMMISSIONED OFFICER COURSE
FOR M1 TANK COMMANDERS (19K BNCOC)

EXECUTIVE SUMMARY

Requirement:

The Army Research Institute (ARI), the Training and Doctrine Command (TRADOC), and the US Army Armor Center and School (USAARMC) have established a Training Technology Field Activity (TTFA) at Fort Knox to incorporate the products of developments in training technology into the Basic Noncommissioned Officer Course for M1 tank commanders (19K BNCOC). In the first phase of the project, the training requirements of the 19K30 duty position were analyzed to identify tasks which should be trained in 19K BNCOC. The present report presents the findings of the second, or design, phase of the project.

Procedure:

In order to convert the list of tasks identified for training in BNCOC into a course design, the following major activities were undertaken: (a) Task documentation for tasks already on the current Program of Instruction (POI) were reviewed and new documentation was generated for tasks not in the POI. (b) Using information from the ARI data base on 19K BNCOC students, the typical entrant was described and course design implications were drawn. (c) Task training priorities were established by having subject matter experts (SMEs) use a simplified method to rate the tasks in terms of their criticality and by then having a Delphi panel of training experts select tasks for training using the criticality ratings as well as their own knowledge of the tasks. (d) The relationship between the procedural tasks and the non-procedural tasks (decision making, problem solving, and interactive tasks) identified in the previous report was examined in order to incorporate the latter into the context of traditional procedural task training. (e) The results from the previously described activities were used to construct a proposed outline for 19K BNCOC. From the outline, the time required for a complete and a shortened version of 19K BNCOC was estimated.

Findings:

The major findings were as follows: (a) Review of task objectives as stated in the POI, the lesson plans, and the test administrator's guide showed a few discrepancies. Accordingly, some changes were suggested for the tasks currently in the POI. (b) The demographic data indicated that 19K BNCOC was receiving good quality soldiers with no need for remediation in basic skills. However, the performance data indicated varying levels of performance on the diagnostic test tasks, and course design changes were suggested. (c) Results from the task

rating process indicated that the simplified method for obtaining SME ratings of task criticality was both valid and reliable. The Delphi negotiation process also proved to be a useable method for task selection. (d) The crosswalk indicated that nearly all the nonprocedural tasks were related to a procedural task. Therefore, nonprocedural tasks can be trained within the context of conventional procedural task instruction. (e) The proposed course outline presented the procedural tasks in the clusters and sequence prescribed for training. The outline also indicated the relative criticality of procedural tasks and identified where a particular nonprocedural process could best be trained. The estimate of the instructional time required to complete the entire course was nine weeks. Eliminating lower priority tasks and some other training activities reduced this estimate to six weeks.

Utilization:

Results from the design phase of this project provide an outline of 19K BNCOC which will be used as a basis for development of training materials in the next and final phase of the project.

DESIGN OF THE BASIC NONCOMMISSIONED OFFICER COURSE
FOR THE M1 TANK COMMANDERS (19K BNCOC)

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DESIGN OF THE BASIC NONCOMMISSIONED OFFICER COURSE FOR M1 TANK COMMANDERS (19K BNCOC)

INTRODUCTION

Background

The Secretary of Defense has recently directed the Military Departments to increase their funding and management emphasis on research and development of training technology, and to explore the application and payoff of this technology. Among the specific actions recommended were activities such as the accelerated use of computer-based instructional methods via portable aids and/or embedded technology devices (e.g., arcade-like devices) to motivate and teach fundamental skills, and increased development and use of emerging technologies (voice recognition, interactive displays, personal job aids, etc.).

To facilitate an examination of the new technology, the Army established the Training Technology Agency (TTA). It is the mission of this agency to identify new training methods and technologies and to improve Army training by implementing and evaluating them. The Army also established Training Technology Field Activities (TTFA) to improve Army training through the application of training technology. The first TTFA was established at Fort Knox. Elements of the US Army Training and Doctrine Command (TRADOC), the US Army Research Institute for the Behavioral and Social Sciences (ARI), and the US Army Armor Center and School (USAARMC), working in concert, were designated as the managers of the Fort Knox TTFA.

Under contract with ARI, the Human Resources Research Organization (HumRRO) was requested to perform work for the TTFA. The TTFA elected to explore the application of the new technology by determining how it might be applied in a specific course, the 19K Basic Noncommissioned Officer Course (BNCOC). This is a course designed to train tank commanders for the M1 tank. Interest in the use of the new technology focused on both the BNCOC instructor as he trained BNCOC students and on the BNCOC student when he later became a tank commander and was charged with training his crew.

Previous Work

A first requirement was to confirm and update the training needs of the BNCOC student (MOS 19K30). Since the Army's initial analysis of the 19K duty position (M1 tank crewman) was conducted before any soldiers were actually assigned to M1 tanks, it was deemed necessary to examine the results of the initial analysis. Of particular concern was the identification of new critical tasks. In this regard, problem solving, decision making, and interactive tasks were of greatest interest. Also at the forefront were new non-critical tasks that the 19K30 might need

to perform if he were to employ the products of new technology in BNCOC or in units training his crew.

To determine the training needs of the BNCOC students, several activities were performed during the first phase of the project. These activities and their results are described in the First Interim Report, Analysis of Training Requirements for the Basic Noncommissioned Officer Course for M1 Tank Commanders (19K BNCOC) by Drucker, Hannaman, Melching, and O'Brien (1984). A major portion of the Phase I effort was to identify tasks which should be added to 19K BNCOC, those which should be modified, and those which should be deleted. A total of sixteen tasks that were not trained in 19K BNCOC were recommended for training. Eleven of these tasks were in the 19K task inventory. They were:

1. Install/Remove the Automatic Chemical Alarm System
2. Conduct a Partial Decontamination
3. Prepare a Sketch Range Card
4. Receive and Orient Newly Assigned Crewman
5. Prepare the Rater's Section of an Enlisted Evaluation Report (DA Form 2166-6)
6. Conduct Search in Accordance with the Uniform Code of Military Justice
7. Conduct a Map Reconnaissance
8. Conduct a Tactical Road March
9. Set Headspace and Timing on a Caliber .50 M2 HB Machinegun
10. Prepare Situation Report (SITREP)
11. Issue Fire Command

Five of the tasks recommended for 19K BNCOC were not in the present 19K task inventory. They were:

1. Conduct Target Acquisition
2. Maintain Position in Platoon Formation
3. Use Marginal Information on a Map
4. Direct Evasion of an Enemy Anti-Tank Guided Missile
5. Employ a Three-Man Crew on an M1 Tank

Three of the tasks recommended for 19K BNCOC were modifications of tasks currently taught in BNCOC. They were:

1. Enter or Leave a Radio Net
2. Direct Reorganization
3. Prepare and Issue Oral Operation Order

Three tasks were recommended for deletion. They were:

1. Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy
2. Use an AN/PDR-27 Radiac Set
3. Determine Directions Using Field Expedient Methods

In addition to these recommendations, a major portion of the effort conducted during the first phase of the project was devoted to identifying nonprocedural tasks that are performed by tank commanders, but which were not in the 19K task inventory. While many of these nonprocedural tasks were being trained during 19K BNCOC as steps or subtasks of other tasks, it was felt that the identification of these tasks was important so that proper task documentation could be prepared for them.

Three types of nonprocedural tasks were identified: decision making tasks, problem solving tasks, and interactive tasks. A total of 42 decision making tasks were identified. These tasks require the tank commander to select an action from among two or more alternatives. In addition, a total of 66 problem solving tasks were identified. These tasks require the tank commander to analyze the factors that are involved in making decisions. For example, one of the factors involved in deciding whether or not to fire at an enemy target is the need to keep the presence of the friendly force hidden from the enemy. This is a subjective factor on which there is likely to be disagreement among decision makers. Since subjective factors such as this one could have a major effect on combat decisions, and since decisions made in combat could affect the successful accomplishment of the mission, it was considered important to assure that tank commanders are capable of solving the types of problems that occur during combat. Consequently, it was judged important that the most critical decision making and problem solving tasks performed by tank commanders be formally trained during 19K BNCOC.

In addition to the decision making and problem solving tasks, 91 interactive tasks were identified. These are tasks whose performance require the tank commander to coordinate the actions of his tank with those of one or more other vehicles or tasks which require the tank commander to communicate, either verbally or nonverbally, to persons outside of his crew. Nonverbal tasks are tasks which involve coordination without the use of spoken or written words. Three types of verbal tasks were identified: orders received by tank commanders, information either received or submitted by tank commanders, and requests submitted by tank commanders.

The second part of the first phase of the project was devoted to identifying the training devices, aids, and materials that could be used by tank commanders in BNCOC when serving as students or in units when training their crews. Devices, aids, and materials that are already available or that will be available for use in training during the next three years were identified, and the clusters of tasks (e.g., target

acquisition, tank gunnery) for which each was most appropriate were determined.

Since the previous report, the research staff added nine more procedural tasks to the list of tasks recommended for training in 19K BNCOC. Included among these nine tasks were three first aid tasks that are currently classified as Skill Level One on the 19K task list. These tasks were included as potential BNCOC tasks because they are activities that could have a significant impact on tank crew survivability and because the tank commander would probably perform the activities in a combat situation. They were:

1. Put on a Tourniquet
2. Give First Aid for Burns
3. Splint a Fracture

The only maintenance task formally trained in the current 19K BNCOC is "Supervise Maintenance on Individual and TO&E Equipment." There are no tasks that relate to maintenance of the tank commander's station or to the supervision of crew level maintenance. To correct that omission, four tasks that related to before and after operations checks and services were added to the list. The first two tasks are modifications of Skill Level One tasks requiring armor crewmen to perform the checks and services. The tasks now provide for the tank commander to supervise these actions. The latter two tasks refer to the tank commander's portion of the checks and services that relate to the commander's weapon station. The tasks were:

1. Supervise Before Operations Checks and Services on an M1 Tank
2. Supervise After Operations Checks and Services on an M1 Tank
3. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS)
4. Perform After Operations Checks and Services on the Commander's Weapon Station (CWS)[1]

Two other miscellaneous tasks were added to the list of 19K BNCOC tasks. The first (indirect fire) task was added to the tactics cluster at the suggestion of ARI. This is a Skill Level One task that is currently part of a pre-course test in BNCOC. Performance on this task on the pre-course test is very poor. Furthermore, new technologies exist for training the task. For these reasons, formal instruction on this task is suggested. The second task was added because there is no

[1]Further analysis revealed that the tank commander has only a limited role in after operations checks and services. Therefore the task does not appear in the proposed course outline given in the last section. Nevertheless, this task was prioritized along with the other tasks.

provision for zeroing the coax machinegun in the system calibration of the M1. Because the gunner actually performs the task, the tank commander's role is more one of supervision. The full titles of these two tasks were:

1. Call for and Adjust Indirect Fire
2. Direct/Supervise the Zeroing of the Coax Machinegun on an M1 Tank

Focus of the Present Report

The present report is concerned with the design phase of the development of training for 19K BNCOC. The previous report dealt with the analysis phase, and a later report will deal with the development phase.

The following activities were performed, and are described in this report:

1. A learning analysis was performed of the 19K30 duty position. The results of the analysis served as the basis for the design of a 19K BNCOC training program. Since a learning analysis had already been performed for the 19K duty position, the analysis consisted of a review of the previous analysis and the performance of a new analysis for the 19 new or revised procedural tasks for which learning analyses had not previously been performed.

2. A description was prepared of the students that have been enrolled in 19K BNCOC. More specifically, biographical background data taken from questionnaires and records, and performance data taken from diagnostic tests were analyzed to identify the relevant skills, knowledges, and aptitudes of the students in 19K BNCOC.

3. Training priorities were established. At the present time, a total of 55 tasks are trained in 19K BNCOC whose duration is only six weeks. Since a total of 78 procedural tasks were recommended for 19K BNCOC based on the analysis performed in Phase I of this effort, and since non-procedural tasks and tasks involving the operation of training devices were to be added, it was obvious that six weeks would be insufficient to allow all of the recommended tasks to be trained. Furthermore, the actual amount of time that would be available for the course was unknown. As a consequence, it was necessary to develop a set of training priorities that would enable the course to be shortened to the amount of time that would actually be made available. Before establishing these training priorities, the nonprocedural tasks were first consolidated to reduce redundancy. In addition, their titles were revised to make them more consistent with traditional task titles.

4. In order to incorporate the nonprocedural tasks in the design of 19K BNCOC, crosswalks were prepared showing the procedural tasks during which each decision making, problem solving, and interactive task

was likely to occur. The results of these crosswalks were used to identify the one procedural task most closely linked to each nonprocedural task. This information was then used to identify the task context in which each non-procedural task could best be trained during 19K BNCOC.

5. A proposed outline for a new 19K BNCOC was prepared. The course outline listed each of the recommended blocks of instruction and included both the procedural tasks and nonprocedural tasks that would be trained within each block. In addition, a leadership course and a land navigation course were developed to provide students an opportunity to perform leadership and land navigation tasks in a field environment prior to participating in tank or platoon field exercises. Also, a competitive "country fair" was suggested as a means of motivating the students. Finally, two types of field exercises were recommended: (a) a single tank tactical exercise that would enable each student to practice tank commander tasks (including problem solving and decision making tasks) in a field environment without interference caused by the need to coordinate with other tanks within the platoon, and (b) an intra-platoon tactical exercise that would enable these students to practice tank commander tasks (including interactive tasks) in a tactical environment that would include the full platoon. Since the recommended 19K BNCOC was estimated to require nine weeks of instruction, a six-week version of the course was also prepared. The shortened version contained only "must train" tasks, mandated subjects, and the two field exercises. In addition to these changes in course content, the recommendation was made that company commanders be required to certify that potential students from their companies be able to perform 27 prerequisite tasks to the standards in the Soldier's Manual. The recommendation was also made that a sample of tasks selected for certification be included in a battery of diagnostic tests to be administered to the students prior to the start of the course. These tests were intended to confirm the certifications and, in some cases, to assure the safety of the students during training.

LEARNING ANALYSIS

The design of the 19K BNCOC training program was based upon a learning analysis of the training requirements of the 19K30 duty position. The tasks recommended for training consist of "old" tasks (i.e., tasks already in the current POI) and "new" tasks (i.e., tasks not in the POI). Accordingly, the analysis of 19K BNCOC was accomplished in two parts. The first part consisted of a review of existing training documentation for the old tasks. The second part was comprised of a "ground-up" learning analysis of all the new procedural tasks recommended for training. The two parts of the learning analysis are described in detail below.

Review of Existing Documentation for Old Tasks

Locating the original learning analyses for the tasks in the current POI proved to be difficult. The main problem was that the original training development for most BNCOC tasks was not performed at the Armor School. For instance, the original learning analyses for land navigation tasks--a comparatively large block of instruction in BNCOC--were performed at the Infantry School. To obtain the original documents of such tasks would require considerable time and effort. Given the time constraints of the current project, these learning analyses were unobtainable.

Although the original documents were not always available, there were several sources for one of the important products of the learning analysis, i.e., the training objective. Training objectives are statements of the final behaviors that soldiers are supposed to develop as a result of a particular training program. Objectives consist of three basic components: a description of the behavior(s) being trained, the conditions under which the behavior is to be observed, and the standard(s) of performance that a trainee must meet. Thus, these objectives provided the basic performance parameters for the design of testing as well as for the design of training for 19K BNCOC.

Statements of the training objectives for existing BNCOC tasks can be found in two documents: the Program of Instruction (POI) for 19K BNCOC and the Lesson Plan for each class. Because the POI is a description of the training that goes on in the classes of 19K BNCOC, the training objectives in the POI and in the Lesson Plans should be identical. The testing objectives for 19K BNCOC were documented in the Test Administrator's Guide for the end-of-course tests in 19K BNCOC. Testing and training objectives may not always exactly correspond because of testing situation constraints. Nevertheless, the test objective as stated in the Test Administrator's Guide should closely correspond to the training objectives as given in the POI and Lesson Plans. A casual inspection of the documents revealed some discrepancies across these three documents. In the present analysis, these documents were systematically examined for inconsistencies in training/testing objectives. The findings from this analysis were then used to make recommendations about changes to current training/testing objectives.

Method

Documents. The documents used in the analysis included the three mentioned above: the POI for 19K BNCOC (dated June 1983), the Lesson Plan (LP) for each class, and the Test Administrator's Guide (TAG) for each task tested at the end of BNCOC. In addition, Soldier's Manuals (SMs) were also used to resolve discrepancies between training/testing objectives. SM references for armor-related tasks included the Soldier's Manuals for the M1 Abrams Armor Crewman, Skill Levels 1 and 2 (FM 17-19K1/2, dated September 1983), Skill Level 3 (FM 17-19K3, dated September 1983), and Skill Levels 2, 3, and 4 (draft, dated December 1983). Nonarmor-related tasks were referenced in the Soldier's Manuals

of Common Tasks, Skill Level 1 (FM 21-2, dated October 1983) and Skill Levels 2, 3, and 4 (FM 21-3, dated May 1981).

Procedure. The basis of the analysis was the POI. That is, task objectives were examined in the order given in the current POI, and any substantial differences between objectives in the POI and those in the other three documents (LPs, TAGs, and SMs) were noted. Substantial differences refer to meaningful differences as opposed to differences in word order or grammar. Wherever possible, these differences were noted by verbatim excerpts from the statement of the objective.

General Findings

The detailed results of the analysis are presented in Appendix A. Given the fact that training programs such as BNCOC are in a constant state of flux, the analysis showed that, for the most part, there was good agreement between the training/testing documents. Nevertheless, there were specific instances where the documents did not agree. These instances are described below.

The testing objectives as stated in the TAG often did not match the training objective as given in the POI or LP. Most of these differences can be explained in terms of the limitations of the testing situation. That is, it was often too time-consuming, too costly, or too dangerous to test the task as it is performed on the job. The most frequent example of this was the use of a paper-and-pencil test in place of a performance test. Paper-and-pencil tests can provide an inexpensive method for measuring some of the important knowledges and skills which are required to perform a task. The only criticism of the use of paper-and-pencil tests in the present context was that testing objectives were often not specific enough. For example, a testing objective stated that the trainee will "answer 6 out of 8 questions correctly within 10 minutes." More information should have been given about both the format (e.g., short answer, fill in blanks, essay, multiple choice) and the content of the questions. Without such specificity, the adequacy of the testing objective is difficult to determine.

There were several examples of common tasks where the Soldier's Manual objective did not match either the training objectives as stated in the POI and LP or the testing objective as given in the TAG. An example was the task entitled "Navigate from One Point on the Ground to Another Point." The training and testing objectives stated that the trainee was to navigate a vehicle between two points no more than 5,000 meters apart. In contrast, the Soldier's Manual made no mention of a vehicle, and the two points were no more than 3,000 meters apart. The apparent reason for this discrepancy was that the common task was originally developed for unmounted infantry. BNCOC training developers modified the task to apply to land navigation in armor vehicles. Such changes to common tasks were judged appropriate.

Time limits were sometimes given as a testing standard but not as a training standard. In most cases, the testing time standard reflected constraints of the testing situation rather than an inherent time constraint in the task. Thus, these differences were judged as acceptable.

Specific Findings

The following specific findings are referenced to the tasks as numbered in Appendix A so that the reader can more easily refer to the appendix for more detail.

2-5. Tasks in the BTMS Cluster. Training and testing practices on these tasks were recently changed to incorporate the Battalion Training Management System (BTMS). The reference for training and testing for these tasks was the Trainer's Workshop (BTMS-AC-80-2). The current POI training objectives for both the task entitled "Prepare to Conduct Training" and the task entitled "Conduct Training" as stated in the POI did not correspond to the conditions, actions, or standards for the two tasks as given in the BTMS training objectives. The third task, "Evaluate the Conduct of Training," is not listed in BTMS-AC-80-2. Furthermore, the manual lists many other tasks (16 in all) that are not in the POI. The POI should be changed to provide a more accurate description of the training activities in the Trainer's Workshop.

7. Identify Terrain Features (Natural and Man-Made) on a Map. The POI gave no time standard to this task whereas the LP and TAG gave time standards of 20 and 22 minutes respectively. As discussed above, the testing standard was probably due more to the constraints of the testing situation rather than of the task per se. The 22-minute standard was probably derived by allowing two minutes for each of the 11 questions on the test. The SM showed no time standard at all for the task. Therefore, the LP time standard should be eliminated.

8. Determine Magnetic Azimuth Using a Compass. "Daylight" was given as a condition of the task as stated in the TAG and the SM, but not in the POI or LP. This condition seems reasonable and should be added to the latter two documents.

9. Determine Azimuth Using a Protractor and Compute a Back Azimuth. According to the POI and LP, both the grid and back azimuth must be computed to the exact degree. However, the test TAG standard was to the exact degree for the back azimuth but within one degree for the grid azimuth. These latter standards were in agreement with the objective as stated in the SM. The POI and LP should be changed accordingly. Also it should be clarified in all three documents that the three minute time standard applies to each of the two computations or to both together.

28. Use KTC 1400D Numerical Code to Authenticate Transmissions and Encrypt/Decrypt Messages and Grid Zone Letters. The task title as given in the LP, TAG, and SM was "Use KTC 1400D Numerical Cipher/Authentication System." The POI title should be changed accordingly.

42. Select Firing Position. The objectives as given in the LP, TAG, and SM clearly indicated that there were two parts to the task: selecting firing positions in defensive situations and in offensive situations. Furthermore, the five-minute time standard applied only to the latter. These two aspects of the objective were less clear in the POI. The POI should be changed to clear up the ambiguity.

43-47. Tasks in the Commander's Weapon Station Cluster. The time standard for completing all five tasks in this cluster was 30 minutes according to the POI compared to 70 minutes according to the LP. The SM provides no time standards for any of these tasks. These two standards should somehow be reconciled.

48. Boresight and System Calibrate the Main Gun on an M1 Tank. The POI and LP objectives stated that the trainee will learn how to boresight both with and without the Pye-Watson muzzle boresighting device. However, the testing objective provided only for boresighting with the device. Either the testing objective should include boresighting without the device, or this part of the training objective should be dropped from the POI and LP objectives. Also, the training objective explicitly stated that there was no time limit for the accuracy screening test, whereas the testing objective puts a 20-minute time limit on this part of the task. These differences in time standards should be reconciled.

53-56. Tasks in the Engage Targets from the Commander's Weapon Station Cluster. The time standards for all four tasks (main gun, coax, caliber .50, and grenade launcher) as stated in all four documents (POI, LP, TAG, SM) were almost in complete disagreement. A common set of time standards should be derived for all the documents.

Learning Analyses of New Tasks

Learning analyses were developed for all the new tasks in the proposed 19K BNCOC inventory. These analyses will provide the basis for training development in the next phase of the project.

Method

The learning analyses of the new tasks followed the format used by the Directorate of Training and Doctrine (DOTD) at the Armor School to analyze gunnery tasks. These documents were divided into two parts: Task Documentation and Task Summary. These two components are described below.

The Task Documentation provided a summary of the tasks with respect to various references and administrative details necessary to training development. Task Documentation consisted of the following 11 elements:

1. Date Developed,
2. MOS with Skill Level,
3. Task Category,
4. Task Number,
5. Task Statement,
6. Equipment Required,

7. Reference Used,
8. Unique Working Conditions,
9. Publications Where Task Appears,
10. Personnel Required, and
11. Initiating Cues.

The Task Summary consisted of detailed statements of task conditions, standards, and performance measures. The last component of the Task Summary--Performance Measures--listed not only the measurable behaviors required to perform the task, but also the skills and knowledges required to perform each behavior as well as any references or notes which apply to that behavior.

Results

The detailed task documentation developed for the new tasks is presented in Appendix B. Learning analyses were developed for the following tasks:

1. Enter or Leave a Radio Net
2. Install/Remove the Automatic Chemical Alarm System
3. Conduct a Partial Decontamination
4. Use Marginal Information on a Map
5. Receive/Orient Newly Assigned Personnel
6. Prepare Rater's Section for Enlisted Evaluation Report (DA Form 2166-6)
7. Conduct Search in Accordance with the Uniform Code of Military Justice
8. Prepare and Issue an Oral Operation Order
9. Direct Reorganization on the Objective
10. Conduct a Map Reconnaissance
11. Conduct a Tactical Road March
12. Prepare a Situation Report (SITREP)
13. Conduct Target Acquisition
14. Maintain Position in Platoon Formation
15. Direct Evasion of an Enemy Anti-Tank Guided Missile
16. Employ a Three-Man Crew
17. Call for and Adjust Indirect Fire
18. Supervise Before Operations Checks and Services on an M1 Tank

19. Supervise After Operations Checks and Services on an M1 Tank

20. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS)

21. Direct/Supervise the Zeroing of the Coax Machinegun on an M1 Tank

22. Prepare a Sketch Range Card

23. Set Headspace and Timing on a Caliber .50 M2 HB Machinegun

24. Issue a Fire Command

This list does not include "Perform After Operations Checks and Services on the Commander's Weapon Station (CWS)" because it was dropped from the proposed course outline (see previous note). Nor does it include the three first aid tasks ("Put on a Tourniquet"; "Give First Aid for Burns"; and "Splint a fracture") which were not selected for training by the task selection panel (see section on Training Priorities).

DESCRIPTION OF 19K BNCOC ENTRANTS

In order to design an appropriate course of instruction for 19K BNCOC, it was necessary to determine the relevant skills, knowledges, and aptitudes that students possess prior to entering the course. This information about the students was obtained from the student data base that ARI had established in support of the TTFA effort. Two sorts of information from the data base were relevant to instructional design: biographical data on the student's background and performance data taken from diagnostic tests administered prior to BNCOC. An analysis of these data is detailed below followed by some of the training design implications that follow from these data.

Statistical Summary

Biographical Profile

Data Base. The biographical information was taken from student responses to a 37-item survey administered to 19K BNCOC students during in-processing on Report Day, i.e., their first day at BNCOC. At the time of this writing, ARI had biographical information on seven cycles of 19K BNCOC (41 students total) dating from October 1983 to August 1984. For the first two of the seven cycles, the questionnaire was not yet prepared. Data were obtained on some of the 37 items by examining existing student records. Even in the later cycles, students sometimes failed to complete some of the items in the survey. Thus, some of the items were based on fewer than 41 responses.

Data Analysis. From the 37-item data base, 16 items were selected as being potentially relevant to the design of BNCOC. Table 1 presents grouped frequency distributions of responses for each of the 16 items. The following description of the typical BNCOC student was based on the modal value(s) of those distributions. The mode was chosen over other measures of central tendency because it is defined as the value (or values) having the greatest frequency and, therefore, the highest probability of occurrence. In addition, the mode could be used to describe the qualitative variables (e.g., present job) as well as the quantitative variables (e.g., age).

In addition to central tendency, the variability of responses was also examined. Chi-square goodness-of-fit tests were performed to evaluate the null hypothesis that frequencies were equally dispersed among class intervals. Thus, in the cases where the null hypothesis could not be rejected (indicated by nonsignificant χ^2 values), the mode may not be a reliable indicator of central tendency. Of the 16 variables reported in Table 1, the χ^2 value was not significant for six variables.

The Typical Student. The typical 19K BNCOC entrant is 28 years old and a high school graduate. He has been in the Army five years and has reached the grade of E-5. He is currently assigned to an active component unit at Fort Knox, most often the 2/6 Cavalry of the Center/School Brigade. His self-reported scores on standardized tests are from 90 to 109 on the General Technical (GT) component of the Armed Services Vocational Aptitude Battery (ASVAB) and 91 to 100 on his last Skill Qualifications Test (SQT). He is a graduate of the Primary Noncommissioned Officer Course (PNCOC) and is presently assigned as a tank commander, a job that he has held for between six and 11 months. He may or may not have served as a tank commander during Gunnery Qualifications (Table VIII), a major exercise (e.g., Reforger) or an ARTEP. He is currently assigned to an M1 tank but was previously assigned to an M60 series tank.

Performance on Diagnostic Tests

Data Base. Course entrants were tested on 13 Skill Level One tasks on Day Zero, the day after Report Day. (This day was referred to as Day Zero because it lies outside the POI, which starts on Day One.) Each task was scored on a pass-fail (GO/NO GO) basis. Students who scored a NO GO on a particular task were told why they were wrong and were given a second and even a third chance to score a GO on the task. The diagnostic test served as a quick review of prerequisite tasks and an informal screen for students who might have problems in the course. However, no training management decisions were contingent upon these scores. That is, students were not dismissed from BNCOC for scoring especially poorly nor were they rewarded for performing particularly well. Nevertheless, the diagnostic test scores became part of the BNCOC records. ARI maintained data only on the first administration of the diagnostic tests. That is, no performance data were available for the second or third retest. In contrast to the biographical data, diagnostic test data were based on the total sample of 41 students.

Table 1

Frequency Distributions of Responses to Survey Questions

Variable Class	Frequency	Percent	χ^2	p
Age			48.14	< .001
32-33	1	2		
30-31	8	20		
28-29	10	25		
26-27	4	10		
24-25	8	20		
22-23	7	18		
20-21	2	5		
	40	100		
High School Graduate?			22.53	< .001
Yes	28	93		
No	2	7		
	30	100		
Years of Active Duty			21.86	< .001
12-13	1	3		
10-11	2	5		
8-9	6	16		
6-7	9	24		
4-5	15	41		
2-3	4	11		
	37	100		
Pay Grade			7.05	< .01
E-6	12	29		
E-5	29	71		
	41	100		
Component			82.00	< .001
Regular Army	41	100		
National Guard	0	0		
Army Reserve	0	0		
	41	100		

(table continues)

Variable Class	Frequency	Percent	χ^2	p
Parent Unit			25.99	< .001
2/6 Cav, Center/School Bde	16	44		
1st Bn, Center/School Bde	4	11		
1st Bn, 1st AIT/OSUT Bde	13	36		
NCOA/DSS	2	6		
TRPCOM, APG	1	3		
	36	100		
G.T. Score			8.54	N.S.
130-139	2	5		
120-129	8	21		
110-119	4	10		
100-109	10	26		
90-99	10	26		
80-89	5	13		
	39	101		
Last SQT Score			3.40	N.S.
91-100	6	40		
81-90	4	27		
71-80	4	27		
61-70	1	7		
	15	101		
Highest Formal Military Training			19.51	< .001
BNCOC	4	11		
PNCOC	20	57		
PLC	6	17		
PLDC	5	14		
	35	99		
Present Job			32.11	< .001
Tank Commander	24	63		
Gunner	5	13		
Driver	1	3		
Instructor	8	21		
	38	100		

(table continues)

Variable Class	Frequency	Percent	χ^2	p
Months as Tank Commander			11.08	N.S.
36-41	2	8		
30-35	0	0		
24-29	1	4		
18-23	2	8		
12-17	6	25		
6-11	7	29		
0-5	6	25		
	24	99		
Tank Commander During Table VIII?			1.00	N.S.
Yes	6	38		
No	10	62		
	16	100		
Tank Commander During Major Exercises?			0.60	N.S.
Yes	9	60		
No	6	40		
	15	100		
Tank Commander During ARTEP?			0.00	N.S.
Yes	6	50		
No	6	50		
	12	100		
Current Tank			16.20	< .001
M1	19	5		
M60A1	1	95		
	20	100		
Previous Tank			6.40	< .05
M60A3	5	33		
M60A1	9	60		
M48A5	1	7		
	15	100		

Results. Table 2 presents the percent of NO GOs for the first administration of the diagnostic test. Tasks are arranged on the basis of failure rate, from the highest to the lowest. The average failure rate for the 13 tasks was 27%. However, as can be seen, performance

varied widely from task to task. All but two of the BNCOC entrants failed Call for Fire (95% NO GOs), whereas only two entrants failed Identify and Explain the Use of 105mm Ammunition (5% NO GOs).

Table 2

Percent of Students Failing Tasks on the First Administration of the Diagnostic Test

Tasks	Percent NO GO
Call For and Adjust Indirect Fire	95
Determine Six Digit Grid Coordinates	54
Perform Operator Maintenance/Set Headspace and Timing of .50 Caliber M2 HB Machinegun	44
Maintain the Breechblock of 105mm Gun on M1	27
Engage Target with Precision Fire Telescope	27
Apply Gunner's Misfire Procedures for a 105mm Gun	24
Adjust Fire Using Subsequent Fire Command M1	22
Clear, Functions Check, and Load the M240 MG	15
Load Main Gun of an M1	12
Engage Target Using Battlesight M1	12
Apply Loader's Misfire Procedures for a 105mm Gun	10
Prepare Function of Gunner Station	10
Identify and Explain the Use of 105mm Ammunition	5

Conclusions and Training Design Implications

The biographical data indicated, in general, that 19K BNCOC is receiving good quality soldiers. They are generally well educated and most have no obvious intellectual or achievement problems according to standardized tests. For the most part, they have had a good deal of experience on the M1 tank although most report at least some experience

with the M60 series tanks.[1] A surprisingly large proportion of entrants reported extensive tank commander experience: Approximately 27% of the sample reported being a tank commander for one year or more. On the other hand, another 12% reported no tank commander experience at all. In terms of training design, these data suggested that BNCOC entrants will not require any extra-course training in terms of basic skills training to remediate academic deficiencies. Furthermore, they will not need any transition training to acquaint them with the M1 series tank.

The background data also indicated considerable variability on some of the reported variables. Thus, the implication that most of the 19K BNCOC entrants are not deficient in intellectual skills or armor experience ought to be tempered with the admonition that occasional problems in those regards will be encountered from time to time.

The diagnostic tests showed especially poor performance on three important tank commander tasks and very good performance on another. The training design implications of each is discussed below.

Call For and Adjust Indirect Fire. This task is currently scheduled to be trained at the unit level. Because there is no dedicated forward observer at the platoon level, the tank commander must perform this task. Results from the diagnostic tests indicate a high rate of failure (95%) on this task. For these reasons, this task should be trained as part of the POI rather than included as a diagnostic item to be quickly reviewed and forgotten.

Perform Operator Maintenance/Set Headspace and Timing of .50 Caliber M2 HB Machinegun. This task, currently trained during entry level armor training, is important for safety reasons. That is because the machinegun is likely to misfire and injure the tank commander if he fails to properly set headspace and timing. The high failure rate (54% NO GOs) is probably due to forgetting of the complex procedures required in this task. For these reasons, this task should also be trained in 19K BNCOC.

Determine Six Digit Grid Coordinates. This task, also trained during entry level training, is important in that it is prerequisite to many of the land navigation tasks. Like the previous task, the high failure rate (54%) is probably due to forgetting. In contrast to the previous two tasks, it is not especially difficult and a quick refresher is all the soldier needs. Therefore, this task should continue to be tested during the diagnostics with short remediation given if needed.

Identify and Explain the Use of 105mm Ammunition. The records indicated that only two entrants (5%) failed this task. Because of the very low failure rate, this task has little if any diagnostic or training value. Accordingly, this task ought to be dropped from diagnostic testing.

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[1]The Armor School is now in its third year of M1 entry level training; soon most of the 19K BNCOC entrants will have only M1 experience.

TRAINING PRIORITIES

Seventy-eight tasks have been identified for 19K BNCOC. Two problems prevent all 78 tasks from being included in the program of instruction (POI). One problem is the amount of time available for BNCOC. The current POI provides for 45 tasks to be trained in six weeks. It is clear that six weeks is not sufficient for training 78 tasks. It is not known, however, how much time can be made available to BNCOC in the future. The second problem is that BNCOC may not be the best course in which to train some of the tasks. A particular task might be better trained at other points in armor training, e.g., PNCOC or ANCOC. Or perhaps the task is best suited for unit training. Accordingly, a prioritization scheme was derived wherein the 78 tasks were ranked from most to least importance with regard to BNCOC. The prioritization was then used to systematically select tasks for training under different assumptions about the amount of time available to BNCOC.

As outlined in Interservice Procedures for Instructional Systems Development (TRADOC Pamphlet 350-30), the process of prioritizing tasks for training is accomplished in two phases. In the first phase, job incumbents rate an inventory of tasks in terms of their relative criticality to the job. In the second phase, a training management team uses those task ratings and other sources of data to select which tasks should be trained and which should not be trained. This two-phase approach to prioritization was adopted in the present project.

Assessment of Task Criticality

TRADOC guidance as given in Systems Approach to Training (TRADOC Regulation 350-7, November 1982), specifies that the selection of tasks for training be based on estimates of task criticality. The Training and Analysis Handbook (TRADOC PAM 351-4(T)) cites several methods for assessing criticality. In each of the methods, subject matter experts (SMEs) use five- or seven-point Likert scales to rate an inventory of job-related tasks on a number of dimensions such as the percent performing, percent time spent performing, consequence of inadequate performance, and task learning difficulty. More recent guidance (Drafts of Systems Approach to Training, dated 11 January 1984 and Front-End Analysis Standard Operating Procedures, dated 23 March 1983) suggests that SMEs also rate tasks in terms of mission success and survivability. There are at least three problems with this approach. First the multiple criteria make such surveys tedious and time consuming. Second, the rating criteria and scales are defined rather abstractly. Training developers report that SMEs do not always take such task surveys very seriously either because they do not understand the purpose of such task surveys or because they doubt the relevance of such ratings to training or both. Third, there is little guidance on how to combine the multiple ratings in order to prioritize tasks. Research (e.g., Drucker, Hoffman, O'Brien, & Bessemer, 1983; Simpson, McCallum, & Fuller, 1984) has shown that these scales are intercorrelated suggesting that they are related to some common concept of task importance.

In the present report, the approach to assessing task criticality used in the Systems Approach to Training (SAT) was modified to address the problems discussed above. In the present approach, SMEs rated tasks using a familiar scale on a single dimension that was more directly related to training. This technique was designed not only to reduce the number of ratings required in a task survey, but also to make the survey seem less arbitrary and irrelevant. And with only a single rating dimension the problem of combining criteria disappears.

Method

Raters. The SMEs were 28 M1 qualified tank commanders drawn from M1 New Equipment Training Teams (NETTs) who were responsible for transition training experienced armor crewmen to the M1 tank. The first sample (N = 14) was drawn from the M1E1 NETT and the second (N = 14) from the M1 NETT for the Reserve Component. Their military grades ranged from E-6 to E-8 (Mdn = E-7) and their length of service ranged from 8 to 18 years (Mdn = 13) years. More importantly, they had from 2 to over 14 years (Mdn = 7.5 years) experience as tank commanders. The two samples did not differ with respect to any of these three attributes. In short, both samples of raters were valid SMEs both in terms of the M1 armor weapon system and in terms of the tank commander's job.

Survey. The task survey was divided into four sections. The first section consisted of the 78 procedural tasks identified as pertaining to 19K BNCOC. The second through the fourth sections consisted of decision making, problem solving, and interactive tasks respectively. Before including these latter nonprocedural tasks in the survey, they were extensively reviewed for their readability. Many of the nonprocedural tasks were rewritten to be clearer or more precise. In some cases, redundant tasks were collapsed and compound tasks were separated. For the first sample, survey items (tasks) were arranged randomly within each of the four sections. For the second sample, the order of items within each section was reversed in order to balance possible order effects across samples. A copy of the first sample's survey is attached at Appendix C.

The rating scale was derived from a distinction that Army trainers frequently make between crucial and non-crucial skills and knowledges, namely "need to know" vs. "nice to know" information. The reasoning behind this distinction was extended to a four-point rating scale. That is, each subject was instructed to rate how important it was for a tank commander to know how to perform a particular task. The raters used the following scale:

1	2	3	4
No need to Know	Nice to Know	Should Know	Must Know

Results

To estimate the consistency with which SMEs rated tasks, interrater reliability coefficients were calculated for the four types of tasks separately. It was expected that reliability would be higher for the procedural compared to the nonprocedural tasks because of the unfamiliarity of the nonprocedural tasks. The results in Table 3 indicate that ratings on all four types of tasks demonstrated acceptable levels of reliability. These results showed that the SMEs used the new scale in a consistent manner, and, in contrast to expectations, that SMEs had no apparent problem rating the importance of nonprocedural tasks as well. Results also showed no differences in central tendency and dispersion between ratings of the four types of tasks.

Table 3

Numbers of Items, Means, Standard Deviations, and Interrater Reliability Coefficients for the Criticality Ratings

Types of Tasks	n	M	SD	r
Procedural Tasks	78	3.5	0.28	.85
Nonprocedural Tasks				
Decision-making tasks	42	3.5	0.23	.85
Problem-solving tasks	67	3.4	0.22	.78
Interactive tasks	75	3.6	0.22	.84

Table 4 lists the procedural tasks in order from the most to the least important task along with the distribution of responses and mean rating for each task. Due to errors in survey administration and errors in rater responses, the actual number of scoreable responses to individual tasks was sometimes less than the total number of subjects (28). The eight highest rated tasks (the top 10%) included four gunnery tasks ("Prepare Commander's Weapon Station"; "Set Headspace and Timing on the M2"; "Issue a Fire Command"; and "Direct Main Gun Engagements") and two maintenance tasks ("Supervise Before Operations Checks and Services" and "Boresight and Systems Calibrate the Main Gun"). The two maintenance tasks are important determinants of the fire control system's reliability and accuracy and are, in that sense, related to gunnery. The remaining tasks in the top 10% include one from the land navigation cluster (Navigate from One Point to Another) and the tactics cluster

Table 4

Procedural Tasks Ranked from Most to Least Important

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank	0	0	2	26	3.93
Set Headspace and Timing on a Caliber .50 M2 HB Machinegun	0	0	3	25	3.89
Issue a Fire Command	1	0	1	26	3.86
Supervise Before Operations Checks and Services on an M1 Tank	0	0	4	24	3.86
Boresight and Systems Calibrate an M1 Tank	0	2	1	25	3.82
Direct Main Gun Engagements on an M1 Tank	1	0	2	25	3.82
Navigate from One Point on the Ground to Another Point	0	0	5	23	3.82
Select a Firing Position	0	1	3	24	3.82
Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank	1	1	1	25	3.79
Use Automatic Communications Electronics Operation Instructions (CEOI)	0	0	6	22	3.79
Conduct Target Acquisition	0	1	5	22	3.75
Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank	1	1	2	24	3.75
Prepare for an NBC Attack	0	0	7	21	3.75
Boresight a Caliber .50 M2 HB Machinegun from the Commander's Weapon Station (CWS)	0	1	5	21	3.74
Determine a Location on the Ground by Terrain Association	0	0	8	20	3.71

(table continues)

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Direct Machinegun Engagements on an M1 Tank	1	1	3	23	3.71
Engage Targets with the Caliber .50 M2 HB Machinegun on an M1 Tank	1	1	3	23	3.71
Orient a Map on the Ground by Map Terrain Association	0	0	8	20	3.71
Perform After Operations Checks and Services on the Commander's Weapon Station (CWS)	1	1	3	23	3.71
Call for and Adjust Indirect Fire	0	3	3	22	3.68
Conduct a Map Reconnaissance	0	1	7	20	3.68
Estimate Range	0	1	7	20	3.68
Identify Terrain Features (Natural and Man Made) on a Map	0	2	5	21	3.68
Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS)	0	2	5	21	3.68
Secure Commander's Weapon Station (CWS) on an M1 Tank	1	1	5	21	3.64
Supervise After Operations Checks and Services on an M1 Tank	1	1	5	21	3.64
Determine Azimuth Using a Protractor and Compute a Back Azimuth	0	2	7	19	3.61
Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank	0	2	7	19	3.61
Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank	1	1	6	20	3.61
Prepare a Situation Report (SITREP)	0	1	9	18	3.61
Zero a Caliber .50 M2 HB Machinegun on an M1 Tank	1	1	6	20	3.61

(table continues)

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Conduct Training	0	1	9	16	3.58
Conduct Partial Decontamination	0	2	8	18	3.57
Direct Evasion of an Enemy Anti-Tank Guided Missile	0	3	6	19	3.57
Employ a Three-Man Crew	0	1	10	17	3.57
Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank	0	1	10	17	3.57
Identify Adjoining Map Sheets	0	3	6	19	3.57
Implement Mission Oriented Protective Posture (MOPP)	0	4	4	20	3.57
Use Marginal Information on a Map	0	2	9	17	3.54
Encode/Decode Messages Using KTC 600D Tactical Operations Code	0	3	7	17	3.52
Give First Aid for Burns	0	1	12	15	3.50
Supervise Maintenance on Individual and TO&E Equipment	0	1	12	15	3.50
Conduct a Tactical Road March	0	1	13	14	3.46
Fire an M250 Grenade Launcher on an M1 Tank	0	4	7	17	3.46
Locate an Unknown Point on a Map or on the Ground by Intersection	0	3	9	16	3.46
Locate an Unknown Point on a Map or on the Ground by Resection	0	3	9	16	3.46
Prepare/Submit NBC-1 Report	0	2	11	15	3.46
Use KTC 1400D Numerical Cipher/ Authentication System	1	3	6	18	3.46
Direct/Supervise the Zeroing of the Coax Machinegun on an M1 Tank	0	2	4	8	3.43

(table continues)

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Enter or Leave a Radio Net	0	4	8	16	3.43
Analyze Terrain Using the Five Military Aspects of Terrain	0	2	13	13	3.39
Initiate Unmasking Procedures	0	4	9	15	3.39
Maintain Position in Platoon Formation	0	2	13	13	3.39
Prepare Rater's Section for Enlisted Evaluation Report (DA Form 2166-6)	0	2	13	13	3.39
Use M256 Chemical Detector Kit	0	2	13	13	3.39
Determine a Magnetic Azimuth Using a Compass	1	3	9	15	3.36
Orient a Map Using a Compass	0	4	10	14	3.36
Conduct Performance Counseling with a Subordinate	1	3	11	13	3.29
Direct Reorganization on the Objective	0	3	15	10	3.25
Prepare/Submit NBC-4 Report	1	2	14	11	3.25
Put on a Tourniquet	0	6	10	12	3.21
Read/Report Radiation Dosages	1	3	13	11	3.21
Prepare to Conduct Training	1	4	11	11	3.18
Recognize Electronic Countermeasures (ECM) and Implement Electronics Counter-Countermeasures (ECCM)	1	3	14	10	3.18
Prepare a Sketch Range Card	3	2	10	12	3.15
Evaluate the Conduct of Training	0	5	14	9	3.14
Prepare and Issue an Oral Operation Order	1	5	11	11	3.14
Install a Hasty Protective Minefield	0	3	19	6	3.11
Install/Remove the Automatic Chemical Alarm System	0	6	13	9	3.11

(table continues)

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Splint a Fracture	0	5	16	7	3.07
Prepare/Submit Standard Shelling, Mortaring and Bomb Report	0	9	9	10	3.04
Receive/Orient Newly Assigned Personnel	1	8	9	10	3.00
Remove a Hasty Protective Minefield	0	6	16	6	3.00
Use IM-174 Radiacmeter	0	6	16	6	3.00
Install/Operate Hot-Loop Wire Communications	0	5	19	4	2.96
Conduct Search in Accordance with the Code of Military Justice	0	10	11	7	2.89
Provide Input Concerning the Status of Training	0	9	13	6	2.89
Construct Field Expedient Antennas	2	11	11	4	2.61

(Select a Firing Position). The latter two tasks represent important cognitive tasks that directly impact on mission success and survivability in combat. At the other end of the ratings (the bottom 10%) were three tasks in the personnel, training, and administration category: "Provide Input Concerning the Status of Training"; "Conduct Search in Accordance with Uniform Code of Military Justice"; and "Receive/ Orient Newly Assigned Personnel." Other tasks receiving low ratings concerned the operation of specific equipment for communications ("Install/Operate Hot-Loop Wire Communications" and "Construct Field Expedient Antennas") and NBC defense ("Use IM-174 Radiacmeter"). The two remaining tasks are from the mine warfare category ("Remove a Hasty Protective Minefield"), and from the tactics category ("Prepare/Submit Standard Shelling, Mortaring and Bomb Report").

Results from ratings of the nonprocedural tasks are presented in Appendix D. For the most part, the nonprocedural task ratings paralleled those of the procedural tasks.

Conclusions

The results indicated that the newly developed approach to assessing task criticality was both reliable and valid. The high interrater reliability coefficients attested to the reliability of the

scale. The validity of the approach was supported by the outcome of the task rankings: In general, the SMEs gave the highest ratings to tasks which were directly related to combat, especially those related to gunnery. At the other extreme, tasks that dealt with personnel matters or tasks that dealt with the operation of nongunnery related equipment were rated as least important. Given the sample of tasks, these ratings provide a reasonable ordering of tasks and a good representation of a tank commander's sense of job priorities.

Selection of Tasks for Training

The SME ratings provide an important source of information for task selection. Nevertheless, the selection of tasks for training should also be based on additional factors such as training management considerations (e.g., training time, costs, and other resources), instructional considerations (e.g., task difficulty or instructional sequencing), and military considerations (e.g., the relationship of a task to the unit's mission). In order to incorporate such considerations into the task selection process, a group of military and civilian experts was impaneled to make the task selections based on the SME ratings and other considerations such as those listed above. Members of the task selection panel were chosen to include expertise in the research, development, and application of armor training.

Diverse members were chosen for the task selection panel to insure that a wide range of a factors was considered in the task selection process. Unfortunately, the input of panel members can sometimes be limited because they are inhibited by face-to-face meetings. As a consequence, important skills may be effectively lost to the group. Exacerbating this problem in military situations are differences in rank. Lower ranking personnel are often reluctant to contradict the opinions of higher ranking personnel. The Delphi technique for group decision making that was developed by the Rand Corporation (Dalkey, 1969) solves these problems by eliminating the requirement to meet face-to-face. Instead group members anonymously contribute written comments which are compiled and distributed to all group members. Group members then react to the comments of others. This process continues in an iterative fashion until a group consensus is reached. In the present project, the Delphi technique was tested and evaluated as a potential method for task selection.

Method

Panel Members. The panel was made up of representatives of the DOTD at the Armor School, the NCO Academy at Fort Knox, the ARI Field Unit at Fort Knox, and the HumRRO office at Fort Knox. The two panel members from DOTD were both assigned to the Course Development Division. One was an NCO (E-7) who had been involved in the original 19K BNCOC, and the other was an armor officer (O-3) who had previously commanded an armor company. The two representatives from the NCO Academy were the Primary Instructors for 19K BNCOC in one case and for 19E (MOS for M60

series tanks) BNCOC in the other. The panel members from ARI included a civilian Research Psychologist who was the contracting officer's representative for the BNCOC project and the Military R&D Coordinator who was an armor officer (O-5) with over 18 years of experience in the Army. The HumRRO representatives were on the BNCOC project staff and included a civilian Senior Staff Scientist with over 20 years of experience in armor training research and a Senior Staff Analyst who was a retired armor officer (O-5) with 27 years of experience in the Army and ten years of experience in training research. In addition, a third HumRRO member of the BNCOC project staff, a civilian Senior Scientist, acted as the panel moderator in that he compiled and distributed the group's responses, but did not participate in the decision making.

Procedure. Task selections for the present phase were made from the 78 procedural tasks. Panel members were provided with detailed instructions on the purpose and method of the task selection process. Included in the set of instructions were the results from the SME ratings. The tasks were presented in task clusters rather than in the rank order of SME ratings. This arrangement was employed to make the SME ratings less salient, and to influence the panelists to attend to task content as well as task ratings. The panelists were instructed to make their task selections on the basis of their own expertise as well as the SME ratings. Specifically, they were instructed to sort the 78 tasks into the following three categories[1]:

1. The most important 39 task (50% of the tasks) which must be included in BNCOC,

2. The least important 4 tasks (approximately 5%) that should not be included in BNCOC, and

3. The remaining 35 tasks (approximately 45%) that should be included in BNCOC if there is enough time.

After the group reached consensus on the three categories, the intention was to have panelists rank the tasks in the "should train" category from most to least important as recommended in TRADOC Pamphlet 350-30. The prioritization of the middle category allows the training manager(s) to systematically add or cut tasks to fit the constraints of the course and to modify the course as the time constraints change.

[1]The three categories of training priority were suggested in Inter-service Procedures for Instructional Systems Development (TRADOC Pamphlet 350-30, Volume 5, p. 144). The number of tasks for each category was determined in consultation with ARI by considering factors such as the number of tasks in the inventory, the criticality of tasks in the inventory, estimates of time which might be made available to 19K BNCOC, etc.

The Negotiation Process

The present procedure for task selection was experimental in nature. Consequently, the moderator had to adjust the selection procedure as the negotiation progressed. The following sections provide a description of the instructions to and results from each round of negotiation.

Round One. Subjects were initially instructed to make their choices and then comment on any task selections that were greatly at variance with the SME ratings. Panelists varied widely in their first round of choices with unanimous agreement on the classifications of only seven tasks (9% of the 78 tasks). Furthermore, the panelists did not, for the most part, comment on their choices.

Round Two. The moderator summarized the responses in round one by constructing a table showing for each task how many panelists classified it as either a "must train," "should train," or "don't train" item. These tables were distributed to each panelist along with a mark (a red dot) indicating where their choice had fallen in this distribution. Another mark (a check) was used to indicate where their previous choice was not in agreement with the majority of other panelists. To encourage more comments and, at the same time, more conformity in responses, panelists were required to either change their responses to the checked items or to provide written arguments for their responses. And to prevent any reversion in agreement, the seven unanimously agreed upon tasks were "frozen" into the agreed upon category. That is, panelists were not allowed to change the classification of any of these tasks. In contrast, panelists were allowed to change the classifications of any of the remaining 71 tasks with the restriction that they again choose 39 "must train," 35 "should train," and four "don't train" tasks. Results from the second round indicated more agreement than on the first round with unanimous agreement on 24 additional tasks. As a result, a total of 31 tasks (40%) were frozen into one of the three classifications. Also, panelists were willing to provide some useful comments where they obviously had strong convictions. But a few panelists had still failed to verbally defend their minority choices.

Round Three. The instructions for round three were exactly the same as in the previous round. In addition, panelists now had the benefit of other panelists' comments along with a summary of the results from round two. Results from round three indicated unanimous agreement on 21 additional tasks. Therefore, a total of 52 tasks (67%) were frozen after three rounds of negotiation. And, evidently stimulated by the previous comments, all panelists were providing useful (and sometimes lengthy) comments on their choices when they represented a minority opinion.

Round Four. The instructions were the same as in the previous two rounds. The panelists unanimously agreed on only six additional tasks in this round resulting in a total of 58 (74%) of the tasks being frozen into one category or another. Furthermore, the comments indicated that the panelists had some strong disagreements on the remaining unclassified tasks. The moderator concluded that the negotiations were at the

point of diminishing returns. That is, fewer and fewer tasks would be frozen on subsequent rounds of negotiation. To reach complete unanimity on the remaining 20 tasks would require an unjustifiable level of effort. Therefore, it was decided to end the negotiations at this point and to resolve the classifications of the remaining tasks in a way that reflected the responses of a majority of panelists.

Final Questions. It was originally intended that panelists would rank order tasks in the "should train" category after the task selections had been resolved. However, panelists informally commented that the ranking process would be difficult for 35 tasks. Indeed, TRADOC Pamphlet 350-30 acknowledges the process is difficult and should be avoided if possible. Therefore, the moderator devised a prioritization of the "should train" tasks from the results of the four rounds of negotiation. The method for resolving the disputed classifications and for ranking "should train" tasks was described and the results were presented to the panelists for their comments. The panelists were asked to examine the task priorities closely to see if they had any objections. They were also asked three questions about the process they used to classify tasks:

1. Did you use the following sources of information to make your task selections? If you did, briefly explain how you used the information.

   a. SME ratings,

   b. your own knowledge of the tasks,

   c. other panelists' comments,

   d. task documentation.

2. Estimate the total amount of time that you devoted to this project.

3. Would you recommend the anonymous Delphi technique as standard operating procedure for selection of tasks for training? What changes to the Delphi procedure would you suggest to make it more valid or useable in military situations?

Prioritization Scheme and Results

Procedure. Task priorities were derived by transforming the panel's responses into a numerical score. If a task was classified as a "must train" item on a particular round of negotiation, it was given a score of two. Likewise, a score of one was assigned to a "should train" task and a zero was assigned to a "don't train" task. In the case where the panelists did not agree, points were awarded in proportion to the frequency of responses. For instance, if four panelists classified a task as "must train" and four classified the same task as "should train," the task was awarded 1.5 points for that round. To obtain a measure of the responses over all four rounds of negotiation, the

results of the four rounds were added together. Tasks were then rank ordered on the basis of total points. This scheme also provided the basis for prioritizing tasks in the "should train" category.

Results. The tasks were initially rank ordered only on the basis of the total points. The first 39 tasks were then classified as "must train," the next 35 as "should train," and the lowest four tasks as "don't train" item. As evidence of the validity of this procedure, the ranking based on total points was highly correlated with the ranking based on SME ratings (Spearman's $r = .80$, $p < .01$). However, this method of prioritization led to counterintuitive classifications of two tasks. The task entitled "Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station" was rated 43.5th and therefore placed in the "should train" category despite the fact that the eight panel members were evenly split on whether the task was a "must train" or a "should train" in the fourth and final round. In earlier rounds, however, the majority of panelists had classified the task as a "should train" item which lowered its total score. The second task entitled "Prepare for an NBC Attack" was misclassified in the other direction. That is, it was rated 38.5th and was therefore placed in the "must train" category despite the fact that the majority of panelists (six out of eight) classified the task as only a "should train" item. This seeming misclassification was due to the fact that panelists had categorized the task as a "must train" item in earlier rounds, resulting in a relatively high total score. These unexpected classifications led to the conclusion that the rating scheme should weight the last round more heavily than earlier ones.

The second method of ranking was based on the outcome of the fourth round. However, if the outcome were only dependent on the fourth round vote, there would be a greater number of tied ranks particularly in the middle category. It was resolved that those ties should be broken by the total points over all four tasks. That is, this two-factor prioritization scheme considered the last round of negotiations first and only then looked at the results from previous rounds. The outcome of this scheme is shown in Table 5. Tasks are ranked from most to least important and accordingly placed into the three categories of training priority. The only changes in task classifications from the previous procedure were the two tasks noted above: "Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station" was moved from the "should train" to the "must train" category, and "Prepare for an NBC Attack" was downgraded from "must train" to "should train."

Answers to Questionnaire. Panelists based their responses most often on their own knowledge of the tasks although several made extensive use of SME ratings in the first round of task selections. Some panelists reported using task documentation for clarification but only in a few cases. Surprisingly, only half of the panelists reported being influenced by other panelists' comments and only then in a few cases. Panelists estimated that the entire Delphi negotiation took from two to five hours of their time, with the most frequent value being two hours. Panelists informally commented that they appreciated being able to do the task selections on their own time. In most cases, panelists were timely in completing their selections. However, because of field

Table 5

Procedural Tasks Prioritized for Training in 19K BNCOC

CATEGORY Task	Points for Round One	Two	Three	Four	Total Points
MUST TRAIN					
Engage Targets with the Caliber .50 M2 HB Machinegun on an M1 Tank	2.000	2.000	2.000	2.000	8.000
Use Automatic Communications-Electronics Operation Instructions (CEOI)	2.000	2.000	2.000	2.000	8.000
Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank	2.000	2.000	2.000	2.000	8.000
Boresight and Systems Calibrate an M1 Tank	2.000	2.000	2.000	2.000	8.000
Determine a Location on the Ground by Terrain Association	1.875	2.000	2.000	2.000	7.875
Navigate from One Point on the Ground to Another Point	1.875	2.000	2.000	2.000	7.875
Estimate Range	1.875	2.000	2.000	2.000	7.875
Boresight a Caliber .50 HB Machinegun on an M1 Tank	1.875	2.000	2.000	2.000	7.875
Orient a Map on the Ground by Map Terrain Association	1.875	2.000	2.000	2.000	7.875
Enter or Leave a Radio Net	1.875	2.000	2.000	2.000	7.875
Zero a Caliber .50 M2 HB Machinegun on an M1 Tank	1.875	2.000	2.000	2.000	7.875
Issue a Fire Command	1.875	1.875	2.000	2.000	7.750
Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank	1.750	2.000	2.000	2.000	7.750
Set Headspace and Timing on a Caliber .50 M2 HB Machinegun	1.750	2.000	2.000	2.000	7.750

(table continues)

Category Task	Points for Round				Total Points
	One	Two	Three	Four	
MUST TRAIN					
Secure Commander's Weapon Station (CWS) on an M1 Tank	1.750	2.000	2.000	2.000	7.750
Direct Machinegun Engagements on an M1 Tank	1.875	2.875	2.000	2.000	7.750
Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) of an M1 Tank	1.875	1.875	2.000	2.000	7.750
Prepare/Submit NBC-1 Report	2.750	2.000	2.000	2.000	7.750
Encode/Decode Messages Using KTC 600D Tactical Operations Code	1.750	2.000	2.000	2.000	7.750
Implement Mission Oriented Protective Posture (MOPP)	1.750	2.000	2.000	2.000	7.750
Select a Firing Position	1.875	1.875	2.000	2.000	7.750
Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank	1.750	1.875	2.000	2.000	7.625
Conduct Target Acquisition	1.750	1.875	2.000	2.000	7.675
Use KTC 1400D Numerical Cipher/Authentication Code	1.625	2.000	2.000	2.000	7.625
Perform After Operations Checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank	1.750	1.875	2.000	2.000	7.625
Direct Evasion of an Enemy Anti-Tank Guided Missile	1.625	1.875	2.000	2.000	7.500
Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank	1.625	1.750	2.000	2.000	7.375
Identify Terrain Features (Natural and Man Made) on a Map	2.750	1.750	1.875	2.000	7.375
Direct Main Gun Engagements on an M1 Tank	1.625	1.750	2.000	2.000	7.375
Conduct Training	1.625	1.625	2.000	2.000	7.250

(table continues)

Category Task	Points for Round One	Two	Three	Four	Total Points
MUST TRAIN					
Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank	1.625	1.750	1.875	2.000	7.250
Supervise After Operations Checks and Services on an M1 Tank	1.750	1.875	1.875	1.875	7.375
Supervise Before Operations Checks and Services on an M1 Tank	1.750	1.875	1.875	1.875	7.375
Conduct a Map Reconnaissance	1.750	1.875	1.875	1.875	7.375
Conduct Performance Counseling with a Subordinate	1.625	1.750	1.875	1.875	7.125
Fire an M250 Grenade Launcher on an M1 Tank	1.500	1.625	1.750	1.750	6.625
Direct/Supervise the Zeroing of the Coax Machinegun on an M1 Tank	1.375	1.500	1.500	1.750	6.125
Use Marginal Information on a Map	1.375	1.500	1.500	1.625	6.000
Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) of an M1 Tank	1.375	1.125	1.125	1.500	5.125
SHOULD TRAIN					
Prepare for an NBC Attack	1.625	1.625	1.500	1.250	6.000
Conduct Partial Decontamination	1.500	1.375	1.375	1.250	5.500
Call for and Adjust Indirect Fire	1.375	1.500	1.250	1.250	5.375
Determine Azimuth Using a Protractor and Compute a Back Azimuth	1.500	1.375	1.250	1.250	5.375

(table continues)

Category Task	Points for Round One	Two	Three	Four	Total Points
SHOULD TRAIN					
Analyze Terrain Using the Five Military Aspects of Terrain	1.375	1.250	1.250	1.250	5.125
Prepare to Conduct Training	1.375	1.250	1.250	1.125	5.000
Prepare/Submit NBC-4 Report	1.375	1.375	1.125	1.125	5.000
Employ a Three-Man Crew	1.500	1.250	1.125	1.125	5.000
Locate an Unknown Point on a Map or on the Ground by Resection	1.250	1.250	1.250	1.125	4.875
Locate an Unknown Point on a Map or on the Ground by Intersection	1.250	1.250	1.250	1.125	4.875
Prepare a Situation Report (SITREP)	1.500	1.250	1.000	1.000	4.750
Evaluate the Conduct of Training	1.125	1.250	1.125	1.000	4.500
Use M256 Chemical Detector Kit	1.375	1.125	1.000	1.000	4.500
Initiate Unmasking Procedures	1.250	1.250	1.000	1.000	4.500
Conduct a Tactical Road March	1.375	1.000	1.000	1.000	4.375
Use IM-175 Radiacmeter	1.125	1.125	1.000	1.000	4.250
Read/Report Radiation Dosages	1.250	1.000	1.000	1.000	4.250
Install a Hasty Protective Minefield	1.125	1.125	1.000	1.000	4.250
Supervise Maintenance on Individual and TO&E Equipment	1.250	1.000	1.000	1.000	4.250
Remove a Hasty Protective Minefield	1.125	1.125	1.000	1.000	4.250
Orient a Map Using a Compass	1.000	1.125	1.000	1.000	4.125
Maintain Position in Platoon Formation	1.125	1.000	1.000	1.000	4.125

(table continues)

Category Task	Points for Round One	Two	Three	Four	Total Points
SHOULD TRAIN					
Determine a Magnetic Azimuth Using a Compass	1.125	1.000	1.000	1.000	4.125
Direct Reorganization on the Objective	1.125	1.000	1.000	1.000	4.125
Prepare a Sketch Range Card	1.125	1.000	1.000	1.000	4.125
Prepare and Issue an Oral Operation Order	1.000	1.000	1.000	1.000	4.000
Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures	1.000	1.000	1.000	1.000	4.000
Install/Remove the Automatic Chemical Alarm System	1.000	1.000	1.000	1.000	4.000
Install/Operate Hot-Loop Wire Communications	1.000	1.000	1.000	1.000	4.000
Provide Input Concerning the Status of Training	0.875	1.000	1.000	1.000	3.875
Identify Adjoining Map Sheets	1.125	0.875	0.875	1.000	3.875
Prepare Rater's Section for Enlisted Evaluation Report (DA Form 2166-6)	0.625	1.000	1.000	1.000	3.625
Receive Orient Newly Assigned Personnel	0.750	0.750	2.000	1.000	3.500
Conduct Search in Accordance with the Uniform Code of Military Justice	0.625	0.750	1.000	1.000	3.375
Prepare/Submit Standard Shelling, Mortaring, and Bomb Report	0.750	0.875	0.875	0.875	3.375

(table continues)

Category Task	Points for Round One	Two	Three	Four	Total Points
DON'T TRAIN					
Give First Aid for Burns	0.875	0.500	0.250	0.125	1.750
Put on a Tourniquet	0.875	0.500	0.000	0.000	1.375
Construct Field Expedient Antennas	0.500	0.250	0.125	0.000	0.875
Splint a Suspected Fracture	0.625	0.125	0.000	0.000	0.750

training commitments, the BNCOC instructors were often out in the field during the week. Consequently, each iteration took about one week to complete; the entire process required about one month. Panelists agreed that the Delphi technique was a workable method for task selection, but some panelists felt a face-to-face session should be added to clear up the remaining disagreements.

Only two of the panelists had objections to the final prioritization. One of the panelists objected to the tasks entitled "Supervise Before Operations Checks and Services on an M1 Tank" and "Supervise After Operations Checks and Services on an M1 Tank" being classified as "must train" items. He argued that "must train" items should only include tank commander tasks per se rather than supervisory tasks. The other panelist objected that two "should train" tasks were rated too low. He argued that "Maintain Position in Platoon Formation," tied with five other tasks at the 62nd out of 78 positions, is a key movement task which requires intraplatoon coordination, exactly the sort of skill that is emphasized in Battle Drills and that BNCOC should focus on. He also pointed out that "Prepare a Sketch Range Card," also tied in the 62nd position, is more important than its rating indicates because the sketch range cards are the basis for the platoon fire plan, a key task for defending the battle position.

Conclusions

The task rating procedure devised for the present research project provided a simple and straightforward method for rating tasks for training. Results from the present research indicated good agreement between SMEs on their task ratings. The resulting task rankings were a reasonable reflection of SME opinions and attitudes toward the tasks. For these reasons, the simplified task rating procedure is recommended as part of the task prioritization process.

The Delphi process proved workable as a method for task selection with two qualifications. First, the time required to complete the process was too long. When using this process in the future, the negotiator should set up a reasonable schedule beforehand and get the panelists to commit time to the negotiation. Second, the panelists expressed a desire to meet face-to-face to resolve the few remaining differences. Future applications should provide for such a contingency.

The correlation between SME ratings and total Delphi points was quite interesting. Given the interrater reliability for rating the procedural tasks (.85), the relationship between the two scales (.80) was almost as strong as it could possibly be. The strong relationship between the two scales suggests that the two phases of task prioritization are somewhat duplicative. One possible modification of the task selection process was to have the Delphi panelists choose tasks without the benefit of SME ratings. However, the panelists commented that the SME ratings were very helpful to them, especially in the earlier rounds of negotiation. On the other hand, the task selection process might have been derived from SME ratings, in effect bypassing the Delphi

process. Problems with this alternative include the fact that the Delphi panel, and not the SMEs, were charged with selecting tasks for training and possessed the relevant expertise for making such a decision. Controlled research is needed to determine the effect of SME ratings on task selections and vice versa. Such research can be used to establish the most cost effective and efficient method for task selection.

RELATIONSHIP OF NONPROCEDURAL TO PROCEDURAL TASKS

As described in the First Interim Report (Drucker, Hannaman, Melching, & O'Brien, 1984), the nonprocedural tasks were derived from a "naive" analysis of tank commander duties with regard to his decision making, problem solving, and his interactive activities. Due to difficulties and delays in identifying the nonprocedural tasks, the researchers were not able to incorporate them into their recommended changes to 19K BNCOC. Since that writing, it was recognized that there is considerable overlap between the two types of tasks. More specifically, nonprocedural tasks are often activities that are performed during the execution of procedural tasks. For instance, the decision making task entitled "Select Primary Position Within Area Assigned by Platoon Leader" is involved in at least four of the 78 procedural tasks: "Analyze Terrain Using the Five Military Aspects of Terrain"; "Select a Firing Position"; "Conduct a Map Reconnaissance"; and "Conduct Target Acquisition." If nonprocedural tasks are shown to be linked to procedural tasks, then instruction on decision making, problem solving, and interactions could be developed in the context of procedural task training.

To systematically examine the relationship between procedural and nonprocedural tasks, a crosswalk was constructed between the two types of tasks. The crosswalk had two purposes: First, the crosswalk determined the degree to which the decision making, problem solving, and interactive tasks were linked to procedural tasks. Second, the crosswalk identified the procedural task context where a nonprocedural task could be trained.

Method

To analyze the relationship of nonprocedural to procedural tasks and vice versa, three matrices (one each for decision making, problem solving, and interactive tasks) were constructed with nonprocedural tasks on one dimension and procedural tasks on the other. Each nonprocedural task was judged to be either related or not related to each procedural task. The criterion for being related was whether or not the nonprocedural activity was likely to occur during the course of executing the procedural task.

Findings

The results of the analysis are shown in Appendix E. The three tables (one for decision making, problem solving, and interactive tasks) list each nonprocedural task cross-referenced to all the related procedural tasks.

The results indicated that most of the nonprocedural tasks were cross-referenced with one or more of the procedural tasks. Only seven of the nonprocedural tasks (less than 4% of the total 185 tasks) had no reference to a procedural task. These seven tasks are listed in Table 6. As can be seen, six of these tasks related to personnel matters, tasks that SMEs regard as relatively unimportant.

To obtain a measure of the relative importance of these tasks, each task's percentile rank was determined relative to the task's category. That is, for each nonprocedural task, the percent of tasks that ranked below the task in question was calculated. The results, also shown in Table 6, indicated that all the nonprocedural tasks that were not cross-referenced with procedural tasks ranked in the bottom quarter of their respective distributions.

Table 6

Nonprocedural Tasks Not Cross-Referenced to a Procedural Task

Type of Activity Task	Percentile Rank
Problem Solving	
Estimate How Much Rest a Crewman Needs to Recover from Fatigue or from the Effects of Combat Stress	1
Judge Whether or Not There is Sufficient Fuel to Generate Smoke Without Jeopardizing the Accomplishment of the Mission	19
Decision Making	
Decide Which Crewman Will Sleep, How Long, and Where	17
Interactive Tasks	
Provide Tow to Mired Tank	14
Understand and Execute Orders to Rest the Crew	9
Understand and Execute the Feeding Schedule	3
Request Rest	23

Conclusions

The results indicated that, for the most part, the nonprocedural tasks have some reference to one or more of the procedural tasks. Furthermore, those nonprocedural tasks having no counterpart in procedural tasks were regarded as relatively unimportant by SMEs. It therefore seems reasonable to conclude that the nonprocedural tasks can be trained within the context of a POI based on procedural tasks.

The analysis indicated that most of the nonprocedural tasks were linked to several procedural tasks. In the next section, the single best procedural task for training each decision making, problem solving, or interactive process was identified.

OUTLINE OF PROPOSED 19K BNCOC

A course outline for 19K BNCOC was prepared based on the results of the analysis of the 19K duty position conducted during the first phase of the project, the results of the learning analysis, and the results of the criticality survey. This outline is contained in Appendix F. The remaining portion of this part of the report focuses on the course outline and provides an explanation of the various components.

Overview of Course Outline

As a result of the analysis of student performance on the current diagnostic test, it is suggested that the company commander for each 19K BNCOC candidate certify that the candidate can perform the Skill Level 1 and 2 tasks necessary for participation in BNCOC. The tasks for which certification is recommended are listed at the beginning of the course outline. In addition, it is recommended that a battery of diagnostic tests be administered to students by BNCOC instructors to confirm the results of the certification effort and to assure the safety of the students. The tasks recommended for diagnostic testing are also contained in the course outline.

The proposed 19K BNCOC contains the following nine blocks of instruction: (1) Leadership, (2) Training Procedures, (3) NBC, (4) Mine Warfare, (5) Communications, (6) Land Navigation, (7) Maintenance, (8) Tank Gunnery, and (9) Tactics. These blocks of instruction are to be presented in the sequence in which they are listed in the course outline. The course outline also lists the procedural tasks and the nonprocedural tasks that are contained in each block of instruction. While the procedural tasks are listed within a block of instruction in the order in which they should be trained, the nonprocedural tasks have not been sequenced.

In addition to the nine blocks of instruction, the proposed 19K BNCOC contains a Leadership Reaction Course, a Land Navigation Pathfinder Course, a Country Fair, and two field exercises. The Leadership Reaction Course is intended to provide students an opportunity to practice the leadership techniques used by tank commanders; it is contained in Appendix G. The Land Navigation Pathfinder Course is intended to provide students an opportunity to practice in the field the land navigation tasks that are contained in the Land Navigation block of instruction; the course is contained in Appendix I. The Country Fair is intended to motivate students prior to their participation in the field exercises and is contained in Appendix J. The two field exercises include a Single-Tank Tactical Exercise and an Intra-Platoon Tactical Exercise. The Single-Tank Tactical Exercise is intended to allow students to practice tank commander tasks (including decision making and problem solving tasks) in a field environment without having to coordinate with other tanks; it is contained in Appendix K. The Intra-Platoon Tactical Exercise is intended to allow students to practice tank commander tasks (including interactive tasks) in a tactical platoon environment; it is contained in Appendix L.

Each procedural task listed in a block of instruction is followed either by the letter "M" or the letter "S" in parentheses. The letter "M" indicates that the task was picked by the task selection panel as one that must be trained even if there is insufficient time available to train all tasks. The letter "S" indicates that the task was selected as one that should be trained if time is available. If a task was selected by the panel as one of the four that should not be trained, it is not included in the course outline.

Each task selected as one that should be trained if time is available contains a number in parentheses in addition to the letter "S." This number indicates the training percentile value of that task. The training percentile value indicates the percentage of tasks having a lower criticality score (from SME ratings) than the criticality score of the task for which the training percentile value is being presented. For example, the second task in the Land Navigation block of instruction, "Identify Adjoining Map Sheets," is followed by the letter-number combination S-13. This means that the task was selected as one that should be trained if time is available, but that it is more critical than only 13 percent of the other "should train" tasks. The sixth task in the Land Navigation block of instruction, "Locate an Unknown Point on a Map or on the Ground by Intersection," is followed by the letter-number combination S-73. Like the task, "Identify Adjoining Map Sheet," it was selected as one that should be trained if time is available. However, it is more critical than the task, "Identify Adjoining Map Sheets," since it has a higher training percentile value.

During the analysis phase of this project, problem solving, decision making, and interactive tasks performed by tank commanders were identified. Then in the crosswalks (see Relationship of Nonprocedural to Procedural Tasks), the nonprocedural tasks that were likely to be performed during the performance of each procedural task were identified. In this section, the procedural task most closely linked to each nonprocedural task was selected. The implementation of the course

outline requires that the problem solving, decision making, and interactive tasks linked most closely to a procedural task be trained during the same lesson in which the procedural task is trained. This technique should provide a context for training nonprocedural tasks and for relating them to the procedural task to which each nonprocedural task is most closely associated.

The nonprocedural tasks are identified in the course outline by the system used to number them. The number of each problem solving task is preceded by the letters "PS." For example, in the Land Navigation block of instruction, ten problem solving tasks are associated with the procedural task "Navigate from One Point on the Ground to Another Point." These ten problem solving tasks are numbered PS-1, PS-2, etc. These ten tasks will not appear with any other procedural tasks in the course outline. The number of each decision making task is preceded by the letter "D," while the number of each interactive task is preceded by the letter "I." While the procedural tasks within a block of instruction are listed in the order in which they should be trained, the problem solving, decision making, and interactive are not listed in a recommended sequence for training.

The title of each interactive task is preceded, in parentheses, by a letter or by a combination of letters. The letters "NV" before a task title identifies the task as a nonverbal interactive task. The tank commander must coordinate the performance of this task with other elements, but no verbal communication is required. All other interactive tasks require verbal communications. The letter "O" before a task title identifies the task as an order which the tank commander receives. The letter "R" identifies it as a request made by the tank commander. Finally, the letter "I" before a task title identifies the task as either a request for information or the submission of information.

The number in parentheses following each nonprocedural task, like the number following each "should train" procedural task, is an indication of its criticality. It specifies the percentage of problem solving, decision making, or interactive tasks having received lower ratings from the subject matter experts during the criticality survey. The higher the number, the greater the criticality of the task. For example, the first problem solving task listed in the Land Navigation block of instruction under the task "Navigate from One Point on the Ground to Another Point," "Judge Whether or Not the Tank Can Climb a Grade," is followed in by the number "47" in parentheses. This indicates that the task was judged by the subject matter experts to be more critical than 47% of the problem solving tasks that they judged.

Description of Course Components

Precourse Student Certification. At the present time, students enrolled in 19K BNCOC are given a battery of hands on diagnostic tests upon their arrival in BNCOC, but prior to the beginning of instruction. Few, if any, students are rejected as a result of their performance on these tests. However, remedial training may be given as time permits.

Since training time is not allocated for remedial training during 19K BNCOC, the need for remedial training places an excessive burden on the instructors.

As was stated in the previous report, students attending 19K BNCOC must be able to perform certain Skill Level 1 and 2 tasks either as prerequisites for learning certain tank commander tasks or for serving as loaders, drivers, or gunners during gunnery or field exercises. Because of this and because the need to provide remedial instruction places an undue burden upon the instructors, the course outline contains the requirement that a company commander certify that candidate students from his company be able to perform these tasks. No guidelines are provided concerning how the company commander is to determine whether or not candidates can perform these tasks, but is is assumed that the company commanders will either use their personal knowledge of the candidate or else administer a set of hands-on or written diagnostic tests to assess his skill level.

Twenty Skill Level 1 and 2 tasks and seven subtasks are listed in the course outline. The company commander must certify that the 19K BNCOC candidate be able to perform each of these tasks or subtasks under the conditions and to the standards contained in the appropriate Soldier's Manual (FM 21-2 and FM 17-19 1/2) or Field Manual (FM 17-12). Students who cannot perform these tasks (or subtasks) to standard must be trained to perform them before they are certified for 19K BNCOC.

Diagnostic Tests. While the requirement for Company Certification of 19K BNCOC students should reduce the burden placed on BNCOC instructors, it does not completely eliminate the need for diagnostic testing and remedial training. Some diagnostic testing is required to confirm the company certification, and some remedial training is necessary to assure the safety of the students. The course outline contains a list of ten tasks (or subtasks) that are recommended for diagnostic testing for safety reasons. Students who demonstrate proficiency on most of these tasks can receive remedial training prior to the start of the course. Students who fail to demonstrate this level of proficiency can be rejected (or they can be trained at the discretion of the instructors), and their company commanders should be held accountable for making improper certifications.

In order to prevent company commanders from basing certification only on the ten tasks selected for mandatory diagnostic training, the course outline specifies that the instructors should randomly select five additional tasks (or subtasks) for diagnostic testing. These tasks should be selected from among those requiring certification. The random selection of the additional tasks should be repeated at the start of each new session.

Leadership. The Program of Instruction (POI) for the current 19K BNCOC contains a task cluster pertaining to NCO Responsibilities and Training. It is recommended that these two areas be separated and that they be taught as different blocks of instruction.

The Leadership block of instruction includes two of the courses of instruction that are currently contained in the NCO Responsibilities/Training task cluster: "Duties and Responsibilities of an NCO" and "Conduct Performance Counseling with a Subordinate." In addition, the block of instruction includes a new course, "The NCO Leader Model," which focuses on the characteristics and behaviors of successful leaders; three tasks that are now contained in a task cluster labeled Information Briefing (i.e., "The Law of Land Warfare/SAEDA Orientation"; "Equal Opportunity"; and "Identifying and Managing Alcohol and Drug Abuse Problems"); a course on "The Principles of Problem Solving, Decision Making, and Interactive Tasks" to prepare students for the problem solving, decision making, and interactive tasks to be trained in 19K BNCOC; and three tasks that are not in the current POI (i.e., "Prepare Rater's Section of an Enlisted Evaluation Report"; "Receive and Orient Newly Assigned Personnel"; and "Conduct Search in Accordance with the Uniform Code of Military Justice"). In addition, the Leadership block of instruction includes five decision making tasks, all of which deal with personnel issues.

Leadership Reaction Course. This training, which is not contained in the current 19K BNCOC, was added to provide the students an opportunity to implement and practice critical aspects of leadership that were contained in the Leadership block of instruction. The course should enable students to exercise leadership behaviors and to solve leadership problems in a combat oriented situation. This experience should allow each student to examine his own style of leadership, to evaluate its effectiveness, and to identify any need for improvement. It should also provide students an opportunity to experience the need for a team effort and for cooperation in accomplishing unit goals. This course is presently under development and is outlined in Appendix G.

Training Procedures. This block of instruction includes three tasks that are now included in the course "Train the Trainer to Train" (Battalion Training Management System): "Prepare to Conduct Training"; "Conduct Training"; and "Evaluate the Conduct of Training." In addition, it contains the task "Provide Input Concerning the Status of Training"; a course of instruction on training devices; and the course "Physical Fitness Instruction." The course of instruction on training devices will include Multiple Integrated Laser Engagement System (MILES), which is a current course within 19K BNCOC, and will also include other training devices which the students will have to use as BNCOC students or later in units as trainers (e.g., U-COFT, Battlesight, SIMCAT, Hand Held Tutor). A list of these training devices and their usage by 19K BNCOC students is contained in Appendix H.

NBC. The NBC block of instruction is similar to the NBC task cluster in the current course except that two tasks have been added ("Install/Remove the Automatic Chemical Alarm System" and "Conduct Partial Decontamination"), and one has been deleted ("Use an AN/PDR-27 Radiac Set").

Mine Warfare. This block of instruction is similar to the current Mine Warfare task cluster except for the task "Prepare and Submit Standard Shelling, Mortaring, and Bombing Report" which was moved to the Tactics block of instruction.

Communications. No new tasks are contained in the Communications block of instruction, although one task was modified as a result of the analysis conducted earlier in the project ("Establish, Enter, or Leave a Radio Net" was changed to "Enter or Leave a Radio Net") and one task was dropped as a result of the task selection process ("Construct Field Expedient Antennas").

Land Navigation. This block of instruction is similar to the Land Navigation task cluster in the current 19K BNCOC except that two tasks were added ("Use Marginal Information on a Map" and "Conduct a Map Reconnaissance") and one task was deleted ("Determine Directions Using Field Expedient Methods").

Land Navigation Pathfinder Course. This course, which is contained in Appendix I, was added to 19K BNCOC to provide the student with an opportunity to perform in the field the thirteen land navigation tasks that are contained in the Land Navigation block of instruction. By evaluating their performance of these tasks in a field situation, the instructors will be able to identify which students need additional training.

Maintenance. Several changes were made in the Maintenance block of instruction. One task was dropped as a result of the analysis conducted earlier in the project: "Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy." In addition, three tasks were added that were previously performed as part of STX and FTX Maintenance, but for which formal instruction was not provided: "Supervise Before Operations Checks and Services on an M1 Tank"; "Supervise After Operations Checks and Services on an M1 Tank"; and "Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank." While the maintenance that is currently performed as part of STX and FTX-Maintenance will continue to be required, it will no longer be listed as a formal block of instruction. Finally, the block of instruction will contain a new course, Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Maintenance Environment. This course will expand upon the course on problem solving, decision making, and interactive tasks that was included in the Leadership block of instruction, but the focus will now be on the role of these tasks in maintenance.

Tank Gunnery. Several changes were made in the block of instruction for Tank Gunnery. Two tasks were moved from the Tank Commander's Station/Tank Gunnery cluster to the Tactics block of instruction ("Estimate Range" and "Select a Firing Position"), and the course of instruction on the M179 training device (Telfare) was moved to the Training Devices course in the Training Procedures block of instruction. In addition, four new tasks ("Set Headspace and Timing on a Caliber .50 M2 HB Machinegun," "Direct and Supervise the Zeroing of the Coax Machinegun on an M1 Tank"; "Issue a Fire Command"; and "Employ a Three-Man Crew") and a new course of instruction ("Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tank Gunnery Environment") were added.

Country Fair Skills Test. The Country Fair, like the Land Navigation Pathfinder Course, will provide BNCOC students an opportunity to perform in a competitive, combat-like situation many of the tasks that they will have learned during BNCOC. It is anticipated that the fair will serve as an incentive for students to practice and perform these tasks to standard prior to formal field exercises, while providing the instructors an opportunity to detect the need for additional training prior to these exercises. This test is under development and briefly outlined in Appendix J.

Tactics. The Tactics block of instruction, which occurs before Gunnery in the POI for the present 19K BNCOC, will be presented after the Gunnery block of instruction since gunnery skills are required to learn tactics. Other major changes were made in the Tactics block of instruction. Only two tasks are included in the task cluster for tactics in the POI for the current 19K BNCOC--"Prepare and Issue an Oral Operation Order" and "Direct Consolidation and Reorganization on the Objective." As a result of the analysis performed earlier in the project, the latter task was changed to "Direct Reorganization on the Objective." In addition, three tasks were moved into the Tactics block of instruction from other task clusters--"Estimate Range" (from Tank Commander's Station/Tank Gunnery), "Select a Firing Position" (from Tank Commander's Station/Tank Gunnery), and "Prepare/Submit Standard Shelling, Mortaring, and Bomb Report" (from Mine Warfare). One task ("Call for and Adjust Indirect Fire") was added because of the large number of BNCOC students who failed to perform this task to standard during the diagnostic tests, and six tasks ("Conduct Target Acquisition"; "Conduct a Tactical Road March"; "Maintain Position in Platoon Formation"; "Direct Evasion of an Enemy Anti-Tank Guided Missile"; "Prepare a Situation Report"; and "Prepare a Sketch Range Card") were added as a result of the analysis performed during the analysis phase of the project. An additional course of instruction, "Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tactical Environment" was also added.

Single Tank Tactical Exercise. The Single Tank Tactical Exercise, which is contained in Appendix K, is a field exercise in which the 19K BNCOC students will be able to practice in the field the tasks that they will have learned earlier in BNCOC, including problem solving and decision making tasks (but not interactive tasks). The Single Tank Tactical Exercise will differ from the Situational Training Exercises (STX) in that each participant will direct his tank while operating alone rather than as part of a platoon. In this way, each student will be able to control his tank and to perform the tank commander tasks learned in BNCOC without having to coordinate with the other tanks in the platoon. Thus, the Single Tank Tactical Exercise will serve as a link between classroom training and more complex field exercises in which the tank commander has to operate as part of a larger unit. Since each tank commander will be given an opportunity to perform the specific tank commander tasks contained in the exercise, it will be possible for instructors to evaluate performance and to provide remedial training before conducting larger scale (and more expensive) field exercises. The exercise contains a total of 29 procedural tasks, which constitutes

44% of the total number of tasks in the seven task clusters represented. A shortened version of the exercise contains a total of 24 procedural tasks, constituting 36% of the tasks in the clusters.

Intra-Platoon Tactical Exercise. The Intra-Platoon Tactical Exercise, which is contained in Appendix L, is another field exercise in which the 19K BNCOC students will be able to practice selected tank commander tasks in the field. It differs from the Single Tank Exercise in two important respects: (a) The exercise will be conducted in the context of a platoon operation rather than as an exercise for a single tank; and (b) It will require the tank commanders to perform interactive tasks as well as problems solving and decision making tasks. Since each tank commander will be required to perform the specific tank commander tasks contained in the exercise, it will be possible for the instructors to evaluate performance and to provide remedial training. The exercise contains a total of 41 procedural tasks, which is 62% of the procedural tasks covered in the course. A shortened version of the exercise contains a total of 37 tasks which is 56% of the procedural tasks covered in the course.

End-of-Course Comprehensive Examination. The course outline specifies that a comprehensive examination will be administered at the end of the course. The examination has not yet been prepared, but will be contained in the Third Interim Report.

Estimate of Course Length

The current 19K BNCOC is six weeks in length. Estimates were made of the length of the course given the increase in the number of tasks to be trained (including nonprocedural tasks) and the incorporation of new training devices. The results of these estimates are contained in Table 7. Assuming that eight hours would be available each day for formal instruction, and that five days would be available each week, it was estimated that the modification of the course would increase the course length by 50 percent to nine weeks.[1] Table 7 presents the estimated length of each major event or block of instruction in hours. An estimate of the length of each task, course of instruction, and test is contained in Appendix M.

The time estimates were based, whenever possible, on the estimates contained in the current POI. Training times that were presented in fractions of hours (e.g., 1.7, 3.1) were rounded upward, whenever possible, to an amount that would cause a block of instruction to be consistent with an eight-hour training day (e.g., two four-hour blocks of instruction). Training times were increased significantly when it was obvious that new technology would be incorporated into a block of instruction or when there were many nonprocedural tasks that would have to be trained.

[1]The nine-week course length includes only instruction, testing, and in-and-out processing. Maintenance and other non-instructional activities will require additional time.

While it was estimated that nine weeks would be required to conduct the ideal 19K BNCOC, it was recognized that practical considerations could cause this amount of time to be unavailable. Consequently, a six-week course was designed as an alternative to the nine week course. The six-week course is similar to the nine-week course except that all tasks rated as "should train" tasks using the task selection procedure and all nonprocedural tasks were eliminated. All courses of instruction that were legally mandated (e.g., EEO, Law of Land Warfare) and all field exercises except the Country Fair were retained. Table 7 contains, in addition to the length of each major activity and block of instruction for the full nine-week course, an estimate of the length of each major activity and block of instruction for the six-week version of the course. It should be noted, however, that both sets of estimates are only initial estimates. More specific estimates will be available when the lesson plans for the course are completed.

Table 7

Summary of Instructional Hours for Six- and Nine-Week Courses

Course Cluster/Activity	Hours of Instruction	
	6-Week Course	9-Week Course
In Processing	8	8
Pre-Course Diagnostic Tests	8	8
Leadership	8	20
Leadership Reaction Course	4	4
Training Procedures	22	40
NBC	4	20
Mine Warfare	0	4
Communications	8	16
Land Navigation	18	32
Land Navigation Pathfinder Course	8	8
Maintenance	12	16
Tank Gunnery	56	64

(table continues)

Course Cluster/Activity	Hours of Instruction 6-Week Course	9-Week Course
Country Fair	0	4
Tactics	20	52
Single Tank Tactical Exercise	16	16
Intra-platoon Exercise	32	32
End-of-Course Test	8	8
Out Processing	8	8
Totals	240	360

REFERENCES

Dalkey, N. (1969). The Delphi method: An experimental study of group opinion. Santa Monica, CA: The Rand Corporation.

DA Field Manual 17-19K1/2. Soldier's Manual for M1 Abrams Armor Crewman: Skill Levels One and Two. September 1983.

DA Field Manual 17-19K3. Soldier's Manual for M1 Abrams Armor Crewman: Skill Level Three. September 1983.

DA Field Manual 21-2. Soldier's Manual of Common Tasks: Skill Level One. October 1983.

DA Field Manual 21-3. Soldier's Manual of Common Tasks: Skill Levels Two, Three, and Four. May 1981.

Drucker, E.H., Hannaman, D.L. Melching, W.H., & O'Brien, R.E. (1984). Analysis of training requirements for the Basic Noncommissioned Officer Course for M1 tank commanders. ARI Research Report in process.

Drucker, E.H., Hoffman, R.G., & O'Brien, R.E. (1983). Measurement of the criticality of combat tasks. HumRRO Final Report TRD(KY)-83-4.

Simpson, H., McCallum, M.C., & Fuller, R.G. (1984). Armor training in combat units, volume I: Development of methodologies for task selection, prioritization, and training definition. Anacapa Final Report.

TRADOC Pamphlet 350-30. Interservice procedures for instructional systems development. August 1975.

TRADOC Pamphlet 351-4(T). Training and analysis handbook. July 1979.

TRADOC Regulation 350-7. Systems approach to training. November 1982.

TRADOC Coordinating Draft of Regulation 350-7. Systems approach to training. January 1984.

TRADOC Coordinating Draft. Front-end analysis standard operating procedures. March 1983.

APPENDIX A
COMPARISON OF TRAINING/TESTING OBJECTIVES

Tasks as Worded and in Sequence Given in 19K BNCOC Program of Instruction

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
1. Conduct Performance Counseling with a Subordinate	"... conduct performance with a subordinate."	Same as POI.	"...written situation in which soldier is informed of subordinate's performance ... must answer 5 of 6 questions on performance counseling correctly."	Same as POI.
2. Prepare to Conduct Training	"... prepare to conduct training ..."	Closest equivalent in BTMS is Prepare for Individual Training. Steps do not match.	NO TAG	Ref. FM 21-3. Different task based on earlier How to Prepare and Conduct Military Training (FM 21-6, Nov 1975).
3. Conduct Training	"... conduct training ..."	Closest equivalent in BTMS is Conduct Individual Training. Steps do not match.	NO TAG	See #2.
4. Evaluate Conduct of Training	"... evaluate the conduct of training ..."	No equivalent in BTMS.	NO TAG	See #2.
5. Analyze Terrain Using the Five Military Aspects of Terrain	"... acting as a tank commander ... soldier must determine how each aspect affects mission, within 5 minutes."	Same as POI.	"... written test ... must answer 8 out of 10 correctly within 5 min."	Ref. FM 21-3. "As a squad leader ..." No time standards.
6. Identify Adjoining Map Sheets	"... in record map sheet number and adjoining map numbers on 7 of 9 questions in 5 min."	Same as POI.	Same as POI.	Ref. FM 17-19K3 (paraphrased). 1. Identify map sheet by name and number. 2. Identify required adjoining map sheets by direction of travel. No time or accuracy standards.

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
7. Identify Terrain Features (Natural and Man-made) on a Map	"... identify 6 out of 8 natural and man-made features."	"... identify 6 out of 8 natural and man-made features within 20 min."	"... answer 9 out of 11 questions ... within 22 min."	Ref. FM 21-1. "Natural and Manmade" not part of task title. "Without error, identify 5 major and 3 minor features marked on a map." No time standard.
8. Determine Magnetic Azimuth Using a Compass	Daylight as condition not mentioned.	Daylight as condition not mentioned.	"... under daylight conditions."	Ref. FM 21-2. "... in the field, in daylight."
9. Determine Azimuth Using Protractor and Compute Back Azimuth	"... determine grid and back azimuth to exact degree within 3 min."	"Given ... and a requirement to determine grid and back azimuth, the soldier must determine the back azimuth ... to the exact degree within 3 min."	"... determine 3 grid azimuths to 1° and 3 back azimuths exactly in 18 min."	Ref. FM 19-19K3. "1. Within 3 min., determine grid azimuth ... to within 1° or 20 mils. 2. Determine back azimuth ... to exact degree/mil."
10. Orient a Map to the Ground by Map Terrain Association	"... orient map ... within ± 30° of magnetic north within 10 min."	Same as POI.	Same as POI.	Ref. FM 21-3. Same as POI. Title has hyphen between Map and Terrain.
11. Determine Location on Ground by Terrain Association	"... within 15 min. determine 6 digit coordinate within ± 100 meters."	Same as POI.	Same as POI.	Ref. FM 21-3. Same as POI.
12. Determine Directions Using Field Expedient Methods	"During darkness ... point out directions ..."	Darkness not mentioned.	Same as POI.	Ref. FM 21-2. Darkness not mentioned but implied. Title differences: "Directions" and "Field-Expedient."
13. Orient a Map Using a a Compass	"... under daylight conditions ... orient map ... within 3° of angle ... in declination diagram ... within 1 min."	Same as POI.	Same as POI.	Ref. FM 21-3. Same as POI.

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
14. Locate an Unknown Point on a Map or Ground by Intersection	Compound objective for both intersection and resection. "... correctly explain/demonstrate the 2 methods used for intersection within 10 min."	Same as POI.	Same as LP.	Ref. FM 17-19K3. "Within 7 min. (15 min. if you measure azimuths, determine the 100,000-meter square i.d. letters and 6-digit coordinate ... within 100 meters."
15. Locate an Unknown Point on a Map or Ground by Resection	See Task 14.	See Task 14.	See Task 14.	See Task 14.
16. Navigate from One Point on the Ground to Another Point	"Given ... start and finish no more than 5000 meters ... navigate vehicle ... within 100 meters." No time standard.	Same as POI.	Same as POI.	Ref. FM 21-3. "... no more than 3,000 meters ... within 1 hr. move from start to finish ... no mention of vehicle.
17. Prepare and Submit NBC-1 Reports	"Given ... and format for NBC-1 report ... within 10 min. submit (initial and subsequent) report ..."	Same as POI.	"Given ... format for NBC-1 report and written situation ... within 10 min., submit (initial and subsequent) report."	Ref. FM 21-3. "Given ... and format ... in 5 min., submit an NBC-1 report .." Refers to initial report only but performance measures include subsequent report.
18. Prepare and Submit NBC-4 Reports	"Given time of day, GTA card 3-6-2, your location and reading from IM-174 radiacmeter ... prepare NBC-4 report and submit to supervisor within 5 min."	Same as POI.	"... given a written situation containing data necessary for preparing NBC-4 report, a correct format, and an example of an NBC-4 report ..." prepare and submit to supervisor within 5 min."	Ref. FM 21-3 (SL4 task). Same as POI but no mention of GTA card 3-6-2 and no time standards.
19. Use an IM-174 Series Radiacmeter	"Given an IM-174 series Radiacmeter with appropriate batteries ... install batteries and place	Same as POI.	"Given 2 Radiacmeters, one with batteries installed and in operation with induced dosage rate, and	Ref. FM 21-3. "Given a calibrated radiacmeter and 2 complete sets of batteries ... install batteries

	Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
		into operation ... and read radiation dose rate ..." No time standards.		one without batteries installed ... install batteries in 2nd radiacmeter and place into operation within 5 min... and read dosage rate on 1st radiacmeter within 1 min."	and take a correct reading ..."
20.	Read and Report Radiation Dosages	"... read and report radiation dosages within 10 sec. within the following acceptable limits: IM-93/ & IM-93A/UD: 20 rads IM-147/ RD: 2 rads."	Same as POI.	Same as POI.	Ref. FM 21-3. "[given] one of four types of radiacmeters ... read and report readings ... IM-93/UD & IM-93A/UD: 20 rads IM-147/ PD: 10 millirads IM-147/ PD: 2 rads."
21.	Use an AN/PDR-27 Radiac Set	"... prepare the set for use and use correct procedures ... within 5 min."	Same as POI.	Same as POI.	Ref. FM 21-3. "For gamma radiation, the dose rate is determined within + 20%."
22.	Prepare for an NBC Attack	"... prepare area for a possible NBC attack ..." No time standard.	Same as POI.	"Given a written situation, answer 6 of 8 questions within 10 min."	Ref. FM 21-3. Same as POI.
23.	Implement Mission Oriented Protective Posture (MOPP)	"Given a tactical situation in NBC environment ... put on and wear appropriate clothing ... also reduce stress and fatigue ... within 10 min."	Same as POI.	"Given slides depicting soldiers in each of 4 levels of MOPP, and a written examination sheet, identify the correct level of MOPP ... explain ways to reduce fatigue and stress ... within 20 min."	Ref. FM 21-3. "1. Soldiers are wearing appropriate clothing.. 2. Steps to reduce stress and fatigue are followed." No time standards. Oriented more towards supervision.
24.	Use M256 Chemical Detector	"Given M256 ... and dressed in MOPP 4 ... identify a simulated chemical agent .. within 18 min. ..."	Same as POI.	Same as POI.	Ref. FM 21-3. "Given M256 ... chemical agents.. you are wearing protective clothing and mask ... do steps to check M256 ...

	Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
					and take current readings."
25.	Initiate Unmasking Procedures	"... initiate unmasking procedures ... within 10 min."	Same as POI.	"... list in the correct sequence the procedures for ..."	Ref. FM 21-3. "Do the steps so that you and your soldiers unmask safely."
26.	Use an Automated Communications Electronics Operation Instruction (CEOI)	Compound objective for Military Communications cluster. 15 min. time standard for entire task.	Same as POI.	Same as POI.	Ref. FM 21-3. Covers most of compound objective except for encoding and decoding. Time standard is 10 min.
27.	Encode and Decode Messages Using KTC 600D Tactical Operations Code	See Task 26.	Same as POI.	Same as POI.	Ref. FM 17-19K. "... encode/decode ... within 30 sec. per code group or word/phrase."
28.	Use KTC 1400 Numerical Code to Authenticate Transmissions and Encrypt/Decrypt Messages and Grid Zone Letters.	See Task 26.	Same as POI except title is Use KTC 1400D Numerical Cipher/Authentication System.	Same as LP.	No time standards. Title Title is like that in LP.
29.	Establish, Enter or Leave a Radio Net	See Task 26.	Same as POI.	Same as POI.	No time standards.
30.	Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM)	"... determine if ECM is being employed ... identify interference as accidental/unintentional or intentional and perform anti-jamming measures in 6 min."	Same as POI.	"... answer 6 of 7 questions on how to recognize ECM and implement ECCM in 15 min. ... identify each of 7 jamming signals presented on a tape." For the latter, time standards were 10.	"... determine that electronic warfare is directed at your station ... employ ECCM for continued operation..."
31.	Install and Operate Hot Loop Wire Communication	"... install hot-loop ... and check operation by operating the hot loop." No time standard.	Same as POI.	"... check operation by sending a message ... and receive acknowledgement of that message ... all	Ref. FM 17-19K3. "Transmit a message using hot-loop wire communications and receive acknowledgement of

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
			action must be completed in 10 min."	it." No time standard.
32. Construct Field Expedient Antennas	"Given ..., and pencil or wooden plug, the soldier must erect a field expedient and complete a radio check within 15 min."	Same as POI.	Same as POI.	Ref. FM 17-19K3. "Given ... electrical insulators (may be expedient) ... standards have been met constructed ... and communications established.." No time standard.
33. Prepare and Submit Standard Shelling, Mortaring and Bomb Report	"... record the information received on a STANAG 2008 .. and send the information to the next higher headquarters." No time standard.	Same as POI.	"... within 5 min..." Otherwise, same as POI.	Ref. FM 17-19K3. Paraphrase of POI.
34. Install a Hasty Protective M[illegible]field	"Given ... [actual task items] ... emplace a hasty minefield so that enemy avenues of approach are blocked and information pertaining to the hasty minefield is recorded on DA Form 1355-1-R and reported to higher headquarters." No time standard.	Same as POI.	"Given a situation/ requirement sheet ... within 20 min... position all antipersonnel mines on sketch map ... position all antitank mines ... select and circle items that should be recorded on DA Form 1355-1-R and reported to higher headquarters."	Ref. FM 17-19K3. "Given .. [actual task items] ... installation of a hasty protective minefield will be conducted using proper procedures ... [and] properly recorded on DA Form 1355-1-R."
35. Remove a Hasty Protective Minefield	"Given ... [task items] .. remove all mines without detonation and clean and store them for future use."	Same as POI.	"Given a situation/requirement ... correctly answer 4 of 5 questions pertaining to removal of a hasty protective minefield ... within 5 min."	Ref. FM 17-19K3. Same as POI.

	Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
36.	Prepare and Issue an Oral Operation Order	"... prepare and issue an oral operation order .. IAW standard 5 paragraph field order." No time standard.	Same as POI.	Same as POI, but with a 30 min. time limit.	Ref. FM 17-19K2/3/4 (Draft) SL4 task. Same as POI.
37.	Direct Consolidation and Reorganization on the Objective	"Given a platoon ... the soldier, acting as platoon sergeant, will direct consolidation and reorganization on the objective." No time standard.	Same as POI	"Given a written test on directing consolidation and reorganization on the objective, the soldier must answer 4 of the 5 questions correctly within 10 min."	Ref. FM 17-19K2/3/4 (Draft), SL4 task. Same as POI.
38.	Inspect DA Form 2408-4 (Weapons Data Card) for Accuracy	"Given a DA Form 2408-4 with ... induced errors ... the soldier must locate and circle ... errors ... within 10 min."	Same as POI.	Same as POI.	Ref. FM 17-19K2/3/4 (Draft). "The weapon's firing data is recorded in the correct column on DA Form 2408-4 with no errors." No time standard.
39.	Supervise Maintenance on Individual and TO&E Equipment	"... supervise the soldiers performing maintenance ..." No time standard.	Same as POI.	"... answer 4 of the 5 questions ... must be completed in 25 min."	Ref. FM 21-3. "Within time specified, direct soldiers in the proper maintenance ... to meet Army standards ..."
40.	Estimate Range	"... at ranges from 50 to 6000 meters ... estimate range to targets using football field, flash-to-bang, recognition, and binocular reticle/mil-relation methods ... to no more than 20% error ... 20 sec. per target to apply [1st 3] methods ... one minute to apply [last] method."	Same as POI.	"... estimate range ... using the binocular reticle/mil-relation method ... be given an 8 question written test on the recognition method and flash-to-bang method."	Ref. FM 21-2. "... at ranges from 50 to 3000 meters ... state actual range to each target with no more than 20% error."

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
41. Select Firing Position	"... select the primary, alternate, and supplementary firing position in a defensive situation; in an offensive situation; he must select an overwatch maneuver firing position ... within 5 min."	"... select primary, alternate and supple- firing position in a defensive situation. In offensive situation, you must select an overwatch or maneuver firing position ... within 5 min."	"... administered a written test on selecting a firing position in defensive operations ... answer 6 of 7 test items ... within 7 min... select a firing tion for a defensive situation ... within 5 min."	Ref. FM 17-19K3. "... In defensive operations, allow coverage of assigned sectors of fire. In offensive operations (in the overwatch), allow placement of suppressive fire ..." No time standard.
42. Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank	Compound objective for class on the commander's Weapon Station. Overall time standard is 30 min.	Same as POI, but time standard is 70 min.	No test available.	Ref. FM 17-19K3. "... installed in mount cradle ... barrel ... screwed in, headspace and timing... set and checked, and function checked ... gun removed IAW SOP." No time standard.
43. Prepare Commander's Weapon Station (CWS) for Operation an an M1 Tank	See task no. 43.	See task no. 43.	See task no. 43.	Ref. FM 17-19K3. Standards provide for 9 steps to be accomplished. No time standard.
44. Secure Commander's Weapon Station (CWS) for Operation on an M1 Tank	See task no. 43.	See task no. 43.	See task no. 43.	Ref. FM 17-19K3. "... M2 MG is removed ... hatch is secured ... CWS is powered down." No time standard.
45. Perform Tank Commander's Preventative Maintenance Prepare to Fire Checks and Services on an M1 Tank	See task no. 43.	See task no. 43.	See task no. 43.	Ref. FM 17-19K3. "Any deficiencies are isolated and identified ... crew-level deficiencies are corrected ... [other] deficiencies are reported to organizational and maintenance ..." No time standard.

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
46. Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank	See task no. 43.	See task no. 43.	See task no. 43.	Ref. FM 17-19K3. See task task no. 46.
47. Boresight and System Calibrate the Main Gun on an M1 Tank	"a. Boresight and system calibrate ... using a muzzle boresight device ... within 20 min... b. Conduct accuracy screening test ... no time limit. c. Boresight ... without a muzzle boresight device ... within 20 min... d. Zero main gun [if muzzle boresight device is not used] ... within 50 min.. e. Verify zero ... within 10 min... Note: Step B & E will not be fired in BNCOC."	Same as POI.	"a. Boresight and system calibrate ... using the muzzle boresight device. b. Conduct accuracy screening test." No time standards in objective but checklist states time limits for part a is 20 min. and part b is 10 min.	Ref. FM 17-19K1/2 (SL1 task). "Given ... Pye-Watson device or black thread and tape ... boresight the main gun ... Initial MRS alignment is performed."
48. Boresight a Caliber .50 M2 HB Machinegun on an M1 Tank	"Boresight the cal. .50 ... within 10 min."	Same as POI.	No test available.	Ref. FM 17-19K3. "1. ...boresight lines ... are aligned ... 2. ... setscrews are tight." No time standard.
49. Zero a Caliber .50 M2 HB Machinegun on an M1 Tank	"Zero the cal. .50 ... within 10 min."	Same as POI.	No test available.	Ref. FM 17-19K3. "1. ...strike of rounds and aiming point ... are centered on ... zero target ... 2. ... setscrews are tight." No time standard.

	Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
50.	Direct Main Gun Engagements on an M1 Tank	Compound objective encompassing both main and machinegun engagements. "... precision engagements ... 8 sec. after target is acquired in NORMAL and EMERGENCY mode, 12 sec. for MANUAL mode; for battlesight ... 5 sec.; if machinegun ... 8 sec., and for adjustment of fire, 5 sec..."	Same as POI.	Same as POI.	Ref. FM 17-19K3. "1. Targets are acquired and identified ... 2. The weapon selected is laid for deflection. 3. The initial and subsequent fire commands are issued." No time standard.
51.	Direct Machinegun Engagements on an M1 Tank	See task no. 51.	See task no. 51.	See task no. 51.	See task no. 51.
52.	Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank	"... engage targets ... and achieve a target hit ... within 8 sec. for precision and 5 sec. for battlesight."	"... engage targets ... and achieve a taget hit ... within 14 sec. for precision and 20 sec. for battlesight."	"... engage targets ... and achieve a target hit within 8 sec. for precision and 10 sec. for battlesight."	Ref. FM 17-19K3. "1. Using precision gunnery techniques, targets are identified and suppressed and destroyed within 5 sec. if main gun is loaded, and 8 sec. if main gun is not loaded. 2. Using battlesight technique ... within 10 sec..."
53.	Engage Targets with M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank	"a. In a 3-man tank crew configuration, issue appropriate fire command and engage troop targets ... from CWS ... within 5 sec... b. Given 3-man configuration with gunner unable to identify	"Engage targets with M240 ... from CWS and achieve target suppression or destruction within 15 sec."	Same as LP.	Ref. FM 17-19K3. Same as LP with the additional standard or condition that "bursts are 20 to 25 rounds."

Task Title	Program of Instruction	Lesson Plans	Test Administrator's Guide	Soldier's Manual
	target ... issue subsequent fire command and engage troop targets .. within 5 min."			
54. Engage Targets with Caliber .50 HB Machinegun on an M1 Tank	"... hit the point targets ... within 5 sec. On area targets ... suppress targets ... within 5 sec. Apply immediate action to reduce stoppage ... within 10 sec."	"... achieve a target hit for a point target, achieve 3/5 coverage for area targets within 15 sec., and apply immediate action ... within 10 sec.: within 10 sec."	"... achieve a target hit for a point target within 10 sec., achieve 3/5 coverage for area targets within 10 sec., and apply immediate action ...	Ref. FM 17-19K3. Loading is part of the task rather than a condition. "Targets are engaged within 10 sec. after acquisition and are hit or suppressed in either the powered or manual mode." No time standard for immediate action.
55. Fire an M250 Grenade Launcher on an M1 Tank	"... perform grenade launcher firing procedures (... firing is simulated), failure to fire procedures, and grenade failure to burst or burn procedures ... within 3 min. and 10 sec."	"Perform M250 grenade launcher firing procedures within 10 sec., failure to fire procedures within 2 min., and failure to burst or burn procedures within 1 min..."	Same as LP.	Ref. FM 17-19K3. No time standards. An additional standard is that the "tank is concealed by smoke or tank's movement is screened from direct enemy observation."

APPENDIX B
LEARNING ANALYSIS OF NEW TASKS PROPOSED FOR 19K BNCOC

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TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: Common
4. TASK NUMBER: 113-571-1003
5. TASK STATEMENT: Enter or Leave a Radio Net (Establish, Enter or Leave a Radio Net)
6. EQUIPMENT REQUIRED: 3 M1 tanks with operational communications equipment
7. REFERENCE USED: FM 24-1, FM 17-19K3, and ST 24-18-2
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank Commander, NCS station operator, outside of platoon net radio operator, and 3 drivers
11. INITIATING CUES: The net control station (NCS) sends a net call for opening the net, the tank commander has a need to enter a net, and the tank commander has a need to leave a net.

TASK SUMMARY

1. TASK NUMBER: 113-571-1003
2. TASK STATEMENT: Enter or Leave a Radio Net
3. CONDITIONS:
   a. Given an operational radio, a CEOI, ACP 125(D), and a platoon net control station.
   b. Given an operational radio, a CEOI, ACP 125(D), and a radio station which is not in the platoon net.
4. STANDARDS:
   a. Know the stations that make up the platoon net.
   b. Know which station in the platoon net is the net control station.
   c. Know that stations in the platoon net answer a net call in alphabetical then numerical order.
   d. Know that the first station, in alphabetical and numerical order, that responds to the net control station opening the net, responds to the net control station challenge and then challenges the net control station.
   e. Know that second station, in alphabetical and numerical rder, responds to the net control station second challenge and then issues a challenge.
   f. Know that the third station, in alphabetical and numerical order, responds to the second station's challenge.
   g. Know that the net control station acknowledges that all authorized stations have entered the net.
   h. Know how to use the CEOI for net structure, net and net station call signs, and authentication.
   i. Know that stations in the platoon net answer a net call for closing down the net in alphabetical and numerical order.
   j. Know that the first station, in alphabetical and numerical order, that responds to the net control station closing the net, challenges the net control station.
   k. Know that the net control station responds to the first station's challenge.
   l. Know that the stations acknowledge leaving the net, in alphabetical and numerical order without challenging.
   m. Know that when leaving a net on an individual station basis, permission must be requested from the net control station.
   n. Know that when leaving a net on an individual station basis, the reason for leaving the net must be given to the net control station.
   o. Know that when entering a net on an individual basis permission must be requested from the net control station.
   p. Know that when entering a net on an individual basis the net control station will challenge the entering station.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # 113-571-1003

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Explain the stations that make up the the platoon net.	Know that the platoon net consists of the radio stations of the following: platoon leader, platoon sergeant, TC of Tank 2, and TC of Tank 4.	
2. Identify the platoon net control station.	Know that the platoon leader radio station is the platoon net control station.	
3. Explain the sequence in which stations in the platoon net answer a net call.	Know that stations in the platoon net answer a net call in alphabetical and numerical sequence, e.g., BOF07, C8T11, and L7L09 or R1B27, R1B37, and R1B62.	
4. Explain the authentication procedures between the net control station and the first station, in alphabetical and numerical order of the net; when the net control station opens the net.	Know that when the net control station is prepared to open the net, he will call the net and issue a challenge to the net. Know that the first station in alphabetical and numerical order of the net responds to the net control station, answers his challenge, and issues a challenge to him, e.g., A2D - THIS IS A2D28 - AUTHENTICATE BRAVO LIMA - OVER. A2D28 - THIS IS BOF27 - I AUTHENTICATE HOTEL- AUTHENTICATE MIKE PAPA - OVER.	
5. Explain the authentication procedures between the net control station and the second station, in alphabetical and numerical order of the net, when the net control station enters the net.	Know that the net control station answers to the net, responds to the challenge and issues a challenge, to the next station. Know that the next station in the alphabetical and numerical order of the net responds to the net control station challenge and issues a challenge to the next station in sequence, e.g., (continued from performance measure 4)	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	A2D - THIS IS A2D28 - I AUTHENTICATE PAPA - AUTHENTICATE BRAVO FOXTROT - OVER.	
6. Explain the authentication procedures between the second station, in alphabetical and numerical order of the net and the third station, in alphabetical and numerical order of the net.	Know that the third station responds to the net, and answers the challenge, e.g., (continued from performance measure 5. A2D - THIS IS C8T11 - I AUTHENTICATE LIMA - AUTHENTICATE DELTA XRAY - OVER. A2D - THIS IS L7L09 - I AUTHENTICATE CHARLIE - OVER.	
7. Explain how the net control station acknowledges that all authorized stations have entered the net.	Know that the net control station calls the net to inform all stations that their transmissions have been heard, that he has no traffic for them, and that the net is now open, e.g. (continued from performance measure 6) A2D - THIS IS A2D28 - ROGER, OUT.	NOTE: Authentication is not required when the net is opened for the first time of a new radio day. In a high threat areas where enemy ICD has been extensive normal authentication will be used.
8. Explain how to use the CEOI.		
a. For determining the net structure.	Know that the CEOI will indicate the net structure, e.g., the stations in the net and the net control station.	
b. For determining station net call signs.	Know that the CEOI will indicate, for a specific period of time the call signs of the stations and the net control station which makes up the net.	NOTE: Call signs are changed on a CEOI schedule.
c. For determining authentication challenges and responses to challenges.	Know that the CEOI will indicate, for a specific period of time, two word authentication challenges and a one word authentication response for each authentication challenge.	NOTE: Authentication challenges and responses are changed on a CEOI schedule.
9. Explain the sequence in which stations in the platoon net answer a call for closing down the net.	Know that when the net control station is prepared to close a net, he will call the net and issue close down instructions. Know that stations in the net answer the net call in alphabetical and numerical sequence, e.g., BOFO7, C8T11, and L7L09 or R1B27, R1B37, and R1B62.	NOTE: All stations remain on the air until the last station has responded.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
10. Explain the authentication procedures between the net control station and the 1st station, in alphabetical and numerical order of the net, when the net control station closes the net.	Know that the first station, in alphabetical and numerical order of the net, challenges the net control station when the net control station closes the net, e.g., A2D - THIS IS BOF70 - AUTHENTICATE KILO GOLF - OVER.	
11. Explain how the net control station responds to the first station's challenge when closing the net.	Know that the net control station responds to the first station's challenge when closing the net, e.g., A2D - THIS IS A2D28 - I AUTHENTICATE DELTA - OVER.	
12. Explain how the stations acknowledge leaving the net in alphabetical and numerical order, without challenging.	Know that station leave the net in alphabetical and numerical sequence. Know that stations leave the net without challenging, e.g., A2D28 - THIS IS BOF07 - ROGER - OUT. A2D28 - THIS IS C8T11 - ROGER - OUT. A2D28 - THIS IS L7L09 - ROGER - OUT.	
13. Explain how to leave a net on an individual station basis.	Know that the station leaving the net requests permission to leave the net from the net control station, e.g., A2D28 - THIS IS BOF07 - REQUEST PERMISSION TO LEAVE THE THE NET.	
14. Explain what other information must be provided to the net control station when a individual station requests permission to leave the net.	Know that when a single station leaves the net that station must inform the net control station the purpose for leaving the net, e.g., (continued from performance measure 13) - I HAVE TO TURN OFF ALL POWER TO CHECK THE BATTERIES - OVER.	
15. Explain the procedure for entering a net on an individual station basis. a. Entering the platoon net.	Know that when entering the platoon net on an individual station basis the entering station must request permission from the net control station, e.g., A2D28 - THIS IS BOF07 - REQUEST PERMISSION TO ENTER YOUR NET - OVER.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Entering a new net.	Know that when entering a new net on an individual basis the entering station must request permission from the net control station. Know that when entering a new station on an individual basis the entering station must inform the net control station the purpose for entering the net, e.g., R5214 - THIS IS BOFO7 - REQUEST PERMISSION TO ENTER YOUR NET TO CONTACT N4X29 - OVER.	
16. Explain the authentication procedures for an individual station entering a net. a. Entering the platoon net.	Know that the net control station may challenge an individual station, which is part of the platoon net, when a request for entering the net is received. Know that the net control station will probably recognize the call of all stations organic to the platoon net.	
b. Entering a new net.	Know that the net control station of a new net will challenge a new individual station requesting to enter the net, e.g., (continued from performance measure 15b) - BOFO7 - THIS IS R5214 - AUTHENTICATE NOVEMBER MIKE - OVER. R5214 - THIS IS BOFO7 - I AUTHENTICATE - XRAY - OVER. BOFO7 - THIS IS R5214 - PERMISSION TO ENTER THE NET GRANTED - ROGER - OUT.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (2Y)
3. TASK CATEGORY: Common
4. TASK NUMBER: None (031-503-2003, 031-503-2005)
5. TASK STATEMENT: Install/Remove the Automatic Chemical Agent Alarm System (Put the Automatic Chemical Agent Alarm System into Operation and Shut Down the Automatic Chemical Agent Alarm System)
6. EQUIPMENT REQUIRED: An automatic chemical agent alarm system and a reel of field wire (WD-1)
7. REFERENCE USED: TC 3-3, FM 21-3, and TM 3-6665-225-12
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15(T), FM 17-16(T), FM 21-3
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: Platoon sergeant directs the tank commander to install the automatic chemical agent alarm system at a designated point, platoon sergeant directs the tank commander to remove the automatic chemical agent alarm system.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Install/Remove the Automatic Chemical Agent Alarm System
3. CONDITIONS:
   a. Given an automatic chemical agent alarm system, a reel of field wire (WD-1), and TM 3-6665-225-12.
   b. Given a tactical situation which requires the installation of an automatic chemical agent alarm system.
   c. Given a tactical situation which requires the removal of an automatic chemical agent alarm system.

STANDARDS:

   a. Perform all pre-operational checks on the automatic chemical agent alarm system.
   b. Perform all pre-start-up checks on the automatic chemical agent alarm system.
   c. Perform all start-up checks on the automatic chemical agent alarm system.
   d. Position the M43 detector unit at the location selected by the platoon sergeant.
   e. Perform all steps required to shut down and remove the automatic chemical agent alarm system.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Perform pre-operational checks on the M43 detector unit.		
a. Check case for cracks, breaks, loose or missing parts.	Know M43 detector unit case and recognize cracks, breaks, loose parts, and the absence of parts.	
b. Unscrew rainshield assembly and pull the adapter and rainshield apart. Inspect for damage.	Know rainshield assembly, adapter, and rainshield.	
c. Unscrew the plug on the air inlet and screw in the adapter.	Know air inlet and its plug.	
d. Stow the rainshield in the handle.	Know how to stow the rainshield.	
e. Unscrew the air flow meter and check for damage.	Know airflow meter.	
f. Remove the bottom case assembly and check for dust, sand, and moisture.	Know bottom case assembly and recognize dust, sand, and moisture.	
g. Check electrical contacts on bottom case assembly.	Know electrical contacts on bottom case assembly.	
h. Check bottom case seal for cleanliness, breaks, or cracks.	Know bottom case seal and recognize cleanliness breaks and cracks.	
i. Check electrical contacts on detector unit assembly for breaks or corrosion.	Know electrical contacts on detector unit assembly. Recognize breaks and corrosion.	
j. Clean grove on detector unit assembly.	Know grove on detector unit assembly.	
k. Check latches on pump assembly.	Know latches on pump assembly.	
l. Check that the electronics module turnlock fastener is locked.	Know electronics module and turnlock fastener.	
m. Check that lobed nut on bail of detector unit assembly is finger tight.	Know bail on detector unit.	
2. Perform pre-operational checks on the M42 alarm unit.		
a. Check case for cracks, breaks, loose or missing parts.	Know M42 alarm unit case and recognize crack, breaks, loose parts, and the absence of parts.	
b. Test the M42 alarm unit. (1) Place the switch to TEST. (2) Place the switch to HORN OFF.	Know M42 alarm unit switch and positions of TEST and HORN OFF. Know alarm visual indicator (RED) and audio indicator (BEEP).	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
NOTE: If the alarm red indicator didn't flash and if the loudspeaker didn't beep, replace the batteries. Performance measure 3.		
3. Replace M42 alarm unit batteries.		
a. Loosen the 4 knurled screws on the cover and separate the front panel from the case.	Know cover and knurled screws.	
b. Flip the front panel over and remove the old batteries.	Know how to remove batteries.	
c. Install 4 fresh BA 3030 batteries.	Know how to install batteries.	
d. Close the battery cover, make sure the spring is fully engaged.	Know how to close cover.	
e. Position the switch to TEST and then to HORN OFF.	Know M42 alarm switch and positions TEST and HORN OFF.	
f. Reassemble the front panel to the case. Make sure the 4 knurled screws are screwed down tight.	Know cover and knurled screws.	NOTE: If the M42 alarm still doesn't work, turn it in.
4. Perform pre-operational checks on the M229 refill kit.		
a. Check the date on the kit, if expired, turn it in for a new kit.	Know current date and location of date on the kit.	
b. Open the kit and make sure that there is at least 1 reservoir and 2 air filters for each 12 hours the system will be used.	Know reservoirs and air filters. Know how long the system will be used.	
c. Check that reservoir assembly contains clear liquid and is filled above the line on the container. If the liquid is dirty or discolored, throw the reservoir away.	Know clear from dirty or discolored. Know line on the container.	
d. Check that the sensitivity bottle contains enough liquid for the mission. 2 drops are required for every 12 hours.	Know sensitivity bottle. Know how long the system will be used.	NOTE: Half a bottle leaves 35 twelve hour missions.
5. Perform pre-operational checks on the BA 3517/U battery.		
a. Check the case for cracks or missing catches.	Know BA 3517/U battery case, and recognize cracks and the absence of parts.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Check the cable for breaks or cracked insulation.	Know the cable and recognize insulation breaks and cracks.	
c. Check to see of connector pins are bent. If they are, turn the battery in.	Know connector pins and recognize bent pins.	
6. Perform pre-start-up on the M43 detector unit.		
a. Remove 1 reservoir assembly and 1 air filter from the refill kit.	Know reservoir assembly and air filter.	NOTE: If below 32°F warm up reservoir assembly.
b. Prepare the reservoir for use.		
(1) Remove safety wire from plunger.	Know safety wire and plunger.	
(2) Turn reservoir assembly upside down and strike against a hard surface until plunger is flush with cap.	Know top and bottom reservoir assembly.	
(3) Shake reservoir assembly for 1 minute, solution turns yellow.	Know 1 minute and color of yellow.	
(4) Loosen reservoir cap.	Know reservoir cap and direction to turn to loosen.	
c. Remove detector unit from the bottom case assembly.	Know detector unit and bottom case assembly.	
d. While holding detector unit upright by its handle, unscrew and remove the old reservoir.	Know counterclockwise direction for unscrewing old reservoir.	NOTE: Old reservoir should be empty.
e. Remove the cap of the reservoir.	Know the cap end of the reservoir is opposite from the E-ring end.	NOTE: The solution in the reservoir can burn exposed skin.
f. Install the new reservoir into the detector unit.	Know clockwise direction for screwing in new reservoir.	
f. Set detector unit assembly in bottom case assembly and secure 4 catches.	Know detector unit and bottom case assembly.	
7. Perform power test on the M43 detector unit and the M42 alarm unit.		
a. Connect one end of WD-1 wire to the terminal on the detector and the other end of the WD-1 wire to the terminals on the alarm.	Know terminals on detector and alarm.	
b. Remove the plug on top of the air inlet of the detector unit.	Know plug and air inlet on detector unit.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Press the zero adjust knob on the detector unit, rotate it fully clockwise and release it.	Know the zero adjust knob on the detector unit, know clockwise direction.	
d. Rotate the vol/battery test knob on the alarm unit fully clockwise.	Know the vol/battery test knob on the detector unit, know clockwise direction.	
e. Notify personnel within hearing that a test is to be made.		
f. Connect the BA 3517/U battery cable to the 24 VDC connector on the detector unit.	Know BA 3517/U battery cable and the 24 VDC connector on the detector unit.	NOTE: If below 40°F the M43 detector unit might have to warm up, as much as 50 minutes before alarm goes off.
g. Listen for a BEEP sound from the detector unit and the alarm unit. Look for a flashing RED light on the alarm unit.	Know audio and visual cues that indicates the equipment is operational.	NOTE: The equipment's operating OK if the M43 detector unit horn sounds and the M42 alarm unit loud speaker sounds and its alarm indicator flashes.
h. Switch the alarm unit knob pointer to HORN OFF or disconnect the field wire from one terminal of the detector unit.	Know alarm unit knob pointer HORN OFF position or know how to disconnect field wire from detector unit terminal.	
i. Adjust the vol/battery test knob for desired audio level.	Know vol/battery test knob on detector unit and desired audio level.	
j. Press and turn zero adjust knob counter clockwise.	Know the zero adjust knob, know the direction of counterclockwise, know that the alarm signal should stop.	
8. Perform air flow test on the M43 detector unit and the M42 alarm unit.		
a. Remove flow meter from detector unit handle and snap it on the adapter.	Know flow meter, detector unit handle, and adapter.	
b. Check that the ball in the airflow meter floats in the correct zone.	Know correct zone which ball should float in.	NOTE: BLUE -40°F to 32°F or 3.048 km (10,000 ft.) altitude, GREEN 32°F to 90° to 130°F.
c. Press in zero adjust knob of detector unit and rotate it fully.	Know zero adjust knob.	
d. Check air flow every 2 minutes after pressing in the zero adjust knob.	Know correct reading of floating ball in flowmeter.	NOTE: See note above. If temperature is below 40°F the pump assembly may be stiff and require additional warmup.
e. After 10 minutes of correct air flow press in the zero adjust knob of the detector unit while pressing in the hand crank and turning the hand crank 50 times.	Know zero adjust knob and the hand crank on the detector unit.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
f. Release the hand crank and set the zero adjust knob for a meter reading in the BLUE.	Know hand crank and zero adjust knob. Know BLUE zone meter reading.	
9. Perform sensitivity check on the M43 detector unit and the M42 alarm unit.		
a. Unscrew the cap from the sensitivity bottle.	Know sensitivity bottle.	
b. Disconnect the BA 3527/U battery from the 24 VDC connector.	Know BA 3517/U battery and 24 VDC connector.	
c. Switch the alarm unit knob pointer to HORN ON or reconnect the field wire.	Know knob pointer and HORN ON position or know how to reconnect fieldwires.	
d. Unscrew air filter plug on the detector unit. Slide out air filter. Squeeze 2 drops of liquid from the sensitivity check bottle on the black (top) part of the air filter.	Know air filter plug, air filter, and black (top) part of air filter.	
e. Immediately slide the air filter into the detector unit and screw in the air filter plug.	Know air filter and air filter plug.	
f. Press and hold the zero adjust knob on the detector unit, connect BA 3517/U battery to the 24 VDC connector, and hold zero adjust knob for 5 seconds.	Know zero adjust knob, know how to connect BA 3517/U battery to 24 VDC connector, know 5 seconds.	NOTE: Within 15 seconds to 5 minutes the detector unit and the alarm units will sound off. The alarm unit RED lamp will flash. NOTE: If it sounds off before 15 seconds get a new unit. However, give it 2 more chances, using a new filter each time.
g. Disconnect the BA 3517/U battery from the 24 VDC connector on the detector unit to stop the alarm signals.	Know BA 3517/U battery and 24 VDC connector.	
h. Replace the used air filter with a new one.	Know air filter, know black side goes up.	
i. Connect the BA 3517/U battery to the 24 VDC connector.	Know BA 3517/U battery and 24VDC connector.	
j. Conduct one last check. Press in and turn the zero adjust knob, on the the detector unit, to set the meter reading in the BLUE zone.	Know zero adjust knob, know meter, and know BLUE zone meter reading.	
k. After 5 minutes check the meter reading the same way.	Know how to recheck the meter reading.	NOTE: The meter reading must be in the BLUE.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
l. Remove the flow meter from the adapter and screw it in the handle.	Know flow meter, adapter, and handle.	
m. If it's raining or sleeting unscrew the rainshield from the handle and snap it on the adapter.	Know rainshield, adapter, and handle. Know it's raining or sleeting.	
n. If it's snowing or below 32°F leave adapter installed.	Know it's snowing or 32°F or below.	
o. If conditions listed in m or n do not exist unscrew the adapter, snap it into the rainshield and stow both in the handle. Turn air inlet to open, screw on the air inlet cap.	Know adapter rainshield, handle, air inlet, and inlet cap.	
10. Position the M43 detector unit at the location selected by the platoon sergeant.		
a. Check that the location is not less than 150 meters nor more than 400 meters from the position to be protected.	Know 150 meter and 400 meter distances.	
b. Check that the location is not more than 300 meters from adjacent automatic chemical agent alarm system.	Know 300 meter distance and location of adjacent automatic chemical agent alarm system.	
c. Check that the location is upwind from the position to be protected.	Know upwind.	
11. Shut down the M42 alarm unit.		
a. Turn the selector switch to the HORN OFF position.	Know selector switch and HORN OFF position.	
b. Disconnect field wire from binding posts.	Know field wire and binding posts and how to disconnect field wire.	
12. Shut down the M43 detector unit.		
a. Press the horn vol/battery test knob to check the battery.	Know horn vol/battery test knob.	
b. Disconnect the BA 3517/U battery from the 24 VDC connector and replace the cover.	Know BA 3517/U battery test knob.	
c. Disconnect field wire from binding posts.	Know field wire and binding posts and how to disconnect field wire.	
d. Release the 4 catches and lift the detector unit assembly from the bottom case assembly.	Know 4 catches, detector unit assembly, and bottom case assembly.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
e. Unscrew the reservoir assembly. Discard the solution. Screw the empty reservoir assembly back into place.	Know reservoir, know reservoir cap.	NOTE: The solution in the reservoir can burn. If it gets on the skin wash it off with water immediately.
f. Place the detector unit assembly in the bottom case assembly. Latch the catches.	Know detector unit assembly, bottom case assembly, and catches.	
g. Check that the rainshield, adapter, and the flow meter are in the handle.	Know rainshield, adapter, flow meter, and handle.	
h. Check that the air inlet is closed and the plug is screwed in securely.	Know air inlet and plug for air inlet.	
i. Snap the cap over the air outlet.	Know air outlet, and air outlet cap.	
j. Pull the hand crank up to its storage position.	Know hand crank and its storage position.	
13. Recover the field wire, M42 alarm unit, and the M43 detector unit.		
a. Recover the field wire and stow it on the tank.	Know how to recover field wire and where to stow it on the tank.	
b. Recover the M42 alarm unit and the M43 detector unit and stow them on the tank.	Know where to stow the M42 alarm unit and the M43 detector unit on the tank.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (1X)
3. TASK CATEGORY: Common
4. TASK NUMBER: 031-503-3006
5. TASK STATEMENT: Conduct Partial Decontamination
6. EQUIPMENT REQUIRED: M1 Tank, M8 Detection Paper, M13 or M258A1 Decontamination Kit, M11 Decontaminating Apparatus, M256 Detection Kit, cleaning solvent
7. REFERENCE USED: FM 3-87, TM 3-220, FM 21-3, and NBC Job Performance Aid
8. UNIQUE WORKING CONDITIONS: Tank Commander in MOPP-4, also role playing as the gunner, loader, and driver.
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15(T) and FM 17-16(T)
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: Enemy artillery attack with persistent chemical agents, tank commander is in MOPP-4.

TASK SUMMARY

1. TASK NUMBER: 031-503-3006
2. TASK STATEMENT: Conduct Partial Decontamination
3. CONDITIONS:
   a. Given an M1 tank in a concealed position after being contaminated by an enemy artillery attack with persistent chemical agents.
   b. Given M8 detection paper, an M13 or M258A1 Decontamination Kit, an M11 decontaminating apparatus, an M256 detection kit, cleaning solvent, lens cleaning solvent, and rags.
4. STANDARDS:
   a. Direct the crew to decontaminate their individual clothing and equipment.
   b. Detect all contamination on own individual clothing and equipment.
   c. Decontaminate all detected contaminated areas on own individual clothing and equipment.
   d. Detect all contamination in the tank commander's station which would affect the operations of controls, hatch, and sights, and which would effect the egress or ingress through the hatch.
   e. Decontaminate all detected contaminated areas in the tank commander's station.
   f. Detect all contamination in the gunner's station which would affect the operations of controls and the use of sights.
   g. Decontaminate all detected contaminated areas in the gunner's station.
   h. Detect all contamination in the loader's station which would affect the operation of controls and the hatch, and which would affect the egress or ingress through the hatch.
   i. Decontaminate all detected contaminated areas in the loader's station.
   j. Detect all contamination in the driver's station which would affect the operation of controls and the hatch, and which would affect the egress or ingress through the hatch.
   k. Decontaminate all detected contaminated areas in the driver's station.

l. Detect all contamination outside the tank commander's station which would affect the operation of the caliber .50 machinegun, optics, and vision blocks.
m. Decontaminate all detected contaminated areas outside the tank commander's station.
n. Detect all contamination outside the gunner's station which would affect the use of optics.
o. Decontaminate all detected contaminated areas outside the gunner's station.
p. Detect all contamination outside the loader's station which would affect the operation of the loader's machinegun, vision blocks, and movement from the loader's hatch to the fuel filler caps, and engine access plates.
q. Decontaminate all detected contaminated areas outside the loader's station.
r. Detect all contamination outside the driver's station which would affect the use of vision blocks.
s. Decontaminate all detected contaminated areas outside the driver's station.
t. Report to the platoon leader that partial decontamination has been completed.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # 031-503-3006

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
		NOTE: Partial decontamination involves neutralizing persistent chemical agents detected on equipment or areas of equipment crewmen will come into contact most, e.g., hatch openings, controls, optics, etc.
1. Direct the crew to decontaminate their individual clothing and equipment. a. Direct crew over the intercom to conduct partial decontamination of individual clothing and equipment.	Know that persistent chemical agents may be inside the tank. Know how to use the intercom.	
2. Detect contamination on own individual clothing and equipment. a. Remove M8 detection paper from protective mask carrier. b. Check own individual clothing and equipment for persistent chemicals with M8 detection paper.	Know that M8 detection paper is carried in the protective mask carrier. Know how to apply M8 detection paper to suspected contaminated area, know M8 detection paper reaction to chemical agents.	NOTE: The hood, gloves, and overboots must be checked first and decontaminated if necessary within 15 minutes after chemical attack. If not, the chemical may be absorbed into the fabric.
3. Decontaminate all detected contaminated areas on own individual clothing and equipment. a. Remove M13 decontamination kit from protective mask cover. b. Remove a clothing decontamination bag from the M13 decontamination kit. c. Crush the capsule inside the decontamination bag and mix its contents (dye) with the power. d. Dust and lightly rub the outer garments with the bag.	Know that the M13 decontamination kit is carried in the protective mask carrier. Know how to open the M13 decontamination kit, know appearance of decontamination bag. Know there is a dye capsule inside the decontamination bag, know dye must be mixed with the powder in the decontamination bag. Know how to use the decontamination bag.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
e. Rub wet spots to detect red or brownish color which indicates the presence of liquid agents.	Know what red or brown spots indicate.	
f. Remove cutter from the M13 decontamination kit and cut away colored spots with the cutter.	Know there is a cutter in the decontamination. Know deep contaminated areas must be cut away.	
4. Detect all contamination in the tank commander's station which would affect temporary operations of the tank.		
a. Check for signs of contamination of controls, hatch release, and optics.	Know signs of contamination and likely places of contamination.	
b. Check for signs of contamination which would affect egress or ingress through the hatch.	Know areas that the tank commander would come into contact during egress or ingress through the hatch.	
c. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	
5. Decontaminate all detected contaminated areas in the tank commander's station.		
a. Remove a clothing decontamination bag from the M13 decontamination kit.	Know appearance of decontamination bag.	
b. Crush the capsule inside the decontamination bag and mix its contents (dye) with the powder).	Know there is a dye capsule inside the decontamination bag, know dye must be mixed with the powder in decontamination bag.	
c. Dust and lightly rub contaminated areas on controls and the hatch release.	Know how to use the decontamination bag.	
d. Blot optical instruments with rags. Wipe with organic solvent. Use lens cleaning solution on lenses.	Know how to decontaminate optics.	
e. Spray hatch opening and cover with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
f. Remove the M256 detector kit from its storage area.	Know where the M256 detector kit is stowed on the tank.	
g. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measures c, d, and e.
h. Remove decontamination residue from decontaminated areas by wiping with a rag.	Know how to remove decontamination residue.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
6. Detect all contamination in the gunner's station which would affect temporary operation of the tank.		
a. Check for signs of contamination of controls and optics.	Know signs of contamination and likely places of contamination.	
b. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas.	
7. Decontaminate all detected contaminated areas in the gunner's station		
a. Remove the clothing decontamination bag from the M13 decontamination kit.	Know appearance of decontamination bag.	
b. Crush the capsule inside the decontamination bag and mix its contents (dye) with the powder.	Know there is a dye capsule inside the decontamination bag.	
c. Dust and lightly rub contaminated areas on controls.	Know how to use the decontamination bag.	
d. Blot optical instruments with rags. Wipe with organic solvent. Use lens cleaning solution on lenses.	Know how to decontaminate optics.	
e. Remove the M256 detector kit from its storage area.	Know where the M256 detector is stowed on the tank.	
f. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measures c and d.
g. Remove decontamination residue from decontaminated areas by wiping with a rag.	Know how to remove decontamination residue.	
8. Detect all contamination in the loader's station which would affect temporary operation of the tank.		
a. Check for signs of contamination of controls and hatch release.	Know signs of contamination and likely places of contamination.	
b. Check for signs of contamination which would affect egress and ingress through the hatch.	Know areas that a loader would come into contact during egress or ingress through the hatch.	
c. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
9. Decontaminate all detected contaminated areas in the loader's station.		
a. Remove the clothing decontamination bag from the M13 decontamination kit.	Know appearance of decontamination bag.	
b. Crush the capsule inside the decontamination bag and mix its contents (dye) with the powder.	Know there is a dye capsule inside the decontamination bag, know dye must be mixed with the powder in decontamination bag. Know how to use the decontamination bag.	
c. Dust and lightly rub contaminated areas on controls and the hatch release.		
d. Spray the hatch opening and cover with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
e. Remove the M256 detector kit from its storage area.	Know where the M256 detector kit is stowed on the tank.	
f. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measures c and d.
g. Remove decontamination residue from decontaminated areas by wiping with a rag.	Know how to remove decontamination residue.	
10. Detect all contamination in the driver's station which would affect temporary operation of the tank		
a. Check for signs of contamination of controls and hatch release.	Know signs of contamination and likely places of contamination.	
b. Check for signs of contamination which would affect egress and ingress through the hatch.	Know areas that the driver would come into contact during egress or ingress through the hatch.	
c. Check suspected areas of contamination with M8 detection paper.	Know how to apply detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	
11. Decontaminate all detected contaminated areas in the driver's station.		
a. Remove the clothing decontamination bag from the M13 decontamination kit.	Know the appearance of decontamination bag.	
b. Crush the capsule inside the decontamination bag and mix its contents (dye) with the powder.	Know there is a dye capsule inside the decontamination bag.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Dust and lightly rub contaminated areas on controls and hatch release.	Know how to use the decontamination bag.	
d. Spray the hatch opening and cover with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
e. Remove the M256 detector kit from its storage area.	Know where the M256 detector kit is stowed on the tank.	
f. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measures c and d.
g. Remove decontamination residue from decontaminated areas by wiping with a rag.	Know how to remove decontamination residue.	
12. Detect all contamination outside the tank commander's station which would affect the operation of the caliber .50 machinegun, optics, and vision blocks.		
a. Check for signs of contamination of caliber .50 machinegun, optics, and vision blocks.	Know signs of contamination and likely places of contamination.	
b. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	
13. Decontaminate all detected contaminated areas outside the tank commander's station.		
a. Spray the caliber .50 machinegun with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
b. Remove decontamination residue with solvent and wipe the solvent off with a rag.	Know how to remove decontamination residue.	
c. Blot optics lenses with lens cleaning solution. Let air dry.	Know how to decontaminate optics.	
d. Wipe vision block off with solvent and remove solvent with a rag.	Know how to decontaminate vision blocks.	
e. Remove the M256 detector kit from storage area.	Know where M256 detector kit is stowed on the tank.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
f. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	*NOTE:* If M256 detector kit readings are positive, repeat performance measures a, b, c, and d.
14. Detect all contamination outside the gunner's station which would affect the use of optics.		
a. Check for signs of contamination of optics.	Know signs of contamination and likely places of contamination.	
b. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	
15. Decontaminate all detected contaminated areas outside the gunner's station.		
a. Blot optics lenses with lens cleaning solution. Let air dry.	Know how to decontaminate optics.	
b. Remove the M256 detector kit from its storage area.	Know where M256 detector kit is stowed on the tank.	
c. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance step a.
16. Detect all contamination outside the loader's station which would affect the operation of the loader's machinegun, vision blocks, and movement from the loader's hatch to the fuel filler caps and engine access plates.		
a. Check for signs of contamination of the loader's machinegun, vision blocks, and the path from the loader's hatch to fuel filler caps and engine access plate.	Know signs of contamination and the likely places of contamination.	
b. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
17. Decontaminate all detected contaminated areas outside the loader's station.		
a. Wipe vision blocks off with solvent and remove solvent with a rag.	Know how to decontaminate vision blocks.	
b. Spray the loader's machinegun with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
c. Spray the path from the loader's hatch to fuel filler caps and engine access plates with DS2 using the M11 decontaminating apparatus.	Know how to use the M11 decontaminating apparatus.	
d. Remove decontamination residue with solvent and wipe the solvent off with a rag.	Know how to remove decontamination residue.	
e. Remove the M256 detection kit from its storage area.	Know where the M256 detector kit is stowed on the tank.	
f. Determine with the M256 detector kit if suspected contaminated areas have been contaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measures a, b, and c.
18. Detect all contamination outside the driver's station which would affect the use of vision blocks.		
a. Check for signs of contamination of the driver's vision blocks.	Know signs of contamination and likely places of contamination.	
b. Check suspected areas of contamination with M8 detection paper.	Know how to apply M8 detection paper to suspected contaminated areas, know M8 detection paper reaction to chemical agents.	
19. Decontaminate all detected contaminated areas outside the driver's station.		
a. Wipe vision blocks off with solvent and remove solvent with a rag.	Know how to decontaminate vision blocks.	
b. Remove M256 detection kit from its storage area.	Know where the M256 detector kit is stowed on the tank.	
c. Determine with the M256 detector kit if suspected contaminated areas have been decontaminated.	Know how to use the M256 detector kit.	NOTE: If M256 detector kit readings are positive, repeat performance measure a.
20. Report to the platoon leader that partial decontamination has been completed.	Know from crewmember reports that their station, inside and outside, have been partially decontaminated. Know how to contact the platoon leader.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: Common
4. TASK NUMBER: None
5. TASK STATEMENT: Use Marginal Information on a Map
6. EQUIPMENT REQUIRED: Four 1:50,000 military maps, of which two can be joined together
7. REFERENCE USED: FM 21-26
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: You will be told to identify marginal information and topographic symbols on a map and to join two map sheets

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: *Use Marginal Information on a Map*
3. CONDITIONS:
   a. Given a 1:50,000 military map that includes the following marginal information:
      (1) Sheet name
      (2) Sheet number
      (3) Scale
      (4) Bar scales
      (5) Adjoining map sheet diagram
      (6) Grid note
      (7) Declination diagram
      (8) Contour interval
   b. Given a 1:50,000 military map that includes the following topographical symbols:
      (1) Man made features
      (2) Water features
      (3) Vegetation
      (4) Relief
      (5) Roads
   c. Given four 1:50,000 military maps, two of which may be joined together.
4. STANDARDS:
   a. Locate within 8 minutes marginal information, indicated in 3a(1) thru (6) above, on a military map.
   b. Explain within 4 minutes how each item of marginal information, indicated in 3a(1) thru (6) above, is used.
   c. Locate within 5 minutes topographic symbols, indicated in 3b(1) thru (5) above, on a military map.
   d. Using a specified 1:50,000 map and the adjoining map sheet diagram for that map, select within 2 minutes from three 15,000 maps the adjoining map sheet for the specified map.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Locate the sheet name on a military map.		
a. Focus on the center of the upper margin and the right side of the lower margin of the map.	*Know terms:* margin, *center, right, upper,* and lower.	
b. Read the name that appears in these locations.	Know sheets are named after the largest cities on the map or outstanding cultural or geographic features.	
c. Explain how the sheet name is used.	*Know sheet names are for identification purposes.* Sheet names are referenced in operation orders.	
2. Locate the sheet number on a military map.		
a. Focus on the upper right margin of the map.	Know terms: margin, upper, and right.	
b. Read the number that appears at this location.	Know sheet numbers are shown in four Arabic numerals followed by a Roman numeral, e.g., 7062 IV.	
c. Explain how the sheet number is used.	Know sheet numbers are for identification purposes. Sheet numbers are referenced in *operation orders and aid in determining* adjoining map sheets.	
3. Locate the scale on a military map.		
a. Focus on the lower center margin of the map.	Know terms: margin, lower, and center.	
b. Read the scale that appears at this location.	*Know that the scale is shown as a fraction,* e.g., 1:25,000, 1:50,000, etc. This means for a 1:25,000 scale map that one unit of *measurement on the map equals* 25,000 units of measurement on the ground, e.g., 1 inch on the map equals 25,000 inches on the ground.	
c. Explain how the scale of a map is used.	Know that scale provides a relationship between map distance and ground distance.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
4. Locate bar scales on a military map. a. Focus on the lower center margin of the map. b. Read the bar scales that appear at this location. c. Explain how bar scales are used.	Know terms: margin, lower, and center. Know that bar scales are rulers in different units of measurement, e.g., statute mile, yard, meter, etc. Know that bar scales are used to convert an unknown map distance between two points to known distance of one or several units of measurement.	
5. Locate the adjoining map sheet diagram on a military map. a. Focus on the lower right margin of the map. b. Read from the adjoining map sheet diagram that appears at this location the map sheet number for the map to the right, left, above, and below. c. Explain how the adjoining map sheet diagram is used.	Know terms: margin, lower, and right. Know map sheet numbers of the maps which join the map being used. Know that the adjoining map sheet diagram is used to identify map sheets which join.	
6. Locate the grid notes on a military map. a. Focus on the lower center margin of the map. b. Read the grid note that appears at the location. c. Explain how grid notes are used.	Know terms: margin, lower, and center. Know that grid notes provide information pertaining to the grid system used, the interval between grid lines, and the number of digits omitted from the grid values. Know that grid notes are used to determine coordinates of a location and to find a location from given coordinates.	
7. Locate the declination diagram on a military map. a. Focus on the lower margin of the map. b. Read the angles of deviation between true north and grid north. c. Read the angles of deviation between true north and magnetic north.	Know terms: lower and margin. Know symbols for true north and grid north. Know symbols for degrees and seconds. Know how many seconds in a degree. Know symbols for true north and magnetic north. Know symbols for degrees and seconds. Know how many seconds in a degree.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
d. Read the angles of deviation between grid north and magnetic north.	Know symbols for grid north and magnetic north. Know symbols for degrees and seconds. Know how many seconds in a degree.	
e. Explain how the declination diagram is used.	Know angle of deviation between magnetic north and grid north is used to convert grid north to magnetic north or magnetic north to grid north, e.g., if magnetic north is 3 degrees right of grid north a magnetic reading of 37 degrees equals a grid reading of 40 degrees.	
8. Locate the contour interval on a military map.		
a. Focus on the lower center margin.	Know terms: margin, lower, and center.	
b. Read the contour interval that appears at this location.	Know that contour intervals is the vertical distance between adjacent contour lines.	
9. Locate man made features on a military map.		
a. Focus on the legend in the lower left margin.	Know terms: margin, lower, left, and legend.	
b. Locate black topographic symbols on the map.	Know black topographic symbols represent man made features.	
c. Identify black topographic symbols on the map by comparing them with black topographic symbols in the legend.	Know that the legend on the map identifies each black symbol which represents a man made object.	
10. Locate water features on a military map.		
a. Focus on the legend in the lower left margin.	Know terms: margin, lower, left, and legend.	
b. Locate blue topographic symbols on the map.	Know blue topographic symbols represent water.	
c. Identify blue topographic symbols on the map by comparing them with blue topographic symbols in the legend.	Know that the legend on the map identifies each blue symbol which represents water.	
11. Locate vegetation on a military map.		
a. Focus on the legend in the lower left map.	Know terms: margin, lower, left, and legend.	
b. Locate green topographic symbols on the map.	Know green topographic symbols represent vegetation.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Identify green topographic symbols on the map by comparing them with green topographic symbols in the legend.	Know that the legend on the map identifies each green symbol which represents *vegetation*.	
12. Locate relief on a military map. a. Locate contour lines on a military map. b. Find the top of a hill. c. Find a gentle slope. d. Find a steep slope.	Know that contour lines are shown in brown. Know that the uppermost contour lines closes like a circle. Know that contour lines evenly spaced and far apart indicate a gentle slope. Know that contour lines evenly spaced and close together indicate a steep slope.	
13. Locate roads on a military map. a. Focus on the legend in the lower left margin. b. Locate a hard surfaced major road. c. Locate an improved light duty road. d. Determine the general width or the general surface of roads.	Know terms: margin, lower, left, and legend. Know that major hard surfaced roads are shown on a map in red. Know that *improved* light duty roads are shown on a map in black. Know that the legend indicates the general width and the general surface of roads, e.g., hard surface, general duty, four lanes, etc.	
14. Join map sheets together. a. Identify the number of the map sheet being used. b. Identify the number of each additional map sheet provided. c. Find the adjoining map sheet diagram of the map sheet being used. d. Using the adjoining map sheet diagram identify map sheets which join the map sheet being used. e. Join the map sheet being used with any additional map sheets which are appropriate.	Know location of map sheet numbers on the map. Know the location of map sheet numbers on the map. Know the location of the adjoining map sheet diagram. Know how to use the adjoining map sheet diagram. Know how to line up like numbered vertical or horizontal grid lines.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (2Z)
3. TASK CATEGORY: Common
4. TASK NUMBER: None
5. TASK STATEMENT: Receive and Orient Newly Assigned Crewman
6. EQUIPMENT REQUIRED: None
7. REFERENCE USED:
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank Commander and one role playing newly assigned crewman
11. INITIATING CUES: The new crewman is introduced to the tank commander by the platoon leader or the platoon sergeant.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Receive and Orient Newly Assigned Crewman
3. CONDITIONS:
   a. Given an assembly area in a combat situation you have just been assigned a new crewman.
   b. Given a garrison situation you have just been assigned a new crewman.
4. STANDARDS:
   Condition 3a:
   a. Ask the crewman about his family and where his home is.
   b. Ask the crewman about his military training and experience.
   c. Ask the crewman about his civilian training and experience.
   d. Tell the crewman about yourself and each crewmember.
   e. Tell the crewman about the condition of the tank.
   f. Tell the crewman what his job will be.
   g. Review for the crewman his crew duties.
   h. Explain the platoon tactical SOP to the crewman.
   i. Tell the crewman what the platoon has been doing the past week and what the platoon will be doing during the next few days.
   j. Explain to the crewman the mess location and its hours of operation.
   k. Explain to the crewman rest and watch procedures.
   l. Tell the crewman where the latrine is located.
   m. Check that the crewman has the proper individual weapon and ammunition, and a complete issue of serviceable clothing and equipment.
   o. Introduce the crewman to the other crewmembers.

Condition 3b:

a. Ask the crewman about his family and where his home is.
b. Ask the crewman if he has any personal problems.
c. Ask the crewman about his military training and experience.
d. Ask the crewman about his civilian training and experience.
e. Tell the crewman about yourself and each crewmember.
f. Tell the crewman about the conditions of the tank.
g. Tell the crewman what his job will be.
h. Review for the crewman his crew duties.
i. Explain the platoon tactical SOP to the crewman.
j. Tell the crewman what training the platoon is conducting.
k. Give the crewman a brief history of the unit, its shoulder patch, and its crest.
l. List for the crewman recreational facilities on the post.
m. List for the crewman support facilities on the post.
n. Explain to the crewman the location of the messhall and its hours of operation.
o. Warn the crewman of drug and venereal disease problems.
p. List for the crewman off limits establishments in the area.
q. Emphasize to the crewman the importance of selecting good companions.
r. Show the crewman his quarters.
s. Check that the crewman has a complete issue of serviceable clothing and equipment.
t. Introduce the crewman to other crewmembers.
u. Detail one crewman to take the new crewman on an orientation ride of the post.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
Condition a (combat situation):		
1. Ask the crewman about his family and where his home is:		
a. Ask the crewman about his family.	Reflect concern about crewmember's family well being.	
b. Ask the crewman where his home is.	Reflect interest in the crewmember's home area.	
2. Ask the crewman about his military and training experience.		
a. Ask the crewman about his military training.	Know personnel job selection criteria.	NOTE: Answers to these questions will provide a basis for crewman assignment.
b. Ask the crewman about his military experience.	Know personnel job selection criteria.	
3. Ask the crewman about his civilian training and experience.		
a. Ask the crewman about his civilian training experience.	Know personnel job selection criteria.	NOTE: Answers to these questions will provide a basis for secondary job duties, e.g., demolitions, etc.
b. Ask the crewman about his civilian experience.	Know personnel job selection criteria.	
4. Tell the crewman about yourself and each crewmember.		
a. Tell the crewman about yourself.	List your military experience in factual terms.	NOTE: This information will let the crewman know what to expect when he joins the crew. The tank commander should state facts and not overplay or downplay individuals. However, if a crewmember's personal activities could have a serious adverse effect upon a new crewman, should they become off duty associates, the new crewman should be told to avoid such association.
b. Tell the crewman about each crewmember.	Know everything about your crewmembers.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
5. Tell the crewman about the condition of the tank.		
a. Tell the crewman about the fire control system, all weapons, ammunition load, power train, suspension system, and communications.	Know the condition of the tank.	NOTE: This information will let the crewman know the general readiness condition of the tank.
6. Tell the crewman what his job will be.		
a. Evaluate the crewman's training and experience to be gunner, loader, or driver.	Weigh crewman's training and experience with job position requirements.	
b. Evaluate the current crewman's training and experience to be gunner, loader, or driver.	Weigh crewman's demonstrated abilities with job position requirements.	
c. Decide crewman's assignment.	Select the best qualified crewman for each crew position.	NOTE: The decision may necessitate shifting a current crewman to a new job.
d. Tell the crewman what his job will be.	Reflect confidence in crewman's ability to perform the job.	
7. Review for the crewman his crew duties.		
a. Review before and after operations preventative maintenance checks and services.	Know the duties of the crewman.	
b. Review prepare-to-fire checks.	Know the duties of the crewman.	
c. Issue fire commands and explain what the crewman does during each different fire command.	Know the duties of the crewman.	
8. Explain the platoon tactical SOP to the crewman.		
a. Explain to the crewman those parts of the platoon tactical SOP that pertains to individual crewmen.	Know parts of platoon tactical SOP that pertains to individual crewman.	NOTE: Many parts of the platoon tactical SOP pertains only to the tank commander, platoon sergeant, or platoon leader.
9. Tell the crewman what the platoon has been doing the past week and what the platoon will be doing during the next few days.		
a. Tell the crewman what the platoon has been doing.	Know what the platoon has been doing and emphasize lessons learned.	
b. Tell the crewman what is being planned for the platoon to do.	Know future plans for the platoon.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
10. Explain to the crewman the mess location and its hours of operation.	Know the mess location and its hours of operation.	
11. Explain to the crewman rest and watch procedures.	Know rest and watch procedures.	
12. Tell the crewman where the latrine is located.	Know latrine location.	
13. Check that the crewman has the proper individual weapon and ammunition, and a complete issue of serviceable clothing and equipment. a. Check individual weapon and ammunition for serviceability. b. Check individual clothing for quantity, size, and serviceability. c. Check individual equipment for quantity and serviceability.	Know weapon serviceability and correct amount of ammunition for the weapon. Know quantity, size, and serviceability of individual clothing. Know quantity and serviceability of individual equipment.	NOTE: Individual weapon may have to be changed because of crew position assignment.
14. Introduce the crewman to other crewmembers. a. Introduce personnel by rank and name.	Know rank and name of crewmembers.	NOTE: The meeting should be in a relaxed setting and the tank commander should remain during the meeting.
Condition b (garrison situation): 1. Ask the crewman about his family and where his home is. a. Ask the crewman about his family. b. Ask the crewman where his home is.	Reflect concern about the crewmember's family well being. Reflect interest in the crewmember's home area.	
2. Ask the crewmember if he has any personal problems. a. Ask the crewmember if he has any physical problems. b. Ask the crewmember if he has any family problems	Determine physical problems which might impair job performance. Determine family problems which might impair job performance.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
3. Ask crewman about his military training and experience.		
a. Ask the crewman about his military training.	Know personnel job selection criteria.	NOTE: Answers to these questions will provide a basis for crewman assignment.
b. Ask the crewman about his military experience.	Know personnel job selection criteria.	
4. Ask the crewman about his civilian training and experience.		
a. Ask the crewman about his civilian training.	Know personnel job selection criteria.	NOTE: Answers to these questions will provide a basis for secondary job duties, e.g., demolitions, etc.
b. Ask the crewman about his civilian experience.	Know personnel job election criteria.	
5. Tell the crewman about yourself and each crewmember.		
a. Tell the crewman about yourself.	List your military experience in factual terms.	NOTE: This information will let the crewman know what to expect when he joins the crew. The tank commander should state facts and not overplay or downplay individuals. However, if a crewmember's personal activities could have a serious adverse effect upon a new crewman, should they become off duty associates, the new crewman should be told to avoid such association.
b. Tell the crewman about each crewmember.	Know everything about your crewmembers.	
6. Tell the crewman about the condition of the tank.		
a. Tell the crewman about the fire control system, all weapons, ammunition load, power train, suspension system, and communications.	Know the condition of the tank.	NOTE: This information will let the crewman know the general readiness condition of the tank.
7. Tell the crewman what his job will be.		
a. Evaluate the crewman's training and experience to be gunner, loader, or driver.	Weigh crewman's training and experience with job position requirements.	
b. Evaluate current crewman's training and experience to be gunner, loader, or driver.	Weigh crewman's demonstrated abilities with job position requirements.	
c. Decide crewman's assignment.	Reflect confidence in crewman's ability to perform the job.	NOTE: The decision may necessitate shifting a current crewman to a new job.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
8. Review for the crewman his crew duties.		
a. Review before and after operations preventative maintenance checks and services.	Know the duties of the crewman.	
b. Review prepare-to-fire checks.	Know the duties of the crewman.	
c. Issue fire commands and explain what the crewman does during each different fire command.	Know the duties of the crewman.	
9. Explain the platoon tactical SOP to the crewman.		
a. Explain to the crewman those parts of the platoon tactical SOP that pertains to individual crewmen.	Know parts of the platoon tactical SOP that pertains to individual crewmen.	NOTE: Many parts of the platoon tactical SOP pertains only to the tank commander, platoon sergeant, or platoon leader.
10. Tell the crewman what training the platoon is conducting.		
a. Tell the crewman what level of training the platoon is in.	Know what level of training the platoon is in, e.g., crew, platoon, company/team, or battalion.	
b. Tell the crewman what specific training the platoon will be conducting this week.	Know what specific training the platoon will be conducting, e.g., crew (tactics or firing), platoon (tactics or firing), co/team (tactics), etc.	
11. Give the crewman a brief history of the unit, its shoulder patch, and its crest.		
a. Give the crewman a brief history of the crest.	Know the unit history, its battles, its lineage, its heroes.	NOTE: This information helps build individual pride in the unit and unit esprit de corps.
b. Explain to the crewman the symbolism of the unit's patch and crest.	Know the symbolism and motto of the unit's shoulder patch and crest.	
12. List for the crewman support facilities on the post.		
a. List for the crewman recreational facilities which are available during off duty time.	Know post recreational facilities, e.g. athletic, hunting and fishing, hobby, camping, theaters, etc.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
13. List for the crewman support facilities on the post. a. List for the crewman support facilities which are available.	Know post support facilities, e.g., PX, commissary, clothing sales store, service station, hospital, etc.	
14. Explain to the crewman the location of the messhall and its hours of operation.	Know the location and the hours of operation of the messhall.	
15. Warn the crewman about drug and venereal disease problems. a. Warn the crewman about drug problems.	Know the local drug problems, procedures for detection, and treatment.	
b. Warn the crewman about venereal disease problems.	Know the local venereal disease problems and treatment procedures.	
16. List for the crewman off limits establishments in the area.	Know the off limits establishments in the area.	
17. Emphasize to the crewman the importance of selecting good companions. a. Explain the importance of selecting companions with like and acceptable interests.	Advise the crewman to select his own companions. Those with like and acceptable interests will lead to enjoyable off duty activities.	
b. Explain the importance of avoiding companions who indulge in questionable off duty activities.	Advise the crewman not to associate with those who indulge in questionable off duty activities as it will lead to undesirable consequences.	
18. Show the crewman to his quarters. a. Show the crewman his quarters. b. Show the crewman latrine facilities. c. Explain to the crewman who will share his quarters.	Know where the crewman's quarters are. Know where the latrine facilities are. Know who shares the quarters with the crewman.	
19. Check that the crewman has a complete issue of serviceable clothing and equipment. a. Check individual clothing for quantity, size, and serviceability.	Know quantity, size, and serviceability of individual clothing.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Check individual equipment for quantity and serviceability.	Know quantity and serviceability of individual equipment.	
20. Introduce the crewman to other crewmembers. a. Introduce personnel by rank and name.	Know rank and name of crewmembers.	NOTE: The meeting should be in a relaxed setting and the tank commander should remain during the meeting.
21. Detail one crewman to take the new crewman on an orientation ride of the post. a. Instruct the current crewman to take the new crewman by company and battalion, post support, and post recreational facilities.	Know current crewman who is thoroughly familiar with post facilities.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (2X)
3. TASK CATEGORY: Common
4. TASK NUMBER: None (121-030-3501)
5. TASK STATEMENT: Prepare Rater's Section of an Enlisted Evaluation Report (Prepare Rater's, Indorser's, and Reviewer's Section of an Enlisted Evaluation Report)
6. EQUIPMENT REQUIRED: DA Form 2166-6 (Enlisted Evaluation Report) with Part I completed
7. REFERENCE USED: AR 623-205
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-19K 1/2
10. PERSONNEL REQUIRED: Tank Commander and one role playing ratee
11. INITIATING CUES: You have been given a DA Form 2166-6, with Part I completed, and told to complete the rater's portion of the form.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Prepare the Rater's Section of an Enlisted Evaluation Report.
3. CONDITIONS:
   a. Given AR 623-205
   b. Given DA Form 2166-6 (Enlisted Evaluation Report) with Part I completed.
4. STANDARDS:
   a. Part I of the DA Form 2166-6 will be reviewed with 100% accuracy by the rater with the ratee.
   b. Part II of the DA Form 2166-6 will be completed by the rater, with 100% accuracy, and verified by the ratee.
   c. The rater's part of Parts III and IV Form 2166-6 will be completed by the rater, will be consistent with the biographical data of the ratee provided to the rater, and in accordance with Chapter 6, AR 623-205.
   d. The report will be authenticated in Part V of DA Form 2166-6 by the rater and in accordance with AR 625-203.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Verify the information entered in Part I of DA Form 2166-6 with the ratee.		
a. Ask ratee to verify data entered in individual blocks of Part I of DA Form 2166-6.	Know interview/verification techniques.	NOTE: Ratee can only verify personal information, block A thru F and part of G.
b. Verify data entered in all blocks, a thru l, of Part I of DA Form 2166-6.	Know that data in all blocks of Part I must be verified.	
c. Notify the personnel officer of errors found in Part I of DA Form 2166-6.	Know to notify personnel officer of errors found in Part I.	
2. Complete II of DA Form 2166-6 and verify the information with the ratee.		
a. Enter the principal duty title of the ratee in Part II, block A, of DA Form 2166-6.	Know the ratee's principal duty title.	
b. Enter the five-place Duty MOS Code that identifies the ratee's duty position in Part II, block B, of DA Form 2166-6.	Know the ratee's Duty MOS Code.	
c. Enter a clear, concise description of the ratee's daily duties in Part II, block C, of DA Form 2166-6.	Know the ratee's daily duties.	
d. Verify all entries with the ratee.	Know that entries in Part II must be verified.	
3. Complete the rater's portion of Parts III and IV of DA Form 2166-6.		
a. Enter numerical ratings of 0 thru 5 in rater's column in Part IIIA of DA Form 2166-6 for each of ten professional competence items.	Know that 5 is the highest numerical rating and that 0 is the lowest numerical rating.	
b. Enter numerical ratings of 0 thru 5 in rater's column in Part IIIB of DA Form 2166-6 for each of seven professional standards items.	Know that 5 is the highest numerical rating and that 0 is the lowest numerical rating.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Describe the ratee's demonstrated performance of present duty in Part IIIC.1 of DA Form 2166-6.	Know rater's demonstrated performance.	
d. Enter rater's numerical evaluation of the ratee's potential in Part IV of DA Form 2166-6.	Know that 40 is the highest numerical rating and that 0 is the lowest numerical rating. Know terms--promote ahead, promote with—do not promote.	
e. Comment on the ratee's potential for higher-level school assignment, and supervisory responsibility.	Know ratee's potential for higher-level school, assignment, and supervisory responsibility.	
4. Authenticate the enlisted evaluation report in Part V of DA Form 2166-6.		
a. Fill in all blocks of Part V of DA Form 2166-6.	Know that all blocks must be filled in.	
b. Sign signature block in Part A of DA Form 2166-6.	Know that the evaluation report must be signed.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (3Z)
3. TASK CATEGORY: Common
4. TASK NUMBER: None
5. TASK STATEMENT: Conduct Searches in Accordance with the Uniform Code of Military Justice
6. EQUIPMENT REQUIRED: None
7. REFERENCE USED: Advance Sheet Booklet, "Military Justice and the Law of War"
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: Uniform Code of Military Justice
10. PERSONNEL REQUIRED: Tank Commander and one role playing suspect
11. INITIATING CUES: You suspect a crime has been committed and you suspect the location of tangible evidence.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Conduct Searches in Accordance with the Uniform Code of Military Justice.
3. CONDITIONS:
   a. Given a suspected criminal situation with corroborating evidence.
   b. Given a DA Form 3881 or a GTA 19-6-3.
4. STANDARDS:
   a. Identify three individuals by position who can authorize searches.
   b. List the primary reason why searches are authorized.
   c. List two reasons when you may conduct searches without permission of an authorizing authority.
   d. Explain the two components of probably cause in regards to searches.
   e. Explain six reasons why an informant can be considered reliable.
   f. Explain three limits of authorizations for searches.
   g. Explain the procedure for obtaining authorization for searches.
   h. Explain the major judicial effect of illegal searches.
   i. Identify three categories of Army personnel who may be authorized to conduct searches.
   j. Explain the six parts of the warning given to the accused to protect him from self-incrimination.
   k. Explain the five considerations when handling evidence.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Identify who may authorize searches.	Know that searches may be authorized by designated commanders (above company commanders), military magistrates, and military judges.	
2. List the reasons why searches may be conducted.	Know that probable cause is the primary reason for authorizing searches. Know that inventory, gate searches, and free and willing consent are exceptions to the need for probable cause authorization for searches.	
3. List the reasons why you may conduct searches without permission of an authorizing authority.	Know that probable cause exists and to prevent the destruction of evidence.	
4. Define probable cause in regards to searches.	Know that probable cause is a reasonable belief that a crime has been committed and that evidence of the crime will be found at the place to be searched.	
5. List the reasons why an informant can be considered reliable.	Know the following reasons why an informant can be considered reliable: admits suspected act is against his interest, past reliability, good soldier, corroborates other information, personal interview with source of information, information verified by independent observation, victim, eyewitness, and motive if informant.	
6. List the limits of search authorization.	Know the limits of search authorization are: searches will normally be conducted within 24 hours of the establishment of probable cause, search authorization will specify	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	the area(s) to be searched, and search authorization will specify the items to be seized.	
7. List the procedure for obtaining authorization for searches.	Know who may authorize searches, know the facts upon which you based your decision that probably cause exists, and present your facts in such a manner that the approving authority will believe you.	
8. Explain the effect of illegal searches.	Know that evidence found during an illegal search will be inadmissable in court.	
9. List which Army personnel may be authorized to conduct searches.	Know that any commissioned officer, warrant officer, or noncommissioned officer may conduct or authorize a search when a search authorization has been granted.	NOTE: A search, without a warrant or authorization, is also proper if probably cause has been determined and one of the following exigencies exists: insufficient time, lack of communications, search of an operable vehicle, or not required by the constitution.
10. List the six parts of the warning given to the accused to protect him from self-incrimination.	Know the accused must be told the nature of the offense, know the accused must be told of his right to remain silent, know the accused must be warned of the consequences of not remaining silent, know that the accused must be told of his right to military or civilian counsel, know the accused must be told of his right to stop answering and/or consult a lawyer even if rights have been waived, and know accused must be told of his rights to waiver silence, and understands consequences of the waiver, and is willing to discuss without consultation or the presence of a lawyer.	NOTE: When the accused is being read his rights under the provisions of Article 31, UCMJ, the person reading the rights will read from DA FORM 3881 or GTA 19-6-3. The entire "rights" statement will be read and whenever pertinent the reader will pause and ask if the accused understands.
11. List considerations when handling evidence.	Know how to handle evidence that will prevent the destruction of fingerprints, know to mark not readily identifiable evidence for later identification, know to safeguard and handle evidence by as few people as possible, know to turn over evidence to the MPs/CID as soon as possible, and know to inform MPs/CID fully of the circumstances (who, what, where, when, and how) it was found that this information can be included in their report.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (4X)
3. TASK CATEGORY: Common
4. TASK NUMBER: 071-326-5626
5. TASK STATEMENT: Prepare and Issue an Oral Operation Order
6. EQUIPMENT REQUIRED: Map sketch of operational area
7. REFERENCE USED: FM 17-15(T) and FM 17-19K4
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: Division 86 Tank Platoon SOP
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: Receipt of platoon warning order.

TASK SUMMARY

1. TASK NUMBER: 071-326-5626
2. TASK STATEMENT: Prepare and Issue an Oral Operation Order
3. CONDITIONS:
   a. Given the platoon leader's warning order.
   b. Given the platoon leader's oral operation order, pencil, paper, and a sketch map of the operation order.

Platoon Leader's Warning Order (2000 hours)

"I've just received a warning order from the team CP. We move out at 0600 tomorrow morning, moving east along Highway N4 to seize Hill 609. Do any of you have any supply, equipment, or personnel problems? Start your precombat checks. I have to be at the team CP by 2030 hours. As soon as I get back and put my order together I'll get together with you."

Platoon Leader's Oral Operation Order (2100 hours)

1. SITUATION.
   a. Enemy: Enemy forces are withdrawing east and appear to be occupying the far bank of Green River. We can expect platoon size recon units to try to delay our advance toward Green River. Remember last week the enemy hit us with persistent chemical agents when we moved through Dexter. The terrain we'll be moving over consists of rolling hills, scattered trees, and in some areas fields of fire to 3000 meters. The only obstacle is Salt River, which is believed to be fordable in some places. Weather is expected to be clear and dry with winds at 10 knots from the west.
   b. Friendly Forces: Our team cross the SP at this location at 0600 hours tomorrow morning, passes through the 1/3 Cavalry at this point, and moves east along highway N4 to seize Hill 609, located here. Our platoon will lead, followed by the team command group, the 3d Infantry Platoon, and then the 2d Tank Platoon. Another team, with a similar mission will be moving east along Highway N2, 5,000 meters to our left flank. Our right flank will be open.

2. MISSION: Our platoon crosses the SP, moves through the cavalry crossing point, and leads the team in a movement to contact to seize Hill 609.
3. EXECUTION:
   a. Scheme of Maneuver: We will move past the SP and through the crossing point in a column formation, once clear of the cavalry position we will change to a combat column formation. Any other changes in formation will depend upon the tactical situation and the terrain. Whenever possible we will bypass enemy positions because speed in reaching Hill 609 is essential.
   b. Fire Support: Our platoon will initially have priority of fires within the team.
   c. Specific Instructions: When approaching and passing through the cavalry crossing point main guns will be at maximum elevation, as soon as we get into the combat column formation, beyond the cavalry position, main guns will be at normal elevation. All formations and reaction drills will be in accordance with the unit tactical SOP. Be alert for signals from the platoon leader or the platoon sergeant and remember to maintain your position in each formation.
   d. Coordinating Instructions: Movement will be in MOPP 1. Standto 0400, breakfast 0415, check assembly area 0515, crews mounted 0540, depart assembly area 0550, cross SP 0600.
4. SERVICE AND SUPPORT: Our unit tactical SOP.
5. COMMAND AND SIGNAL:
   a. Signal. CEOI Index 1, Edition B in effect, listening silence in effect until enemy contact, two green star clusters is the emergency signal for shifting/lifting supporting/suppressive fires.
   b. Command. I will be in my usual platoon formation position, succession of command: platoon sergeant, TC tank 2, and TC tank 4. Time now is 2130 hours. Are there any questions?

4. STANDARDS:
   a. Know the organization of the operation order.
      (1) Know the number of, title of, and the sequence of the major paragraphs of an operation order.
      (2) Know the subparagraph headings of each major paragraph of an operation order.
   b. Analyze the platoon order to determing what you and your crew must accomplish during the operation.
      (1) Know what your mission is.
      (2) Know what the enemy situation is.
      (3) Know what the terrain conditions are.
      (4) Know what the weather conditions will be.
      (5) Know what supplies and equipment will be needed.
      (6) Know if special tasks have been assigned to your crewmembers.
      (7) Know when the operation begins and what time the crew must be ready to go.
      (8) Know how to develop a reverse planning sequence schedule.
      (9) Conduct a map reconnaissance.
   c. Develop the operation order.
      (1) Include the enemy situation that could affect the operation.
      (2) Include the terrain and weather conditions that could affect the operation.
      (3) Include the mission of the platoon, planned actions of other elements of the platoon, and friendly forces to the right, left, rear, and front of the platoon.
      (4) Include a clear and concise statement of what the crew must do to accomplish its mission.
      (5) Include a statement of how the crew will execute its mission.
      (6) Include provisions for fire support.
      (7) Include any specific instructions included in the platoon order.
      (8) Include any coordinating instructions included in the platoon order.
      (9) Include service support information applicable to the crew.
      (10) Include signal information applicable to the crew.
      (11) Include command information applicable to the crew.
   d. Issue the operation order.
      (1) Include all five paragraphs.
      (2) Emphasize time schedule indicated in paragraph 3d of the operation order.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # 071-326-5626

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Explain the organization of the operation order.		
a. List the headings and sequence of the major paragraphs in an operation.	Know the headings and the sequence of major paragraphs in an operation order are: Situation, Mission, Execution, Service Support, and Command and Signal.	
b. List the subparagraph headings of each major paragraph of an operation order.	Know the subparagraph headings of the major paragraphs in an operation order are: SITUATION (Enemy Forces, Friendly Forces, Attachments, and Detachments), MISSION (none), EXECUTION (Scheme of Maneuver, Fire Support, Specific Instructions, and Coordinating Instructions), SERVICE SUPPORT (Trains and Supply Points, Supply, Maintenance and Evacuation, and Personnel), COMMAND AND SIGNAL (Signal and Command).	NOTE: Service support requirements at crew-level should be covered by SOP.
2. Analyze the platoon order to determine what you and your crew must accomplish during the operation.		
a. Explain what your mission is.	Know that your mission is to maintain position in various movement and reaction formations, to respond to all platoon leader or platoon sergeant orders, to destroy enemy targets as acquired, and to submit appropriate reports.	NOTE: The mission of a tank crew, operating within the context of a platoon operation is normally the same for each tactical operation. The exception being a specific mission, for a specific tank crew, not covered by the unit tactical SOP.
b. Explain what the enemy situation is.	Know that the enemy is withdrawing east and appears to be occupying the far bank of Green River, that enemy recon elements of platoon seize are expected to try to delay our advance toward Green River, and that the enemy recently used persistent chemical agents.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Explain terrain conditions in the area of operations.	Know that the terrain consists of rolling hills, scattered hills, and fields of fire in some areas out to 3000 meters. Know that the only obstacle short of Hill 609 is Salt River and it may be fordable in some areas.	
d. Explain the predicted weather conditions in the area of operations.	Know that the weather is expected to be clear and dry with the winds from the west at 10 knots.	
e. Explain what supplies and equipment will be needed for the operation.	Know that combat loading per the unit tactical SOP will insure sufficient supplies and equipment for the operation.	
f. Explain special task assignments for crewmembers.	Know that there are no special task assignments for crewmembers.	
g. Explain when the operation begins and at what time the crew must be ready to go.	Know that the operation officially begins at 0600 hours when the first tank crosses the SP. Know that the crew must be ready to go at 0550 hours when the first tank departs the assembly area.	
h. Explain how to develop a reverse planning sequence schedule.	Know that a reverse planning sequence schedule allows you to allocate time to prepare for the mission. Know to identify the things that must be done to get ready and work backwards from the "ready" time to allow your men time to accomplish each task, e.g., 0550 ready time, 0540 crew mounted, 0515 check assembly area, 0415 breakfast, 0400 standto, 1200-0400 rest, 1200 complete precombat checks, 2200 issue order, 2145 complete order, 2130 complete map recon, 2100 receive platoon order, 2015 issue warning order, 2000 receive warning order.	
i. Explain how to conduct a map reconnaissance.	Know to study the map terrain features along the route of advance from the assembly area to Hill 609. Know to mark on the map overlay the SP, 1/3 Cavalry crossing point, the route to Hill 609, obstacles along the route, ambush sites along the route, prominent elevation points along the route, and areas along the route with fields of fire of 2000-3000 meters.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
3. Develop the operation order.		
a. Write paragraph 1a of the operation order.	Know that paragraph 1a of the operation order is the enemy situation, e.g., "Enemy forces are withdrawing to the east and are covering the withdrawal with recon platoon size delaying forces along Highway N4. The enemy has recently used persistent chemical agents against us. The terrain in the area consists of rolling hills, scattered trees, and some field of fire to 3000 meters. The only obstacle short of Hill 609 is Salt River, which appears to be fordable in some places. The weather will be clear and dry with westerly winds at 10 knots.	
b. Write paragraph 1b of the operation order.	Know that paragraph 1b of the operation order is the friendly situation, e.g., "1st Platoon leads the team across the SP, located here, at 0600 hours tomorrow, passes through the I/3 crossing point, located here, and moves east along Highway N4 to seize Hill 609, located here. The 1st Platoon will be followed by the team command group, the 3d Infantry Platoon, and the 2d Tank Platoon. Another team will move east along Highway N2 5,000 meters to our left flank. Our right flank will be open."	
c. Write paragraph 2 of the operation order.	Know that paragraph 2 of the operation order is the mission, e.g., "Our mission during the operation is to maintain the wingman position during movement and reaction formations, to respond to all platoon leader or platoon sergeant orders, to destroy enemy targets as acquired, and to submit appropriate reports.	
d. Write paragraph 3a of the operation order.	Know that paragraph 3a of the operation order is the scheme of maneuver of the execution phase of the operation, e.g., "The platoon will move in column formation until clearing the cavalry crossing point, at that time the platoon will move into a combat column	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	formation. We will maintain our wingman position throughout the operation."	
e. Write paragraph 3b of the operation order.	Know that paragraph 3b of the operation order is fire support, e.g., "Our platoon has priority of indirect fires."	
f. Write paragraph 3c of the operation order.	Know that paragraph 3c of the operation order is specific instructions for the crew, e.g., "When we approach and pass through the cavalry crossing point the main gun will be at maximum elevation, beyond the crossing point the main gun will be depressed to normal elevation. All formation and reaction drills will be per the unit tactical SOP. The loader and driver will be alert for platoon leader and platoon sergeant hand and arm signals."	
g. Write paragraph 3d of the operation order.	Know that paragraph 3d of the operation order is coordinating instructions, e.g., "Movement will start in MOPP 1. Standto 0400, breakfast 0415, assembly area checked 0515, crew mounted 0540, depart assembly area 0550, and cross SP at 0600."	
h. Write paragraph 4 of the operation order.	Know that paragraph 4 of the operation order is service support, e.g., "Per unit tactical SOP."	
i. Write paragraph 5a of the operation order.	Know that paragraph 5a of the operation order is signal, e.g., "CEOI Index 1, Edition B in effect, listening silence in effect until enemy contact, two green start clusters is the emergency signal for shifting or lifting supporting or suppressive fires."	
j. Write paragraph 5b of the operation order.	Know that paragraph 5b of the operation order is command, e.g., "Succession of command is gunner, driver, loader. Time now is 2200 hours. Are there any questions?"	
4. Issue the operation order.		NOTE: Orally Present the skills and knowledges indicated in quotation marks for performance measure 3a thru 3j.
a. Present all five paragraphs and their appropriate subparagraphs for the operation order.	Know that the operation order has five major paragraphs. Know that the various major paragraphs have standard subparagraphs.	
b. Emphasize the time schedule for paragraph 3d of the operation order as indicated in performance measure 3g.	Know the time schedule indicated in performance measure 3g.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (4X)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: 171-123-4008
5. TASK STATEMENT: Direct Reorganization (Direct Consolidation and Reorganization on the Objective)
6. EQUIPMENT REQUIRED: 1 M1 Tank
7. REFERENCE USED: FM 17-15(T), Division 86 Tank Platoon SOP, FM 17-19K4
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank Commander and crew
11. INITIATING CUES: Consolidation on the objective has just been completed by the platoon.

TASK SUMMARY

1. TASK NUMBER: 171-123-4008
2. TASK STATEMENT: Direct Reorganization
3. *CONDITIONS: Given a tactical situation in which an objective has been taken and the tank platoon has completed its consolidation on the objective.*
4. STANDARDS:
   a. Direct coax and loader machineguns be reloaded, reload caliber .50 machinegun, and direct redistribution of main gun ammunition to ready areas.
   b. Direct/assist in the removal of casualties to a covered position, give/obtain medical aid to/for the casualties, request evacuation of casualties.
   c. Report the situation, casualties incurred, and status of ammunition and fuel to the platoon sergeant.
   d. Direct/assist in the performance of essential maintenance.
   e. Respond to platoon sergeant's radio check.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # 171-123-4008

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Explain the actions taken by the tank commander in regards to machinegun and main gun ammunition during reorganization.	Know that the gunner is directed to reload the coax machinegun. Know that the loader is directed to reload the loader's machinegun. Know that the tank commander should reload the caliber .50 machinegun. Know that the loader is directed to redistribute main gun ammunition from ammunition compartments to the ready ammunition compartment in accordance with the unit ammunition loading plan.	
2. Explain the actions taken by the tank commander in regards to the handling of casualties during reorganization.	Know that casualties are to be removed from the tank and placed in a covered position. Know that casualties must be administered medical aid and when necessary additional medical aid requested. Know to request evacuation of casualties.	
3. Explain the report that the tank commander should send to the platoon sergeant during reorganization.	Know that the tank commander should submit a situation report to the platoon sergeant during reorganization. Know that the contents of the situation report are: reporting unit, location, activity, personnel losses, ammunition required, POL required, equipment required, and remarks/other supplies. Know that the report can be given to the platoon sergeant by radio or by messenger.	
4. Explain the performance of essential maintenance during reorganization.	Know that essential maintenance are those minimum steps necessary to insure the crew and the tank are performing their shoot, move, and communicate tasks without causing additional injury or damage to the crew or the tank.	
5. Explain how to respond to the platoon sergeant's communication check during reorganization.	Know that when a radio check is made the initiating station is asking for a signal strength and readability report. Know the correct replies for various signal strengths and readability conditions.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (32)
3. TASK CATEGORY: Common
4. TASK NUMBER: None
5. TASK STATEMENT: Conduct a Map Reconnaissance
6. EQUIPMENT REQUIRED: One 50,000 military map covered with acetate and a set of grease pencils
7. REFERENCE USED:
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: Division 86 Tank Platoon SOP, FM 17-15 (T)
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: Platoon Leader's operation order

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Conduct a Map Reconnaissance
3. CONDITIONS: Given an operation order, a 1:50,000 military map, and a tactical situation in which you have been given a point of departure, a general movement route, and an objective.
4. *STANDARDS:*
   a. Locate and identify on the map, within 5 minutes your point of departure, your movement route, and the objective.
   b. Locate and identify on the map, within 18 minutes, the following terrain features which would affect you reaching the objective.
      (1) Obstacles
      (2) Overwatch positions
      (3) Defiles (200 meters or less in width)
      (4) Three highest points within 3000 meters of the route
      (5) Enemy fields of fire 1000-2000 meters
      (6) Enemy fields of fire 2000-3000 meters.
      (7) Best mounted avenue of approach to the objective (last 5 km)
      (8) Best mounted approach onto the objective (last 1 km)

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Locate and identify the start point on the map.		
a. Extract the start point coordinate from the operation order and locate the point on the map.	Know how to plot a grid coordinate on a map.	
b. Identify significant terrain features near the start point which would aid in locating the start point, and mark these terrain features on the map.	Know significant terrain features, e.g., house, bridge, cut, etc.	
2. Locate and identify the passage point on the map.		
a. Extract the passage point coordinate from the operation order and locate the point on the map.	Know how to plot a grid coordinate on a map. Know military symbol for passage point.	
b. Identify significant terrain features near the passage point which will aid in locating the passage point, and mark these terrain features on a map.	Know significant terrain features, e.g., house, bridge, cut, etc.	
3. Locate and identify the movement route on the map.		
a. Extract the movement route from the operation order and mark it on the map.	Know how to mark a movement route on a map.	
b. Identify significant terrain features along the movement route which will aid in locating the movement route, during actual movement route, and mark these terrain features on the map.	Know significant terrain features, e.g., house, bridge, cut, peak, shoulder, defile, etc.	
c. Extract movement route check points or critical points from the operation order and mark them on the map.	Know military symbols for check points and critical points.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
4. Locate and identify obstacles on the map.		
a. Identify areas along the movement route which are not trafficable.	Know movement capabilities of the tank to negotiate, wet ground, rocks and boulders, streams, dense forests, gaps, ice and snow, etc.	
b. Identify areas along the movement route which are not gradeable.	Know ascent and descent capabilities of the tank to negotiate hills, vertical barriers, etc.	
5. Locate and identify overwatch positions on the map.		
a. Identify possible overwatch positions along the movement route which have good fields of fire.	Know requirements for overwatch position fields of fire.	
b. Identify possible overwatch positions along the movement route which provides cover and concealment.	Know requirements for overwatch position cover and concealment.	
c. Identify possible overwatch positions along the movement route which provides ingress and egress.	Know requirements for overwatch position entrances and exits.	
6. Locate and identify defiles (200 meters or less wide) on the map.		
a. Identify man made defiles along the movement route.	Know what man made defiles are, e.g., bridge, underpasses, road cuts, causeways, etc.	
b. Identify natural defiles along the movement route.	Know what natural defiles are, e.g., narrow natural passageway, narrow valley, ford, etc.	
c. Identify overwatch positions just short of and just beyond the defiles.	Know characteristics of a good overwatch position.	
7. Locate and identify the three highest points on the map which are within 3000 meters of the movement route.		
a. Identify the three highest points which are within 2000 meters of the movement route.	Know how to read contour elevation.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
8. Locate and identify enemy fields of fire of 1000-2000 meters on the map. a. Identify enemy fields of fire 1000-2000 meters along the movement route.	Know how to measure distance on a map and how to determine line of sight for fields of fire.	
9. Locate and identify enemy fields of fire 2000-3000 meters on the map. a. Identify enemy fields of fire of 2000-3000 meters along the movement route.	Know how to measure distance on a map and know how to determine line of sight for fields of fire.	
10. Locate and identify the best mounted approach to the objective (last 5 km) on the map. a. Identify the approach that provides cover and concealment.	Know that cover protects from enemy direct fire and concealment protects from enemy observation.	
b. Identify the approach that provides trafficability and gradeability.	Know mobility capability of the tank.	
c. Identify the approach that facilitates control.	Know control procedures.	
d. Identify the approach that leads into the flank of the objective.	Know, by fields of fire, general direction of enemy defense of the objective.	
e. Identify the approach that facilitates flank security.	Know if the approach to the objective is covered by natural obstacles.	
11. Locate and identify the best mounted approach onto the objective (last 1 km) on the map. a. Identify the approach that provides trafficability and gradeability.	Know mobility capability of the tank.	
b. Identify the approach that provides for lateral dispersion of tanks.	Know the need for lateral dispersion of tanks during the assault.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (3Z)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Conduct a Tactical Road March
6. EQUIPMENT REQUIRED: 2 M1 tanks with operating radios
7. REFERENCE USED: FM 17-15(T)
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank commander aided by two drivers and one platoon leader or platoon sergeant
11. INITIATING CUE: You have been briefed on conducting a tactical road march, been given a strip map of the movement route, and have just received the platoon leader's or the platoon sergeant's signal or message to move out in open column formation.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Conduct a Tactical Road March
3. CONDITIONS:
   a. Given a strip map for a tactical road march.
   b. Given a signal or a message from the platoon leader or the platoon sergeant to move out in an open column formation.
4. STANDARDS:
   a. Place the strip map coordinate tick marks on the map coordinates within 1 minute.
   b. Trace on the map overlay acetate within 3 minutes the start point (SP), route of march, critical points (CPs), and the release point (RP) indicated on the strip map.
   c. Maintain an interval of not less than 50 meters nor more than 100 meters with the platoon leader's or the platoon sergeant's tank.
   d. Maintain ground observation in Unit SOP assigned sector.
   e. Maintain aerial observation in Unit SOP assigned sector.
   f. Maintain main gun orientation on Unit SOP assigned sector.
   g. Conduct maintenance during scheduled halts.
   h. Move disabled tank off the road and post guides to direct traffic.
   i. Establish local security during halts.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Place the strip map on the military map. a. Identify the top strip map coordinate tick mark and place it over the appropriate military map coordinate. b. Identify the bottom strip map coordinate tick mark and place it over the appropriate military map coordinate.	Know location of strip map coordinate tick mark. Know how to find and read coordinates on a military map. Know location of strip map coordinate tick mark. Know how to find and read coordinates on a military map.	
2. Trace strip map information onto map overlay acetate. a. Lay map acetate overlay over the strip map. b. Trace on the acetate the start point, the route of march, critical points, and the release point from the strip map.	Lay acetate over strip map without moving strip map coordinate tick marks off of appropriate coordinates on the military map. Know symbols for release point, route of march, critical points, and release point.	
3. Move to and maintain position in column formation. a. Direct the driver to move to a position 50 meters to the rear of the platoon sergeant's tank. b. Direct the driver to maintain a position not less than 50 meters nor more than 100 meters to the rear of the platoon leader's or the platoon sergeant's tank.	Know platoon leader's tank and platoon sergeant's tank. Know 50 meter distance. Know platoon leader's tank and platoon sergeant's tank. Know 50 meter distance.	NOTE: Tank 2 orients on tank 1 (PL tank). Tank 4 orients on tank 3 (PS tank).
4. Maintain ground observation in Unit SOP assigned sector. a. Maintain ground observation in platoon assigned sector. b. Maintain ground observation in individual assigned sector.	Know Unit SOP platoon assigned ground observation sector. Know Unit SOP individual assigned ground observation sector.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
5. Maintain aerial observation in Unit SOP assigned sector. a. Maintain aerial observation in platoon assigned sector.	Know Unit SOP platoon assigned aerial observation sector.	
6. Maintain main gun orientation on Unit SOP assigned sector. a. Maintain main gun orientation on platoon assigned sector.	Know platoon leader's wingman orients main gun to the left of the direction of platoon movement. Know that platoon sergeant's wingman orients main gun to the rear from the direction of platoon movement.	
7. Conduct maintenance during scheduled halts. a. Direct driver to dismount and inspect tank suspension system. b. Direct crewmembers report maintenance problems. c. Supervise maintenance activities.	Insure driver make a thorough inspection of the tank suspension system. Know maintenance remedies when maintenance problems are reported. Know how to prioritize maintenance and supervise maintenance activities.	
8. Move disabled vehicle off the road and post guards to direct traffic. a. Direct driver to try to clear the roadway of the tank. b. Direct loader to dismount and direct traffic around disabled tank.	Know that roadway must be cleared to allow the column to continue unimpeded. Know that road guide will assist movement of passing vehicles and reduce possibility of accidents.	
9. Establish local security during halts. a. Keep the .50 caliber machinegun manned at all times. b. Maintain ground observation of platoon assigned sector. c. Maintain aerial observation of platoon assigned sector.	Know that the .50 caliber machinegun provides the best one man security of all weapon systems on the tank. Know platoon assigned ground observation sector. Know platoon assigned aerial observation sector.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: Common
4. TASK NUMBER: None
5. TASK STATEMENT: Prepare a Situation Report (SITREP)
6. EQUIPMENT REQUIRED: M1 Tank with operational radios, hot loop wire communications, a platoon tactical SOP, a CEOI, and paper and pencil
7. REFERENCE USED: Division 86 Tank Platoon SOP
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15(T)
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: The time or situation, according to the platoon tactical SOP, requires a situation report be submitted.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Prepare a Situation Report (SITREP)
3. CONDITIONS:
   a. Given a movement to contact tactical situation and your tank has dropped out of the formation with a thrown track.
   b. Given a defend a battle position tactical situation the platoon has repulsed and enemy attack and is now attacking in force friendly units on your right flank.
4. STANDARDS:
   a. Submit within 10 minutes an oral situation report by radio to the platoon leader. The report must include information in paragraphs ALPHA thru DELTA and GOLF and HOTEL of the situation reports. Locations and quantities must be encrypted. Brevity list of CEOI must be used.
   b. Submit within 10 minutes an oral situation report by radio or hot loop to the platoon leader. The report must include information in all paragraphs of the situation report. Locations and quantities must be encrypted. Brevity list of CEOI must be used.

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
Condition 3a		
1. Submitting the situation report (SITREP)		
a. Locate the SITREP format in the platoon tactical SOP.	Know platoon tactical SOP.	
b. Item ALPHA: Reporting Unit. Use call sign.	Know call sign.	EXAMPLE: "This is G3F06."
c. Item BRAVO: Location. Encrypt location by using CEOI.	Know own location and how to encrypt location.	EXAMPLE: "NA 123456."
d. Item CHARLIE: Activity. Report significant activity since last report or current situation. Use CEOI brevity list.	Know past and current significant activity and how to use the CEOI brevity list.	EXAMPLE: "Thrown track. Snipers in the area. Attempting to repair track."
e. Item DELTA: Personal Losses. Report personal losses, KIA, WIA, MIA, and past or current incapacitating illness or injury. Encrypt quantities, use brevity list in CEOI.	Know past and current personnel readiness conditions and how to use brevity list in *CEOI*.	EXAMPLE: "Loader slightly wounded."
f. Item GOLF: Equipment Required. Report equipment requirements. Encrypt quantities. Use brevity list in CEOI.	Know equipment requirements by type. Know how to use CEOI brevity list.	EXAMPLE: "Request recovery crew with M88."
g. Item HOTEL: Remarks. Report other requirements which may have a significant impact upon mission success.	Know other information which may have a significant impact upon mission success.	EXAMPLE: "Request security elements for protection during replacement of the track."
		NOTE: Items ALPHA, BRAVO, and CHARLIE are in <u>all</u> situation reports. Other paragraphs may be omitted if unneeded.
Condition 3b		
1. Submitting the situation report (SITREP)		
a. Locate the SITREP format in the platoon SOP.	Know the platoon tactical SOP.	
b. Item ALPHA: Reporting Unit. Use call signs or the switchboard designator.	Know call sign or switchboard designator.	EXAMPLE: "This is G3F06" or "This is BLUE DIAMOND ONE FOUR."
c. Item BRAVO: Location. Encrypt location by using CEOI.	Know own location and how to encrypt location.	EXAMPLE: "NS 146897."

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
d. Item CHARLIE: Activity. Report significant activity since last report or current situation. Use CEOI brevity list.	Know past and current significant activity and how to use the CEOI brevity list.	EXAMPLE: "Continuing mission. One T-72 destroyed, one T-72 damaged. two BMPs destroyed. Enemy withdrawing. Enemy attacking unit on right with six T-72s."
e. Item DELTA: *Personal Losses. Report personal* losses, KIA, WIA, MIA, and past or current incapacitating illness or injury. Encrypt quantities, use *brevity list in CEOI.*	Know past and current personal readiness conditions and how to use brevity list in CEOI.	EXAMPLE: "G3FO7" or "BLUE DIAMOND ONE THREE tank *destroyed. No survivors.*"
f. Item ECHO: Ammunition Required. Report ammunition requirements. Encrypt quantities. Use brevity list in CEOI.	Know ammunition requirements by type, caliber and quantity. Know how to encrypt quantities and use CEOI brevity list.	EXAMPLE: "Twenty rounds 105mm APDS, one thousand rounds caliber fifty, 3000 rounds caliber 7.62mm."
g. Item FOXTROT: POL Required. Report POL requirements. Encrypt quantities. Use brevity list in CEOI.	Know POL requirements by type and quantities. *Know* how to encrypt quantities and use CEOI brevity list.	EXAMPLE: "100 gallons fuel."
h. Item GOLF: Equipment Required. Report equipment requirements. Encrypt quantities. Use brevity list in CEOI.	Know equipment requirements by type. Know how to use CEOI brevity list.	EXAMPLE: "One *loader 7.62mm machinegun.*"
i. Item HOTEL: Remarks: Report other requirements which may have a significant impact upon mission success.	Know other information which may have a significant impact upon mission success.	EXAMPLE: "Moving now to supplementary position per your order."
		NOTE: Items ALPHA, BRAVO, and CHARLIE are in <u>all</u> situation reports. Other paragraphs may be omitted if unneeded.

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (1Y)
3. TASK CATEGORY: M1 Tanks
4. TASK NUMBER: 071-331-0804
5. TASK STATEMENT: Conduct Target Acquisition (Conduct Day and Night Surveillance Without the Aid of Electronic Devices)
6. EQUIPMENT REQUIRED: 1 M1 tank, 1 pair of binoculars, 2 OPFOR tanks, and 2 OPFOR BMPs
7. REFERENCE USED: FM 17-12-1
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-12, FM 17-12-1
10. PERSONNEL REQUIRED: Tank Commander and OPFOR personnel, targets and target vehicle drivers and commanders
11. INITIATING CUES: You have been told to maintain surveillance in an assigned sector.

TASK SUMMARY

1. TASK NUMBER: 071-331-0804
2. TASK STATEMENT: Conduct Target Acquisition
3. CONDITIONS:
   a. Given a moving M1 tank during daylight with a pair of binoculars, an operational gunner's primary sight extension, an operational thermal imaging system, and camouflaged threat stationary and moving troops and vehicles.
   b Given a stationary M1 tank with a pair of binoculars, an operational gunner's primary sight extension, an operational thermal imaging system, and camouflaged threat stationary and moving troops and vehicles.
4. STANDARDS:
   a. Locate threat stationary troops from a moving M1 tank within 3 minutes of time acquisition is possible.
   b. Locate threat stationary vehicles from a moving M1 tank within 2 minutes of time acquisition is possible.
   c. Locate threat moving troops from a moving M1 tank within 2 minutes of time acquisition is possible.
   d. Locate threat moving tank from a moving M1 tank within 1 minute of time acquisition is possible.
   e. Locate threat stationary troops or vehicles from a stationary tank within 3 minutes of time acquisition is possible.
   f. Locate threat moving troops or vehicles from a stationary M1 tank within 2 minutes of time acquisition is possible.
   g. Employ correct target detection techniques.
   h. Employ correct target acquisition techniques.
   i. Correctly identify all troops and vehicles as friend or foe.
   j. Correctly select correct weapons system and ammunition for targets.
   k. Correctly classify multiple threat targets MOST DANGEROUS, DANGEROUS, LEAST DANGEROUS.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # 071-331-0804

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Locate threat troops.		
a. Report the location of threat troops.	Know how to determine the location of threat targets.	NOTE: Submit report in SALUTE report format.
b. Report the number of threat troops.		
c. Report the activity of threat troops.	Recognize different activities by threat troops.	
d. Report the weapons of threat troops.	Recognize threat weapons.	
2. Locate threat vehicles.		
a. Report the location of threat vehicles.	Know how to determine the location of threat targets.	NOTE: SUBMIT report in SALUTE report format.
b. Report the type of threat vehicles.	Recognize threat vehicles.	
c. Report the number of threat vehicles.		
d. Report the activity of threat vehicles.	Recognize different activities by threat vehicles.	
3. Employ proper target detection techniques.		
a. Look for target signatures, e.g., blast, flash, dust, smoke, noise, etc.	Know target signature.	
b. Look for targets where they are most likely to be employed, e.g., track vehicle signatures on rolling terrain, threat anti-tank positions covering areas where tanks are likely to be employed.	Know enemy weapon deployment doctrine, know the principles of terrain appreciation.	NOTE: Put yourself in the position of the threat commander in determining weapon positions.
c. Look for target signatures which appear more distinctive when viewed through thermal optics, e.g., suspension and exhaust systems, personnel heater air ducts and exhaust system ducts, a vehicle that has been operating and a wheel vehicle, in addition to the suspension and exhaust systems, the wheels and windshield.	Know the capabilities of thermal optics.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
4. Employ proper target acquisition technique.		
a. Observe the area from inside the right front fender to inside the left rear fender.	Know platoon tactical SOP.	
b. Use binoculars for general area scanning.	Know how to focus binoculars, know interpupilary setting.	
c. Use GPS extension for specific scanning.	Know relative difference between 3X and 10X magnification.	
d. Use thermal optics during periods of poor visibility.	Know operations and capabilities of thermal optics.	
e. Employ rapid scan method of observation.		
(1) Start at center of sector and rapidly scan from near to farthest visible point.	Pay particular attention to likely weapon position locations.	
(2) Orient left and conduct a quick scan near to far.	Pay particular attention to likely weapon position locations.	NOTE: Scan sweep must overlap the center area.
(3) Orient right and conduct a quick scan near to far.	Pay particular attention to likely weapon position locations.	NOTE: Scan sweep must overlap the center area.
f. Employ the 50 meter scan method of observation using the tanks optics.		
(1) Pausing at short intervals to give the eyes time to focus, search a strip of the target area 50 meters deep from right to left.	Know left from right and 50 meter distance.	
(2) Scan a strip farther out from left to right, overlapping the first step.	Know left from right and 50 meter distance.	
(3) Continue the method until the entire target area is searched.	Know left from right and 50 meter distance.	
(4) Stop and search each suspicious area thoroughly.	Recognize suspicious areas.	
5. Correctly identify all troops and vehicles as friend or foe.		
a. Identify enemy troops and vehicles as foe.	Know enemy personnel and equipment.	
b. Identify friendly troops and vehicles as friend.	Know friendly personnel and equipment.	NOTE: Tank crews must know what to engage and not to engage.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
6. Correctly select weapon system and ammunition for each threat target.		
a. Select smallest weapon which will destroy the target.	Know the range, accuracy, and penetration of each weapon on the tank.	
b. Select least effective main gun ammunition which will destroy the target.	Know the range, accuracy, and penetration of ammunition on the tank.	
7. Correctly classify multiple threat targets as to MOST DANGEROUS, DANGEROUS, LEAST DANGEROUS.		
a. Classify a threat target with armor defeating capabilities that appears preparing to engage you as a MOST DANGEROUS target.	Recognize when a threat armor defeating weapon is preparing to engage you.	NOTE: Tank in range with main gun pointing toward you, ATGM in range.
b. Classify a threat target with armor defeating capabilities that is not preparing to engage you as a DANGEROUS target.	Recognize when a threat armor defeating weapon is not preparing to engage you.	NOTE: Tank not in range or in range but main gun is pointing away from you. ATGM not in range or on moving BMP.
c. Classify a threat target that does not have an armor defeating capability, but can report to one who does, as a LEAST DANGEROUS target.	Recognize a threat target that does not have an armor defeating capability, but can report to one who does.	NOTE: Troops (mounted or dismounted), vehicles without weapons.

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Maintain Position in Platoon Formation
6. EQUIPMENT REQUIRED: 2 M1 tanks with operation radios
7. REFERENCE USED: FM 17-15(T)
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15(T)
10. PERSONNEL REQUIRED: Tank commander aided by two drivers and one platoon leader or platoon sergeant
11. INITIATING CUES: You have just received the platoon leader's or platoon sergeant's signal or message to maintain correct position in the platoon formation, or you have noticed that your driver is out of position in the platoon formation, or you have just received the platoon leader's or the platoon sergeant's signal or message to execute a specific formation.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Maintain Position in Platoon Formation
3. CONDITIONS:
   a. Given a signal or a message from the platoon leader or the platoon sergeant to maintain position in the movement formation.
   b. Given an indication that the driver is not maintaining position in the movement formation.
   c. Given a signal or a message from the platoon leader or the platoon sergeant to execute a specific formation.
4. STANDARDS:
   a. Move to doctrinally designated position pertinent to the movement formation within 1 minute of the platoon leader's or platoon sergeant's signal.
   b. Move to a position no closer than 100 meters nor more than 300 meters of the platoon leader's or the platoon sergeant's tank.
   c. Direct the driver to take action within 1 minute to move to the doctrinally designated position relative to the platoon leader's or the platoon sergeant's tank.
   d. Direct the driver to move no closer than 100 meters nor more than 300 meters of the platoon leader's or the platoon sergeant's tank.
   e. Move to the doctrinally designated position, but no closer than 100 meters nor farther than 300 meters and within 1 minute of the platoon leader's or the platoon sergeant's signal or message for the following formation:
      (1) Column
      (2) Combat column
      (3) Combat wedge
      (4) Line
      (5) Coil
      (6) Herringbone

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Move to and maintain position in the movement formation.		
a. Recognize platoon leader's or platoon sergeant's signal or message to maintain proper position.	Know signal or message for maintaining position in a formation.	
b. Recognize that the driver is not maintaining the proper position.	Know doctrinally designated position for the tank in relation to the platoon leader's or the platoon sergeant's tank. Know platoon leader's and platoon sergeant's tanks.	NOTE: Tank 2 orients on tank 1 (PL task). Tank 4 orients on tank 3 (PS task).
c. Direct the driver to move the tank to the proper position in the formation relative to the platoon leader's or the platoon sergeant's position.	Know doctrinally designated position for the tank in each platoon formation. Know that driver has the tank out of position.	
d. Direct the driver to move no closer than 100 meters nor farther than 300 meters from the platoon leader's or the platoon sergeant's tank.	Know 100 meter and 300 meter intervals.	
2. Move to and maintain position in a column formation.		
a. Direct the driver to move the tank to a position 100 meters to the rear of the platoon leader's or the platoon sergeant's tank.	Know platoon leader's or platoon sergeant's tank. Know 100 meter interval.	
b. Direct the driver to maintain the tank positions directly behind the platoon leader's or the platoon sergeant's tank.	Know platoon leader's or platoon sergeant's tank. Know 100 meter interval.	
3. Move to and maintain position in a combat column formation.		
a. Direct the driver to move the tank to a position of 100 to 300 meters to right of and to the rear of the platoon leader's or the platoon sergeant's tank.	Know terms: right of and rear of. Know platoon leader's or platoon sergeant's tank. Know 100 and 300 meter distances.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Direct the driver to maintain the tank position 100 to 300 meters to the right of and to the rear of the platoon leader's or the platoon sergeant's tank.	Know terms: right of and rear of. Know platoon leader's or platoon sergeant's tank. Know 100 and 300 meter distances.	
4. Move to and maintain position in a combat wedge formation.		
a. Direct the driver to move the tank to position of 100 to 300 meters to the left or to the right and to the rear of the platoon sergeant's tank.	Know terms: right of, left of, and rear of. Know platoon leader's or platoon sergeant's tank. Know 100 and 300 meter distances.	
b. Direct the driver to maintain the tank position 100 to 300 meters to the left and to the rear of the platoon leader's tank or to the right and to the rear of the platoon sergeant's tank.	Know terms: right of, left of, and rear of. Know platoon leader's tank and platoon sergeant's tank. Know 100 and 300 meter distances.	
5. Move to and maintain position in a line formation.		
a. Direct the driver to move the tank to a position of 100 to 300 meters. to the left of the platoon leader's tank or the the right of the platoon sergeant's tank.	Know terms: left and right. Know platoon leader's and platoon sergeant's tank. Know 100 and 300 meter distances.	
b. Direct the driver to maintain the tank position 100 to 300 meters to the left of the platoon leader's tank or to the right of the platoon sergeant's tank.	Know terms: left and right. Know platoon leader's and platoon sergeant's tank. Know 100 and 300 meter distances.	
6. Move to position in coil formation.		
a. Direct the driver to move the tank to a defilade position 100 to 300 meters to the right rear or the left rear of the platoon leader's or the platoon sergeant's tank.	Know terms: right, left, and rear. Know defilade position. Know platoon leader's and platoon sergeant's tanks. Know 100 and 300 meter distances.	
b. Direct the driver to "face" the tank outward of the coil (circle) formation.	Know term "face the tank outward."	
7. Move to position in herringbone formation.		
a. Direct the driver to move the tank off and on the same side of the road as the platoon leader's or the platoon sergeant's tank and 100 meters to the rear of the platoon leader's or platoon sergeant's tank.	Know terms: off the road, same side of the road, and rear. Know platoon leader's tank and platoon sergeant's tank. Know 100 and 300 meter distances.	
b. Direct the driver to face the tank half right if on the platoon leader's side of the road or half left if on the platoon sergeant's side of the road.	Know term: "face the tank half right" or "face the tank half left."	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (3X)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Direct Evasion of an Enemy Anti-Tank Guided Missile
6. EQUIPMENT REQUIRED: M1 Tank with MILES mounted, 12 smoke grenades, ATGM simulator, and OPFOR target with MILES receiver
7. REFERENCE USED: FM 17-15(T), FM 17-12, FM 17-19K 1/2
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: TC 17-15-9, TC 17-15-11
10. PERSONNEL REQUIRED: Tank Commander and crew and OPFOR ATGM launch crew
11. INITIATING CUES: Crewmember announces SAGGER and cardinal direction

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Direct Evasion of an Enemy Anti-Tank Guided Missile
3. CONDITIONS:
   a. Given a moving M1 tank during a movement to contact in the daylight, a four man crew, and an enemy ATGM which has fired at the tank.
   b. Given a stationary tank in a hull defilade position in the daylight, a four man crew, and an enemy ATGM which has fired at the tank.
4. STANDARDS:

   Condition 3a
   a. Initiate evasive action within 2 seconds of missile alert.
   b. Submit contact report within 5 seconds of missile alert.
   c. Direct driver toward full defilade position.
   d. Engage enemy firing position with the main gun within 7 seconds of missile alert.
   e. Pop smoke if full defilade position is more than seven seconds away.
   f. Submit SPOT report within 3 seconds of reaching full defilade position.

   Condition 3b
   a. Submit context report within 3 seconds of missile alert.
   b. Direct driver to accelerate the tank to the rear.
   c. Direct driver to accelerate the tank hard right or hard left.
   d. Direct driver to alternate firing position.
   e. Direct driver to move the tank into observation defilade.
   f. Submit SPOT report within 3 seconds of reaching turret defilade in alternate firing position.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
Condition 3a		
1. Receive missile alert from crewmember. "SAGGER-NORTH"		
a. Look north for missile launch signature.	Know direction of north and missile launch signature.	
b. Look on line from missile launch signature to the tank for missile signature.	Know missile signature and rate of speed.	NOTE: The Sagger's rate of speed is 120 meters per second.
2. Direct the driver to take evasive action.		
a. Direct the driver in a general direction toward defilade.	Know general direction to take tank away from missile flight and toward defilade.	NOTE: Tank commander starts laying main gun toward enemy firing position.
b. Direct driver to zigzag the tank.	Know effective evasive driving actions.	
3. Submit contact report over platoon net.		
a. Identify self.	Know contents of CONTACT report and the communications channels over which the report is transmitted.	
b. Identify threat.		
c. Identify direction of threat.		
4. Direct driver toward full defilade position.		
a. Select a full defilade position.	Recognize full defilade position.	NOTE: As soon as the main gun has been laid on the target the tank commander issues a fire command.
b. Give the driver directions to the full defilade position.	Know concise driving directions.	
5. Engage enemy firing position with the main gun.		
a. Lay main gun on enemy firing position.	Recall terrain feature relative to the missile launch site.	
b. Issue a fire command.	Know type of ammunition most suitable against missile launch area.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Direct gunner to take over and to continue to engage the suspected missile launch area, and area 15 meters to the left and right of the missile launch point.	Know that HEAT rounds impacting in the vicinity of the missile gunner may affect his ability to maintain a vertical lay on the tank.	NOTE: Bursting HEAT rounds in the vicinity of the missile gunner may cause him to lose control of the missile.
6. Pop smoke.		
a. Estimate that a full defilade position is more than seven seconds from the start of evasive action.	Know that full defilade is more than 7 seconds away from start of evasive action. Know that the probability of being hit by the missile increases with each additional second of tank travel.	NOTE: Seven seconds is an average time.
b. Announce "GRENADE LAUNCHER."	Know grenade launcher fire commands.	
c. Lay turret for direction.	Know direction grenades are to be launched.	NOTE: TC and loader automatically close hatches.
d. Check that loader and driver hatches are closed.	Know hatches must be closed to prevent crewman injury.	
e. Close tank commander hatch.	Know hatches must be closed to prevent crewman injury.	
f. Announce "SALVO ONE, SALVO TWO, or SALVO."	Know grenade launcher fire commands.	
g. Fire the grenade launcher.	Know how to fire the grenade launcher.	
h. Announce "GRENADES LAUNCHED."	Know grenade launcher fire commands.	NOTE: TC and loader automatically open hatches.
i. Direct driver to full defilade position.	Maintain orientation behind smoke screen while moving toward defilade.	NOTE: The launching of smoke grenades may temporarily disorient the driver. The tank commander must get the tank into defilade before the smoke is dispersed.
7. Submit SPOT report over platoon net.		
a. Direct the driver to move the tank forward from full defilade to observation defilade.	Know the meaning of observation defilade.	NOTE: Observation defilade is achieved when the tank is moved forward sufficient for only the TC to observe over the crest of the defilade. The tank remains in full defilade.
b. Identify self.	Know communications channels.	
c. Report what was observed (size, activity, location, unit, and equipment.)	Know contents of SPOT report.	
d. Report what you are doing and recommendations.	Know what you are doing and give viable recommendations.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
Condition 3b		
1. Submit contact report over platoon net.		
a. Identify self.	Know contents of CONTACT report and the communications channels over which the report is transmitted.	
b. Identify threat.		
c. Identify direction of threat.		
2. Direct the driver to accelerate the tank to the rear.		
a. Alert the crew to brace for rearward movement.	Know that a sudden tank movement can cause injuries if the crew is not braced.	
b. Direct the driver to accelerate the tank to the rear.	Know that the tank must disappear from the missile gunner's reticle. Know that speed is crucial.	
c. Direct driver to halt.	Know that tank is in full defilade.	
3. Direct the driver to accelerate the tank hard left or hard right.		
a. Alert the crew to brace for sudden turns and forward movement.	Know that a sudden tank turn and acceleration can cause injuries if the crew is not braced.	
b. Direct driver to accelerate the tank and make a hard right or hard left turn.	Know that the tank should move to a new firing position. Know that speed is crucial.	
4. Direct driver to alternate firing position.		
a. Direct driver to move the tank toward the alternate firing position.	Know where alternate firing position is.	
b. Direct the driver to move the tank rapidly.	Know that speed is essential.	
c. Direct driver along a route that provides defilade.	Know that route selected is in defilade.	
5. Direct the driver to move the tank into observation defilade in the alternate firing position.		
a. Direct the driver to move the tank slowly into the alternate firing position.	Recognize the alternate firing position.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Direct the driver to halt the tank where the tank commander can observe over the crest of the defilade.	Know when to tell the driver to stop the tank.	
6. Submit SPOT report over the platoon net.		
a. Identify self.	Know communications channels.	
b. Report what was observed (size, activity, location, unit, and equipment.)	Know contents of SPOT report.	
c. Report what you are doing and recommendations.	Know what you are doing and give viable recommendations.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Employ a Three-Man Crew on an M1 Tank
6. EQUIPMENT REQUIRED: M1 tank and crew with operational radios, 4 rounds APDS, 2 rounds HEAT, 100 rounds of 7.62mm, 12 rounds smoke grenades and a three-man crew tank gunnery firing course
7. REFERENCE USED: FM 17-12-1, RP 79-14
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. INITIATING CUES: You are in a tactical situation, one crewmember has become a casualty, the tank is operational

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Employ a Three-Man Crew on an M1 Tank
3. CONDITIONS:
   a. Given a moving or stationary M1 tank during day or night, main gun ammunition, a four man crew, and one moving and two stationary threat main gun targets. All crew stations have been powered up and all prepare-to-fire checks have been performed. (One crew casualty will be assessed prior to each engagement).
   b. Given a moving or stationary M1 tank during day or night, the ammunition ready box and the coax machinegun loaded, a four-man crew, and one stationary target (troops) within coax effective range (900 meters tracer burnout). All crew stations have been powered up and all prepare-to fire checks have been performed. (One crew casualty will be assessed prior to each engagement.)
4. STANDARDS:
   a. The tank is moved into a defilade position within 5 seconds of tank commander, gunnery, or loader casualty.
   b. The tank is moved into a defilade position within 30 seconds of a driver casualty.
   c. The crew in reorganized within 15 seconds of the tank reaching a defilade position.
   d. The fire control system is set for three-man crew operation within 15 seconds of crew reorganization.
   e. Modified fire commands are reviewed with the crew within 15 seconds of setting the fire control system for three-man crew operation.
   f. Using precision gunnery techniques, main gun targets are identified and suppressed or destroyed within 7 seconds of target acquisition (if the main gun is loaded) or within 10 seconds of target acquisition if the main gun is not loaded.
   g. Using battlesight gunnery techniques, main gun targets are identified and suppressed or destroyed within 7 seconds of target acquisition (main gun is loaded).
   h. Adjust fire as needed, within 5 seconds of the first round and achieve a second round hit.
   i. Using non-precision gunnery techniques, coax machinegun targets are identified and suppressed or destroyed within 10 seconds of target acquisition.
   j. Coax machinegun firing bursts will be 20-25 rounds.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
GUNNER CASUALTY		
1. Direct the driver to move the tank into defilade position.		
a. Select a full defilade position.	Recognize a full defilade position which can be reached rapidly.	
b. Direct the driver over the safest route to the defilade position.	Recognize safest route to full defilade position. Know commands for directing driver's movement of the tank.	
2. Provide assistance to the casualty.		
a. Treat the casualty.	Recognize various wounds and injuries. Know treatment for various wounds and injuries.	
b. Direct the remaining personnel for three-man crew operation.	Know how to evacuate the casualty through tank commander's hatch.	
3. Reorganize the remaining personnel for three-man crew operation.		
a. Announce to the crew that the gunner's position will be vacant.	Know that the gunner's position remains vacant during three-man crew operation.	
4. Direct and set the fire control system for three-man crew operation.		
a. Place MAGNIFICATION lever on GPS to 10X.	Know the location of the MAGNIFICATION lever and the direction to 10X.	
b. Place FIRE CONTROL MODE switch in NORMAL position.	Know the location of the FIRE CONTROL MODE switch and the NORMAL position.	
c. Place thermal imaging system (TIS) in STBY.	Know the location of the THERMAL MODE switch and STBY position.	
d. Place laser rangefinder in operation. (Manual operation will be in the ARM LAST return.)		
(1) Arm the laser rangefinder by moving the RANGE switch from SAFE to ARM 1ST RTN or ARM LAST RTN.	Know the location of laser rangefinder RANGE switch and the position of SAFE, ARM 1ST RTN, and ARM LAST RTN.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
(2) Check the fault symbol "F" in the GPS and the FIRE CONTROL MALF indicator light on the commander's panel by moving the laser RANGE switch to the SAFE position. If both of these indicators stay on, perform computer self test.	Recognize the fault symbol "F" in the GPS. Know location of the commander's panel and recognize the FIRE CONTROL MALF indicator light.	
(3) Set RANGE switch to either ARM position.	Know the location of the RANGE switch and ARM 1ST RTN and ARM LAST RTN position.	
e. Direct the loader to set the TURRET/ GUN DRIVE switch to the POWERED position.	Know that the loader must set the TURRET/ GUN DRIVE switch to the POWERED position.	
f. Set the GUN SELECT switch to the MAIN position.	Know the location of the GUN SELECT switch and MAIN and COAX positions.	
g. Set the AMMUNITION SELECT SWITCH on the proper ammunition.	Know the location of the AMMUNITION SELECT switch and SABOT, HEP, BH, and HEAT positions.	
h. Check that the computer has the correct battlesight ranges pre-indexed for each type of ammunition.		
(1) Set GUN SELECT switch to COAX and check that the COAX indicator light comes on.	Know the location of the GUN SELECT switch and the COAX indicator light.	
(2) Unlatch and open computer control panel door.	Know how to unlatch the computer control panel door.	
(3) Set COMPUTER CONTROL PANEL (CCP) POWER switch to ON and check that PWR light comes on.	Know the location of the COMPUTER CONTROL PANEL POWER switch and the POWER light. Know how to set the switch to ON.	
(4) Loosen two screws and open protective cover over three right side input keys of the computer.	Know the location of the protective cover over the three right side input keys and how to loosen the two screws holding the protective cover on.	
(5) Press and release BS ADJUST key. Check that the display shows battlesight range for the coax machinegun.	Know the location of the BS ADJUST key and the display which shows coax battlesight range.	
(6) If coax battlesight range is incorrect, enter correct battlesight range numbers int the computer by pressing correct number keys.	Know battlesight range for various types of ammunition.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
Numbers will appear on the display as the keys are pressed.		
(7) Press and release the ENTER key.	Know the location of the ENTER key.	
(8) Press and release *BS ADJUST* key. Check that the display reads the correct battlesight range.	*Know the location of the BS ADJUST* key and the display which shows coax battlesight range.	
(9) Press and release the ENTER key.	Know the location of the ENTER key.	
(10) Replace the cover which protects the three input keys of the computer.	Know how to replace the protective cover.	
		NOTE: Set GUN SELECT switch to MAIN position and AMMUNITION SELECT switch to SABOT and repeat the procedure. When completed repeat the procedure for HEAT.
5. Review modified fire commands with the crew.		
a. Explain the ALERT element.		
(1) The word GUNNER is deleted.	Know word that is deleted.	
(2) The word BATTLESIGHT is the alert element for battlesight engagements.	Know word which becomes alert element.	
(3) The word LOAD is the alert element for coax engagements.	Know word which becomes alert element.	
(4) The word LOAD is the alert element for precision engagements.	Know word which becomes alert element.	
b. Explain that there is no change in the AMMUNITION element.	Know the element which didn't change.	
c. Explain that the target DESCRIPTION element is deleted.	Know the element that is deleted.	
d. Explain that the DIRECTION element is deleted.	Know the element that is deleted.	
e. Explain that the RANGE element is deleted.	Know the element that is deleted.	
f. Explain that the EXECUTION element is the phrase ON THE WAY.	Know the four-man crew execution element FIRE has been deleted. Know the execution element for a three-man crew is ON THE WAY.	
g. Explain that the TERMINATION element is the phrase CEASE FIRE.	Know the element which didn't change.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
6. Engage a stationary target with the main gun from the commander's weapon station using precision gunnery techniques (Normal mode).		NOTE: If the main gun ammunition indicated is different than that shown by the AMMUNITION SELECT switch then the tank commander must change the AMMUNITION SELECT switch to the type of ammunition announced.
a. Issue the fire command "LOAD (type of ammunition)" (SABOT, HEP, BEEHIVE, or HEAT), and at the same time lay the main gun for direction.	Know modified fire commands. Know correct ammunition for a specific type of target.	
b. Use the override handle to traverse the main gun to a position where the target can be identified through the GPS extension.	Know the location of the override handle. Know the direction to turn the handle to bring the GPS extension reticle on to the target.	
c. Lay the GPS reticle aiming cross on the target aiming point.	Know the location of the GPS extension. Know the GPS reticle aiming cross. Must be able to manipulate the GPS crosshair on the center of mass of the target. Must be able to manipulate the override handle left, right, up, or down without releasing the palm switches.	NOTE: The palm switches on the override handle must be squeezed until the main gun is fired. If it is released, the control handle laser button, the trigger, and gun stabilization will not work. When tracking a moving target in the normal mode, the computer automatically inserts the proper lead after your range.
d. Push and release one or both laser range buttons.	Know location and feel of laser range buttons.	
e. Check the bottom view of the GPS extension for the range in meters, the multiple returns bar, or a possible fault symbol.	Know meaning of multiple returns bar and the fault symbol.	NOTE: If a multiple range occurs, the multiple range bar will appear over the range numbers. If an "F" appears, there is a fire control NO GO. In most cases an "F" will not prevent firing, but may affect accuracy.
f. After the loader has announced "UP" announce "ON THE WAY" and squeeze the trigger on the override handle to fire the main gun. Release the trigger after the main gun fires.	Know how to alert the crew before firing. Know the location of the trigger on the override handle.	
g. If target is destroyed announce "CEASE FIRE."	Know if target has been hit. Know to alert crew of the end of the engagement.	
7. Adjust fire if necessary.		
a. Relay the GPS reticle aiming cross onto the target aiming point.	Know the location of the GPS extension. Know the GPS reticle aiming cross. Must be able to manipulate the GPS crosshair on the center of mass of the target. Must be able	NOTE: The palm switch on the override handle the GPS reticle must be squeezed until the main gun is fired. If it is released, the control handle laser button, the trigger, and the gun

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	to manipulate the override handle left, right, up, or down without releasing the palm switches.	stabilization will not work. When tracking a moving target in the normal mode the computer automatically inserts the proper lead after you range.
b. Push and release one or both laser range buttons. c. Check the bottom view of the GPS extension for the range in meters, the multiple returns bar, or a possible fault symbol.	Know location and feel of laser range buttons. Know the meaning of multiple returns bar and the fault symbol.	NOTE: If a multiple range occurs, the multiple range bar will appear over the range numbers. If an "F" appears there is a fire control NO GO. In most cases an "F" will not prevent firing, but may affect accuracy.
d. After the loader has announced "UP" announce "ON THE WAY" and squeeze the trigger on the override handle to find the main gun. Release the trigger after the main gun fires. e. If the target is destroyed announce "CEASE FIRE."	Know how to alert the crew before firing. Know the location of the trigger on the override handle. Know if the target has been hit. Know to alert the crew of the end of the engagement.	NOTE: The reengage technique described in performance measure 7 is the preferred method of adjustment during a precision engagement. However, tank commanders should also master three other adjustment techniques: the standard mil adjustment for the GPS when precision fire is used, the range change adjustment when the GAS is used, and the target form adjustment when either ballistic or nonballistic reticle are used.
LOADER CASUALTY 8. Repeat performance measure 1.		
9. Provide assistance to the casualty. a. Treat the casualty.	Recognize various wounds and injuries. Know treatment for various wounds and injuries.	
b. Direct and assist the evacuation of the casualty.	Evacuate the casualty through the loader's hatch.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
10. Reorganize the remaining personnel for three-man crew operations. a. Direct the gunner to move to the loader's position and assume the loader's duties. b. Announces to the crew that the gunner's position will be vacant.	Know that moving the gunner to the loader's position keeps an experienced crewmember in the turret and minimizes reorganization. Know that the gunner's position remains vacant during three-man crew operations.	
11. Repeat performance measure 4 and 5.		
12. Engage a moving target with the main gun from the commander's weapon station using precision gunnery techniques. (Normal mode) Repeat performance measures 6a thru 6g.		NOTE: If the main gun ammunition indicated is different than that shown by the AMMUNITION SELECT switch then the tank commander must change the AMMUNITION SELECT switch to the type of ammunition announced.
13. Repeat performance measure 7.		
GUNNER CASUALTY 14. Repeat performance measures 1 thru 5.		
15. Engage a stationary target with the main gun from the commander's weapon station using battlesight gunnery techniques. (Degraded mode, LRF inoperative) a. Issue the fire command "BATTLESIGHT" and at the same time lay the main gun for direction. b. Repeat performance 6b and 6c. c. Delete performance measures 6d and 6e. d. Repeat performance measures 6f and 6g.	Know modified fire command. Know correct ammunition for a specific target. Know laser rangefinder as inoperative.	NOTE: If the main gun ammunition indicated is different than that shown by the AMMUNITION SELECT switch then the tank commander must change the AMMUNITION SELECT switch to the type of ammunition announced.
16. Adjust fire if necessary. a. Note deflection and range error in relation to width and height of the target.	Know where round went in relation to the target. Know target form technique of adjustment.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Relay the GPS reticle aiming cross to the center of mass of an imaginary target from which represents the deflection and range error of the first round.	Know the location of the GPS extension. Know the GPS reticle aiming cross. Must be able to manipulate the GPS cross hair on the center of mass of the imaginary target form. Must be able to manipulate the override handle left, right, up, or down without releasing the palm switches. Know that target forms may be doubled or halved for adjustments.	NOTE: The palm switch on the override handle must be squeezed until the main gun is fired. If it is released, the control handle laser button, the trigger, and the gun stabilization will not work.
c. Delete performance measure 7b and 7c. d. Repeat performance measures 7d and 7e.		
DRIVER CASUALTY		
17. Screen the tank from enemy observation. a. Announce GRENADE LAUNCHER. b. Lay the turret for direction. c. Check that the loader's hatch is closed. d. Close the tank commander's hatch.	Know grenade launcher fire commands. Know direction grenades are to be launched. Know hatches must be closed to prevent crewmen injury. Know hatches must be closed to prevent crewman injury. Know grenade launcher fire commands.	
e. Announce SALVO ONE, SALVO TWO, or SALVO. f. Fire the grenade launcher. g. Announce "GRENADES LAUNCHED." h. Direct the loader to move to driver position. i. Direct the gunner to dismount the tank.	Know how to fire the grenade launcher. Know grenade launcher fire commands.	NOTE: TC and loader automatically open hatches.
18. Provide assistance to the casualty. a. Treat the casualty.	Recognize various wounds and injuries. Know treatment for various wounds and injuries.	
b. Direct and assist the evacuation of the casualty.	Know how to evacuate the casualty through the driver's hatch.	
19. Reorganize the remaining personnel for three-man crew operation. a. Direct the gunner to move to the driver's position and to assume the duties of the driver.	Know that moving the gunner to the driver's position keeps an experienced loader in position and minimizes reorganization.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
b. Announce to the crew that the gunner's position will remain vacant.	Know that the gunner's position remains vacant during three-man crew operations.	
20. Repeat performance measures 1, 4, and 5.		
21. Engage an area target with the coax machinegun from the commander's weapon station. (Normal mode)		NOTE: The firing tank continues to move during the engagement sequence.
a. Check that manual safety on the machinegun is set to F (fire).	Know position of manual safety, and know how to set the manual safety to F (fire).	
b. Set GUN SELECT switch to COAX.	Know position of GUN SELECT switch, and know how to set the GUN SELECT switch to COAX.	
c. Issue the fire command "COAX" and at the same time lay the main gun for direction.	Know modified fire commands. Know correct weapon for a specific type of target.	
d. Repeat performance measures 6b and 6d.		
e. Lay the GPS reticle on the rear edge of the target.	Know where to initially lay GPS reticle for coax area targets.	
f. Announce "ON THE WAY" and squeeze the trigger on the override handle to fire the coax.	Know how to alert the crew before firing. Know the location of the trigger on the override handle.	
g. Fire 20-25 round bursts.	Know round bursts when firing the coax.	
h. Walk the burst across the width of the target to form the bottom line of the Z.	Know the traverse technique for engaging area targets.	
i. Walk the bursts back across the target to the far edge to form the middle bar of the Z.	Know the traverse technique for engaging area targets.	
j. Walk the burst across the far side of the target to complete the Z pattern.	Know the traverse technique for engaging area targets.	
k. If the target is destroyed announce "CEASE FIRE."	Know if the target has been destroyed. Know to alert the crew of the end of the engagement.	
		NOTE: Another casualty condition is when the tank commander becomes a casualty. In this situation the gunner becomes the tank commander and follows all listed performance measures. This condition was not included because the task is to train tank commanders.
		NOTE: When the three-man crew course is executed the officer or NCO in charge will designate which crewmember has become a casualty. However, target engagements which follow will be as pre-structured in the course.

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (1X)
3. TASK CATEGORY: Common
4. TASK NUMBER: 061-283-6003
5. TASK STATEMENT: Call For and Adjust Indirect Fire
6. EQUIPMENT REQUIRED: Training set fire observation, TC and FDC radio stations (telephone and wire substituted), call signs for TC and FDC, CEOI, binoculars, compass, coordinate scale, pencil 1:50,000 scale military map, and various targets
7. REFERENCE USED: FM 17-15 (TEST), FM 6-3, TC 6-40-4
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-19K 1/2
10. PERSONNEL REQUIRED: TC, FDC representative, and training set fire observation operator
11. INITIATING CUES: Target appears in battle area beyond the range of direct fire weapons, platoon leader and platoon sergeant unable to call for fire.

TASK SUMMARY

1. TASK NUMBER: 061-283-6003
2. TASK STATEMENT: Call For and Adjust Indirect Fire
3. CONDITIONS: Given binoculars, radio (telephone and wire substituted), TC and FDC Call signs, CEOI, compass, coordinate scale, pencil, 1:50,000 military map of the target area, and various targets.
4. STANDARDS:
   a. Initial request for fires is made within 3 minutes after target has been designated.
   b. Adjustments must be transmitted within 30 seconds after the round impacts.
   c. Observer must achieve effect on the target within five adjustments (round must impact within 50 meters of the target to achieve effect on the target).

DATA WORKSHEET
MOS 19K
CATEGORY: COMMON
TASK: # 061-283-6003

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Formulate and transmit the initial call for fire.		
a. Locate the target by grid coordinates.	Locate the target area on the map. Know how to read six-digit coordinates of the center of the target area.	
or		
b. Locate the target by shifting from a known point.	Know a common reference, between you and the FDC, in the target area.	
or		
c. Locate the target by polar plot.	Know your location on the map. Know the direction from your location to the target. Know the distance to the target.	
d. Determine the direction from your position to the target.	Know how to determine direction by a compass. Know how to determine direction with a map and a protractor. Know how to estimate direction. Know how to determine direction from a known direction.	NOTE: Known if location of the target is determined by polar plot.
e. Leave platoon radio net.	Know that permission must be given by the platoon NCS prior to leaving the platoon net.	
f. Change radio frequency to FDC radio frequency.	Know how to find the FDC frequency in the CEOI. Rotate frequency knobs on RT-841 of the AN/VRC-64 radio to the FDC frequency.	
g. Enter the FDC radio net.	Know how to find the FDC call sign in the CEOI. Know that permission must be given by the FDC NCS prior to entering the FDC net. Know how to respond to an FDC NCS challenge.	
h. Transmit the call for fire to the FDC. (Shift from a known point)		
(1) Announce observer identification (call sign).	Know to identify yourself by your call sign.	OB: HOTEL SIX SIX, THIS IS HOTEL FOUR FOUR,
(2) Announce warning order (adjust fire).	Know to alert the FDC of a fire mission.	OB. CONT: ADJUST FIRE,

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
(3) Give location of target (shift data).	Know a common reference, between you and the FDC in the target area. Know to give direction in mils. (Direction may be given in degrees but the FDC must know if degrees is being used.) Know distance (left or right) from the known point to the target. Know distance (add or drop) from the known point to the target.	OB: CONT: SHIFT SEVEN THREE TWO, OVER. FDC: THIS IS HOTEL SIX SIX, ADJUST FIRE. SHIFT SEVEN THREE TWO OUT. OB: DIRECTION FIVE TWO ONE ZERO, LEFT THREE EIGHT ZERO, ADD FOUR HUNDRED, OVER. FDC: DIRECTION FIVE TWO ONE ZERO, LEFT THREE EIGHT ZERO, ADD FOUR HUNDRED, OUT.
(4) Give description of target.	Know to include in the description of the target: what the target is (troop, equipment, supply dump, trucks, etc.), what the target is doing (digging in, in an assembly area, etc.), number of elements in the target or size of the target (squad, platoon, three trucks, six tanks, 200 x 400 meters, etc.), and degree of protection (in the open, in foxhole, in bunkers, etc.).	OB: COMBAT OP IN OPEN.
(5) Give method of engagement.	Know desired effect on target. Know fuze setting for desired effect on target, e.g., HE fuze quick, HE fuze delay, HE fuze time, HE fuze VT, HE fuze concrete piercing.	OB CONT: VT, OVER FDC: COMBAT OP IN OPEN, VT, OUT FDC: CHARLIE, ONE ROUND, OVER OB: CHARLIE, ONE ROUND, OUT.
(Grid mission)		
(1) Announce observer identification (call sign).	Know to identify yourself by your call call sign.	OB: ALPHA FOUR ZULU FIVE SEVEN, THIS IS GOLF THREE HOTEL SEVEN ONE,
(2) Announce warning order (adjust fire).	Know to alert the FDC of a fire mission.	OB CONT: ADJUST FIRE, OVER. FDC: GOLF THREE HOTEL SEVEN ONE, THIS IS ALPHA FOUR ZULU FIVE SEVEN, ADJUST FIRE, OUT.
(3) Give location of target (grid).	Locate target on the map. Know how to read six digit coordinates of the center of the target area.	OB: GRID, ONE EIGHT ZERO SIX ONE THREE, OVER. FDC: GRID, ONE EIGHT ZERO SIX ONE THREE, OUT.
(4) Give description of target.	Know to include description of the target: what the target is (troop, equipment, supply dump, trucks, etc.), what the target is doing (digging in, in an assembly area, etc.), number of elements in the target or size of the target (squad, platoon, three trucks, six tanks,	OB: INFANTRY PLATOON IN THE OPEN.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	200 x 400 meters, etc.), and degree of protection (in the open, in foxholes, in bunkers, etc.).	
(5) Give method of engagement.	Know desired effect on target. Know fuze setting for desired effect on target, e.g., HE fuze quick, HE fuze delay, HE fuze time, HE fuze VT, HE fuze concrete piercing.	OB. CONT: VT IN EFFECT, OVER. FDC: INFANTRY PLATOON IN THE OPEN, VT IN EFFECT, OVER.
(6) Announce direction from your position to the target.	Know that to adjust fire onto the target the FDC must know the direction from your position to the target. Know to give the direction in mils. (Direction may be given in degrees but the FDC know degrees is being used.)	FDC: BRAVO, TWO ROUNDS, OVER OB: BRAVO, TWO ROUNDS OUT. OB: DIRECTION ONE SIX SIX ZERO, OVER FDC: DIRECTION ONE SIX SIX ZERO, OUT.
2. Adjust fire on the target using the bracketing method of adjustment. a. Spot each round when it impacts as over or short, right or left of the target.	Know if a round lands beyond (over) the target. Know if a round lands in front (short) of the target. Know if a round falls to the right of the target. Know if a round falls to the left of the target.	
(1) Make range changes.	Know to make the following range changes for the following round impact/target relationships: Round impact from target — Add or drop Over 400 meters — + or - 800 meters 200-400 meters — + or - 400 meters 100-200 meters — + or - 200 meters less than 100 meters — + or - 100 meters	NOTE: If the round impacts short of the target add range, if the round impacts beyond the target drop range.
(2) Make deviation (deflection) changes.	Know how to measure the horizontal distances from the round impact to the target binocular reticle and fingers. - Know horizontal reticle in binoculars measures 100 mils and is divided into 10 mil increments. - Know the observer/target (OT) factor is the range to the target divided by 1000.	NOTE: OT factor for 2000 meters to a target is 2. OT factor for 1500 meters to a target is 1.5.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	- Know to round off OT factor fractions, e.g., 1200 meters equals 1.2 but used as 1, 1800 meters equals 1.8 but used as 2, 2500 meters equals 2.5 but used as 3. - Measure mil distance between the round impact and the target on the binocular horizontal reticle scale. - Compute the deviation (deflection) correction by multiplying the mil distance from the round impact to the target by the OT factor. - Know finger method for determining horizontal distances. (With arm extended and palm toward you and first, second, and third fingers pointing up the three fingers equal 100 mils, the second and third fingers equal 70 mils, and the third finger equals 30 mils.	EX: Distance from observer to the target is 2000 meters, OT factor is 2; distance from round impact to target is 100 mils. Deviation is 200 mils (left or right). $(\frac{2000}{1000} = 2 \times 100 = 200)$
b. Transmit corrections to the FDC in meters.	Know the initial correction should bracket target in range. Know deviation (deflection) corrections should be made to keep the rounds on line.	FDC: SHOT, OVER OB: SHOT, OUT OB: RIGHT ONE HUNDRED, DROP FOUR HUNDRED, OVER FDC: RIGHT ONE HUNDRED, DROP FOUR HUNDRED, OUT FDC: SHOT, OVER OB: SHOT, OUT OB: LEFT FOUR ZERO, ADD TWO HUNDRED, OVER FDC: LEFT FOUR ZERO, ADD TWO HUNDRED, OUT FDC: SHOT, OVER OB: SHOT, OUT OB: DROP ONE HUNDRED, OVER FDC: SHOT, OVER OB: SHOT OUT
c. Initiate fire for effect.	Know that when a 100 meter bracket is split or a range correct spotting is made, the fire for effect phase is entered.	OB: ADD FIVE ZERO, FIRE FOR EFFECT, OVER FDC: ROUNDS COMPLETE, OVER OB: ROUNDS COMPLETE, OUT
d. Report results of fire-for-effect.	Know to report to FDC results of fire-for-effect. Know how to report results of fire-for-effect, e.g., number of casualties, damaged equipment, stalled trucks, enemy withdrawing, etc.	OB: END OF MISSION, TWENTY CASUALTIES, REST OF PLATOON DISPERSED, OVER FDC: END OF MISSION, TWENTY CASUALTIES, REST OF PLATOON DISPERSED, OUT.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
3. Return to platoon net. a. Leave the FDC net.	Know that permission must be given by the FDC NCS prior to leaving the FDC net.	
b. Change radio frequency to platoon radio frequency.	Know how to find the platoon frequency in the CEOI. Rotate frequency knobs on RT-841 of an AN/VRC-64 radio to the platoon frequency.	
c. Enter the platoon radio net.	Know how to find the platoon call sign in the CEOI. Know that permission must be given by the platoon NCS prior to entering the platoon net. Know how to respond to a platoon NCS challenge.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Supervise Before Operations Checks and Services on an M1 Tank
6. EQUIPMENT REQUIRED: M1 Tank with machineguns and radios mounted, and TM 9-2350-255-10 and DA Form 2404
7. REFERENCE USED: TM 9-2350-255-10
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15 (TEST), Tank Platoon SOP
10. PERSONNEL REQUIRED: Tank Commander and crew
11. INITIATING CUES: Platoon Leader alert order that the platoon will move out in one hour.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Supervise Before Operations Checks and Services on an M1 Tank
3. CONDITIONS: Given an M1 tank with all machineguns and radios mounted, a TM 9-2350-255-10 or appropriate checklist for each crewmember, and a DA Form 2404 for the tank commander.
4. STANDARDS:
   a. Within 15 minutes conduct the "walk around" inspection of the following areas:
      (1) General check of tank exterior ([1] Item number in Table 2-1, TM 9-2350-255-10).
      (2) Precleaner [2]
      (3) Transmission oil level [3]
      (4) Engine oil level [4]
      (5) Engine compartment fire extinguisher sensor lenses [5]
      (6) Engine compartment [5]
      (7) Batteries [6]
      (8) Hull access plates [7]
      (9) Rear grille doors [8]
      (10) Front and rear fuel tank filler covers and seals [9]
      (11) Tank tension [10]
   b. Note all deficiencies on DA Form 2404.
   c. Assign crewmembers to correct deficiencies noted.
   d. Monitor correction of deficiencies.
   e. Direct crewmembers to mount the tank and to perform before operations checks and services at their stations. (At this time the TC performs the task: Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) on an M1 Tank.)

f. Monitor driver's check for deficiencies in the following areas:
   (1) Parking brake system hydraulic pressure.
   (2) Engine start and checks.
   (3) Fire extinguisher system.
g. Monitor loader's check for deficiencies in the following area:
   (1) Fire extinguisher system
h. Monitor gunner's check for deficiencies in the following areas:
   (1) Main accumulator.
   (2) Hydraulic system oil reservoir.
   (3) Auxiliary hydraulic pump.
   (4) Fire extinguisher system.
   (5) Power Gun/Turret Control.
   (6) Manual Gun/Turret Controls.
i. Direct crewmembers to report all deficiencies noted which could not be corrected.
j. Note uncorrected deficiencies on DA Form 2404.
k. Within 15 minutes of "walk around" inspection all before operations checks and services have been completed and recorded on DA Form 2404.
l. Provide organizational maintenance with a completed copy of DA Form 2404.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Conduct general check of tank exterior.		
a. Check for leaks, tampering, damage, or missing parts.	Know where to look for leaks, tampering, damage, or missing parts. Recognize leaks, tampering, damage, or missing parts.	
b. Check for debris on sponson air intake grille.	Know where sponson air intake grille is located. Recognize debris on sponson air intake grille.	
c. Checks for cracks and dents on precleaner seal assembly.	Know where the precleaner seal assembly is located. Recognize cracks and dents in/on precleaner seal assembly.	
d. Check transmission oil level.	Know where transmission oil filler cap/dipstick is located. Know how to read markings on the dipstick.	NOTE: Deadlined if Class III leak present. (Page 2-30, TM 9-2350-255-10).
e. Check engine oil level.	Know where engine oil filler cap/dipstick is located. Know how to read markings on the dipstick.	NOTE: Deadlined if Class III leak present. (Page 2-30, TM 9-2350-255-10).
f. Check engine compartment fire extinguisher sensor lenses for cleanliness.	Know where engine compartment fire extinguisher sensor lenses are located. Know if sensor lenses require cleaning.	NOTE: Deadlined if sensors missing or broken.
g. Check for oil leaks in the engine compartment.	Know where to look for oil leaks in the engine compartment. Recognize oil leaks in the engine compartment.	NOTE: Deadlined if Class III leak present. (Page 2-30, TM (9-2350-255-10).
h. Check battery condition indicators.	Know where battery condition indicators are located. Know how to read battery condition indicators.	NOTE: Deadlined if batteries need charged.
i. Check that hull access plates are in place and secure.	Know where hull access plates are located. Recognize if hull access plates are in place and secure.	
k. Check that rear grille doors are closed and bolts are tight.	Know where rear grille doors are located. Recognize if rear grille doors are closed and bolts are tight.	
l. Check that front and rear fuel tank filler covers are in place and secure.	Know where front and rear fuel tank filler covers are located. Recognize if front and rear fuel tank filler covers are in place and secure.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
m. Check that track tension is correct.	Know that the adjusting link should move no more than 1/8 inch from the locknut after pumping grease into the fitting. Know that if the adjusting link moves more than 1/8 inch from the locknut after pumping grease into the fitting track tension must be adjusted.	NOTE: Deadlined if missing or broken torsion bar.
2. Note all deficiencies on DA Form 2404.	Know how to make entries on DA Form 2404. Enter deficiencies noted in column c of DA Form 2404.	
3. Assign crewmembers to correct deficiencies noted.	Know which crewmember to assign deficiencies found in performance measure 1a through 1h and 1l to the driver, 1i and 1k to the loader, and 1m to the gunner and loader.	
4. Receive crewman reports of deficiencies corrected.	Know to initial deficiency entries in DA Form 2404 which were corrected.	
5. Direct crewmen to mount the tank and to conduct before operations checks and services at their station.	Know that the driver is to check: the parking brake system, hydraulic pressure, engine start and checks, and the fire extinguisher system. Know that the loader checks the fire extinguisher system. Know that the gunner is to check: the main accumulator for pressure, hydraulic system oil reservoir, auxiliary hydraulic pump, fire extinguisher system, power gun/turret control, and manual gun/ turret controls.	NOTE: Checks fire extinguisher system in driver compartment. NOTE: Deadlined if engine inoperative. NOTE: Checks fire extinguisher system in loader's compartment. NOTE: Checks fire extinguisher system in gunner's compartment. Deadlined for Class III leak around hydraulic reservoir (Page 2-30, TM 9-2355-10). Deadlined for depleted fire extinguisher system engine compartment bottles. Deadlined if gun elevation inoperative, turret traverse inoperative, or gun fails to respond to controls. Deadlined if manual elevation and traverse controls inoperative. NOTE: At this time the TC performs the task, "Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) on an M1 Tank."

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
6. Receive crewman reports of deficiencies noted but which they were unable to correct.	Recognize whether or not a deficiency can be corrected at crewman level.	
7. Note all uncorrected deficiencies on DA Form 2404.	Know how to make entries on DA Form 2404. Enter deficiencies noted in colum C of DA Form 2404.	
8. Not uncorrected deficiencies which would cause the tank to be deadlined or which would significantly degrade the tank's mobility and gunnery performance.	Know deficiencies which would deadline the tank. Know deficiencies which would significantly degrade the tank's mobility and gunnery performance.	
9. Give a copy of the DA Form 2404 to organizational maintenance.	Know how and where to control organizational maintenance.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Supervise After Operations Checks and Services on an M1 Tank
6. EQUIPMENT REQUIRED: M1 Tank with machineguns and radios mounted, and TM 9-2350-255-10 and DA Form 2404
7. REFERENCE USED: TM 9-2350-255-10
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15 (TEST), Tank Platoon SOP
10. PERSONNEL REQUIRED: Tank Commander and crew
11. INITIATING CUES: Platoon has closed into a forward assembly area and completed defensive preparations.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Supervise After Operations Checks and Services on an M1 Tank
3. CONDITIONS: Given an M1 tank with all machineguns and radios mounted, a TM 9-2350-255-10 or appropriate checklist for each crewmember, and a DA Form 2404 for the tank commander.
4. STANDARDS:
   a. Within 20 minutes conduct the "walk around" inspection of the tank to determine if there are maintenance deficiencies in the following areas:
      (1) General check of the tank exterior ([1] Item number in Table 2-1, TM 9-2350-255-10)
      (2) Precleaner [2]
      (3) Transmission oil level [3]
      (4) Engine oil level [4]
      (5) Engine compartment fire extinguisher sensor lenses [5]
      (6) Hull access plates [7]
      (7) Rear grille doors [8]
      (8) Track tension [10]
      (9) Roadwheel and compensating idler hubs and arms [11]
      (10) Roadwheels and compensating idler wheels [12]
      (11) Shock absorbers [13]
      (12) Torsion bars [14]
      (13) Track assembly [15]
      (14) Hub and sprocket assembly [16]
      (15) Support roller assembly [17]
      (16) Adjusting link assembly [18]
      (17) Skirt panels, fenders, and mudguards [19]
      (18) Engine hydraulics and heat exchanger [20]

b. Note all deficiencies on DA Form 2404.
c. Assign crewman to correct deficiencies.
d. Monitor correction of deficiencies.
e. Direct the gunnery and loader to mount the tank and to perform after operations checks and services at their stations.
f. Monitor gunner's check for deficiencies in the following area;
   (1) Hydraulic system oil reservoir
   (2) Power gun/turret control
   (3) Manual gun/turret controls
g. Monitor loader's check for deficiencies in the following area:
   (1) Loader's panel
h. Direct crewmembers to report all deficiencies noted which could not be corrected.
i. Note uncorrected deficiencies on DA Form 2404.
j. Within 15 minutes of "walk around" inspection all after operations checks and services have been completed and recorded on DA Form 2404.
k. Provide organizational maintenance with a complete copy of DA Form 2404.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Conduct general check of tank exterior.		
a. Check for damage or missing parts, insure drain valves are open, look under the tank for leaks, and make sure tank exterior is clean as possible to prevent a buildup of dirt, grime, and grease, and to enhance inspection.	Know where to look for damage or missing parts. Recognize damage or components with missing parts. Be able to differentiate between leaks on the ground caused by oil or hydraulic fluid and water. Recognize that the exterior of the tank is as clean as the tactical situation will permit.	
b. Check for debris on the sponson air intake grille.	Know where the sponson air intake grille is located. Recognize debris on the sponson air intake grill.	
c. Check for cracks and dents on the precleaner seal assembly.	Know where the precleaner seal assembly is located. Recognize cracks and dents in/on precleaner seal assembly.	
d. Check transmission oil level.	Know where transmission oil filler cap/dipstick is located. Know how to read markings on the dipstick.	NOTE: Deadlined if Class III leak present. Page 2-30, TM 9-2350-255-10)
e. Check engine oil level.	Know where the engine oil filler cap/dipstick is located. Know how to read markings on the dipstick.	NOTE: Deadlined if Class III leak present. Page 2-30, TM 2350-255-10)
f. Check engine compartment fire extinguisher sensor lenses.	Know where engine compartment fire extinguisher sensor lenses are located. Know if sensor lenses require cleaning.	NOTE: Deadlined if sensors broken or missing.
g. Check that hull access plates are in place and secure.	Know where hull access plates are located. Recognize if hull access plates are in place and are secure.	
h. Check that rear grille doors are closed and bolts are tight.	Know where rear grille doors are located. Recognize if rear grille doors are closed and bolts are tight.	
i. Check that track tension is correct.	Know that the adjusting link should move no more than 1/8 inch from the locknut after pumping grease into the fitting. Know that if the adjusting link moves more than 1/8 inch from the locknut after pumping grease into the fitting track tension must be adjusted.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
j. Check roadwheel and compensating idler hubs and arms for leaks around hub at inner and outer roadwheels, check oil level in hub cap, check for missing rubber plug, check upper end of arm for leaks at housing, and check arms for deep gouges or bends.	Know the location of hub, inner and outer roadwheels oil level hole, rubber plug, and compensating arm. Recognize the hub, inner and outer roadwheels, oil level hole, rubber plug, and compensating arm. Recognize an oil leak around hub of inner and outer roadwheels. Know oil level in the hub should be to the bottom of the hole for the rubber plug.	NOTE: Deadlined if compensating idler wheel or roadwheel missing.
k. Check for bent, broken, or missing roadwheels and compensating idler wheels, check that wearplates are not cracked, gouged, or missing, check that not more than 50 percent of rubber on the wheel is chunked or separated, check that all mounting nuts and bolts are secure, and check for bent or broken center guides.	Know the location of roadwheels and compensating idler wheels, wearplates, rubber on wheels, mounting nuts and bolts, and center guides. Recognize roadwheels, compensating idler wheels, wearplates, mounting nuts and bolts and center guides. Recognize bent, broken, or missing roadwheels and compensating idler wheels. Recognize cracked, gouged, or missing wearplates. Know when more than 50% of the rubber on roadwheels and compensating idler wheels are chunked or separated. Know if mounting nuts and bolts are secure. Know if center guides are bent or broken.	
l. Check shock absorber sight gages for proper oil level, check if oil in sight gages is milky, check for oil leaks and conduct touch-test of shock absorber housings with back of hand.	Know the location of shock absorbers and shock absorber gages. Recognize shock absorbers and shock absorber gages. Know that the proper oil level is indicated if the indicator ball is between the middle and top sight gage. Know that if the oil is milky in the sight gage organizational maintenance should be notified. Know that when conducting the touch-test of shock absorber housings a cold housing may indicate a broken shock absorber and organizational maintenance should be called.	
m. Check for broken torsion bars.	Know location of roadwheels. Know to place a crowbar under roadwheels 2 through 6 and pry up on roadwheels. Know if roadwheel cannot be lifted torsion bar is good. Know to look at roadwheel arms 1 and 7 for tilt of tank or lifting of roadwheels and track	NOTE: Deadlined if missing or broken torsion bar.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	off the ground. Know if tank is not tilted or roadwheels and tracks are not off the ground torsion bar is good.	
n. Check track assembly for missing, bent, or broken center guides and nuts, check for missing, loose, or improperly seated wedges or bolts in end connectors, and dead track shoes.	Know the location of center guides, wedges, and end connectors. Recognize center guides, wedges, and end connectors, Recognize missing, bent, or broken center guides and nuts. Recognize missing, loose, or improperly seated wedges and bolts. Recognize dead track shoes appear out of line.	NOTE: If time permits the TC or a designated crewmember should do a *Hammer Ring Test.* (Reference Item 15, Table 2-1, TM 9-2350-255-10)
o. Check inner and outer sprocket for cracks and worn or gouged teeth, check sprocket wear mark, check for missing or loose bolts, and check hub for cracks, sharp edged gouges and loose or missing mounting bolts.	Know location of hub and sprocket assembly. Recognize hub and sprocket assembly. Recognize cracks and worn or gouged teeth on inner and outer sprocket. Know that if teeth are worn to the back edge of the wear mark to call organizational maintenance. Recognize missing or loose bolts. Recognize hub cracks, sharp edged gouges and loose or missing counting bolts.	NOTE: Deadlined if teeth are broken, broken bolts or drive hub spring, or sprockets worn to wear marks.
p. Check support roller assembly for grease leakage and missing or damaged lube fittings, check wheel for cracks or unusual wear, check spindle support for missing or loose retaining pin, check hub cap for cracks, damage, grease leakage, or loose fit, and touch-test hub to make sure it is not hot.	Know location of support roller assembly, lube fittings, spindle support, retaining pin, and hub cap. Recognize support roller assembly, lube fittings, spindle support, retaining pin, and hub cap. Recognize grease leakage and missing or damaged lube fittings. Recognize cracks or unusual wear on the wheel. Recognize missing or loose retaining pin. Recognize hub cap cracks, damage, grease leakings, or loose fit. Know that when conducting the touch test of the support roller assembly a hot hub indicates that lubrication is required.	NOTE: Deadlined if support roller assemblies missing or overheated.
q. Check adjusting link assembly for loose or missing hardware and lube fitting, check for loose or missing lock bolt, and if grease comes out of relief valve check that locknut is secure against barrel.	Know location of adjusting lock assembly, lube fitting, lock bolt, relief valve, locknut, and barrel. Recognize adjusting lock assembly, lube fitting, lock bolt, relief valve, locknut, and barrel. Recognize loose or missing hardware and	NOTE: Deadlined if assembly is missing or broken.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	lube fitting. Recognize loose or missing lock bolt. Recognize grease coming out of relief valve. Recognize locknut secure against barrel.	
r. Check skirt hinges, panels, and support struts, check that all pins are straight and secured by ring pins or roll pins, and check skirts, fenders, and mudguards for cracks and damage.	Know location of skirts, fenders, mudguards, hinges, support struts, and ring pins and roll pins. Recognize skirts, fenders, mudguards, hinges, support struts, ring pins, and roll pins. Recognize straight and secure ring pins and roll pins. Recognize cracked or damaged skirts, fenders, and mudguards. Know to notify organizational maintenance if skirts, fenders, or mudguards are damaged or cracked.	NOTE: Deadlined if hinges or struts broken or skirts missing.
s. Check engine hydraulics and heat exchanger lines for leaks, pump assembly for looseness, heat exchanger for looseness, and grille doors for clogged fins.	Know location of engine hydraulics and heat exchanger. Recognize engine hydraulic and heat exchanger. Recognize leaks in hydraulic pump lines. Recognize looseness in pump assembly base. Recognize leaks in heat exchanger hydraulic lines. Recognize looseness in heat exchanger mountings. Recognize clogged fins in heat exchanger grille.	NOTE: Deadlined if Class III leak present. (Page 2-30, TM 9-2350-255-10), loose pump assembly base, or loose heat exchanger mountings.
2. Note all deficiencies on DA Form 2404.	Know how to make entries on DA Form 2404. Enter deficiencies noted in column c of DA Form 2404.	
3. Assign crewmembers to correct deficiencies noted.	Know which crewmembers to assign deficiencies to. Assign deficiencies found in performance measures 1a through 1g and 1s to the driver, and 1h through 1r to the gunner and loader.	
4. Receive crewman reports of deficiencies corrected.	Know to initial deficiency entries on DA Form 2404 which were corrected.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
5. Direct gunner and loader to mount the tank and to conduct after operations checks and services at their stations.	Know that the gunner is to check: hydraulic system oil reservoir, power gun/turret control, and manual/gun turret controls. Know that the loader is to check the loader's panel.	NOTE: Deadlined if Class III leak present, gun elevation and traverse inoperative, gun fails to respond to controls or manual elevation and traverse controls inoperative. NOTE: Deadlined if either switch is inoperative
6. Note all uncorrected deficiencies on DA Form 2404.	Recognize whether or not a deficiency reported can be corrected at crewman level.	
7. Note all uncorrected deficiencies on DA Form 2404.	Know how to make entries on DA Form 2404. Enter deficiencies noted in column c of DA Form 2404.	
8. Note uncorrected deficiencies which would significantly degrade the tank's mobility and gunnery performance.	Know deficiencies which would deadline the tank. Know deficiencies which would significantly degrade the tank's mobility and gunnery performance.	
9. Give a copy of DA Form 2404 to organizational maintenance.	Know how and where to contact organizational maintenance.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) on an M1 Tank
6. EQUIPMENT REQUIRED: M1 Tank with machinegun and radios mounted, and TM 9-2350-255-10 and DA Form 2404
7. REFERENCE USED: TM 9-2350-255-10
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15 (TEST), Tank Platoon SOP
10. PERSONNEL REQUIRED: Tank Commander and crew
11. INITIATING CUES: Platoon Leader alert order that the platoon will move out in one hour.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) on an M1 Tank
3. CONDITIONS: Given an M1 tank with all machineguns and radios mounted, a TM 9-2350-255-10 or appropriate checklist for the tank commander, and a DA Form 2404.
4. STANDARDS:
   a. Within 15 minutes perform commander's weapon station (CWS) before operations checks and services on the following:
      (1) Communications system ([34] Item number in Table 2-1, TM 9-2350-255-10)
      (2) Fire extinguisher system [35]
   b. Note all deficiencies on DA Form 2404.
   c. Note uncorrected deficiencies on DA Form 2404.
   d. Provide organizational maintenance with a completed copy of DA Form 2404.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Check that radio works by requesting a radio check.	Know how to turn on the radio. Know how to make a radio check Know if reception is adequate.	NOTE: Deadlined if transmission or reception inoperative.
2. Check that intercom is operable.	Know how to turn on the intercom. Know how to make an intercom check. Know if reception is adequate.	NOTE: Deadlined if no intercom between TC and driver.
3. Check portable fire extinguisher.	Know location of protable fire extinguisher. Check that pull out pin is sealed with wire. Check that inspection tag is current.	NOTE: Checks fire extinguisher in TC compartment.
4. Note all uncorrectable deficiencies on an DA Form 2404.	Know how to make entries on DA Form 2404. Enter deficiencies noted in column C of DA Form 2404.	
5. Give a copy of DA Form 2404 to organizational maintenance.	Know how and where to contact organizational maintenance.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Direct and Supervise the Zeroing of the M240 Coax Machinegun on an M1 Tank
6. EQUIPMENT REQUIRED: M1 Tank with mounted M240 machinegun, 75 rounds ammunition, target
7. REFERENCE USED: TM 9-2350-255-10
8. UNIQUE WORKING CONDITIONS:
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank Commander and crew
11. INITIATING CUES: Zero was lost from coax

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Direct and Supervise the Zeroing of the M240 Coax Machinegun on an M1 Tank
3. CONDITIONS: Given a stationary M1 tank on level ground with a mounted and loaded M240, coaxial machinegun, crew, 75 rounds of ammunition, a clearly defined, and visible target at 800 meters. GUN/TURRET drive switch on loader's panel is set to POWERED, TURRET POWER and AUX HYDR POWER (if engine is shut down) switches are ON. Gunner's station has been prepared for operation. The main gun has been boresighted and calibrated.
4. STANDARDS: Zero the M240 coaxial machinegun so that:
   a. Reticle is adjusted to center of impact area on the target after firing 20-25 round bursts.
   b. Final burst of 20-25 rounds impact on the reticle aiming point.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Check that GUN/TURRET drive switch on loader's panel is set to powered.	Know amber powered light must be lit.	
2. Check that GUN SELECT switch on GPS is set to COAX.	Know COAX white light must be lit.	
3. Check that turret blower came on automatically.	Know turret blower should come on automatically when GUN SELECT switch is set to COAX.	NOTE: If turret blower does not come on, perform troubleshooting procedures in Table 3-1, TM 9-2350-255-10-3. WARNING: Turret blower must operate when firing the coax. Fumes from firing can be harmful to crew.
4. Check that FIRE CONTROL MODE switch on GPS is set to NORMAL.	Know NORMAL position of FIRE CONTROL MODE on GPS.	
5. Check that NORMAL indicator light comes on.	Know that the green NORMAL indicator light must be lit.	
6. Check that MAGNIFICATION LEVER on GPS is set to 10X.	Know that magnification lever is located below the AMMO SELECT unit and lever should be in most right position.	
7. Sight through the GPS extension to check that the gunner lays the reticle aiming point on the target.	Know GPS extension and sight reticle.	WARNING: Be sure main gun and exterior guns are clear and aimed downrange throughout the firing operation to prevent injury to personnel.
8. Check gunner's lase to the target or manual input into the computer.	Know coax is zeroed at a range of 800 meters to the target.	
9. Check that gunner fired a 20-25 round burst at the target.	Know that 20-25 round bursts are used to zero the coax.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
10. Check that the gunner announced "ON THE WAY" before firing the machinegun.	Know that "ON THE WAY" proceeds firing of any tank weapon.	
11. Look through the GPS extension to check that the lay of the gun was not disturbed when the gunner released the power control handles.	Know that the gunner must not disturb the lay of the gun when releasing the power control handles after firing the 20-25 round burst.	CAUTION: Do not change lay of gun and reticle. Keep gunner's power control handles centered.
12. Check that gunner opens the door on the computer control panel and places the computer control panel power switch to ON.	Know location of computer control panel and its power switch.	
13. Check that gunner pushes ZERO pushbutton on computer control panel.	Know that ZERO pushbutton will illuminate when pushed.	NOTE: If reticle aiming point is at the center of the bullet strike area go to step 20. If it is not in the center of the bullet strike area go to step 4.
14. Check that gunner moves RETICLE ADJUST toggle switch on computer control panel up (U), down (D), left (L), or right (R) as required to outer reticle aiming point in the strike area.	Know location of RETICLE ADJUST toggle switch and the effects of its movement on the reticle.	
15. Look through the GPS extension to check that the gunner moves the reticle in the center of the strike area.	Recognize strike area, reticle, and relation of reticle and strike area to final reticle adjustment.	
16. Check that gunner presses ENTER pushbutton on the computer control panel. Check that light in ZERO pushbutton goes out.	Know location of ENTER pushbutton and know when it is pushed light in ZERO pushbutton goes out.	NOTE: Repeat step 7.
17. Check that the gunner fires a second 20-25 round burst without moving the power control handles.	Know that the gunner must not disturb lay of gun when releasing the power control handles after firing the 20-25 round burst.	
18. Check that strike area brackets reticle aiming point.	Know that if strike area brackets reticle aiming point coax is zeroed.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
19. Check that gunner repeats step 13.	Know that zero pushbutton will illuminate when pushed.	NOTE: Record zero setting from computer display. Is strike area did not bracket reticle aiming point go back to step 13.
20. Check that gunner presses ENTER pushbutton on the computer control panel. Check that light on ZERO pushbutton goes out.	Know location of ENTER pushbutton and know when it is pushed light in ZERO pushbutton goes out.	
21. Check that gunner places computer control panel power switch to OFF and closes the computer control panel door.	Know location of computer control panel and its door.	
22. Check that gunner clears the coaxial machinegun.	Know how to safely clear the coax.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (3Z)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Prepare a Sketch Range Card
6. EQUIPMENT REQUIRED: 1:50,000 military map, lensatic compass, straight edge, paper, and pencil
7. REFERENCE USED: FM 17-12
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-15(T), FM 17-16(T), TT 71 1/2, and Division 86 Tank Platoon SOP
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: The platoon leader has briefed you on the area of operations and assigned you your primary firing position. He wants your sketch range card in 30 minutes.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Prepare a Sketch Range Card
3. CONDITIONS: Given a 1:50,000 military map, an orientation of the area, a location for the primary firing position, a sector of fire, platoon target reference points, platoon indirect fire concentrations, and the position of left and right adjacent vehicles.
4. STANDARDS:
   a. Within 5 minutes draw a sketch which includes the major terrain features within the platoon's area of operation.
   b. Within 5 minutes indicate on the sketch the location of the primary firing position, the tank sector of fire, and the location of the center of the sector of fire.
   c. Within 3 minutes indicate on the sketch target reference points.
   d. Within 2 minutes indicate on the sketch indirect fire targets.
   e. Within 2 minutes indicate on the sketch the primary firing positions of the vehicle on the right and the vehicle on the left.
   f. Within 2 minutes indicate on the sketch the left sector boundry of the vehicle on the right and the right sector boundry of vehicle on the left.
   g. Within 2 minutes indicate on the sketch by each target reference point symbol the target reference point numbers approved by the platoon leader.
   h. Within 2 minutes indicate on the sketch indirect fire target numbers approved by the FIST and provided by the platoon leader.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Draw a sketch map, with major terrain features.		
a. Draw in the road net.	Accurately orient the road net with other terrain features.	
b. Draw in prominent hills.	Accurately orient prominent hills with other terrain features.	
c. Draw in obstacles.	Accurately orient obstacles with other terrain features.	
d. Draw in man made features.	Accurately orient man made features with other terrain features.	
e. Label terrain features.	Accurately label roads, hills, obstacles, and man made features.	
2. Indicate on the sketch the location of the primary firing position, the tank's sector of fire, and the location of the center of the sector of fire.		
a. Indicate the location of the primary firing position with the tank symbol ⊟.	Know the location of the primary firing position and the symbol for a tank.	
b. Extend a double line from the tank symbol to the right boundry reference point indicated by the platoon leader.	Know right boundry reference point.	
c. Extend a double line from the tank symbol to the left boundry reference point indicated by the platoon leader.	Know left boundry reference point.	
d. Select an easily recognizable terrain features in the center of the sector and place the (ASP) symbol immediately beyond the terrain features on the sketch.	Know easily recognizable terrain features, center of the sector, and center of the sector symbol.	
e. Extend a single line from the tank symbol to the center of sector reference point.	Know tank symbol and center of sector reference point.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
f. Measure the distance on a map from the tank symbol to each sector boundry reference point and the center of sector reference point. Enter the distance, as range, on the boundry and center of sector lines.	Know how to measure distance on a map and how to center distances on bounding and center of sector lines.	
3. Indicate on the sketch target reference points (TRPs).		
a. Indicate with the + symbol target reference points provided by the platoon leader.	Know target reference point locations and the target reference symbol.	
b. Indicate with the + symbol additional target reference points required.	Recognize potential direct fire target areas.	
4. Indicate on the sketch indirect fire targets.		
a. Indicate with O the temporary symbol for indirect fire targets.	Recognize potential indirect fire target areas and temporary indirect fire symbol.	
5. Indicate on the sketch the primary firing positions of the vehicle on the right and the vehicle on the left.		
a. Indicate with the appropriate symbol ⌸ or ◊ the primary firing positions of the vehicle on the right and the vehicle on the left.	Know the location of the vehicle on the right and the vehicle on the left. Know tank and BEF symbols.	
6. Indicate on the sketch the left sector boundry of the vehicle on the right and the right sector boundry of the vehicle on the left.		
a. Extend a single dashed line from the vehicle symbol on the right to that vehicle's left boundry reference point. Then extend a single dashed line from the vehicle symbol on the left to that vehicle's right boundry reference point.	Know left sector boundry reference point of the vehicle on the right and the right sector boundry reference point of the vehicle on the left.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
7. Indicate on the sketch by each target reference point symbol the target reference point number. a. Indicate by each target reference point symbol + the reference point number (Example 043) provided by the platoon leader.	Know how to plot platoon leader approved target reference point information on the sketch.	NOTE: This information is added to the tank commander's sketch range card after platoon leader/FIST coordination.
8. Indicate on the sketch indirect fire target numbers. a. Remove temporary symbol O for indirect fire targets. b. Indicate the indirect fire symbols + with FIST approved indirect fire target numbers (Example AA0126).	Know to remove temporary symbol for indirect fire target. Know how to plot FIST approved indirect fire target information on the sketch.	NOTE: Don't remove prior to receiving platoon leader indirect fire information. NOTE: This information is added to the tank commander's sketch range card after platoon leader/FIST coordination

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. MOS WITH SKILL LEVEL: 19K30 (1X)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: 071-313-3455
5. TASK STATEMENT: Set Headspace and Timing on a Caliber .50 Machinegun
6. EQUIPMENT REQUIRED: A caliber .50 machinegun and a headspace and timing gage.
7. REFERENCE USED: FM 23-65, TM 9-1005-213-10
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS: FM 17-19K 1/2
10. PERSONNEL REQUIRED: Tank Commander
11. INITIATING CUES: You have just received a new caliber .50 machinegun and are checking it to see if it will fire.

TASK SUMMARY

1. TASK NUMBER: 071-313-3455
2. TASK STATEMENT: Set Headspace and Timing on a Caliber .50 Machinegun
3. CONDITIONS: Given an assembled caliber .50 machinegun with incorrect headspace and timing and a headspace and timing gage.
4. STANDARDS: Within 10 minutes, the following conditions must be obtained once the gun is cocked and the bolt is forward.
   a. Headspace. With the charging handle pulled back 1/16 of an inch (so that the barrel of extension is not resting against the trunnion block) the GO end of the headspace gage will enter the T-slot and the NO GO end will not.
   b. Timing. With the NO FIRE timing gage inserted between the barrel extension and the trunnion block (with the beveled edge of the gage on the barrel notches), the firing pin will not release when the trigger is depressed. When the NO FIRE timing gage is replaced by the FIRE gage, the firing pin will release when the trigger is depressed.

NOTE: The term "charging handle" refers to the charger cable.

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: #071-313-3455

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Headspace adjustment with the headspace gage.		
a. Raise the cover. Retract the recoiling parts and screw the barrel all the way into the barrel extension, and loosen the barrel two notches or clicks.	Know how to retract recoiling parts. Know what the barrel and the barrel extension are. Know what notches and clicks are in regards to the barrel and the barrel extension.	
b. Pull the charging handle to its rearmost position. Hold the handle to the rear and press the bolt latch release, allowing the bolt to go forward slowly to prevent damage of parts.	Know what the charging handle (charging cable) and the bolt latch release are. Know how to depress the bolt latch release, and while holding the charging handle, allowing the bolt to go forward slowly.	NOTE: Be careful not to depress the trigger, since this will cause the firing pin to be released. The firing pin should never be released with the gage in the T-slot as this could damage the firing pin and gage.
c. Pull the charging handle back until the barrel extension is 1/16 of an inch from the trunnion block.	Know what the trunnion block is. Know 1/16 of an inch distance.	
d. Insert the GO end and then the NO GO end of the headspace gage in the T-slot. If the GO end of the gage enters freely down to the center ring on the gage and the NO GO end does not enter, headspace is correct.	Know GO and NO GO ends of headspace gage.	
e. If the GO end of the gage does not enter freely, the barrel must be unscrewed one notch (click) at a time (check with the gage after each notch), until the ago end of the gage enters freely. To complete the adjustment, try to insert the NO GO end of the gage. If it does not enter, headspace is correct.	Know how to unscrew the barrel. Recognize the movement of the barrel one notch (click).	
f. If the NO GO end of the gage enters the T-slot, headspace is too loose. The barrel must be screwed into the barrel extension (one notch at a time), checking with the gage after each notch, until the GO end enters and the NO GO end does not.	Know how to screw the barrel into the barrel extension. Recognize the movement of the barrel one notch (click).	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
2. Checking and/or setting timing with the timing gage.		
a. After headspace has been set, make sure the gun is cocked and all moving parts are fully forward. Then pull back on the charging handle with the left hand, making a large enough separation between the trunnion block and the barrel extension to insert the FIRE gage. Place the beveled edge of the gage against the barrel notches, then allow the bolt to go forward by releasing the charging handle.	Know FIRE gage. Recognize beveled edge of the gage. Know how to cock the gun. Know barrel extension and trunnion block.	
b. The next step is to remove the backplate. To remove the backplate pull out on the backplate to latch lock and pull up on the backplate latch.	Know what the backplate, backplate latch lock, and backplate latch. Know directions out and up.	
c. Inside the back of the receiver is the trigger, lever and the timing adjustment screw. Screw the timing adjustment nut down, to the left, until it rests lightly on the trigger lever. Apply strong pressure upward on the trigger lever with the thumb; the gun should not fire.	Know timing adjustment nut and trigger lever. Know directions left, down, and upward.	
d. To set timing, turn the timing adjustment nut up, or to the right, one click at a time. After each click apply strong pressure upward on the trigger lever, attempting to release the firing gun.	Know timing adjustment nut and trigger lever. Know directions right and upward. Recognize one click.	
e. When the gun fires turn the timing adjustment nut up two additional clicks. The reason for the additional clicks is there are six clicks of timing between early and late timing. The gun has already fired on the first click, two more	Know gun has fired. Know timing adjustment nut. Know direction up. Recognize two clicks.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
clicks will give you a total of three clicks, an appropriate center of the proper timing adjustment.		
f. Replace the backplate, remove the FIRE gage and recock the gun. Then push the bolt latch release and ease the bolt forward.	Know how to replace the backplate. Know how to recock the gun. Know bolt latch release.	
g. Move to the side of the gun, pull back on the charging handle, and insert the NO-FIRE gage in the same place the FIRE gage was, between the barrel extension and the trunnion block. The beveled edge of the gage should be against the barrel notches.	Know NO-FIRE gage. Recognize the beveled edge of the gage. Know barrel extension, trunnion block, and barrel notches.	
h. Depress the trigger; the gun should not fire. If the firing pin is released, the timing is too early. If early timing exists, the gun will fire two rounds and stop firing because the extractor does not come far enough forward to extract another round.	Know if firing pin is released. Know symptoms of early timing.	
i. To correct early timing, remove the backplate and turn the timing adjustment nut all the way down until it rests lightly on the trigger lever and begin again. This time insure strong pressure is exerted upward on the trigger lever each click. If the firing pin does not release when the NO-FIRE gage is inserted, remove it and reinsert the FIRE gage. If the firing pin is released when the trigger is depressed proper timing has been set.	Know how to remove the backplate. Know timing adjustment nut and trigger lever. Know directions down and upward. Know NO-FIRE and FIRE gage. Know when firing pin releases.	

TASK DOCUMENTATION

1. DATE DEVELOPED:
2. TASK WITH SKILL LEVEL: 19K30 (3X)
3. TASK CATEGORY: M1 Tank
4. TASK NUMBER: None
5. TASK STATEMENT: Issue an Initial Fire Command and Issue a Subsequent Fire Command
6. EQUIPMENT REQUIRED: M1 tank with operational intercommunications system and various tank targets and projectile trajectory/target relationship indicators.
7. REFERENCE USED: FM 17-12-1
8. UNIQUE WORKING CONDITIONS: None
9. PUBLICATIONS WHERE TASK APPEARS:
10. PERSONNEL REQUIRED: Tank commander and crew
11. INITIATING CUES: Appearance of a target or projectile(s) missing a target.

TASK SUMMARY

1. TASK NUMBER: None
2. TASK STATEMENT: Issue an Initial Fire Command and Issue a Subsequent Fire Command
3. CONDITIONS:
   a. Given a moving or a stationary M1 tank with operational fire control and intercommunications systems, single and multiple targets, stationary and moving targets, and point and area targets.
   b. Given a moving or a stationary M1 tank with operational intercommunications system, with inoperative laser rangefinder and stabilization system, single and multiple targets, stationary and moving targets, and point and area targets.
   c. Given a moving or a stationary M1 tank with a first round miss on a point target and a first burst miss on an area target.
4. STANDARDS:
   a. Know the seven elements of a precision fire command.
   b. Know the circumstances for deleting elements from a precision fire command.
   c. Know the six elements of a battlesight fire command.
   d. Know the main reason why a battlesight fire command is used.
   e. Know the system failure which necessitates emergency mode gunnery.
   f. Within 7 seconds of target appearance issue a fire command from a stationary tank for a single moving tank at 1800 meters.
   g. Within 7 seconds of target appearance issue a fire command from a stationary tank for two moving tanks at 1600 meters.
   h. Within 7 seconds of target appearance issue a fire command from a stationary tank for an area troop target at 800 meters.
   i. Within 7 seconds of target appearance issue a fire command from a stationary tank for a single moving anti-tank target at 1400 meters and an area troop target at 1200 meters.
   j. Within 7 seconds of target appearance issue a fire command from a moving tank for a single stationary tank at 1700 meters.
   k. Within 7 seconds of target appearance issue a fire command from a moving tank for two moving tanks at 1800 meters.

l. Within 7 seconds of target appearance issue a fire command from a moving tank for a single stationary anti-tank target at 1600 meters and a single moving truck target at 1400 meters.
m. Within 7 seconds of target appearance issue a fire command from a moving tank for an area troop target at 900 meters.
n. Within 7 seconds of target appearance issue a fire command from a moving tank for a single stationary tank at 1700 meters (stabilization system inoperative).
o. Within 7 seconds of target appearance issue a fire command from a moving tank for a single stationary tank at 1600 meters and a single moving tank at 1800 meters (stabilization system inoperative).
p. Within 7 seconds of target appearance issue a fire command from a moving tank for a single moving tank at 1600 meters and a single moving anti-tank target at 1400 meters (laser rangefinder inoperative).
q. Within 7 seconds of target appearance issue a fire command from a moving tank for a single stationary tank at 1600 meters (laser rangefinder inoperative).
r. Know the four elements of a subsequent fire command.
s. Know the two elements of a subsequent fire command that are always given.
t. Within 3 seconds of a first round target miss issue a subsequent fire command from a moving tank for a single stationary tank at 1800 meters (gunner remained silent, TC apply reengage techn. ques).
u. Within 3 seconds of a first round target miss issue a subsequent fire command from a moving tank for a single stationary tank at 1700 meters (TC apply standard mil adjustment).
v. Within 3 seconds of a first round target miss issue a subsequent fire command from a stationary tank for a single moving tank at 1100 meters (TC apply target form techniques).
w. Within 3 seconds of a first burst target miss issue a subsequent fire command from a moving tank for an area troop target at 800 meters (TC apply cosx area target adjustment techniques).

DATA WORKSHEET
MOS 19K
CATEGORY: M1 TANK
TASK: # NONE

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
1. Explain the seven elements of a precision fire command.		
a. Alert	Know alert elements: GUNNER, CALIBER FIFTY, or LOADER MACHINEGUN for various situations.	
b. Ammunition or weapon.	Know ammunition or weapon elements: SABOT, HEAT, HEP, BEEHIVE, BEEHIVE TIME, SMOKE, or COAX, for various situations.	
c. Description.	Know description elements: TANK, TRUCK, PC, CHOPPER, PLANE, TROOPS, MACHINEGUN, or ANTI-TANK, for various situations.	NOTE: For other targets use the briefest possible terms which clearly describes the target.
d. Direction.	Know direction elements: TRAVERSE--LEFT (or RIGHT)--STEADY--ON; BRING IT UP or BRING IT DOWN; REFERENCE POINT--BRIDGE--TRAVERSE RIGHT (or LEFT); WATCH MY TRACER, for various situations.	NOTE: This element is omitted if the TC can quickly lay the gun for direction and elevation.
e. Range.	Know range elements--examples: NINE HUNDRED, TWO THOUSAND, ONE EIGHT HUNDRED, for various situations.	NOTE: This element is announced only when the LRF cannot be used or doesn't work or battlesight gunnery is not being used.
f. Execution.	Know execution elements: FIRE, AT MY COMMAND, or FROM MY POSITION for various situations.	
g. Termination of engagement.	Know termination of engagement elements: TARGET-CEASE FIRE, CEASE FIRE, or LOADER CEASE FIRE for various situations.	
2. Explain the circumstances for deleting elements from a precision fire command.		
a. Direction.	Know that the direction element is deleted from a precision fire command if the TC can quickly lay the main gun for direction and elevation.	
b. Range.	Know that the range element is deleted from a precision fire command when the LRF is operative or battlesight gunnery is used.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
3. Explain the seven elements of a battlesight fire command. a. Alert.	Know that the alert command is the word GUNNER.	NOTE: UNIT SOP battlesight round is prechambered or loader loads unit SOP battlesight round.
b. Ammunition or weapon.	Know that the ammunition or weapon element is the word BATTLESIGHT.	
c. Description.	Same as performance measure 1c.	
d. Direction.	Know that the direction element is omitted from battlesight gunnery.	
e. Range.	Know that the range element is omitted from battlesight gunnery.	NOTE: If the target is moving or the firing tank is moving manual lead must be applied.
f. Execution.	Know that the execution element is the word FIRE.	
g. Termination of engagement.	Same as performance measure 1g.	
4. Explain the main reason why a battlesight fire command is used.	Know that a battlesight fire command is used when the LRF cannot be used and the crew is placed in imminent danger from a surprise target.	
5. Explain the system failure which necessitates emergency mode gunnery. a. Explain the system failure.	Know that emergency mode gunnery is used when the stabilization system is inoperative.	
b. Explain how the tank commander compensates for an inoperative stabilization system.	Know that prior to firing and following the gunner's announcement IDENTIFIED, the TC must announce DRIVER-STOP. Know that as soon as the engagement ends the TC announces DRIVER-MOVE OUT.	
6. Issue a fire command from a stationary tank for a single moving tank at 1800 meters (turret defilade position). a. Select the type of ammunition which is the most effective against the target.	Know that SABOT ammunition is the most effective ammunition against tank targets.	
b. Issue the fire command.	Know the precision gunnery fire command, from a turret defilade position, for a single moving tank target at 1800 meters, e.g. GUNNER-SABOT-TANK-DRIVER-MOVE OUT-GUNNER-TAKE OVER (Gunner announces DRIVER-STOP,	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	IDENTIFIED) FIRE; TARGET-CEASE FIRE (TC announces DRIVER-BACK UP--DRIVER STOP).	
7. Issue a fire command from a stationary tank for two moving tanks at 1600 meters (turret defilade position). a. Select type of ammunition which is most effective against the target. b. Select most dangerous target to engage first. c. Issue the fire command.	Know that SABOT ammunition is the most effective ammunition against tank targets. Know target classification categories: most dangerous, dangerous, and least dangerous. Know the precision gunnery fire command, from a turret defilade position, for two moving tank targets at 1600 meters, e.g. GUNNER-SABOT-TWO TANKS-LEFT TANK-DRIVER-MOVE OUT-GUNNER-TAKE OVER (Gunner announces DRIVER-STOP, IDENTIFIED) FIRE-TARGET-RIGHT TANK-FIRE-TARGET-CEASE FIRE (TC announces DRIVER-BACK UP-DRIVER-STOP).	NOTE: This is a multiple target engagement.
8. Issue a fire command from a stationary for an area troop target at 800 meters (turret defilade position). a. Select type of ammunition which is the most effective against the target. b. Issue the fire command.	Know that coax ammunition is the most effective ammunition against an area troop target. Know the precision gunnery fire command, from a turret defilade position, for an area troop target at 800 meters, e.g. GUNNER-COAX-TROOPS-DRIVER-MOVE OUT-GUNNER-TAKE OVER (Gunner announces DRIVER-STOP, IDENTIFIED)-FIRE-TARGET-CEASE FIRE (TC announces DRIVER-BACK UP-DRIVER-STOP).	
9. Issue a fire command from a stationary tank for a single moving anti-tank target at 1400 meters and an area troop target at 1200 meters (turret defilade position). a. Select type of ammunition which is most effective against the targets.	Know that HEAT ammunition is effective against anti-tank vehicles. Know to save SABOT ammunition for tank targets.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
	Know that coax ammunition is effective to 900 meters (tracer burn out range). Know that .50 caliber ammunition is effective to 1800 meters.	
b. Select most dangerous target to engage first.	Know that the anti-tank target is more dangerous than the troop target.	
c. Issue the fire command.	Know the precision gunnery fire command, from a turret defilade position, for an anti-tank target at 1400 meters and an area troop target at 1200 meters, e.g. GUNNER-HEAT-ANTI-TANK-DRIVER-MOVE OUT-GUNNER-TAKE OVER (Gunner announces DRIVER-STOP, IDENTIFIED)-FIRE AND ADJUST-CALIBER FIFTY-TC COMPLETE-CEASE FIRE (TC announces DRIVER-BACK UP-DRIVER-STOP).	NOTE: This is a simultaneous target engagement.
	Know that the TC will not be able to assist the gunner in adjustment, therefore the announcement FIRE and ADJUST.	
10. Issue a fire command from a moving tank for a single stationary tank at 1700 meters (Gunner announces CANNOT IDENTIFY).		
a. Select the type of ammunition which is the most effective against the target.	Know that SABOT ammunition is the most effective ammunition against tank targets.	
b. Issue the fire command.	Know the precision gunnery fire command from a moving tank, for a single stationary tank target, e.g. GUNNER-SABOT-TANK (Gunner announces CANNOT IDENTIFY)-FROM MY POSITION-ON THE WAY-TARGET-CEASE FIRE. Know that the TC can engage the target from his position when the gunner cannot identify the target.	
11. Issue a fire command from a moving tank for two moving tanks at 1800 meters.		
a. Select the type of ammunition which is the most effective against the target.	Know that SABOT ammunition is the most effective ammunition against tanks.	
b. Select most dangerous target to engage first.	Know target classification categories: most dangerous, dangerous, and least dangerous.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
c. Issue the fire command.	Know the precision gunnery fire command from a moving tank for two moving tank targets, e.g. GUNNER-SABOT-TWO TANKS-LEFT TANK-FIRE-TARGET-TARGET-RIGHT TANK-FIRE-TARGET-CEASE FIRE.	NOTE: This is a multiple target engagement.
12. Issue a fire command from a moving tank for a single stationary anti-tank target at 1600 meters and a single moving truck target at 1400 meters. a. Select type of ammunition which is the most effective against the targets.	Know that HEAT ammunition is effective against against anti-tank positions. Know to save SABOT ammunition for tank targets. Know that coax effective range is only 900 meters whereas the .50 caliber machinegun effective range is 1800 meters.	
b. Select the most dangerous target to engage first.	Know that the anti-tank target is more dangerous than the truck target.	
c. Issue the fire command.	Know the precision gunnery fire command from a moving tank, for a stationary anti-tank target at 1600 meters and a moving truck target at 1400 meters, e.g. GUNNER-HEAT-ANTI-TANK-FIRE AND ADJUST-CALIBER FIFTY-TC COMPLETE-CEASE FIRE. Know that the TC will not be able to assist the gunner in adjustment, therefore the announcement FIRE AND ADJUST.	NOTE: This is a simultaneous target engagement.
13. Issue a fire command from a moving tank for an area troop target at 900 meters. a. Select the type of ammunition which is the most effective against the target.	Know that coax ammunition is the most effective ammunition against an area troop target. Know coax effective range is 900 meters.	
b. Issue the fire command.	Know the precision gunnery fire command from a moving tank, for an area troop target at 900 meters, e.g. GUNNER-COAX-TROOPS-FIRE-TARGET-CEASE FIRE.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
14. Issue a fire command from a moving tank for a single stationary tank at 1700 meters (stabilization system inoperative). a. Select the type of ammunition which is the most effective against the target. b. Issue the fire command.	Know that SABOT ammunition is the most effective ammunition against tank targets. Know the precision gunnery fire command, for an emergency mode situation, from a moving tank, for a single stationary tank target at 1700 meters, e.g. GUNNER-SABOT-TANK-DRIVER-STOP-FIRE-TARGET-CEASE FIRE-DRIVER-MOVE OUT. Know that the tank must be stopped just prior to firing when the stabilization system is inoperative. Know that as soon as the target is hit or two rounds have been fired the driver is told to move the tank.	
15. Issue a fire command from a moving tank for a single stationary tank at 1600 meters and a single moving tank at 1800 meters (stabilization system inoperative). a. Select the type of ammunition which is the most effective against the targets. b. Select the most dangerous target to engage first. c. Issue the fire command.	Know that SABOT ammunition is the most effective ammunition against tank targets. Know that a closer stationary tank target is more dangerous than a farther moving tank target. Know the precision gunnery fire command, for an emergency mode situation, from a moving tank, for a single stationary tank target at 1600 meters and a single moving tank target at 1800 meters, e.g. GUNNER-SABOT-TWO TANK-STATIONARY TANK-DRIVER-STOP-FIRE-TARGET-TARGET-MOVING TANK-FIRE-CEASE FIRE-DRIVER-MOVE OUT. Know that the tank must be stopped just prior to firing when the stabilization system is inoperative. Know that as soon as the second target is hit or four rounds have been fired the driver is told to move the tank.	NOTE: This is a multiple target engagement.

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
16. Issue a fire command from a moving tank for a single moving tank at 1600 meters and a single moving anti-tank target at 1400 meters (laser rangefinder inoperative). a. Select the type of ammunition which is the most effective against the targets. b. Select the most dangerous target to engage first. c. Issue the fire command.	Know that SABOT ammunition is the most effective ammunition against tanks. Know that HEAT ammunition is effective against anti-tank targets. Know that the tank is the most dangerous of the two targets. Know that the anti-tank target cannot fire accurately while moving. Know the battlesight gunnery fire command from a moving tank, for a single moving tank target at 1600 meters and a single moving anti-tank target at 1400 meters, e.g. GUNNER-BATTLESIGHT-TANK-FIRE-TARGET-TARGET-ANTI-TANK-FIRE-CEASE FIRE. Know that targets are within battlesight range. Know that the guided technique of fire to use when the LRF is inoperative is battlesight.	NOTE: This is a multiple target engagement.
17. Issue a fire command from a moving tank for a single moving tank at 1600 meters (laser rangefinder inoperative). a. Select the type of ammunition which is the most effective against the target. b. Issue the fire command.	Know that SABOT ammunition is the most effective ammunition against tanks. Know the battlesight gunnery fire command from a moving tank, for a single moving tank target at 1600 meters, e.g. GUNNER-BATTLESIGHT-TANK-FIRE-TARGET-CEASE FIRE. Know that the target is within battlesight range. Know that the quickest technique of fire to use when the LRF is inoperative is battlesight.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
18. Explain the four elements of a subsequent fire command.		
a. Alert	Know that the alert element is the TC's range observation and is announced as TARGET, OVER, SHORT, DOUBTFUL, or LOST.	
b. Deflection correction.	Know that the deflection observation is never announced. Know that deflection corrections are always made and announced in mils (precision gunnery) or forms (battlesight gunnery). Know if the round went to the left of the target the correction is to the RIGHT so many mils or forms. Know if the round went to the right of the target the correction is to the LEFT so many mils or forms.	
c. Range correction.	Know that range correction is based on the TCs range observation. Know that if the round went over the target the TC drops mils, meters, or forms. Know if the round is short of the target the TC adds mils, meters, and forms.	
d. Command of execution.	Know that the command of execution is the word FIRE.	
19. Identify the two elements of a subsequent fire command that are always given.		
a. Alert.	Know that the alert element is always given in a subsequent fire command.	
b. Command of execution.	Know that the command of execution element is always given in a subsequent fire command.	
20. Issue a reengagement subsequent fire command (TC and gunner announce observation as LOST).	Know the reengagement subsequent fire command from a moving tank, for a single stationary tank target at 1800 meters, e.g. LOST-REENGAGE-FIRE-TARGET-CEASE FIRE. Know that TC evaluates new range data from gunner's lasing the target, prior to announcing FIRE.	

PERFORMANCE MEASURES	SKILLS AND KNOWLEDGES	REFERENCES AND NOTES
21. Issue a standard adjustment subsequent fire command (Gunner announces observation is LOST).	Know the standard mil adjustment subsequent fire command from a moving tank, for a single stationary tank target at 1700 meters, e.g. DOUBTFUL-(TC observes the round went to the left of the target 4 mils) RIGHT FOUR MILS-FIRE-TARGET-CEASE FIRE.	
22. Issue a target form adjustment subsequent fire command (Gunner announces observation as DOUBTFUL, TC announces observation as SHORT.	Know the target form adjustment subsequent fire command from a stationary tank, for a single moving tank target at 1600 meters, e.g. SHORT-ADD ONE FORM-FIRE-TARGET-CEASE FIRE.	
23. Issue a subsequent fire command for a coax engagement (gunner remains silent.)	Know the subsequent fire command for a coax engagement from a moving tank, for an area troop target, at 800 meters, e.g. BRING IT UP, or BRING IT DOWN, or BRING IT RIGHT, or BRING IT LEFT-CEASE FIRE. Knows to use shortest possible adjustment terms. Knows terms UP, DOWN, RIGHT, and LEFT are corrections for rounds striking below, above, to the left of and to the right of the target area.	

APPENDIX C
TASK CRITICALITY SURVEY

Name _____ MOS _____
Last First M.I.

Unit _____ Length of Service _____ Years _____ Months

Grade _____ TC Experience _____ Years _____ Months

BNCOC TASK SURVEY

The Human Resources Research Organization (HumRRO) and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) are redesigning the 19K BNCOC Program of Instruction (POI). This survey presents lists of tank commander tasks, decisions, judgments, and interactions. In order to decide which of these activities will be trained in BNCOC, we need to know the importance of each one. We want you to rate the importance of these activities based on your knowledge of the tank commander's job. Please disregard whether or not these activities are currently in the BNCOC POI.

Your judgments will have a significant impact on the content of BNCOC. Please read all of the instructions thoroughly and take care in making your ratings.

I. TASKS

INSTRUCTIONS: The following is a list of tasks which could be performed by the tank commander. How important is it for the tank commander to know how to perform these tasks? Circle the number corresponding to your rating using the following scale:

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Encode/Decode Messages Using KTC 600D Tactical Operations Code	1	2	3	4
Conduct Training	1	2	3	4
Read/Report Radiation Dosages	1	2	3	4
Use Marginal Information on a Map	1	2	3	4
Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank	1	2	3	4
Determine a Location on the Ground by Terrain Association	1	2	3	4
Engage Targets with the Caliber .50 M2 HB Machinegun on an M1 Tank	1	2	3	4
Determine Azimuth Using a Protractor and Compute a Back Azimuth	1	2	3	4
Conduct a Map Reconnaissance	1	2	3	4
Call for and Adjust Indirect Fire	1	2	3	4
Employ a Three-Man Crew	1	2	3	4
Boresight a Caliber .50 M2 HB Machinegun on an M1 Tank	1	2	3	4
Supervise Before Operations Checks and Services on an M1 Tank	1	2	3	4
Prepare/Submit NBC-1 Report	1	2	3	4

How important is it for the tank commander to know how to perform these tasks?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Install/Remove the Automatic Chemical Alarm System	1	2	3	4
Direct Evasion of an Enemy Anti-Tank Guided Missile	1	2	3	4
Set Headspace and Timing on a Caliber .50 Machinegun	1	2	3	4
Locate an Unknown Point on a Map or on the Ground by Intersection	1	2	3	4
Initiate Unmasking Procedures	1	2	3	4
Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS)	1	2	3	4
Direct/Supervise the Zeroing of the Loader's Machinegun on an M1 Tank	1	2	3	4
Conduct Performance Counseling with a Subordinate	1	2	3	4
Navigate from One Point on the Ground to Another Point	1	2	3	4
Zero a Caliber .50 M2 HB Machinegun on an M1 Tank	1	2	3	4
Recognize Electronics Countermeasures (ECM) and Implement Electronic Counter Countermeasures (ECCM)	1	2	3	4
Prepare to Conduct Training	1	2	3	4
Orient a Map on the Ground by Map Terrain Association	1	2	3	4
Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank	1	2	3	4
Use KTC 1400 Numerical Cipher/Authentication System	1	2	3	4
Direct Main Gun Engagements on an M1 Tank	1	2	3	4
Install a Hasty Protective Minefield	1	2	3	4
Prepare a Sketch Range Card	1	2	3	4
Analyze Terrain Using the Five Military Aspects of Terrain	1	2	3	4

How important is it for the tank commander to know how to perform these tasks?

: 1 No Need To Know	: 2 Nice To Know	: 3 Should Know	: 4 Must Know :

Orient a Map Using a Compass	1	2	3	4
Splint a Fracture	1	2	3	4
Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank	1	2	3	4
Install/Operate Hop-Loop Wire Communications	1	2	3	4
Conduct Target Acquisition	1	2	3	4
Prepare Rater's Section for an Enlisted Evaluation Report (DA Form 2166-6)	1	2	3	4
Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank	1	2	3	4
Remove a Hasty Protective Minefield	1	2	3	4
Fire an M250 Grenade Launcher on an M1 Tank	1	2	3	4
Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank	1	2	3	4
Use Automatic Communications Electronics Operation Instructions (CEOI)	1	2	3	4
Boresight and Systems Calibrate an M1 Tank	1	2	3	4
Use M256 Chemical Detector Kit	1	2	3	4
Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank	1	2	3	4
Direct/Supervise the Zeroing of the Coax Machinegun on an M1 Tank	1	2	3	4
Put on a Tourniquet	1	2	3	4
Implement Mission Oriented Protective Posture (MOPP)	1	2	3	4
Direct Machinegun Engagements on an M1 Tank	1	2	3	4
Construct Field Expedient Antennas	1	2	3	4

How important is it for the tank commander to know how to perform these tasks?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Receive/Orient Newly Assigned Personnel	1	2	3	4
Issue a Fire Command	1	2	3	4
Evaluate the Conduct of Training	1	2	3	4
Conduct a Tactical Road March	1	2	3	4
Use IM-174 Radiacmeter	1	2	3	4
Locate an Unknown Point on a Map or on the Ground by Resection	1	2	3	4
Conduct Partial Decontamination	1	2	3	4
Determine a Magnetic Azimuth Using a Compass	1	2	3	4
Estimate Range	1	2	3	4
Identify Adjoining Map Sheets	1	2	3	4
Identify Terrain Features (Natural and Man Made) on a Map	1	2	3	4
Prepare a Situation Report (SITREP)	1	2	3	4
Direct Reorganization on the Objective	1	2	3	4
Prepare/Submit an NBC-4 Report	1	2	3	4
Prepare for an NBC Attack	1	2	3	4
Give First Aid for Burns	1	2	3	4
Select a Firing Position	1	2	3	4
Maintain Position in Platoon Formation	1	2	3	4
Prepare/Submit Standard Shelling, Mortaring, and Bomb Report	1	2	3	4
Secure Commander's Weapon Station (CWS) for Operation on an M1 Tank	1	2	3	4
Enter or Leave a Radio Net	1	2	3	4

How important is it for the tank commander to know how to perform these tasks?

: 1 No Need To Know	: 2 Nice To Know	: 3 Should Know	: 4 Must Know :

Supervise After Operations Checks and Services on an M1 Tank	1	2	3	4
Provide Report Concerning the Status of Training	1	2	3	4
Conduct Search in Accordance with the Uniform Code of Military Justice	1	2	3	4
Perform After Operations Checks and Services on the Commander's Weapon Station (CWS)	1	2	3	4
Prepare and Issue an Oral Operation Order	1	2	3	4
Supervise Maintenance on Individual and TO&E Equipment	1	2	3	4

II. DECISIONS

INSTRUCTIONS: The following is a list of some of the decisions that a tank commander could make while performing his duties. How important is it for the tank commander to know how to make these decisions? Circle the number corresponding to your rating using the following scale:

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Select Mode of Communications (e.g., Radio, Hand-Arm Signals, Pyrotechnics)	1	2	3	4
Choose Appropriate Main Gun Ammunition	1	2	3	4
Decide Whether or Not to Maintain Position Relative to Section Leader When Section Leader's Tank Moves in an Illogical Manner (e.g., into an Area in Which the Tank Is Likely to Become Mired)	1	2	3	4
Decide Whether or Not to Break Radio Listening Silence	1	2	3	4
Decide Whether or Not to Take Evasive Actions	1	2	3	4
Decide Whether or Not a Crewman Must Be Evacuated Due to Injury or Illness	1	2	3	4
Recommend Punishment for Crewmen	1	2	3	4
Decide When to Stop Firing	1	2	3	4
Decide Whether or Not to Fire at Target(s)	1	2	3	4
Assign Personnel to Crew Positions	1	2	3	4
Decide Whether or Not to Fire Smoke Grenades	1	2	3	4
Decide How Much Training Each Crewman Will Receive	1	2	3	4
Select Supplementary Position Within Area Assigned by Platoon Leader	1	2	3	4

How important is it for the tank commander to know how to make these decisions?

	1 No Need To Know	2 Nice To Know	3 Should Know	4 Must Know
Decide Which Mode of Observation Will Be Used to Search for Targets (e.g., Naked Eye, Binoculars, Primary Sight)	1	2	3	4
Select Specific Paths of Movement Relative to Section Leader's Tank	1	2	3	4
Select Crewman for Award	1	2	3	4
Decide Whether or Not to Negotiate an Obstacle	1	2	3	4
Recommend Crewman for Promotion	1	2	3	4
Select Tasks for Training Crew	1	2	3	4
Select Overwatch Position Within Area Designated by Section Leader	1	2	3	4
Decide Which Crewmen Will Sleep, How Long, and Where	1	2	3	4
Select Methods for Training Crew	1	2	3	4
Decide How to Negotiate an Obstacle	1	2	3	4
Decide Whether or Not to Move to Covered Position	1	2	3	4
Decide Sequence in Which to Engage Multiple Targets	1	2	3	4
Decide What Weapon to Fire	1	2	3	4
Select Primary Position Within Area Assigned by Platoon Leader	1	2	3	4
Decide During Operational Checks What Maintenance Actions Are Required and Which of These Must Be Performed Immediately	1	2	3	4
Decide Who Will Drive Tank When Driver Is a Casualty	1	2	3	4
Select Firing Position Within Area Designated by Section Leader	1	2	3	4
Decide Whether or Not to Close/Open Hatches	1	2	3	4

How important is it for the tank commander to know how to make these decisions?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Select Alternate Position Within Area Assigned by Platoon Leader	1	2	3	4
Decide Whether or Not to Generate Smoke	1	2	3	4
Decide When to Move to Alternate Position	1	2	3	4
Decide When to Fire at Target(s)	1	2	3	4
Select Covered Position	1	2	3	4
Select Devices and Materials for Training Crew	1	2	3	4
Decide Whether or Not to Recommend Crewman for Leave	1	2	3	4
Decide Where TC and Loader Will Search for Targets	1	2	3	4
Decide Whether or Not to Override Designated Search Areas	1	2	3	4
Decide How to Maintain Position Relative to Section Leader's Tank	1	2	3	4
Decide Whether to Report or to Engage Enemy First	1	2	3	4

III. JUDGMENTS

INSTRUCTIONS: The following is a list of judgments that a tank commander could make while performing his duties. How important is it for the tank commander to know how to make these judgments? Circle the number corresponding to your rating using the following scale:

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Judge How Well a Crewman Will Be Able to Function During Combat	1	2	3	4
Identify the Least Powerful Weapon or Ammunition Required to Destroy an Enemy Target	1	2	3	4
Judge How Much the Speed of Communications Will Affect Mission Success or the Survival of the Tank	1	2	3	4
Judge the Effects of NBC Conditions on the Functioning and Survival of the Tank and Its Crew	1	2	3	4
Judge Whether or Not the Tank Can Pass Between Two Obstructions	1	2	3	4
Judge Whether or Not the Tank Will Become Mired While Negotiating an Obstacle	1	2	3	4
Judge How Much a Maintenance Problem in a Tank System Would Interfere with the Operation of the System	1	2	3	4
Judge Whether or Not a Crewman Needs Medical Attention	1	2	3	4
Estimate the Effects of Losing a Crewman Due to Injury or Sickness on the Present Battlefield Situation	1	2	3	4
Judge Whether or Not a Maintenance Problem Can Be Corrected Within Available Time and Resources	1	2	3	4
Judge Whether or Not the Gun Tube Can Clear an Obstruction	1	2	3	4

How important is it for the tank commander to know how to make these judgments?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Judge if Unclear Communications Will Cause the Mission to Fail or the Tank to Be Destroyed	1	2	3	4
Compare the Criticality of Multiple Enemy Targets with Respect to the Accomplishment of the Enemy's Mission	1	2	3	4
Estimate the Need to Maintain Surveillance as a Defense Against an Enemy Attack	1	2	3	4
Judge How Well the Ground Will Support the Tank	1	2	3	4
Estimate How Much Rest a Crewman Needs to Recover from Fatigue or from the Effects of Combat Stress	1	2	3	4
Judge Whether or Not the Tank Will Be Damaged While Negotiating an Obstacle	1	2	3	4
Judge, Before Firing, Whether or Not the Supply of Each Type of Main Gun Ammunition Is Sufficient to Complete the Mission or to Engage a Greater Threat	1	2	3	4
Estimate the Effects of Wind Direction and Speed on the Effectiveness of a Smoke Screen	1	2	3	4
Find a Route into or out of a Position	1	2	3	4
Estimate How Much Time Is Available to Prevent the Enemy from Destroying the Tank	1	2	3	4
Estimate the Likelihood That the Platoon Would Still Accomplish Its Mission Even if the Tank Did Not Participate in the Mission Due to a Maintenance Problem	1	2	3	4
Judge from Battlefield Cues the Amount and Kind of Damage Inflicted Upon an Enemy Target	1	2	3	4
Judge How Much a Smoke Screen Would Protect the Tank from Enemy Observation	1	2	3	4
Judge How the Hatch Position Will Affect the Ability of the Crew to Detect Enemy Targets	1	2	3	4

How important is it for the tank commander to know how to make these judgments?

	1 No Need To Know	2 Nice To Know	3 Should Know	4 Must Know
Estimate the Ability of the Remaining Crewmen to Substitute for the Driver When He is Lost Due to Injury or Sickness	1	2	3	4
Judge the Likelihood of Being Hit by Enemy Direct Fire	1	2	3	4
Estimate the Amount of Time Required to Reach Cover from Direct Enemy Fire	1	2	3	4
Anticipate the Types of Enemy Weapon Systems That Might Be Encountered Prior to Resupply or Prior to Mission Completion	1	2	3	4
Judge if a Lack of Communications Security Will Cause the Mission to Fail or the Tank to Be Destroyed	1	2	3	4
Judge Whether or Not Firing at the Enemy Will Jeopardize Mission Success by Revealing the Location of Friendly Tanks	1	2	3	4
Judge Whether or Not an Engine-Generated Smoke Screen Would Be Between the Tank and the Enemy Given the Tank's Direction of Movement	1	2	3	4
Judge if Breaking Radio Listening Silence Will Cause the Mission to Fail or the Tank to Be Destroyed	1	2	3	4
Estimate the Likelihood That a Maintenance Problem Would Prevent the Tank from Completing Its Mission	1	2	3	4
Judge Whether or Not There Is Sufficient Fuel to Generate Smoke Without Jeopardizing the Accomplishment of the Mission	1	2	3	4
Estimate the Likelihood of a System Malfunction After Consistently Failing to Hit a Target While Using Proper Gunnery Techniques	1	2	3	4
Identify Likely Enemy Locations	1	2	3	4
Judge Whether or Not the Bounding Tank Can Be Seen from the Overwatch Position While Bounding from One Location to Another	1	2	3	4

How important is it for the tank commander to know how to make these judgments?

	1 No Need To Know	2 Nice To Know	3 Should Know	4 Must Know
Estimate the Effects of Losing a Crewman Due to Injury or Sickness on Future Battlefield Situations	1	2	3	4
Judge Whether or Not the Tank Can Negotiate an Obstacle	1	2	3	4
Judge Adequacy of Cover from Direct Enemy Fire	1	2	3	4
Judge Whether or Not the Tank Can Provide Immediate Support for the Section Leader's Tank During a Bypass	1	2	3	4
Estimate the Amount of Time Required to Negotiate an Obstacle	1	2	3	4
Judge Whether or Not a Landmark Will Call Attention to the Tank	1	2	3	4
Estimate Amount of Time the Tank Has Been Exposed	1	2	3	4
Compare the Lethality of Multiple Enemy Targets	1	2	3	4
Judge Whether or Not the Terrain Provides Sufficient Concealment for the Enemy to Attempt to Negotiate It	1	2	3	4
Identify Likely Enemy Avenues of Approach	1	2	3	4
Estimate the Likelihood of Hitting a Target	1	2	3	4
Judge How the Hatch Position Will Affect the Driver's Ability to Drive	1	2	3	4
Judge, Before Firing, Whether or Not the Supply of Ammunition for Each Weapon Is Sufficient to Complete the Mission or to Engage a Greater Threat	1	2	3	4
Estimate How Much the Survival of the Tank Depends on Taking an Appropriate Action (e.g., Taking Cover, Firing, Popping Smoke)	1	2	3	4
Judge Where to Search for Targets When Conditions Make It Impossible to Maintain Surveillance in the Assigned Sector	1	2	3	4

How important is it for the tank commander to know how to make these judgments?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Estimate the Likelihood That the Enemy Will Destroy the Tank if Preventative Measures Are Not Taken	1	2	3	4
Estimate How Much Time Is Required to Engage the Enemy	1	2	3	4
Judge Whether or Not the Tank Can Climb a Grade	1	2	3	4
Interpret the Meaning of Various Battlefield Events or Cues Such as Smoke, Flashes, or Noises	1	2	3	4
Judge if the Distance to the Section Leader's Tank Is Close Enough to Provide Immediate Support, yet Far Enough to Avoid Simultaneous Detection or Destruction of Both Tanks by the Enemy	1	2	3	4
Judge Whether or Not Conditions Indicate a Need to Override the Designated Search Area	1	2	3	4
Judge Whether or Not Terrain Features Will Interfere with the Tank's Line of Sight to Enemy Targets	1	2	3	4
Judge Whether or Not Surveillance Can Be Maintained During a Bypass	1	2	3	4
Judge if Adjacent Tanks Are Far Enough Apart to Avoid Their Simultaneous Detection or Destruction by the Enemy, yet Close Enough to Support Each Other	1	2	3	4
Judge Whether or Not the Tank Can Clear an Overhead Obstruction	1	2	3	4
Judge Whether or Not the Tank Can Negotiate a Slope	1	2	3	4
Find a Bypass Route	1	2	3	4
Judge Adequacy of Concealment from Enemy Observation	1	2	3	4
Estimate the Likelihood That a Maintenance Problem Would Prevent the Tank from Completing Its Mission	1	2	3	4
Judge the Trafficability of Terrain	1	2	3	4

IV. INTERACTIONS

INSTRUCTIONS: The following are four lists of activities that require the tank commander to coordinate with or communicate with soldiers outside of his crew.

A. ACTIVITIES THAT REQUIRE COORDINATION WITH OTHER TANKS IN THE PLATOON. How important is it for the tank commander to know how to perform these activities? Circle the number corresponding to your rating using the following scale:

: 1	: 2	: 3	: 4 :
No Need To Know	Nice To Know	Should Know	Must Know

Communicate Using Flag Signals	1	2	3	4
Redistribute Ammunition	1	2	3	4
Communicate Using Pyrotechnics	1	2	3	4
Slave Start Another Tank	1	2	3	4
Conduct Fire and Maneuver	1	2	3	4
Provide Tank to Platoon Leader/Platoon Sergeant When Theirs Is Disabled	1	2	3	4
Provide Tow to Mired Tank	1	2	3	4
Move Tank in Appropriate Movement Formation (e.g., Column, Line, Wedge)	1	2	3	4
Interpret Panels	1	2	3	4
Fire at Enemy Targets in Assigned Sector	1	2	3	4
Move Tank Using Appropriate Movement Technique (e.g., Traveling, Bounding Overwatch)	1	2	3	4

How important is it for the tank commander to know how to perform these activities?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Select Firing Position Relative to Firing Position of Section Leader's Tank	1	2	3	4
Maintain Surveillance in Assigned Sector	1	2	3	4
Maintain Position of Tank Relative to Section Leader's Tank	1	2	3	4
Maintain Orientation of Gun in Assigned Sector	1	2	3	4
Fire at Enemy Targets in Accordance with Established Fire Pattern (e.g., Frontal, Depth, Crossfire)	1	2	3	4
Communicate Using Hand and Arm Signals	1	2	3	4
Move Tank into Appropriate Temporary Halt Formation (e.g., Herringbone, Coil)	1	2	3	4
Assist in Performing Maintenance on Other Tank(s)	1	2	3	4
Provide Supporting Fire	1	2	3	4

B. ORDERS THAT A TANK COMMANDER MAY RECEIVE FROM THE PLATOON LEADER OR PLATOON SERGEANT. How important is it for the tank commander to understand and know how to execute these orders? Circle the number corresponding to your rating using the following scale:

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Where to Move the Tank	1	2	3	4
What Movement Technique to Use (e.g., Traveling, Bounding Overwatch)	1	2	3	4

How important is it for the tank commander to understand and know how to execute these orders?

	1 No Need To Know	2 Nice To Know	3 Should Know	4 Must Know
To Execute the Feeding Schedule	1	2	3	4
To Prepare the Tank for Nuclear Attack	1	2	3	4
When to Move the Tank	1	2	3	4
To Move into a Supplementary Position	1	2	3	4
To Pop or Generate Smoke	1	2	3	4
To Conduct a Commo Check	1	2	3	4
What Speed to Move the Tank	1	2	3	4
When to Fire	1	2	3	4
To Provide Supporting Fires	1	2	3	4
When to Stop Firing	1	2	3	4
To Look for a Bypass	1	2	3	4
Where to Fire	1	2	3	4
To Take Evasive Action	1	2	3	4
To Provide Overwatch	1	2	3	4
To Submit a Status Report (e.g., Fuel, Ammo)	1	2	3	4
To Bypass an Obstacle	1	2	3	4
What Route to Take	1	2	3	4
To Adjust the Tank's Position Relative to Section Leader's Tank	1	2	3	4
To Execute MOPP Level	1	2	3	4
When to Stop the Tank	1	2	3	4
To Conduct Before, During, & After Operations Maintenance Checks	1	2	3	4

How important is it for the tank commander to understand and know how to execute these orders?

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

What Movement Formation to Use (e.g., Column, Line, Wedge)	1	2	3	4
To Select a Primary, Alternate, or Supplementary Position	1	2	3	4
Where to Stop the Tank	1	2	3	4
To Close/Open the Hatches	1	2	3	4
Where to Search for Targets	1	2	3	4
What Fire Pattern to Use (e.g., Frontal, Depth, Crossfire)	1	2	3	4
To Submit a Standard Report (e.g., SPOTREP, SHELREP, SITREP)	1	2	3	4
To Rest the Crew	1	2	3	4
To Conduct Surveillance	1	2	3	4

C. INFORMATION THAT A TANK COMMANDER MAY SUBMIT OR RECEIVE FROM THE PLATOON LEADER OR THE PLATOON SERGEANT. How important is it for the tank commander to know how to communicate this information accurately? Circle the number corresponding to your rating using the following scale:

1	2	3	4
No Need To Know	Nice To Know	Should Know	Must Know

Commo Check	1	2	3	4
Status Reports (e.g., Fuel, Ammo, Commo, etc.)	1	2	3	4

How important is it for the tank commander to know how to communicate this information accurately?

: 1	: 2	: 3	: 4 :
No Need To Know	Nice To Know	Should Know	Must Know

Number of Target(s)	1	2	3	4
Alerts (e.g., Chemical, Nuclear, Missile)	1	2	3	4
Contact Report	1	2	3	4
Identification of Target(s)	1	2	3	4
Challenges/Responds to Password	1	2	3	4
Location of Target(s)	1	2	3	4
The Presence of Obstacles	1	2	3	4
Enemy Contact	1	2	3	4
Round Sensing for Another Tank	1	2	3	4
Terrain Characteristics	1	2	3	4
(Submit) Sketch Range Card	1	2	3	4
Standard Reports (e.g., SPOTREP, SHELREP, SITREP)	1	2	3	4
(Receive) Platoon Fire Plan	1	2	3	4
Trafficability	1	2	3	4

D. REQUESTS THAT A TANK COMMANDER MAY SUBMIT TO THE PLATOON LEADER OR PLATOON SERGEANT. How important is it for the tank commander to know how to make these requests? Circle the number corresponding to your rating using the following scale:

: 1 :	2 :	3 :	4 :
No Need To Know	Nice To Know	Should Know	Must Know

Commo Check	1	2	3	4
Supplies	1	2	3	4
Maintenance	1	2	3	4
Medical Assistance	1	2	3	4
Recovery of Mired Vehicle	1	2	3	4
Password	1	2	3	4
Rest	1	2	3	4

APPENDIX D
NONPROCEDURAL TASKS RANKED FROM MOST TO LEAST IMPORTANT

Table D-1

Decision Making Tasks Ranked from Most to Least Important

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Decide What Weapon to Fire	0	0	2	26	3.93
Choose Appropriate Main Gun Ammunition	0	1	1	26	3.89
Decide Sequence in Which to Engage Multiple Targets	0	0	4	24	3.86
Decide Whether or Not to Fire at Target(s)	0	1	3	24	3.82
Decide When to Fire at Target(s)	0	0	6	22	3.79
Decide When to Stop Firing	0	1	4	23	3.79
Decide Whether or Not to Take Evasive Actions	0	2	3	23	3.75
Select Primary Position Within Area Assigned by Platoon Leader	0	0	7	21	3.75
Decide When to Move to Alternate Position	0	0	8	20	3.71
Decide Whether or Not to Move to Covered Position	0	0	8	20	3.71
Decide How to Negotiate an Obstacle	0	1	7	20	3.68
Decide Whether or Not to Break Radio Listening Silence	0	2	5	21	3.68
Decide Whether to Report or to Engage Enemy First	0	0	9	19	3.68
Select Covered Position	0	0	9	19	3.68
Select Firing Position Within Area Designated by Section Leader	0	0	9	19	3.68
Select Alternate Position Within Area	0	1	8	19	3.64
Select Overwatch Position Within Area Designated by Section Leader	0	0	10	18	3.64

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Select Specific Paths of Movement Relative to Section Leader's Tank	0	0	10	18	3.64
Decide During Operational Checks What Maintenance Actions Are Required and Which of These Must Be Performed Immediately	0	2	7	19	3.61
Decide Which Mode of Observation Will Be Used to Search for Targets (e.g., Naked Eye, Binoculars, Primary Sight)	0	0	11	17	3.61
Decide How Much Training Each Crewman Will Receive	0	1	10	17	3.57
Select Mode of Communications (e.g., Radio, Hand-Arm Signals, Pyrotechnics)	0	1	10	17	3.57
Decide Whether or Not to Fire Smoke Grenades	0	1	10	17	3.57
Decide Whether or Not to Maintain Position Relative to Section Leader When Section Leader's Tank Moves in an Illogical Manner (e.g., into an Area in Which the Tank Is Likely to Become Mired)	0	3	6	19	3.57
Decide Whether or Not to Negotiate an Obstacle	0	1	10	17	3.57
Select Supplementary Position Within Area Assigned by Platoon Leader	0	0	12	16	3.57
Decide Whether or Not a Crewman Must Be Evacuated Due to Injury or Illness	0	3	7	18	3.54
Select Methods for Training Crew	0	1	12	15	3.50
Decide How to Maintain Position Relative to Section Leader's Tank	0	0	15	13	3.46
Decide Where TC and Loader Will Search for Targets	0	2	11	14	3.44
Decide Whether or Not to Generate Smoke	0	1	14	13	3.43

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Decide Who Will Drive Tank When Driver Is a Casualty	1	2	10	15	3.39
Decide Whether or Not to Close/Open Hatches	0	3	12	13	3.36
Select Tasks for Training Crew	0	2	14	12	3.36
Decide Which Crewmen Will Sleep, How Long, and Where	2	2	9	15	3.32
Assign Personnel to Crew Positions	0	2	16	10	3.29
Recommend Crewman for Promotion	0	2	16	10	3.29
Decide Whether or Not to Override Designated Search Area	1	4	11	12	3.21
Select Devices and Materials for Training Crew	0	3	16	9	3.21
Recommend Punishment for Crewman	1	4	15	8	3.07
Select Crewman for Award	0	4	18	6	3.07
Decide Whether or Not to Recommend Crewman for Leave	2	6	11	9	2.96

Table D-2

Problem Solving Tasks Ranked from Most to Least Important

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Identify the Least Powerful Weapon or Ammunition Required to Destroy an Enemy Target	0	0	6	22	3.79
Judge Adequacy of Concealment from Enemy Observation	0	0	7	21	3.75
Judge Whether or Not Terrain Features Will Interfere with the Tank's Line of Sight to Enemy Targets	0	0	7	21	3.75
Estimate the Likelihood of Hitting a Target	0	1	6	21	3.71
Estimate How Much the Survival of the Tank Depends on Taking an Appropriate Action	0	0	9	19	3.68
Find a Route Into or Out of a Position	0	0	9	19	3.68
Identify Likely Enemy Avenues of Approach	0	0	9	19	3.68
Judge Whether or Not the Tank Will Become Mired While Negotiating an Obstacle	0	0	9	19	3.68
Interpret the Meaning of Various Battlefield Events or Cues Such as Smoke, Flashes, or Noises	0	0	10	18	3.64
Judge Adequacy of Cover from Direct Enemy Fire	0	1	8	19	3.64
Judge Whether or Not the Gun Tube Can Clear an Obstruction	0	0	10	18	3.64
Judge Whether or Not the Tank Can Clear an Overhead Obstruction	0	0	10	18	3.64
Estimate the Likelihood That the Enemy Will Destroy the Tank If Preventative Measures Are Not Taken	0	2	7	19	3.61
Identify Likely Enemy Locations	0	0	11	17	3.61

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Judge Whether or Not a Crewman Needs Medical Attention	0	1	9	17	3.59
Compare the Lethality of Multiple Enemy Targets	0	1	10	17	3.57
Estimate How Much Time Is Required to Engage the Enemy	0	2	8	18	3.57
Judge How Well the Ground Will Support the Tank	0	1	10	17	3.57
Judge If the Distance to the Section Leader's Tank Is Close Enough to Provide Immediate Support, Yet Far Enough to Avoid Simultaneous Destruction of Both Tanks by Enemy Fire	0	0	12	16	3.57
Judge Whether or Not the Tank Can Negotiate an Obstacle	0	0	12	16	3.57
Judge Whether or Not the Tank Can Negotiate a Slope	0	0	12	16	3.57
Judge Whether or Not the Tank Will Be Damaged While Negotiating an Obstacle	0	0	12	16	3.57
Judge, Before Firing, Whether or Not the Supply of Each Type of Main Gun Ammunition Is Sufficient to Complete the Mission or to Engage a Greater Threat	1	2	11	14	3.56
Judge Whether or Not Conditions Indicate a Need to Override the Designated Search Area	0	3	12	13	3.56
Judge Whether or Not Firing at the Enemy Will Jeopardize Mission Success by Revealing the Location of Friendly Tanks	0	3	12	13	3.56
Estimate the Likelihood of a System Malfunction After Consistently Failing to Hit a Target While Using Proper Gunnery Techniques	0	2	9	17	3.54
Judge, Before Firing, Whether or Not the Supply of Ammunition for Each Weapon Is Sufficient to Complete the Mission or to Engage a Greater Threat	0	0	13	15	3.54

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Judge If Breaking Radio Listening Silence Will Cause the Mission to Fail or the Tank to Be Destroyed	0	1	11	16	3.54
Judge Whether or Not the Tank Can Pass Between Two Obstructions	0	0	13	15	3.54
Estimate the Need to Maintain Surveillance as a Defense Against an Enemy Attack	1	0	11	16	3.50
Judge the Trafficability of Terrain	0	0	14	14	3.50
Judge Where to Search for Targets When Conditions Make It Impossible to Maintain Surveillance in the Assigned Sector	0	1	12	15	3.50
Judge Whether or Not a Landmark Will Call Attention to the Tank	0	2	10	16	3.50
Estimate Amount of Time the Tank Has Been Exposed	0	2	11	15	3.46
Find a Bypass Route	0	1	13	14	3.46
Judge the Effects of NBC Conditions on the Functioning and Survival of the Tank and Its Crew	0	3	9	16	3.46
Judge Whether or Not the Tank Can Climb a Grade	0	0	15	13	3.46
Estimate the Amount of Time Required to Reach Cover from Direct Enemy Fire	0	3	10	15	3.43
Judge How Much a Maintenance Problem in a Tank System Would Interfere with the Operation of the System	0	0	16	12	3.43
Judge the Likelihood of Being Hit by Enemy Direct Fire	3	1	5	19	3.43
Judge Whether or Not the Tank Can Provide Immediate Support for the Section Leader's Tank During a Bypass	0	2	12	14	3.43
Judge Whether or Not the Terrain Provides Sufficient Concealment for the Enemy to Attempt to Negotiate It	0	2	12	14	3.43

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Judge If Adjacent Tanks Are Far Enough Apart to Avoid Their Simultaneous Detection by the Enemy, Yet Close Enough to Support Each Other	0	2	13	13	3.39
Estimate the Likelihood That a Maintenance Problem Would Prevent the Tank from Completing Its Mission	1	1	12	13	3.37
Estimate the Amount of Time Required to Negotiate an Obstacle	0	3	12	13	3.36
Judge How Much the Speed of Communications Will Affect Mission Success or the Survival of the Tank	0	0	18	10	3.36
Judge Whether or Not the Bounding Tank Can Be Seen from the Overwatch Position While Bounding from One Location to Another	0	2	14	12	3.36
Judge Whether or Not Surveillance Can Be Maintained During a Bypass	0	3	12	13	3.36
Compare the Criticality of Multiple Enemy Targets with Respect to the Accomplishment of the Enemy's Mission	1	2	12	13	3.32
Judge If Unclear Communications Will Cause the Mission to Fail or the Tank to Be Destroyed	1	2	12	13	3.32
Judge Whether or Not an Engine-Generated Smoke Screen Would Be Between the Tank and the Enemy Given the Tank's Direction of Movement	1	0	16	11	3.32
Judge How the Hatch Position Will Affect the Driver's Ability to Drive	1	1	15	11	3.29
Judge If Lack of Communications Security Will Cause the Mission to Fail or the Tank to Be Destroyed	0	4	12	12	3.29
Judge Whether or Not There Is Sufficient Fuel to Generate Smoke Without Jeopardizing the Accomplishment of the Mission	1	1	16	10	3.25

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Estimate the Effects of Wind Direction and Speed on the Effectiveness of a Smoke Screen	0	3	16	9	3.21
Judge Whether or Not a Maintenance Problem Can Be Corrected Within Available Time and Resources	0	2	18	8	3.21
Estimate the Ability of the Remaining Crewmen to Substitute for One Another When a Crewman Is Lost Due to Injury or Sickness	1	5	11	11	3.14
Anticipate the Types of Enemy Weapon Systems That Might Be Encountered Prior to Resupply or Prior to Mission Completion	0	7	11	10	3.11
Estimate the Effects of Losing a Crewman Due to Injury or Sickness on Future Battlefield Situations	1	6	10	11	3.11
Estimate How Much Time Is Available to Prevent the Enemy from Destroying the Tank	3	5	7	13	3.07
Judge How Well a Crewman Will Be Able to Function During Combat	2	3	1	8	3.07
Estimate the Effects of Losing a Crewman Due to Injury or Sickness on the Present Battlefield Situations	1	5	14	8	3.04
Judge How the Hatch Position Will Affect the Ability of the Crew to Detect Enemy Targets	1	4	16	7	3.04
Judge How Much a Smoke Screen Will Protect the Tank from Enemy Direct Observation	1	3	18	6	3.04
Judge from Battlefield Cues the Amount and Kind of Damage Inflicted Upon an Enemy Target	2	5	13	8	2.96
Estimate How Much Rest a Crewman Needs to Recover from Fatigue or from the Effects of Combat Stress	3	4	13	8	2.93
Estimate the Likelihood That the Platoon Would Still Accomplish Its Mission If the Tank Did Not Participate in the Mission Due to a Maintenance Problem	2	9	9	8	2.82

Table D-3

Interactive Tasks Ranked from Most to Least Important

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
NON-VERBAL INTERACTIONS					
Fire at Enemy Targets in Assigned Sector	0	0	4	24	3.86
Move Tank Using Appropriate Movement Technique (e.g., Traveling, Bounding, Overwatch)	0	0	4	24	3.86
Fire at Enemy Targets in Accordance with Established Fire Pattern (e.g., Frontal, Depth, Crossfire)	0	0	6	22	3.79
Conduct Fire and Maneuver	0	0	7	21	3.75
Provide Supporting Fire	0	0	7	21	3.75
Select Firing Position Relative to Firing Position of Section Leader's Tank	0	0	11	17	3.61
Slave Start Another Tank	0	0	18	10	3.57
Maintain Surveillance in Assigned Sector	0	0	13	15	3.54
Move Tank into Appropriate Temporary Halt Formation (e.g., Herringbone, Coil)	0	0	13	15	3.54
Maintain Orientation of Gun in Assigned Sector	0	0	14	14	3.50
Move Tank in Appropriate Movement Formation (e.g., Column, Line, Wedge)	0	0	14	14	3.50
Communicate Using Flag Signals	0	2	13	13	3.39
Communicate Using Hand and Arm Signals	0	2	13	13	3.39
Maintain Position of Tank Relative to Section Leader's Tank	0	2	13	13	3.39
Provide Tow to Mired Tank	0	0	7	11	3.39
Redistribute Ammunition	0	3	14	11	3.29

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Communicate Using Pyrotechnics	0	4	13	11	3.25
Assist in Performing Maintenance on Other Tank(s)	2	1	20	5	3.00
Interpret Panels	1	7	13	7	2.93
Provide Tank to Platoon Leader/Platoon Sergeant When Theirs Is Disabled	5	6	7	10	2.79
ORDERS					
When to Fire	0	0	3	25	3.89
When to Stop Firing	0	0	4	24	3.86
To Provide Supporting Fire	0	0	5	23	3.82
To Prepare the Tank for Nuclear Attack	0	0	7	21	3.75
Where to Fire	0	0	7	21	3.75
Where to Move the Tank	0	0	7	21	3.75
To Provide Overwatch	0	0	8	20	3.71
To Submit a Status Report (e.g., Fuel, Ammo)	0	0	8	20	3.71
What Movement Technique to Use (e.g., Traveling, Bounding, Overwatch)	0	1	6	21	3.71
Execute MOPP Level	0	1	7	20	3.68
To Take Evasive Action	0	0	9	19	3.68
When to Move the Tank	0	0	9	19	3.68
To Conduct Before, During, and After Operations Maintenance Checks	0	1	8	19	3.64
To Select a Primary, Alternate, or Supplementary Position	0	0	10	18	3.64
Where to Search for Targets	0	1	8	19	3.64

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
What Fire Pattern to Use (e.g., Frontal, Depth, Crossfire)	0	2	7	19	3.61
What Route to Take	0	1	11	17	3.61
To Bypass an Obstacle	0	0	12	16	3.57
To Move into a Supplementary Position	0	0	12	16	3.57
To Submit a Standard Report (e.g., SPOTREP, SHELREP, SITREP)	0	1	10	17	3.57
When to Stop the Tank	0	1	10	17	3.57
Where to Stop the Tank	0	1	10	17	3.57
To Pop or Generate Smoke	0	0	18	10	3.56
To Conduct Surveillance	0	1	11	16	3.54
To Look for a Bypass	0	1	11	16	3.54
What Movement Formation to Use (e.g., Column, Line, Wedge)	0	1	11	16	3.54
What Speed to Move the Tank	0	0	15	13	3.46
Close/Open the Hatches	0	1	13	14	3.46
To Adjust the Tank's Position Relative to Section Leader's Tank	0	1	14	13	3.43
To Conduct a Commo Chck	0	0	16	12	3.43
To Rest the Crew	0	1	13	13	3.36
To Execute the Feeding Schedule	0	5	18	5	3.00
INFORMATION					
Alerts (e.g., Chemical, Nuclear, Missile)	0	1	2	25	3.86
Enemy Contact	0	0	4	24	3.86
Identification of Target(s)	0	0	4	24	3.86

Tasks	Frequency of Responses 1	2	3	4	Mean Rating
Contact Report	0	1	3	24	3.82
Location of Target(s)	0	0	6	22	3.79
Challenge/Respond to Password	0	0	7	21	3.75
Number of Target(s)	0	1	6	21	3.71
The Presence of Obstcles	0	1	7	20	3.68
Status Reports (e.g., Fuel, Ammo, Commo)	0	0	9	19	3.68
Terrain Characteristics	0	0	9	19	3.68
(Receive) Platoon Fire Plan	0	1	9	18	3.61
Round Sensing for Another Tank	0	0	11	17	3.61
Standard Reports (e.g., SPOTREP, SHELREP, SITREP)	0	2	9	17	3.54
Commo Check	1	0	12	15	3.46
Trafficability	0	1	14	13	3.43
(Submit) Sketch Range Card	1	4	7	16	3.36
REQUESTS					
Supplies	0	0	8	20	3.71
Maintenance	0	0	9	19	3.68
Password	0	1	7	20	3.68
Medical Assistance	0	0	10	18	3.64
Recovery of a Mired Vehicle	0	0	13	15	3.54
Rest	0	1	13	14	3.46
Commo Check	1	1	13	13	3.36

APPENDIX E
CROSSWALKS OF NONPROCEDURAL AND PROCEDURAL TASKS

Table E-1

Crosswalk Between Decision Making and Procedural Tasks

MOVEMENT

1. Select Primary Position Within Area Assigned by Platoon Leader
   a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   b. Select a Firing Position (Tactics)
   c. Conduct a Map Reconnaissance (Tactics)
   d. Conduct Target Acquisition (Tactics)
2. Select Alternate Position Within Area Assigned by Platoon Leader
   a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   b. Select a Firing Position (Tactics)
   c. Conduct a Map Reconnaissance (Tactics)
   d. Conduct Target Acquisition (Tactics)
3. Decide When to Move to Alternate Position
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   d. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   e. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
4. Select Supplementary Position Within Area Assigned by Platoon Leader
   a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   b. Select a Firing Position (Tactics)
   c. Conduct a Map Reconnaissance (Tactics)
   d. Conduct Target Acquisition (Tactics)
5. Select Specific Paths of Movement Relative to Section Leader's Tank
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Conduct a Map Reconnaissance (Tactics)
6. Decide How to Maintain Position Relative to Section Leader's Tank
   a. Maintain Position in Platoon Formation (Tactics)
7. Decide Whether or Not to Negotiate an Obstacle
   a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   b. Conduct a Map Reconnaissance (Tactics)
   c. Maintain Position in Platoon Formation (Tactics)

8. Decide How to Negotiate an Obstacle
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
9. Select Overwatch Position Within Area Designated by Section Leader
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Conduct a Map Reconnaissance (Tactics)
    d. Conduct Target Acquisition (Tactics)
10. Select Firing Position Within Area Designated by Section Leader
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Conduct a Map Reconnaissance (Tactics)
    d. Conduct Target Acquisition (Tactics)
11. Decide Whether or Not to Maintain Position Relative to Section Leader When Section Leader's Tank Moves in an Illogical Manner
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Maintain Position in Platoon Formation (Tactics)
    d. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)

DETECTION/IDENTIFICATION

1. Decide Whether or Not to Override Designated Search Area
    a. Conduct Target Acquisition (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
2. Decide Where TC and Loader Will Search for Targets
    a. Conduct Target Acquisition (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
3. Decide Which Mode of Observation Will Be Used to Search for Targets
    a. Conduct Target Acquisition (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)

GUNNERY

1. Decide Whether or Not to Fire at Target(s)
    a. Estimate Range (Tactics)
    b. Conduct Target Acquisition (Tactics)
    c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    d. Call For and Adjust Indirect Fire (Tactics)
    e. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    f. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    g. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    h. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    i. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    j. Prepare a Sketch Range Card (Tank Gunnery)
    k. Issue a Fire Command (Tank Gunnery)

2. Decide Sequence in Which to Engage Multiple Targets
   a. Conduct Target Acquisition (Tactics)
   b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   c. Call For and Adjust Indirect Fire (Tactics)
   d. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   e. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   f. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank
   g. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   h. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
3. Decide When to Fire at Target(s)
   a. Estimate Range (Tactics)
   b. Conduct Target Acquisition (Tactics)
   c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   d. Call For and Adjust Indirect Fire (Tactics)
   e. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   f. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   g. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   h. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   i. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   j. Prepare a Sketch Range Card (Tank Gunnery)
   k. Issue a Fire Command (Tank Gunnery)
4. Decide What Weapon to Fire
   a. Estimate Range (Tactics)
   b. Conduct Target Acquisition (Tactics)
   c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   d. Call For and Adjust Indirect Fire (Tactics)
   e. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank
   f. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   g. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   h. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   i. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   j. Prepare a Sketch Range Card (Tank Gunnery)
   k. Issue a Fire Command (Tank Gunnery)
5. Choose Appropriate Main Gun Ammunition
   a. Estimate Range (Tactics)
   b. Conduct Target Acquisition (Tactics)
   c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   e. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   f. Prepare a Sketch Range Card (Tank Gunnery)
   g. Issue a Fire Command (Tank Gunnery)

6. Decide When to Stop Firing
    a. Conduct Target Acquisition (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    c. Call For and Adjust Indirect Fire (Tactics)
    d. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    e. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    f. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    g. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    h. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    i. Issue a Fire Command (Tank Gunnery)

SUSTAINMENT

1. Decide Which Crewman Will Sleep, How Long, and Where
2. Decide Whether or Not a Crewman Must Be Evacuated Due to Injury or Illness
    a. Put on a Tourniquet (First Aid)
    b. Give First Aid for Burns (First Aid)
    c. Splint a Fracture (First Aid)
    d. Employ a Three-Man Crew (Tactics)
3. Decide Who Will Drive Tank When Driver Is a Casualty
    a. Employ a Three-Man Crew (Tactics)
4. Decide Whether or Not to Close/Open Hatches
    a. Initiate Unmasking Procedures (NBC)
    b. Initiate Mission Oriented Protective Postures (MOPP)(NBC)
    c. Use M256 Chemical Detector Kit (NBC)
    d. Use IM-174 Radiacmeter (NBC)
    e. Prepare for an NBC Attack (NBC)
    f. Conduct Partial Decontamination (NBC)
    g. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
5. Decide Whether or Not to Fire Smoke Grenades
    a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    b. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
6. Decide Whether or Not to Generate Smoke
    a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
7. Decide Whether or Not to Move to Covered Position
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    d. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
8. Select Covered Position
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    d. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)

9. Decide During Operational Checks What Maintenance Actions Are Required and Which of These Must Be Performed Immediately
    a. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    b. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    c. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    d. Perform After Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Tank Gunnery)
    f. Secure Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    g. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Tank Gunnery)
    h. Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on a M1 Tank (Tank Gunnery)
10. Decide Whether or Not to Take Evasive Actions
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    c. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
    d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    e. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)

COMMUNICATIONS

1. Decide Whether or Not to Break Radio Listening Silence
2. Select Mode of Communications
    a. Call For and Adjust Indirect Fire (Tactics)
3. Decide Whether to Report or to Engage Enemy Anti-Tank Guided Missile (Tactics)

TRAINING

1. Select Tasks for Training Crew
    a. Provide Input into the Status of Training (Personnel, Training Management, and Administration)
    b. Prepare to Conduct Training (Personnel, Training Management, and Administration)
    c. Conduct Training (Personnel, Training Management, and Administration)
    d. Evaluate the Conduct of Training (Personnel, Training Management, and Administration)
2. Select Methods for Training Crew
    a. Provide Input into the Status of Training (Personnel, Training Management, and Administration)
    b. Prepare to Conduct Training (Personnel, Training Management, and Administration)
    c. Conduct Training (Personnel, Training Management, and Administration)
    d. Evaluate the Conduct of Training (Personnel, Training Management, and Administration)

3. Decide How Much Training Each Crewman Will Receive
   a. Provide Input Into the Status of Training (Personnel, Training Management, and Administration)
   b. Prepare to Conduct Training (Personnel, Training Management, and Administration)
   c. Conduct Training (Personnel, Training Management, and Administration)
4. Select Devices and Materials for Training Crew
   a. Provide Input Into the Status of Training (Personnel, Training Management, and Administration)
   b. Prepare to Conduct Training (Personnel, Training Management, and Administration)
   c. Conduct Training (Personnel, Training Management, and Administration)
   d. Evaluate the Conduct of Training (Personnel, Training Management, and Administration)

PERSONNEL

1. Assign Personnel to Crew Positions
   a. Conduct Performance Counseling with a Subordinate (Personnel, Training Management, and Administration)
   b. Receive/Orient Newly Assigned Personnel (Personnel, Training Management, and Administration
2. Select Crewman for Award
   a. Conduct Performance Counseling with a Subordinate (Personnel, Training Management, and Administration)
3. Recommend Crewman for Promotion
   a. Conduct Performance Counseling with a Subordinate (Personnel, Training Management, and Administration)
4. Recommend Punishment for Crewman
   a. Conduct Performance Counseling with a Subordinate (Personnel, Training Management, and Administration)
5. Decide Whether or Not to Recommend Crewman for Leave
   a. Conduct Performance Counseling with a Subordinate (Personnel, Training Management, and Administration)

Table E-2

Crosswalk Between Problem Solving and Procedural Tasks

MOVEMENT

1. Judge Whether or Not Terrain Features Will Interfere with the Tank's Line of Sight to Enemy Targets
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Use Marginal Information on a Map (Land Navigation)
   d. Select a Firing Position (Tactics)
   e. Conduct a Map Reconnaissance (Tactics)
   f. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   g. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   h. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   i. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   j. Direct Main Gun Engagements on an M1 Tank (Gunnery)
   k. Issue a Fire Command (Gunnery)
2. Judge Adequacy of Cover from Direct Enemy Fire
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Use Marginal Information on a Map (Land Navigation)
   f. Select a Firing Position (Tactics)
   g. Conduct a Map Reconnaissance (Tactics)
   h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
3. Judge Adequacy of Concealment from Enemy Observation
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Select a Firing Position (Tactics)
   f. Conduct a Map Reconnaissance (Tactics)
   g. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)

4. Find a Route Into or Out of a Position
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   c. Orient a Map on the Ground by Map Terrain
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Use Marginal Information on a Map (Land Navigation)
   f. Select a Firing Position (Tactics)
   g. Conduct a Map Reconnaissance (Tactics)
   h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
5. Judge How Well the Ground Will Support the Tank
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Use Marginal Information on a Map (Land Navigation)
   f. Select a Firing Position (Tactics)
   g. Conduct a Map Reconnaissance (Tactics)
   h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
6. Judge Whether or Not a Landmark Will Call Attention to the Tank
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Select a Firing Position (Tactics)
   f. Conduct a Map Reconnaissance (Tactics)
7. Judge If Adjacent Tanks Are Far Enough Apart to Avoid Their Simultaneous Detection by the Enemy, Yet Close Enough to Support Each Other
   a. Select a Firing Position (Tactics)
   b. Maintain Position in Platoon Formation (Tactics)
8. Estimate Amount of Time the Tank Has Been Exposed
   a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
9. Judge the Likelihood of Being Hit by Enemy Direct Fire
   a. Estimate Range (Tactics)
   b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
   f. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   g. Direct Machinegun Engagements on an M1 Tank (Gunnery)

h. Direct Main Gun Engagements on an M1 Tank (Gunnery)
i. Issue a Fire Command (Gunnery)

10. Judge the Trafficability of Terrain
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    e. Use Marginal Information on a Map (Land Navigation)
    f. Select a Firing Position (Tactics)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
11. Judge Whether or Not the Tank Can Climb a Grade
    a. Navigate from One point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    e. Use Marginal Information on a Map (Land Navigation)
    f. Select a Firing Position (Tactics)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
12. Judge Whether or Not the Tank Can Negotiate an Obstacle
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    e. Use Marginal Information on a Map (Land Navigation)
    f. Select a Firing Position (Tactics)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
13. Judge Whether or Not the Tank Can Negotiate a Slope
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    e. Use Marginal Information on a Map (Land Navigation)
    f. Select a Firing Position (Tactics)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)

14. Judge Whether or Not the Tank Can Clear an Overhead Obstruction
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Select a Firing Position (Tactics)
15. Judge Whether or Not the Tank Can Pass Between Two Obstructions
    a. Navigate from One Point on the Ground to Another Point (Land Navigate)
    b. Select a Firing Position (Tactics)
16. Judge Whether or Not the Gun Tube Can Clear an Obstruction
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Select a Firing Position (Tactics)
17. Judge If the Distance to the Section Leader's Tank Is Close Enough to Provide Immediate Support, Yet Far Enough to Avoid Simultaneous Destruction of Both Tanks by Enemy Fire
    a. Select a Firing Position (Tactics)
    b. Maintain Position in Platoon Formation (Tactics)
18. Find a Bypass Route
    a. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Conduct a Map Reconnaissance (Tactics)
19. Judge Whether or Not the Tank Will Be Damaged While Negotiating an Obstacle.
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Use Marginal Information on a Map (Land Navigation)
    d. Select a Firing Position (Tactics)
20. Judge Whether or Not the Tank Will Become Mired While Negotiating an Obstacle
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Use Marginal Information on a Map (Land Navigation)
    d. Select a Firing Position (Tactics)
21. Estimate the Amount of Time Required to Negotiate an Obstacle
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Use Marginal Information on a Map (Land Navigation)
    d. Select a Firing Position (Tactics)
22. Judge Whether or Not the Tank Can Provide Immediate Support for the Section Leader's Tank During a Bypass
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Conduct Target Acquisition (Tactics)
    d. Maintain Position in Platoon Formation (Tactics)

23. Judge Whether or Not Surveillance Can Be Maintained During a Bypass
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    e. Conduct Target Acquisition (Tactics)
24. Judge Whether or Not the Tank Can Be Seen from the Overwatch Position While Bounding from One Location to Another
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    c. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)

DETECTION/IDENTIFICATION

1. Judge Whether or Not the Terrain Provides Sufficient Concealment for the Enemy to Attempt to Negotiate It
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    d. Select a Firing Position (Tactics)
    e. Conduct a Map Reconnaissance (Tactics)
    f. Conduct Target Acquisition (Tactics)
2. Identify Likely Enemy Avenues of Approach
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
    c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    d. Select a Firing Position (Tactics)
    e. Conduct a Map Reconnaissance (Tactics)
    f. Conduct Target Acquisition (Tactics)
3. Judge Where to Search for Targets When Conditions Make It Impossible to Maintain Surveillance in the Assigned Sector
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Conduct Target Acquisition (Tactics)
4. Judge Whether or Not Conditions Indicate a Need to Override the Designated Search Area
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Conduct Target Acquisition (Tactics)

5. Identify Likely Enemy Locations
   a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   b. Orient a Map on the Ground by Map Terrain Association (Land Navigation)
   c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   d. Select a Firing Position (Tactics)
   e. Conduct Target Acquisition (Tactics)
   f. Prepare a Sketch Range Card (Gunnery)

GUNNERY

1. Judge Whether or Not Firing at the Enemy Will Jeopardize Mission Success by Revealing the Location of Friendly Tanks
   a. Call For and Adjust Indirect Fire (Tactics)
   b. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   c. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   f. Direct Main Gun Engagements on an M1 Tank
   g. Issue a Fire Command (Gunnery)
2. Estimate the Likelihood of Hitting a Target
   a. Estimate Range (Tactics)
   b. Call For and Adjust Indirect Fire (Tactics)
   c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   f. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   g. Direct Main Gun Engagements on an M1 Tank
   h. Issue a Fire Command (Gunnery)
3. Compare the Lethality of Multiple Enemy Targets
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   e. Direct Main Gun Engagements on an M1 Tank
   f. Issue a Fire Command (Gunnery)
4. Compare the Criticality of Multiple Enemy Targets with Respect to the Accomplishment of the Enemy's Mission
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)

c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
e. Direct Main Gun Engagements on an M1 Tank
f. Issue a Fire Command (Gunnery)

5. Identify the Least Powerful Weapon or Ammunition Required to Destroy the Enemy Target
   a. Estimate Range (Tactics)
   b. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   c. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   f. Direct Main Gun Engagements on an M1 Tank
   g. Issue a Fire Command (Gunnery)
6. Judge Before Firing Whether or Not the Supply of Ammunition for Each Weapon Is Sufficient to Complete the Mission or to Engage a Greater Threat
   a. Call For and Adjust Indirect Fire (Tactics)
   b. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   c. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   f. Direct Main Gun Engagements on an M1 Tank
   g. Issue a Fire Command (Gunnery)
7. Judge Before Firing Whether or Not the Supply of Each Type of Main Gun Ammunition Is Sufficient to Complete the Mission or to Engage a Greater Threat
   a. Call For and Adjust Indirect Fire (Tactics)
   b. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   c. Direct Main Gun Engagements on an M1 Tank
   d. Issue a Fire Command (Gunnery)
8. Anticipate the Types of Enemy Weapon Systems That Might Be Encountered Prior to Resupply or Prior to Mission Completion
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   e. Direct Main Gun Engagements on an M1 Tank
   f. Issue a Fire Command (Gunnery)
9. Judge from Battlefield Cues the Amount and King of Damage Inflicted Upon an Enemy Target
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)

b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
e. Direct Main Gun Engagements on an M1 Tank
f. Issue a Fire Command (Gunnery)

10. Interpret the Meaning of Various Battlefield Events or Cues Such as Smoke, Flashes, Etc.
    a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
    b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
    c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
    d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
    e. Direct Main Gun Engagements on an M1 Tank
    f. Issue a Fire Command (Gunnery)
11. Estimate the Likelihood of a System Malfunction After Consistently Failing to Hit a Target While Using Proper Gunnery Techniques
    a. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
    b. Direct Machinegun Engagements on an M1 Tank (Gunnery)
    c. Boresight and System Calibrate an M1 Tank (Gunnery)
    d. Issue a Fire Command (Gunnery)

SUSTAINMENT

1. Estimate the Need to Maintain Surveillance as a Defense Against an Enemy Attack
    a. Conduct Target Acquisition (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
2. Judge How Well a Crewman Will Be Able to Function During Combat
    a. Put on a Tourniquet (First Aid)
    b. Give First Aid for Burns (First Aid)
    c. Splint a Fracture (First Aid)
    d. Employ a Three-Man Crew (Tactics)
3. Estimate How Much Rest a Crewman Needs to Recover from Fatigue or from the Effects of Combat Stress
4. Judge Whether or Not a Crewman Needs Medical Attention
    a. Put on a Tourniquet (First Aid)
    b. Give First Aid for Burns (First Aid)
    c. Splint a Fracture (First Aid)
    d. Direct Reorganization on the Objective (Tactics)
    e. Employ a Three-Man Crew (Tactics)
5. Estimate the Effects of Losing a Crewman Due to Injury or Sickness on the Present Battlefield Situation
    a. Direct Reorganization on the Objective (Tactics)
6. Estimate the Effects of Losing a Crewman Due to Injury or Sickness on Future Battlefield Situations
    a. Direct Reorganization on the Objective (Tactics)

7. Estimate the Ability of the Remaining Crewmen to Substitute for One Another When a Crewman Is Lost Due to Injury or Sickness
   a. Direct Reorganization on the Objective (Tactics)
   b. Employ a Three-Man Crew (Tactics)
8. Judge the Effects of NBC Conditions on the Functioning and Survival of the Tank and Its Crew
   a. Initiate Unmasking Procedures (NBC)
   b. Implement Mission Oriented Protective Posture (MOPP) (NBC)
   c. Use M256 Chemical Detection Kit (NBC)
   d. Use IM-174 Radiacmeter (NBC)
   e. Read/Report Radiation Dosages (NBC)
   f. Prepare for an NBC Battle (NBC)
   g. Install/Remove the Automatic Chemical Alarm System
   h. Conduct Partial Decontamination (NBC)
9. Judge How Much a Smoke Screen Will Protect the Tank from Enemy Direct Fire
   a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
10. Judge How the Hatch Position Will Affect the Ability of the Crew to Detect Enemy Targets
   a. Conduct Target Acquisition (Tactics)
   b. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
11. Judge How the Hatch Position Will Affect the Driver's Ability to Drive
   a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
   b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   c. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
   d. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
   e. Direct Machinegun Engagements on an M1 Tank (Gunnery)
   f. Direct Main Gun Engagements on an M1 Tank (Gunnery)
12. Judge Whether or Not an Engine-Generated Smoke Screen Would Be Between the Tank and the Enemy Given the Tank's Direction of Movement
   a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
13. Estimate the Amount of Time Required to Reach Cover from Direct Enemy Fire
   a. Determine Location on the Ground by Terrain Association (Land Navigation)
   b. Navigate from One Point on the Ground to Another Point (Land Navigation)
   c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   d. Select a Firing Position (Tactics)
   e. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   f. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
14. Estimate the Effects of Wind Direction an Speed on the Effectiveness of a Smoke Screen
   a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   b. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
15. Judge Whether or Not There Is Sufficient Fuel to Generate Smoke Without Jeopardizing the Accomplishment of the Mission

16. Estimate the Likelihood That the Enemy Will Destroy the Tank If Preventative Measures Are Not Taken
    a. Navigate from One point on the Ground to Another Point (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Estimate Range (Tactics)
    d. Direct Evasion of an Enemy Anti-Tank Guided Missile (Gunnery)
    e. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
    f. Issue a Fire Command (Gunnery)
17. Estimate the Likelihood That a Maintenance Problem Would Prevent the Tank from Completing Its Mission
    a. Direct Reorganization on the Objective (Tactics)
    b. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    c. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    d. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Gunnery)
    f. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Gunnery)
    g. Perform Tank Commander's Preventative Maintenanced After-Firing Checks and Services on an M1 Tank (Gunnery)
    h. Boresight and System Calibrate an M1 Tank (Gunnery)
18. Estimate the Likelihood That a Maintenance Problem Would Prevent the Platoon from Completing Its Mission
    a. Direct Reorganization on the Objective (Tactics)
    b. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    c. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    d. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Gunnery)
    f. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Gunnery)
    g. Perform Tank Commander's Preventative Maintenanced After-Firing Checks and Services on an M1 Tank (Gunnery)
    h. Boresight and System Calibrate an M1 Tank (Gunnery)
19. Judge Whether or Not a Maintenance Problem Can Be Corrected Within Available Time and Resources
    a. Direct Reorganization on the Objective (Tactics)
    b. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    c. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    d. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Gunnery)
    f. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Gunnery)

g. Perform Tank Commander's Preventative Maintenanced After-Firing Checks and Services on an M1 Tank (Gunnery)
h. Boresight and System Calibrate an M1 Tank (Gunnery)

20. Judge How Much a Maintenance Problem in a Tank System Would Interfere with the Operation of the System
    a. Direct Reorganization on the Objective (Tactics)
    b. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    c. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    d. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Gunnery)
    f. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Gunnery)
    g. Perform Tank Commander's Preventative Maintenanced After-Firing Checks and Services on an M1 Tank (Gunnery)
    h. Boresight and System Calibrate an M1 Tank (Gunnery)
21. Estimate the Likelihood That the Platoon Would Accomplish Its Mission If the Tank Did Not Participate in the Mission Due to a Maintenance Problem
    a. Direct Reorganization on the Objective (Tactics)
    b. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    c. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    d. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    e. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (Gunnery)
    f. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Gunnery)
    g. Perform Tank Commander's Preventative Maintenanced After-Firing Checks and Services on an M1 Tank (Gunnery)
    h. Boresight and System Calibrate an M1 Tank (Gunnery)
22. Estimate How Much Time Is Available to Prevent the Enemy from Destroying the Tank
    a. Select a Firing Position (Tactics)
    b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    c. Fire an M250 Grenade Launcher on an M1 Tank (Gunnery)
    d. Issue a Fire Command (Gunnery)
23. Estimate How Much Time Is Required to Engage the Enemy
    a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Gunnery)
    b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
    c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Gunnery)
    d. Direct Machinegun Engagements on an M1 Tank (Gunnery)
    e. Direct Main Gun Engagements on an M1 Tank (Gunnery
    f. Issue a Fire Command (Gunnery)

COMMUNICATIONS

1. Estimate How Much the Survival of the Tank Depends on Taking an Appropriate Action
   a. Prepare a Situation Report (SITREP) (Tactics)
2. Judge If Breaking Radio Listening Silence Will Cause the Mission to Fail or the Tank to Be Destroyed
   a. Prepare/Submit NBC-1 Report (NBC)
   b. Prepare/Submit NBC-4 Report (NBC)
   c. Prepare a Situation Report (SITREP) (Tactics)
3. Judge How Much the Speed of Communications Will Affect Mission Success or the Survival of the Tank
   a. Construct Field Expedient Antennas (Communications)
   b. Prepare/Submit NBC-1 Report (NBC)
   c. Prepare/Submit NBC-4 Report (NBC)
   d. Prepare a Situation Report (SITREP) (Tactics)
4. Judge If Lack of Communication Security Will Cause the Mission to Fail or the Tank to Be Destroyed
   a. Use KTC 1400 Numerical Cipher Authentication System (Communications)
   b. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
   c. Install/Operate Hot-Loop Wire Communications (Communications)
   d. Use Automated Communications Electronics Operation Instructions (CEOI) (Communications)
   e. Prepare a Situation Report (SITREP) (Tactics)
5. Judge If Unclear Communications Will Cause the Mission to Fail or the Tank to Be Destroyed
   a. Construct Field Expedient Antennas (Communications)
   b. Prepare/Submit NBC-1 Report (NBC)
   c. Prepare/Submit NBC-4 Report (NBC)
   d. Prepare a Situation Report (SITREP) (Tactics)

Table E-3

Crosswalk Between Interactive and Procedural Tasks

NON-VERBAL TASKS

1. Maintain Position of Tank Relative to Section Leader's Tank
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Conduct a Tactical Road March (Tactics)
   d. Maintain Position in Platoon Formation (Tactics)
2. Maintain Orientation of Gun in Assigned Sector
   a. Conduct a Tactical Road March (Tactics)
3. Select Firing Position Relative to Firing Position of Section Leader's Tank
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Select a Firing Position (Tactics)
   d. Conduct a Tactical Road March (Tactics)
   e. Maintain Position in Platoon Formation (Tactics)
   f. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   g. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   h. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   i. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   j. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   k. Prepare a Sketch Range Card (Tank Gunnery
4. Move Tank Using Appropriate Movement Technique
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Maintain Position in Platoon Formation (Tactics)
   d. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
5. Move Tank in Appropriate Movement Formation
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Conduct a Tactical Road March (Tactics)
   d. Maintain Position in Platoon Formation (Tactics)
   e. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)

6. Move Tank Into Appropriate Temporary Halt Formation
   a. Navigate from One Point on the Ground to Another Point (Land Navigation)
   b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   c. Conduct a Tactical Road March (Tactics)
   d. Maintain Position in Platoon Formation (Tactics)
7. Maintain Surveillance in Assigned Sector
   a. Conduct a Map Reconnaissance (Tactics)
   b. Conduct a Tactical Road March (Tactics)
   c. Conduct Target Acquisition (Tactics)
8. Fire at Enemy Targets in Assigned Sector
   a. Estimate Range (Tactics)
   b. Conduct a Map Reconnaissance (Tactics)
   c. Conduct a Tactical Road March (Tactics)
   d. Conduct Target Acquisition (Tactics)
   e. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   f. Employ a Three-Man Crew (Tactics)
   g. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   h. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   i. Engage Targets with the Main Gun from the Commande 's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   j. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   k. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   l. Issue a Fire Command (Tank Gunnery)
9. Fire at Enemy Targets in Accordance with Established Fire Pattern
   a. Estimate Range (Tactics)
   b. Conduct a Tactical Road March (Tactics)
   c. Conduct Target Acquisition (Tactics)
   d. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   e. Employ a Three-Man Crew (Tactics)
   f. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   g. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   h. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   i. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   j. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   k. Issue a Fire Command (Tank Gunnery)
10. Provide Supporting Fire
   a. Select a Firing Position (Tactics)
   b. Estimate Range (Tactics)
   c. Conduct a Tactical Road March (Tactics)
   d. Conduct Target Acquisition (Tactics)
   e. Maintain Position in Platoon Formation (Tactics)
   f. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   g. Employ a Three-Man Crew (Tactics)
   h. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   i. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)

j. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
k. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
l. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
m. Issue a Fire Command (Tank Gunnery)

11. Conduct Fire and Maneuver
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Select a Firing Position (Tactics)
    d. Estimate Range (Tactics)
    e. Conduct Target Acquisition (Tactics)
    f. Maintain Position in Platoon Formation (Tactics)
    g. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    h. Employ a Three-Man Crew (Tactics)
    i. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    j. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    k. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    l. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    m. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    n. Issue a Fire Command (Tank Gunnery)
12. Communicate Using Hand and Arm Signals
    a. Use Automated Communications - Electronics Operation Instructions (CEOI) (Communications)
    b. Conduct a Tactical Road March (Tactics)
13. Communicate Using Flag Signals
    a. Use Automated Communications - Electronics Operation Instructions (CEOI) (Communications)
    b. Conduct a Tactical Road March (Tactics)
14. Communicate Using Pyrotechnics
    a. Use Automated Communications - Electronics Operation Instructions (CEOI) (Communications)
15. Interpret Panels
    a. Use Automated Communications - Electronics Operation Instructions (CEOI) (Communications)
16. Redistribute Ammunition
    a. Direct Reorganization on the Objective (Tactics)
17. Provide Tank to Platoon Leader/Platoon Sergeant When Theirs Is Disabled
    a. Direct Reorganization on the Objective (Tactics)
18. Assist in Performing Maintenance on Other Tank(s)
    a. Direct Reorganization on the Objective (Tactics)
19. Provide Tow to Mired Tank
20. Slave Start Another Tank
    a. Direct Reorganization on the Objective (Tactics)

ORDERS

1. Where to Move the Tank
   a. Prepare/Submit NBC-4 Report (NBC)
   b. Prepare for an NBC Attack (NBC)
   c. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   d. Determine a Location on the Ground by Terrain Association (Land Navigation)
   e. Navigate from One Point on the Ground to Another Point (Land Navigation)
   f. Orient a Map to the Ground by Terrain Association (Land Navigation)
   g. Identify Adjoining Map Sheets (Land Navigation)
   h. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   i. Conduct a Tactical Road March (Tactics)
   j. Maintain Position in Platoon Formation (Tactics)
2. Where to Fire
   a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   b. Determine a Location on the Ground by Terrain Association (Land Navigation)
   c. Orient a Map to the Ground by Terrain Association (Land Navigation)
   d. Identify Adjoining Map Sheets (Land Navigation)
   e. Conduct Target Acquisition (Tactics)
   f. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   g. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   h. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   i. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   j. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   k. Issue a Fire Command (Tank Gunnery)
3. Where to Search for Targets
   a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   b. Determine a Location on the Ground by Terrain Association (Land Navigation)
   c. Orient a Map to the Ground by Terrain Association (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Conduct Target Acquisition (Tactics)
4. When to Move the Tank
   a. Prepare/Submit NBC-4 Report (NBC)
   d. Prepare for an NBC Attack (NBC)
   c. Conduct a Tactical Road March (Tactics)

5. When to Fire
    a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an Mi Tank (Tank Gunnery)
    d. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    e. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    f. Issue a Fire Command (Tank Gunnery)
6. When to Stop the Tank
    a. Conduct a Tactical Road March (Tactics)
    b. Maintain Position in Platoon Formation (Tactics)
7. When to Stop Firing
    a. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    b. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    c. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    d. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    e. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    f. Issue a Fire Command (Tank Gunnery)
8. Where to Stop the Tank
    a. Orient a Map to the Ground by Terrain Association (Land Navigation)
    b. Identify Adjoining Map Sheets (Land Navigation)
9. What Route to Take
    a. Identify Terrain Features (Natural and Mad Made) on a Map (Land Navigation)
    b. Determine a Location on the Ground by Terrain Association (Land Navigation)
    c. Determine Magnetic Azimuth Using a Compass (Land Navigation)
    d. Navigate from One Point on the Ground to Another Point (Land Navigation)
    e. Orient a Map Using a Compass (Land Navigation)
    f. Orient a Map to the Ground by Terrain Association (Land Navigation)
    g. Identify Adjoining Map Sheets (Land Navigation)
    h. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    i. Use Marginal Information on a Map (Land Navigation)
    j. Conduct a Map Reconnaissance (Tactics)
    k. Conduct a Tactical Road March (Tactics)
10. What Movement Formation to Use
    a. Conduct a Tactical Road March (Tactics)
11. What Movement Technique to Use
    a. Maintain Position in Platoon Formation (Tactics)
12. What Speed to Move the Tank
    a. Conduct a Tactical Road March (Tactics)
    b. Maintain Position in Platoon Formation (Tactics)

13. To Look for a Bypass
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Determine a Location on the Ground by Terrain Association (Land Navigation)
    c. Orient a Map Using a Compass (Land Navigation)
    d. Orient a Map to the Ground by Terrain Association (Land Navigation)
    e. Identify Adjoining Map Sheets (Land Navigation)
    f. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
14. To Select a Primary, Alternate, or Supplementary Position
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    f. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    h. Prepare a Sketch Range Card (Tank Gunnery)
15. To Move Into a Supplementary Position
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Select a Firing Position (Tactics)
    d. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    e. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    f. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
16. To Bypass an Obstacle
    a. Navigate from One Point on the Ground to Another Point (Land Navigation)
    b. Orient a Map Using a Compass (Land Navigation)
    c. Orient a Map to the Ground by Terrain Association (Land Navigation)
    d. Identify Adjoining Map Sheets (Land Navigation)
    e. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    f. Use Marginal Information on a Map (Land Navigation)
    g. Conduct a Map Reconnaissance (Tactics)
    h. Conduct a Tactical Road March (Tactics)
    i. Maintain Position in Platoon Formation (Tactics)

17. What Fire Pattern to Use
    a. Conduct Target Acquisition (Tactics)
    b. Maintain Position in Platoon Formation (Tactics)
    c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    f. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    h. Issue a Fire Command (Tank Gunnery)
18. To Pop or Generate Smoke
    a. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    b. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
    c. Issue a Fire Command (Tank Gunnery)
19. To Provide Overwatch
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Determine a Location on the Ground by Terrain Association (Land Navigation)
    c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    d. Select a Firing Position (Tactics)
    e. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    f. Employ a Three-Man Crew (Tactics)
20. To Provide Supporting Fire
    a. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    b. Select a Firing Position (Tactics)
    c. Conduct a Tactical Road March (Tactics)
    d. Maintain Position in Platoon Formation (Tactics)
    e. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    f. Employ a Three-Man Crew (Tactics)
    g. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    h. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    i. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    j. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    k. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    l. Issue a Fire Command (Tank Gunnery)
21. To Conduct Surveillance
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Determine a Location on the Ground by Terrain Association (Land Navigation)
    c. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    d. Conduct a Map Reconnaissance (Tactics)
    e. Conduct a Tactical Road March (Tactics)
    f. Conduct Target Acquisition (Tactics)

22. To Submit a Standard Report
    a. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
    b. Put on a Tourniquet (First Aid)
    c. Give First Aid for Burns (First Aid)
    d. Splint a Fracture (First Aid)
    e. Prepare/Submit NBC-1 Report
    f. Use M256 Chemical Detector Kit (NBC)
    g. Use M-174 Radiacmeter (NBC)
    h. Read/Report Radiation Dosages (NBC)
    i. Locate an Unknown Point on a Map or on the Ground by Resection (Land Navigation)
    j. Identify Adjoining Map Sheets (Land Navigation)
    k. Determine Azimuth Using a Protractor and Compute Back Azimuth (Land Navigation)
    l. Install a Hasty Protective Minefield (Mines)
    m. Remove a Hasty Protective Minefield (Mines)
    n. Direct Reorganization on the Objective (Tactics)
    o. Prepare/Submit Standard Shelling, Mortaring, and Bombing Report (Tactics)
    p. Prepare Before, During, and After Operations
23. To Conduct Before, During, and After Operations Maintenance Checks
    a. Direct Reorganization on the Objective (Tactics)
    b. Conduct a Tactical Road March (Tactics)
    c. Supervise Before Operations Checks and Services on an M1 Tank (Maintenance)
    d. Supervise After Operations Checks and Services on an M1 Tank (Maintenance)
    e. Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) (Maintenance)
    g. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (Tank Gunnery)
    h. Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank (Tank Gunnery)
24. Execute MOPP Level
    a. Initiate Unmasking Procedures (NBC)
    b. Prepare/Submit NBC-4 Report (NBC)
    c. Initiate Mission Oriented Protective Posture (MOPP) (NBC)
    d. Use M256 Chemical Detector Kit (NBC)
    e. Use M-174 Radiacmeter (NBC)
    f. Read/Report Radiation Dosages (NBC)
    g. Prepare for an NBC Attack (NBC)
25. Close/Open the Hatches
    a. Initiate Unmasking Procedures (NBC)
    b. Prepare/Submit NBC-4 Report (NBC)
    c. Initiate Mission Oriented Protective Posture (MOPP) (NBC)
    d. Use M256 Chemical Detector Kit (NBC)
    e. Use M-174 Radiacmeter (NBC)
    f. Read/Report Radiation Dosages (NBC)
    g. Prepare for an NBC Attack (NBC)
    h. Conduct Partial Decontamination (NBC)
    i. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    j. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)

26. To Rest the Crew
27. To Execute the Feeding Schedule
28. To Prepare the Tank for Nuclear Attack
    a. Prepare/Submit NBC-4 Report (NBC)
    b. Initiate Mission Oriented Protective Posture (MOPP) (NBC)
    c. Prepare for an NBC Attack (NBC)
29. To Submit a Status Report
    a. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
    b. Put on a Tourniquet (First Aid)
    c. Give First Aid for Burns (First Aid)
    d. Splint a Fracture (First Aid)
    e. Use M256 Chemical Detector Kit (NBC)
    f. Use M-174 Radiacmeter (NBC)
    g. Read/Report Radiation Dosages (NBC)
    h. Prepare for an NBC Attack (NBC)
    i. Conduct Partial Decontamination (NBC)
    j. Direct Reorganization on the Objective (Tactics)
    k. Conduct a Tactical Road March (Tactics)
    l. Employ a Three-Man Crew (Tactics)
30. To Adjust the Tank's Position Relative to Section Leader's Tank
    a. Conduct a Tactical Road March (Tactics)
    b. Maintain Position in Platoon Formation (Tactics)
31. To Take Evasive Action
    a. Estimate Range (Tactics)
    b. Conduct Target Acquisition (Tactics)
    c. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    d. Fire an M250 Grenade Launcher on an M1 Tank (Tank Gunnery)
    e. Engage Targets with the Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    f. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
    g. Issue a Fire Command (Tank Gunnery)
32. To Conduct a Commo Check
    a. Direct Reorganization on the Objective (Tactics)
    b. Conduct a Tactical Road March (Tactics)

INFORMATION

1. The Presence of Obstacles
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Use Marginal Information on a Map (Land Navigation)
2. Trafficability
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
    c. Use Marginal Information on a Map (Land Navigation)
3. Terrain Characteristics
    a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
    b. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)

c. Use Marginal Information on a Map (Land Navigation)
d. Prepare a Sketch Range Card (Tank Gunnery)

4. Identification of Target(s)
   a. Conduct Target Acquisition (Tactics)
   b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   f. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   h. Prepare a Sketch Range Card (Tank Gunnery)
   i. Issue a Fire Command (Tank Gunnery)
5. Location of Target(s)
   a. Identify Terrain Features (Natural and Man Made) on a Map (Land Navigation)
   b. Locate an Unknown Point on a Map or on the Ground by Intersection (Land Navigation)
   c. Identify Adjoining Map Sheets (Land Navigation)
   d. Analyze Terrain Using the Five Military Aspects of Terrain (Land Navigation)
   e. Conduct Target Acquisition (Tactics)
   f. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   g. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   h. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   i. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   j. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   k. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   l. Prepare a Sketch Range Card (Tank Gunnery)
   m. Issue a Fire Command (Tank Gunnery)
6. Number of Target(s)
   a. Conduct Target Acquisition (Tactics)
   b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
   d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
   f. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
   g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
   h. Prepare a Sketch Range Card (Tank Gunnery)
   i. Issue a Fire Command (Tank Gunnery)
7. Contact Report
   a. Conduct Target Acquisition (Tactics)
   b. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
   c. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)

d. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
e. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
f. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
g. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)

8. Round Sensing for Another Tank
   a. Conduct Target Acquisition (Tactics)
   b. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
9. (Receive) Platoon Fire Plan
   a. Prepare a Sketch Range Card (Tank Gunnery)
10. (Submit) Sketch Range Card
   a. Prepare a Sketch Range Card (Tank Gunnery)
11. Commo Check
   a. Direct Reorganization on the Objective (Tactics)
12. Status Report
   a. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
   b. Put on a Tourniquet (First Aid)
   c. Give First Aid for Burns (First Aid)
   d. Splint a Fracture (First Aid)
   e. Use M256 Chemical Detector Kit (NBC)
   f. Use M-174 Radiacmeter (NBC)
   g. Read/Report Radiation Dosages (NBC)
   h. Prepare for an NBC Attack (NBC)
   i. Conduct Partial Decontamination (NBC)
   j. Direct Reorganization on the Objective (Tactics)
   k. Conduct a Tactical Road March (Tactics)
   l. Employ a Three-Man Crew (Tactics)
13. Standard Reports
   a. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
   b. Put on a Tourniquet (First Aid)
   c. Give First Aid for Burns (First Aid)
   d. Splint a Fracture (First Aid)
   e. Prepare/Submit NBC-1 Report
   f. Use M256 Chemical Detector Kit (NBC)
   g. Use M-174 Radiacmeter (NBC)
   h. Read/Report Radiation Dosages (NBC)
   i. Locate an Unknown Point on a Map or on the Ground by Resection (Land Navigation)
   j. Identify Adjoining Map Sheets (Land Navigation)
   k. Determine Azimuth Using a Protractor and Compute Back Azimuth (Land Navigation)
   l. Install a Hasty Protective Minefield (Mines)
   m. Remove a Hasty Protective Minefield (Mines)
   n. Direct Reorganization on the Objective (Tactics)
   o. Prepare/Submit Standard Shelling Mortaring, and Bombing Report (Tactics)
   p. Prepare a Situation Report (SITREP) (Tactics)
14. Alerts
   a. Initiate Unmasking Procedures (NBC)
   b. Prepare/Submit NBC-1 Report
   c. Initiate Mission Oriented Protective Posture (MOPP) (NBC)

d. Use M-174 Radiacmeter (NBC)
e. Read/Report Radiation Dosages (NBC)
f. Conduct a Tactical Road March (Tactics)
g. Prepare a Situation Report (SITREP) (Tactics)

15. Enemy Contact
    a. Conduct a Tactical Road March (Tactics)
    b. Prepare a Situation Report (SITREP) (Tactics)
    c. Conduct Target Acquisition (Tactics)
    d. Direct Evasion of an Enemy Anti-Tank Guided Missile (Tactics)
    e. Engage Targets with the Caliber .50 HB M2 Machinegun on an M1 Tank (Tank Gunnery)
    f. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    g. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (Tank Gunnery)
    h. Direct Machinegun Engagements on an M1 Tank (Tank Gunnery)
    i. Direct Main Gun Engagements on an M1 Tank (Tank Gunnery)
16. Challenge/Respond to Password
    a. Use KTC 1400D Numerical Cipher/Authentication System (Communications)
    b. Use an Automated Communications - Electronics Operation Instructions (CEOI) (Communications)

REQUESTS

1. Commo Check
    a. Direct Reorganization on the Objective (Tactics)
    b. Conduct a Tactical Road March (Tactics)
2. Supplies
    a. Direct Reorganization on the Objective (Tactics)
    b. Prepare a Situation Report (SITREP) (Tactics)
3. Maintenance
    a. Locate an Unknown Point on a Map or on the Ground by Resection (Land Navigation)
    b. Identify Adjoining Map Sheets (Land Navigation)
    c. Determine Azimuth Using a Protractor and Compute Back Azimuth (Land Navigation)
    d. Direct Reorganization on the Objective (Tactics)
    e. Conduct a Tactical Road March (Tactics)
    f. Prepare a Situation Report (SITREP) (Tactics)
4. Medical Assistance
    a. Put on a Tourniquet (First Aid)
    b. Give First Aid for Burns (First Aid)
    c. Splint a Fracture (First Aid)
    d. Locate an Unknown Point on a Map or on the Ground by Resection (Land Navigation)
    e. Identify Adjoining Map Sheets (Land Navigation)
    f. Determine Azimuth Using a Protractor and Compute Back Azimuth (Land Navigation)
    g. Direct Reorganization on the Objective (Tactics)
    h. Prepare a Situation Report (SITREP) (Tactics)
    i. Employ a Three-Man Crew (Tactics)

5. Recovery of a Mired Vehicle
   a. Conduct a Tactical Road March (Tactics)
   b. Maintain Position in Platoon Formation (Tactics)
6. Password
   a. Encode/Decode Messages Using KTC 600D Tactical Operations Code (Communications)
   b. Use an Automated Communications - Electronics Operation Instructions (CEOI) (Communications)
7. Rest

APPENDIX F
OUTLINE OF PROPOSED 19K BNCOC

PRE-COURSE STUDENT/CERTIFICATION

1. Determine the Grid Coordinates of a Point on a Military Map Using the Military Grid Reference System
2. Recognize and Identify Friendly and Threat Armored Vehicles
3. Communicate Using Visual Signaling Techniques
4. Operate an AN/VRC-64 Radio
5. Send a Radio Message
6. Operate Intercommunications Set AN/VIC-1
7. Use Challenge and Password
8. Collect and Report Information (SALUTE)
9. Perform Before Operations Checks and Services on an M1 Tank
10. Perform After Operations Checks and Services on an M1 Tank
11. Prepare Driver's Station for Operation on an M1 Tank
12. Start/Stop the Engine on an M1 Tank
13. Drive an M1 Tank
14. Perform Gunner's and Loader's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank
15. Perform Gunner's and Loader's Preventative Maintenance After Firing Checks and Services on an M1 Tank
16. Install/Remove an M240 Coax Machinegun on an M1 Tank
17. Clear an M240 Machinegun to Prevent Accidental Discharge on an M1 Tank
18. Clear a Caliber .50 M2 HB Machinegun to Prevent Accidental Discharge
19. Prepare Gunner's Station for Operation on an M1 Tank
20. Load/Unload the 105mm Main Gun on an M1 Tank
21. Apply Gunner's Misfire Procedures on the 105mm Gun (Subtask)
22. Apply Loader's Misfire Procedures on the 105mm Gun (Subtask)
23. Engage Targets with the M240 Coax Machinegun from the Gunner's Station on an M1 Tank
24. Engage Targets with the Main Gun from the Gunner's Station on an M1 Tank
25. Engage Targets Using Precision Fire Technique with the Telescope (Subtask)
26. Engage Targets Using Battlesight Fire Technique (Subtask)
27. Adjust Fire from Subsequent Fire Commands (Subtask)

PRE-COURSE DIAGNOSTIC TESTS

1. Determine the Grid Coordinates of a Point on a Military Map Using the Military Grid Reference System
2. Clear an M240 Machinegun to Prevent Accidental Discharge on an M1 Tank
3. Clear a Caliber .50 M2 HB Machinegun to Prevent Accidental Discharge
4. Prepare Gunner's Station for Operation on an M1 Tank
5. Load/Unload the 105mm Main Gun on an M1 Tank
6. Apply Gunner's Misfire Procedures on an M1 Tank (Subtask)
7. Apply Loader's Misfire Procedures on the 105mm Gun (Subtask)

8. Engage Targets Using Precision Fire Technique with the Telescope (Subtask)
9. Engage Targets Using Battlesight Fire Technique (Subtask)
10. Adjust Fire from Subsequent Fire Commands (Subtask)
11-15. (Five Tasks to be Selected Randomly from Among Those Recommended for Pre-Course Student Certification)

LEADERSHIP

1. The NCO Leader Model
2. Duties and Responsibilities of an NCO
3. Conduct Performance Counseling with a Subordinate (M)
   D-1. Select Crewman for Award (4)
   D-2. Recommend Crewman for Promotion (13)
   D-3. Recommend Punishment for Crewman (4)
   D-4. Decide Whether or Not to Recommend Crewman for Leave (0)
4. Prepare Rater's Section of an Enlisted Evaluation Report (DA Form 2166-) (S-9)
5. Receive and Orient Newly Assigned Personnel (S-6)
   D-1. Assign Personnel to Crew Positions (13)
6. The Principles of Problem Solving and Decision Making
7. The Law of Land Warfare/SAEDA Orientation
8. Identifying and Managing Alcohol and Drug Abuse Problems
9. Equal Opportunity
10. Conduct Search in Accordance with the Uniform Code of Military Justice (S-1)

LEADERSHIP REACTION COURSE (Contained in Appendix G)

TRAINING PROCEDURES

1. Provide Input Concerning the Status of Training (S-13)
2. Prepare to Conduct Training (S-80)
   D-1. Select Tasks for Training Crew (20)
   D-2. Select Methods for Training Crew (33)
   D-3. Decide How Much Training Each Crewman Will Receive (44)
   D-4. Select Devices and Materials for Training Crew (8)
3. Conduct Training (M)
4. Evaluate the Conduct of Training (S-63)
5. Training Devices (See Appendix H)
6. Physical Fitness Instruction

NBC

1. Install/Remove the Automatic Chemical Alarm System (S-21)
2. Implement Mission Oriented Protective Posture (MOPP) (M)
   D-1. Decide Whether or Not to Close/Open Hatches (20)
   I-1. (0) Execute MOPP Level (65)
   I-2. (0) Close/Open the Hatches (23)
   I-3. (I) Alerts (94)

3. Use M256 Chemical Detection Kit (S-63)
4. Prepare/Submit NBC-1 Report (M)
   PS-1. Judge If Breaking Radio Listening Silence Will Cause the Mission to Fail or the Tank to be Destroyed (59)
   PS-2. Judge How Much the Speed of Communications Will Affect Mission Success or the Survival of the Tank (31)
   PS-3. Judge If Unclear Communications Will Cause the Mission to Fail or the Tank to be Destroyed (25)
5. Conduct Partial Decontamination (S-63)
6. Initiate Unmasking Procedures (S-63)
7. Use IM-174 Radiacmeter Dosages (S-49)
8. Read/Report Radiation Dosages (S-49)
   PS-1. Judge the Effects of NBC Conditions on the Functioning and Survival of the Tank and Its Crew (47)
9. Prepare and Submit NBC-4 Report (S-80)
10. Prepare for an NBC Attack (S-97)
   I-1. (0) To Prepare the Tank for Nuclear Attack (81)

MINE WARFARE

1. Install a Hasty Protective Minefield (S-49)
2. Remove a Hasty Protective Minefield (S-49)

COMMUNICATIONS

1. Enter or Leave a Radio Net (M)
2. Use KTC 1400D Numerical Cipher/Authentication Code (M)
3. Encode/Decode Messages Using KTC 600D Tactical Operations Code (M)
   PS-1. Judge If Lack of communication Security Will Cause the Mission to Fail or the Tank to be Destroyed (22)
   I-1. (0) To Submit a Standard Report (43)
   I-2. (0) To Submit a Status Report (73)
   I-3. (I) Status Reports (65)
   I-4. (I) Standard Reports (33)
4. Use Automated Communication-Electronics Operation Instructions (CEOI) (M)
   I-1. (NV) Communicate Using Pyrotechnics (5)
   I-2. (NV) Interpret Panels (1)
   I-3. (I) Challenge/Respond to Password (81)
   I-4. (R) Password (65)
5. Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM) (S-21)
6. Install/Operate Hot Loop Wire Communications (S-21)

LAND NAVIGATION

1. Use Marginal Information on a Map (M)
2. Identify Adjoining Map Sheets (S-13)
3. Identify Terrain Features (Natural and Man Made) on a Map (M)
   PS-1. Judge Whether or Not a Landmark Will Call Attention to the Tank (53)

4. Orient a Map on the Ground by Map Terrain Association (M)
   I-1. (0) Where to Stop the Tank (43)
5. Orient a Map Using a Compass (S-34)
6. Locate an Unknown Point on a Map or on the Ground by Intersection (S-73)
7. Locate an Unknown Point on a Map or on the Ground by Resection (S-73)
8. Determine Azimuth Using a Protractor and Compute a Back Azimuth (S-90)
9. Determine a Magnetic Azimuth Using a Compass (S-34)
10. Determine a Location on the Ground by Terrain Association (M)
11. Navigate from One Point on the Ground to Another Point (M)
    PS-1. Judge Whether or Not the Tank Can Climb a Grade (47)
    PS-2. Judge Whether or Not the Tank Can Negotiate an Obstacle (72)
    PS-3. Judge Whether or Not the Tank Can Negotiate a Slope (72)
    PS-4. Judge Whether or Not the Tank Can Clear an Overhead Obstruction (85)
    PS-5. Judge Whether or Not the Tank Can Pass Between Two Obstructions (59)
    PS-6. Judge Whether or Not the Gun Tube Can Clear an Obstruction (84)
    PS-7. Judge Whether or Not the Tank Will Be Damaged While Negotiating an Obstacle (90)
    PS-8. Judge Whether or Not the Tank Will Become Mired While Negotiating an Obstacle (90)
    PS-9. Estimate the Amount of Time Required to Negotiate an Obstacle (31)
    PS-10. Judge Whether or Not the Tank Can Provide Immediate Support for the Section Leader's Tank During a Bypass (40)
    D-1. Select Specific Paths of Movement Relative to Section Leader's Tank (60)
    I-1. (0) To Move Into a Supplementary Position (43)
    I-2. (0) To Bypass an Obstacle (43)
12. Analyze Terrain Using the Five Military Aspects of Terrain (S-86)
    PS-1. Judge Whether or Not Terrain Features Will Interfere with the Tank's Line of Sight to Enemy Targets (96)
    PS-2. Judge Adequacy of Cover from Direct Enemy Fire (84)
    PS-3. Judge Adequacy of Concealment from Enemy Observation (96)
    PS-4. Find a Route Into or Out of a Position (90)
    PS-5. Judge How Well the Ground Will Support the Tank (72)
    PS-6. Judge the Trafficability of Terrain (53)
    PS-7. Find a Bypass Route (47)
    PS-8. Judge Whether or Not Surveillance Can be Maintained During a Bypass (31)
    PS-9. Judge Whether or Not the Tank Can Be Seen from the Overwatch Position While Bounding from One Location to Another (31)
    PS-10. Judge Whether or Not the Terrain Provides Sufficient Concealment for the Enemy to Attempt to Negotiate It (40)
    PS-11. Identify LIkely Enemy Avenues of Approach (90)
    PS-12. Judge Where to Search for Targets when Conditions Make It Impossible to Maintain Surveillance in the Assigned Sector (53)
    PS-13. Identify Likely Enemy Locations (80)

PS-14. Estimate the Amount of Time Required to Reach Cover from Direct Enemy Fire (40)
D-1. Decide How to Negotiate an Obstacle (69)
D-2. Decide Whether or Not to Move to Covered Position (77)
D-3. Select Covered Position (69)
I-1. (O) What Route to Take (51)
I-2. (O) To Look for a Bypass (33)
I-3. (I) The Presence of Obstacles (65)
I-4. (I) Trafficability (19)
I-5. (I) Terrain Characteristics (65)

13. Conduct a Map Reconnaissance (M)

LAND NAVIGATION PATHFINDER COURSE (Contained in Appendix I)

MAINTENANCE

1. Procedures of Problem Solving and Decision Making Tasks in a Maintenance Environment
2. Supervise Before Operations Checks and Services on an M1 Tank (M)
   PS-1. Estimate the Likelihood That a Maintenance Problem Would Prevent the Tank from Completing Its Mission (34)
   PS-2. Judge Whether or Not a Maintenance Problem Can Be Corrected Within Available Time and Resources (17)
   PS-3. Judge How Much a Maintenance Problem in a Tank System Would Interfere with the Operation of the System (40)
   PS-4. Estimate the Likelihood that the Platoon Would Still Accomplish Its Mission if the Tank Did Not Participate in the Mission Due to a Maintenance Problem (O)
   D-1. Decide During Operational Checks What Maintenance Actions Are Required and Which of These Must Be Performed Immediately (54)
3. Supervise After Operations Checks and Services on an M1 Tank (M)
4. Perform Before Operations checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank (M)
5. Supervise Maintenance on Individual and TO&E Equipment (S-49)

TANK GUNNERY

1. Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tank Gunnery Environment
2. Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank (M)
3. Set Headspace and Timing on a Caliber .50 M2 HB Machinegun (M)
4. Boresight a Caliber .50 M2 HB Machinegun on an M1 Tank (M)
5. Zero a Caliber .50 M2 HB Machinegun on an M1 Tank (M)
6. Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank (M)
7. Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank (M)
8. Direct and Supervise the Zeroing of the Coax Machinegun on an M1 Tank (M)
9. Boresight and System Calibrate an M1 TAnk (M)

10. Issue a Fire Command (M)
    - PS-1. Compare the Lethality of Multiple Enemy Targets (72)
    - PS-2. Compare the Criticality of Multiple Enemy Targets with Respect to the Accomplishment of the Enemy's Mission (25)
    - PS-3. Identify the Least Powerful Weapon or Ammunition Required to Destroy the Enemy Target (99)
    - PS-4. Judge, Before Firing, Whether or Not the Supply of Ammunition for Each Weapon Is Sufficient to Complete the Mission or to Engage a Greater Threat (59)
    - PS-5. Judge, Before Firing, Whether or Not the Supply of Each Type of Main Gun Ammunition Is Sufficient to Complete the Mission or to Engage a Greater Threat (64)
    - PS-6. Anticipate the Types of Enemy Weapon Systems That Might Be Encountered Prior to Resupply or Prior to Mission Completion (13)
    - PS-7. Judge from Battlefield Cues the Amount and Kind of Damage Inflicted Upon an Enemy Target (3)
    - PS-8. Interpret the Meaning of Various Battlefield Events or Cues Such as Smoke, Flashes, etc. (84)
    - PS-9. Estimate How Much Time Is Required to Engage the Enemy (72)
    - D-1. Decide Sequence in Which to Engage Multiple Targets (93)
    - D-2. Choose Appropriate Main Gun Ammunition (95)
    - D-3. Decide When to Stop Firing (87)
    - I-1. (NV) Fire at Enemy Targets in Assigned Sector (94)
    - I-2. (NV) Fire at Enemy Targets in Accordance with Established Fire Pattern (86)
    - I-3. (NV) Provide Supporting Fire (81)
    - I-4. (O) Where to Fire (81)
    - I-5. (O) When to Fire (99)
    - I-6. (O) When to Stop Firing (94)
    - I-7. (O) What Fire Pattern to Use (51)
    - I-8. (O) To Provide Supporting Fire (89)
11. Engage Targets with the Caliber .50 M2 HB Machinegun on an M1 Tank (M)
12. Direct Machinegun Engagements on an M1 Tank (M)
13. Direct Main Gun Engagements on an M1 Tank (M)
    - PS-1. Estimate the LIkelihood of a System Malfunction After Consistently Failing to Hit a Target While Using Proper Gunnery Techniques (59)
    - PS-2. Judge How the Hatch Position Will Affect the Driver's Ability to Drive (22)
    - D-1. Decide When to Move to Alternate Position (77)
    - D-2. (I) Round Sensing for Another Tank (51)
14. Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank (M)
15. Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank (M)
16. Fire an M250 Grenade Launcher on an M1 Tank (M)
    - PS-1. Estimate the Effects of Wind Direction and Speed on the Effectiveness of a Smoke Screen (17)

17. Employ a Three-Man Crew (S-80)
    - PS-1. Judge How Well a Crewman Will Be Able to Function During Combat (10)
    - PS-2. Estimate the Ability of the Remaining Crewmen to Substitute for Another When a Crewman Is Lost Due to Injury or Sickness (15)
    - D-1. Decide Whether or Not a Crewman Must Be Evacuated Due to Injury or Illness (36)
    - D-2. Decide Who Will Drive Tank When Driver Is a Casualty (24)
    - I-1. (R) Medical Assistance (57)
18. Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M1 Tank (M)
19. Secure Commander's Weapon Station (CWS) on an M1 Tank (M)

COUNTRY FAIR (Contained in Appendix J)

TACTICS

1. Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tactical Environment
2. Conduct Target Acquisition (M)
    - PS-1. Judge Whether or Not Conditions Indicate a Need to Override the Designated Search Area (64)
    - PS-2. Estimate the Need to Maintain Surveillance as a Defense Against an Enemy Attack (53)
    - PS-3. Judge How the Hatch Position Will Affect the Ability of the Crew to Detect Enemy Targets (6)
    - D-1. Decide Whether or Not to Override Designated Search Area (8)
    - D-2. Decide Where TC and Loader Will Search for Targets (29)
    - D-3. Decide Which Mode of Observation Will Be Used to Search for Targets (54)
    - I-1. (NV) Maintain Surveillance in Assigned Sector (33)
    - I-2. (O) Where to Search for Targets (57)
    - I-3. (O) To Conduct Surveillance (33)
    - I-4. (I) Identification of Target(s) (94)
    - I-5. (I) Location of Target(s) (86)
    - I-6. (I) Number of Target(s) (73)
    - I-7. (I) Contact Report (89)
3. Estimate Range (M)
    - PS-1. Judge the Likelihood of Being Hit by Enemy Direct Fire (40)
    - PS-2. Estimate the Likelihood of Hitting a Target (94)
    - PS-3. Estimate the Likelihood That the Enemy Will Destroy the Tank If Preventative Measures Are Not Taken (80)
    - D-1. Decide Whether or Not to Fire at Target(s) (90)
    - D-2. Decide When to Fire at Target(s) (87)
    - D-3. Decide What Weapon to Fire (S-90)
4. Call For and Adjust Indirect Fire (S-90)
    - PS-1. Judge Whether or Not Firing at the Enemy Will Jeopardize Mission Success by Revealing the Location of Friendly Tanks (64)
    - D-1. Select Mode of Communications (44)
5. Prepare and Issue an Oral Operation Order (S-21)

6. Conduct a Tactical Road March (S-57)
   - D-1. Decide Whether or Not to Break Radio Listening Silence (69)
   - I-1. (NV) Maintain Orientation of Gun in Assigned Sector (27)
   - I-2. (NV) Communicate Using Hand and Arm Signals (14)
   - I-3. (NV) Communicate Using Flag Signals (14)
   - I-4. (O) When to Move the Tank (65)
   - I-5. (O) To Conduct Before, During, and After Operations Maintenance Checks (57)

7. Maintain Position in Platoon Formation (S-34)
   - PS-1. Judge If the Distance to the Section Leader's Tank Is Close Enough to Provide Immediate Support, Yet Far Enough to Avoid Simultaneous Destruction of Both Tanks by Enemy Fire (72)
   - D-1. Decide How to Maintain Position Relative to Section Leader's Tank (31)
   - D-2. Decide Whether or Not to Negotiate an Obstacle (44)
   - D-3. Decide Whether or Not to Maintain Position Relative to Section Leader When Section Leader's Tank Moves in an Illogical Manner (44)
   - I-1. (NV) Maintain Position of Tank Relative to Section Leader's Tank (14)
   - I-2. (NV) Move Tank Using Appropriate Movement Technique (94)
   - I-3. (NV) Move Tank in Appropriate Movement Formation (27)
   - I-4. (NV) Move Tank into Appropriate Temporary Halt Formation (33)
   - I-5. (NV) Conduct Fire and Maneuver (81)
   - I-6. (O) Where to Move the Tank (81)
   - I-7. (O) When to Stop the Tank (43)
   - I-8. (O) What Movement Formation to Use (33)
   - I-9. (O) What Movement Technique to Use (73)
   - I-10. (O) What Speed to Move the Tank (23)
   - I-11. (O) To Adjust the Tank's Position Relative to Section Leader's Tank (19)

8. Direct Evasion of an Enemy Anti-Tank Guided Missile (M)
   - PS-1. Estimate Amount of Time the Tank Has Been Exposed (47)
   - PS-2. Judge How Much a Smoke Screen Will Protect the Tank from Enemy Direct Fire (6)
   - PS-3. Judge Whether or Not an Engine-Generate Smoke Screen Would Be Between the Tank and the Enemy Given the Tank's Direction of Movement (25)
   - PS-4. Estimate How Much Time Is Available to Prevent the Enemy from Destroying the Tank (10)
   - D-1. Decide Whether or Not to Fire Smoke Grenades (44)
   - D-2. Decide Whether or Not to Generate Smoke (26)
   - D-3. Decide Whether or Not to Take Evasive Actions (82)
   - D-4. Decide Whether to Report or to Engage Enemy First (69)
   - I-1. (O) To Pop or Generate Smoke (39)
   - I-2. (O) To Take Evasive Action (65)

9. Select a Firing Position (M)
   - PS-1. Judge If Adjacent Tanks Are Far Enough Apart to Avoid Their Simultaneous Detection by the Enemy, Yet Close enough to Support Each Other (36)

D-1. Select Primary Position Within Area Assigned by Platoon Leader (82)
D-2. Select Alternate Position Within Area Assigned by Platoon Leader (60)
D-3. Select Supplementary Position Within Area Assigned by Platoon Leader (44)
D-4. Select Overwatch Position Within Area Designated by Section Leader (60)
D-5. Select Firing Position Within Area Designated by Section Leader (60)
I-1. (NV) Select Firing Position Relative to Firing Position of Section Leader's Tank (51)
I-2. (O) To select a Primary, Alternate, or Supplementary Position (57)
I-3. (O) To Provide Overwatch (73)

10. Direct Reorganization on the Objective (S-34)
PS-1. Judge Whether or Not a Crewman Need Medical Attention (78)
PS-2. Estimate the Effects of Losing a Crewman Due to Injury or Sickness on the Present Battlefield Situation (6)
PS-3. Estimate the Effects of Losing a Crewman Due to Injury or Sickness on Future Battlefield Situations (13)
I-1. (NV) Redistribute Ammunition (7)
I-2. (NV) Provide Tank to Platoon Leader/Platoon Sergeant When Theirs Is Disabled (0)
I-3. (NV) Assist in Performing Maintenance on Other Tank(s) (3)
I-4. (NV) Slave Start Another Tank (43)
I-5. (O) To Conduct a Commo Check (19)
I-6. (I) Commo Check (23)
I-7. (R) Commo Check (9)
I-8. (R) Supplies (73)
I-9. (R) Maintenance (65)

11. Prepare a Situation Report (SITREP) (S-69)
PS-1. Estimate How Much the Survival of the Tank Depends on Taking An Appropriate Action (90)
I-1. (I) Enemy Contact (94)

12. Prepare a Sketch Range Card (S-34)
I-1. (I) (Receive) Platoon Fire Plan (51)
I-2. (I) (Submit) Sketch Range Card (9)

13. Prepare/Submit Standard Shelling, Mortaring, and Bomb Report (S-1)

SINGLE TANK TACTICAL EXERCISE (Contained in Appendix K)

INTRA-PLATOON TACTICAL EXERCISE (Contained in Appendix L)

END OF COURSE COMPREHENSIVE EXAM

APPENDIX G
LEADERSHIP REACTION COURSE

When a soldier enters the 19K30 BNCOC course he is trained to be a tank commander in an M1 tank armor unit. The tank commander is the first level leader position in the U.S. Army leader hierarchy. In this new position the junior NCO will be frequently called upon to make rapid decisions which will affect his mission, his crew, and his tank. He must be able to "come-up" with rational decisions, in a short time, for varying problems. In other words he must develop the ability to "think on his feet." The leadership reaction course is an important part of the 19K30 leadership program.

Leadership training in past and current 19K30 BNCOC courses can be characterized as lacking depth and imagination. Little or no emphasis was placed upon leading and problem solving. The purposes of the leadership reaction course are:

- Measure the degree to which certain leadership traits are possessed by the student.
- Provide the student with the means of making a self-evaluation to determine more accurately his leadership ability.
- Provide the student with an opportunity to apply leadership traits, principles of leadership, and problem solving in a combat oriented situation.
- Enable the student to recognize the necessity of team effort and cooperation in accomplishing assigned measures.

APPENDIX H
USE OF TRAINING DEVICES IN 19K BNCOC

TASK CLUSTER	TRAINING DEVICE	USE AS A STUDENT	USE AS AN INSTRUCTOR
1. LEADERSHIP	*VIDEO DISCS*	To learn interpersonal skills and to assess the mastery of those skills.	
2. TRAINING	MILES U-COFT BATTLESIGHT TELFARE M55 LASER ESSLR PYE-WATSON TRAINING SET FIRE OBSERVATION SIMCAT HAND HELD TUTOR BESELER CUE/SEE VIDEO DISCS	To learn the availability, acquisition, and general use of training devices, to learn the capabilities of the listed training devices, and to mount and check out MILES equipment on an M1 tank and to prepare for operation and check out the MILES controller gun.	
3. NBC			
4. MINE WARFARE			
5. COMMUNICATIONS			
6. LAND NAVIGATION	VIDEO DISCS	To learn basic land navigation skills, e.g., identifying terrain features, orienting a map, determining grid coordinates of a point on a map, etc.	To teach basic land navigation skills, e.g., identifying terrain features, orienting a map, determining grid coordinates of a point on a map, etc.
7. MAINTENANCE	HAND HELD TUTOR	To learn supervisory and individual M1 tank maintenance tasks, e.g., supervise before operations checks and services on an M1 tank, perform before operations checks and services on the commander's weapon station (CWS), etc.	To teach individual crewmen M1 tank maintenance tasks, e.g., perform before operations checks and services on an M1 tank, perform after operations checks and services on an M1 tank, etc.

TASK CLUSTER	TRAINING DEVICE	USE AS A STUDENT	USE AS AN INSTRUCTOR
8. TANK GUNNERY	BATTLESIGHT	To learn target acquisition main gun manipulation, and reticle lay when engaging targets with the main gun.	To teach the gunner target acquisition, main gun manipulation, and reticle lay when engaging targets with the main gun.
	U-COFT	To learn tank commander pre-fire checks, conduct of fire procedures, engage targets from the commander's weapon station with the main gun, caliber .50 machinegun, and coax machinegun, and direct main gun and machinegun engagements.	
	PYE-WATSON	To learn how to boresight the main gun.	
	TELFARE	To learn how to mount, boresight, and zero the TELFARE device and how to use the TELFARE as a sub-caliber firing device when firing various firing tables.	To teach the gunner and the loader how to mount, boresight, and zero the TELFARE device.
	M55 LASER	To learn how to mount, boresight, and zero the M55 laser and how to use the M55 laser as a sub-caliber device when firing various firing tables.	To teach the gunner and the loader how to mount, boresight, and zero the M55 laser.
	ESSLR	To learn how to install the ESSLR device to create a laser eye-safe range.	To teach the gunner how to install the ESSLR device.
9. TACTICS	MILES	To learn how to operate MILES equipment in a force on force tactical environment.	To teach crewmen how to operate MILES equipment in a force on force tactical environment.
	TRAINING SET FIRE OBSERVATION	To learn how to call for and adjust indirect fire in a simulated tactical environment.	
	SIMCAT	To learn movement formations and technique, target acquisition, and target engagement in a computer-assisted combined arms simulator; and to learn function in a tank platoon context in regards to platoon intra-actions.	

APPENDIX I
PATHFINDER LAND NAVIGATION COURSE (PLNC)

PURPOSE: The Pathfinder Land Navigation Course (PLNC) is designed to accomplish the following:

- Evaluate, in a field environment, the performance of land navigation tasks by tank commanders.
- Determine the 19K30 BNCOC "Pathfinder" of the year.

SCOPE: The scope of the PLNC includes all 19K30 BNCOC land navigation tasks, plus three other land navigation tasks required to perform PLNC requirements. The number of tasks, by station, in the PLNC are listed in Table 1 below.

Table I-1

PLNC Scope

Station Number	Task Per Station*	Duplicate Tasks Per Station	Total Tasks
1	LN-1, LN-2, LN-3, LN-5, LN-8, LN-9, LN-11, LN-A	LN-1, LN-3, LN-9 LN-A	12
2	LN-4, LN-8, LN-9, LN-10, LN-11, LN-A, LN-B, LN-C	LN-B(3), LN-C	12
3	LN-6, LN-8, LN-9, LN-C	LN-8, LN-9	6
4	LN-7, LN-8, LN-9, LN-10, LN-C	LN-9, LN-C	7
5	LN-12, LN-13	---	2
TOTAL	27	12	39

*Task number suffixes are the same as task numbers in the land navigation cluster in the Proposed 19K BNCOC Course Outline. Task letter suffixes identify tasks not included in the proposed course outline but which are required to perform PLNC requirements.

SCORING: The emphasis on scoring the student's performance of PLNC tasks will be his ability to accurately perform the tasks. Task performance procedural deficiencies will be noted by station chiefs only for the purpose of post PLNC feedback to the student. Accuracy of task performance will be valued at 85 percent of the PLNC. Time to complete the PLNC will also be considered. This factor reflects two student capabilities--physical conditioning and knowledge of land navigation tasks. Individual tasks will not have a time standard. The value of the time completion factor will be 15 percent. Table 2 is an example of a PLNC scoresheet.

Table I-2

PLNC Scoresheet

Name _____ Rank _____ SSN _____ Date _____

Time Started PLNC _____ Time Finished PLNC _____

Station No.	Requirement	Response	Station No.	Requirement	Response
1	A	7062 IV Leavenworth 7062 III Manhattan	4	A B	NA 210100 NA 215120
	B	GO or NO/GO by Station Chief	5	A	- 10 kilometers - Village, bridge, Hill 800
	C	Quarry			- Areas 2 and 5
	D	93 degrees			- Green River, Duck Pond and RR Underpass
2	A	2000 meters			- Areas 3, 4, and 9
	B	2700 meters			- Areas 2, 5, and 7
	C	700 meters			
	D	NA 172845			
3	A	NA 184765 NA 180560			
	B	NA 179246			
	C	60 degrees 1068 mils			

_____
Chief Instructor

PATHFINDER LAND NAVIGATION COURSE

STATION	SCENARIO	TASKS	COMMENTS
1	SITUATION "Welcome to Station 1. At this station you will perform 12 land navigation tasks. Are you ready?"		
	A. "Here are five 1:50,000 scale military map sheets. Join together the two map sheets that have a common boundry. What is the number of each of the adjoining map sheets? What is the name of each of the adjoining map sheets?" (Student will indicate his answer to the questions on the answer sheet.)	LN-2 Identify adjoining map sheets.	
	B. "Here is the map sheet you will be using during the Pathfinder Course. Orient the map with your compass." (Station chief will enter GO or NO GO on the student's answer sheet.)	LN-5 Orient a map using a compass.	
	C. "What man-made terrain feature is located at NA_____?" (Student will indicate his answer to the question on the answer sheet.)	LN-A Locate a point on the map by grid coordinate. LN-3 Identify terrain features (natural and man-made) on a map. LN-1 Use marginal information on a map.	
	D. "What is the magnetic azimuth from your present position to the man-made terrain feature at NA_____?" (Student will indicate his answer to the question on the answer sheet.)	LN-9 Determine magnetic azimuth using a compass.	Student, using the map sheet declination constant, converts grid azimuth to magnetic azimuth.

STATION	SCENARIO	TASKS	COMMENTS
	SITUATION CONTINUED "You will now leave Station 1 and proceed to NA_____ by the most feasible route. When you arrive at that location you will be at Station 2. There you will be required to report the straight line distance from Station 1 to Station 2 and the actual distance you traveled from Station 1 to Station 2. Are there any questions?"	PRIOR TO DEPARTURE FROM STATION 1 LN-A Locate a point on a map by grid coordinate. LN-3 Identify terrain features (natural and man-made) on a map. LN-1 Use marginal information on a map. LN-8 Determine azimuth using a protractor. DURING MOVEMENT FROM STATION 1 TO STATION 2 LN-9 Determine magnetic azimuth using a compass. LN-11 Navigate from one point on the ground to another point.	Student, using the map sheet declination constant, converts grid azimuths to magnetic azimuths.
2	SITUATION "Welcome to Station 2. At this station you will perform 12 land navigation tasks. Are you ready?" A. "You are located at NA_____. What is the straight line distance from NA _____ to Station 1, the place you just left?" (Student will indicate his answer to the question on the answer sheet.) B. "Indicate on the map, by straight lines, the distance you actually traveled from Station 1 to Station 2." (Student will indicate his answer on the answer sheet.)	LN-A Locate a point on a map by grid coordinates. LN-B Measure distance on a map. LN-B Measure distance on a map.	

STATION	SCENARIO	TASKS	COMMENTS
	C. "What is the difference in distance between the straight line from Station 1 to Station 2 and the actual distance you traveled from Station 1 to Station 2?" (Student will indicate his answer to the question on the answer sheet.)		Student will subtract the straight line distance from the distance actually traveled.
	D. "From your present location at NA_____ you will plot a grid azimuth of ___ degrees. Now from your present position trace the grid azimuth out to 2500 meters. What are the coordinates at that point?" (Student will indicate his answer to the question on the answer sheet.)	LN-8 Determine azimuth using a protractor. LN-B Measure distance on a map. LN-C Determine the grid coordinate of a point on a military map using the military grid reference system.	
	"Now from your present location move out along the grid azimuth 2000 meters. That is where Station 3 is. Are there any questions?"	PRIOR TO DEPARTURE FROM STATION 2 LN-B Measure distance on a map. DURING MOVEMENT FROM STATION 2	
		LN-9 Determine magnetic azimuth using a compass. LN-11 Navigate from one point on the ground to another point.	Student, using the map sheet declination constant, converts grid azimuth to magnetic azimuth.
	"Halfway to Station 3 you see smoke to your ____ flank. Determine the location of the smoke and your location."	LN-4 Orient a map to the ground by terrain association. LN-10 Determine location on the ground by terrain association. LN-C Determine the grid coordinate of a point on a military map using the military grid reference system.	

STATION	SCENARIO	TASKS	COMMENTS
3	SITUATION "Welcome to Station 3. At this station you will perform 6 land navigation tasks. Are you ready?" A. "During your move from Station 3 you observed smoke to your ____ flank. Tell me the coordinates of the smoke and the coordinates of your location when you saw the smoke." (Student will indicate his answer on the answer sheet.) B. "You are now at OP ALPHA which is at NA_____. That field telephone is connected to OP CHARLIE which is at NA_____. The FIST will be here in a few minutes and he wants you to have a center of sector marker located when he gets here. That lone pine tree on that ridge would be a good center of sector marker. Determine the grid coordinates of that lone pine tree." (Student will indicate his answer on the answer sheet.) C. "A target has appeared in your sector and you are preparing to request indirect fire. Part of the request is to determine and announce the observer-target (OT) line. What is the magnetic OT line from your position?" What is the grid OP line from your position?" (Student will indicate his answers to the questions on the answer sheet.) "You will now proceed along this road until you meet the chief of Station 4. Are there any questions?"	LN-6 Locate an unknown point on a map or on the ground by intersection. LN-9 Determine magnetic azimuth using a compass. LN-8 Determine azimuth using a protractor. LN-C Determine the grid coordinates of a point on a military map using the military grid reference system. LN-9 Determine magnetic azimuth using a compass. LN-8 Determine azimuth using a protractor.	Student, using the map sheet declination constant, converts grid magnetic azimuth to grid azimuth. Student, using the map sheet declination constant, converts magnetic azimuth to grid azimuth.

STATION	SCENARIO	TASKS	COMMENTS
4	SITUATION "Welcome to Station 4. At this station you will perform 7 land navigation tasks. Are you ready?"		
	A. "You are now at OP XRAY, however, you do not know exactly where OP XRAY is. You have your map but you are unable to find your compass. Determine your present location, mark it on the map, and report the coordinates of your location." (Student will indicate his answer on the answer sheet.)	LN-10 Determine location on the ground by terrain association LN-C Determine the grid coordinates of a point on a military map using the military grid reference system.	
	B. "You have found your compass and now you want to confirm your present location. Determine your present location and report the coordinate of your location." (Student will indicate his answer on the answer sheet.)	LN-7 Locate an unknown point on a map or on the ground by resection. LN-9 Determine magnetic azimuth using a compass. LN-8 Determine azimuth using a protractor. LN-C Determine the grid coordinate of a point on a military map using the military grid reference system.	Student, using the map sheet declination constant, converts magnetic azimuth to grid azimuth.
	"Now from your present position move out on a magnetic azimuth of ____ degrees. That is where Station 5 is. Are there any questions?"	LN-9 Determine magnetic azimuth using a compass.	
5	SITUATION "Welcome to Station 5. At this station you will perform 2 land navigation tasks. Are you ready?"		

STATION	SCENARIO	TASKS	COMMENTS
	A. "You are TC 12, 1st Platoon, Company A, 37th Armor. You are in a forward assembly area and have just received the platoon leader's order for tomorrow's operation. The company will conduct a movement to contact east along Highway ____, 1st Platoon leading, from the 3d Cavalry Screen to Hill 609. After crossing RJ ____ the 1st Platoon will occupy an overwatch position and the 2d Platoon will take over the lead. You will conduct a map reconnaissance from the 3d Cavalry Screen to RJ____. To conduct the map reconnaissance determine the following: - The distance from the cavalry screen to RJ____. - Easily identifiable terrain features along the route of advance. - Impassable terrain along the route of advance. - Obstacles along the route of advance. - Areas of observation that extend out to 3000 meters along the route of advance. - Areas of cover and concealment that permit movement pass areas of observation that extends out to 3000 meters along the route of advance.	LN-13 Conduct a map reconnaissance. LN-12 Analyze terrain using the five military aspects of terrain.	

APPENDIX J
COUNTRY FAIR SKILLS TEST (CFST)

PURPOSE: The Country Fair Skills Test (CFST) is designed to accomplish the following:

- Evaluate the performance of selected procedural tasks by tank commanders.
- To provide a challenging evaluation procedure which will enhance student motivation and provide a "break" in program of instruction routine.

SCOPE: The scope of the CFST is shown in Table 1 below.

Table J-1

CFST Scope

Cluster	Task
TRAINING	Prepare to conduct training. Conduct training.
NBC	Read and report radiation dosages. Conduct partial decontamination.
COMMUNICATIONS	Enter and leave a radio net. Encode and decode messages using KTC 600D Tactical Operation Code. Install and operate hot loop wire communications.
LAND NAVIGATION	*Determine the grid coordinates of a point on a military map using the military grid reference system. Determine azimuth using a protractor and compute back azimuth.
MAINTENANCE	Perform before operations checks and services on the commander's weapon station (CWS). Perform after operations checks and services on the commander's weapon station (CWS)
TANK GUNNERY	Prepare Commander's Weapon Station (CWS) for operation. Employ a three-man crew.
TACTICS	Prepare a sketch range card. Conduct target acquisition.

*Not a 3 level task, but one which has proven to be difficult to learn.

APPENDIX K
SINGLE TANK TACTICAL EXERCISE (STTX)

PURPOSE: The Single Tank Tactical Exercise (STTX) is designed to accomplish the following:

- Evaluate, in a tactical scenario controlled field environment, the performance of procedural tasks by tank commanders.
- Provide "on-the-spot" remedial training of performance deficiencies.

SCOPE: The scope of the STTX is shown in Table 1 below.

Table K-1

STTX Scope

Task Cluster	Tasks in Cluster	Tasks in STTX	Task Duplicates in STTX	Total Tasks in STTX
NBC	10	4	0	4
MINE WARFARE	2	0	0	0
COMMUNICATIONS	6	4	1	5
LAND NAV	13	3	2	5
TACTICS	12	6	5	11
MAINTENANCE	5	5	0	5
TANK GUNNERY	18	7	2	9
TOTAL	66	29	10	39

SCOPE REDUCTION: Should the scope of the STTX result in an excessive amount of time required to perform the STTX, the scope could be reduced by eliminating all maintenance tasks, thereby reducing the amount of time required. Table 2 below indicates a scope reduction.

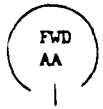
Table K-2

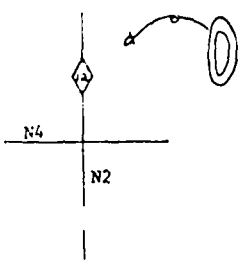
STTX Scope Reduction

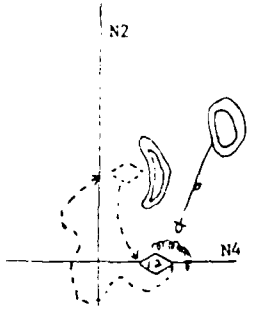
Task Cluster	Tasks in Cluster	Tasks in STTX	Task Duplicates in STTX	Total Tasks in STTX
NBC	10	4	0	4
MINE WARFARE	2	0	0	0
COMMUNICATIONS	6	4	1	5
LAND NAV	13	3	2	5
TACTICS	12	6	5	11
MAINTENANCE	5	0	0	0
TANK GUNNERY	18	7	2	9
TOTAL	66	24	10	34

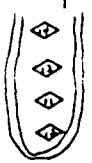
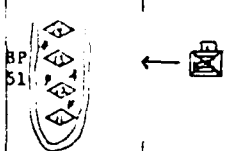
Enclosures 1. Single Tank Tactical Exercise (STTX)
2. Evaluator's Handbook (TBP)

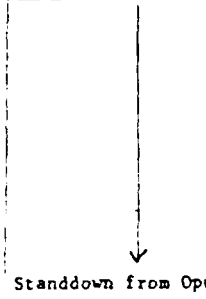
SINGLE TANK TACTICAL EXERCISE (STTX)

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
Prepare for Operations  	SITUATION You are TC 12 of Co A, 37th Arm. The company is in a forward assembly area and you have just been alerted by the platoon leader to get your tank ready for operations. (Student will now complete the tasks listed to the right.)	A1	*Supervise before operation checks and services on an M1 tank. *Perform before operations checks and services on the commander's weapon station (CWS). *Prepare commander's weapon station (CWS) for operation on an M1 tank. *Perform tank commander's preventative maintenance prepare-to-fire checks and services on an M1 tank.	Maintenance Maintenance Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook
Receipt of OPORD	SITUATION CONTINUED The platoon leader issued the following operation order: "Enemy forces of the 327 MRD occupy defensive position east of GREEN River. Mounted enemy recon patrols active west of GREEN River. Company A leaves the assembly area and crosses the SP at ____ hours, moves south along Hy N2 then east along Hy N4, and occupies BP 51. On BP 51, right to left, 1st Plat, 2d Plat, and 3d Plat. Elements of 3d ACR will be on our right. 1st	A2	*Conduct a map reconnaissance. *Prepare and issue an oral operation order. *Use an automated communications electronics operation instructions (CEOI). *Use the KTC 1400 numerical cipher/ authentication system. *Enter or leave a radio net.	Land Navigation Tactics Communications Communications Communications	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
Tactical Movement to Battle Position	Plat leads movement to BP 51 in in combat column per tac SOP, we'll occupy our part of the BP, right to left, 12, 11, 13, and 14. Logistics SOP. Current CEOI in effect. Any questions?" (Student will now complete the tasks listed to the right)				
	SITUATION CONTINUED Upon moving out of the assembly area Tank 12 threw a track. The executive officer arrives at your tank, looks over the situation, tells you to start working on the problem and that he will send support maintenance to assist you. He also tells you that when you have the track back on you are to proceed to BP 51 and join your platoon.				
	SITUATION CONTINUED The thrown track was replaced and as you approach RJ N2-N4 your tank was fired upon by an enemy guided missile. (Student will now complete the tasks listed to the right)	B1	· Navigate from one point to another. · Conduct target acquisition. · Direct evasion of an enemy anti-tank guided Missile. · Select a firing position.	Land Navigation Tactics Tactics Tactics	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
			·Fire an M250 grenade launcher on an M1 Tank.	Tank Gunnery	See Evaluator's Handbook
			·Issue a fire command.	Tank Gunnery	See Evaluator's Handbook
			·Direct main gun engagement on an an M1 tank.	Tank Gunnery	See Evaluator's Handbook
	SITUATION CONTINUED You evaded the anti-tank missile. and fired on the suspected enemy firing position. You search the suspected area with binoculars but are unable to detect any enemy activity. You order your driver to move out and upon reaching a point 100 meters from your last position you are fired on again by an enemy anti-tank missile. Observing that the closest covered position is the one you just left you order your driver to take evasive action and to return to that position. Upon reaching the covered position you again search the suspected area for enemy activity, but you are unable to detect any enemy activity. (Student will now complete the tasks listed to the right.)	B2	*Navigate from one point to another.	Land Navigation	See Evaluator's Handbook
			*Conduct target acquisition.	Tactics	See Evaluator's Handbook
			*Direct evasion of an enemy anti-tank guided missile.	Tactics	See Evaluator's Handbook
			*Fire an M250 grenade launcher on an M1 tank.	Tank Gunnery	See Evaluator's Handbook
			·Call for and adjust indirect fire.	Tactics	See Evaluator's Handbook
			·Determine azimuth using a protractor and compute back azimuth.	Land Navigation	See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
Organize Battle Position  	SITUATION CONTINUED Under protective cover of indirect fire, a mix of HE and WP, you are able to depart the position and join the platoon on BP 51. Upon reaching BP 51 the platoon leader designated your general primary firing position, your sector of fire, and told you to organize your position IAW tac SOP. As you start organizing you position the company aid man reported that your loader had 102° fever, was dehydrated, and had a severe case of dysentery. At that very moment the loader was being evacuated to the battalion aid station. (Student will now complete tasks listed to the right.)	C1	*Select a firing position. 'Prepare a sketch range card. 'Put the automatic chemical alarm system into operation. 'Install and operate hot loop wire communications. 'Employ a three-man crew.	Tactics Tactics NBC Communications Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook
Defend Battle Position  	SITUATION CONTINUED You have completed organizing your sector of BP 51. Individual enemy targets are seen beyond direct fire range. An enemy artillery concentration, a mixture of HE and persistent chemical agents fall on the BP. An enemy MR Co reinforced with a platoon of T-72 tanks is	C2	*Conduct target acquisition. *Call for and adjust indirect fire. 'Determine azimuth using a protractor and compute back azimuth. 'Implement mission-oriented protective posture (MOPP).	Tactics Tactics Land Navigation NBC	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	moving towards the 1st Platoon's sector of the BP at a range of 2500 meters. (Student will now complete the tasks listed to the right.)		*Use the M256 chemical detection kit. *Prepare and submit NBC-1 report. *Issue a fire command. *Engage targets with the main gun from the commander's weapon station (CWS) on an M1 tank.	NBC NBC Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook
	*SITUATION CONTINUED* The enemy was repulsed and the company was relieved of its defense mission. The company has occupied a rear assembly area and will remain there for three days for operational recovery. (Student will now complete the tasks listed to the right.)	D1	*Supervise after operations checks on an M1 tank. *Perform after operations checks and services on the commander's weapon station (CSW). *Perform tank commander's preventative maintenance after firing checks and services on an M1 tank. *Enter or leave a radio net.	Maintenance Maintenance Maintenance Communications	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

APPENDIX L

INTRA-PLATOON TACTICAL EXERCISE (I-PTX)

PURPOSE: The Intra-Platoon Tactical Exercise (I-PTX) is designed to accomplish the following:

- Evaluate, in a tactical scenario controlled field environment, the performance of procedural tasks by tank commanders, while operating in platoon level tactics.
- Evaluate, in a tactical scenario controlled field environment, the ability of tank commanders to perform interactive tasks with the platoon leader, platoon sergeant, or the other tank commander, while operating in platoon level tactics.
- Provide "on-the-spot" remedial training of performance deficiencies.

SCOPE: The scope of the I-PTX for procedural tasks is shown in Table 1 below. The scope of interactive active procedural tasks includes such functional areas as: NBC, Communications, Land Navigation, Tactics, Maintenance, and Tank Gunnery.

Table L-1

I-PTX Scope

Task Cluster	Tasks in Cluster	Tasks in I-PTX	Task Duplicates in I-PTX	Total Tasks in I-PTX
NBC	10	6	0	6
MINE WARFARE	2	0	0	0
COMMUNICATIONS	6	4	7	11
LAND NAV	13	8	14	22
TACTICS	12	11	24	35
MAINTENANCE	5	4	8	12
TANK GUNNERY	18	8	5	13
TOTAL	66	41	58	99

SCOPE REDUCTION: Should the scope of the I-PTX result in an excessive amount of time required to perform the I-PTX, the scope could be reduced by eliminating all maintenance tasks, all duplicated land navigation tasks, and four duplicated tactics tasks.

Table L-2

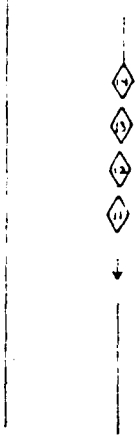
I-PTX Scope Reduction

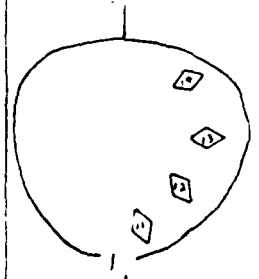
Task Cluster	Tasks in Cluster	Tasks in I-PTX	Task Duplicates in I-PTX	Total Tasks in I-PTX
NBC	10	6	0	6
MINE WARFARE	2	0	0	0
COMMUNICATIONS	6	4	7	11
LAND NAV	13	8	0	8
TACTICS	12	11	20	31
MAINTENANCE	5	0	0	0
TANK GUNNERY	18	8	5	13
TOTAL	66	37	32	69

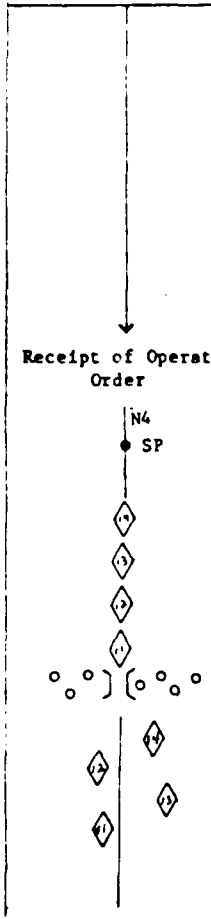
Enclosures 1. Intra-Platoon Tactical Exercise (I-PTX)
2. Evaluator's Handbook (TBP)

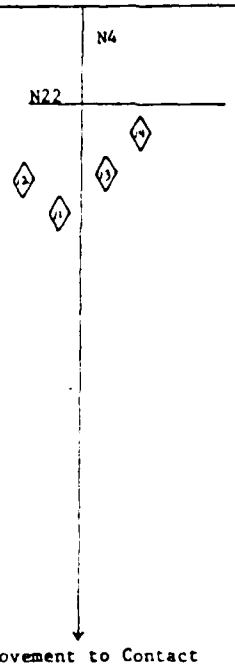
INTRA-PLATOON TACTICAL EXERCISE (I-PTX)

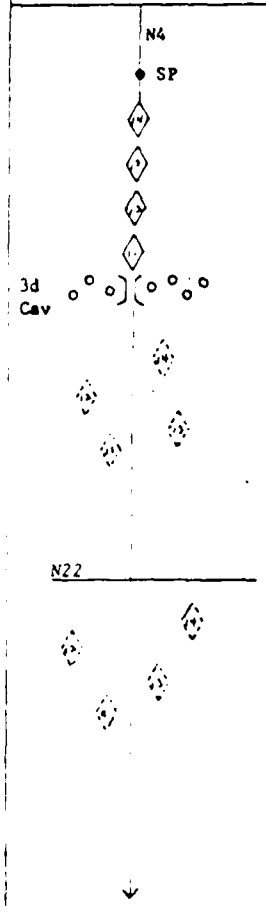
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
Prepare for Operations  Receipt of Movement Order	SITUATION You are TC 12 of Co A, 37th Arm. The company is in a rear assembly area and you have just been alerted by the platoon leader to get your tank ready to move to a forward assembly area. (Student will now complete the tasks listed to the right.)	A1	*Supervise before operations checks and services on an M1 tank. *Perform before operations checks and services on the commander's weapon station (CWS). *Prepare commander's weapon station (CWS) for operation on an M1 tank. *Perform tank commander's preventative maintenance prepare-to-fire checks and services on an M1 tank.	Maintenance Maintenance Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook
	SITUATION CONTINUED The platoon leader issued the following movement order. "Enemy forces in the area are reported to be dismounted stay behind patrols and occasional flights of armed reconnaissance high performance aircraft. Company A moves out of the assembly area, crosses the SP at ____ hours, conducts a tactical road march east of Highway N4, crosses the RP, and occupies an assembly area at this	A2	*Prepare and issue an oral movement order. *Use an automated communications electronics operation instructions (CEOI). *Use the KTC 1400D numerical cipher/ authentication system. *Enter or leave a radio net.	Tactics Communications Communications Communications	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's See Evaluator's Handbook During this activity the evaluator will

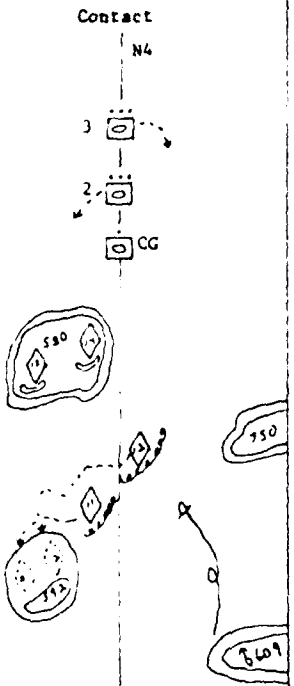
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
 Tactical Road March	point. Movement will be column of platoons, 1st Platoon leading. Movement formation per tac SOP, open column, rate of march ____ KMPH, catch up speed not exceed ____ KMPH. We'll top off in the forward assembly. Current CEOI in effect, listening silence in effect upon crossing SP. My tank will lead the platoon column. Any questions?" (Student will now complete the tasks listed to the right.)				observe the student's ability to perform interactive tasks, e.g., relay platoon leaders movement order to his crew, enter a radio net in proper sequence while applying proper procedures, and respond to net authentication challenge.
	SITUATION CONTINUED The 1st Platoon leads Company A in a tactical roadmarch east on Highway N4. (During the movement the student will execute the tasks listed to the right.	B1	*Conduct a tactical road march. *Maintain position in platoon formation.	Tactics Tactics	See Evaluator's Handbook See Evaluator's Handbook During this activity the evaluator will observe the student's ability to perform interactive tasks,

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					e.g., respond to visual movement and formation signals, maintaining observation and main gun orientation in assigned sector, and relaying visual signals when appropriate.
Occupy Forward Assembly Area 	SITUATION CONTINUED The 1st Platoon crosses the RP and a guide leads the platoon into the assembly area, the platoon leader points to the general area your tank is to occupy. (Student will now complete the tasks listed to the right.)	B2	'Select a firing position. *Enter or leave a radio net. 'Install and operate hot loop wire communications. 'Supervise after operations checks and services on an M1 tank 'Perform after operations checks and services on the commander's weapon station (CWS).	Tactics Communications Communications Maintenance Maintenance	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook During this activity the evaluator will observe the student's ability to

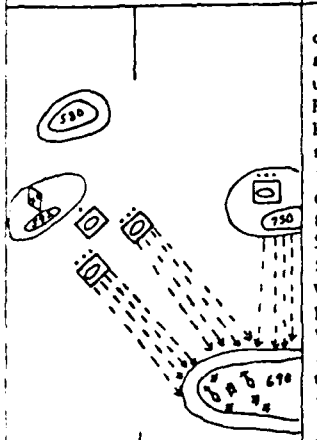
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					perform interactive tasks, e.g., submits status reports, checks interlocking observation with other tanks, provides maintenance assistance to other tanks as requested.
	SITUATION CONTINUED The platoon leader issues the following operation order. "The 327 MRD occupies position east of GREEN River. Mounted recon patrols from that division have been observed operating up to 15 km west of that river. The enemy has also been averaging four, two plane sorties of armed reconnaissance high performance aircraft per day in the area we'll be operating in. Enemy attack helicopters have not been observed. Company B will be moving parallel to us along Hy N6, about 5000 meters to our left. Elements of	B3	*Conduct a map reconnaissance. *Use marginal information on a map. *Analyze terrain using the five military aspects of terrain. *Prepare and issue an oral operation order. *Supervise before operations checks and services on M1 tank. *Perform before operations checks and services on commander's weapon station (CWS) *Perform tank commander's preventative maintenance prepare-to-fire checks and services on an M1 tank	Land Navigation Land Navigation Land Navigation Tactics Maintenance Maintenance Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	3d Cav will cover our right flank. A Company crosses the SP at ____ hours in a column of platoon, passes through the 3d Cav screen, conducts a movement to contact east along Hy N4, secures Hill 609, and supports following units crossing of GREEN River. 1st Platoon will lead the company, column formation from assembly area through cavalry screen, combat column to RJ N4-N22, then wedge formation. Logistics SOP. Current CEOI in effect, red star cluster emergency lifting of supporting fire, radio silence once we cross SP, crossing point recognition panels are orange, remove after passing through cavalry screen. I'll lead initially. Any questions?" (Student will now complete the tasks listed to the right.)		*Enter or leave a radio net.	Communications	See Evaluator's Handbook During this activity the evaluator will observe the student's ability to perform interactive tasks, e.g., coordinate with the platoon leader on visual signals and movement actions during the operation, breaking down wire communications, and entering a radio net in proper sequence using proper procedure.
	SITUATION CONTINUED				
	The first platoon moves out of the assembly area, crosses the SP, passes through the cavalry screen, changes from a platoon column	C1	*Determine location on the ground by terrain association. *Navigate from one point on the ground to another point.	Land Navigation Land Navigation	See Evaluator's Handbook See Evaluator's Handbook

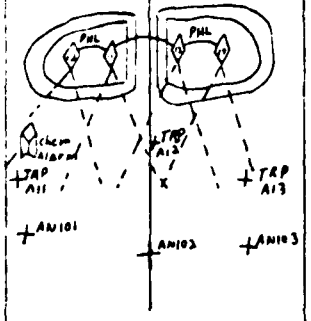
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	formation to a platoon combat column formation, and changes to a platoon wedge formation after crossing RJ N8-N22. (During the movement to contact the student will execute the tasks listed to the right.)		*Analyze terrain using the five military aspects of terrain. *Conduct target acquisition. *Estimate range. *Maintain position in platoon formation. *Select a firing position	Land Navigation Tactics Tactics Tactics Tactics	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook During this activity the evaluator will observe the student's ability to perform interactive tasks, e.g., respond to visual movement and formation signals, maintaining observation and main gun orientation in assigned sector, and relaying visual signals when appropriate.

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	SITUATION CONTINUED Five kilometers short of Hill 609 the platoon leader signals the platoon to change formation to a combat column and to continue the movement by using the bounding overwatch by section, successive bounds, movement technique. 2500 meters short of Hill 609 the lead section, platoon leaders section, is fired upon by an ATGM from Hill 609. The section immediately went to defilade while the platoon sergeant's section engages the ATGM firing position. Upon reaching defilade the platoon leader orders you to call for indirect fire on enemy positions on Hill 609 while he makes an estimate of the situation and reports to the company commander. (During the action on contact the student will execute the tasks listed to the right.)	C2	'Direct evasion of an enemy anti-tank guided missile *Select a firing position. 'Fire an M250 grenade launcher on an M1 tank. *Identify terrain features on a map. 'Orient a map to the ground by terrain association. 'Determine location on the ground by terrain association. 'Determine the azimuth using a protractor and compute back azimuth. *Conduct target acquisition. 'Call for and adjust indirect fire. 'Use automated communicative electronics operations instructions (CEOI). *Estimate range. 'Issue a fire command. 'Direct main gun engagements on an M1 tank.	Tactics Tactics Tank Gunnery Land Navigation Land Navigation Land Navigation Land Navigation Tactics Tactics Communications Tactics Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evalutor's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook. During this activity the evaluator will observe the

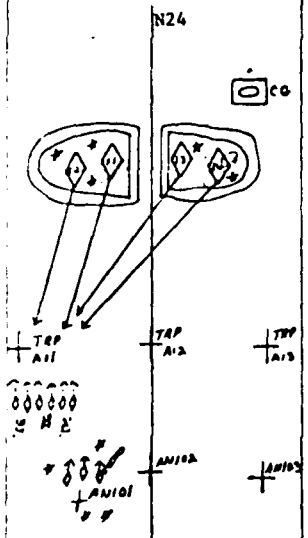
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					student's ability to perform interactive tasks, e.g., respond to ATGM alert, covering platoon leader's movement, popping smoke on order, occupying a defilade position from which he can support the platoon leader, and responding to the order to call for and adjust indirect fire.
↓ Hasty Attack	SITUATION CONTINUED				
	The company commander receives the platoon leader's report that there appears to be three BMPs and at least one T-72 on Hill 901, also the platoon's fire doesn't appear to be very effective because of the long range and the location of enemy targets. The company realizes that Hill 609 is his objective and it must be taken	D1	*Maintain position in platoon formation.	Tactics	See Evaluator's Handbook
			*Navigate from one point on the ground to another point.	Land Navigation	See Evaluator's Handbook
			*Conduct target acquisition.	Tactics	See Evaluator's Handbook
			*Prepare and issue an oral operation order (FRAG ORDER).	Tactics	See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	quickly in order for him to support a hasty river crossing by following units. He orders the FIST to smoke Hill 609, the 3d Platoon to occupy Hill 750 when Hill 609 has been smoked and from Hill 750 to support the company's attack by fire. Next he orders the 2d Platoon to join him to the rear of Hill 580. At Hill 580 the company CO issues the following frag order. "FIST you will place continuous fire on enemy positions on Hill 609. When we are within 500 meters of it lift your fires. 3d Platoon support by fire until our movement masks your guns then orient to the left of Hill 609 to cover our left flank. 1st and 2d Platoons will attack, 1st Platoon is base platoon and on the right. I'll be to the rear of base platoon, Ex O will be on Hill 592, keeping a watch on our right flank. We move out as soon as the artillery hits the objective. Any questions?" The platoon moves out into the attack in a wedge formation and upon receiving direct fire conducts fire and maneuver, upon reaching the assault position the platoon changes to a line formation. (During the hasty attack the student will execute the tasks listed to the right.)		*Select a firing position. *Direct reorganization on the objective. *Issue a fire command. *Direct main gun engagements. *Direct machinegun engagements on an M1 tank.	Tactics Tactics Tank Gunnery Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook During this activity the evaluator will observe the student's ability to perform interactive tasks, e.g., respond to visual movement and formation signals, respond to radio signals, maintain observation and main gun orientation in assigned sector, covering platoon leader movement, conducting fire and maneuver in relationship

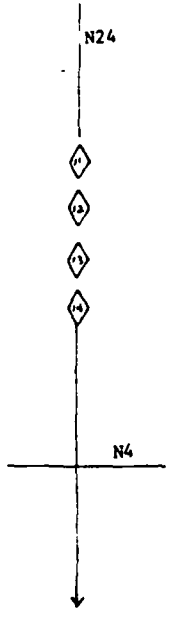
SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					with other platoon element actions, covering assigned area during platoon/fire orders, and covering assigned sector during the assault on the objective.
Move to Blocking Position	SITUATION CONTINUED				
N4	The hasty attack was successful and following forces were successful in establishing a small bridgehead across GREEN River. The platoon leader assembles all tank commanders and issues the following operation order. "An enemy reinforced recon company has crossed *GREEN River fifteen kilometers south* of us. They are five kilometers west of the river and have now turned north along Highway N24. They may become a threat to the task force's right flank and could threat the bridgehead. The company has to remain here for another thirty minutes, until relieved, but we are to move out immediately and set up a	D1	*Determine location on the ground by terrain association.	Land Navigation	See Evaluator's Handbook
N24			*Navigate from one point on the ground to another point.	Land Navigation	See Evaluator's Handbook
			*Analyze terrain using the five military aspects of terrain.	Land Navigation	See Evaluator's Handbook
			*Conduct target acquisition.	Tactics	See Evaluator's Handbook
			*Estimate range	Tactics	See Evaluator's Handbook
			*Maintain position in platoon formation.	Tactics	See Evaluator's Handbook
					During this activity the evaluator will observe the student's

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
 Organization of Blocking Position	blocking position astride Highway N24 at these coordinates. When the rest of the company joins us 2d Platoon goes in on our right and 3d Platoon goes in on our left. When we get there we'll go right into position, my section to the right of the road and PS sector to the left. If time permits we'll completely organize the position. We move out in combat column, traveling technique. Any questions? Mount up." (During the tactical movement the student will execute the tasks listed to the right.)				ability to perform interactive tasks, e.g., respond to visual movement and formation signals, maintaining observation and main gun orientation in assigned sector, and relaying visual signals when appropriate.
N24 	SITUATION CONTINUED The platoon arrives at the blocking position and occupies turret defilade firing positions. The FIST arrives five minutes later and announces that the rest of the company should arrive in thirty minutes. As you are telling the crew what has to be done you notice the loader isn't paying any attention, he looks weak and apparently has a very high temperature. Occasionally he shakes	D2	*Select a firing position. 'Employ a three-man crew. 'Put the automatic chemical alarm system into operation. *Install and operate hot loop wire communications. 'Prepare a sketch range card. *Use marginal information on a map.	Tactics Tank Gunnery NBC Communications Tactics Land Navigation	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
	like he has the chills. You have him lie down in a protected spot and tell him to report to the medic when the company arrives. You continue briefing the crew and then go about your duties in organizing the defensive position. (During the organization of the defensive position the student will execute the tasks listed to the right.)		*Identify terrain features on a map.	Land Navigation	See Evaluator's Handbook
			*Orient a map to the ground by terrain association.	Land Navigation	See Evaluator's Handbook
			*Determine location on the ground by terrain association.	Land Navigation	See Evaluator's Handbook
			*Analyze terrain using the five military aspects of terrain	Land Navigation	See Evaluator's Handbook
			*Conduct target acquisition.	Tactics	See Evaluator's Handbook
			*Estimate range.	Tactics	See Evaluator's Handbook
			*Supervise after operations checks and services on an M1 tank.	Maintenance	See Evaluator's Handbook
			*Perform after operations checks and services on the commander's weapon station (CWS).	Maintenance	See Evaluator's Handbook *During this* activity the evaluator will observe the student's ability to perform interactive tasks, e.g., placing chemical alarm in position IAW PS instruction, installing wire communications, selecting a firing position in relation to tanks to the right and left.

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					developing a sketch range card consistent with the platoon leader's directions, and maintaining surveillance IAW platoon surveillance plan.
Defend Defensive Position  	SITUATION CONTINUED The company arrives at the blocking position and the 2d and 3d Platoons occupies positions to the right and left at the 1st Platoon. At ____ hours leading elements of the enemy reconnaissance company came into view but outside of direct fire range. The platoon leader tells you he is talking to the CO and the PS is working on his turret so you are to request indirect fire using concentration AN 101 as a reference point. Indirect fire destroyed one BMP, damaged another one, and the rest went to defilade. At ____ hours the platoon position was hit by artillery fire consisting of HE, smoke, and chemical agents. At ____ hours six BMPs supported three T-72s	D3	*Conduct target acquisition. *Determine location on the ground by terrain association. *Call for and adjust indirect fire. *Use automated communications electronics communications instructions (CEOI) *Estimate range. *Implement mission oriented protective posture (MOPP). *Use the M256 chemical detection kit. *Prepare and submit NBC-1 report. *Issue a fire command.	Tactics Land Navigation Tactics Communications Tactics NBC NBC NBC Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

SCHEMATIC SCENARIO		WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
		suddenly appeared at 2500 meters in the vicinity of TRP A11. The platoon leader orders all tanks to concentrate fires on targets in the vicinity of TRP A11. The enemy attack was repulsed with five BMPs and two T-72s destroyed. The enemy withdrew south, out of surveillance range. The company lost one M1. (During the defense the student will execute the tasks listed to the right.)		*Engage targets with the main gun from the commander's weapon station (CWS) on an M1 tank.	Tank Gunnery	See Evaluator's Handbook
				*Initiate unmasking procedures.	NBC	See Evaluator's Handbook
				*Prepare a situation report.	Tactics	See Evaluator's Handbook
				*Conduct partial decontamination.	NBC	See Evaluator's Handbook
						During this activity the evaluator will observe the student's ability to perform interactive tasks, e.g., place chemical alarm into position IAW PS instruction, install wire communications, request indirect fire IAW P1 instruction, develop sketch range card consistent with platoon fire plan, follow PL orders on target engagements, provide

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
					surveillance IAW platoon surveillance plan, and submit required reports.
Movement to and Occupation of Rear Assembly Area  	SITUATION CONTINUED The company was refueled and rearmed on the defensive position. At ____ hours the Company CO received word that friendly units to the south had closed upon GREEN River and the company was relieved of its mission and would displace to a rear assembly area. The platoon leader issued the following movement order. "The company moves out in ten minutes to return to a rear assembly area at this location. Order of march 3d Platoon, 1st Platoon, 2d Platoon. 3d and 2d Platoons will move in combat column, we'll move in column. Route of march is north on Highway N4 to the assembly area. Any questions? Mount up." (During the	E1	*Prepare and issue an oral movement order. *Conduct a tactical road march. *Maintain position in platoon formation. *Determine location on the ground by terrain association. *Conduct target acquisition. *Occupy a firing position. *Enter or leave a radio net. *Use the KTC 1400D numerical cipher/ authentication system. *Supervise after operations checks and services on an M1 tank.	Tactics Tactics Tactics Land Navigation Tactics Tactics Communications Communications Maintenance	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook

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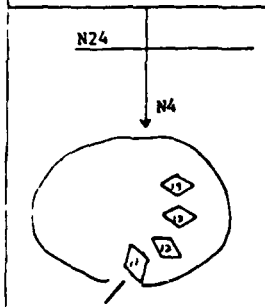	preparation to move, the movement, and occupation of the rear assembly the student will execute tasks listed to the right.)		*Perform after operations checks and services on the commander's weapon station (CWS). *Perform tank commander's preventative maintenance after firing checks and services on an M1 tank. *Secure commander's weapon station (CWS) on an M1 tank.	Maintenance Tank Gunnery Tank Gunnery	See Evaluator's Handbook See Evaluator's Handbook See Evaluator's Handbook During this activity the evaluator will observe the student's ability to perform interactive tasks, e.g., relay platoon leader's movement order to his crew, respond to visual movement and formation signals, maintain observation and main gun orientation in assigned sector, relay visual signals when appropriate, and

SCHEMATIC SCENARIO	WRITTEN SCENARIO	ACTIVITY NUMBER	TASK PERFORMED	TASK CLUSTER	COMMENTS
			*Duplicated task.		occupy rear assembly area IAW platoon occupation plan.

APPENDIX M
TIME REQUIRED TO TRAIN TASKS IN PROPOSED BNCOC

Tasks/Activities	Hours
PRE-COURSE DIAGNOSTIC TESTS	
1. Determine the Grid Coordinates of a Point on a Military Map Using the Military Grid Reference System	.5
2. Clear an M240 Machinegun to Prevent Accidental Discharge on an M1 Tank	.5
3. Clear a Caliber .50 M2 HB Machinegun to Prevent Accidental Discharge	.5
4. Prepare Gunner's Station for Operation on an M1 Tank	.5
5. Load/Unload the 105mm Main Gun on an M1 Tank (Subtask)	.5
6. Apply Gunner's Misfire Procedures on an M1 Tank (Subtask)	.5
7. Apply Loader's Misfire Procedures on the 105mm Gun (Subtask)	.5
8. Engage Targets Using Precision Fire Technique with the Telescope (Subtask)	.5
9. Engage Targets Using Battlesight Fire Technique (Subtask)	.5
10. Adjust Fire from Subsequent Fire Commands (Subtask)	.5
11-15. Five Tasks Selected Randomly from Among Those Requiring Pre-Course Student Certification	3.0
	8.0
LEADERSHIP	
*1. The NCO Leader Model	2.0
*2. Duties and Responsibilities of an NCO	2.0
3. Conduct Performance Counseling with a Subordinate	4.0
*4. Prepare Rater's Section of an Enlisted Evaluation Report (DA FORM 2166-6)	2.0
*5. Receive and Orient Newly Assigned Personnel	2.0
*6. The Principles of Problem Solving, Decision Making, and Effect Interaction	2.0
7. The Law of Land Warfare/SAEDA Orientation	2.0
8. Identifying and Managing Alcohol and Drug Abuse Problems	1.0
9. Equal Opportunity	1.0
*10. Conduct Search in Accordance with the Uniform Code of Military Justice	2.0
	20.0

Tasks/Activities	Hours
LEADERSHIP REACTION COURSE	4.0
TRAINING PROCEDURES	
*1. Provide Input Concerning the Status of Training	6.0
*2. Prepare to Conduct Training	6.0
3. Conduct Training	6.0
*4. Evaluate the Conduct of Training	6.0
5. Training Devices	12.0
6. Physical Fitness Instruction	4.0
	40.0
NBC	
*1. Install/Remove the Automatic Chemical Alarm System	2.0
2. Implement Mission Oriented Protective Posture (MOPP)	2.0
*3. Use M256 Chemical Detection Kit	2.0
4. Prepare/Submit NBC-1 Report	2.0
*5. Conduct Partial Decontamination	2.0
*6. Initiate Unmasking Procedures	2.0
*7. Use IM-174 Radiacmeter	2.0
*8. Read/Report Radiation Dosages	2.0
*9. Prepare and Submit NBC-4 Report	2.0
*10. Prepare for an NBC Attack	2.0
	20.0
MINE WARFARE	
*1. Install a Hasty Protective Minefield	2.0
*2. Remove a Hasty Protective Minefield	2.0
	4.0
COMMUNICATIONS	
1. Enter or Leave a Radio Net	2.0
2. Use KTC 1400D Numerical Cipher/Authentication Code	2.0
3. Encode/Decode Messages Using KTC 600D Tactical Operations Code	2.0
4. Use Automated Communication-Electronics Operation Instructions (CEOI)	2.0
*5. Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM)	4.0
*6. Install/Operate Hot Loop Wire Communications	4.0
	16.0
LAND NAVIGATION	
1. Use Marginal Information on a Map	2.0
*2. Identify Adjoining Map Sheets	2.0

Tasks/Activities		Hours
3.	Identify Terrain Features (Natural and Man Made) on a Map	2.0
4.	Orient a Map on the Ground by Map Terrain Association	2.0
*5.	Orient a Map Using a Compass	2.0
*6.	Locate an Unknown Point an a Map or on the Ground by Intersection	2.0
*7.	Locate an Unknown Point on a Map or on the Ground by Resection	2.0
*8.	Determine Azimuth Using a Protractor and Compute a Back Azimuth	2.0
*9.	Determine a Magnetic Azimuth Using a Compass	2.0
10.	Determine a Location on the Ground by Terrain Association	4.0
11.	Navigate from One Point on the Ground to Another Point	4.0
*12.	Analyze Terrain Using the Five Military Aspects of Terrain	2.0
13.	Conduct a Map Reconnaissance	4.0
		32.0
LAND NAVIGATION PATHFINDER COURSE		8.0
MAINTENANCE		
*1.	Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Maintenance Environment	2.0
2.	Supervise Before Operations Checks and Services on an M1 Tank	2.0
3.	Supervise After Operations Checks and Services on an M1 Tank	2.0
4.	Perform Before Operations Checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank	4.0
5.	Perform After Operations Checks and Services on the Commander's Weapon Station (CWS) of an M1 Tank	4.0
*6.	Supervise Maintenance on Individual and TO&E Equipment	2.0
		16.0
TANK GUNNERY		
*1.	Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tank Gunnery Environment	2.0
2.	Install/Remove a Caliber .50 M2 HB Machinegun on an M1 Tank	2.0
3.	Set Headspace and Timing on a Caliber .50 M2 HB Machinegun	2.0
4.	Boresight a Caliber .50 M2 HB Machinegun on an M2 Tank	4.0
5.	Zero a Caliber .50 M2 HB Machinegun on an M1 Tank	2.0
6.	Prepare Commander's Weapon Station (CWS) for Operation on an M1 Tank	4.0

Tasks/Activities		Hours
7.	Perform Tank Commander's Preventative Maintenance Prepare-to-Fire Checks and Services on an M1 Tank	4.0
8.	Direct and Supervise the Zeroing of the Coax Machinegun on an M1 Tank	2.0
9.	Boresight and System Calibrate an M1 Tank	6.0
10.	Issue a Fire Command	8.0
11.	Engage Targets with the Caliber .50 M2 HB Machinegun on an M1 Tank	2.0
12.	Direct Machinegun Engagements on an M1 Tank	2.0
13.	Direct Main Gun Engagements on an M1 Tank	4.0
14.	Engage Targets with the M240 Coax Machinegun from the Commander's Weapon Station (CWS) on an M1 Tank	2.0
15.	Engage Targets with the Main Gun from the Commander's Weapon Station (CWS) on an M1 Tank	4.0
16.	Fire an M250 Grenade Launcher on an M1 Tank	2.0
*17.	Employ a Three-Man Crew	4.0
18.	Perform Tank Commander's Preventative Maintenance After Firing Checks and Services on an M2 Tank	4.0
19.	Secure Commander's Weapon Station (CWS) on an M1 Tank	4.0
		64.0
COUNTRY FAIR		8.0
TACTICS		
*1.	Procedures of Problem Solving, Decision Making, and Interactive Tasks in a Tactical Environment	2.0
2.	Conduct Target Acquisition	8.0
3.	Estimate Range	6.0
*4.	Call for and Adjust Indirect Fire	4.0
*5.	Prepare and Issue an Oral Operation Order	4.0
*6.	Conduct a Tactical Road March	4.0
*7.	Maintain Position in Platoon Formation	2.0
8.	Direct Evasion of an Enemy Anti-Tank Guided Missile	2.0
9.	Select a Firing Position	4.0
*10.	Direct Reorganization on the Objective	4.0
*11.	Prepare a Situation Report (SITREP)	4.0
*12.	Prepare a Sketch Range Card	4.0
*13.	Prepare/Submit Standard Shelling, Mortaring, and Bomb Report	4.0
		52.0
SINGLE TANK TACTICAL EXERCISE		16.0
INTRA-PLATOON TACTICAL EXERCISE		32.0
END OF COURSE COMPREHENSIVE EXAM		8.0

*Tasks/activities that would be eliminated in the six-week course.