Research Note 84-84

ARMOR TRAINING IN COMBAT UNITS
FINAL REPORT
VOLUME 2: TRAINING PRODUCTS

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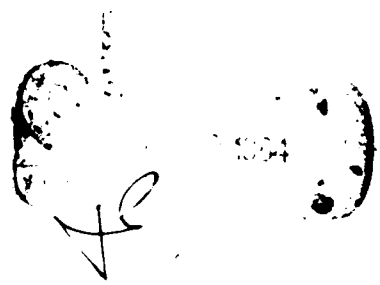

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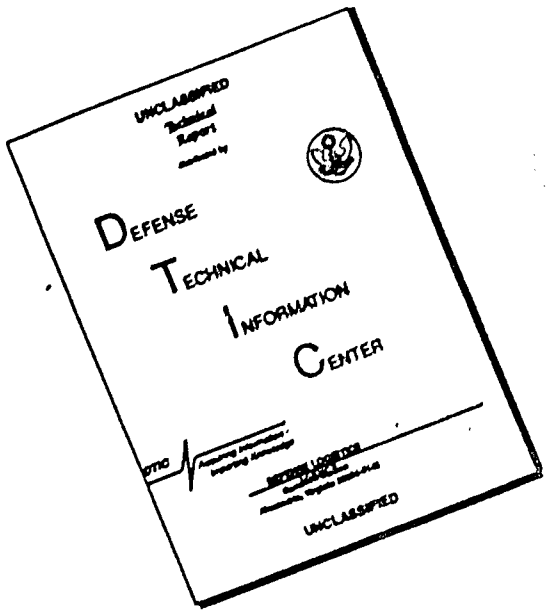

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Methods were developed to select and prioritize armor crew tasks, and to define the scope, content, and methods to employ in armor crew individual training. These methods were applied to the duties and tasks of M60A3 tank commanders and gunners. Methods, results, and products of this project were the task selection methodology, lists of M60A3 tank commander and gunner tasks selected, task prioritization methodology, prioritized lists of tank

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20. ABSTRACT (Continued):

commander and gunner tasks, training definition methodology, 46 training modules, and Trainer's and Training Manager's Guides.

The task selection methodology is a 13-step top-down, mission-oriented approach that permits the training developer to select tasks systematically for coverage in unit-level individual training. Its effectiveness is limited by the quality of the source documents used and the expertise of the training developer.

Two task prioritization methodologies were developed. Method One is the most objective and reliable, but also the most time- and labor-intensive. It relies primarily on questionnaire data and enables objective, rule-based prioritization. Method Two relies primarily on subject-mater-expert (SME) judgments and is less time- and labor-intensive than the first method, but is also less objective and reliable.

The training definition methodology reflects the instructional system development (ISD) model, performance-oriented training, and the findings of research in training and cognition. It permits the training developer to define the scope, content, and training methods for unit-level individual training on the selected tasks.

44, 64, 202, 204, 206, 208
215, 226, 228, 232, 242,
244 + 246

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FOREWORD

This is Volume 2 of the two-volume final report covering work concerning the development of methodologies for armor crew task selection, task prioritization, and training definition. Volume 1 describes these methodologies and their development. Volume 2 contains a set of training modules and training guides that were developed by applying these methodologies to a specific set of armor crewmen tasks.

The work described in these two volumes was performed under contract MDA 903-82-C-0380, for research entitled "Armor Training in Combat Units." The overall objective of this research was to develop and demonstrate methods to select and prioritize armor crew tasks, and to define the scope, content, and methods to employ in training packages that could be used to train armor crew personnel in their crew position, cross-train them for other crew positions, and prepare crewmen for combat after mobilization.

During this project, work proceeded on several fronts, and a wide range of project tasks was performed. This work progressed in stages, with a close interaction with the sponsor. Several reports and technical memoranda were submitted, and a variety of training products was developed. This report contains the training products that were developed during the second half of the project. These consist of a set of training modules designed for use in training tank commanders and gunners, a Trainer's Guide that provides the trainer with "how to train" information, and a Training Manager's guide that tells the platoon leader how to manage training with the modules.

EXECUTIVE SUMMARY

Research Requirement:

To develop and demonstrate methods to select and prioritize armor crew tasks, and to define the scope, content, and methods to employ in training packages that could be used to train armor crew personnel in their crew position, cross-train them for other crew positions, and prepare crewmen for combat after mobilization.

Procedure:

Work performed on this project consisted of four major tasks:

- Develop a methodology to select tasks for coverage in unit-level training
- Develop methodologies to prioritize tasks and determine appropriate training order
- Develop a methodology to define training based on tasks--develop training management plans and training products to use during training delivery
- Apply task selection, prioritization, and training definition methodologies the duties and tasks of M60A3 tank commanders and gunners

Findings:

Methods were developed to select and prioritize armor crew tasks, and to define the scope, content, and methods to employ in armor crew individual training. These methods were applied to the duties and tasks of M60A3 tank commanders and gunners. Methods, results, and products of this project are as follows:

- Task selection methodology
- Lists of M60A3 tank commander and gunner individual tasks selected by applying the task selection methodology.
- Task prioritization methodology
- Prioritized lists of M60A3 tank commander and gunner individual tasks
- Training definition methodology
- Forty-six training modules for use by training supervisors in conducting M60A3 tank commander and gunner training
- Trainer's and Training Manager's Guides for use by unit-level personnel in conducting and managing individual training with the modules

Key objectives in developing both the task selection and prioritization methodologies were to develop methodologies that were (1) objective and reliable, and (2) capable of being employed by Army training developers.

The task selection methodology derives from the top-down, mission-oriented training approach described in ARTEP 71-2. It is based primarily on Army documentation, particularly the Soldier's Manual (SM). It consists of a 13-step procedure that permits the training developer to select tasks systematically for coverage in unit-level individual training. The method's effectiveness is limited by the quality of the source documents used and the expertise of the training developer. Informal validation has shown the methodology to be effective and reasonably objective and reliable for methods of this type, i.e., analytical methods that rely on the judgments of subject matter experts (SME).

Two task prioritization methodologies were developed. Method One is the most objective and reliable, but also the most time- and labor-intensive. To employ it, the training developer must create three questionnaires, administer them, collect and analyze data, develop task dependency networks, and then derive training orders. The first two questionnaires must be administered to approximately 50 subjects and the last to about 15. Total SME time to complete the questionnaires is approximately 130 man-hours. This methodology produces objective and reliable results. Computerization could considerably reduce the amount of analysis required, but additional research and development would be required to create the necessary programs.

Prioritization Method Two employs two questionnaires instead of three--for a total SME time of approximately 100 man-hours--and relies primarily on SME judgments for performing prioritization. This methodology is less time- and labor-intensive than Method One, but is also less objective and reliable.

The training definition methodology is based primarily on the instructional system development (ISD) model, but also incorporates elements of the Army's performance-oriented training approach and of the findings reported in the research literature in training and cognition. It permits the training developer to start with a task analysis and to define systematically the scope and content of a training program for unit-level individual training. The methodology provides the training developer with guidance in determining unit-level training constraints, identifying training resources, selecting appropriate learning activities and resources, and planning the training products for use in training delivery. The training definition methodology was applied within the context of M60A3 armor units and to the duties and tasks of tank commanders and gunners. Training guides and modules were developed to support training on 11 tank commander and 12 gunner individual tasks.

Utilization of Findings:

This report contains the training products that were developed during the second half of the project. These consist of a set of training modules and guides for training tank commanders and gunners. These products may be useful as models for use by researchers or training developers, or to form the core of a unit-level training program for tank commanders and gunners.

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INTRODUCTION

In recent years, the Army's unit training problems have been well publicized and have been the subject of much discussion. Though the Army has always had training problems, those at the unit level today are unique. They stem from Army policy changes of the mid-1970s to transfer a large part of the training responsibility from formal schools to operational units. This placed new burdens on unit personnel who, in many cases, already felt overwhelmed by the responsibilities of fulfilling their operational mission in an austere economic environment.

The One-Station Unit Training (OSUT) received by a new tank crewman prior to assignment to a unit trains him to perform effectively on only a small percentage of his duty tasks. Army policy is to give limited formal training before assigning personnel to units. Units must therefore develop and implement technical training programs for their personnel as best they can. Most of this training must be done by first-line supervisors--platoon sergeants and tank commanders. These personnel are the key to unit-level training. Unfortunately, many of these supervisors lack both the technical and training skills necessary to be effective trainers. Effective training at unit level also requires careful management to assure that training time is allocated and that this time is used effectively. This management responsibility falls upon platoon leaders, who generally lack the experience necessary to manage training effectively.

Many units are short of experienced NCOs, and there is a rapid rate of turnover of those who are available. These problems may be especially severe with new armor systems such as the M60A3 and M1. Since these systems are new, many NCOs have little experience with them, making their jobs as trainers that much more difficult.

First-line supervisors who want to train their subordinates face several obstacles. One of the first is to decide what to cover during training. The logical place for the supervisor to find out is the Soldier's Manual (SM). By Army doctrine, the SM is the central document around which skill training revolves. It describes the task, conditions, and standards for each task that a soldier at a given skill level, in a particular MOS, is responsible for performing. The SM has not been as effective as it could be for a number of reasons. One of these is that the list of tasks it contains is incomplete. Many tasks which soldiers must perform are left out because they are not critical for the MOS. Even with its omissions, the SM contains an enormous number of tasks, and these are listed without assigned priorities for training. The tank commander, platoon sergeant, or platoon leader--picking up the SM and attempting to decide where to start--gets no help from the SM. In it, all tasks have the same priority. The task omissions and lack of prioritization pose serious problems. Since each unit is, in effect, required to develop its own training plan, it must interpret the SM, select the tasks, and attach priorities to them. Doing this is no easy matter. It is highly improbable that any two units would come up with the same training plan.

In summary, the unit training environment is not promising for effective individual training. The supervisors responsible for conducting training are not equipped to do so, and the training materials available to them are limited. Morever, the unit leaders responsible for planning, managing, and overseeing this training lack the necessary skills. What is basically needed is a "turn-key" training

system that can be taken to armor units and put to use. This system would perform all of the following functions:

- Identify the tasks to cover in training.
- Prioritize them in terms of importance, and identify an appropriate training order.
- Provide ready-to-use training packages that unit trainers can take off the shelf and use to conduct training.
- Provide management plans that unit leaders can use to plan, manage, and oversee training.

This project was designed to develop the methodologies to perform these four tasks, and to apply these methodologies in armor units equipped with the M60A3 tank.

Research Objectives

The overall objective of the research was to develop and demonstrate methods to select and prioritize armor crew tasks, and to develop training modules that could be used at unit level to train armor crew personnel in their crew position, cross-train them for other crew positions, and prepare crewmen for combat after mobilization. The project focused on the individual tasks of tank commanders and gunners in armor battalions equipped with the M60A3 tank.

Project Overview

The technical approach for the project was divided among four major tasks. The relationships among these tasks are shown in Figure 1. Tasks 1, 2, and 3 involve the development of a methodology for task selection, prioritization, and training definition. In task 4, these methodologies were applied to the development of training products for training M60A3 armor crewmen.

This report describes each of the first three project tasks, in separate sections. Project Task Four (Apply Methodology to M60A3 System) is discussed within each of the first three sections as it applies to task selection, prioritization, or training definition, respectively.

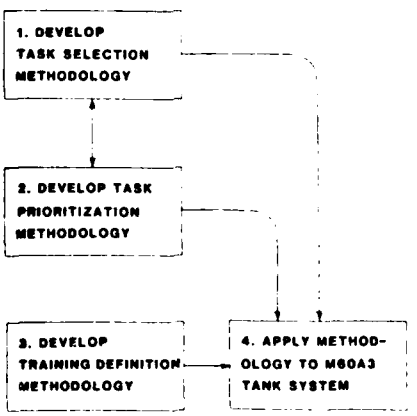


Figure 1. Project tasks.

DEVELOPMENT OF TRAINING PRODUCTS

Introduction

This section describes the format and content of the three types of training products developed during the project. These training products are:

- Training Modules
- Trainer's Guide
- Training Manager's Guide

Training modules were developed for use by the trainer both to prepare for conducting training and to use as a training prescription--telling how to train and what to cover--during training delivery. A trainer's guide was developed to explain the trainer's role, the content and use of the training modules, and to give general "how to train" guidance. A training manager's guide was prepared for training managers (i.e., platoon leaders) to explain their role in training, describe the training modules, and provide guidance for training management and evaluation.

These training products were developed in an iterative fashion, and with much interaction between personnel at Anacapa and ARI. The general content requirements for these products were determined quite early in the project, and were described fairly accurately in the technical proposal. As work proceeded, these requirements evolved, and prototype training products were developed. All training products were first submitted as drafts, reviewed by ARI, revised, reviewed again, and so on.

The format and content of the most current versions of each of the training products are described below.

Training Modules

Training modules were prepared for training both tank commanders and gunners. The platoon sergeant uses tank commander modules to train personnel for the tank commander crew position. Tank commanders use gunner modules to train their crew members as gunners. The format of tank commander and gunner modules is identical. Each module covers a specific task. Tank commander tasks covered are listed in Table 1. Gunner tasks covered are listed in Table 2.

There are two modules for each task. One is a "short" module and the other is a "long" module. Each short module consists of a single card (about $4\frac{1}{4}$" x $6\frac{1}{2}$"). Long modules are usually three or four pages long, arranged in a booklet with a hinge at the top. The first and last page of each long module duplicate the content of a short module. However, the middle pages contain additional technical and how-to-train information. The following discussion describes a long module. The modules developed during the project are contained in the next section of this report.

The first page of each training module contains identification and training preparation information at the top, and a training plan at the bottom. Consider first the box at the top.

CREW POSITION: GUNNER	**TRAINING MODULE NO.** 4
TASK: ENGAGE STATIONARY TARGETS WITH THE MAIN GUN USING PRECISION GUNNERY	
PREREQUISITE TASKS: GUNNER MODULES NO. 1 AND 3	
TRAINING REFERENCES: FM 17-12-3; SM 171-129-1020; TC 17-15-13, TEC 020-171-F360 E,F	
SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M65 LASER (OPTIONAL); 5 TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES.	

CREW POSITION tells whom the module is for, i.e., gunner or tank commander.

TASK is the task that the module covers. It will be one of the tasks listed in either Table 1 or 2.

PREREQUISITE TASKS are the modules that should be completed before the current module.

TRAINING REFERENCES are references with information that will help the trainer prepare to train with the module.

SUPPORT REQUIREMENTS are the equipment, materials, ranges, and so forth required for conducting training. Some of these are optional and others are required. Optional items will make training more effective, but they are not always available. Training can be conducted without them, if necessary.

The bottom of the module contains the training plan. This plan describes the decisions and procedures involved in conducting training. The top of this plan consists of a decision-action diagram.

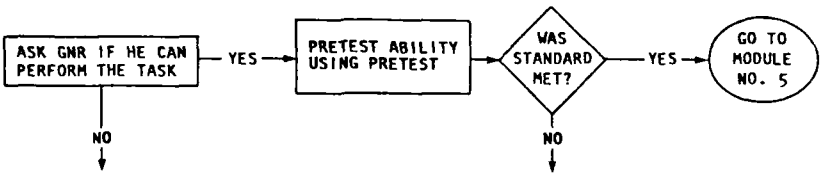


TABLE 1

TANK COMMANDER TASKS COVERED IN TRAINING MODULES

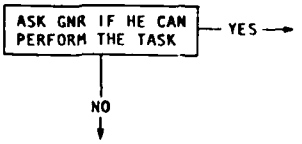
Module No.	Task
1	Prepare station and conduct LRF self-test.
2	Boresight a caliber .50 M85 machinegun.
3	Issue fire commands.
4	Respond to multiple LRF returns.
5	Direct main gun engagement in normal mode.
6	Engage stationary targets from TC's station using precision gunnery.
7	Engage moving targets from TC's station using auto-lead.
8	Issue subsequent fire command.
9	Engage targets with M85.
10	Direct main gun engagement using range card data.
11	Power down and secure TC station.

TABLE 2

GUNNER TASKS COVERED IN TRAINING MODULES

Module No.	Task
1	Prepare gunner's station for operation and conduct computer self-test.
2	Boresight.
3	Basic gunnery skills: aiming, tracking, ranging, firing.
4	Engage stationary targets with main gun using precision gunnery.
5	Engage moving targets with main gun using precision
6	Engage stationary targets with M105D telescope (degraded).
7	Engage moving targets with M105D telescope (degraded).
8	Adjust main gun fire.
9	Perform main gun misfire procedures.
10	Operate M28E2 azimuth indicator.
11	Operate gunner's quadrant.
12	Power down and secure gunner's station.

The words in the top left box say, ASK GUNNER (OR TANK COMMANDER) IF HE CAN PERFORM THE TASK.



The trainer asks the soldier this question before starting training. What the trainer does next depends upon the soldier's answer. If the soldier answers "no," then the trainer follows the arrow that goes straight down, to a box labeled **EXPLAIN.** If the soldier answers "yes," the trainer follows the arrow to the box to the right, which directs him to PRETEST ABILITY USING PRETEST FORM.

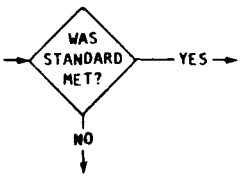
The pretest is on the back of the first page of the module. There are three blocks of information on the pretest: (1) objectives, (2) guidelines, and (3) pretest form. The objectives are the objectives of the pretest. These define the purpose of the pretest and give the performance standard. The trainer states these to the soldier before conducting the pretest. Guidelines are general directions for conducting the pretest. They describe procedures to follow during testing. The pretest form is the actual test. This test is based on the task that is being covered during training. It requires the soldier to demonstrate the basic skills and knowledge required to perform the task. The pretest form has three columns, as shown below.

PRETEST FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GNR-SABOT-TANK," lay the main gun, start the stopwatch.	1. Set fire control switches. Locate target and get into TTS.		

The left column contains directions for the trainer. The middle column tells what the soldier should do. The right column contains GO/NO GO boxes. The directions tell the trainer what to do at each step. The trainer works his way through the pretest, step by step. He assesses the soldier's performance on each step, giving him a GO or NO GO and marking it in the right column.

After the pretest, the trainer determines whether or not the soldier met the standard and makes a decision (see decision diamond). He then takes the appropriate path, based on the soldier's performance. The trainer follows the arrow that corresponds to the answer to the question WAS STANDARD MET?

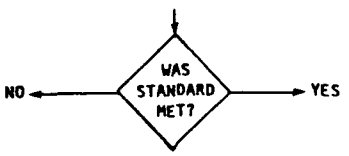


If the answer is "no" (standard not met), he follows the arrow for "no" straight down to box labeled **EXPLAIN.** If the answer is "yes," he follows the arrow to the right to the oval box with words directing him to the next module (i.e., the soldier does not have to receive training on the current module, and the trainer can proceed to a more advanced module).

Typically, the trainer will proceed with the training exercise in the current module. This exercise is contained in the four boxes labeled EXPLAIN, DEMONSTRATE, SUPERVISE PRACTICE, and EVALUATE. To conduct the exercise, the trainer follows the direction in each box, in turn.

He starts with the EXPLAIN box. This requires him to describe in words each step in the particular task. Next, he goes to the DEMONSTRATE box. This lists the points to cover during the demonstration. Additional information on the demonstration will be contained within long modules. After completing the demonstration, the supervisor continues to the SUPERVISE PRACTICE box. This gives instructions for supervision. Additional information will be contained within long modules. Finally, the supervisor moves to the EVALUATE box. This refers him to the PRACTICE/EVALUATION form on the last page of the module. This form is similar to the pretest form and is used in the same way. It lists each step in the procedure, and requires the supervisor to evaluate the soldier's performance and keep track of GOs and NO GOs.

At the conclusion of this process, the trainer must decide whether or not the soldier met the standard (see decision diamond at bottom), and take the appropriate action.



If the standard was met, then training is over. If not, then the soldier is given additional practice, and his performance is evaluated again. This cycle continues until the soldier meets the performance standard.

Individual modules differ in content, but all have the form just described, and all are used in the same way.

Trainer's Guide

The training concept developed during this project placed heavy emphasis on training modules. As described above, these modules were to be used both for training preparation by the trainer and during the actual delivery of training. A basic requirement of these modules was that they had to be concise and compact. This meant that they could only include the essentials. If training were to be conducted by more sophisticated trainers, in a more congenial context (e.g., a school), then the training modules might have taken on a more elaborate form. However, the form they did take meant that compromises had to be made, and certain information left out.

The Trainer's Guide was developed to fill in this missing information. More specifically, the Trainer's Guide was designed to provide information on the following topics:

- A description of the training program in which the modules were to be used.
- The trainer's role in training.
- An explanation of the training modules--what tasks they covered, differences between short and long modules, module organization.
- How to conduct training--who must be trained, what to train them on, where to train them, and when to train.
- How to train--trainer preparation, how to conduct a training session, evaluation of soldier performance

Consistent with the general guidelines followed when developing the training modules, the Trainer's Guide was written as concisely as possible. The guide totals 26 pages. It is written in a simple, clear style, addresses the reader in the second person singular, and provides explicit directions for performing specific training activities, i.e., is directive in nature rather than providing general guidelines that can be broadly interpreted. Also like the training modules, the Trainers' Guide was prepared in compact form for convenient storage and transport.

Training Manager's Guide

The Training Manager's Guide fills for the training manager (i.e., platoon leader) the same role that the Trainer's Guide does for the trainer. It provides the information the training manager needs in order to manage and evaluate training efficiently. This is information that would be out of place in training modules or in the Trainer's Guide.

The Training Manager's Guide is similar in certain respects to the Trainer's Guide. It is concise and compact (15 pages long), written in a simple and clear

style, and is explicit and directive in nature. This guide was designed to provide information on the following topics:

- A description of the training program in which the training modules were to be used.
- The training manager's role in managing and evaluating training.
- Description of tasks covered by training modules.
- Description of a module and the correct way of using it during training.
- Training procedures--who to train, what to train, when to train, and where to train.
- Training management procedures--planning training, controlling training, evaluating training.

TRAINING MODULES

This section contains the training modules developed during the project. Two types of training modules—long and short—were developed for each of 11 tank commander and 12 gunner tasks. Tasks covered are shown in Tables 1 (tank commander tasks) and 2 (gunner tasks).

In this section, modules for tank commander tasks are presented first, followed by those for gunner tasks. Within each of these subsections, long modules are presented first, followed by short modules.

Note that the modules are presented in this report in the form of $8\frac{1}{2}$ by 11 inch pages. When reproduced for actual use, their dimensions are $4\frac{1}{2}$ by $6\frac{1}{2}$ inches and they are prepared in the form of small booklets with a hinge at the top.

TCL 1

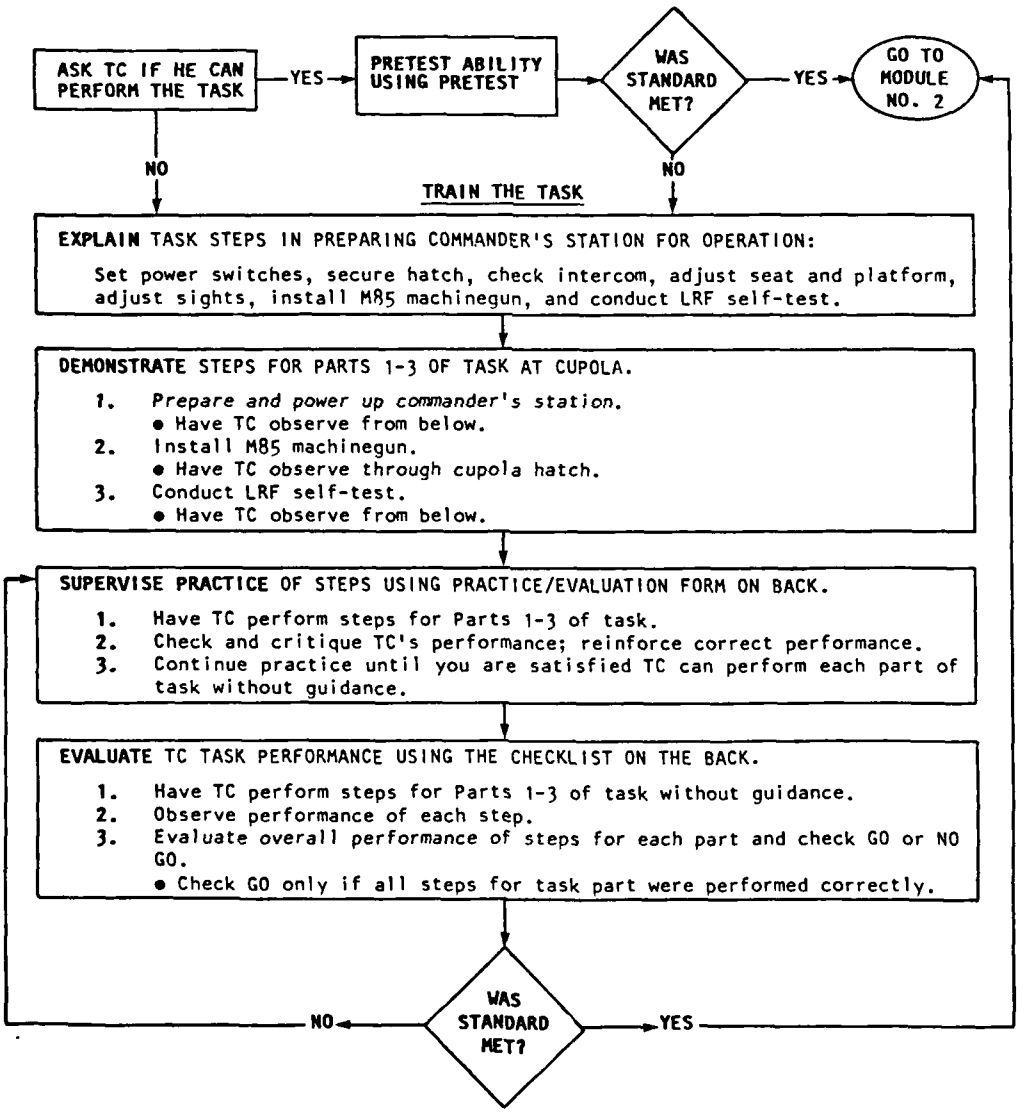
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 1**

TASK: PREPARE STATION, INSTALL M85 MACHINEGUN AND CONDUCT LRF SELF-TEST

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform the tasks of preparing the commander's station and conducting the LRF self-test.

GUIDELINES

STEP 1: ASK THE TC IF HE CAN ALREADY PERFORM PROCEDURES FOR PREPARING THE STATION AND CONDUCTING THE LRF SELF-TEST.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: EVALUATE TC'S PERFORMANCE AND MARK THE GO OR NO GO BOX FOR STEPS 1-3 OF THE PRETEST.

- If performance is correct, then continue with another module or have the TC assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATE.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Ask the TC to prepare and power up the commander's station.	1. Prepare and power up the commander's station. • Set switches • Secure hatch • Check intercom • Adjust seat and platform • Adjust TTS and M36E1 sights		
Ask the TC to install the M85 machinegun.	2. Install M85 machinegun.		
Ask the TC to make initial switch settings and checks for the LRF self-test. MODE to TEST MASTER BATTERY to ON POWER to ON	3. Make initial switch settings for LRF self-test. Check indicators.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required in order to prepare the commander's station and perform the LRF self-test.
- To give the TC a chance to watch how this task is performed by an expert.

GUIDELINES

- Demonstrate each step separately: preparing and powering up the TC's station, installing the M85 machinegun, and conducting the LRF self-test.
- Make sure that the TC is positioned where he can see you perform each subtask.
- Follow each demonstration of a subtask by allowing the TC to try the subtask and to ask questions.
- Repeat demonstrations of subtasks as needed.

STEP 1: DEMONSTRATE HOW TO PREPARE AND POWER UP THE COMMANDER'S STATION.

- Have TC observe from below.
- Secure the commander's hatch in the open position.
- Have the driver set the MASTER BATTERY switch to ON.
- Set the CUPOLA POWER switch to ON.
- Turn on the dome light.
- Set the MAIN PWR switch on the AM-1780 to ON and check the function of the intercom system within the vehicle.
- Explain that this is the point in the sequence when the caliber .50 M85 machinegun should be installed.
- Adjust the commander's seat and platform.
- Adjust the commander's display of the TTS for operation.
- Prepare the commander's M36E1 periscope for operation.
- Prepare the LRF for operation.
- Explain that the last step in this sequence is to conduct the LRF self-test.

STEP 2: DEMONSTRATE HOW TO INSTALL THE M85 MACHINEGUN.

- Have TC observe through cupola hatch.
- Clear the machinegun if necessary.
- Remove the rear mounting pin.
- Elevate the machinegun cradle.
- Slide the machinegun in the cradle.
- Secure the gun in the cradle with the rear mounting pin.
- Connect the solenoid lead connector to the end plate.
- If fixed feed chute is aligned with machinegun feedway, then open cradle access door.
- If chamber is empty, then put machinegun safety on F.
- Pull back and hold charger handle.
- Pull manual trigger handle.
- Slowly release bolt forward.
- Close machinegun cover.
- Close cradle access cover.

STEP 3: DEMONSTRATE HOW TO PERFORM LRF SELF-TEST.

- Have TC observe from below.
- Make initial switch settings and check indicators and displays.
- Adjust DIM LIGHTS TEST out of the TEST position.
- Continue switch settings and checks.
- Perform each step in LRF Logic Test (Table 2-1 Operator's Manual).
- Perform LRF Firing Test (if authorized lasing area is available.)

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the TC understands the correct decisions and steps for successfully preparing the commander's station and conducting the LRF self-test.
- To let the TC develop and fine-tune task skills at his own pace.

GUIDELINES

- Position yourself and the TC such that you can observe his performance on each part of the task.
- Check and critique TC's performance; reinforce correct performance.
- Continue practice until you are satisfied that TC can perform each part of task without guidance.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Have the TC demonstrate preparing and powering up the commander's station.
- Have the TC demonstrate installing the caliber .50 M85 machinegun.
- Have the TC conduct the LRF self-test.

STEP 2: HAVE THE TC PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation form.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE TC PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation form.
- Have the gunner perform each step in succession.
- At the end of the task performance give the gunner feedback on each step and the task as a whole:
  -- correct faulty performance of individual steps
  -- reinforce good performance of individual steps
  -- report speed and success of the entire task
- Continue practice until TC is able to successfully prepare the commander's station and conduct the LRF self-test without guidance and within a satisfactory period of time.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The TC will be able to correctly carry out performance steps and decisions for preparing the commander's station and conducting the LRF self-test without guidance.

GUIDELINES

STEP 1: HAVE THE TC PERFORM PARTS 1-3 WITHOUT GUIDANCE.

STEP 2: OBSERVE AND EVALUATE TC'S PERFORMANCE ON PARTS 1-3 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

- Record task performance using the GO/NO GO boxes for each part. Only check GO if:
  -- All steps within the part were performed correctly.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE TC HOW HE PERFORMED ON:

- Preparing and powering up the commander's station.
- Installing the M85 machinegun.
- Performing the LRF self-test.

STEP 4: DETERMINE IF MORE TRAINING ON THIS TASK IS REQUIRED.

- Training on the task is complete when TC is able to correctly carry out performance steps and decisions for preparing the commander's station and conducting the LRF self-test.
- If a part was performed incorrectly, return to SUPERVISED/PRACTICE and have the TC practice the part. Return to EVALUATION when performance is correct.

PRACTICE/EVALUATION FORM

PART 1: PREPARE AND POWER UP COMMANDER'S STATION

GO	NO GO

- Set switches.
- Secure hatch.
- Check intercom.
- Adjust seat and platform.
- Adjust TTS and M36E1.

PART 2: INSTALL CALIBER .50 M85 MACHINEGUN

GO	NO GO

- Place machinegun into its cradle. Secure with rear mounting pin.
- Compress quick-disconnect clamp. Connect adjusting link assembly to periscope elevation adjusting arm.
- Connect solenoid lead to back plate assembly.

PART 3: PERFORM LRF SELF-TEST

GO	NO GO

Make initial switch settings and check indicators and displays:

Settings	Normal Function Indicators
MODE to TEST MASTER BATTERY to ON POWER to ON	POWER illuminates RANGE (Meters) displays 8888 RETURNS displays 8
• DIM LIGHTS TEST out of the TEST position.	Only RANGE (not flashing), RESET, FEED, BATL RNG, LAST and TEST illuminate. RANGE (METERS) and RETURNS indicate 0000 and 0.
• Continue switch settings and checks.	
MODE to ON then to AUTO	ON and then AUTO illuminate. RANGE flashes within 4 sec.
MANUAL/RANGEFINDER to MANUAL	RANGE should not flash.
MODE to TEST EMER POWER to ON then XMTR TEST	Control panel indicators remain on.
RANGE pushbutton depressed.	RANGE (METERS) indicates 0002. MALF lights.
BATL RNG dpressed.	BATL RNG should light.

Perform each step in LRF Logic Test (Table 2-1 Operator's Manual).

Perform LRF Firing Test (if authorized lasing area is available).

TCL 2

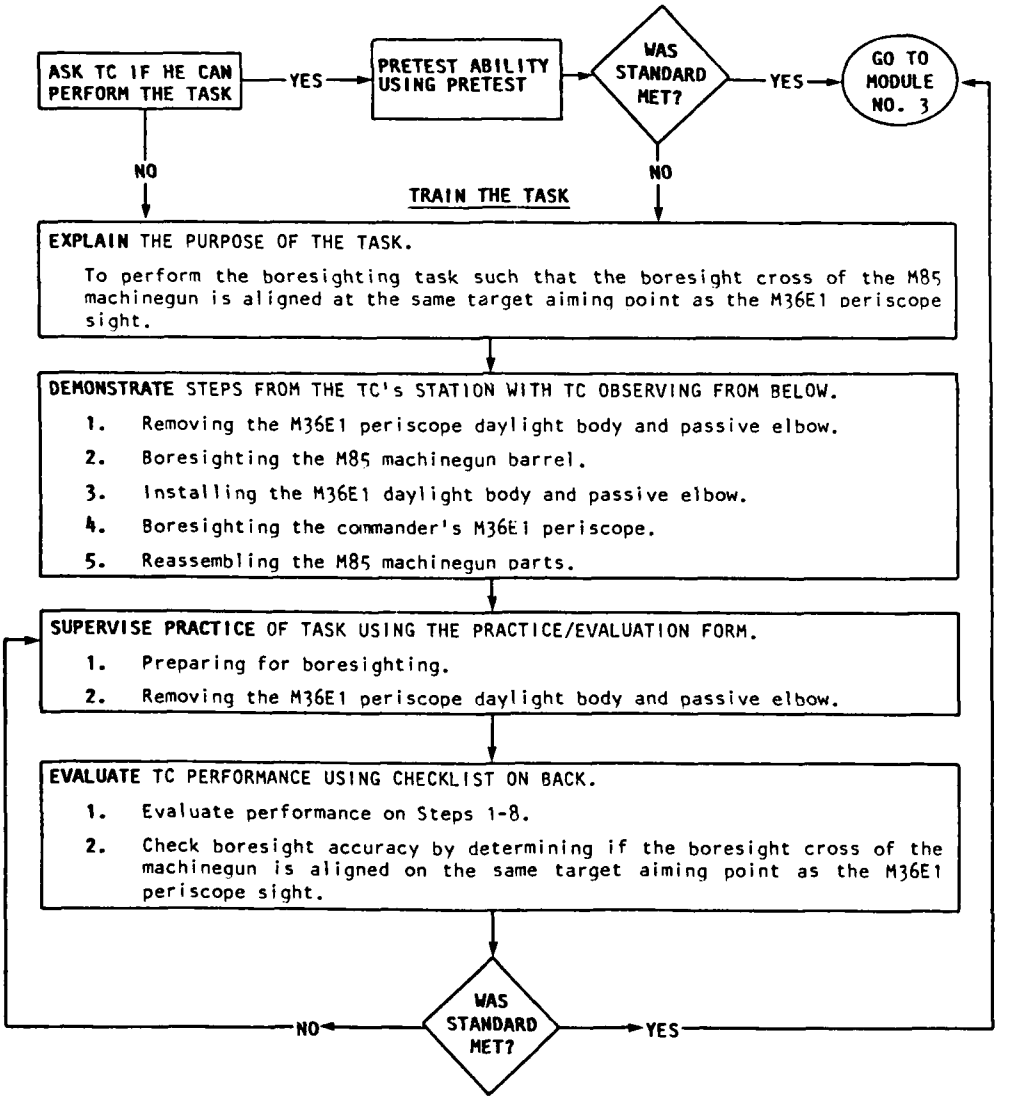
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 2**

TASK: BORESIGHT A CALIBER .50 M85 MACHINEGUN ON AN M60A3 TANK

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-19E3; TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK: CALIBER .50 M85 MACHINEGUN; TARGET; BINOCULARS



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform the boresight task.

GUIDELINES

STEP 1: ASK THE TC IF HE CAN ALREADY PERFORM PROCEDURES NEEDED TO BORESIGHT THE *M85 MACHINEGUN*.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: MAKE SURE THE FOLLOWING CONDITIONS ARE MET BEFORE STARTING THE PRETEST:

- The M85 machinegun is clear.
- A target at a distance of 500 meters which has a clearly defined right angle has been selected.
- The tank is parked on level ground.

STEP 3: EVALUATE TC'S PERFORMANCE. MARK THE GO OR NO GO BOX FOR STEPS 1-7 OF THE PRETEST.

- If performance is correct, then continue with another module or have the TC assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATE.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Ask TC to remove the M36E1 periscope daylight body and passive elbow.	1. Remove the M36E1 periscope daylight body and passive elbow.		
Ask TC to boresight the M85 machinegun barrel.	2. Disconnect solenoid lead connector from backplate assembly.		
	3. Remove backplate, bolt buffer group, sear assembly, and bolt assembly.		
	4. Hold feel lever, and feed ejector assembly to left.		
	5. Align center of machinegun barrel on target aiming point.		
	6. Make adjustments using azimuth adjustment knobs if necessary.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required in order to perform the boresight task.
- To give the TC a chance to watch how this task is performed by an expert.

GUIDELINES

- Demonstrate each of the eight boresight subtasks separately.
- Make sure that the TC is positioned where he can see you perform each subtask.
- Follow each demonstration of a subtask by allowing the TC to try the subtask and to ask questions.
- Repeat demonstrations of subtasks as needed.

STEP 1: EXPLAIN AND DEMONSTRATE PREPARATIONS FOR BORESIGHTING.

- Verify that M85 machinegun is clear.
- Select a target at a distance of 500 meters which has a clearly defined right angle.
- Make sure the tank is on level ground.

STEP 2: DEMONSTRATE HOW TO REMOVE THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.

STEP 3: DEMONSTRATE HOW TO BORESIGHT THE M85 MACHINEGUN BARREL.

- Disconnect solenoid lead connector from backplate assembly. Warning: Backplate is spring loaded. DO NOT remove backplate with bolt to the rear.
- Remove backplate, bolt buffer group, sear assembly, and bolt assembly.
- Hold feed lever, and feed and ejector assembly to the left.
- Align center of machinegun barrel on target aiming point.
- Make adjustments using azimuth adjustment knob if necessary.

STEP 4: DEMONSTRATE HOW TO INSTALL THE M36E1 DAYLIGHT BODY AND PASSIVE ELBOW.

STEP 5: DEMONSTRATE HOW TO BORESIGHT THE COMMANDER'S M36E1 PERISCOPE.

- Sight through the daylight eyepiece. Use the ELEV/DEFL knobs to align the boresight cross on the same aiming point as the barrel bore.
- Release boresight knobs and slip scales to 4 and 4.
- Sight through passive elbow eyepiece. Align boresight cross, slip scales to 4 and 4. Verify that daylight body reticle is still on target aiming point.

STEP 6: EXPLAIN THAT THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW ARE REMOVED AT THIS POINT.

STEP 7: DEMONSTRATE HOW TO REASSEMBLE THE M85 MACHINEGUN PARTS.

- Install bolt assembly, sear assembly, bolt buffer group, and backplate.
- Place bolt forward and safety at F.

STEP 8: EXPLAIN THAT THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW ARE INSTALLED AT THIS POINT.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the TC understands the correct decisions and steps for successfully boresighting the M85 machinegun.
- To let the TC develop and fine-tune task skills at his own pace.

GUIDELINES

- Begin practice by observing the TC from above cupola and by giving guiding comments. If there are two observers, have one watch from below TC's station.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Have the TC explain preparation steps for boresighting.
- Have the TC demonstrate removing and installing the M36E1 periscope daylight body and passive elbow.
- Have the TC demonstrate boresighting the M85 machinegun barrel.
- Have the TC demonstrate boresighting the commander's M36E1 periscope.
- Have the TC demonstrate reassembly of the M85 machinegun parts.

STEP 2: HAVE THE TC PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation form.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3 below.

STEP 3: HAVE THE TC PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation form.
- Have the TC perform each step in succession.
- At the end of the task performance give the TC feedback on each step and the task as a whole.
  -- correct faulty performance on individual steps
  -- reinforce good performance on individual steps
  -- report success of entire task
- Continue until the boresight cross of the machinegun is aligned on the same target aiming point as the M36E1 periscope sight.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The TC will be able to boresight the M85 machinegun such that the boresight cross of the machinegun is aligned at the same target aiming point as the M36E1 periscope sight.

GUIDELINES

STEP 1: EVALUATE THE TC'S PERFORMANCE ON STEPS 1-8 USING THE CHECKLIST.

- Observe the TC's performance from above the cupola and next to the TC's station.
- Check GO only if all substeps are performed correctly.
- Finally, check the boresight accuracy.

STEP 2: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE TC HOW HE PERFORMED ON:

- Preparing for boresight.
- Removing and installing the M36E1 daylight body and passive elbow.
- Boresighting the M85 machinegun barrel.
- Boresighting the commander's M36E1 periscope.
- Reassembling the M85 machinegun parts.
- Successfully meeting the boresight objective: The boresight cross of the machinegun should be aligned at the same target aiming point as the M36E1 periscope sight.

STEP 3: DETERMINE IF MORE TRAINING ON THIS TASK IS REQUIRED.

- If there is one NO GO or more return to SUPERVISED PRACTICE and have TC practice the poorly performed step(s) until performance is correct then return to EVALUATION.
- Training on the task is complete when all steps are performed correctly and the boresight cross of the machinegun is aligned at the same target aiming point as the M36E1 periscope sight.

PRACTICE/EVALUATION FORM

GO	NO GO

STEP 1: CARRY OUT PREPARATIONS FOR BORESIGHTING.

- Verify that the M85 machinegun is clear.
- Select a target at a distance of 500 meters which has a clearly defined right angle.
- Make certain the tank is on level ground.

STEP 2: REMOVE THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.

STEP 3: BORESIGHT THE M85 MACHINEGUN BARREL.

- Disconnect solenoid lead connector from backplate assembly.
- Remove backplate, bolt buffer group, sear assembly, and bolt assembly.
- Hold feed lever, and feed ejector assembly to the left.
- Align center of machinegun barrel on target aiming point.
- Make adjustments using azimuth adjustment knobs if necessary.

STEP 4: INSTALL THE M36E1 DAYLIGHT BODY AND PASSIVE ELBOW.

STEP 5: BORESIGHT THE COMMANDER'S M36E1 PERISCOPE.

- Sight through daylight body eyepiece.
  Use ELEV/DEFL knobs to light boresight cross on the same aiming point as the barrel bore.
- Release boresight knobs and slip scales to 4 and 4.
- Sight through passive elbow eyepiece.
  Align boresight cross, slip scales to 4 and 4.
  Verify that daylight body reticle is still on target aiming point.

STEP 6: REMOVE THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.

STEP 7: REASSEMBLE M85 MACHINEGUN PARTS.

- Install bolt assembly.
- Install sear assembly.
- Install bolt buffer group.
- Install backplate.
- Place bolt forward and safety at F.

STEP 8: INSTALL M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.

CHECK TC'S BORESIGHT ACCURACY

TCL 3

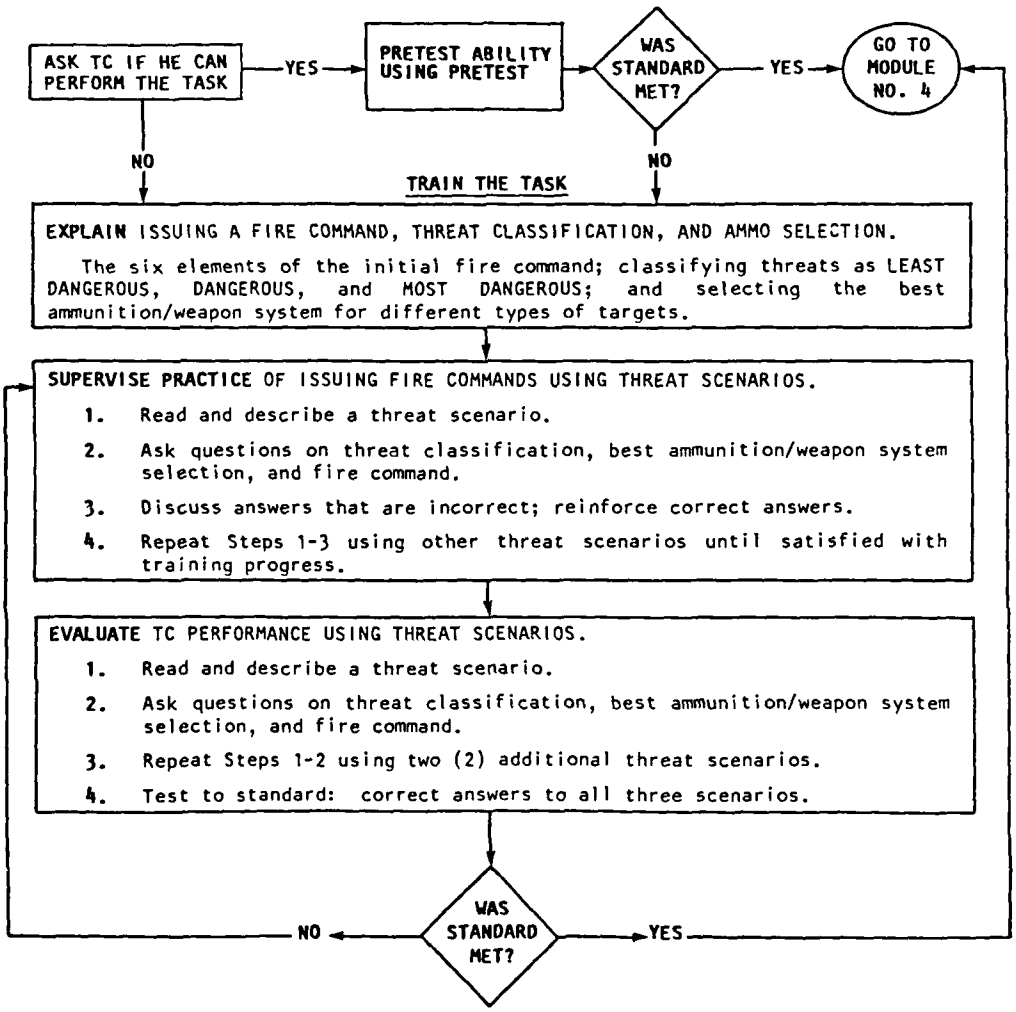
CREW POSITION: TANK COMMANDER — TRAINING MODULE NO. 3

TASK: ISSUE FIRE COMMAND

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-12-3; TEC 020-171-5359 E, F

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING; THREAT SCENARIOS (20) (SEE EXAMPLE ON BACK).



PRETEST

OBJECTIVE

- To determine if the tank commander is already capable of performing this task to standard.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

To meet standard, the tank commander must be capable of classifying threats, selecting ammunition/weapon systems, and issuing fire commands.

- If he says NO, then go directly to EXPLANATION.
- If he says YES, then administer the PRETEST.

STEP 2: ADMINISTER THE PRETEST BY SHOWING, ONE AT A TIME, EACH OF FIVE RANDOMLY SELECTED SCENARIO CARDS.

- For each, present the scenarios pictured and the vital information.
- Have him answer each question for each card.
- If all responses are correct, check the **"GO"** box below and proceed to the next question.
- Check **"NO GO"** if any responses are incorrect.
- The tank commander should have five "GO" responses to pass the pretest and skip the remainder of the training module.
- Proceed to EXPLANATION if the pretest standard is not met.

PRETEST

Scenario	Threat Classification		AMO/WPN Selection		Fire Command		Response Summary	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	GO	NO GO
1								
2								
3								
4								
5								

EXPLANATION

OBJECTIVES

- To explain how to classify threats into one of three primary categories.
- To discuss which weapons can and should be used against different targets under different conditions.
- To explain the commands for firing all weapons on the M60A3 during basic modes of operation.

GUIDELINES

- Follow each of the three steps to provide the material on threat classification, ammunition/weapon selection, and issuing fire commands.
- Use the visual aids (scenario cards) to illustrate critical points during each step.

STEP 1: DESCRIBE THE THREE CLASSES OF THREATS

MOST DANGEROUS THREAT	Can kill tank and is preparing to engage tank.
DANGEROUS THREAT	Can kill tank but apparently does not see tank.
LEAST DANGEROUS THREAT	Cannot kill tank but can report tank's position.

- Threats should be responded to in order of their classification.
- A MOST DANGEROUS threat should be fired upon before a DANGEROUS threat.
- A DANGEROUS threat should be fired upon before a LEAST DANGEROUS threat.
- The tank crew must eliminate MOST DANGEROUS threats first if they are to survive.

STEP 2: DESCRIBE AMMUNITION/WEAPON SELECTION

- Describe the most important characteristics of the three major weapons on the M60A3 tank (range, accuracy, target effectiveness of main gun, coax, and cal .50).
- Describe the major types of main gun ammunition and conditions under which each is used.

SABOT	• Primary round for tanks and armored vehicles. • Highly accurate up to 3,000 M.
HEAT	• Primary round for lightly armored targets, field fortifications, and helicopters.
BEEHIVE*	• Primary round for troops in the open.
HEP*	• Primary round for area and point targets at extended ranges.

*Being phased out.

STEP 3: DESCRIBE THE ELEMENTS OF AN INITIAL FIRE COMMAND

o Describe the six basic elements of the initial fire command.

ELEMENT	FUNCTION	EXAMPLE
Alert	Alerts crew of immediate engagement.	"GUNNER"
Ammunition/Weapon	Tells crew what ammunition or weapon will be used.	"SABOT"
Description	Identifies the target for the gunner.	"TANK"
Direction	Identifies target direction.	"TRAVERSE RIGHT"
Range	Identifies target range, if required.	"2000"
Execution	Tells gunner to fire weapon.	"FIRE"

o Describe standard crew responses to each element of the initial fire command.

TIME	CREW RESPONSES TO INITIAL FIRE COMMAND		
	TC	GUNNER	LOADER
	"GUNNER"		
	"SABOT"		
	TANK"		
	"DIRECT FRONT"*		
	"TWO THOUSAND"*		
			"UP"
		"IDENTIFIED"	
		("CANNOT IDENTIFY")	
		"LASING"	
	FIRE"		
		"ON THE WAY"	

*Optional

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that tank commander acquires basic knowledge of target classification, weapon/ammunition selection, and fire command elements.
- To verify that tank commander can quickly and accurately give a fire command for a threat scenario.

GUIDELINES

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Request the tank commander to describe the three classes of threats and how he is to respond to different classes of threats (e.g., fire at "MOST DANGEROUS" threats first).
- Request the tank commander to describe the three main weapons, types of ammunition, effective ranges, and ammunition/weapon effectiveness.
- Request the tank commander to describe the six basic elements of the initial fire command.

STEP 2: USE THREAT SCENARIOS TO CONDUCT PRACTICE.

- Select a pictorial scenario and show it to the tank commander.
- Have the tank commander classify each threat.
- Have the tank commander state the initial fire command.
- If any element of the initial fire command is incorrect, repeat the scenario later.
- Reinforce correct answers.
- Continue practice until satisfied with training progress.

STEP 3: PROCEED TO EVALUATION WHEN THE TANK COMMANDER HAS CLEARLY DEMONSTRATED THE ABILITY TO ISSUE CORRECT INITIAL FIRE COMMANDS.

--GO TO EVALUATION--

EVALUATION

OBJECTIVES

- The tank comander will be able to issue a complete initial fire command when presented with a multiple threat scenario.

GUIDELINES

STEP 1: RANDOMLY SELECT A THREAT SCENARIO FROM THE SET OF 20 SCENARIOS.

STEP 2: DESCRIBE THE SCENARIO TO THE TANK COMMANDER.

STEP 3: ACQUIRE AN ANSWER FOR EACH QUESTION (THREAT CLASSIFICATION, AMMUNITION/WEAPON SELECTION, FIRE COMMAND).

- Record answers in the spaces below.

STEP 4: CHECK GO/NO GO TO SUMMARIZE TC'S RESPONSE.

- Check GO for the scenario if all answers are correct.
- Check NO GO if any of the answers are incorrect.

STEP 5: REPEAT STEPS 1-4 USING TWO ADDITIONAL THREAT SCENARIOS.

STEP 6: DETERMINE IF MORE TRAINING ON THIS TASK IS REQUIRED.

- Acquire GO responses from the tank commander for all three scenarios to meet the standard.
- If three GO responses are not acquired, review required material, PRACTICE material, select three scenarios, and repeat the EVALUATION until the standard is met.

EVALUATION

Scenario	Threat Classification		AMO/WPN Selection		Fire Command		Response Summary	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	GO	NO GO
1								
2								
3								

TCL 4

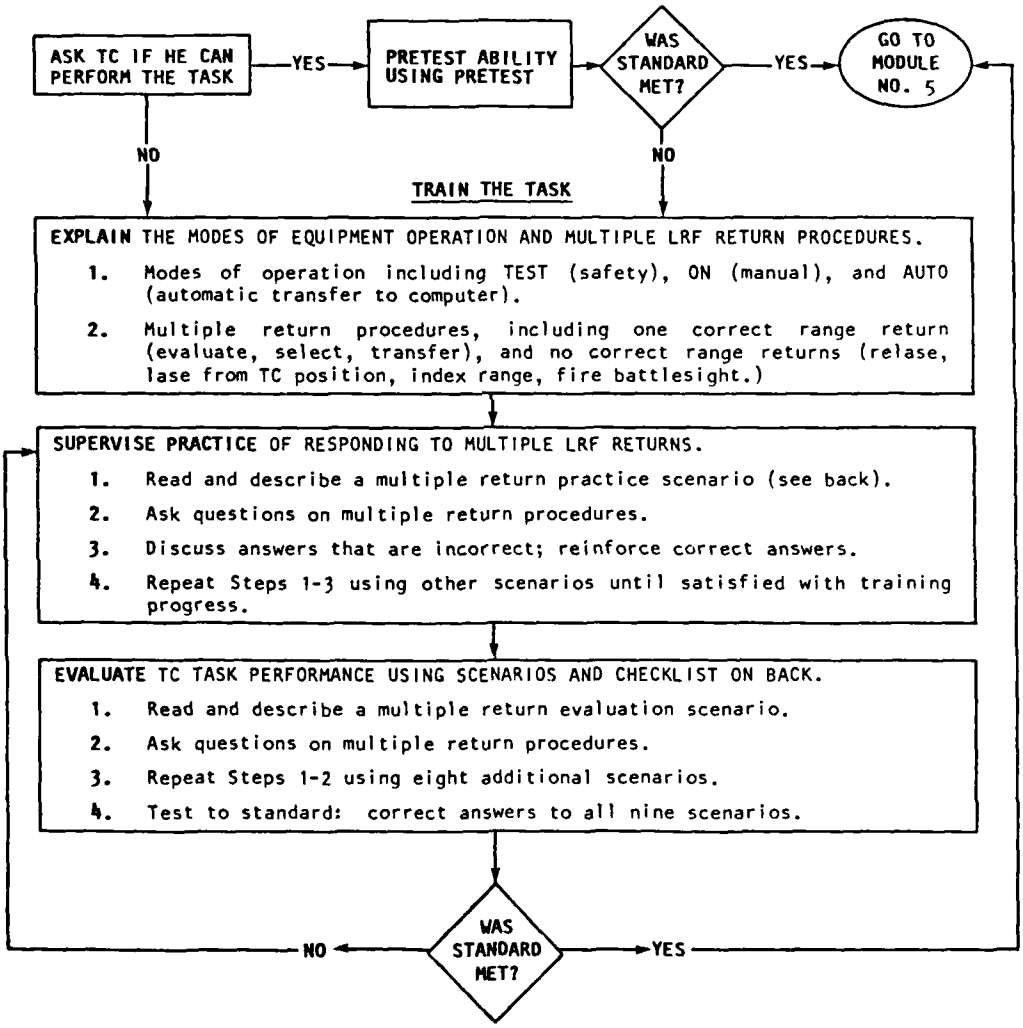
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 4**

TASK: RESPOND TO MULTIPLE LRF RETURNS

PREREQUISITE TASKS: TC MODULE NO. 3

TRAINING REFERENCES: FM 17-12-3

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING; LRF SCENARIOS (INCLUDED)



PRETEST

OBJECTIVES

- To determine if the tank commander is already capable of correctly responding to multiple LRF returns.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

To meet standard, the tank commander must be capable of recognizing multiple LRF returns and respond according to the circumstances.

- If he says NO, then go directly to EXPLANATION.
- If he says YES, then administer the PRETEST.

STEP 2: ADMINISTER THE PRETEST BY READING EACH OF THE FOLLOWING SCENARIOS.

- The tank commander should be able to view the commander's controls and indicators--or a picture of the commander's controls and indicators.
- Read a scenario and ask the tank commander to describe fully the appropriate responses to the multiple LRF return.
- Administer the three remaining scenarios. All four answers must be correct to pass the pretest and skip the remainder of the training module.
- Proceed to EXPLANATON if the pretest standard is not met.

PRETEST SCENARIOS	**GO**	**NO GO**
1. You have ranged on a target and the SELECT light goes on. RANGE 1 agrees with your estimated range; RANGES 2 and LAST do not. What is the appropriate TC response?		
2. You have ranged on a target and the SELECT light goes on. RANGE 1 is 500 M, RANGE 2 is 1,000 M, and RANGE LAST is 1,400 M. You estimate the target to be about 1,500 M distance. What is the appropriate response?		
3. You have ranged on a target and the SELECT light goes on. RANGE 1, RANGE 2, and RANGE LAST are all very different from your estimation of range. What is one appropriate TC response?		
4. You have ranged on a target a number of times and continue to receive inaccurate LRF returns. The target is about 1,200 M away. What is the appropriate TC response?		

DEMONSTRATION

OBJECTIVES

- To demonstrate and explain operation of tank commander's controls and indicators.
- To demonstrate and explain types of multiple LRF returns that can be received.
- To describe the correct response to different types of multiple LRF returns.

GUIDELINES

- Follow each of the three steps discussed below to provide material on equipment operation and tank commander actions.
- Use the illustration of the controls if actual controls are not available during the exercise.
- Use evaluation scenarios to illustrate the types of returns which can be received--and appropriate responses to different types of multiple LRF returns.

STEP 1: EXPLAIN MODES OF EQUIPMENT OPERATION.

- Modes include **TEST** (safety), **ON** (manual), and **AUTO** (automatic transfer to computer).

STEP 2: EXPLAIN MULTIPLE RETURN PROCEDURES.

- Correct range return (evaluate, select, transfer).
- No correct range returns (relase, lase *from TC position*, *index range*, fire battlesight).

STEP 3: DEMONSTRATE OPERATION OF THE MULTIPLE LRF CONTROLS AND DISPLAYS.

- Demonstrate operation and use of MODE switch; AUTO indicator; RANGE switch/indicator; 1, 2, and LAST selector/indicators; RESET switch/indicator; RETURNS indicator; RANGE indicator; FEED switch/indicator

STEP 4: DISCUSS THE TYPES OF MULTIPLE LRF RETURNS WHICH CAN BE RECEIVED.

- Discuss returns where tank commander judges that one of the ranges is accurate.
- Discuss returns where tank commander judges that none of the ranges are accurate.

STEP 5: DISCUSS TANK COMMANDER RESPONSES TO DIFFERENT TYPES OF MULTIPLE LRF RETURNS.

- Discuss proper sequence of actions when one of three returns appears to be accurate.
- Discuss tank commander options when none of the returns is accurate.
- Discuss operation of controls (i.e., FEED and RESET switch/indicators) when range must be fed manually or when LRF is to be re-set.
- Discuss sample scenarios and the appropriate tank commander response.

SUPERVISED PRACTICE

OBJECTIVES:

- To verify that the tank commander can operate the multiple LRF controls.
- To verify that the tank commander can operate the controls in the proper sequence when multiple LRF returns are received.

GUIDELINES

STEP 1: REQUEST THE TANK COMMANDER TO DESCRIBE THE OPERATION AND FUNCTION OF EACH OF THE TANK COMMANDER CONTROLS RELATED TO MULTIPLE LRF RETURNS.

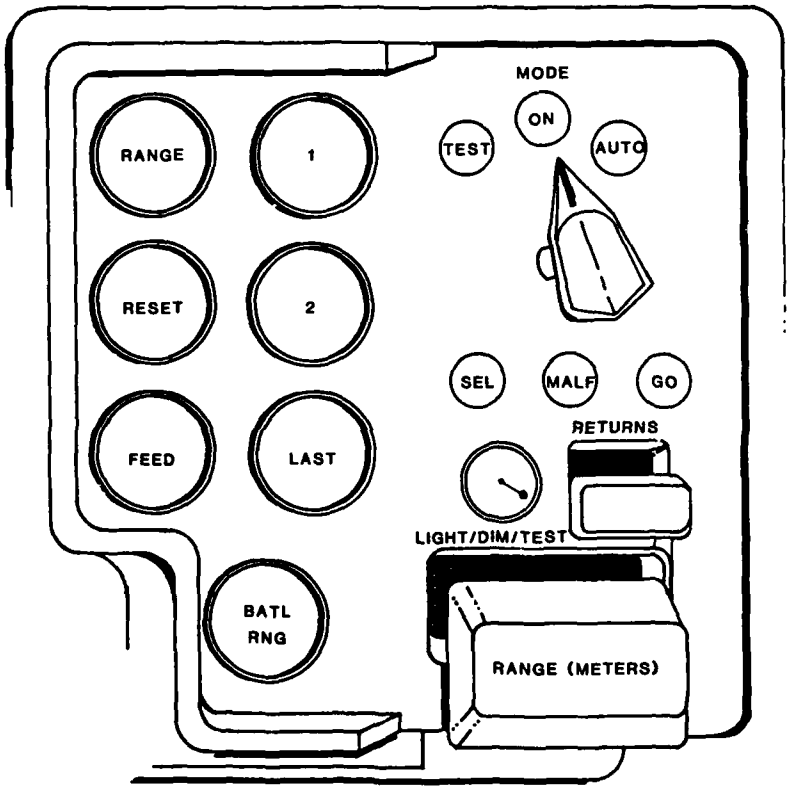
STEP 2: READ EACH OF THE FOLLOWING SCENARIOS TO THE TANK COMMANDER AND HAVE HIM DEMONSTRATE, WITH THE ACTUAL EQUIPMENT OR ILLUSTRATION, THE CORRECT SEQUENCE OF RESPONSES.

- Repeat any scenarios to which the tank commander provides incorrect responses.
- Provide positive reinforcement ("Good") when a correct response is given.

PRACTICE SCENARIOS

	GO	NO GO
1. You have ranged on a target and the SELECT light goes on. What are the appropriate TC actions?		
2. You have ranged on a target and the SELECT light goes on, RANGE 1 is 500 M, RANGE 2 is 1,000 M, and RANGE LAST is 1,400 M. You estimate the target to be about 1,500 M distance. What is the appropriate response?		
3. You have ranged on a target and the SELECT light goes on. RANGE 1, RANGE 2, and RANGE LAST are all very different from your estimation of range. What is one appropriate TC response?		
4. You have ranged on a target a number of times and continue to receive accurate LRF returns. The target is about 1,200 M away. What is the appropriate TC response?		

TCL 4


MODE
ON
TEST
AUTO
RANGE
1
RESET
2
SEL
MALF
GO
RETURNS
FEED
LAST
LIGHT/DIM/TEST
BATL
RNG
RANGE (METERS)

EVALUATION

OBJECTIVES

- The tank commander will be able to describe or demonstrate correct response to all types of multiple LRF returns.

GUIDELINES

STEP 1: READ THE FIRST OF THE FOLLOWING SIX SCENARIOS TO THE TANK COMMANDER.

STEP 2: HAVE THE TANK COMMANDER DESCRIBE THE CORRECT OPERATION OF THE EQUIPMENT.

- If the equipment is not available, the tank commander should demonstrate his response with the attached console illustration as an aid.

STEP 3: CHECK THE "GO" OR "NO GO" BOX AFTER THE RESPONSE.

STEP 4: PRESENT EACH OF THE FIVE REMAINING SCENARIOS USING STEPS 1-3.

STEP 5: ACQUIRE SIX "GO" RESPONSES FOR THE TANK COMMANDER TO MEET THE STANDARD.

- Repeat discussion of selected topics, if necessary, and repeat the evaluation until the standard is met.

EVALUATION SCENARIOS

	GO	NO GO
1. You have ranged on a target and the SELECT light goes on. What are the appropriate TC actions?		
2. You have ranged on a target and receive multiple LRF returns. RANGE 2 is quite close to your estimated range. What is the appropriate TC response?		
3. You have ranged on a target and receive multiple LRF returns. None of the three ranges displayed is close to your estimated target range. What are the appropriate steps to re-lase?		
4. You have ranged on a target and receive multiple LRF returns. The LAST return is close to your estimated range. What is the appropriate TC response?		
5. You have ranged on a target numerous times and continue to receive inaccurate multiple LRF returns. What are the TC steps for manually inducing an estimated range?		
6. You have ranged on a target and the SELECT light goes on. RANGE 1 agrees with your estimated range; RANGES 2 and LAST do not. What is the appropriate TC response?		

TCL 5

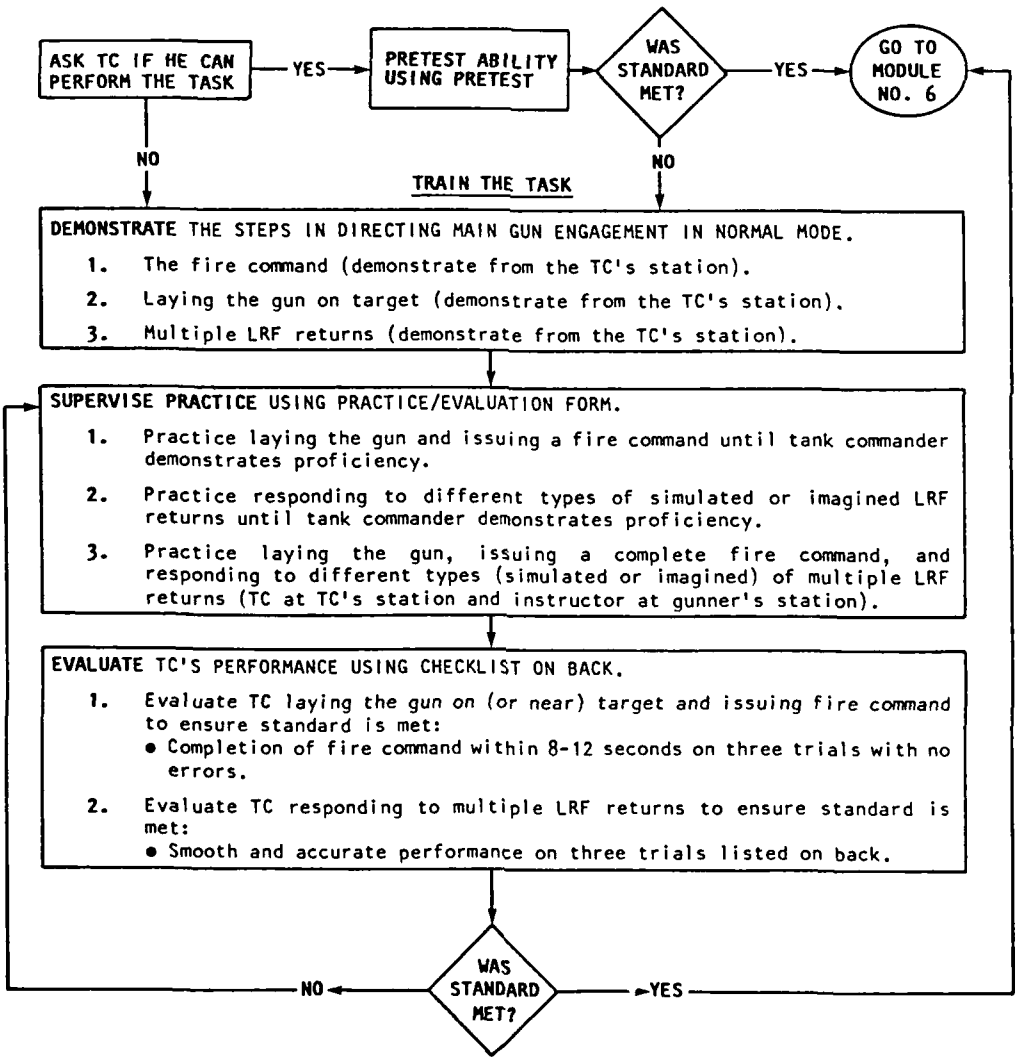
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 5**

TASK: DIRECT MAIN GUN ENGAGEMENT IN NORMAL MODE

PREREQUISITE TASKS: TC MODULES NOS. 3 AND 4

TRAINING REFERENCES: FM 17-12-3; TEC 020-171-5359 E, F

SUPPORT REQUIREMENTS: M60A3 TANK; M55 LASER (OPTIONAL); STOPWATCH, TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES (OR AVAILABLE TARGETS: VEHICLES, PEOPLE)



OBJECTIVE

- To determine if the tank commander is already capable of performing this task to standard.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD. The tank commander must be capable of issuing a complete fire command, laying the gun on the target, and responding to multiple LRF returns.
- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then administer PRETEST.

STEP 2: ADMINISTER THE PRETEST.
- The tank commander should be situated at the tank commander's station. Performance can be observed from the gunner's station.
- Have the tank commander issue an initial fire command and lay the gun on or near the target. Evaluate each basic response with the checklist.
- If any response is incorrect and the task is not completed within 12 seconds, proceed to DEMONSTRATION.
- Have the tank commander repeat the initial fire command. When "LASING" occurs, indicate that multiple LRF returns have been received. Assess the accuracy of his responses (selecting a range, setting switches, etc.). The response should be errorless and fluid to skip the remainder of the training module.
- Proceed to DEMONSTRATION if the pretest standard is not met.

PRETEST

INSTRUCTOR (In Gunner's Station)	TC	GO	NO GO
Begin Exercise:			
Instruct TC to identify target, lay the gun, and issue a complete fire command. Say "GO" and start the stopwatch.			
Evaluate accuracy of first part of fire command.	1. Announces "GUNNER, SABOT, TANK."		
Evaluate accuracy of laying the gun. Announce "UP" as would loader.	2. Lays the main gun within the gunner's view of target.		
Announce "IDENTIFIED" as would gunner.	3. Releases turret control.		
Verify that turret control was released.			
Announce "LASING."	4. Announces "FIRE" (or "FROM MY POSITION" or "AT MY COMMAND").		
Announce "ON THE WAY" and fire gun. Stop stopwatch (less than 12 seconds?) Check setting of switches.	5. Resets TC station switches.		

- Conduct a trial in which TC is told that three multiple LRF returns are received. The "LAST" return is judged to be accurate. Observe his responses for correctness.

DEMONSTRATION

OBJECTIVES

- To demonstrate issuing a fire command for a main gun engagement and all crew responses.
- To demonstrate all tank commander control operations when he directs an engagement with the main gun.
- To demonstrate all tank commander actions when a multiple LRF return is received.

GUIDELINES

- Assume the tank commander's position to demonstrate tasks.
- Explain each tank commander action and demonstrate a number of times sequential commands and equipment operations.
- Provide the tank commander the opportunity to ask questions.

STEP 1: REHEARSE ELEMENTS, FUNCTIONS, AND EXAMPLES OF FIRE COMMANDS.

o Demonstrate execution of the initial fire command.

ELEMENT	FUNCTION	EXAMPLE
Alert	Alerts crew of immediate engagement.	"GUNNER"
Ammunition/Weapon	Tells crew what ammunition or weapon will be used.	"SABOT"
Description	Identifies the target for the gunner.	"TANK"
Direction	Identifies target direction.	"TRAVERSE RIGHT"
Range	Identifies target range, if required.	"2000"
Execution	Tells gunner to fire weapon.	"FIRE"

STEP 2: DEMONSTRATE STANDARD CREW RESPONSES TO EACH ELEMENT OF THE INITIAL FIRE COMMAND.

TIME	CREW RESPONSES TO INITIAL FIRE COMMAND		
	TC	GUNNER	LOADER
	"GUNNER" "SABOT" TANK" "DIRECT FRONT"* "TWO THOUSAND"*		
			"UP"
		"IDENTIFIED" ("CANNOT IDENTIFY") "LASING"	
	FIRE"		
		"ON THE WAY"	

*Optional

STEP 3: DEMONSTRATE ALL EQUIPMENT FUNCTIONS DURING MAIN GUN ENGAGEMENT

- Demonstrate laying the main gun on or near the target.
- Demonstrate release of turret control.

STEP 4: DISCUSS OR SIMULATE THE TYPES OF MULTIPLE LRF RETURNS THAT CAN BE RECEIVED AND TANK COMMANDER RESPONSES.

- Demonstrate display functions and switch operation.
- Demonstrate responses to multiple LRF returns when one of the three returns appears to be accurate.
- Demonstrate responses to multiple LRF returns when none of the three returns is accurate.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the tank commander can issue all fire commands and coordinate crew response.
- To verify that the tank commander can lay the main gun on a selected target with adequate accuracy and transfer turret control to the gunner.
- To verify that the tank commander can operate the multiple LRF return controls and respond to multiple LRF returns.
- To verify that the tank commander can smoothly integrate all of the above elements and direct main gun engagements.

GUIDELINES

- Have the tank commander position himself at the tank commander's station.
- The instructor should be positioned at the gunner's station.
- Use the stopwatch to time the tank commander during rehearsals and provide feedback on his progress.
- Provide strong verbal reinforcement ("Good") when responses are correct.

STEP 1: DESCRIBE A TARGET IN THE TANK COMMANDER'S FIELD OF VIEW.

- At your command, have him issue an appropriate initial fire command and lay the gun on the target.
- During the command sequence, provide all crew responses to the tank commander's commands (i.e., "UP," "IDENTIFIED," "CANNOT IDENTIFY").

STEP 2: REHEARSE THE COMPLETE SEQUENCE FROM TARGET IDENTIFICATION TO FIRING UNTIL THE TANK COMMANDER'S PERFORMANCE IS FLUID AND UNINTERRUPTED.

STEP 3: BEGIN REHEARSALS WHERE MULTIPLE LRF RETURNS ARE RECEIVED.

- After announcing "LASING" in response to the tank commander's initial command, describe a situation where mutliple LRF returns are received.
- Have the tank commander respond by making all appropriate switch depressions.

STEP 4: CONTINUE REHEARSALS OF MULTIPLE LRF RETURNS UNTIL TANK COMMANDER'S PERFORMANCE IS FLUID AND UNINTERRUPTED.

--GO TO EVALUATION--

EVALUATION

OBJECTIVES

- The tank commander will be able to issue a complete fire command within 8-12 seconds, lay the main gun on or near target, and respond rapidly and accurately to multiple LRF returns by selecting ranges or directing the gunner to re-lase.

GUIDELINES

- Use the following guidelines/checklist to evaluate issuing the fire command and laying the main gun.

STEP 1: EVALUATE TC LAYING THE GUN ON (OR NEAR) TARGET AND ISSUING FIRE COMMAND TO ENSURE STANDARD IS MET.

- Conduct three trials using the top portion of the training exercise evaluation.
- On each trial, TC must complete all elements for the entire trial to be correct (GO).
- Three consecutive trials under 12 seconds are required to meet the standard for STEP 1.
- If standard is not met, return to SUPERVISED PRACTICE and have the TC practice issuing the fire command and laying the main gun.
- When standard for STEP 1 is met, continue evaluation following STEP 2 procedures.

STEP 2: EVALUATE TC RESPONDING TO MULTIPLE LRF RETURNS TO ENSURE STANDARD IS MET.

- Conduct three trials in which real or hypothetical multiple LRF returns are presented, using both portions of the training exercise evaluation.
- The TC must provide three consecutive correct responses to multiple LRF situations to meet the standard for STEP 2.
- If the standard is not met, return to SUPERVISED PRACTICE and repeat required training.
- When the standard for STEP 2 is met, the evaluation is completed.

PRACTICE/EVALUATION FORM

ISSUING THE FIRE COMMAND AND LAYING THE GUN ON TARGET

INSTRUCTOR (In Gunner's Station)	TC	GO	NO GO
Begin Exercise:			
Instruct TC to identify target, lay the gun, and issue a complete fire command. Say "GO" and start the stopwatch.			
	1. Announces "GUNNER, SABOT, TANK."		
Evaluate accuracy of first part of fire command.			
	2. Lays the main gun within the gunner's view of target.		
Evaluate accuracy of laying the gun.			
Announce "UP" as would loader.			
Announce "IDENTIFIED" as would gunner.			
Verify that turret control was released.			
	3. Releases turret control.		
Announce "LASING."			
	4. Announces "FIRE" (or "FROM MY POSITION" or "AT MY COMMAND").		
Announce "ON THE WAY" and fire gun. Stop stopwatch (less than 12 seconds?)			
Check setting of switches.			
	5. Resets TC station switches.		

TRIAL 1		TRIAL 2		TRIAL 3	
GO	NO GO	GO	NO GO	GO	NO GO
Time: _____		Time: _____		Time: _____	

RESPONDING TO MULTIPLE LRF RETURNS

	GO	NO GO
1. Conduct a trial in which TC is told that three multiple LRF returns are received. The "LAST" return is judged to be accurate. Observe his responses for correctness.		
2. Conduct a trial in which TC is told that three multiple LRF returns are received. Return "1" is judged to be accurate. Observe his responses for correctness.		
3. Conduct a trial in which TC is told that three multiple LRF returns are received. None of the three returns is judged to be accurate. Observe his responses for correctness.		

TCL6

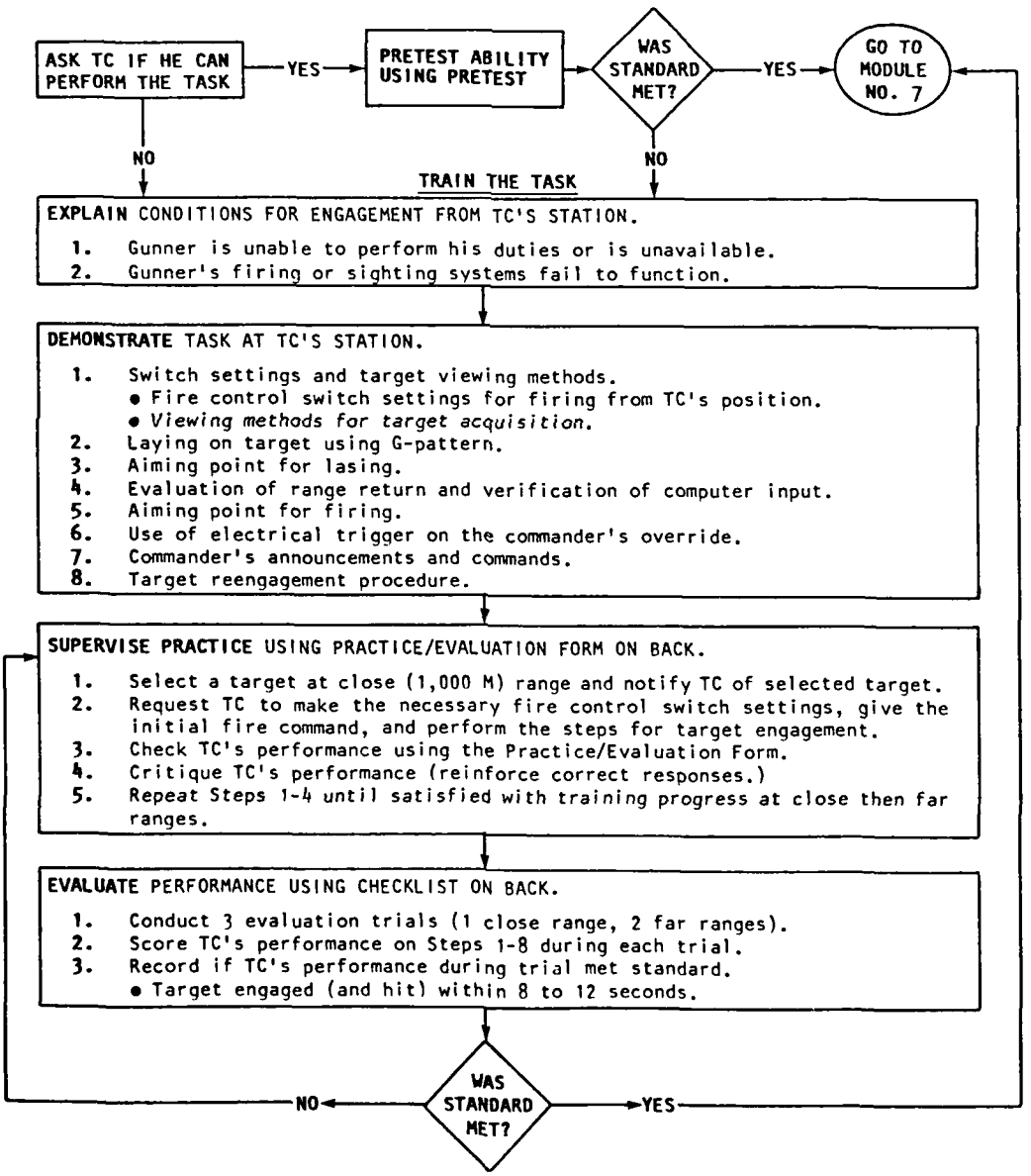
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 6**

TASK: ENGAGE STATIONARY TARGETS FROM TC'S STATION USING PRECISION GUNNERY

PREREQUISITE TASKS: TC MODULES NOS. 1, 3, 4, AND 5

TRAINING REFERENCES: FM 17-12-3; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 1 TARGET SILHOUETTE AT CLOSE (1,000 M); 2 TARGET SILHOUETTES AT FAR RANGES (1,800 M).



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to engage and hit stationary targets from the TC station with the main gun within 8 to 12 seconds.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Tank and target are stationary.
- All stations are prepared for engagement.

STEP 3: EVALUATE TC'S PRETEST PERFORMANCE AND CHECK THE GO OR NO GO BOX FOR EACH STEP.

- If TC receives a GO on all steps, then train TC on Module No. 7, or have the TC assist you in training.
- If there are any errors (one NO GO or more), then go to the DEMONSTRATION.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Locate target and command "LOAD (SABOT)."		
	2. Identify target.		
Announce "UP."			
	3. Lay aiming cross slightly below center of target's visible mass using G-pattern.		
Check gun lay and lasing aiming point.			
	4. Announce "LASING," lase on target, and evaluate range data (optional).		
Check TC's evaluation of range data.			
	5. Relay aiming cross on center of target's visible mass using override control.		
Check relay of gun and aiming point for firing.			

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by tank commanders in engaging and hitting a stationary target within 8 to 12 seconds.
- To demonstrate how this task is performed to standard by an expert.

GUIDELINES

Position the tank commander where he can see you demonstrate the task. Begin demonstrating the task slowly, step by step, answering any questions.

STEP 1: EXPLAIN CONDITIONS FOR ENGAGEMENT FROM TC'S STATION.

- Gunner is unable to perform his duties or is unavailable.
  - -- A 3-member crew reorganizes so that the TC takes on the duties of the gunner. The driver and loader maintain their positions with increased awareness of target acquisition during engagement.
- Gunner's firing or sighting systems fail to function.
  - -- TC may perform target engagement procedure if gunner's primary and secondary sights and firing systems fail to function.

STEP 2: DEMONSTRATE FIRE CONTROL SWITCH SETTINGS FOR FIRING.

- Set turret power to ON.
- Set main gun switch to ON.
- Set GUNNER/CMDR switch on TTS to CMDR.
- Set MOVING/STATIONARY switch to STATIONARY.

STEP 3: DEMONSTRATE VIEWING METHODS FOR TARGET ACQUISITION.

STEP 4: DEMONSTRATE LAYING ON TARGET USING G-PATTERN.

STEP 5: DEMONSTRATE AIMING POINT FOR LASING.

- Have the TC watch through gunner's sight as you correctly aim at several targets.
- Explain that this is the correct aim for ranging because it reduces possibility of multiple LRF returns.

STEP 6: DEMONSTRATE EVALUATION OF RANGE RETURN AND VERIFICATION OF COMPUTER INPUT.

- Review evaluation of range return.
- Review proper sequence of actions following multiple LRF returns.
- Review operation of controls (i.e., FEED and RESET switch/indicators) when range must be fed manually or when LRF is to be reset.
- Demonstrate verification of computer input.
  - -- range has been successfully received by computer if GO light appears.

STEP 8: DEMONSTRATE USE OF ELECTRICAL TRIGGER ON THE COMMANDER'S OVERRIDE.

STEP 9: DEMONSTRATE COMMANDER'S ANNOUNCEMENTS AND COMMANDS.

- Discuss announcements and commands:
  - -- "LOAD (SABOT)"
  - -- "LASING"
  - -- "ON THE WAY"
- Demonstrate the commands and announcements while performing the target engagement procedure.

STEP 10: DEMONSTRATE TARGET REENGAGEMENT PROCEDURE.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the TC understands the correct decisions and steps in engaging and hitting a stationary target with the main gun from the TC's station.
- To let the TC develop and fine-tune task skills at his own pace until the 8- to 12-second standard is met.

GUIDELINES

- Begin practice by observing the TC from beside his station. Continue by observing from the gunner's LRF sight.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD. HAVE THE TC DEMONSTRATE:

- Switch settings and target viewing methods.
- Laying on target using G-pattern.
- Aiming point for lasing.
- Evaluation of range return and verification of computer input.
- Aiming point for firing.
- Use of electrical trigger on the commander's override.
- Commander's announcements and commands.
- Target reengagement procedure.

STEP 2: HAVE THE TC PRACTICE THE TASK STEP BY STEP.

- Use the PRACTICE/EVALUATION FORM.
- Specify near (1,000 M) target.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last task step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE TC PRACTICE THE ENTIRE TASK.

- Use the PRACTICE/EVALUATION FORM.
- Specify near (1,000 M) target.
- Have the TC perform each step in succession.
- At the end of the task performance give the TC feedback on each step and the task as a whole:
  -- correct faulty performance of individual steps
  -- reinforce good performance of individual steps
  -- report speed and success of the entire task.
- Continue practice until performance meets 12 second standard.
- Practice in the same manner with far targets until standard is met.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The TC will be able to engage and hit stationary targets from the TC's station using precision gunnery within 8 to 12 seconds.

GUIDELINES

Conduct 3 evaluation trials.
- Trial 1 at close (1,000 M) range.
- Trials 2 and 3 at far (1,800) ranges.

STEP 1: HAVE THE TC PERFORM THE TASK AND EVALUATE HIS PERFORMANCE.

- Observe from the gunner's station.
- Check GO or NO GO for Steps 1-8 using the checklist on the Practice/Evaluation Form.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-8 performed correctly.
- Target engaged and hit within 8 to 12 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH REPETITION OF THE EVALUATION EXERCISE. TELL THE TC HOW HE PERFORMED ON:

- Switch settings and target viewing methods.
- Laying on target.
- Ranging.
- Firing.
- Giving announcements and commands.
- Total time to complete task.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If TC met standards on all 3 trials, no more training on this module is required.
- If TC did not meet standard on all 3 trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Locate target and command "LOAD (SABOT)."		
	2. Identify target.		
Announce "UP."	3. Lay aiming cross slightly below center of target's visible mass using G-pattern.		
Check gun lay and lasing aiming point.	4. Announce "LASING," lase on target, and evaluate range data (optional).		
Check TC's evaluation of range data.	5. Relay aiming cross on center of target's visible mass using override control.		
Check relay of gun and aiming point for firing.	6. Announce "ON THE WAY" and fire using trigger on override.		
Stop stopwatch. Check resetting of fire control switches.	7. Announce "CEASE FIRE."		
	8. Reset fire control switches to original positions.		
Score performance trial and record time.			

TRIAL 1

Close Range

GO	NO GO

Time: _____

TRIAL 2

Far Range

GO	NO GO

Time: _____

TRIAL 3

Far Range

GO	NO GO

Time: _____

TCL 7

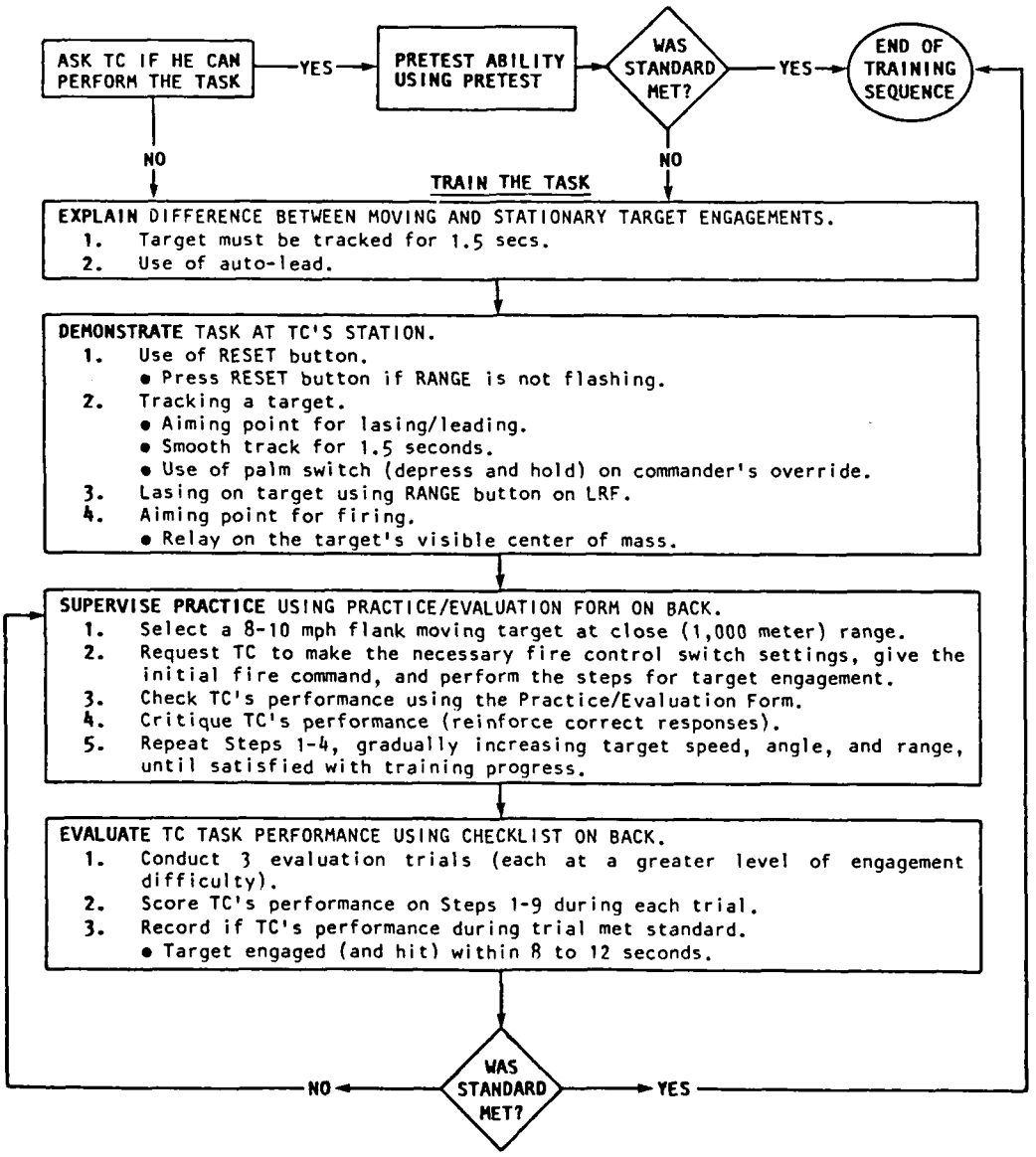
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 7**

TASK: ENGAGE MOVING TARGETS FROM TC'S STATION USING AUTO-LEAD.

PREREQUISITE TASKS: TC MODULES NOS. 1, 3, 4, 5, AND 6.

TRAINING REFERENCES: FM 17-12-3; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 3 MOVING TARGETS (5-25 MPH) OF LOW, MODERATE, AND HIGH DIFFICULTY LEVELS.



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to engage (and hit) moving targets with the main gun within 8 to 12 seconds.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Tank is stationary, target is moving.
- All stations are prepared for engagement.

STEP 3: EVALUATE TC'S PRETEST PERFORMANCE AND CHECK THE GO OR NO GO BOX FOR EACH STEP.

- If TC receives a GO on all steps, then have the TC assist you in training.
- If there are any errors (one NO GO or more), then go to the DEMONSTRATION.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Press RESET button if RANGE is not flashing. Locate target and command "LOAD (SABOT)."		
Announce "UP."	2. Identify target.		
	3. Depress and hold palm switch on TC's override. Lay aiming cross slightly below center of target's visible mass using G-pattern. Track target for 1½ seconds.		
Check gun lay, lasing aiming point, and TC's tracking ability.	4. Announce "LASING," press and release RANGE button on LRF and establish lead by pressing and holding thumb switch.		
	5. Evaluate range data and reply data on RANGE (METERS) and RETURNS display.		
Check TC's evaluation of range data.			

DEMONSTRATION

OBJECTIVES

- o To explain important procedures and decisions required by tank commanders in engaging and hitting a moving target with the main gun within 8 to 12 seconds.
- o To demonstrate how this task is performed to standard by an expert.

GUIDELINES

Position the tank commander where he can see you demonstrate the task. Begin demonstrating the task slowly, step by step, answering any questions.

STEP 1: EXPLAIN THE DIFFERENCE BETWEEN MOVING AND STATIONARY TARGET ENGAGEMENTS.

- o Target must be tracked for 1.5 seconds.
- o Use of auto-lead.

STEP 2: DEMONSTRATE USE OF RESET BUTTON.

- o Press RESET button if RANGE is not flashing.

STEP 3: DEMONSTRATE TRACKING A MOVING TARGET.

- o Aiming point for lasing/leading (slightly below center of target's visible mass).
- o Smooth 1.5 sec. track on a slowly moving target and a quickly moving target (TC observes through gunner's LRF sight).
- o Use of palm switch (depress and hold) on commander's override.

STEP 4: DEMONSTRATE LASING ON TARGET.

- o Press and release RANGE button on LRF.

STEP 5: DEMONSTRATE USE OF AUTO-LEAD.

- o Establish lead by depressing and holding palm switch.
- o Reticle offset in POWER mode requires relay of reticle.
- o No reticle displacement in STAB mode.

STEP 6: DEMONSTRATE AIMING POINT FOR FIRING.

- o Relaying on target's visible center of mass.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- o To make sure the TC understands the correct decisions and steps in engaging (and hitting) a moving target within 8-12 seconds with the main gun.
- o To let the TC develop and fine-tune task skills at his own pace.

GUIDELINES

- o Begin practice by observing the TC from beside his station.
- o Continue practice by observing the TC's performance through the gunner's LRF sight.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD. HAVE THE TC DEMONSTRATE:

- o Tracking a target.
  - -- aiming point for lasing/leading (slightly below)
  - -- use of palm switch on commander's override
- o Lasing on target using RANGE button on LRF.
- o Auto-lead.
  - -- relay of reticle in POWER Mode
- o Aiming point for firing.
  - -- relay on target's visible center of mass

STEP 2: HAVE THE TC PRACTICE THE TASK STEP BY STEP.

- o Use the PRACTICE/EVALUATION FORM.
- o Specify an 8-10 mph moving target at near (1,000 M) range.
- o Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- o Finally, when performance on the last task step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE TC PRACTICE THE ENTIRE TASK.

- o Use the PRACTICE/EVALUATION FORM.
- o Specify an 8-10 mph flank moving target at near (1,000 M) target.
- o Have the TC perform each step in succession.
- o At the end of the task performance give the TC feedback on each step and the task as a whole:
  - -- correct faulty performance of individual steps
  - -- reinforce good performance of individual steps
  - -- report speed and success of the entire task.
- o Continue practice until performance meets 12 second standard.
- o Practice in the same manner with 2 additional targets, each representing an increase in target speed, angle, and range.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

The TC will be able to engage (and hit) moving targets from the TC's station using auto-lead within 8 to 12 seconds.

GUIDELINES

CONDUCT 3 EVALUATION TRIALS.

- o Each trial at a greater level of engagement difficulty.

STEP 1: OBSERVE FROM THE GUNNER'S STATION AND EVALUATE THE TC'S PERFORMANCE.

- o Check GO or NO GO for Steps 1-9, using the checklist on the PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- o Steps 1-9 performed correctly.
- o Target engaged (and hit) within 8 to 12 seconds.

STEP 3: *CORRECT ANY MISTAKES AT THE END OF EACH EVALUATION TRIAL. TELL THE TC* HOW HE PERFORMED ON:

- o Switch settings
- o Target acquisition
- o Aiming
- o Ranging
- o Giving announcements and commands
- o Firing
- o Tracking
- o Use of auto-lead

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- o If TC met standards on all 3 trials, no more training on this module is required.
- o If TC did not meet standard on all 3 trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Press RESET button if RANGE is not flashing. Locate target and command "LOAD (SABOT)."		
Announce "UP."	2. Identify target.		
	3. Depress and hold palm switch on TC's override. Lay aiming cross slightly below center of target's visible mass using G-pattern. Track target for 1½ seconds.		
Check gun lay, lasing aiming point, and TC's tracking ability.	4. Announce "LASING," press and release RANGE button on LRF and establish lead by pressing and holding thumb switch.		
	5. Evaluate range data and reply data on RANGE (METERS) and RETURNS display.		
Check TC's evaluation of range data.	6. Relay aiming cross on center of target's visible mass using override control.		
Check relay of gun and aiming point for firing.	7. Announce "ON THE WAY" and fire using trigger on override.		
Stop stopwatch. Check resetting of fire control switches.	8. Announce "CEASE FIRE."		
	9. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if Steps 1-9 performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Low Difficulty	**Moderate Difficulty**	**High Difficulty**
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

TC18-1

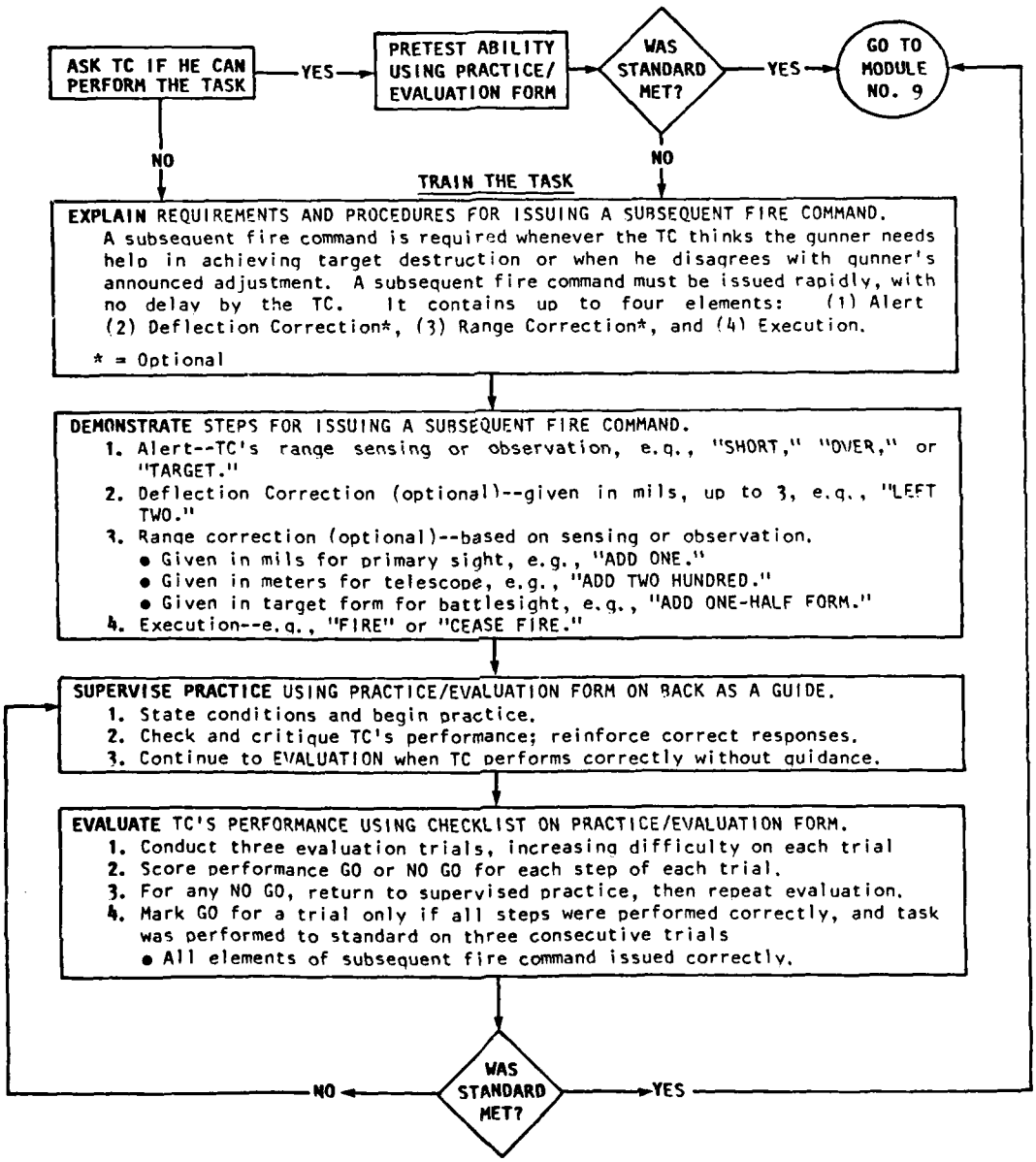
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 8**

TASK: ISSUE SUBSEQUENT FIRE COMMAND

PREREQUISITE TASKS: TANK COMMANDER MODULES 3, 4, 5, 6 and 7

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E3

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform this task to standard: Issue all elements of a subsequent fire command correctly.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.
- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.
- A main gun round has been fired.
- The gunner needs help in achieving target destruction.

STEP 3: EVALUATE TANK COMMANDER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.
- If performance is correct, then continue with another module or have the tank commander assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Request the TC to issue a subsequent fire command for a sensing of over and left with gunner using primary sight and APDS.	1. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"RIGHT ONE/TWO/THREE." • Range correction--"DROP ONE." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of short and line with gunner using the telescope.	2. Issue subsequent fire command. • Alert--"SHORT." • Range correction--"ADD TWO/FOUR HUNDRED." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of over and right with gunner using battlesight.	3. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"LEFT ONE/TWO/THREE." • Range correction--"DROP ONE HALF FORM." • Execution--"FIRE."		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by tank commander in issuing a subsequent fire command.
- To give the tank commander a chance to learn how this task is performed to standard by an expert.

GUIDELINES

- Explain each element of a subsequent fire command and give examples of a number of subsequent fire commands.
- Provide the tank commander with opportunities to ask questions.

STEP 1: DESCRIBE WHEN AND WHY SUBSEQUENT FIRE COMMANDS ARE ISSUED.

- A subsequent fire command is issued whenever the TC thinks that the gunner needs help in achieving target destruction or when he disagrees with the gunner's announced adjustment.
- A subsequent fire command must be issued immediately after a round is fired. Any delay may cause the gunner to hesitate.

STEP 2: DESCRIBE THE FOUR ELEMENTS OF A SUBSEQUENT FIRE COMMAND AND PROVIDE EXAMPLES.

ELEMENT	DESCRIPTION	EXAMPLE
ALERT	Announcement of range sensing on observation (over, short, doubtful, lost, target). It notifies the gunner that a subsequent fire command is being issued. (Deflection sensings are never announced.)	"OVER" "SHORT" "LOST" "TARGET"
DEFLECTION CORRECTION*	Correction for deflection is based on sensing (left, right, line). Deflection correction is always made in mils and is never more than 3 because of accuracy of task fire controls. If round is sensed as being left of target, correction is "RIGHT." If sensing is right, correction is "LEFT."	"LEFT ONE" "RIGHT THREE"

ELEMENT	DESCRIPTION	EXAMPLE
RANGE CORRECTION*	Correction for range based on sensing. Range correction is made in mils, meters, or target form, depending on sight and/or ammunition used.	
	• Primary sight and APDS/HEAT-- ±1 mil.	"DROP ONE"
	• Primary sight and other main gun ammo	
	-- Add or drop 2 mils to 2,000 meters	"ADD TWO"
	-- Add or drop 4 mils beyond 2,000 meters	
	• Telescope--add or drop 200/400 meters	"DROP TWO HUNDRED"
	• Battlesight--Add or drop ½/1 target form.	"ADD ONE HALF FORM"
EXECUTION	Announcement of execution element. Various execution elements and actions taken are:	
	• **Fire**--Target engagment continues.	"FIRE"
	• **Cease Fire**--Target engagement terminated.	"CEASE FIRE"
	• **Reengage**--Gunner relases and fires (for sensing of "LOST").	"REENGAGE"

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the tank commander understands the correct decisions and steps for issuing a subsequent fire command quickly and accurately.
- To allow the tank commander to develop and fine-tune performance skills at his own pace.

GUIDELINES

- Position yourself so that you can hear the tank commander's performance on each part of the task.
- If you have more than one tank commander to train, place the other where he can also hear.

STEP 1: MAKE SURE THE TANK COMMANDER UNDERSTANDS THE BASICS OF THE TASK.

- Request the tank commander to describe when and why a subsequent fire command would be issued.
- Request the tank commander to describe the four elements of a subsequent fire command and provide examples of use of each element.

STEP 2: HAVE THE TANK COMMANDER PRACTICE THE TASK.

- Use the PRACTICE/EVALUATION FORM as a guide.
- Have the TC practice on each step until performance on that step is correct and timely. Then continue to the next task step.
- Finally, when performance on the last step is correct and timely, then have the TC perform each step in succession.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

- At the end of each practice, give the tank commander feedback on his performance.
  - -- Correct faulty performance of individual steps.
  - -- Reinforce correct performance of individual steps.
  - -- Summarize speed and success of entire task performance.

STEP 4: CONTINUE PRACTICE UNTIL TASK IS PERFORMED CORRECTLY WITHOUT GUIDANCE.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The tank commander will be able to issue all elements of a subsequent fire command correctly.

GUIDELINES

Conduct three evaluation trials.

STEP 1: OBSERVE AND EVALUATE THE TANK COMMANDER'S PERFORMANCE USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- All steps are performed correctly.
- Optional elements are included only when necessary.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH REPETITION OF THE EVALUATION EXERCISE. TELL THE TANK COMMANDER HOW HE PERFORMED ON:

- Issuing a subsequent fire command for a sensing of "TARGET."
- Issuing a subsequent fire command for a sensing of "LOST."
- Issuing a subsequent fire command when gunner is using primary sight.
- Issuing a subsequent fire command when gunner is using telescope.
- Issuing a subsequent fire command when gunner is using battlesight.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If TC met standards on all three trials, no more training on this module is required.
- If TC did not meet standard on all three trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

ISSUING A SUBSEQUENT FIRE COMMAND

INSTRUCTOR	TC	GO	NO GO
Request the TC to issue a subsequent fire command for a sensing of target destruction.	1. Issue subsequent fire command. • Alert--"TARGET." • Execution--"CEASE FIRE."		
Request the TC to issue a subsequent fire command for no sensing by gunner or TC.	2. Issue subsequent fire command. • Alert--"LOST." • Execution--Any one of following: -- "FIRE" -- "REENGAGE" -- "DROP ___, FIRE" -- "CEASE FIRE"		
Request the TC to issue a subsequent fire command for a sensing of over and left with gunner using primary sight and APDS.	3. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"RIGHT ONE/TWO/THREE." • Range correction--"DROP ONE." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of short and line with gunner using the telescope.	4. Issue subsequent fire command. • Alert--"SHORT." • Range correction--"ADD TWO/FOUR HUNDRED." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of over and right with gunner using battlesight.	5. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"LEFT ONE/TWO/THREE." • Range correction--"DROP ONE HALF FORM." • Execution--"FIRE."		

TRIAL 1 Low Difficulty		TRIAL 2 Moderate Difficulty		TRIAL 3 High Difficulty	
GO	NO GO	GO	NO GO	GO	NO GO

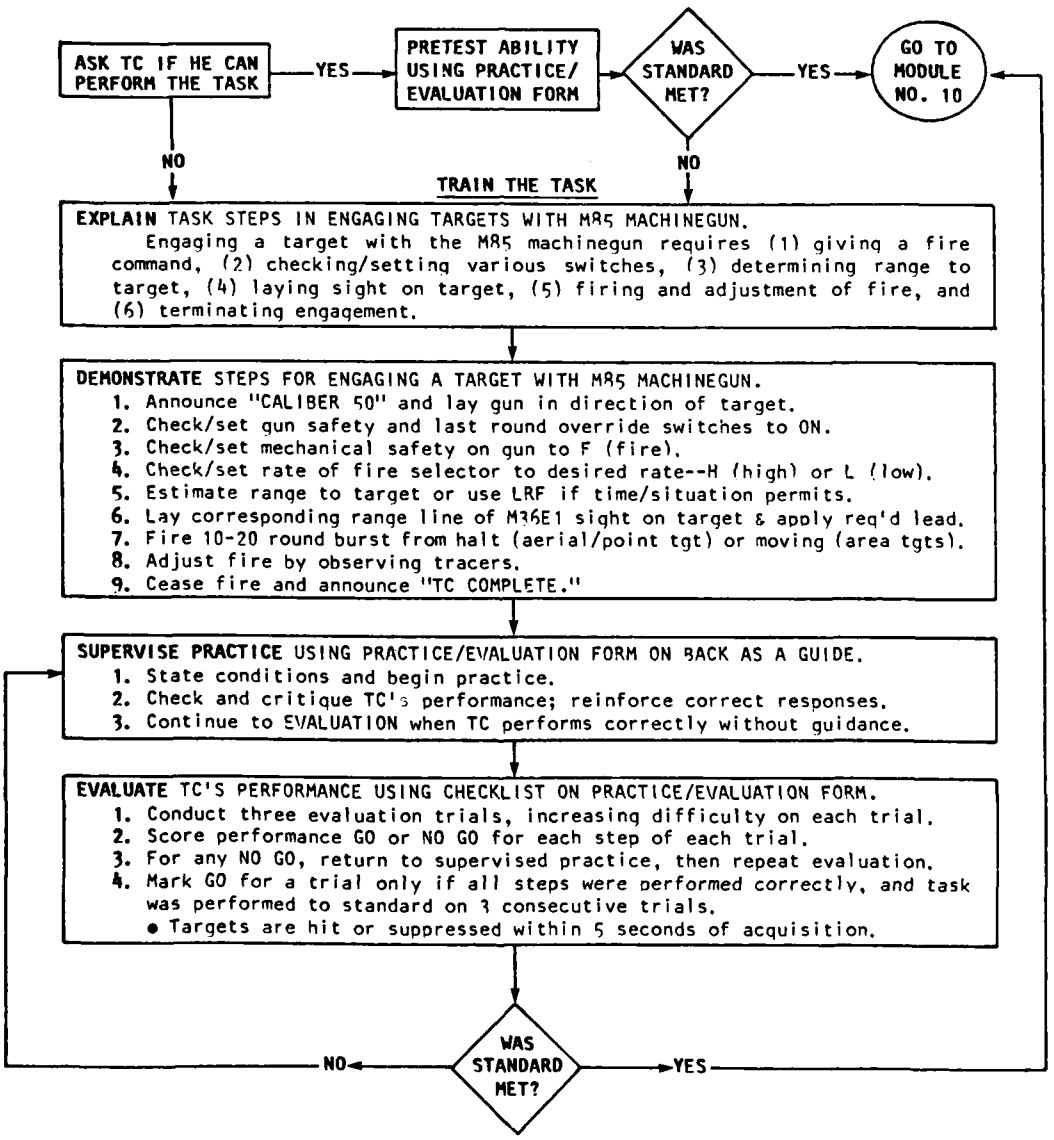
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 9**

TASK: ENGAGE TARGETS WITH M85 MACHINEGUN

PREREQUISITE TASKS: TANK COMMANDER MODULES 1, 2, AND 3

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E3, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK; STOPWATCH; STATIONARY, MOVING, AND AERIAL TARGETS



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform this task to standard: Engage targets with M85 machinegun.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.
- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.
- M85 machinegun is installed and loaded.
- TC's prepare-to-fire checks are completed.
- Commander's weapon station is powered up.

STEP 3: EVALUATE TANK COMMANDER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.
- If performance is correct, then continue with another module or have the tank commander assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Specify target and request TC to engage it with M85 MG. Start stopwatch.	1. Announce "CALIBER 50" & lay gun in direction of target.		
	2. Check/set gun safety and last round override switches to ON.		
	3. Check/set mechanical safety to F (fire).		
Check rate of fire selected. Low rate of fire except for aircraft.	4. Check/set rate of fire selector.		
	5. Estimate range to target or use LRF.		
	6. Lay range line of M36E1 sight on target, and apply lead if required.		
	7. Fire using electrical or manual trigger.		
Check that firing is in 10-20 round bursts (2-3 tracers) and proper lead applied.	8. Adjust fire by observing tracers.		
Stop stopwatch when target hit or suppressed.	9. Cease fire and announce "TC COMPLETE."		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in applying main gun misfire procedures.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: EXPLAIN MEANINGS OF CHECKFIRE, MISFIRE, HANGFIRE, AND COOK-OFF.

- CHECKFIRE: A command to interrupt a fire mission which may be given by any crew member.
- MISFIRE: A failure to fire due to faulty firing mechanism or element in propelling charge explosive train.
- HANGFIRE: A delay in the functioning or propelling charge explosive train. DANGER: A hangfire may be mistaken for a misfire. Wait 2 minutes before opening the breech.
- COOK-OFF: A functioning of any or all of the explosive components of a round caused by chambering in a hot gun.

STEP 2: DEMONSTRATE MISFIRE PROCEDURES FROM GUNNER'S STATION.

- Announce "MISFIRE." Keep main gun trained on target.
- Attempt to fire using trigger on gunner's control handle that was not used initially. Announce "MISFIRE."
- Attempt to fire using trigger on manual elevating handle. Announce "MISFIRE."
- Wait for TC to attempt to fire from his position.
- Place main gun switch in OFF position.
- Attempt to fire using manual firing device (blasting machine). Announce "MISFIRE."
- Direct loader to place loader switch in SAFE position and wait 2 minutes, then open breech, rotate round ½ turn, close breech, place loader switch in FIRE position and announce "UP."
- Attempt to fire using an electrical trigger. Announce "MISFIRE."
- Place main gun switch in OFF position.

STEP 3: EXPLAIN PROCEDURES FOR ROUND THAT FAILS TO FIRE.

- When gun fails to fire, the round is assumed faulty.
- Remove round. If gun is **hot** and round cannot be removed within one additional minute, the round should remain in the gun for 2 hours.
- Evacuate all personnel from tank until gun is cool.
- Remove round.
- Perform complete firing circuit test.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the tank commander understands the correct decisions and steps for engaging targets with the M85 machinegun.
- To allow the tank commander to develop and fine-tune performance skills at his own pace.

GUIDELINES

- Position yourself so that you can observe the tank commander's performance on each part of the task.
- If you have more than one tank commander to train, place the other where he can also observe.

STEP 1: MAKE SURE THE TANK COMMANDER UNDERSTANDS THE BASICS OF THE TASK.

- Alert crew by announcing "CALIBER 50" and laying gun for direction.
- Check/set switches, safety and rate of fire selector.
- Estimate/determine range to target and lay sight on target.
- Fire while moving or from brief halt, depending on type of target.
- Fire in 10-20 round bursts (2-3 tracers).
- Adjust fire by observing tracers.
- Cease fire and announce "TC COMPLETE."

STEP 2: HAVE THE TANK COMMANDER PRACTICE THE TASK.

- Use the PRACTICE/EVALUATION FORM as a guide.
- Have the TC practice on each step until performance on that step is correct and timely. Then continue to the next task step.
- Finally, when performance on the last step is correct and timely, then have the TC perform each step in succession.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

- At the end of each practice, give the tank commander feedback on his performance.
  - -- Correct faulty performance of individual steps.
  - -- Reinforce correct performance of individual steps.
  - -- Summarize speed and success of entire task performance.

STEP 4: CONTINUE PRACTICE UNTIL TASK IS PERFORMED CORRECTLY WITHOUT GUIDANCE.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The tank commander will be able to perform all steps and carry out all decisions for engaging targets with the M85 machinegun.

GUIDELINES

Conduct three evaluation trials.

STEP 1: OBSERVE AND EVALUATE THE TANK COMMANDER'S PERFORMANCE OF STEPS 1-9 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-9 performed correctly.
- Target hit or suppressed within 5 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH REPETITION OF THE EVALUATION EXERCISE. TELL THE TANK COMMANDER HOW HE PERFORMED ON:

- Issuing a fire command and laying gun in direction of target.
- Checking/setting switch settings.
- Estimating or determining range to target.
- Laying sight on target and applying lead, if required.
- Firing in 10-20 round bursts (2-3 tracers).
- Using correct technique of fire for type target; area, point, moving, or aerial.
- Adjusting fire by observation of tracers.
- Terminating target engagement.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If TC met standard on all three trials, no more training on this module is required.
- If TC did not meet standard on all three trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

ENGAGE TARGETS WITH M85 MACHINEGUN

INSTRUCTOR	TC	GO	NO GO
State conditions for task. • MG is installed and loaded. • TC's prepare-to-fire checks completed. • CWS is powered up.			
Specify target and request TC to engage it with M85 MG. Start stopwatch.	1. Announce "CALIBER 50" and lay gun in direction of target.		
	2. Check/set gun safety and last round override switches to ON.		
	3. Check/set mechanical safety on gun to F (fire).		
Check rate of fire selected. Low rate should be used for all targets except aircraft.	4. Check/set rate of fire selector to desired rate, H (high) or L (low).		
	5. Estimate range to target or use LRF if time/situation permits.		
	6. Lay corresponding range line of M36E1 sight on target, and apply lead if required.		
Check that firing is in 10-20 round burst (2-3 tracers) and: • Nearest target engaged (area tgts). • 5 mil lead applied (moving tgts). • 50- or 200-meter lead applied (low- or high-performance aircraft.)	7. *Fire using electrical trigger* or trigger extension handle. o Continue to move when engaging area targets. o Halt briefly when engaging aerial or point targets.		
Stop stopwatch when target hit or suppressed.	8. Adjust fire by observing tracers. • Adjust elevation using manual control handle. • Adjust deflection using manual traversing handle in TC override (when only M85 in use).		
	9. Cease fire and announce "TC COMPLETE."		

TRIAL 1

Low Difficulty

GO	NO GO

Time: _____

TRIAL 2

Moderate Difficulty

GO	NO GO

Time: _____

TRIAL 3

High Difficulty

GO	NO GO

Time: _____

TCL 10-1

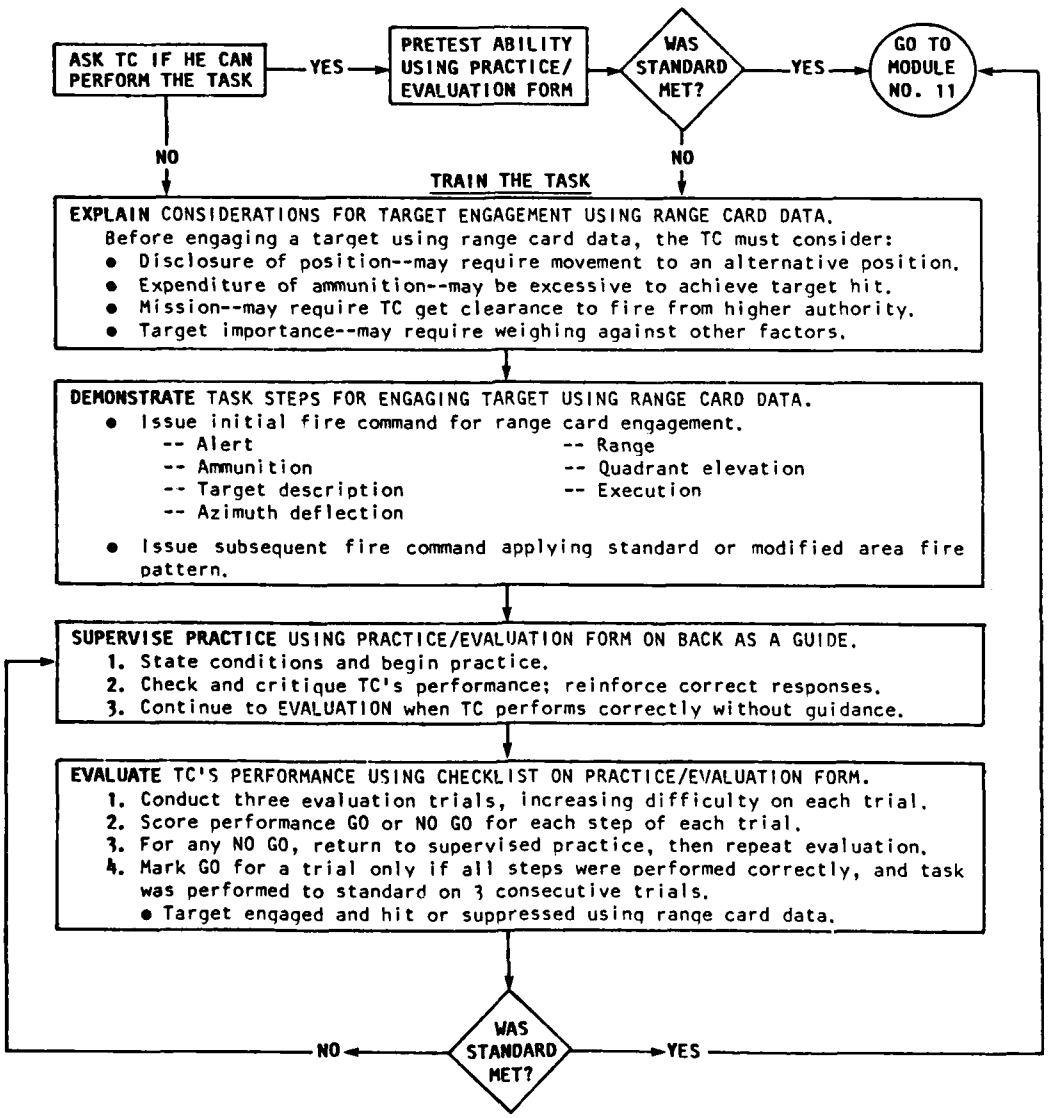
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 10**

TASK: DIRECT MAIN GUN ENGAGEMENT USING RANGE CARD DATA

PREREQUISITE TASKS: TANK COMMANDER MODULES 3 AND 5

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E1/2, TC 17-15-13

SUPPORT REQUIREMENTS: M60A3 TANK, STATIONARY TARGETS, M55 LASER (OPTIONAL), IC-26



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform this task to standard: Direct main gun engagement using range card data.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Tank is in a marked firing position.
- A range card has been completed.

STEP 3: EVALUATE TANK COMMANDER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the tank commander assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

INSTRUCTOR	TC	GO	NO GO
Specify a range card target and request TC to engage it.	1. Issue fire command for target engagement using range card data. • Alert--"GUNNER." • Ammo--"HEAT."		
Have loader announce "UP."	• Description--"BARN."		
Have gunner apply defl. on azimuth indicator.	• Deflection--"EIGHT FIVE THREE LEFT."		
Have gunner indicate range.	• Range--"TWO THOUSAND."		
Have gunner apply elev. and center bubble.	• Quad. Elev--"PLUS ONE FIVE."		
Have gunner announce "ON THE WAY."	• Execution--"FIRE."		
Request TC to issue subsequent fire commands for standard area fire pattern.	2. Issue subsequent fire command for standard area fire pattern. • "ADD ONE--FIRE." • "DROP TWO--FIRE." • "ADD ONE--RIGHT TEN--FIRE." • "LEFT TWENTY--FIRE."		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by tank commander in engaging a target with the main gun using range card data.
- To give the tank commander a chance to learn how this task is performed to standard by an expert.

GUIDELINES

- Position the tank commander where he can hear you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: EXPLAIN CONSIDERATIONS FOR ENGAGING TARGET USING RANGE CARD DATA.

- **Disclosure of position**--direct fire will pinpoint a tank and force it to move to an alternate position.
- **Expenditure of ammunition**--excessive amounts of ammunition may be needed to achieve a target hit.
- **Mission**--control of firing may be retained by the section or platoon leader or the company commander.
- **Target importance**--threat tanks, for example, are much more important than a reconnaissance patrol.

STEP 2: ISSUE A FIRE COMMAND USING RANGE CARD DATA.

- Announce alert element.
- Announce ammunition element.
- Announce target description.
- Announce deflection setting for azimuth indicator.
- Announce range to be indexed in computer.
- Announce elevation setting for elevation quadrant.
- Announce execution element.

STEP 3: EXPLAIN AREA FIRE PATTERNS.

- Standard area fire pattern:
  Fire first round from range card data.
  For second round, add 1 mil and fire.
  For third round, drop 2 mils and fire.
  For fourth round, add 1 mil, right 10 mils, and fire.
  For fifth round, left 20 mils and fire.
- Modified area fire pattern as specified in unit SOP.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the tank commander understands the correct decisions and steps for directing main gun engagement using range card data.
- To allow the tank commander to develop and fine-tune performance skills at his own pace.

GUIDELINES

- Position yourself so that you can observe the tank commander's performance on each part of the task.
- If you have more than one tank commander to train, place the other where he can also observe.

STEP 1: MAKE SURE THE TANK COMMANDER UNDERSTANDS THE BASICS OF THE TASK.

- Considerations for target engagement using range card data.
- Issuing initial fire command for target engagement using range card data.
  - -- Alert
  - -- Ammunition
  - -- Target description
  - -- Azimuth deflection
  - -- Range
  - -- Quadrant elevation
  - -- Execution
- Issuing subsequent fire command applying area fire pattern.
  - -- Standard pattern
  - -- Modified pattern

STEP 2: HAVE THE TANK COMMANDER PRACTICE THE TASK.

- Use the PRACTICE/EVALUATION FORM as a guide.
- Have the TC practice on each step until performance on that step is correct and timely. Then continue to the next task step.
- Finally, when performance on the last step is correct and timely, then have the TC perform each step in succession.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

- At the end of each practice, give the tank commander feedback on his performance.
  - -- Correct faulty performance of individual steps.
  - -- Reinforce correct performance of individual steps.
  - -- Summarize speed and success of entire task performance.

STEP 4: CONTINUE PRACTICE UNTIL TASK IS PERFORMED CORRECTLY WITHOUT GUIDANCE.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The tank commander will be able to weigh all considerations for, and perform all steps to direct, engaging targets with the main gun from range card data.

GUIDELINES

Conduct three evaluation trials.

STEP 1: OBSERVE AND EVALUATE THE TANK COMMANDER'S PERFORMANCE OF STEPS 1-3 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-3 are performed correctly.
- Target engaged and hit or suppressed using range card data.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH REPETITION OF THE EVALUATION EXERCISE. TELL THE TANK COMMANDER HOW HE PERFORMED ON:

- Weighing considerations for engaging target from range card data.
- Issuing initial fire command using range card data.
- Issuing subsequent fire commands to apply area fire pattern.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If TC met standards on all three trials, no more training on this module is required.
- If TC did not meet standard on all three trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

DIRECT MAIN GUN ENGAGEMENT USING RANGE CARD DATA

INSTRUCTOR	TC	GO	NO GO
Explain conditions for task: • Tank is in a marked firing position and a range card, either circular or sketch, has been completed.			
Request TC to explain considerations for engaging a target using range card data.	1. Explain considerations applicable to range card engagement. • **Disclosure of position**--direct fire will pinpoint a tank and force it to move to an alternate position. • **Expenditure of ammunition**--excessive amounts of ammunition may be needed to achieve a target hit. • **Mission**--control of firing may be retained by the section or platoon leader or the company commander. • **Target importance**--threat tanks, for example, are much more important than a reconnaissance patrol.		
Specify a range card target and request TC to engage it.	2. Issue fire command for target engagement using range card data. • Alert--"GUNNER." • Ammo--"HEAT."		
Have loader announce "UP."	• Description--"[illegible]."		
Have gunner apply defl. on azimuth indicator.	• Deflection--"EIGHT FIVE THREE LEFT."		
Have gunner index range.	• Range--"TWO THOUSAND."		
Have gunner apply elev. and center bubble.	• Quad. Elev--"PLUS ONE FIVE."		
Have gunner announce "ON THE WAY."	• Execution--"FIRE."		
Request TC to issue subsequent fire commands for standard area fire pattern.	3. Issue subsequent fire command for standard area fire pattern. • "ADD ONE--FIRE." • "DROP TWO--FIRE." • "ADD ONE--RIGHT TEN--FIRE." • "LEFT TWENTY--FIRE."		

TRIAL 1 Low Difficulty		TRIAL 2 Moderate Difficulty		TRIAL 3 High Difficulty	
GO	NO GO	GO	NO GO	GO	NO GO

TCL 11-1

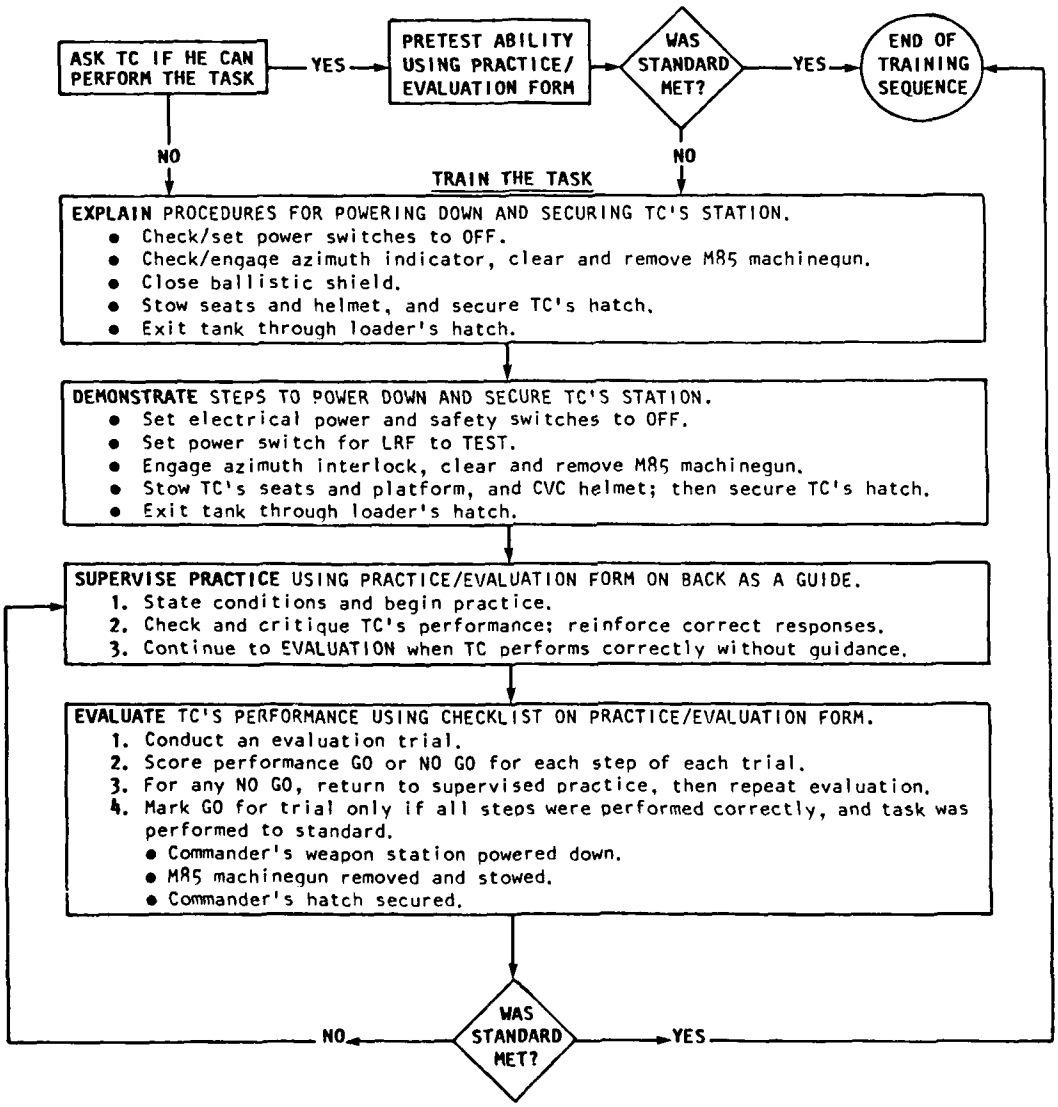
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 11**

TASK: POWER DOWN AND SECURE TANK COMMANDER'S STATION

PREREQUISITE TASKS: TANK COMMANDER MODULE 1

TRAINING REFERENCES: FM 17-19E3, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform this task to standard: Power down and secure tank commander's station.

GUIDELINES

STEP 1: ASK THE TANK COMMANDER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: EVALUATE TANK COMMANDER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the tank commander assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

POWER DOWN AND SECURE TANK COMMANDER'S STATION

INSTRUCTOR	TC	GO	NO GO
Request TC to power down and secure his station.	1. Set cupola power switch to OFF.		
	2. Set electrical gun safety switch for M85 machinegun to OFF.		
	3. Set power switch for M36E1 periscope to OFF.		
	4. Set power switch for LRF to TEST.		
	5. Check/engage azimuth interlock.		
	6. Clear M85 machinegun.		
	7. Remove M36E1 periscope.		
	8. Remove M85 machinegun and stow.		
	9. Install M36E1 periscope.		
	10. Close ballistic shield.		
	11. Set main power switch on AM-1780 to OFF.		
	12. Stow TC's observation seat.		
	13. Stow TC's seat and platform.		
	14. Remove and stow CVC helmet.		
	15. Secure TC's hatch in closed position.		
	16. Exit tank through loader's hatch.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by tank commander in powering down and securing the tank commander's station.
- To give the tank commander a chance to learn how this task is performed to standard by an expert.

GUIDELINES

- Position the tank commander where he can watch you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: SET CUPOLA POWER SWITCH TO OFF.

STEP 2. SET ELECTRICAL GUN SAFETY SWITCH FOR M85 MACHINEGUN TO OFF.

STEP 3. SET POWER SWITCH FOR M36E1 PERISCOPE TO OFF.

STEP 4. SET POWER SWITCH FOR LRF TO TEST.

STEP 5. CHECK/ENGAGE AZIMUTH INTERLOCK.

STEP 6. CLEAR M85 MACHINEGUN.

STEP 7. REMOVE M36E1 PERISCOPE.

STEP 8. REMOVE M85 MACHINEGUN AND STOW.

STEP 9. INSTALL M36E1 PERISCOPE.

STEP 10. CLOSE BALLISTIC SHIELD.

STEP 11. SET MAIN POWER SWITCH ON AM-1780 TO OFF.

STEP 12. STOW TC'S OBSERVATION SEAT.

STEP 13. STOW TC'S SEAT AND PLATFORM.

STEP 14. REMOVE AND STOW CVC HELMET.

STEP 15. SECURE TC'S HATCH IN CLOSED POSITION.

STEP 16. EXIT TANK THROUGH LOADER'S HATCH.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the tank commander understands the correct decisions and steps for powering down and securing the tank commander's station.
- To allow the tank commander to develop and fine-tune performance skills at his own pace.

GUIDELINES

- Position yourself so that you can observe the tank commander's performance on each part of the task.
- If you have more than one tank commander to train, place the other where he can also observe.

STEP 1: MAKE SURE THE TANK COMMANDER UNDERSTANDS THE BASICS OF THE TASK.

- Setting electrical power and safety switches to OFF.
- Setting power switch for LRF to TEST.
- Engaging azimuth interlock, clearing and removing M85 machinegun.
- Stowing TC's seats and platform, and CVC helmet.
- Securing TC's hatch.
- Entering tank through loader's hatch.

STEP 2: HAVE THE TANK COMMANDER PRACTICE THE TASK.

- Use the PRACTICE/EVALUATION FORM as a guide.
- Have the TC practice on each step until performance on that step is correct and timely. Then continue to the next task step.
- Finally, when performance on the last step is correct and timely, then have the TC perform each step in succession.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

- At the end of each practice, give the tank commander feedback on his performance.
  - -- Correct faulty performance of individual steps.
  - -- Reinforce correct performance of individual steps.
  - -- Summarize speed and success of entire task performance.

STEP 4: CONTINUE PRACTICE UNTIL TASK IS PERFORMED CORRECTLY WITHOUT GUIDANCE.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The tank commander will be able to perform all steps for powering down and securing the tank commander's station.

GUIDELINES

Conduct an evaluation trial.

STEP 1: OBSERVE AND EVALUATE THE TANK COMMANDER'S PERFORMANCE OF STEPS 1-16 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER THE TRIAL. ONLY CHECK GO IF:

- Commander's weapon station powered down.
- M85 machinegun removed and stowed.
- Tank commander's hatch secured.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE TANK COMMANDER HOW HE PERFORMED ON:

- Powering down commander's weapon station.
- Removing and stowing M85 machinegun.
- Stowing TC's equipment and securing hatch.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If TC met standards on the trial, no more training on this module is required.
- If TC did not meet standard on the trial:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

POWER DOWN AND SECURE TANK COMMANDER'S STATION

INSTRUCTOR	TC	GO	NO GO
Request TC to power down and secure his station.	1. Set cupola power switch to OFF.		
	2. Set electrical gun safety switch for M85 machinegun to OFF.		
	3. Set power switch for M36E1 periscope to OFF.		
	4. Set power switch for LRF to TEST.		
	5. Check/engage azimuth interlock.		
	6. Clear M85 machinegun.		
	7. Remove M36E1 periscope.		
	8. Remove M85 machinegun and stow.		
	9. Install M36E1 periscope.		
	10. Close ballistic shield.		
	11. Set main power switch on AM-1780 to OFF.		
	12. Stow TC's observation seat.		
	13. Stow TC's seat and platform.		
	14. Remove and stow CVC helmet.		
	15. Secure TC's hatch in closed position.		
	16. Exit tank through loader's hatch.		

TCS1

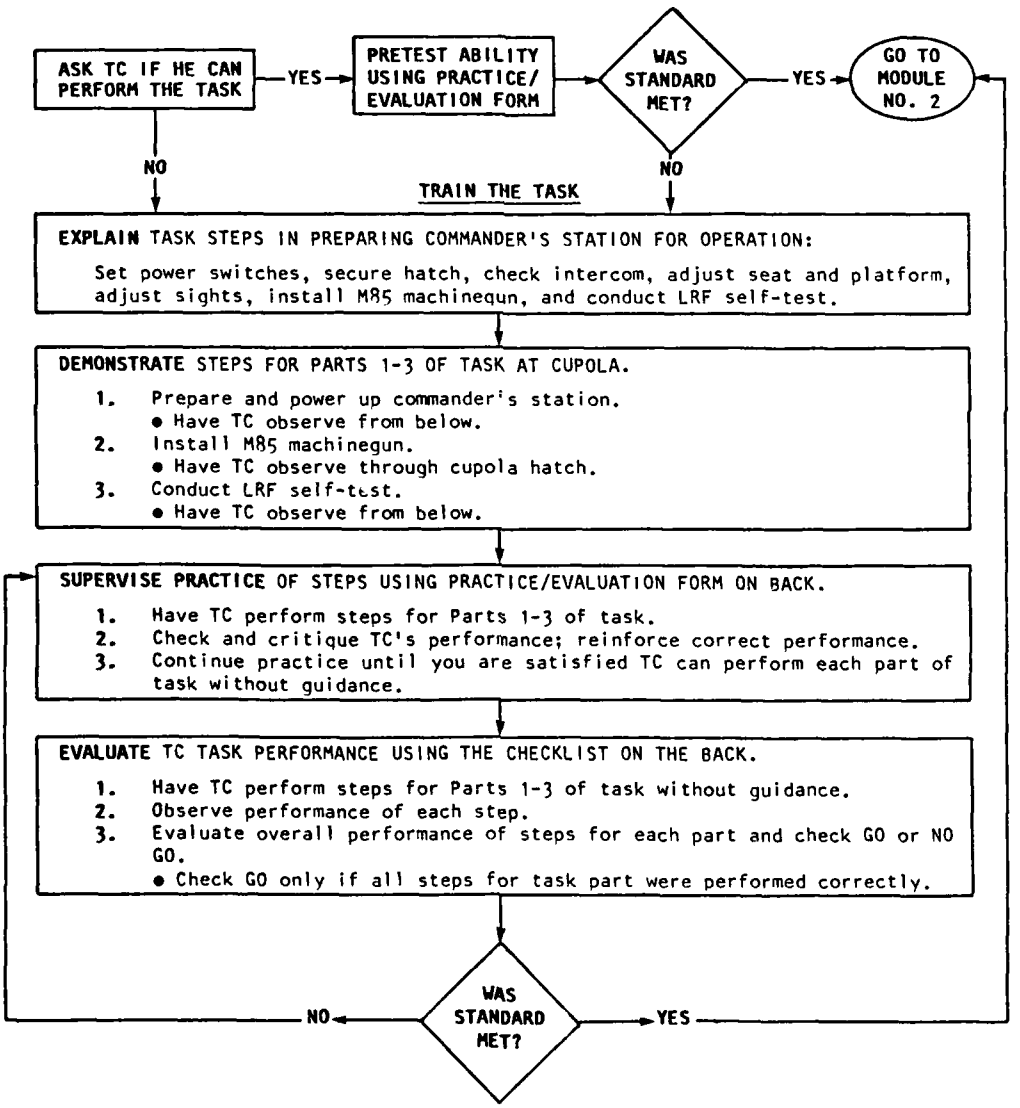
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 1**

TASK: PREPARE STATION, INSTALL M85 MACHINEGUN AND CONDUCT LRF SELF-TEST

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK



PRACTICE/EVALUATION FORM

PART 1: PREPARE AND POWER UP COMMANDER'S STATION

GO	NO GO

- Set switches.
- Secure hatch.
- Check intercom.
- Adjust seat and platform.
- Adjust TTS and M36E1.

PART 2: INSTALL CALIBER .50 M85 MACHINEGUN

GO	NO GO

- Place machinegun into its cradle. Secure with rear mounting pin.
- Compress quick-disconnect clamp. Connect adjusting link assembly to periscope elevation adjusting arm.
- Connect solenoid lead to back plate assembly.

PART 3: PERFORM LRF SELF-TEST

GO	NO GO

Make initial switch settings and check indicators and displays:

Settings	Normal Function Indicators
MODE to TEST MASTER BATTERY to ON POWER to ON	POWER illuminates RANGE (Meters) displays 8888 RETURNS displays 8
• DIM LIGHTS TEST out of the TEST position.	Only RANGE (not flashing), RESET, FEED, BATL RNG, LAST and TEST illuminate. RANGE (METERS) and RETURNS indicate 0000 and 0.
• Continue switch settings and checks.	
MODE to ON then to AUTO	ON and then AUTO illuminate. RANGE flashes within 4 sec.
MANUAL/RANGEFINDER to MANUAL	RANGE should not flash.
MODE to TEST EMER POWER to ON then XMTR TEST	Control panel indicators remain on.
RANGE pushbutton depressed.	RANGE (METERS) indicates 0002. MALF lights.
BATL RNG dpressed.	BATL RNG should light.
• Perform each step in LRF Logic Test (Table 2-1 Operator's Manual).	
• Perform LRF Firing Test (if authorized lasing area is available.)	

TCS2

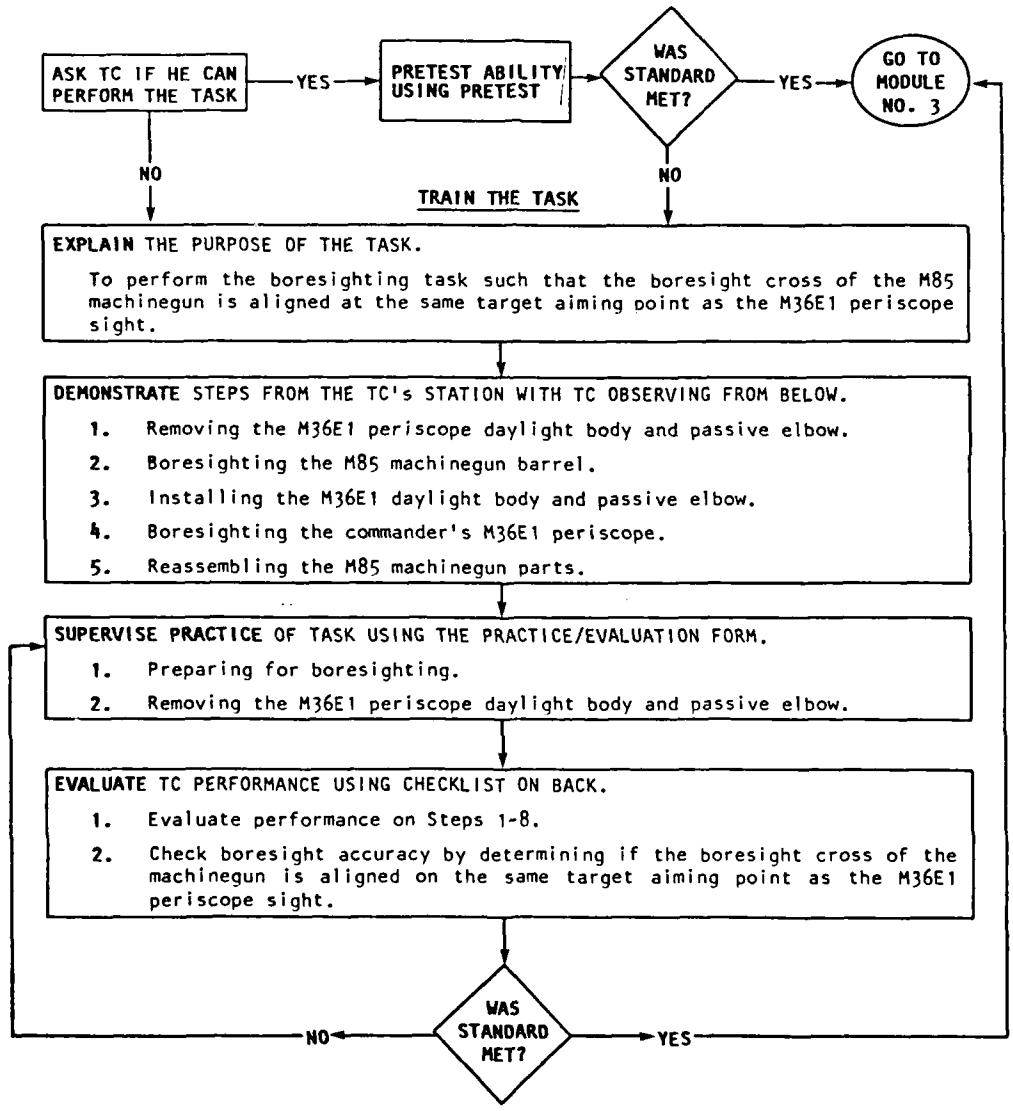
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 2**

TASK: BORESIGHT A CALIBER .50 M85 MACHINEGUN ON AN M60A3 TANK

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-19E3; TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK; CALIBER .50 M85 MACHINEGUN; TARGET; BINOCULARS



PRACTICE/EVALUATION FORM	GO	NO GO
STEP 1: CARRY OUT PREPARATIONS FOR BORESIGHTING. • Verify that the M85 machinegun is clear. • Select a target at a distance of 500 meters which has a clearly defined right angle. • Make certain the tank is on level ground.		
STEP 2: REMOVE THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.		
STEP 3: BORESIGHT THE M85 MACHINEGUN BARREL. • Disconnect solenoid lead connector from backplate assembly. • Remove backplate, bolt buffer group, sear assembly, and bolt assembly. • Hold feed lever, and feed ejector assembly to the left. • Align center of machinegun barrel on target aiming point. • Make adjustments using azimuth adjustment knobs if necessary.		
STEP 4: INSTALL THE M36E1 DAYLIGHT BODY AND PASSIVE ELBOW.		
STEP 5: BORESIGHT THE COMMANDER'S M36E1 PERISCOPE. • *Sight through daylight body eyepiece.* Use ELEV/DEFL knobs to light boresight cross on the same aiming point as the barrel bore. • Release boresight knobs and slip scales to 4 and 4. • Sight through passive elbow eyepiece. Align boresight cross, slip scales to 4 and 4. Verify that daylight body reticle is still on target aiming point.		
STEP 6: REMOVE THE M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.		
STEP 7: REASSEMBLE M85 MACHINEGUN PARTS. • Install bolt assembly. • Install sear assembly. • Install bolt buffer group. • Install backplate. • Place bolt forward and safety at F.		
STEP 8: INSTALL M36E1 PERISCOPE DAYLIGHT BODY AND PASSIVE ELBOW.		
CHECK TC'S BORESIGHT ACCURACY.		

TCS3

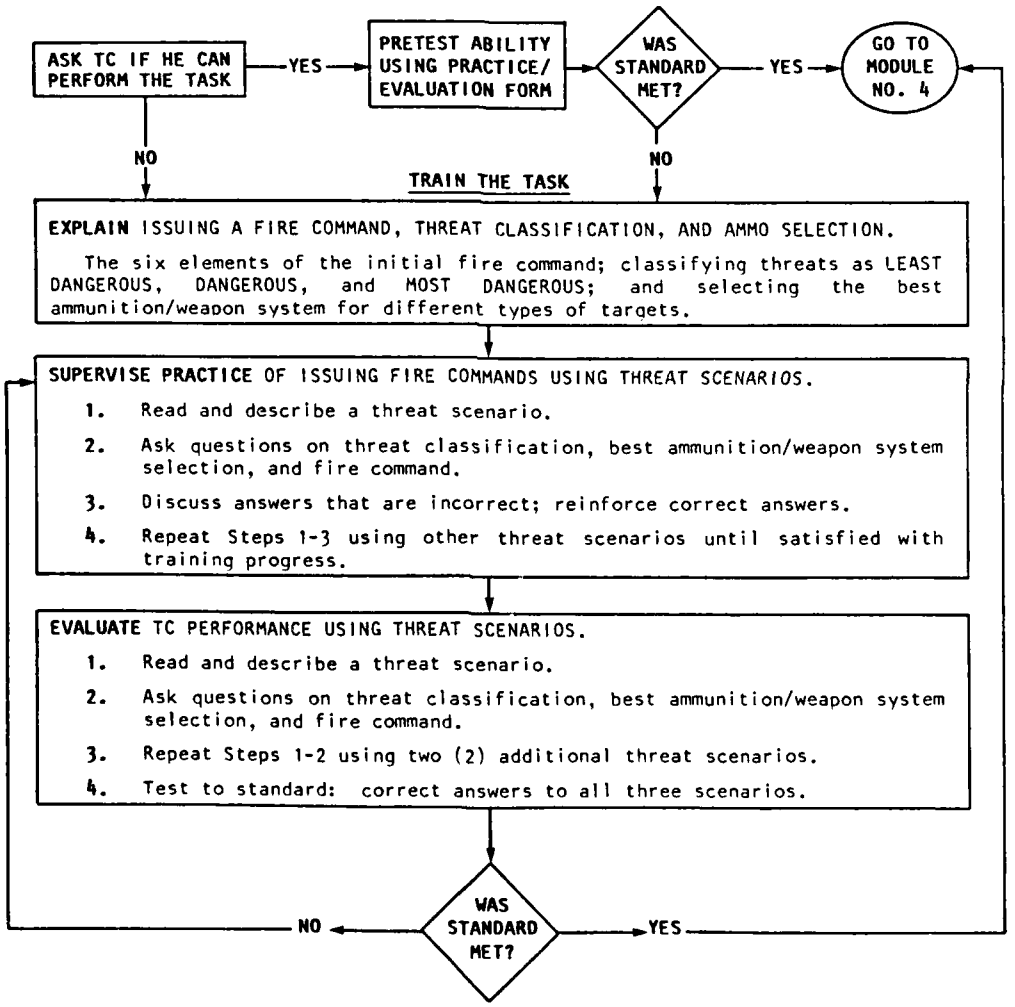
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 3**

TASK: ISSUE FIRE COMMAND

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-12-3; TEC 020-171-5359 E, F

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING; THREAT SCENARIOS (20) (SEE EXAMPLE ON BACK).



EVALUATION

OBJECTIVES

- The tank comander will be able to issue a complete initial fire command when presented with a multiple threat scenario.

GUIDELINES

STEP 1: RANDOMLY SELECT A THREAT SCENARIO FROM THE SET OF 20 SCENARIOS.

STEP 2: DESCRIBE THE SCENARIO TO THE TANK COMMANDER.

STEP 3: ACQUIRE AN ANSWER FOR EACH QUESTION (THREAT CLASSIFICATION, AMMUNITION/WEAPON SELECTION, FIRE COMMAND).

- Record answers in the spaces below.

STEP 4: CHECK GO/NO GO TO SUMMARIZE TC'S RESPONSE.

- Check GO for the scenario if all answers are correct.
- Check NO GO if any of the answers are incorrect.

STEP 5: REPEAT STEPS 1-4 USING TWO ADDITIONAL THREAT SCENARIOS.

STEP 6: DETERMINE IF MORE TRAINING ON THIS TASK IS REQUIRED.

- Acquire GO responses from the tank commander for all three scenarios to meet the standard.
- If three GO responses are not acquired, review required material, PRACTICE material, select three scenarios, and repeat the EVALUATION until the standard is met.

EVALUATION

Scenario	Threat Classification		AMO/WPN Selection		Fire Command		Response Summary	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	GO	NO GO
1								
2								
3								

TCS4

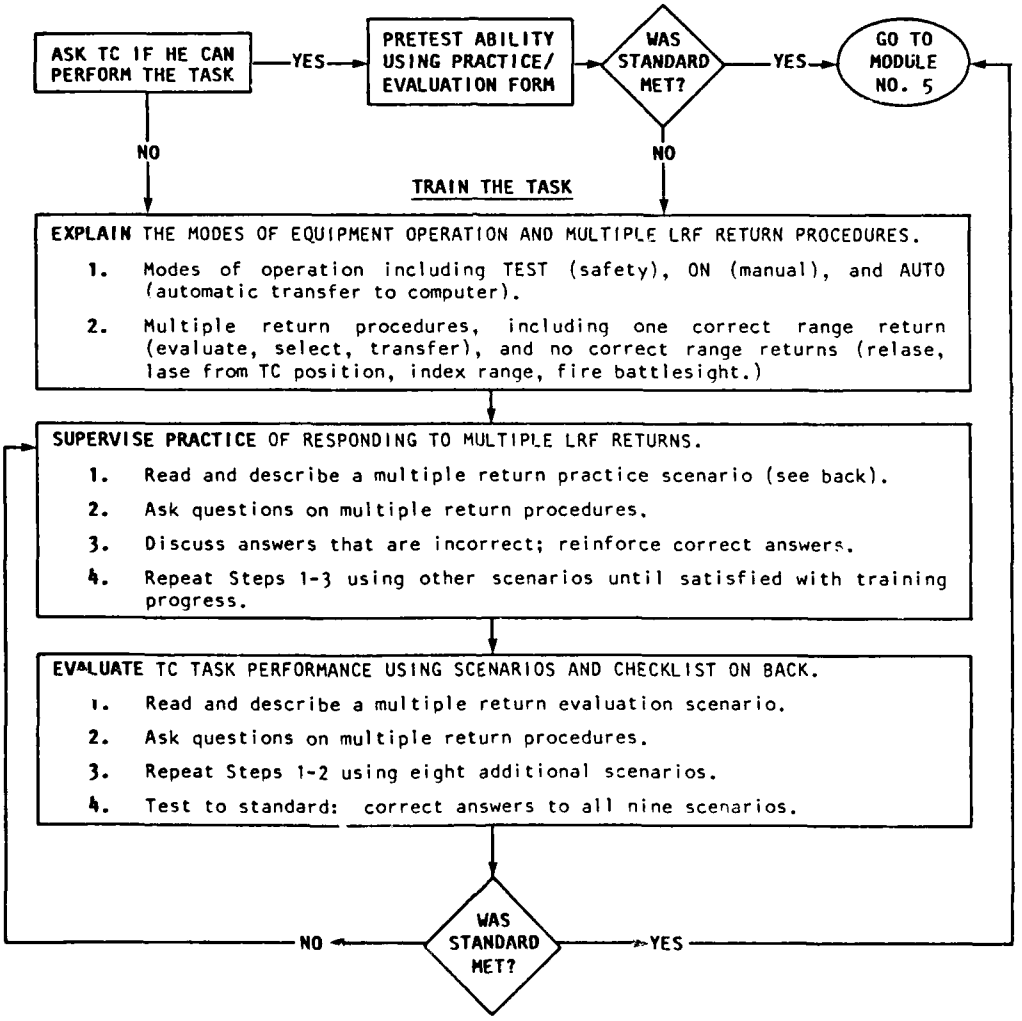
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 4**

TASK: RESPOND TO MULTIPLE LRF RETURNS

PREREQUISITE TASKS: TC MODULE NO. 3

TRAINING REFERENCES: FM 17-12-3

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING; LRF SCENARIOS (INCLUDED)



TCS4

PRACTICE SCENARIOS

	GO	NO GO
1. You have ranged on a target and the SELECT light goes on. What are the appropriate TC actions?		
2. You have ranged on a target and the SELECT light goes on. RANGE 1 is 500 m, RANGE 2 is 1000 m, and RANGE LAST is 1400 m. You estimate the target to be about 1500 m distance. What is the appropriate response?		
3. You have ranged on a target and the SELECT light goes on. RANGE 1, RANGE 2, and RANGE LAST are all very different from your estimation of range. What is one appropriate TC response?		
4. You have ranged on a target a number of times and continue to receive inaccurate LRF returns. The target is about 1200 m away. What is the appropriate response?		

EVALUATION SCENARIOS

1. You have ranged on a target and the SELECT light goes on. What are the appropriate TC actions?		
2. You have ranged on a target and receive multiple LRF returns. RANGE 2 is quite close to your estimated range. What is the appropriate TC response?		
3. You have ranged on a target and receive multiple LRF returns. None of the three ranges displayed is close to your estimated target range. What are the appropriate steps to relase?		
4. You have ranged on a target and receive multiple LRF returns. The LAST return is close to your estimated range. What is the appropriate TC response?		
5. You have ranged on a target numerous times and continue to receive inaccurate multiple LRF returns. What are the TC steps for manually inducing an estimated range?		
6. You have ranged on a target and the SELECT light goes on. RANGE 1 agrees with your estimated range; RANGE 2 and RANGE LAST do not. What is the appropriate TC response?		
7. You have ranged on a target and receive multiple LRF returns. The first range is close to your estimated range. What is the appropriate TC response?		
8. You have ranged on a target and receive multiple LRF returns. None of the three ranges is close to your estimated range. What are the appropriate steps to relase?		
9. You have ranged on a target and the SELECT light goes on. RANGE 2 agrees with your estimated range; RANGE 1 and RANGE LAST do not. What is the appropriate TC response?		

TCS5

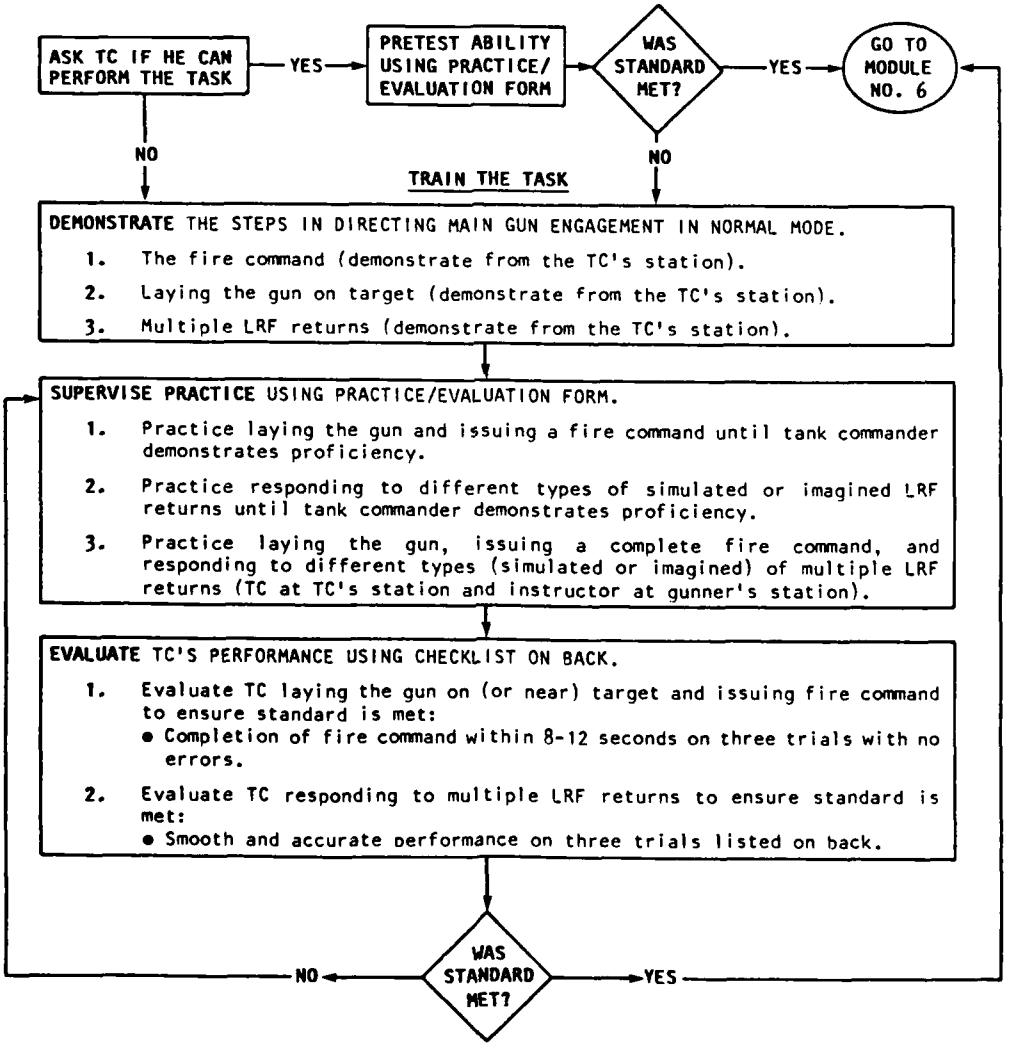
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 5**

TASK: DIRECT MAIN GUN ENGAGEMENT IN NORMAL MODE

PREREQUISITE TASKS: TC MODULES NOS. 3 AND 4

TRAINING REFERENCES: FM 17-12-3; TEC 020-171-5359 E, F

SUPPORT REQUIREMENTS: M60A3 TANK; M55 LASER (OPTIONAL); STOPWATCH, TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES (OR AVAILABLE TARGETS: VEHICLES, PEOPLE)



PRACTICE/EVALUATION FORM

ISSUING THE FIRE COMMAND AND LAYING THE GUN ON TARGET

INSTRUCTOR (In Gunner's Station)	TC	GO	NO GO
Begin Exercise:			
Instruct TC to identify target, lay the gun, and issue a complete fire command. Say "GO" and start the stopwatch.	1. Announces "GUNNER, SABOT, TANK."		
Evaluate accuracy of first part of fire command.	2. Lays the main gun within the gunner's view of target.		
Evaluate accuracy of laying the gun.	3. Releases turret control.		
Announce "UP" as would loader.			
Announce "IDENTIFIED" as would gunner.			
Verify that turret control was released.			
Announce "LASING."	4. Announces "FIRE" (or "FROM MY POSITION" or "AT MY COMMAND").		
Announce "ON THE WAY" and fire gun. Stop stopwatch (less than 12 seconds?)			
Check setting of switches.	5. Resets TC station switches.		

TRIAL 1	
GO	NO GO

Time: _____

TRIAL 2	
GO	NO GO

Time: _____

TRIAL 3	
GO	NO GO

Time: _____

RESPONDING TO MULTIPLE LRF RETURNS

	GO	NO GO
1. Conduct a trial in which TC is told that three multiple LRF returns are received. The "LAST" return is judged to be accurate. Observe his responses for correctness.		
2. Conduct a trial in which TC is told that three multiple LRF returns are received. Return "1" is judged to be accurate. Observe his responses for correctness.		
3. Conduct a trial in which TC is told that three multiple LRF returns are received. None of the three returns is judged to be accurate. Observe his responses for correctness.		

TCS6

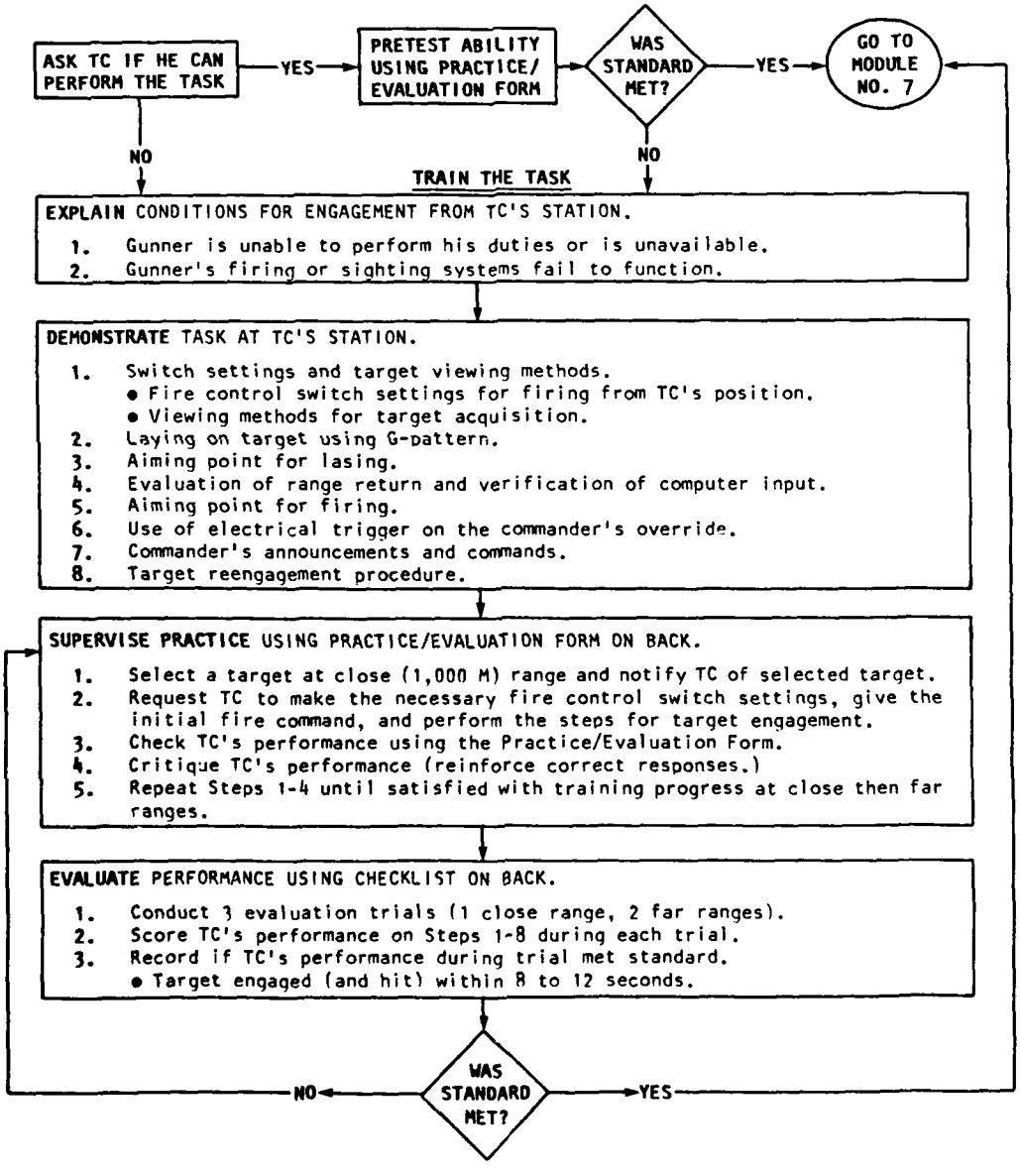
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 6**

TASK: ENGAGE STATIONARY TARGETS FROM TC'S STATION USING PRECISION GUNNERY

PREREQUISITE TASKS: TC MODULES NOS. 1, 3, 4, AND 5

TRAINING REFERENCES: FM 17-12-3; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 1 TARGET SILHOUETTE AT CLOSE (1,000 M); 2 TARGET SILHOUETTES AT FAR RANGES (1,800 M).



PRACTICE/EVALUATION FORM

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Locate target and command "LOAD (SABOT)."		
	2. Identify target.		
Announce "UP."	3. Lay aiming cross slightly below center of target's visible mass using G-pattern.		
Check gun lay and lasing aiming point.	4. Announce "LASING," lase on target, and evaluate range data (optional).		
Check TC's evaluation of range data.	5. Relay aiming cross on center of target's visible mass using override control.		
Check relay of gun and aiming point for firing.	6. Announce "ON THE WAY" and fire using trigger on override.		
Stop stopwatch. Check resetting of fire control switches.	7. Announce "CEASE FIRE."		
	8. Reset fire control switches to original positions.		
Score performance trial and record time.			

TRIAL 1	TRIAL 2	TRIAL 3
Close Range	Far Range	Far Range
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

TCS7

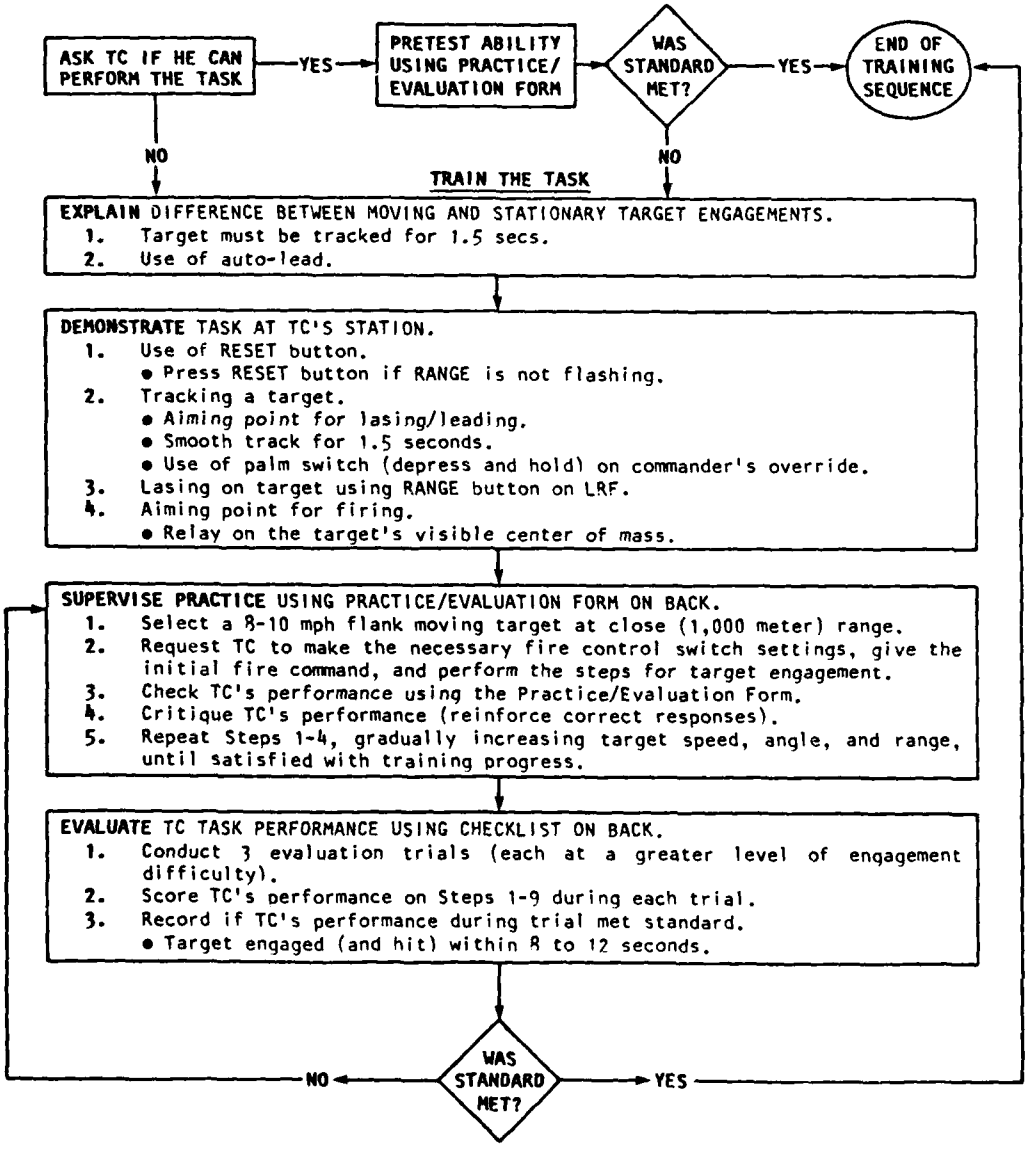
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 7**

TASK: ENGAGE MOVING TARGETS FROM TC'S STATION USING AUTO-LEAD.

PREREQUISITE TASKS: TC MODULES NOS. 1, 3, 4, 5, AND 6.

TRAINING REFERENCES: FM 17-12-3; FM 17-19E3; FM 17-13-3

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 3 MOVING TARGETS (5-25 MPH) OF LOW, MODERATE, AND HIGH DIFFICULTY LEVELS.



PRACTICE/EVALUATION FORM

INSTRUCTOR	TC	GO	NO GO
Begin Exercise: Notify TC of the target, request TC to begin target engagement procedure, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Press RESET button if RANGE is not flashing. Locate target and command "LOAD (SABOT)."		
Announce "UP."	2. Identify target.		
	3. Depress and hold palm switch on TC's override. Lay aiming cross slightly below center of target's visible mass using G-pattern. Track target for 1½ seconds.		
Check gun lay, lasing aiming point, and TC's tracking ability.	4. Announce "LASING," press and release RANGE button on LRF and establish lead by pressing and holding thumb switch.		
	5. Evaluate range data and reply data on RANGE (METERS) and RETURNS display.		
Check TC's evaluation of range data.	6. Relay aiming cross on center of target's visible mass using override control.		
Check relay of gun and aiming point for firing.	7. Announce "ON THE WAY" and fire using trigger on override.		
Stop stopwatch. Check resetting of fire control switches.	8. Announce "CEASE FIRE."		
	9. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if Steps 1-9 performed correctly and task standard met.)			

TRIAL 1

Low Difficulty

GO	NO GO

Time: _____

TRIAL 2

Moderate Difficulty

GO	NO GO

Time: _____

TRIAL 3

High Difficulty

GO	NO GO

Time: _____

TCSR

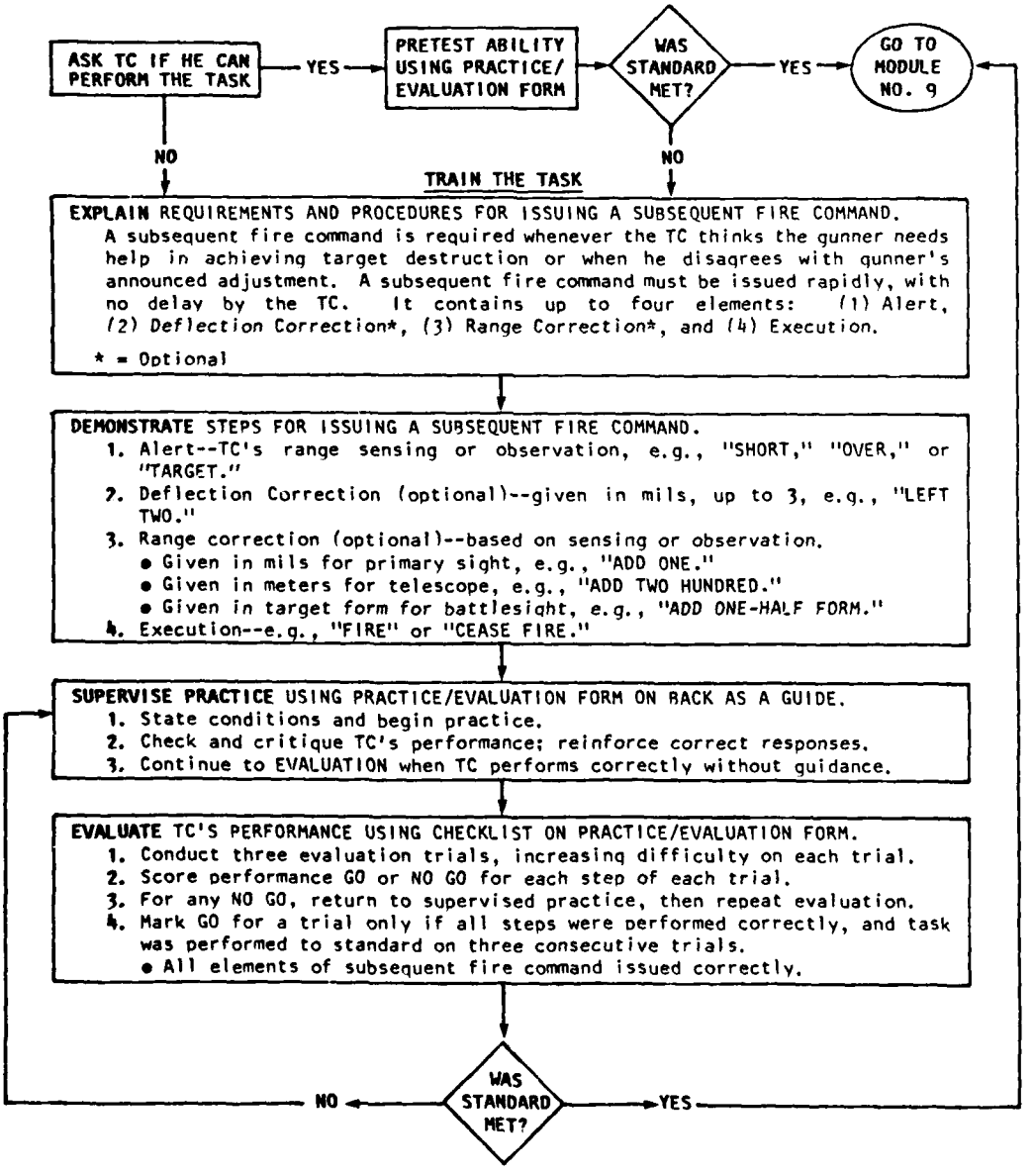
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 8**

TASK: ISSUE SUBSEQUENT FIRE COMMAND

PREREQUISITE TASKS: TANK COMMANDER MODULES 3, 4, 5, 6 and 7

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E3

SUPPORT REQUIREMENTS: CLASSROOM OR FIELD SETTING



TCSR

PRACTICE/EVALUATION FORM

ISSUING A SUBSEQUENT FIRE COMMAND

INSTRUCTOR	TC	GO	NO GO
Request the TC to issue a subsequent fire command for a sensing of target destruction.	1. Issue subsequent fire command. • Alert--"TARGET." • Execution--"CEASE FIRE."		
Request the TC to issue a subsequent fire command for no sensing by gunner or TC.	2. Issue subsequent fire command. • Alert--"LOST." • Execution--Any one of following: -- "FIRE" -- "REENGAGE" -- "DROP ___, FIRE" -- "CEASE FIRE"		
Request the TC to issue a subsequent fire command for a sensing of over and left with gunner using primary sight and APDS.	3. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"RIGHT ONE/TWO/THREE." • Range correction--"DROP ONE." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of short and line with gunner using the telescope.	4. Issue subsequent fire command. • Alert--"SHORT." • Range correction--"ADD TWO/FOUR HUNDRED." • Execution--"FIRE."		
Request the TC to issue a subsequent fire command for a sensing of over and right with gunner using battlesight.	5. Issue subsequent fire command. • Alert--"OVER." • Deflection correction--"LEFT ONE/TWO/THREE." • Range correction--"DROP ONE HALF FORM." • Execution--"FIRE."		

TRIAL 1

Low Difficulty

GO	NO GO

TRIAL 2

Moderate Difficulty

GO	NO GO

TRIAL 3

High Difficulty

GO	NO GO

TCSQ

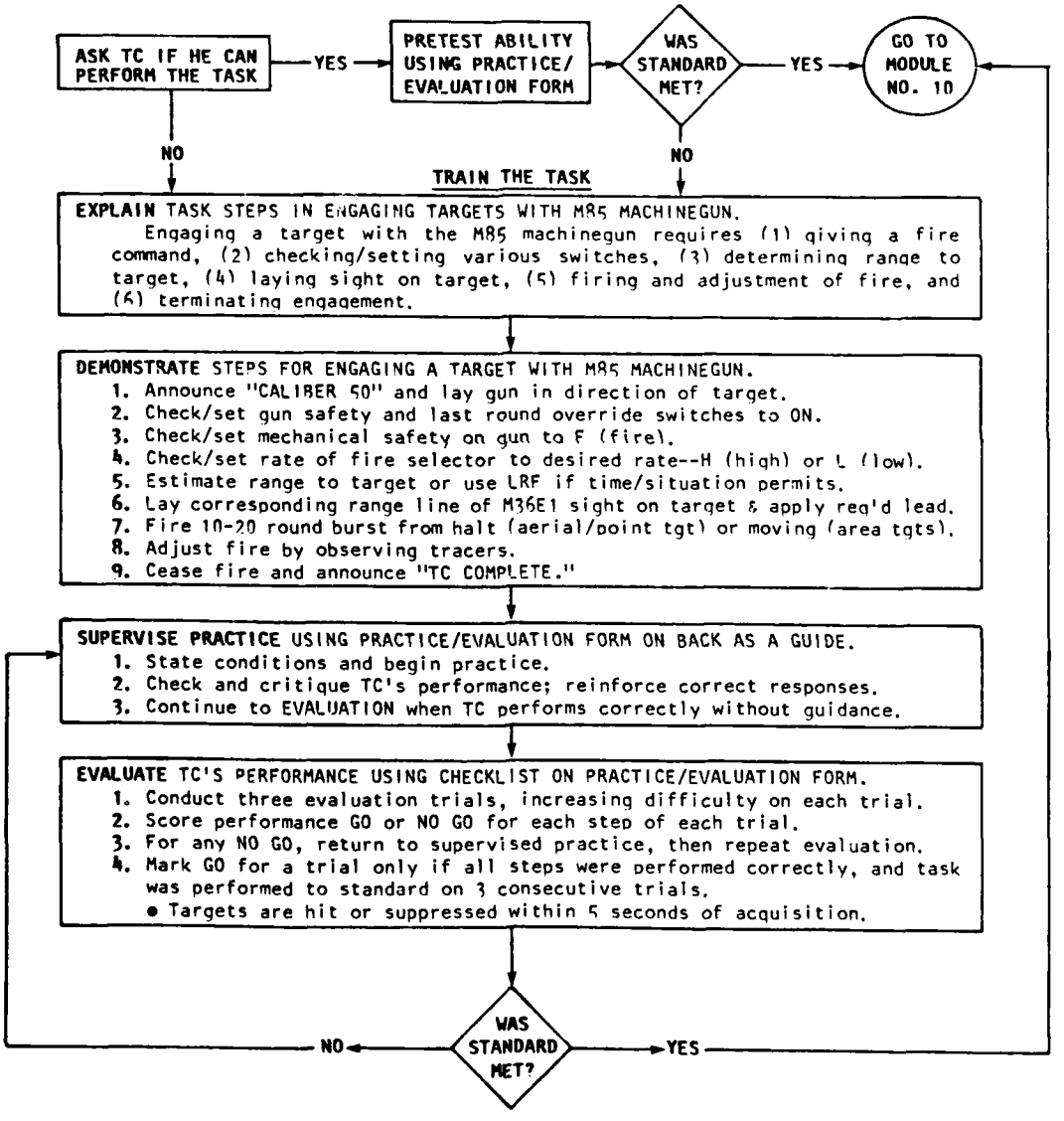
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 9**

TASK: ENGAGE TARGETS WITH M85 MACHINEGUN

PREREQUISITE TASKS: TANK COMMANDER MODULES 1, 2, AND 3

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E3, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK; STOPWATCH; STATIONARY, MOVING, AND AERIAL TARGETS



TCSQ

PRACTICE/EVALUATION FORM

ENGAGE TARGETS WITH M85 MACHINEGUN

INSTRUCTOR	TC	GO	NO GO
State conditions for task. • MG is installed and loaded. • TC's prepare-to-fire checks completed. • CWS is powered up.			
Specify target and request TC to engage it with M85 MG. Start stopwatch.	1. Announce "CALIBER 50" and lay gun in direction of target.		
	2. Check/set gun safety and last round override switches to ON.		
	3. Check/set mechanical safet on gun to F (fire).		
Check rate of fire selected. Low rate should be used for all targets except aircraft.	4. Check/set rate of fi selector to desired rate, (high) or L (low).		
	5. Estimate range to target or use LRF if time/situation permits.		
	6. Lay corresponding range line of M36E1 sight on target, and apply lead if required.		
Check that firing is in 10-20 round burst (2-3 tracers) and: • Nearest target engaged (area tgts). • 5 mil lead applied (moving tgts). • 50- or 200-meter lead applied (low- or high-performance aircraft.)	7. Fire using electrical trigger or trigger extension handle. • Continue to move when engaging area targets. • Halt briefly when engaging aerial or point targets.		
Stop stopwatch when target hit or suppressed.	8. Adjust fire by observing tracers. • Adjust elevation using manual control handle. • Adjust deflection using manual traversing handle in TC override (when only M85 in use).		
	9. Cease fire and announce "TC COMPLETE."		

TRIAL 1	TRIAL 2	TRIAL 3
Low Difficulty	Moderate Difficulty	High Difficulty
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

TCS10

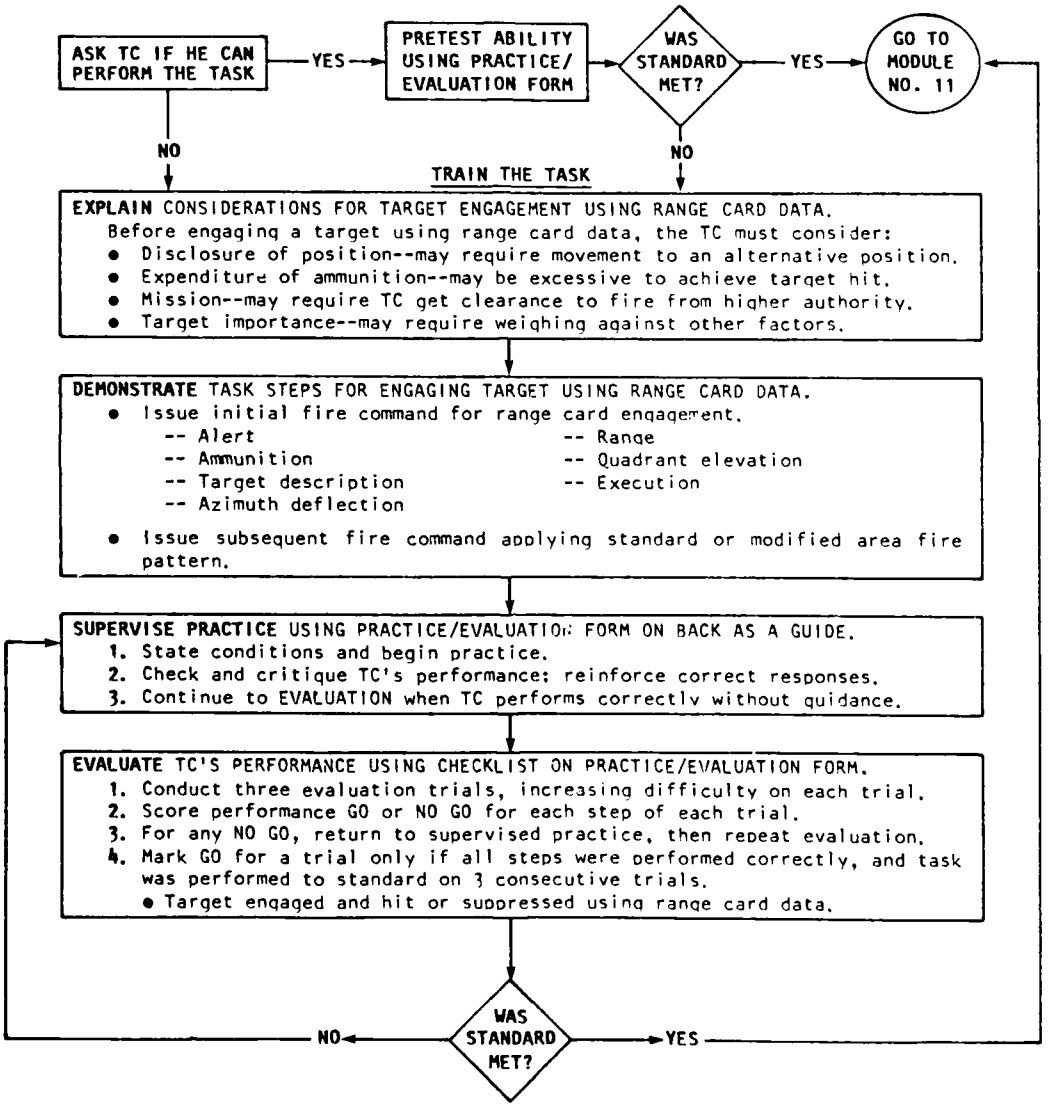
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 10**

TASK: DIRECT MAIN GUN ENGAGEMENT USING RANGE CARD DATA

PREREQUISITE TASKS: TANK COMMANDER MODULES 3 AND 5

TRAINING REFERENCES: FM 17-12, FM 17-12-3, FM 17-19E1/2, TC 17-15-13

SUPPORT REQUIREMENTS: M60A3 TANK, STATIONARY TARGETS, M65 LASER (OPTIONAL), IC-26



PRACTICE/EVALUATION FORM

DIRECT MAIN GUN ENGAGEMENT USING RANGE CARD DATA

INSTRUCTOR	TC	GO	NO GO
Explain conditions for task: • Tank is in a marked firing position and a range card, either circular or sketch, has been completed.			
Request TC to explain considerations for engaging a target using range card data.	1. Explain considerations applicable to range card engagement. • **Disclosure of position**--direct fire will pinpoint a tank and force it to move to an alternate position. • **Expenditure of ammunition**--excessive amounts of ammunition may be needed to achieve a target hit. • **Mission**--control of firing may be retained by the section or platoon leader or the company commander. • **Target importance**--threat tanks, for example, are much more important than a reconnaissance patrol.		
Specify a range card target and request TC to engage it.	2. Issue fire command for target engagement using range card data. • Alert--"GUNNER." • Ammo--"HEAT."		
Have loader announce "UP."	• Description--"BARN."		
Have gunner apply defl. on azimuth indicator.	• Deflection--"EIGHT FIVE THREE LEFT."		
Have gunner index range.	• Range--"TWO THOUSAND."		
Have gunner apply elev. and center bubble.	• Quad. Elev--"PLUS ONE FIVE."		
Have gunner announce "ON THE WAY."	• Execution--"FIRE."		
Request TC to issue subsequent fire commands for standard area fire pattern.	3. Issue subsequent fire command for standard area fire pattern. • "ADD ONE--FIRE." • "DROP TWO--FIRE." • "ADD ONE--RIGHT TEN--FIRE." • "LEFT TWENTY--FIRE."		

TRIAL 1 Low Difficulty		TRIAL 2 Moderate Difficulty		TRIAL 3 High Difficulty	
GO	NO GO	GO	NO GO	GO	NO GO

TCS11

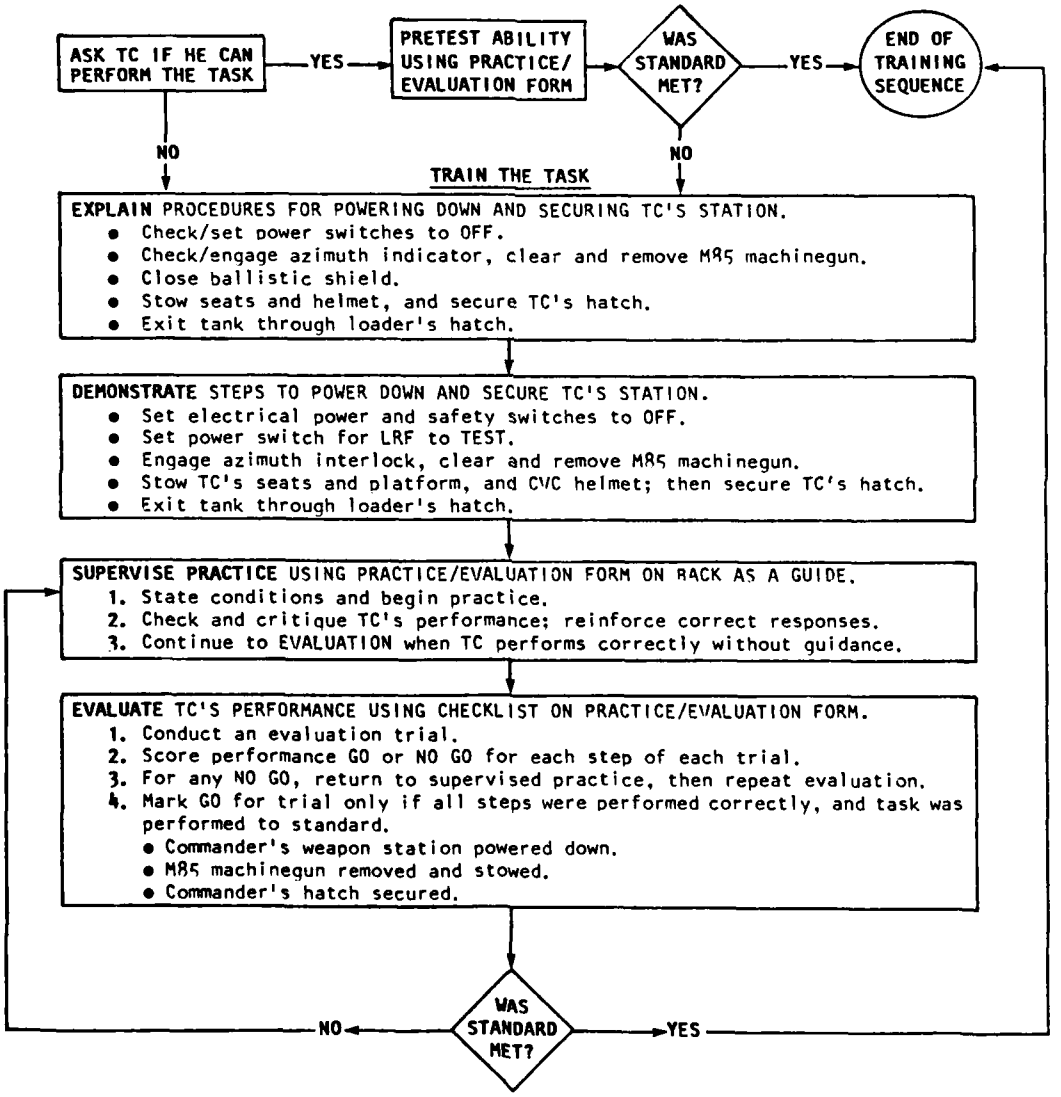
CREW POSITION: TANK COMMANDER **TRAINING MODULE NO. 11**

TASK: POWER DOWN AND SECURE TANK COMMANDER'S STATION

PREREQUISITE TASKS: TANK COMMANDER MODULE 1

TRAINING REFERENCES: FM 17-19E3, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK



PRACTICE/EVALUATION FORM

POWER DOWN AND SECURE TANK COMMANDER'S STATION

INSTRUCTOR	TC	GO	NO GO
Request TC to power down and secure his station.	1. Set cupola power switch to OFF.		
	2. Set electrical gun safety switch for M85 machinegun to OFF.		
	3. Set power switch for M36E1 periscope to OFF.		
	4. Set power switch for LRF to TEST.		
	5. Check/engage azimuth interlock.		
	6. Clear M85 machinegun.		
	7. Remove M36E1 periscope.		
	8. Remove M85 machinegun and stow.		
	9. Install M36E1 periscope.		
	10. Close ballistic shield.		
	11. Set main power switch on AM-1780 to OFF.		
	12. Stow TC's observation seat.		
	13. Stow TC's seat and platform.		
	14. Remove and stow CVC helmet.		
	15. Secure TC's hatch in closed position.		
	16. Exit tank through loader's hatch.		

GL 1

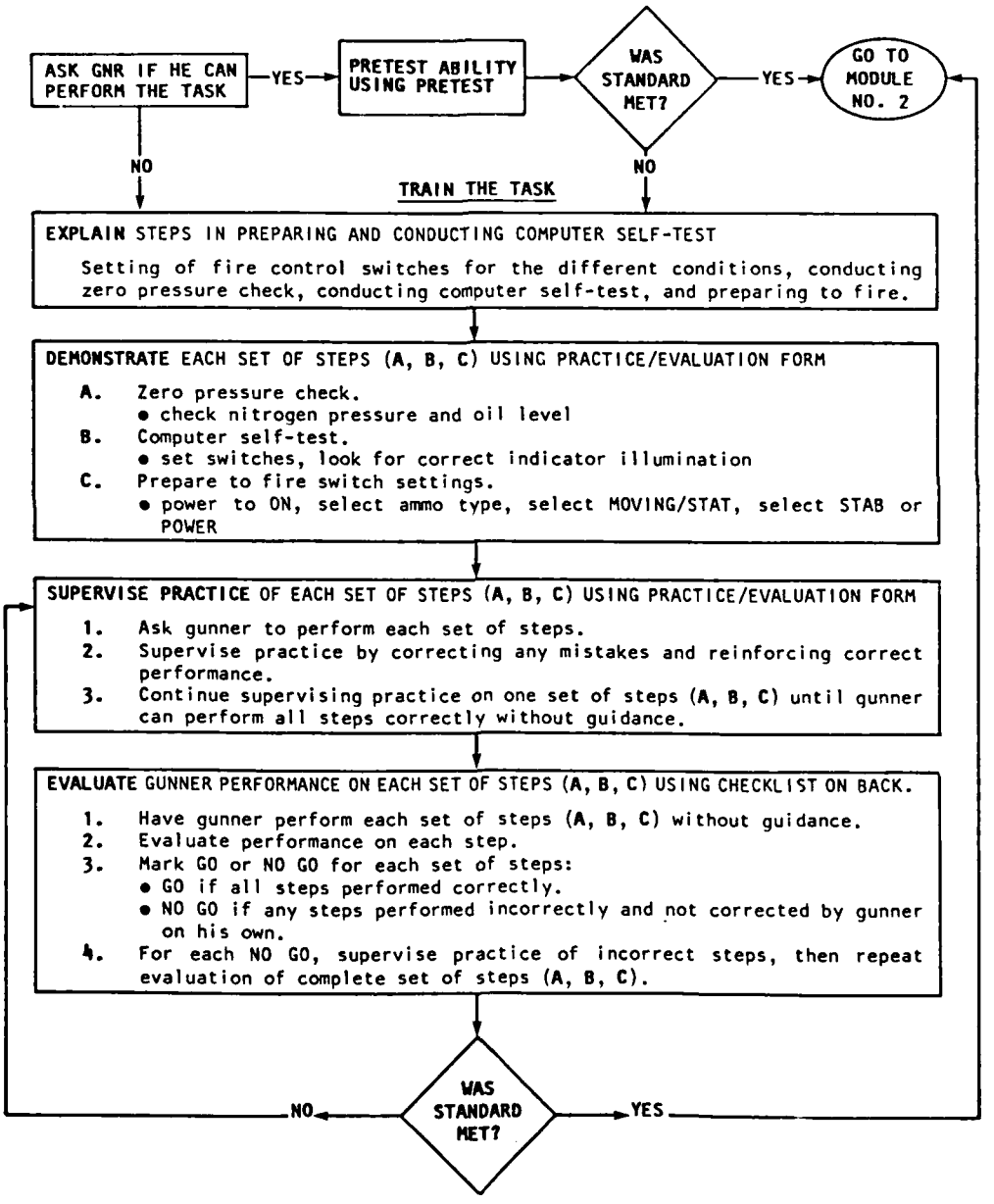
CREW POSITION: GUNNER **TRAINING MODULE NO. 1**

TASK: PREPARE GUNNER'S STATION FOR OPERATION, AND CONDUCT COMPUTER SELF-TEST

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-19E 1/2

SUPPORT REQUIREMENTS: M60A3 TANK



PRETEST

OBJECTIVE

- To determine if the gunner is already able to prepare the gunner's station and conduct the computer self-test.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY CORRECTLY PERFORM (1) ZERO PRESSURE CHECK, (2) COMPUTER SELF-TEST, AND (3) SWITCH SETTINGS.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.
- If he says YES for one or two subtasks and NO for the other(s), then give him the entire pretest.

STEP 2: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE GO OR NO GO BOX FOR EACH STEP OF THE PRETEST.

- If performance on 1-3 is correct, then continue with Module No. 2 or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Evaluate gunner's performance on zero pressure check.	1. Conduct zero pressure check.		
Set MODE to TEST and MASTER BATTERY to ON. Evaluate Gunner's performance on COMPUTER SELF TEST Steps 1-6.	2. Conduct COMPUTER SELF-TEST Steps 1-6 (from turning POWER to ON through setting LAMP/NORMAL/SYSTEM to SYSTEM).		
Ask gunner to set switches for prepare-to-fire. Evaluate gunner's performance.	3. Set appropriate switches for SABOT ammo.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in performing the zero pressure check, computer self-test, and prepare-to-fire switch settings.
- To give the gunner a chance to watch how this task is performed by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate each subtask. Begin demonstrating each task slowly, step by step. Answer any questions.
- Complete the demonstration by performing each task to standards quickly. Have the gunner watch from behind the gunner's seat.

(A) ZERO PRESSURE CHECK

STEP 1: DEMONSTRATE STEPS FOR CHECKING NITROGEN PRESSURE.
- Set ELEV/TRAV POWER switch to OFF.
- Engage turret lock.
- Depress and hold plunger of power solenoid.
- Turn gunner's control handle right or left.
- Needle drops slowly to 500-550 psi, then to zero.

STEP 2: EXPLAIN THAT IF GAUGE READING IS LESS THAN 400 PSI, ORGANIZATIONAL MAINTENANCE SHOULD BE NOTIFIED.

STEP 3: DEMONSTRATE HOW TO CHECK FLUID LEVEL IN RESERVOIR.
- With sight gauge.
- With dip stick.

STEP 4: EXPLAIN THAT OIL SHOULD BE CHECKED WITH PRESSURE GAUGE INDICATING ZERO.

(B) COMPUTER SELF-TEST

STEP 1: GIVE THE WARNING THAT THE COMPUTER SELF-TEST SHOULD NOT BE CARRIED OUT AT THE SAME TIME AS THE LRF SELF-TEST.

STEP 2: EXPLAIN THAT THE COMPUTER SELF-TEST IS A TASK WITH MANY STEPS.
- Steps need to be carried out in a specific order.
- There are two types of steps: setting switches, and checking indicators (consequences of switch settings).

STEP 3: IF POSSIBLE, HELP THE GUNNERS TO LEARN THE STEPS BY:
- Pointing out steps that go together either in terms of location or purpose.

(C) SWITCH SETTINGS

STEP 1: NAME SWITCHES AND DEMONSTRATE SETTINGS AND INDICATORS ON THE ASU, GUNNER'S SWITCH BOX, STABILIZATION CONTROL SELECTOR, AND GUNNER'S CONTROL UNIT.

STEP 2: DEMONSTRATE PROPER SWITCH SETTINGS AND CORRECT ORDER OF SETTINGS FOR PREPARING TO FIRE AND FIRING UNDER VARIOUS CONDITIONS (WITH AND WITHOUT THE MACHINEGUN AND WITH DIFFERENT AMMO).

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To make sure the gunner understands the correct decisions and steps in performing the zero pressure check, computer self-test, and prepare-to-fire switch settings.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Have the gunner **explain** how to:
  - -- check nitrogen pressure
  - -- check the oil level
  - -- recharge the hydraulic system
  - -- traverse the turret and check for proper operation
- Have the gunner try to state all of the steps of the computer self-test.
- Have the gunner point to and name switch setting units, switches, and indicators.

STEP 2: HAVE THE GUNNER DEMONSTRATE EACH SUBTASK STEP BY STEP.

- Observing the gunner from behind the gunner's seat.
- Have him repeat practice on each subtask until performance is correct.
- Gradually give less and less guidance.

STEP 3: WHEN PERFORMANCE IS CORRECT ON EACH INDIVIDUAL SUBTASK, HAVE GUNNER PRACTICE THE ENTIRE TASK AS A COMPLETE SEQUENCE.

- Continue practice until gunner's unguided performance on the entire task sequence is completely correct.
- If there is one NO GO or more, return to STEP 2 and have the gunner practice the poorly performed subtask(s).

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- To make sure the gunner can correctly perform the zero pressure check, computer self-test, and prepare-to-fire switch settings.

GUIDELINES

Complete the following evaluation procedure for each subtask until the gunner can correctly perform the zero pressure check, computer self-test, and prepare-to-fire switch settings without guidance.

STEP 1: HAVE THE GUNNER PERFORM ONE OF THE SUBTASKS.

- State which subtask is to be performed:
  -- zero pressure check
  -- computer self-test
  -- prepare-to-fire switch settings

STEP 2: OBSERVE AND EVALUATE GUNNER'S PERFORMANCE ON THE SUBTASK.

- Observe from behind the gunner's station.
- Use the checklist to make sure each step in the subtask is performed correctly.
- If all steps are performed correctly, check GO and repeat Steps 1 and 2 for the next subtask.
- Reinforce correct performance.
- If an error is made on any step, check NO GO and return to SUPERVISED PRACTICE for the poorly performed subtask, then repeat EVALUATION.

STEP 3: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If gunner performed all three subtasks correctly, no more training on this module is required.
- If SUPERVISED PRACTICE was repeated but gunner did not perform all three tasks correctly, more training on this module is required.

PRACTICE/EVALUATION FORM

A. ZERO PRESSURE CHECK

GO	NO GO

1. Check nitrogen pressure. Needle drops slowly to 500 then to zero.
2. Check oil level. Add more oil if necessary.
3. Recharge hydraulic system if nitrogen pressure was 400-550 psi.
4. Traverse turret and check for proper operation.

B. COMPUTER SELF-TEST

GO	NO GO

Settings	Normal Function Indicators
1. POWER switch is ON.	POWER indicator illuminates.
2. Vary LIGHTS control.	Panel illumination varies smoothly.
3. Vary BRIGHT/DIM on ASU.	Indicator brightness varies smoothly.
4. LAMP/NORMAL/SYSTEM to LAMP.	All SELF TEST and SENSOR FAILS illuminate.
5. MANUAL/RANGEFINDER to MANUAL.	
6. LAMP/NORMAL SYSTEM to SYSTEM.	Only OK indicator illuminates.
7. MOVING/STATIONARY to MOVING.	MOVING illuminates.
8. MOVING/STATIONARY to STATIONARY.	STATIONARY illuminates on both ASUs.
9. MOVING/STATIONARY to MOVING (TC's)	MOVING illuminates on both ASUs.
10. Repeat Steps 8 and 9.	
11. Press each of 4 ASU switches.	Pressed switch is brightest.
12. Set MANUAL/RANGEFINDER to RANGEFINDER.	
13. LAMP/NORMAL/SYSTEM to SYSTEM.	Only OK illuminates. RANGE (METERS) and RETURNS indicate 1850 $\pm$15 and 2.
14. Repeat Step 13 for each ammo type.	
15. Carry out OPERATIONAL RESPONSE TESTING.	

C. PREPARE-TO-FIRE SWITCH SETTINGS

GO	NO GO

1. Set POWER switch to ON (GNR's Control Unit).
2. Select ammo type on ASU.
3. Set MOVING/STAT switch.
4. Set STAB or POWER switch to ON.

GL 2

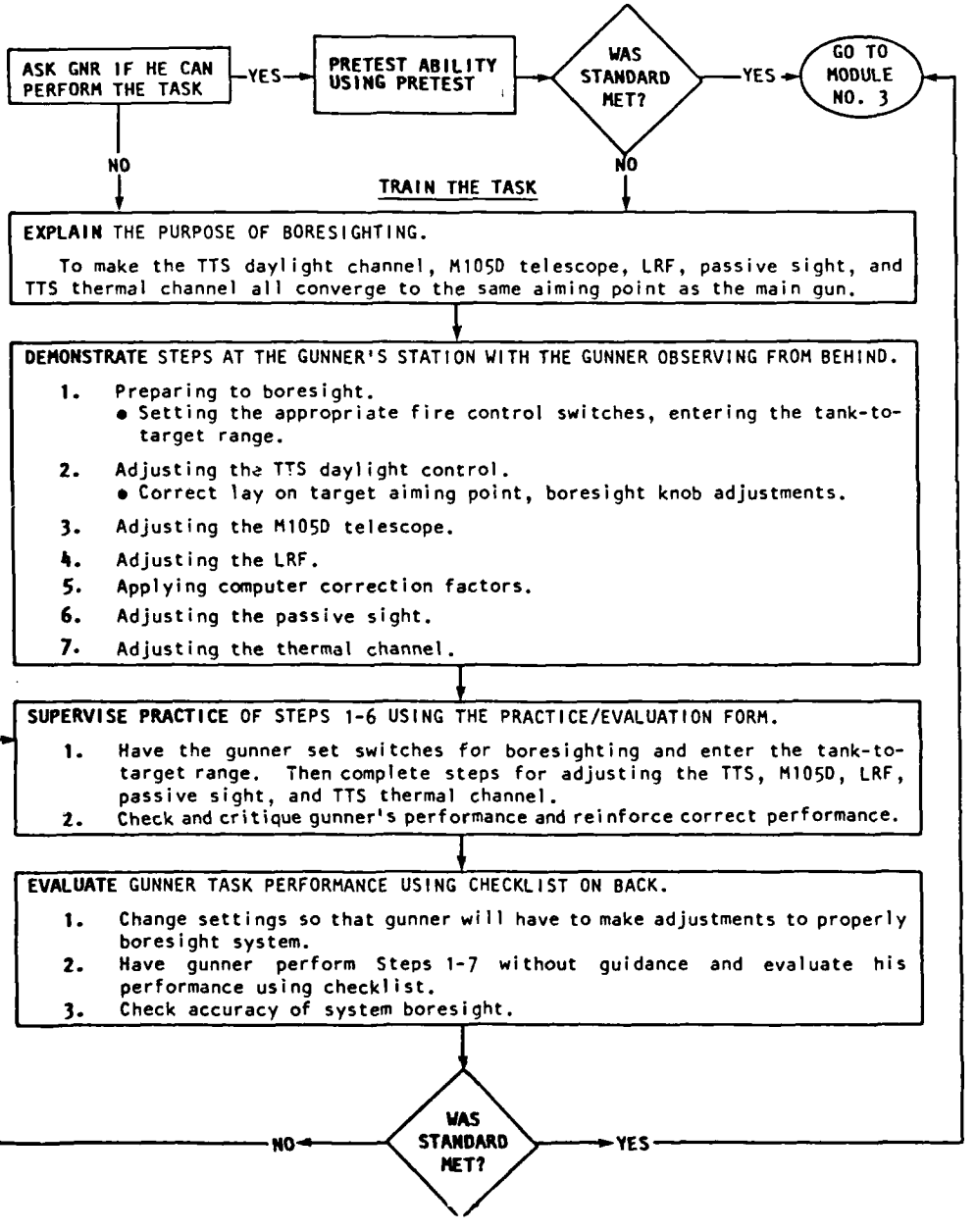
CREW POSITION: GUNNER — **TRAINING MODULE NO. 2**

TASK: BORESIGHT MAIN GUN

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TRADOC TT 17-12-1

SUPPORT REQUIREMENTS: PYE WATSON DEVICE, M60A3 TANK



PRETEST

OBJECTIVE

- To determine if the tank commander is already able to perform the boresight task.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM PROCEDURES NEEDED TO BORESIGHT THE TTS DAYLIGHT CHANNEL, M105D TELESCOPE, LRF, PASSIVE SIGHT, AND TTS THERMAL CHANNEL.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: MAKE SURE THE FOLLOWING CONDITIONS ARE MET:

- All prepare to fire checks have been completed.
- A suitable target and the Pye Watson device are available.
- The tank is properly positioned.

STEP 3: EVALUATE GUNNER'S PERFORMANCE AND MARK THE GO OR NO GO BOX FOR TASKS 1 AND 2 OF THE PRETEST.

- If performance is correct then continue with Module No. 3 or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATE.

PRETEST

TC	GUNNER	GO	NO GO
Ask GNR to set switches to the appropriate settings.	Set switches for boresighting. • Turret to ON, STAB to OFF, • TTS filter selector lever pointed away from GNR, • POWER on GCU to ON.		
Ask GNR to adjust TTS daylight channel.	Adjust TTS daylight channel: • Carry out steps for adjusting GNR's sight reticle. • Check knob readings for extreme deviations. • Rotate boresight knobs half-way back to zero. • Re-lay aiming dot on target aiming point. • Slip scales to 4 and 4. • Remove boresight device.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in performing the boresight task.
- To give the gunner a chance to watch how this task is performed by an expert.

GUIDELINES

- Demonstrate each of the six boresight subtasks separately.
- Make sure that the gunner is positioned where he can see you perform each subtask.
- Follow each demonstration of a subtask by allowing the gunner to try the subtask and to ask questions.
- Repeat demonstrations of subtasks as needed.

STEP 1: DEMONSTRATE PREPARING TO BORESIGHT.
- Ensure that all prepare-to-fire checks have been completed.
- Position tank, select target, enter known tank-to-target range.
- Make all the appropriate lever and switch settings.
- Clear all weapons, insert boresight device.

STEP 2: DEMONSTRATE STEPS FOR ADJUSTING THE GUNNER'S TTS DAYLIGHT CHANNEL SIGHT RETICLE WHILE SEATED IN THE GUNNER'S SEAT WITH THE GUNNER OBSERVING FROM BEHIND.
- Lay the aiming dot of the sight reticle on the target aiming point.
- Traverse and elevate as directed by the TC in order to lay the boresight dot on the target aiming point. The last movement of the gun should be an upward one.
- Adjust the sight reticle with the boresight knobs so that the aiming dot is again on the target aiming point. Knobs should be firmly seated.
- Traverse and elevate off the target and re-lay the aiming dot of the sight reticle on the target aiming point. The last movement of the gun should be an upward one.
- Slip the boresight scales to 4 and 4.
- Announce the boresight knob readings.

STEP 3: DEMONSTRATE HOW TO ADJUST THE M105D TELESCOPE.

STEP 4: DEMONSTRATE HOW TO ADJUST THE LRF.

STEP 5: DEMONSTRATE HOW TO APPLY COMPUTER CORRECTION FACTORS.
- Apply correction factors after boresighting LRF.
- Apply the computer correction factors by rotating the individual zero knobs on GCU to the appropriate settings:
  Note: If TPDS (M724) ammunition is to be fired instead of APDS (M392A2/M728), do not apply the correction factor for APDS.
- Do not refer the M105D reticle to the corrected TTS. The telescope is left uncorrected so it can serve as a check of boresight retention.

STEP 6: DEMONSTRATE HOW TO ADJUST PASSIVE SIGHT.
- When proper light conditions exist, refer the gunner's passive sight reticle to the same aiming point as the TTS reticle.

STEP 7: DEMONSTRATE HOW TO ADJUST THE TTS THERMAL CHANNEL.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps for successfully performing the boresight task.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station and by giving guiding comments. If there are two observers, have one watch from the TC's station.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD. GIVE AMPLE GUIDANCE.

- Have the gunner demonstrate steps for preparing to boresight.
- Have the gunner demonstrate the steps for adjusting the gunner's TTS daylight channel sight reticle.
- Have the gunner demonstrate the steps for adjusting the M105D telescope.
- Have the gunner demonstrate the steps for adjusting the LRF.
- Have the gunner demonstrate the steps for adjusting the passive sight.
- Have the gunner demonstrate the steps for adjusting the TTS thermal channel.

STEP 2: RETURN TO THE TC STATION. HAVE THE GUNNER PRACTICE THE ENTIRE TASK. GIVE LESS AND LESS GUIDANCE.

STEP 3: CORRECT MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF THE EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Preparing to boresight.
- Adjusting TTS daylight channel.
- Adjusting the M105D telescope.
- Adjusting the LRF.
- Adjusting the passive sight.
- Adjusting the TTS thermal channel.

STEP 4: CONTINUE UNTIL THE GUNNER IS ABLE TO CORRECTLY CARRY OUT THE PERFORMANCE STEPS WITH MINIMAL GUIDANCE AND THE TTS DAYLIGHT CHANNEL, M105D TELESCOPE, LRF, PASSIVE SIGHT, AND TTS THERMAL CHANNEL CONVERGE TO THE SAME AIMING POINT AS THE MAIN GUN.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the boresight task.

GUIDELINES

Training on this task is completed when performance on each step is correct and TTS daylight channel, M105D telescope, LRF, passive sight, and TTS thermal channel all converge to the same aiming point as the main gun.

STEP 1: CHANGE SETTINGS SO THAT GUNNER WILL HAVE TO MAKE ADJUSTMENTS TO PROPERLY BORESIGHT SYSTEM.

STEP 2: HAVE GUNNER PERFORM STEPS 1-6 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE ON EACH STEP.

- Observe and evaluate performance from behind gunner's station and at the TC's station.
- Check GO/NO GO for each task step, using checklist on PRACTICE/EVALUATION FORM.
- Check accuracy of system boresight.
- If one NO GO or more is recorded, then return to SUPERVISED PRACTICE and have gunner practice the poorly performed step until performance is correct, then repeat EVALUATION.

STEP 3: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If gunner received a GO on Steps 1-6 and boresight was accurate, no more training on this module is required.
- If SUPERVISED PRACTICE was repeated and gunner either still received a NO GO or boresight was not accurate, more training on this module is required.

GL 2

PRACTICE/EVALUATION FORM

	GO	NO GO
STEP 1: PREPARE TO BORESIGHT. • Ensure that all prepare to fire checks have been completed. • Position tank, select target, enter the known tank-to-target range. • Make all the appropriate lever and switch settings. • Clear all weapons, insert boresight device.		
STEP 2: ADJUST THE TTS DAYLIGHT CHANNEL. • Carry out the steps for adjusting GNR's sight reticle. • Check boresight knob readings for extreme deviations. • Rotate boresight knobs half-way back to 4. • Re-lay aiming dot on target aiming point using manual controls. • Slip scales to 4 and 4 without moving aiming dot. • Remove boresight device from muzzle.		
STEP 3: ADJUST THE M105D TELESCOPE. • Move reticle selector to full-left or full-right. • Adjust boresight cross on same aiming point as the TTS daylight aiming dot. • Slip the scales to 3 and 3.		
STEP 4: ADJUST LRF. • Press BATL RNG (TC). • Insure GNR's sight is still on target aiming point. • Set 6x/12x switch to 12x. Adjust LRF reticle on same aiming point as the TTS daylight reticle. • Slip the scales to 4 and 4. • Apply computer correction factors by rotating the individual zero knobs on the GCU to the appropriate settings.		
STEP 5: ADJUST THE PASSIVE SIGHT. • When proper light conditions exist, refer the gunner's passive sight reticle to the same aiming point as the TTS reticle.		
STEP 6: APPLY COMPUTER CORRECTION FACTORS. • Rotate individual zero knobs on GCU to appropriate settings.		
STEP 7: ADJUST THE TTS THERMAL CHANNEL. • Make the necessary switch settings. • Select NARROW thermal channel field of view. • Make FOCUS, BRIGHT, CONTRAST, POLARITY, and RTCL CONTROL adjustments for optimal viewing. • Rotate THERMAL CHANNEL BORESIGHT EL and AZ knobs. Lay reticle aiming dot on target aiming point. • Slip boresight knobs to 4 and 4 without moving aiming dot.		
CHECK GUNNER'S SYSTEM BORESIGHT ACCURACY. • Check to make sure that all sights are properly aligned. • Verify that the TTS daylight channel, M105D telescope, LRF, passive sight, and TTS thermal channel all converge to the same aiming point as the main gun.		

GL 3

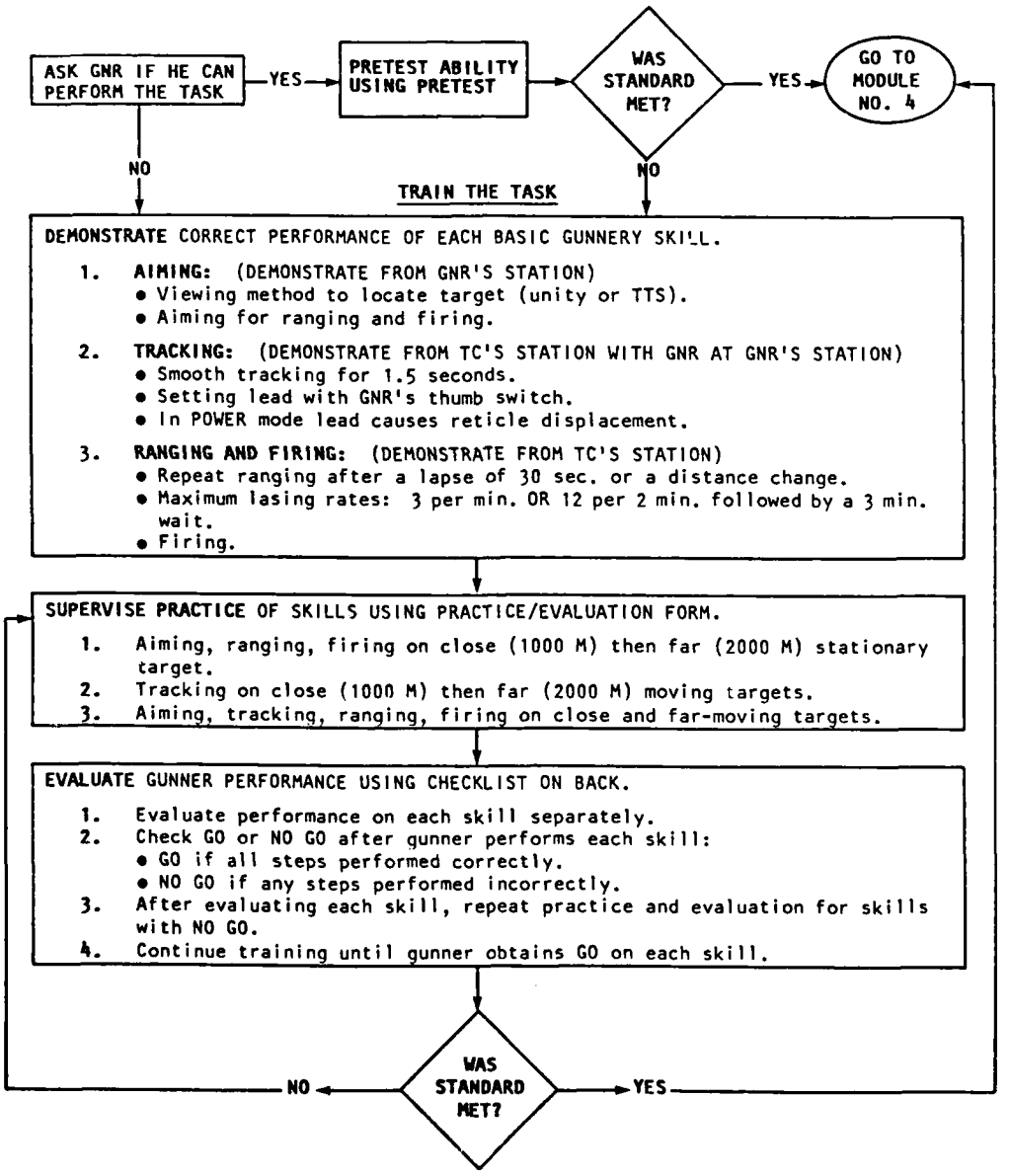
CREW POSITION: GUNNER — TRAINING MODULE NO. 3

TASK: BASIC GUNNERY SKILLS: AIMING, TRACKING, RANGING, FIRING

PREREQUISITE TASKS: GUNNER MODULE NO. 1

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-12-3; FM 17-19 E1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); TARGET SILHOUETTES AT CLOSE (1000 M) AND FAR (2000 M) RANGES (OR AVAILABLE TARGETS, VEHICLES, PEOPLE)



PRETEST

OBJECTIVES

- To determine if the gunner is already able to perform well on basic gunnery skills.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM TO STANDARDS ON AIMING, TRACKING, RANGING, AND FIRING.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.
- If he says YES for one or two subtasks and NO for the other(s) then go to DEMONSTRATION.

STEP 2: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the gunner assist you in training.
- If there are any errors (one NO GO or more), then DEMONSTRATE and PRACTICE, as required, but EVALUATE all skills.

PRETEST

TC	GUNNER	GO	NO GO
• Specify a target. Lay the main gun. Ask GNR to aim for ranging.	1. Aim for ranging.		
• Ask GNR to track for 1.5 sec.	2. Track a target for 1.5 seconds.		
• Ask GNR to range to target: Fire LRF and set LEAD.	3. Range to target, FIRE LRF and set lead.		
• Ask GNR to aim for firing.	4. Aim for firing.		
• Ask GNR to state conditions for re-ranging.	5. State conditions for re-ranging.		
• Ask GNR to state maximum ranging rates.	6. State maximum ranging rates.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in aiming, tracking, ranging, and firing.
- To provide the gunner a chance to watch an expert demonstrate basic gunnery skills.

GUIDELINES

- Position yourself and the gunner so that he can watch your demonstration.
  - -- Aiming: Demonstrate from gunner's station. Gunner observes from behind.
  - -- Tracking, ranging, and firing: Demonstrate from TC's station. Gunner observes from gunner's LRF sight.

Aiming

STEP 1: DEMONSTRATE THE CORRECT VIEWING MODES FOR DIFFERENT CONDITIONS AND PURPOSES.
- When gun is being laid, look through unity window, and then go to sight.
- If in TTS, go from wide to narrow field of view after identification.

STEP 2: DEMONSTRATE AIMING FOR RANGING AND FIRING.
- Aim for ranging by laying aiming cross slightly below center of target visible mass using G-pattern. (Reduces chances of multiple LRF returns.)
- Aim for firing by laying aiming cross on center of target visible mass.

Tracking

STEP 3: DEMONSTRATE A SMOOTH 1.5 SEC. TRACK BEFORE SETTING LEAD.
- Use silhouettes or targets of convenience such as slowly moving vehicles.

STEP 4: DEMONSTRATE HOW TO SET LEAD BY DEPRESSING GUNNER'S THUMB SWITCH.
- Explain that depressing the switch also fires the LRF.

STEP 5: EXPLAIN THAT WITH TURRET ROTATING IN POWER MODE, RETICLE IS DISPLACED OFF TARGET AIMING POINT WHEN LEAD IS INTRODUCED.
- Gunner must relay reticle on target after pressing thumb switch if in POWER mode.

Ranging

STEP 6: EXPLAIN WHEN RANGING SHOULD BE REPEATED.
- 30 sec. since ranging.
- Distance between tank and target has changed.
- Reengagement.

STEP 7: EXPLAIN MAXIMUM LASING RATES.
- Sustained rate of 3 per minute.
- 12 ranges in 2 minutes, followed by a 3-minute wait.

Firing

STEP 8: EXPLAIN THAT GUNNER CAN FIRE M105 BY DEPRESSING.
- Either firing trigger on control handles.
- Trigger on manual elevating handle.

STEP 9: COMPLETE THE DEMONSTRATION BY PERFORMING EACH SKILL QUICKLY IN SUCCESSION.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in aiming, tracking, ranging, and firing.
- To allow the gunner to develop and fine-tune task skills at his own pace.

GUIDELINES

Begin practice by observing one gunner from behind the gunner's station. If you have more than one observer, have the other observe from the TC's station.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF EACH TASK IN TURN:

Aiming
- Have gunner demonstrate how to aim for ranging on a stationary target.

Tracking
- Have gunner explain how to set automatic lead and state the consequences of setting lead with POWER mode active.

Ranging
- Have gunner state conditions under which ranging should be repeated.
- Have gunner state maximum ranging rates.

Firing
- Have gunner state correct aim for firing.

STEP 2: HAVE EACH GUNNER PRACTICE EACH SKILL STEP BY STEP.

- Start with aiming for a stationary target.
- Continue tracking a slowly moving target.
- Finally, have him practice ranging and firing skills.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH PRACTICE TRIAL. TELL THE GUNNER HOW HE PERFORMED ON:

- Aiming for ranging.
- Aiming for firing.
- Tracking.
- Ranging.
- Firing.

STEP 4: CONTINUE PRACTICE UNTIL ALL SKILLS ARE PERFORMED ACCURATELY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

Gunner will be able to aim, track, range, and fire the main gun during simple gunnery exercises.

GUIDELINES

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE ON EACH SKILL SEPARATELY.

STEP 2: CHECK GO OR NO GO AFTER GUNNER PERFORMS EACH SKILL:

- GO if all steps performed correctly.
- NO GO if any steps performed incorrectly.

STEP 3: AFTER EVALUATING EACH SKILL, REPEAT PRACTICE AND EVALUATION FOR SKILLS WITH NO GO.

STEP 4: CONTINUE TRAINING UNTIL GUNNER OBTAINS GO ON EACH SKILL.

PRACTICE/EVALUATION FORM

TC	GUNNER
AIMING	GO / NO GO
Begin Exercise: Specify target, lay the main gun. Check the position of switches.	1. Set fire control switches, locate target, get into TTS. 2. Identify target, grasp power controls, and announce "IDENTIFIED." 3. Lay aiming cross slightly below center of target visible mass using G-pattern.
Evaluate GNR's aim. Check GO or NO GO.	
TRACKING	GO / NO GO
Instruct GNR to set automatic lead and track a slowly moving target.	1. Track target smoothly for 1.5 seconds. 2. Depress and hold either palm switch. Lay sight reticle on target. Track for 1.5 seconds.
Check GO or NO GO.	
RANGING	GO / NO GO
Instruct GNR to aim for ranging.	1. Aim for ranging: Lay aiming cross slightly below center of target visible mass using G-pattern. Track. 2. Announce "LASING." 3. Depress LASE/LEAD button.
Evaluate range data (optional). Check GO or NO GO.	
FIRING	GO / NO GO
Instruct trainee to aim for firing. Evaluate GNR's aim.	1. Aim for firing. Relay on center of target visible mass.
Command: "FIRE"	2. Announce "ON THE WAY" and squeeze firing trigger(s).
Command: "CEASE FIRE"	
Check resetting of fire control switches.	3. Reset fire control switches to original settings.
Check GO or NO GO.	

GL 4

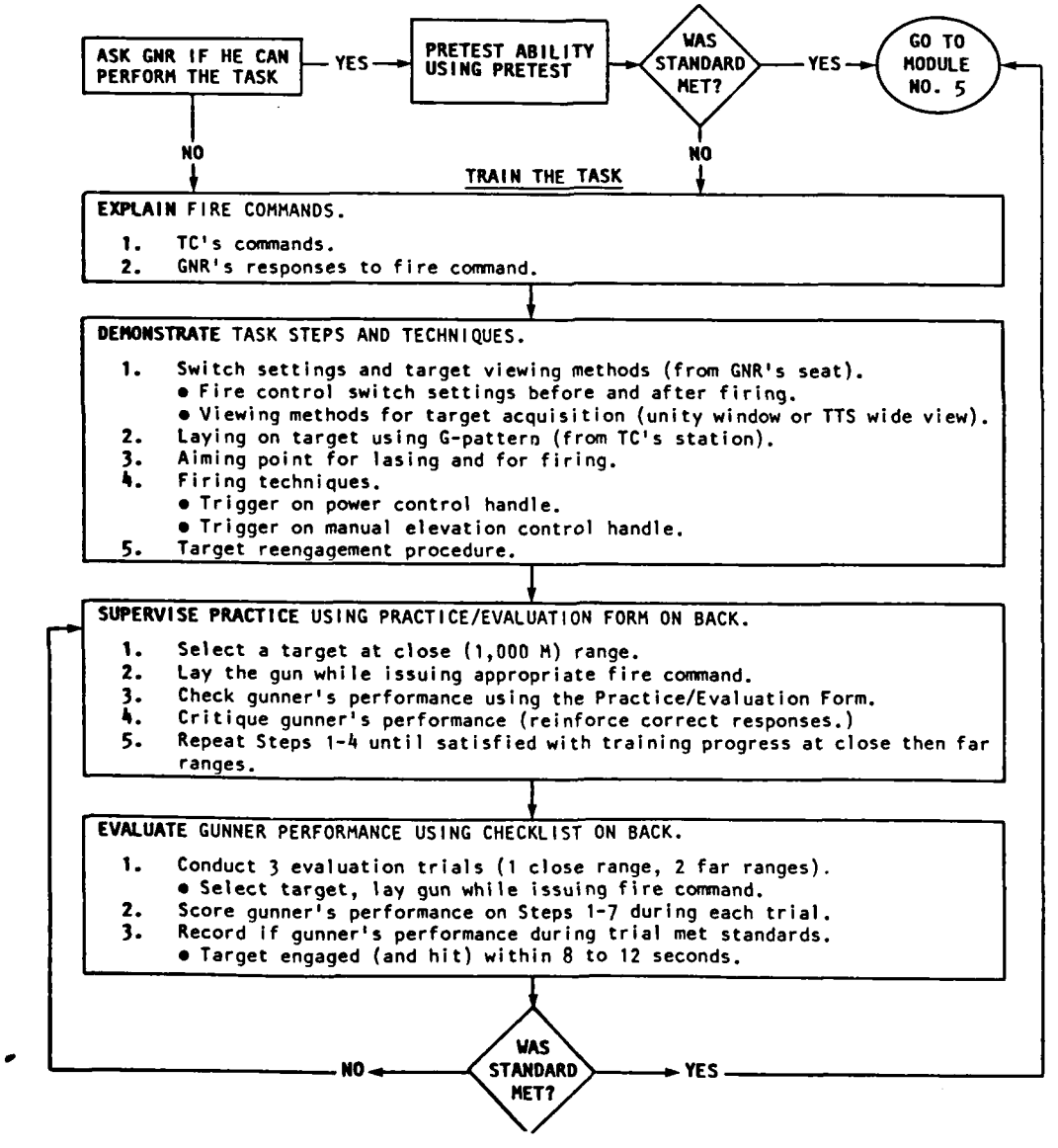
CREW POSITION: GUNNER **TRAINING MODULE NO. 4**

TASK: ENGAGE STATIONARY TARGETS WITH THE MAIN GUN USING PRECISION GUNNERY

PREREQUISITE TASKS: GUNNER MODULES NO. 1 AND 3

TRAINING REFERENCES: FM 17-12-3; SM 171-129-1020; TC 17-15-13, TEC 020-171-5360 E,F

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 5 TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES.



PRETEST

OBJECTIVES

- To determine if the gunner is already able to perform this task to standard: engage and hit stationary targets within 8 to 12 seconds using precision gunnery.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to the DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Tank and target are stationary.
- All stations are prepared for engagement.

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND CHECK THE **GO** OR **NO GO** BOX FOR EACH STEP.

- If gunner receives a GO on all steps, then train gunner on Module No. 5, or have the gunner assist you in training.
- If there are any errors (one NO GO or more), then go to the DEMONSTRATION.

PRETEST FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GNR-SABOT-TANK," lay the main gun, start the stopwatch.	1. Set fire control switches. Locate target and get into TTS.		
Evaluate GNR's setting of fire control switches. Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify target, grasp power controls, and announce "IDENTIFIED."		
Evaluate GNR's target identification and announcement. Evaluate gun lay and lasing aiming point.	3. Lay aiming cross slightly below center of target visible mass using G-pattern.		
Evaluate range data (optional), and command "FIRE".	4. Announce "LASING" and depress LASE/LEAD button.		
Evaluate relay of gun and aiming point for firing.	5. Relay aiming cross on center of target-visible mass.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in engaging and hitting a stationary target within 8 to 12 seconds.
- To demonstrate how this task is performed to standard by an expert.

GUIDELINES

Position the gunner where he can see you demonstrate the task and subtasks: behind the gunner's station or at the TC's sight. Begin demonstrating the task slowly, step by step, answering any questions.

STEP 1: EXPLAIN GUNNER ANNOUNCEMENTS FOLLOWING A PRECISION FIRE COMMAND.

- Announcing "IDENTIFIED" or "CANNOT IDENTIFY."
- Announcing "LASING" after target acquisition or after a command to "RE-ENGAGE."
- Announcing "ON THE WAY" after a command to "FIRE."

STEP 2: DEMONSTRATE NORMAL POSITION OF SWITCHES.

- Turret power ON
- Gun switches OFF
- TTS in STBY
- STAB in standby (POWER) mode
- Recommend STAB for engaging targets while moving.

STEP 3: DEMONSTRATE CORRECT VIEWING MODES FOR DIFFERENT TACTICAL CONDITIONS.

- When gun is being laid, look through unity window, then go to sight.
- If in TTS, go from wide to narrow field of view after identification.

STEP 4: DEMONSTRATE HOW TO LAY ON TARGET.

- Demonstrate how to lay on target using G-pattern.

STEP 5: DEMONSTRATE HOW TO AIM CORRECTLY FOR RANGING.

- Have the gunner watch through TC's sight as you correctly aim at several targets.
- Explain that this is the correct aim for ranging because it reduces the possibility of multiple LRF returns.

STEP 6: DEMONSTRATE HOW TO AIM CORRECTLY FOR FIRING.

- Center of visible target mass

STEP 7: DEMONSTRATE FIRING TECHNIQUES.

- Trigger on power control handle
- Trigger on manual elevation control handle

STEP 8: DEMONSTRATE TARGET REENGAGEMENT PROCEDURE.

Complete the demonstration by performing each task to standards quickly. Have the gunner watch from behind the gunner's station, then through the TC's LRF sight.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in engaging and hitting a stationary target within 8 to 12 seconds.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

- Begin practice by observing one gunner from behind the gunner's station. If you have more than one observer, have the second one watch from the TC's station.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD. HAVE THE GUNNER DEMONSTRATE:

- Switch settings and target viewing methods.
- Laying on target using G-pattern.
- Aiming point for lasing and for firing.
- Firing techniques.
- Target reengagement procedure.

STEP 2: HAVE THE GUNNER PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation Form.
- Specify near (1,000 M) target.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE GUNNER PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation Form.
- Specify a near (1,000 M) target.
- Have the gunner perform each step in succession.
- At the end of the task performance give the gunner feedback on each step and the task as a whole:
  -- Correct faulty performance of individual steps.
  -- Reinforce good performance of individual steps.
  -- Report speed and success of the entire task.
- Continue practice until performance meets 12 second standard.
- Practice in the same manner with far targets until standard is met.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to engage stationary targets with the main gun using precision fire within 8 to 12 seconds.

GUIDELINES

Conduct 3 evaluation trials.

- Trial 1 at close (1,000 M) range.
- Trials 2 and 3 at far ranges.

STEP 1: HAVE THE GUNNER PERFORM THE TASK AND EVALUATE HIS PERFORMANCE.

- Observe from the TC's station.
- Check GO or NO GO for Steps 1-7 using the checklist on the Practice/Evaluation form.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-7 performed correctly.
- Target engaged (and hit) within 8 to 12 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH REPETITION OF THE EVALUATION EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Switch settings.
- Target acquisition.
- Aiming.
- Ranging.
- Announcing "IDENTIFIED," etc.
- Firing.
- Total time to complete task.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD ON ALL 3 TRIALS:

- Conduct supervised practice on those task steps performed incorrectly.
- Repeat the entire evaluation.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GNR-SABOT-TANK," lay the main gun, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Locate target and get into TTS.		
	2. Identify target, grasp power controls, and announce "IDENTIFIED."		
Announce "UP" and release turret control on hearing "IDENTIFIED."			
	3. Lay aiming cross slightly below center of target visible mass using G-pattern.		
Check gun lay and lasing aiming point.			
	4. Announce "LASING" and depress LASE/LEAD button.		
Evaluate range data (optional), and command "FIRE"			
	5. Relay aiming cross on center of target-visible mass.		
Check relay of gun and aiming point for firing.			
	6. Announce "ON THE WAY" and squeeze firing trigger(s).		
Announce "CEASE FIRE." Stop stopwatch. Check resetting of fire control switches.			
	7. Reset fire control switches to original positions.		
Score performance trial and record time.			

TRIAL 1

Close Range

GO	NO GO

Time: _____

TRIAL 2

Far Range

GO	NO GO

Time: _____

TRIAL 3

Far Range

GO	NO GO

Time: _____

GL5

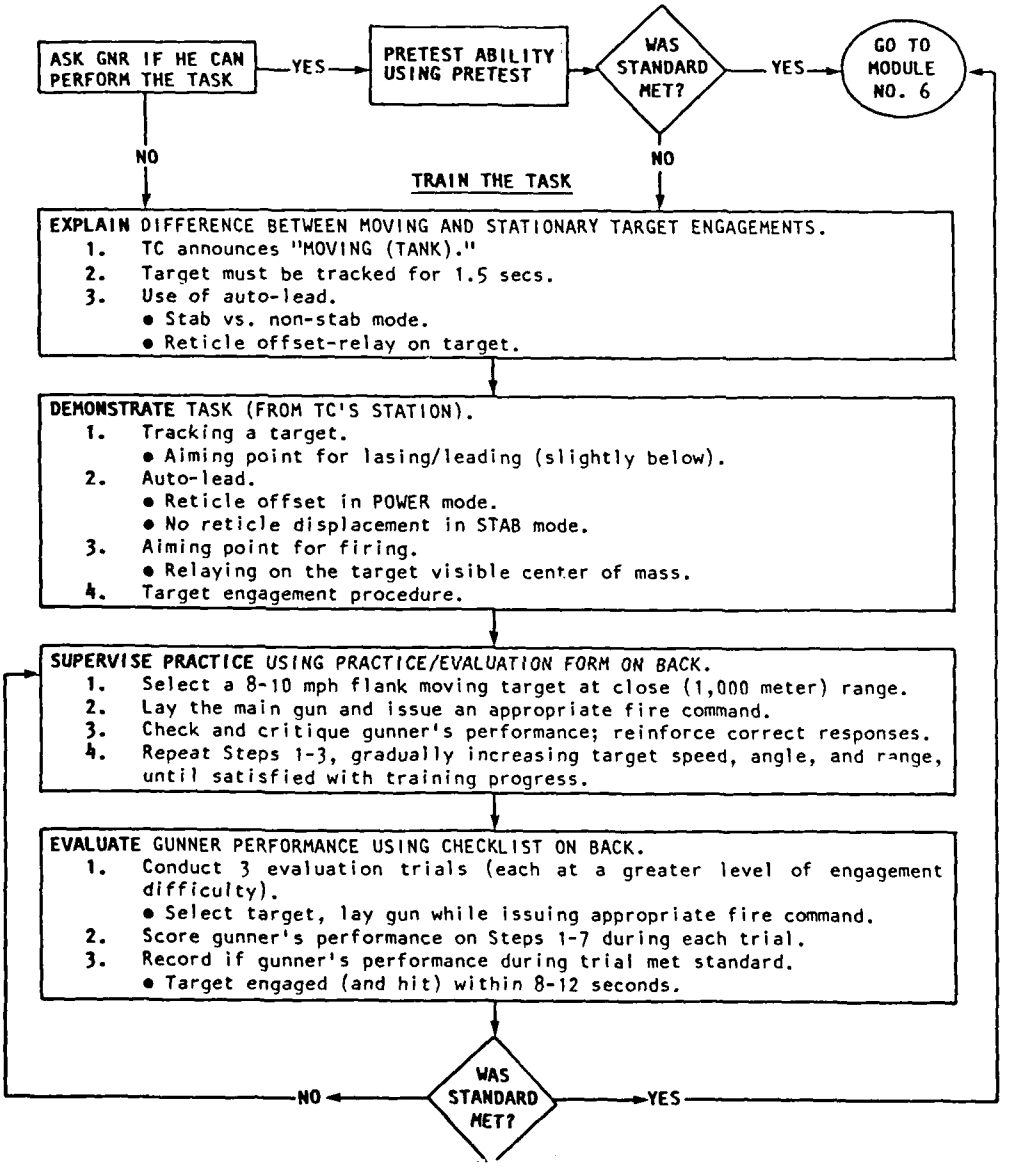
CREW POSITION: GUNNER **TRAINING MODULE NO. 5**

TASK: ENGAGE MOVING TARGETS WITH MAIN GUN USING PRECISION GUNNERY

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, AND 4

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-12-3; FM 17-19E 1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; MOVING TARGETS (5-25 mph) (SILHOUETTES OR TARGETS OF CONVENIENCE); M55 LASER (OPTIONAL)



PRETEST

OBJECTIVE

- To determine if the gunner is already able to engage (and hit) moving targets within 8-12 seconds.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THIS TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: BEGIN THE PRETEST.

- State the conditions:
  -- tank is stationary, target is moving
  -- all stations are prepared for engagement
- Select a far (1,800 M) target.

STEP 3: EVALUATE GUNNER'S PERFORMANCE AND MARK THE GO OR NO GO BOX FOR EACH STEP.

- If correct and gunner receives a GO on all steps, then continue with another module or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then begin training by demonstrating this task.

PRETEST

TC	GUNNER	GO	NO GO
Begin exercise: Command "GUNNER-SABOT-MOVING-TANK." Lay main gun for direction.	1. Set fire control switches, locate target, and get into TTS.		
Evaluate GNR's setting of fire control switches. Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify target, grasp power control handles, and announce "IDENTIFIED."		
Evaluate GNR's target identification and announcement. Evaluate gun lay, lasing aiming point, and tracking ability.	3. Lay aiming cross slightly below center of target visible mass using G-pattern. Track for 1.5 seconds.		
Evaluate range data (optional).	4. Announce "LASING" and depress LASE/LEAD button.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in engaging (and hitting) moving targets.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can watch you demonstrate the task: behind the gunner's station and at the TC's sight.
- Begin demonstrating the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: EXPLAIN THE DIFFERENCE BETWEEN MOVING AND STATIONARY TARGET ENGAGEMENTS.

- TC announces "MOVING (TANK)."
- Target must be tracked for 1.5 seconds.
- Use of auto-lead.
  - -- stab vs. non-stab mode
  - -- reticle offset-relay on target

STEP 2: DEMONSTRATE TRACKING.

- Aiming point for lasing/leading (slightly below center of target's visible mass).
- Have the gunner watch you perform a smooth 1.5 sec. track on a slowly moving target and a quickly moving target.
- Gunner observes through gunner's LRF sight.

STEP 3: DEMONSTRATE AUTOMATIC LEAD.

- Reticle offset in POWER mode requires relay of reticle.
- No reticle displacement in STAB mode.

STEP 4: DEMONSTRATE AIMING POINT FOR FIRING.

- Relaying on target's visible center of mass.

STEP 5: DEMONSTRATE TARGET ENGAGEMENT PROCEDURE.

- Demonstrate the entire task to standard.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To make sure the gunner understands the correct decisions and steps in engaging (and hitting) a moving target within 8-12 seconds.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

- Begin practice by observing the gunner from behind the gunner's station.
- If there is more than one observer, have the other gunner observe from the TC's station.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD. HAVE THE GUNNER DEMONSTRATE:

- Tracking a target.
  -- aiming point for lasing/leading (slightly below)
- Auto-lead.
  -- relay of reticle in POWER mode
- Aiming point for firing.
  -- relay on target's visible center of mass.

STEP 2: HAVE THE GUNNER PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation form.
- Specify near (1,000 M) target.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE GUNNER PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation form.
- Specify a near (1,000 M) target.
- Have the gunner perform each step in succession.
- At the end of the task performance give the gunner feedback on each step and the task as a whole:
  -- correct faulty performance of individual steps
  -- reinforce good performance of individual steps
  -- report speed and success of the entire task
- Continue practice until performance meets 12 second standard.
- Practice in the same manner with 2 additional targets, each at a greater level of engagement difficulty.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- To make sure the gunner can perform this task to standards. (Target engaged and hit within 8 to 12 seconds.)

GUIDELINES

CONDUCT 3 EVALUATION TRIALS.

- Each trial at a greater level of engagement difficulty.

STEP 1: OBSERVE FROM THE TC's STATION AND EVALUATE THE GUNNER'S PERFORMANCE.

- Check GO or NO GO for Steps 1-7, using the checklist on the PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-7 performed correctly.
- Target engaged (and hit) within 8 to 12 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH EVALUATION TRIAL. TELL THE GUNNER HOW HE PERFORMED ON:

- Switch settings
- Target acquisition
- Aiming
- Ranging
- Announcing "IDENTIFIED," etc., quickly
- Firing
- Tracking

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If gunner met standards on all 3 trials, no more training on this module is required.
- If gunner did not meet standard on all 3 trials:
  -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command "GUNNER-SABOT-MOVING-TANK." Lay main gun for direction; start stopwatch, and check the position of fire control switches.	1. Set fire control switches, locate target, and get into TTS.		
	2. Identify target, grasp power control handles, and announce "IDENTIFIED."		
Announce "UP" and release turret control on hearing "IDENTIFIED."	3. Lay aiming cross slightly below center of target visible mass using G-pattern. Track for 1.5 seconds.		
Check gun lay, lasing aiming point, and tracking ability.	4. Announce "LASING" and depress LASE/LEAD button.		
Evaluate range data (optional) and command "FIRE."	5. Lay aiming cross on center of target visible mass.		
Check relay of gun and aiming point for firing.	6. Announce "ON THE WAY" and squeeze firing trigger(s) while continuing to track.		
Command "CEASE FIRE." Stop the stopwatch. Check resetting of fire control switches.	7. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if Steps 1-7 performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Low Difficulty	**Moderate Difficulty**	**High Difficulty**
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

GL6

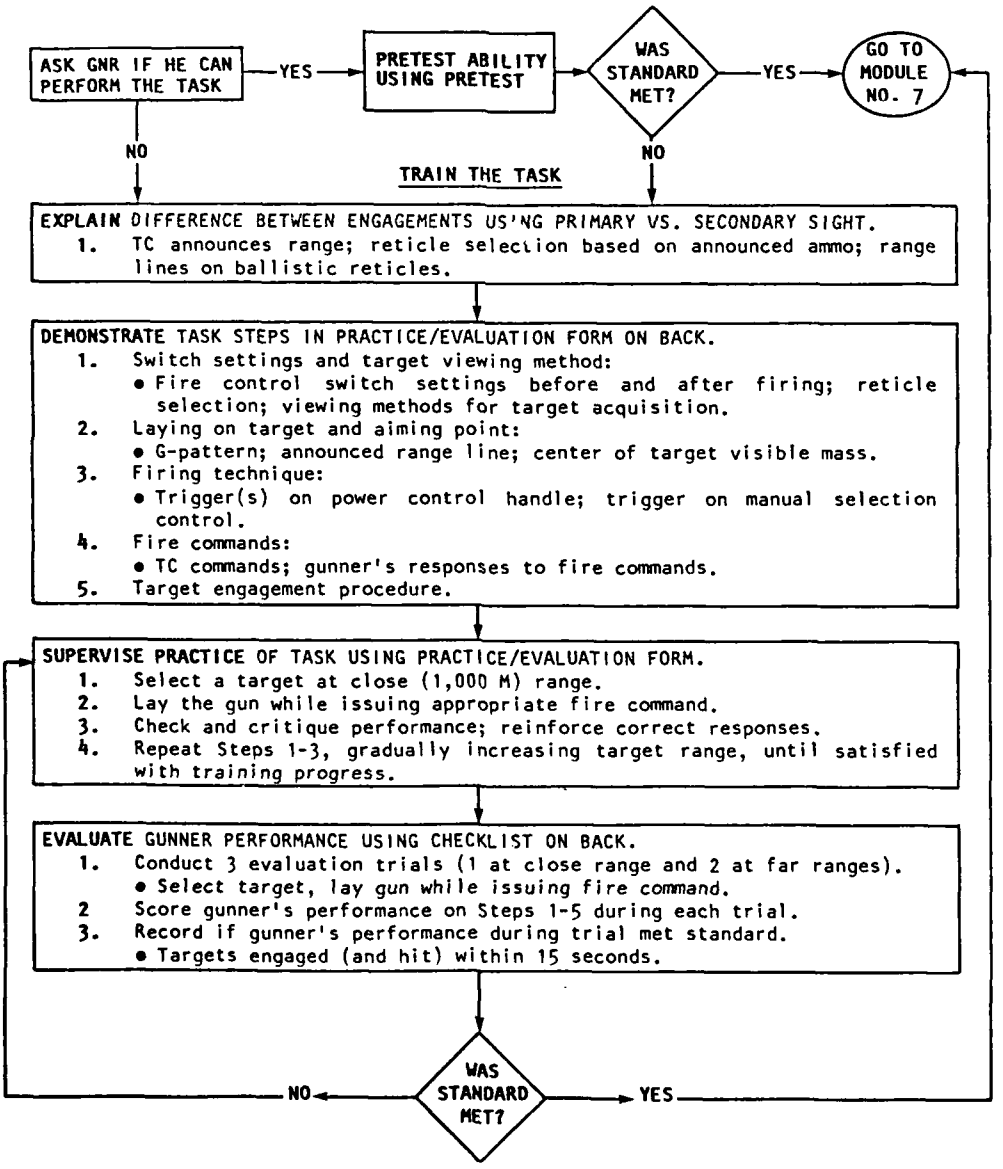
CREW POSITION: GUNNER — TRAINING MODULE NO. 6

TASK: ENGAGE STATIONARY TARGETS WITH M105D TELESCOPE (DEGRADED)

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, AND 5

TRAINING REFERENCES: TM 9-2550-253-10; FM 17-19E 1/2; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; STATIONARY TARGETS (SILHOUETTES OR TARGETS OF CONVENIENCE) AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES



PRETEST

OBJECTIVE

- To determine if the gunner is already able to engage (and hit) a stationary target using the M105D telescope.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THIS TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Telescope is properly adjusted for optimal viewing.
- TC has given the command: "GUNNER-BEEHIVE-TIME-TROOPS-1200."

STEP 3: EVALUATE GUNNER'S PRETEST AND MARK THE GO OR NO GO BOX FOR EACH STEP.

- If gunner receives a GO on all steps, then continue with Module No. 7 or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION of this module.

PRETEST

TC	GUNNER	GO	NO GO
Lay main gun for direction, check position of switches.	1. Set fire control switches and move reticle selector lever to select appropriate reticle (APERS-T ammo use HEAT reticle).		
Evaluate GNR's setting of switches and reticle selection.	2. Locate target, get into telescope.		
	3. Look through telescope, identify target, and announce "IDENTIFIED."		
Evaluate GNR's actions for Steps 2 and 3, announce "UP" and release turret control.			
	4. Lay the announced range line on center of target's visible mass using either the power or manual control handles. (See note.)		
Evaluate gunner's lay of announced rangeline.			

Note: To fire APERS-T, find the closest value in the APERS-T column of the aiming data plate. Determine equivalent HEAT range. Lay on target using this equivalent range within the HEAT reticle.

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in engaging stationary targets using the M105D telescope.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Demonstrate from the gunner's seat with the gunner observing from behind you. First, demonstrate the task slowly, answering any questions. Finally, demonstrate the task quickly and to standard (15 second standard).

STEP 1: DEMONSTRATE SWITCH SETTINGS AND TARGET VIEWING METHOD.

- Fire control switch settings before and after firing.
- Viewing methods for target acquisition.

STEP 2: DEMONSTRATE USE OF RETICLE SELECTION LEVER FOR SELECTING THE APPROPRIATE RETICLE.

- For FSDS ammo use APDS reticle.
- For APERS-T use HEAT reticle.

STEP 3: DEMONSTRATE HOW TO LAY THE TELESCOPE ON TARGET AND TARGET AIMING POINT.

- Use of G-pattern.
- Use of center of target's visible mass as aiming point.

STEP 4: DEMONSTRATE USING ANNOUNCED RANGELINE TO LAY ON TARGET.

- To fire APERS-T ammunition, select HEAT reticle. Use TC's range estimate, and find closest value in the APERS-T column of the aiming data plate located on the 105 mm gunner's guard. Determine equivalent HEAT range. Lay on target with this equivalent range.

STEP 5: DEMONSTRATE FIRING TECHNIQUES.

- Triggers on power control handle.
- Trigger on manual selection control.

STEP 6: REVIEW FIRE COMMANDS.

- TC's commands; gunner's responses to fire commands.

STEP 7: DEMONSTRATE TARGET ENGAGEMENT PROCEDURE.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To make sure the gunner understands the correct decisions and steps in engaging stationary targets using the M105D telescope.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If there is one observer, have the other observe from the TC's station. Practice on close (1,000 M) targets first, then on far (2,000 M) targets.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Have the gunner demonstrate switch settings and viewing methods.
- Have the gunner demonstrate use of reticle selector lever for selecting the appropriate reticle:
  -- Check gunner's reticle selection for FSDS ammo.
  -- Check gunner's reticle selection for APERS-T.
- Have the gunner demonstrate how to lay the telescope reticle on target.
  -- G-pattern
  -- center of target visible mass
- Have a gunner demonstrate and explain preparing to fire APERS-T ammunition using the HEAT reticle.
- Have the gunner demonstrate firing techniques.
- Have the gunner state fire commands and responses.

STEP 2: HAVE THE GUNNER PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation form.
- Specify near (1,000 M) target.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE GUNNER PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation form.
- Specify a near (1,000 M) target.
- Have the gunner perform each step in succession.
- At the end of the task give the gunner feedback on each step and the task as a whole:
  -- correct faulty performance of individual steps
  -- reinforce good performance of individual steps
  -- report speed and success of the entire task

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to engage stationary targets with the M105D telescope within 15 seconds.

GUIDELINES

CONDUCT 3 EVALUATION TRIALS.

- Trial 1 at close (1,000 M) range.
- Trials 2 and 3 at far ranges.

STEP 1: OBSERVE FROM THE TC's STATION AND EVALUATE THE GUNNER'S PERFORMANCE ON STEPS 1-5 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM AFTER EACH TRIAL. ONLY CHECK GO IF:

- Steps 1-5 performed correctly.
- Target engaged (and hit) within 15 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH EVALUATION TRIAL. TELL THE GUNNER HOW HE PERFORMED ON:

- Switch settings and target viewing method.
- Laying on target and aiming point.
- Firing technique.
- Fire commands.
- Target engagement procedure.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If gunner met standard on all 3 trials, no more training on this module is required.
- If gunner did not meet standard on all 3 trials:
  -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GUNNER-SABOT-(HEAT) (HEP) TANK 1000." Lay main gun for direction, start the stopwatch, and check the position of fire control switches and reticle selector.	1. Set fire control switches, select APDS/HEP(HEAT) reticle, locate target, and get into telescope.		
Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify target, grasp power control handles.		
Evaluate gunner's aiming point by looking through LRF or TTS sight and command "FIRE."	3. Lay announced range line on center of target's visible aiming mass.		
	4. Announce "ON THE WAY" and squeeze firing trigger(s).		
Command: "CEASE FIRE," stop the stopwatch, check resetting of fire control switches.	5. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if all steps performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Close Range	Far Range	Far Range
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

GL 7

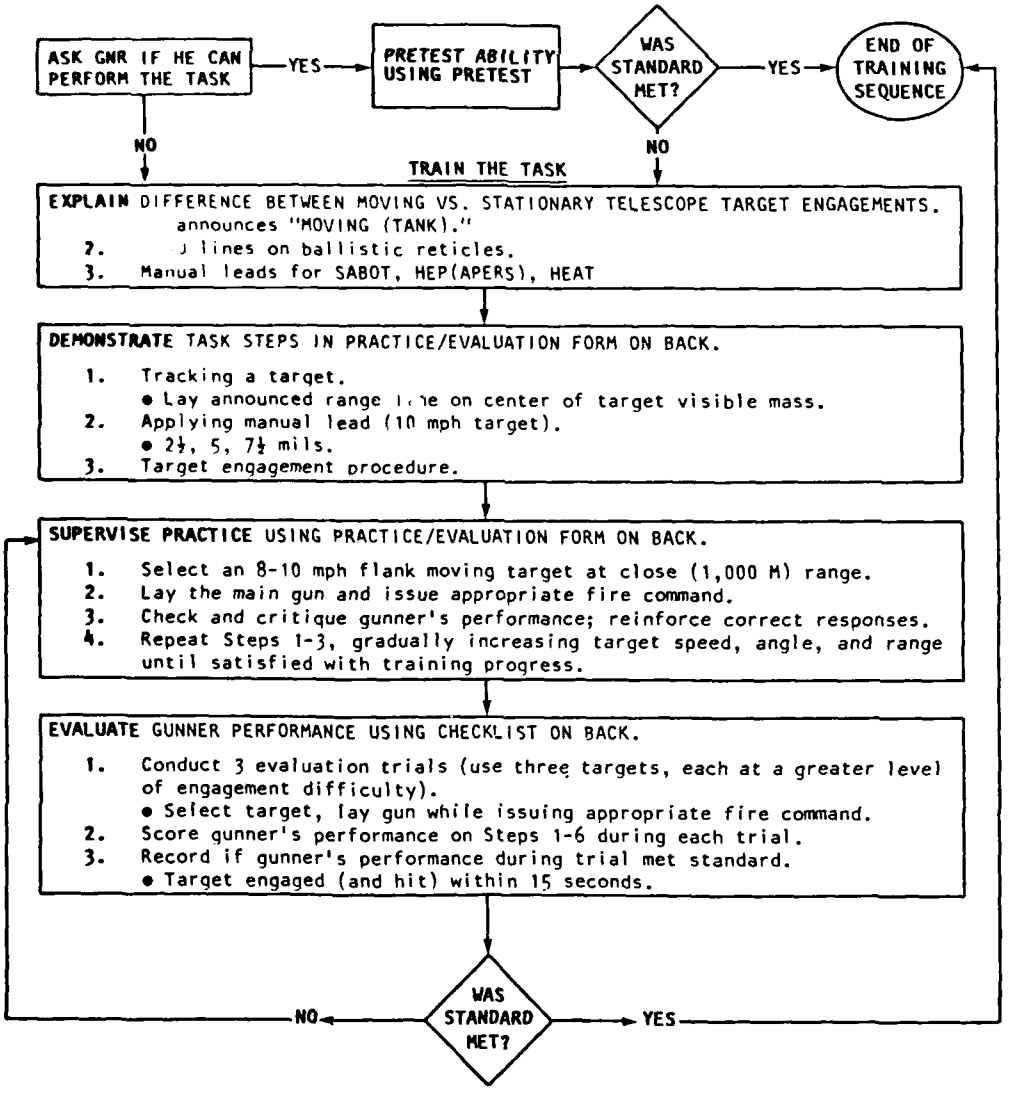
CREW POSITION: GUNNER **TRAINING MODULE NO. 7**

TASK: ENGAGE MOVING TARGETS WITH M105D TELESCOPE (DEGRADED)

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, 5, AND 6

TRAINING REFERENCES: TM 9-2550-253-10; FM 17-19E 1/2; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; MOVING TARGETS (SILHOUETTES OR TARGETS OF CONVENIENCE) AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES



PRETEST

OBJECTIVE

- To determine if the gunner is already able to engage (and hit) a stationary target using the M105D telescope.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THIS TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS BEFORE STARTING THE PRETEST.

- Telescope is properly adjusted for optimal viewing
- TC has given the command: "GUNNER-BEEHIVE-TIME-TROOPS-1200."

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE GO OR NO GO BOX FOR EACH STEP.

- If performance is correct on Steps 1-4, then have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION of this module.

PRETEST

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GUNNER-SABOT-(HEAT)(HEP)-MOVING-TANK-1000." Lay main gun for direction, start the stopwatch, and check the position of fire control switches and reticle selector.	1. Set fire control switches, select APDS/HEP(HEAT) reticle, locate target, and get into telescope.		
Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify targets, grasp control handles, announce "IDENTIFIED."		
	3. Lay announced range line on center of targets visible aiming mass.		
Evaluate GNR's lead by looking through LRF or TTS sight.	4. Apply manual lead for announced ammo from center of target's visible mass while continuing to track.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in engaging moving targets using the M105D telescope.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Demonstrate from the gunner's seat with the gunner observing from behind you. First, demonstrate the task slowly, answering any questions. Finally, demonstrate the task quickly and to standard (15 second standard).

STEP 1: EXPLAIN THE DIFFERENCE BETWEEN STATIONARY VERSUS MOVING TARGET ENGAGEMENTS.

- TC announces "MOVING (TANK)."
- Lead lines on ballistic reticles.
- Manual leads for SABOT, HEP(APERS), HEAT

STEP 2: DEMONSTRATE TRACKING A TARGET.

- Lay the announced range line on center of target's visible mass.

STEP 3: DEMONSTRATE APPLYING MANUAL LEAD.

- 2½ mils for SABOT.
- 5 mils for HEAT.
- 7½ mils for HEP.

STEP 4: DEMONSTRATE TARGET ENGAGEMENT PROCEDURE.

- Respond to TC's initial fire command.
  - -- set fire control switches
  - -- select APDS/HEP(HEAT) reticle
  - -- locate target
  - -- get into telescope
  - -- identify target
- Announce "IDENTIFIED."
- Lay announced range line on center of target's visible aiming mass.
- Apply manual lead to announced ammo while continuing to track.
- Respond to TC's "FIRE" command
  - -- announce "ON THE WAY"
  - -- fire
  - -- continue to track with applied lead
- Gunner's response to TC's "CEASE FIRE" command
  - -- reset fire control switches to original positions.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To make sure the gunner understands the correct decisions and steps in engaging moving targets using the M105D telescope.
- To let the gunner develop and fine-tune task skills at his own pace.

GUIDELINES

- Begin practice by observing the gunner from behind the gunner's station, then from TC's sight.
- Select an 8-10 mph flank moving target at close (1,000 M) range and two additional targets each of increased engagement difficulty.

STEP 1: MAKE SURE THE BASICS ARE UNDERSTOOD.

- Ask the gunner to explain the differences between moving and stationary engagements using the M105D telescope.
- Ask the gunner to state correct manual lead to apply for SABOT, HEAT, and HEP.
- Ask gunner to state responses to TC's commands.

STEP 2: HAVE THE GUNNER PRACTICE THE TASK STEP BY STEP.

- Use the Practice/Evaluation form.
- Specify near (1,000 M) target.
- Repeat practice on each step until performance on that step is correct and quick. Then continue to the next task step.
- Finally, when performance on the last step is correct and quick, then continue to STEP 3, below.

STEP 3: HAVE THE GUNNER PRACTICE THE ENTIRE TASK.

- Use the Practice/Evaluation form.
- Specify a near (1,000 M) target.
- Have the gunner perform each step in succession.
- At the end of the task give the gunner feedback on each step and the task as a whole:
  -- correct faulty performance of individual steps
  -- reinforce good performance of individual steps
  -- report speed and success of the entire task
- Continue practice until performance meets 15 second standard. Then have gunner practice in the same way on two additional targets of increasing engagement difficulty.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to engage and hit a moving target with the M105D telescope within 15 seconds.

GUIDELINES

CONDUCT 3 EVALUATION TRIALS.

- Trial 1 at close (1,000 M) range.
- Trials 2 and 3 at far ranges.

STEP 1: OBSERVE FROM THE TC's STATION AND EVALUATE THE GUNNER'S PERFORMANCE ON STEPS 1-6 USING THE CHECKLIST ON THE PRACTICE/EVALUATION FORM.

STEP 2: EVALUATE AND RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FROM AFTER EACH TRIAL. CHECK GO ONLY IF:

- Steps 1-6 performed correctly.
- Target engaged (and hit) within 15 seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF EACH EVALUATION TRIAL. TELL THE GUNNER HOW HE PERFORMED ON:

- Tracking a target.
- Applying manual lead.
- Target engagement procedure.

STEP 4: DETERMINE IF MORE TRAINING ON THIS MODULE IS REQUIRED.

- If gunner met standard on all 3 trials, no more training is required.
- If gunner did not meet standard on all 3 trials:
  - -- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
  - -- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GUNNER-SABOT-(HEAT) (HEP)-MOVING-TANK-1000." Lay main gun for direction, start the stopwatch, and check the position of fire control switches and reticle selector.	1. Set fire control switches, select APDS/HEP(HEAT) reticle, locate target, and get into telescope.		
Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify targets, grasp control handles, announce "IDENTIFIED."		
	3. Lay announced range line on center of target's visible aiming mass.		
Evaluate GNR's aiming point and tracking ability by looking through LRF or TTS sight. Evaluate GNR's lead by looking through LRF or TTS sight and command *"FIRE."*	4. Evaluate manual lead for announced ammo from center of target's visible mass while continuing to track.		
	5. *Announce "ON THE WAY" and* squeeze firing trigger(s) while continuing to track with applied lead.		
Check sight picture, command "CEASE FIRE," stop the stopwatch and check resetting of fire control switches.	6. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if all steps performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Low Difficulty	**Moderate Difficulty**	**High Difficulty**
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

GL 8-1

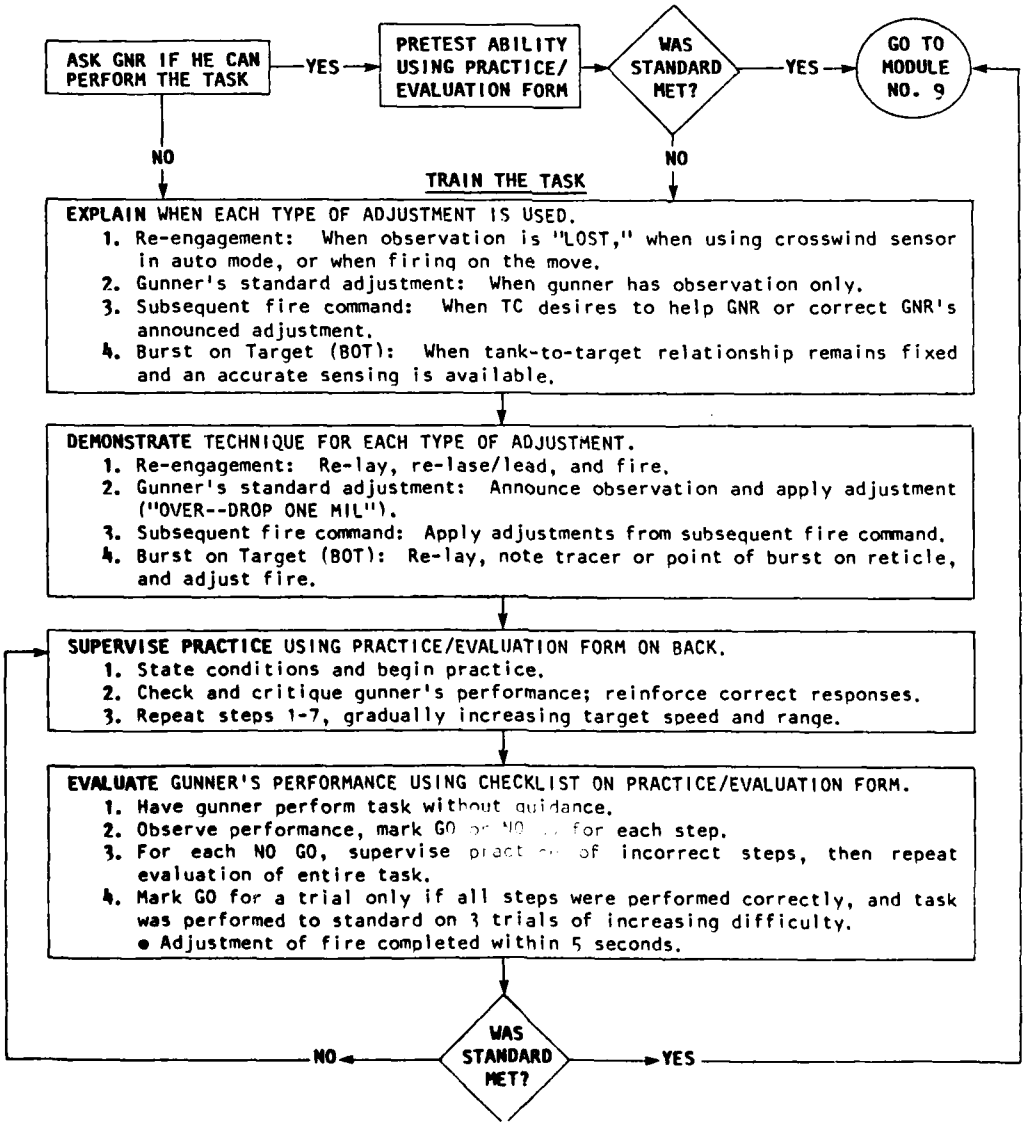
CREW POSITION: GUNNER **TRAINING MODULE NO. 8**

TASK: ADJUST MAIN GUN FIRE

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, 5, 6, 7

TRAINING REFERENCES: FM 17-12-3, FM 17-19E1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER, STOPWATCH, STATIONARY AND MOVING TARGETS (5-25 mph), M55 LASER (OPTIONAL), CONDUCT-OF-FIRE TANK GUNNERY TRAINER (OPTIONAL), FOX BOT TRAINER (OPTIONAL)



PRETEST

OBJECTIVE

- To determine if the gunner is already able to perform this task to standard: adjustment of fire is completed within five seconds.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.

- Tank systems are fully operational.
- Tank and turret are stationary.
- SABOT round has been fired and missed.
- Sensing on round was "LOST."

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Announce "UP" as would the loader. Start the stopwatch.	1. Lay aiming cross slightly below center of target-visible mass using G pattern.		
Check gun lay and laser aiming point.	2. Announce "LASING" and depress LASE/LEAD button.		
Check relay of gun and aiming point.	3. Relay aiming cross on center of target-visible mass.		
	4. Announce "ON THE WAY" and squeeze firing trigger(s).		
Announce "CEASE FIRE." Stop stopwatch. Check resetting of fire control switches.	5. Reset fire control switches.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in adjustment of main gun fire.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: EXPLAIN SITUATIONS REQUIRING USE OF THE VARIOUS ADJUSTMENT TECHNIQUES.

- Use re-engagement technique when (1) round is "lost," (2) using crosswind sensor in auto mode, or (3) firing on the move.
- Use gunner's standard adjustment when GNR has observation only.
- Use subsequent fire command when TC issues one.
- Use BOT when gunner senses round and tank-to-target relationships remain fixed.

STEP 2: DEMONSTRATE RE-ENGAGEMENT TECHNIQUE.

- Lay aiming cross slightly below center of target visible mass using G pattern.
- Announce "LASING" and depress LASE/LEAD button.
- Re-lay aiming cross on center of target visible mass.

STEP 3: DEMONSTRATE GUNNER'S STANDARD ADJUSTMENT.

- Announce observations and method of adjustment such as "OVER--DROP ONE MIL."
- Apply adjustment by re-laying aiming cross.

STEP 4: DEMONSTRATE SUBSEQUENT FIRE COMMAND.

- Issue subsequent fire command (ALERT, DEFLECTION AND RANGE CORRECTIONS, EXECUTION).
- Apply adjustment by re-laying aiming cross.

STEP 5: DEMONSTRATE BOT.

- Re-lay after firing to maintain correct initial sight picture.
- Describe point on reticle where tracer or burst appears in relation to the target.
- Apply adjustment by re-laying point on reticle on target-visible center of mass.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in adjustment of main gun fire.
- To allow the gunner to develop and fine-tune performance skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If you have more than one gunner to train, place the others where they can also observe.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF EACH TYPE OF FIRE ADJUSTMENT.

- Ask the gunner to describe situations where each type of adjustment should be used.
  -- Re-engagement
  -- Gunner's standard adjustment
  -- Subsequent fire command
  -- BOT
- Have the gunner demonstrate application of sighting adjustments.
- Have the gunner demonstrate firing techniques.

STEP 2: HAVE EACH GUNNER PRACTICE EACH TYPE OF ADJUSTMENT STEP BY STEP.

- Re-engagement.
- Gunner's standard adjustment.
- Subsequent fire command.
- BOT.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

STEP 4: CONTINUE PRACTICE UNTIL ALL ADJUSTMENTS ARE PERFORMED CORRECTLY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the task.

GUIDELINES

Training on this task is completed when performance on each step is correct.

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE.

STEP 2: HAVE GUNNER PERFORM STEPS 1-8 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE. RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM. ONLY CHECK GO IF:

- Each step is performed correctly.
- Adjustment of fire is completed within five seconds.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Initial lay of sight on center of target-visible mass.
- Firing announcement.
- Re-lay after firing to maintain initial sight picture.
- Announcement of sensing.
- Application of BOT.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD:

- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

Burst-On-Target Technique TC	GUNNER	GO	NO GO
Command "GUNNER-HEAT-MISSILE." Lay main gun, start stopwatch, check fire control switches.	1. Set fire control switches, locate target, look through unity window, announce "IDENTIFIED."		
	2. Lay aiming cross on center of target's visible mass. Apply lead if necessary.		
Announce "FIRE."	3. Announce "ON THE WAY" and fire.		
	4. Relay to maintain correct initial sight picture. Concentrate on target, note point of sight reticle where tracer appears.		
Attempt to sense round.	5. Announce sensing ("SHORT," "OVER") and BOT.		
Remain silent if agree with GNR's announcement. Otherwise issue subsequent fire command.	6. If TC is silent, use gun controls to move the point on the reticle where the tracer appeared to the center of the target's visible mass. (Otherwise follow TC's command.)		
Announce "UP" as would the loader.	7. Announce "ON THE WAY" and fire again. Continue in this manner until otherwise commanded by TC.		
Announce "CEASE FIRE." Stop stopwatch, check resetting of fire control switches.	8. Reset fire control switches.		

TRIAL 1

Low Difficulty

GO	NO GO

Time: _____

TRIAL 2

Moderate Difficulty

GO	NO GO

Time: _____

TRIAL 3

High Difficulty

GO	NO GO

Time: _____

GL9-1

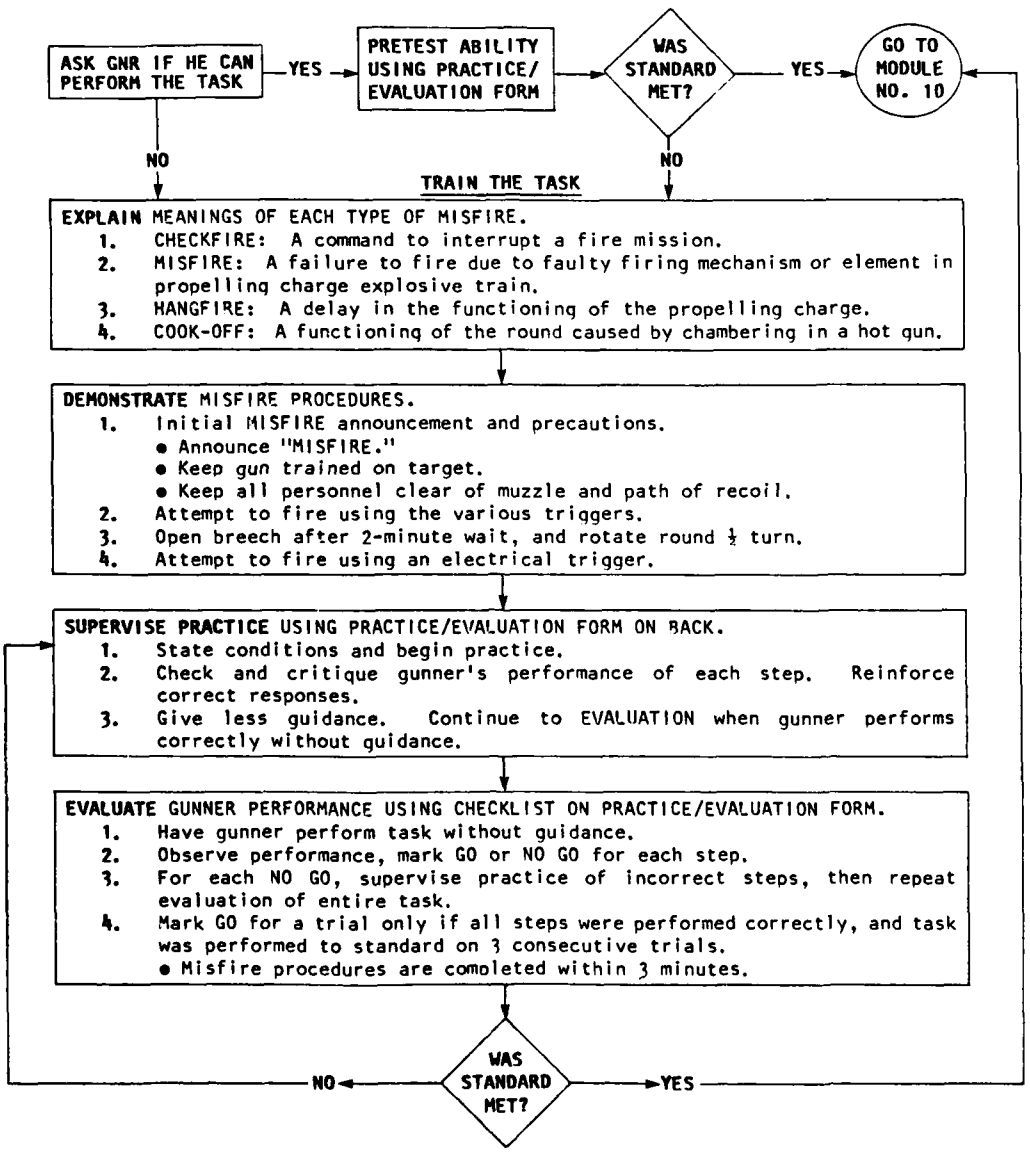
CREW POSITION: GUNNER **TRAINING MODULE NO. 9**

TASK: PERFORM MAIN GUN MISFIRE PROCEDURES

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3-8

TRAINING REFERENCES: FM 17-19E1/2, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER



PRETEST

OBJECTIVE

- To determine if the gunner is already able to perform this task to standard: misfire procedures are complete within three minutes.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.
- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS.
- Tank is stationary with main gun aimed at target.
- Main gun is loaded and has failed to fire.

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE GO OR NO GO BOX FOR EACH SUBTASK.
- If performance is correct, then continue with another module or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Start stopwatch.	1. Announce "MISFIRE." Keep gun trained on target.		
Ensure that main gun is trained on target and all personnel are clear of gun muzzle and path of recoil.	2. Attempt to fire using trigger on GNR's control handle that was not used initially. Announce "MISFIRE."		
	3. Attempt to fire using trigger on manual elevating handle. Announce "MISFIRE."		
Press override switch and attempt to fire. Do not release override switch. Announce "MISFIRE."	4. Wait for commander to attempt to fire from his position.		
	5. Place main gun switch in OFF position.		
Release override switch after GNR has placed main gun switch in OFF position.	6. Attempt to fire using manual firing device (blasting machine). Announce "MISFIRE."		
Place loader's switch in SAFE position. Wait 2 minutes, open breech, rotate the round ½ turn and close breech. Place loader's switch in FIRE position and announce "UP."	7. Observe the TC as he carries out the loader's actions.		
	8. Attempt to fire using an electrical trigger. Announce "MISFIRE."		
Place loader's safety switch in SAFE position. Stop stopwatch.	9. Place main gun switch in OFF position.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in applying main gun misfire procedures.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: EXPLAIN MEANINGS OF CHECKFIRE, MISFIRE, HANGFIRE, AND COOK-OFF.

- CHECKFIRE: A command to interrupt a fire mission which may be given by any crew member.
- MISFIRE: A failure to fire due to faulty firing mechanism or element in propelling charge explosive train.
- HANGFIRE: A delay in the functioning or propelling charge explosive train. DANGER: A hangfire may be mistaken for a misfire. Wait 2 minutes before opening the breech.
- COOK-OFF: A functioning of any or all of the explosive components of a round caused by chambering in a hot gun.

STEP 2: DEMONSTRATE MISFIRE PROCEDURES FROM GUNNER'S STATION.

- Announce "MISFIRE." Keep main gun trained on target.
- Attempt to fire using trigger on gunner's control handle that was not used initially. Announce "MISFIRE."
- Attempt to fire using trigger on manual elevating handle. Announce "MISFIRE."
- Wait for TC to attempt to fire from his position.
- Place main gun switch in OFF position.
- Attempt to fire using manual firing device (blasting machine). Announce "MISFIRE."
- Direct loader to place loader switch in SAFE position and wait 2 minutes, then open breech, rotate round ⅓ turn, close breech, place loader switch in FIRE position and announce "UP."
- Attempt to fire using an electrical trigger. Announce "MISFIRE."
- Place main gun switch in OFF position.

STEP 3: EXPLAIN PROCEDURES FOR ROUND THAT FAILS TO FIRE.

- When gun fails to fire, the round is assumed faulty.
- Remove round. If gun is **hot** and round cannot be removed within one additional minute, the round should remain in the gun for 2 hours.
- Evacuate all personnel from tank until gun is cool.
- Remove round.
- Perform complete firing circuit test.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in performing main gun misfire procedures.
- To allow the gunner to develop and fine-tune performance skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If you have more than one gunner to train, place the others where they can also observe.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF THE TASK.

- Ask the gunner to define each type of firing interruption:
  -- Checkfire
  -- Misfire
  -- Hangfire
  -- Cook-off
- Have the gunner use each of the various switches to fire the main gun:
  -- Electric
  -- Manual
- Have the gunner connect the manual firing device (blasting machine) and use it to fire the main gun.

STEP 2: HAVE EACH GUNNER PRACTICE THE TASK STEP BY STEP.

- Use of trigger on gunner's control handle.
- Use of trigger on manual elevation handle.
- Use of control switches.
- Use of manual firing device.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

STEP 4: CONTINUE PRACTICE UNTIL ALL STEPS ARE PERFORMED CORRECTLY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the task.

GUIDELINES

Training on this task is completed when performance on each step is correct.

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE.

STEP 2: HAVE GUNNER PERFORM STEPS 1-9 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE. RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM. ONLY CHECK GO IF:

- Each step is performed correctly.
- Misfire procedures are completed within three minutes.

STEP 3: *CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE* GUNNER HOW HE PERFORMED ON:

- Announcement of misfire.
- Use of electric triggers.
- Use of manual trigger.
- Use of control switches.
- Use of manual firing device.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD:

- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

Main Gun Misfire Procedures

TC	GUNNER	GO	NO GO
Inform gunner that main gun is loaded and has failed to fire. Start stopwatch.	1. Announce "MISFIRE." Keep gun trained on target.		
Ensure that main gun is trained on target and all personnel are clear of gun muzzle and path of recoil.	2. Attempt to fire using trigger on GNR's control handle that was not used initially. Announce "MISFIRE."		
	3. Attempt to fire using trigger on manual elevating handle. Announce "MISFIRE."		
Press override switch and attempt to fire. Do not release override switch. Announce "MISFIRE."	4. Wait for commander to attempt to fire from his position.		
	5. Place main gun switch in OFF position.		
Release override switch after GNR has placed main gun switch in OFF position.			
	6. Attempt to fire using manual firing device (blasting machine). Announce "MISFIRE."		
Place loader's switch in SAFE position. Wait 2 minutes, open breech, rotate the round ½ turn and close breech. Place loader's switch in FIRE position and announce "UP."	7. Observe the TC as he carries out the loader's actions.		
	8. Attempt to fire using an electrical trigger. Announce "MISFIRE."		
	9. Place main gun switch in OFF position.		
Place loader's safety switch in SAFE position. Stop stopwatch.			

NOTE: Inform gunner that if the round will still not fire, it is assumed faulty and must be removed. If the gun is hot and the round cannot be removed within 1 additional minute, the round should remain in the gun for 2 hours and all personnel must evacuate the tank.

TRIAL 1		TRIAL 2		TRIAL 3	
GO	NO GO	GO	NO GO	GO	NO GO

Time: _____ Time: _____ Time: _____

GL 10-1

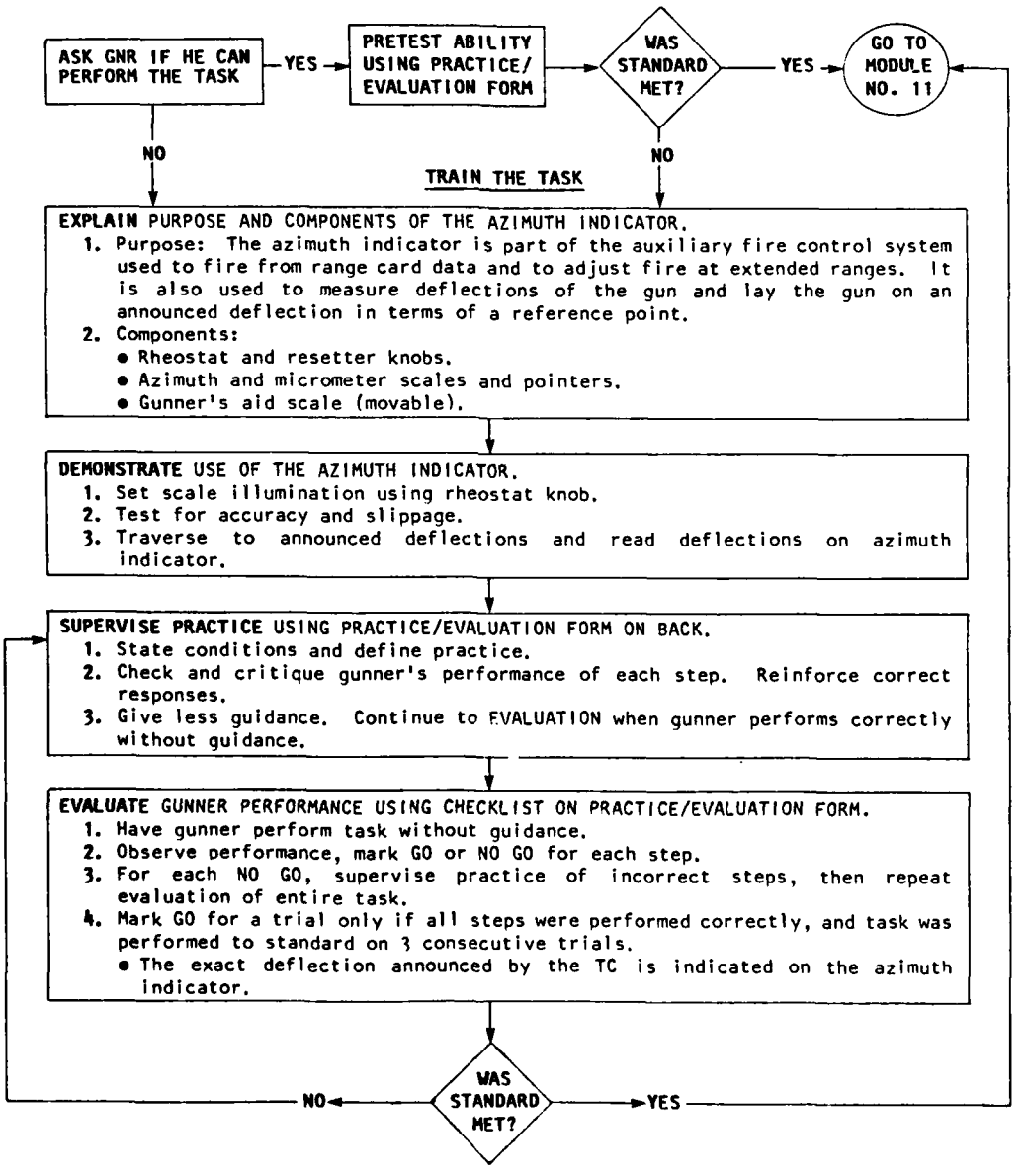
CREW POSITION: GUNNER **TRAINING MODULE NO. 10**

TASK: OPERATE M28E2 AZIMUTH INDICATOR

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10, FM 17-12-3, FM 17-19E1/2

SUPPORT REQUIREMENTS: M28E2 AZIMUTH INDICATOR



PRETEST

OBJECTIVE

- To determine if the gunner is already able to perform this task to standard: the exact deflection announced by the tank commander is indicated on the azimuth indicator.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS:

- Tank systems are fully operational.
- Tank and targets are stationary.

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Ask gunner to illuminate azimuth indicator scales.	1. Set master battery switch to ON. Rotate rheostat knob on azimuth indicator to desired brightness.		
Ask gunner to perform accuracy test.	2. Perform accuracy test on azimuth indicator.		
Ask gunner to perform slippage test.	3. Perform slippage test on azimuth indicator.		
Announce DEFLECTION element of fire command.	4. Traverse turret to the announced deflection, and repeat the deflection reading back to the TC.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in operating the M28E2 azimuth indicator.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: IDENTIFY COMPONENTS OF THE AZIMUTH INDICATOR AND EXPLAIN THEIR USE.

- Rheostat knob used to set scale illumination to desired brightness.
- Resetter knob used to zero the azimuth indicator.
- Azimuth scale measures deflection in hundreds of mils.
- Micrometer scale measures deflection in single mils.
- Gunner's aid is a movable scale.

STEP 2: DEMONSTRATE ACCURACY TEST.

- Place crosswind auto/manual switch to MANUAL.
- Lay aiming dot on a clearly defined point.
- Set the azimuth indicator to zero.
- Traverse manually 6,400 mils. Lay exactly on aiming point without overrunning it.
- Check that indicator pointers are on zero.

STEP 3: DEMONSTRATE SLIPPAGE TEST.

- Place crosswind auto/manual switch to MANUAL.
- Lay aiming dot on a clearly defined point.
- Set the azimuth indicator to zero.
- Place turret in power operation.
- Traverse rapidly clockwise several times, stopping suddenly.
- Turn off turret power.
- Manually traverse counterclockwise to re-lay on original aiming point without overrunning it.
- Check that indicator pointers are on zero.
- Repeat the procedure in the opposite direction.

STEP 4: ANNOUNCE VARIOUS DEFLECTIONS AND TRAVERSE TURRET TO ANNOUNCED DEFLECTION READINGS.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in operating the azimuth indicator.
- To allow the gunner to develop and fine-tune performance skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If you have more than one gunner to train, place the others where they can also observe.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF THE TASK.

- Ask the gunner to list the components of the azimuth indicator and explain their use.
  -- Rheostat knob.
  -- Resetter knob.
  -- Azimuth scale.
  -- Micrometer scale.
  -- Gunner's aid.
- Have the gunner traverse the turret several times and read the deflection readings on the azimuth indicator.

STEP 2: HAVE EACH GUNNER PRACTICE THE TASK STEP BY STEP.

- Accuracy test.
- Slippage test.
- Traverse turret to announced deflection readings.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

STEP 4: CONTINUE PRACTICE UNTIL ALL TASKS ARE PERFORMED CORRECTLY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the task.

GUIDELINES

Training on this task is completed when performance on each step is correct.

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE.

STEP 2: HAVE GUNNER PERFORM STEPS 1-4 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE. RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM. ONLY CHECK GO IF:

- Tasks are performed correctly.
- Exact deflections announced by tank commander are indicated on the azimuth indicator.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Setting illumination level.
- Performing accuracy test.
- Performing slippage test.
- Laying gun exactly on announced deflection.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD:

- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask gunner to illuminate azimuth indicator scales.	1. Set master battery switch to ON. Rotate rheostat knob on azimuth indicator to desired brightness.		
Ask gunner to perform accuracy test.	2. Perform accuracy test. • Place crosswind auto/manual switch to MANUAL. • Lay aiming dot of direct-fire sight on a clearly defined aiming point. • Zero the azimuth indicator using resetter knob. • Traverse manually 6,400 mils. Lay exactly on aiming point without overrunning it. Pointers should read zero.		
Ask gunner to perform slippage test.	3. Perform slippage test. • Place crosswind auto/manual switch to MANUAL. • Lay aiming dot of direct-fire sight on a clearly defined aiming point. • Zero the azimuth indicator using the resetter knob. • Place turret in power operation. • Traverse rapidly clockwise several times in power, stopping suddenly. • Turn off turret power. • Manually traverse counterclockwise to original aiming point without overrunning it. Both pointers should align at zero. • Repeat the procedure in the opposite direction.		
Announce DEFLECTION element of fire command.*	4. Traverse turret to the announced deflection, and repeat the deflection reading back to the TC.		

TRIAL 1		TRIAL 2		TRIAL 3	
GO	NO GO	GO	NO GO	GO	NO GO

*NOTE: Change setting for each trial.

GL 11-1

CREW POSITION: GUNNER **TRAINING MODULE NO. 11**

TASK: OPERATE GUNNER'S QUADRANT

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-12-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER, M1A1 GUNNER'S QUADRANT

ASK GNR IF HE CAN PERFORM THE TASK —YES→ **PRETEST ABILITY USING PRACTICE/ EVALUATION FORM** → **WAS STANDARD MET?** —YES→ **GO TO MODULE NO. 12**

NO ↓ (from ASK GNR)

NO ↓ (from WAS STANDARD MET?)

TRAIN THE TASK

EXPLAIN PURPOSE AND COMPONENTS OF GUNNER'S QUADRANT.

1. Purpose:
   - Verify the accuracy of the elevation quadrant.
   - Determine the amount of elevation or depression of the main gun.
2. Components:
   - Elevation scales.
   - Index plate, plunger, and arm.
   - Level vial and cover.
   - Quadrant shoes.
   - Micrometer knob and scale.
   - Auxiliary index mark.
   - Line-of-fire arrow.

↓

DEMONSTRATE TASK FROM GUNNER'S STATION.

1. Test accuracy of gunner's quadrant (end-for-end test).
2. Determine amount of elevation or depression in mils.

↓

SUPERVISE PRACTICE USING PRACTICE/EVALUATION FORM ON BACK.

1. State conditions and begin practice.
2. Check and critique gunner's performance of each step. Reinforce correct responses.
3. Give less guidance. Continue to EVALUATION when gunner performs correctly without guidance.

↓

EVALUATE GUNNER PERFORMANCE USING CHECKLIST ON PRACTICE/EVALUATION FORM.

1. Have gunner perform task without guidance.
2. Observe performance, mark GO or NO GO for each step.
3. For each NO GO, supervise practice of incorrect steps, then repeat evaluation of entire task.
4. Mark GO for a trial only if all steps were performed correctly, and task was performed to standard on 3 consecutive trials.
   - Accurate test of gunner's quadrant.
   - Accurate reading of scales.

↓

WAS STANDARD MET?

NO ← **WAS STANDARD MET?** → YES

NO → back to SUPERVISE PRACTICE

YES → **GO TO MODULE NO. 12**

PRETEST

OBJECTIVE

- To determine if the gunner is already able to perform this task to standard:
  -- Perform end-for-end test
  -- Read quadrant accurately

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS:

- Tank systems are fully operational.
- Tank is stationary on fairly level ground.

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- *If performance is correct, then continue with another module or* have the gunner assist you in training.
- If there are any errors (one NO GO or more) then go to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Ask the gunner to state purpose and name components of the gunner's quadrant.	1. State purpose of using quadrant. Name the components of the quadrant.		
Ask the gunner to perform end-for-end test of the gunner's quadrant.	2. Perform end-for-end test. • Set scales at zero. • Place the quadrant shoes on quadrant seats. • Center the quadrant bubble. • Turn the quadrant end-for-end.		
Elevate or depress the main gun. Ask gunner to determine amount of elevation or depression using the gunner's quadrant.	3. Determine amount of elevation or depression of main gun.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in operating the gunner's quadrant.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: STATE THE PURPOSE OF THE GUNNER'S QUADRANT.

- To verify the accuracy of the elevation quadrant.
- To determine the amount of elevation or depression of the main gun.

STEP 2: NAME THE COMPONENTS OF THE GUNNER'S QUADRANT.

- Elevation scales.
- Index plate, plunger, and arm.
- Level vial and cover.
- Quadrant shoes.
- Micrometer knob and scale.
- Auxiliary index mark.
- Line-of-fire arrow.

STEP 3: DEMONSTRATE AN END-FOR-END TEST.

- Place quadrant shoes on quadrant seats.
- Center bubble in leveling vial.
- Turn quadrant end-for-end.

STEP 4: DEMONSTRATE READING THE SCALES.

- Elevate or depress main gun.
- Center bubble in leveling vial and read scales.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in operating the gunner's quadrant.
- To allow the gunner to develop and fine-tune performance skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If you have more than one gunner to train, place the others where they can also observe.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF THE TASK.

- Ask the gunner to list the components of the gunner's quadrant.
  - -- Elevation scale.
  - -- Index plate, plunger, and arm.
  - -- Level vial and cover.
  - -- Quadrant shoes.
  - -- Micrometer knob and scale.
  - -- Auxiliary index mark.
  - -- Line-of-fire arrow.
- Ask the gunner to read the scales at various settings.

STEP 2: HAVE EACH GUNNER PRACTICE THE TASK STEP BY STEP.

- Perform end-to-end test.
- Read the scales for various elevated and depressed positions of the main gun.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

STEP 4: CONTINUE PRACTICE UNTIL ALL TASKS ARE PERFORMED CORRECTLY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the task.

GUIDELINES

Training on this task is completed when performance on each step is correct.

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE.

STEP 2: HAVE GUNNER PERFORM STEPS 1-3 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE. RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM. ONLY CHECK GO IF:

- Tasks are performed correctly.
- Scale readings are accurate.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Identification of components.
- Performance of end-to-end test.
- Reading scales.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD:

- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask the gunner to state purpose and name components of the gunner's quadrant.	1. State purpose of using quadrant. Name the components of the quadrant.		
Ask the gunner to perform end-for-end test of the gunner's quadrant.	2. Perform end-for-end test. • Set both index arm and micrometer scale at zero. • Place the quadrant shoes on the scribed quadrant seats of the breech ring with the black "line of fire" arrow pointed toward the muzzle. • Center the bubble by elevating or depressing the main gun. • Turn the quadrant end-for-end (180°). -- If bubble recenters itself, the quadrant is in perfect adjustment and the main gun is at zero degrees elevation. -- If bubble does not recenter itself, use another gunner's quadrant and repeat end-for-end test.		
Elevate or depress the main gun. Ask the gunner to determine the amount of elevation or depression of the main gun (in mils) by using the gunner's quadrant.	3. Determine amount of elevation or depression of the main gun. • Place the gunner's quadrant shoes on the scribe marks of the main gun so the line of fire arrow cannot be seen. (Arrow is pointing toward muzzle.) • Press index plunger and move index arm until bubble in leveling vial is almost centered. Center bubble in vial by turning micrometer knob. • Add together value on elevation scale and value on micrometer scale to determine amount of elevation or depression of the main gun.		

TRIAL 1	
GO	NO GO

TRIAL 2	
GO	NO GO

TRIAL 3	
GO	NO GO

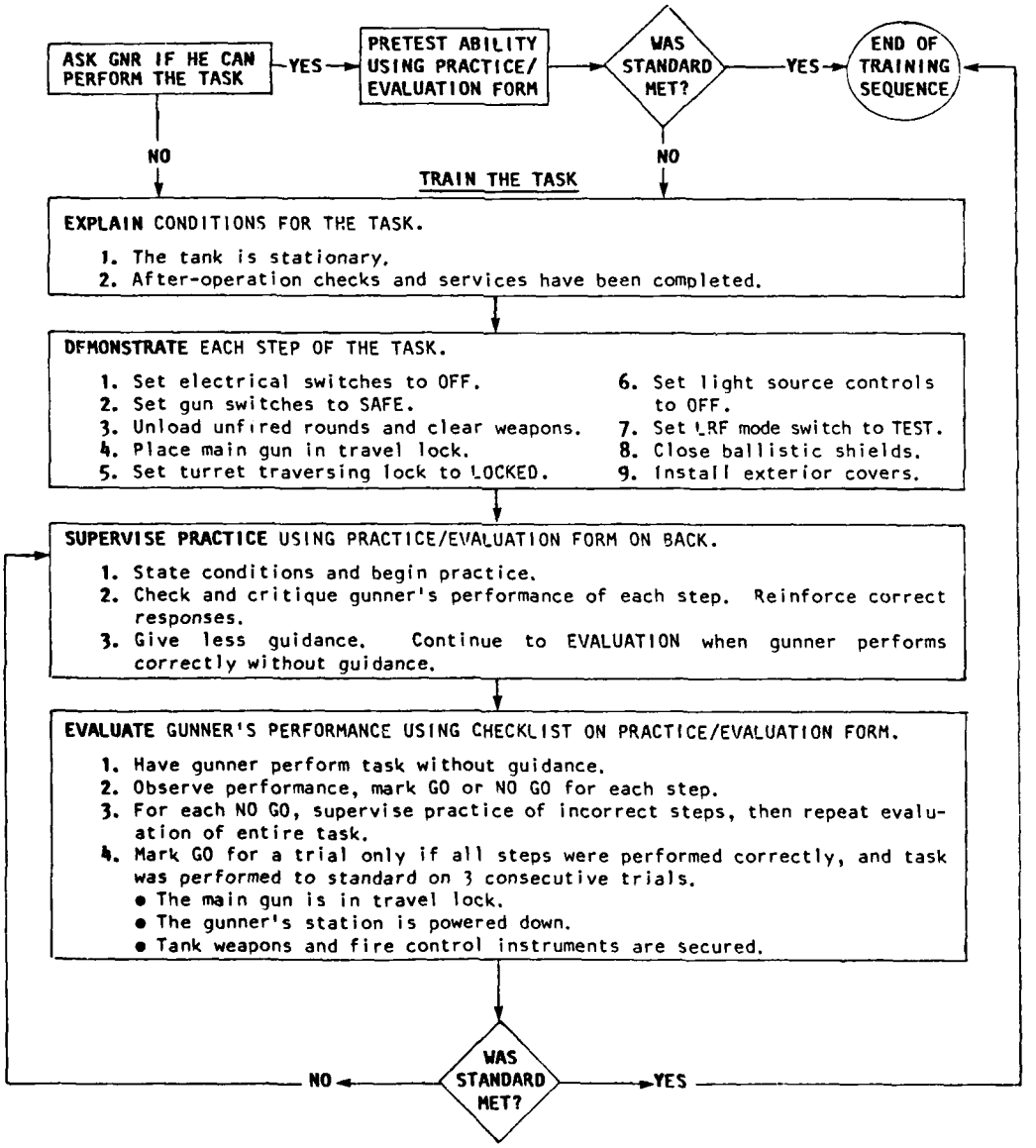
CREW POSITION: GUNNER **TRAINING MODULE NO. 12**

TASK: POWER DOWN AND SECURE GUNNER'S STATION

PREREQUISITE TASKS: GUNNER MODULE NO. 1

TRAINING REFERENCES: FM 17-19E1/2, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER



PRETEST

OBJECTIVE

- To determine if the gunner is already able to perform this task to standard:
  -- The gunner's station is powered down.
  -- The main gun is in travel lock.
  -- Tank weapons and fire control instruments are secured.

GUIDELINES

STEP 1: ASK THE GUNNER IF HE CAN ALREADY PERFORM THE TASK TO STANDARD.

- If he says NO, then go directly to DEMONSTRATION.
- If he says YES, then give him the PRETEST.

STEP 2: STATE THE CONDITIONS:

- The tank is stationary.
- After-operations checks and services have been completed.

STEP 3: EVALUATE GUNNER'S PRETEST PERFORMANCE AND MARK THE **GO** OR **NO GO** BOX FOR EACH SUBTASK.

- If performance is correct, then continue with another module or have the gunner assist you in training.
- if there are any errors *(one NO GO or more) then go* to DEMONSTRATION.

PRETEST

TC	GUNNER	GO	NO GO
Ask gunner to power down gunner's station.	1. Set electrical switches to OFF.		
	2. Set gun safety switches to SAFE.		
Ask gunner to secure main gun for travel.	3. Unload any unfired rounds.		
	4. Traverse turret and put main gun in travel lock.		
	5. Set turret traversing lock to LOCKED.		
Ask gunner to secure fire control instruments and tank weapons.	6. Turn light source controls to OFF.		
	7. Set LRF mode switch to TEST.		
	8. Close ballistic shields.		
	9. Install exterior covers.		

DEMONSTRATION

OBJECTIVES

- To explain important procedures and decisions required by gunners in powering down and securing gunner's station.
- To give the gunner a chance to watch how this task is performed to standard by an expert.

GUIDELINES

- Position the gunner where he can see you demonstrate the task.
- Begin the demonstration by performing the task slowly, answering any questions.
- Complete the demonstration by quickly performing the task to standard.

STEP 1: SET MAIN GUN, MACHINEGUN, AND ELEV/TRAV POWER SWITCHES TO OFF.

STEP 2: SET MAIN GUN AND CUPOLA SAFETY SWITCH TO SAFE.

STEP 3: UNLOAD UNFIRED ROUNDS AND CLEAR WEAPONS.

- Main gun
- Coax
- Cal .50

STEP 4: PLACE MAIN GUN IN TRAVEL LOCK.

- Traverse turret so that main gun is over travel lock.
- Lift bar and raise travel lock.
- Using manual controls, lower main gun into travel lock and secure.

STEP 5: SET TURRET TRAVERSING LOCK TO LOCKED.

STEP 6: TURN LIGHT SOURCE CONTROLS TO OFF.

- Azimuth indicator.
- Elevation quadrant.
- Gunner's telescope.

STEP 7: SET LRF MODE SWITCH TO TEST.

STEP 8: CLOSE BALLISTIC SHIELDS.

- Gunner's periscope.
- Commander's periscope.
- LRF blister cover.

STEP 9: INSTALL EXTERIOR COVERS.

- Coax
- Telescope
- Main gun muzzle.

--GO TO SUPERVISED PRACTICE--

SUPERVISED PRACTICE

OBJECTIVES

- To verify that the gunner understands the correct decisions and steps in powering down and securing gunner's station.
- To allow the gunner to develop and fine-tune performance skills at his own pace.

GUIDELINES

Begin practice by observing the gunner from behind the gunner's station. If you have more than one gunner to train, place the others where they can also observe.

STEP 1: MAKE SURE THE GUNNER UNDERSTANDS THE BASICS OF THE TASK.

- Ask gunner to identify electrical switches for main gun, coax, and elevation/traversing power.
- Ask gunner to identify gun safety switches for main gun and cupola.
- Ask gunner to describe procedure for clearing tank weapons.
- Ask gunner to identify light source controls for azimuth indicator, elevation quadrant, and telescope.
- Ask gunner to identify LRF mode switch.

STEP 2: HAVE EACH GUNNER PRACTICE THE TASK STEP BY STEP.

- Set power switches to OFF and safety switches to SAFE.
- Unload unfired rounds and clear tank weapons.
- Place main gun in travel lock and lock turret traverse.
- Turn light source controls to OFF and LRF mode switch to TEST.
- Close ballistic shields.
- Install exterior covers.

STEP 3: CORRECT ANY MISTAKES AND REINFORCE SUCCESSFUL PERFORMANCE AT THE END OF EACH PRACTICE.

STEP 4: CONTINUE PRACTICE UNTIL ALL TASKS ARE PERFORMED CORRECTLY.

--GO TO EVALUATION--

EVALUATION

OBJECTIVE

- The gunner will be able to perform steps required for successful completion of the task.

GUIDELINES

Training on this task is completed when performance on each step is correct.

STEP 1: OBSERVE AND EVALUATE THE GUNNER'S PERFORMANCE FROM THE TC'S STATION. USE THE GO/NO GO CHECKLIST TO EVALUATE PERFORMANCE.

STEP 2: HAVE GUNNER PERFORM STEPS 1-9 WITHOUT GUIDANCE AND EVALUATE HIS PERFORMANCE. RECORD TASK PERFORMANCE ON BOTTOM OF PRACTICE/EVALUATION FORM. ONLY CHECK GO IF:

- Each step is performed correctly.
- Gunner's station is powered down and secured.

STEP 3: CORRECT ANY MISTAKES AT THE END OF THE EVALUATION EXERCISE. TELL THE GUNNER HOW HE PERFORMED ON:

- Powering down gunner's station.
- Placing main gun in travel lock.
- Securing tank weapons and fire control instruments.

STEP 4: IF THE GUNNER DOES NOT MEET STANDARD:

- Conduct SUPERVISED PRACTICE on those task steps performed incorrectly.
- Repeat the EVALUATION.

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask gunner to set electrical switches to OFF.	1. Set electrical switches to OFF. • Main gun • Machine gun • Elev/trav power		
Ask gunner to set gun safety switches to SAFE and clear weapons.	2. Set gun safety switches to SAFE. • Main gun • Cupola		
	3. Unload unfired rounds and clear weapons. • Main gun • Coax • Cal .50		
Ask gunner to place main gun in travel lock.	4. Traverse turret and put main gun in travel lock.		
	5. Set turret traversing lock to LOCKED.		
Ask gunner to turn off light sources.	6. Turn light source controls to OFF.		
Ask gunner to turn off LRF.	7. Set LRF mode switch to TEST.		
Ask gunner to close ballistic shields.	8. Close ballistic shields and LRF blister cover.		
Ask gunner to install exterior covers.	9. Install exterior covers. • Machine gun • Telescope • Main gun muzzle		

TRIAL 1	
GO	NO GO

TRIAL 2	
GO	NO GO

TRIAL 3	
GO	NO GO

GS1

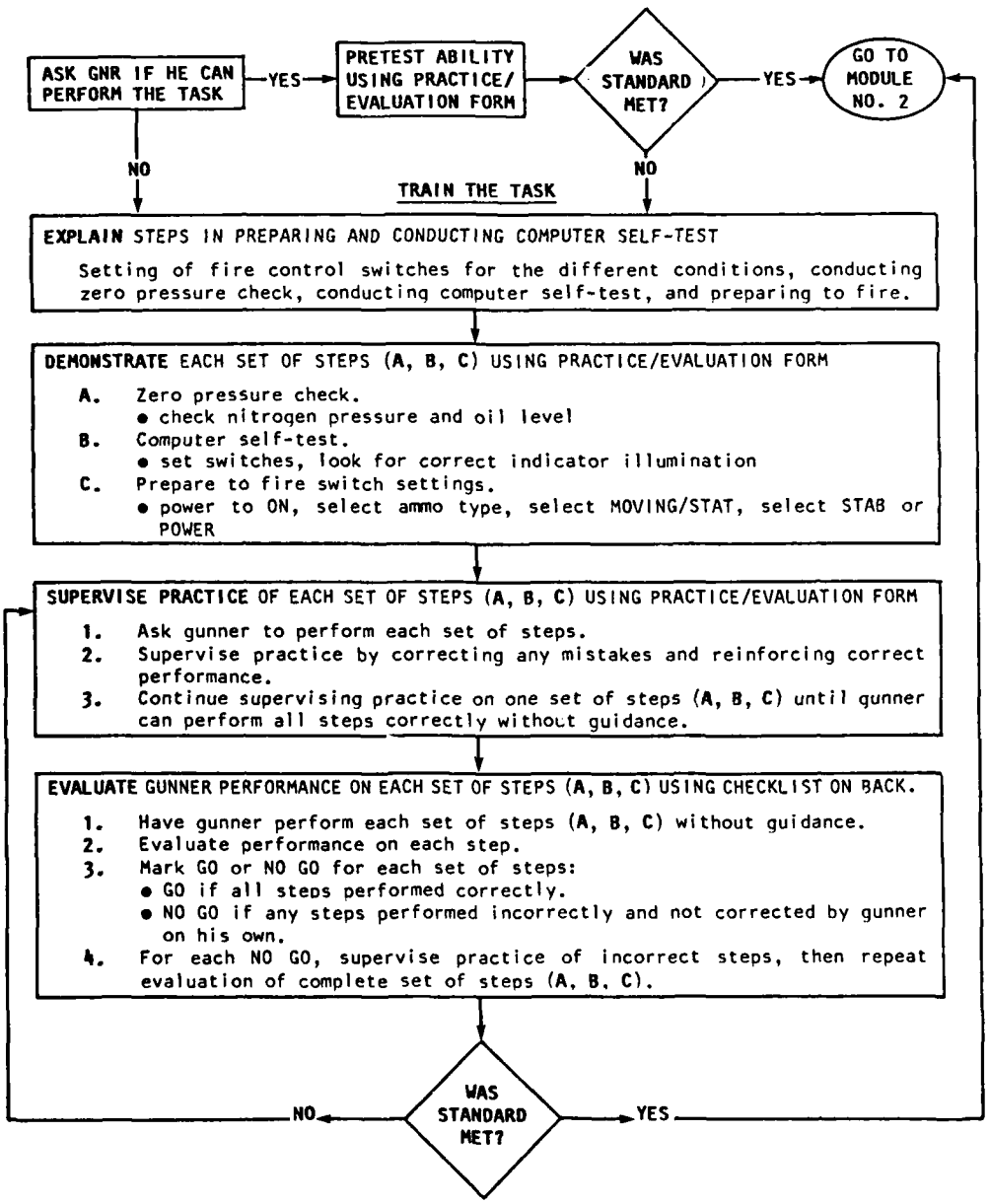
CREW POSITION: GUNNER **TRAINING MODULE NO. 1**

TASK: PREPARE GUNNER'S STATION FOR OPERATION, CONDUCT COMPUTER SELF-TEST

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-19E 1/2

SUPPORT REQUIREMENTS: M60A3 TANK



PRACTICE/EVALUATION FORM

A. ZERO PRESSURE CHECK

GO	NO GO

1. Check nitrogen pressure. Needle drops slowly to 500 then to zero.
2. Check oil level. Add more oil if necessary.
3. Recharge hydraulic system if nitrogen pressure was 400-550 psi.
4. Traverse turret and check for proper operation.

B. COMPUTER SELF-TEST

GO	NO GO

Settings	Normal Function Indicators
1. POWER switch is ON.	POWER indicator illuminates.
2. Vary LIGHTS control	Panel illumination varies smoothly.
3. Vary BRIGHT/DIM on ASU.	Indicator brightness varies smoothly.
4. LAMP/NORMAL/SYSTEM to LAMP.	All SELF TEST and SENSOR FAILS illuminate.
5. MANUAL/RANGEFINDER to MANUAL.	
6. LAMP/NORMAL SYSTEM to SYSTEM.	Only OK indicator illuminates.
7. MOVING/STATIONARY to MOVING.	MOVING illuminates.
8. MOVING/STATIONARY to STATIONARY.	STATIONARY illuminates on both ASUs.
9. MOVING/STATIONARY to MOVING (TC's)	MOVING illuminates on both ASUs.
10. Repeat Steps 8 and 9.	
11. Press each of 4 ASU switches.	Pressed switch is brightest.
12. Set MANUAL/RANGEFINDER to RANGEFINDER.	
13. LAMP/NORMAL/SYSTEM to SYSTEM.	Only OK illuminates. RANGE (METERS) and RETURNS indicate 1850 $\pm$15 and 2.
14. Repeat Step 13 for each ammo type.	
15. Carry out OPERATIONAL RESPONSE TESTING.	

C. PREPARE-TO-FIRE SWITCH SETTINGS

GO	NO GO

1. Set POWER switch to ON (GNR's Control Unit).
2. Select ammo type on ASU.
3. Set MOVING/STAT switch.
4. Set STAB or POWER switch to ON.

GS2

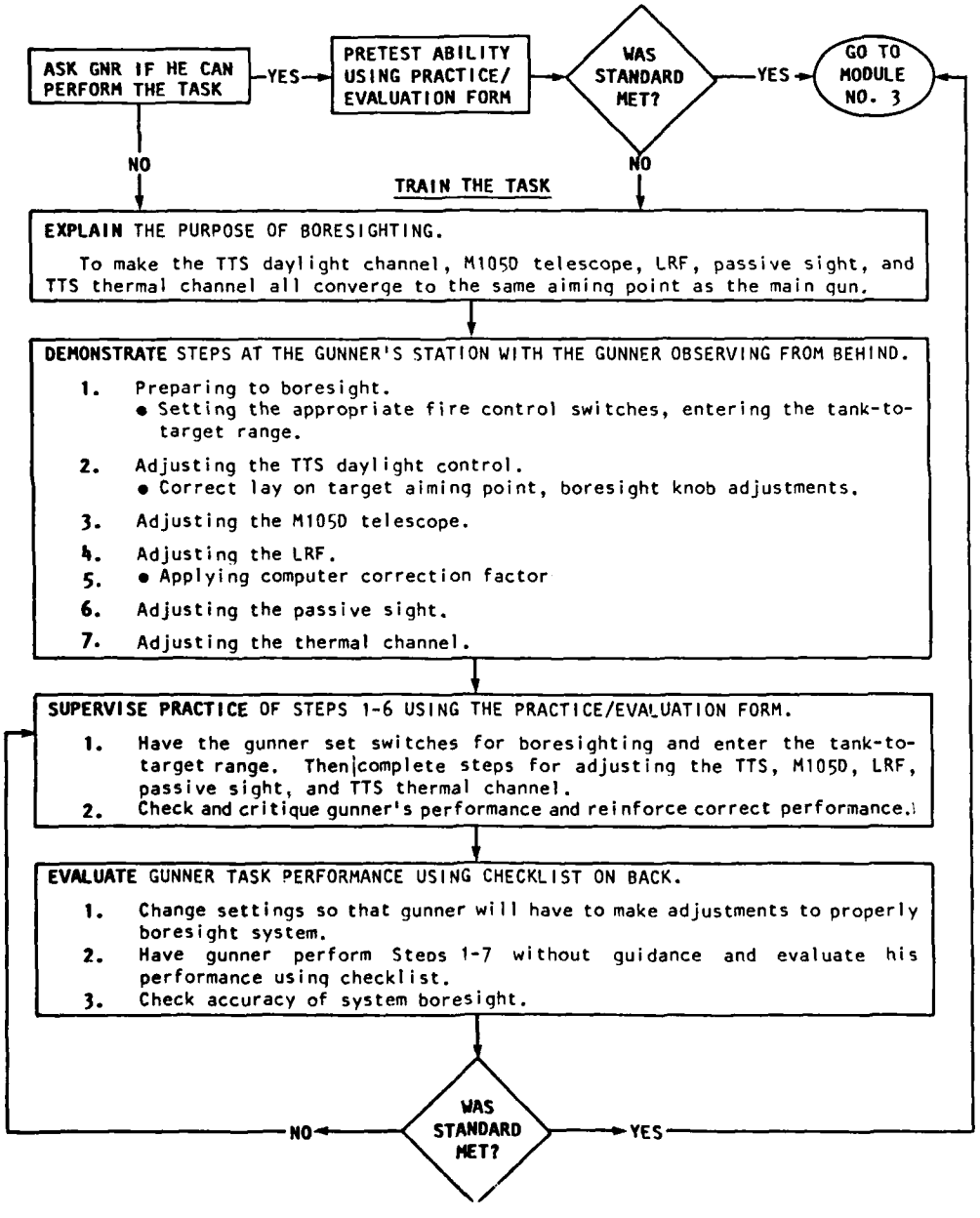
CREW POSITION: GUNNER **TRAINING MODULE NO. 2**

TASK: BORESIGHT MAIN GUN

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TRADOC TT 17-12-1

SUPPORT REQUIREMENTS: PYE WATSON DEVICE, M60A3 TANK



GS2

PRACTICE/EVALUATION FORM

	GO	NO GO
STEP 1: PREPARE TO BORESIGHT. • Ensure that all prepare to fire checks have been completed. • Position tank, select target, enter the known tank-to-target range. • Make all the appropriate lever and switch settings. • Clear all weapons, insert boresight device.		
STEP 2: ADJUST THE TTS DAYLIGHT CHANNEL. • Carry out the steps for adjusting GNR's sight reticle. • Check boresight knob readings for extreme deviations. • Rotate boresight knobs half-way back to 4. • Re-lay aiming dot on target aiming point using manual controls. • Slip scales to 4 and 4 without moving aiming dot. • Remove boresight device from muzzle.		
STEP 3: ADJUST THE M105D TELESCOPE. • Move reticle selector to full-left or full-right. • Adjust boresight cross on same aiming point as the TTS daylight aiming dot. • Slip the scales to 3 and 3.		
STEP 4: ADJUST LRF. • Press BATL RNG (TC). • Insure GNR's sight is still on target aiming point. • Set 6x/12x switch to 12x. Adjust LRF reticle on same aiming point as the TTS daylight reticle. • Slip the scales to 4 and 4. • Apply computer correction factors by rotating the individual zero knobs on the GCU to the appropriate settings.		
STEP 5: APPLY COMPUTER CORRECTION FACTORS. • Rotate individual zero knobs on GCU to appropriate settings.		
STEP 6: ADJUST THE PASSIVE SIGHT. • When proper light conditions exist, refer the gunner's passive sight reticle to the same aiming point as the TTS reticle.		
STEP 7: ADJUST THE TTS THERMAL CHANNEL. • Make the necessary switch settings. • Select NARROW thermal channel field of view. • Make FOCUS, BRIGHT, CONTRAST, POLARITY, and RTCL CONTROL adjustments for optimal viewing. • Rotate THERMAL CHANNEL BORESIGHT EL and AZ knobs. Lay reticle aiming dot on target aiming point. • Slip boresight knobs to 4 and 4 without moving aiming dot.		
CHECK GUNNER'S SYSTEM BORESIGHT ACCURACY. • Check to make sure that all sights are properly aligned. • Verify that the TTS daylight channel, M105D telescope, LRF, passive sight, and TTS thermal channel all converge to the same aiming point as the main gun.		

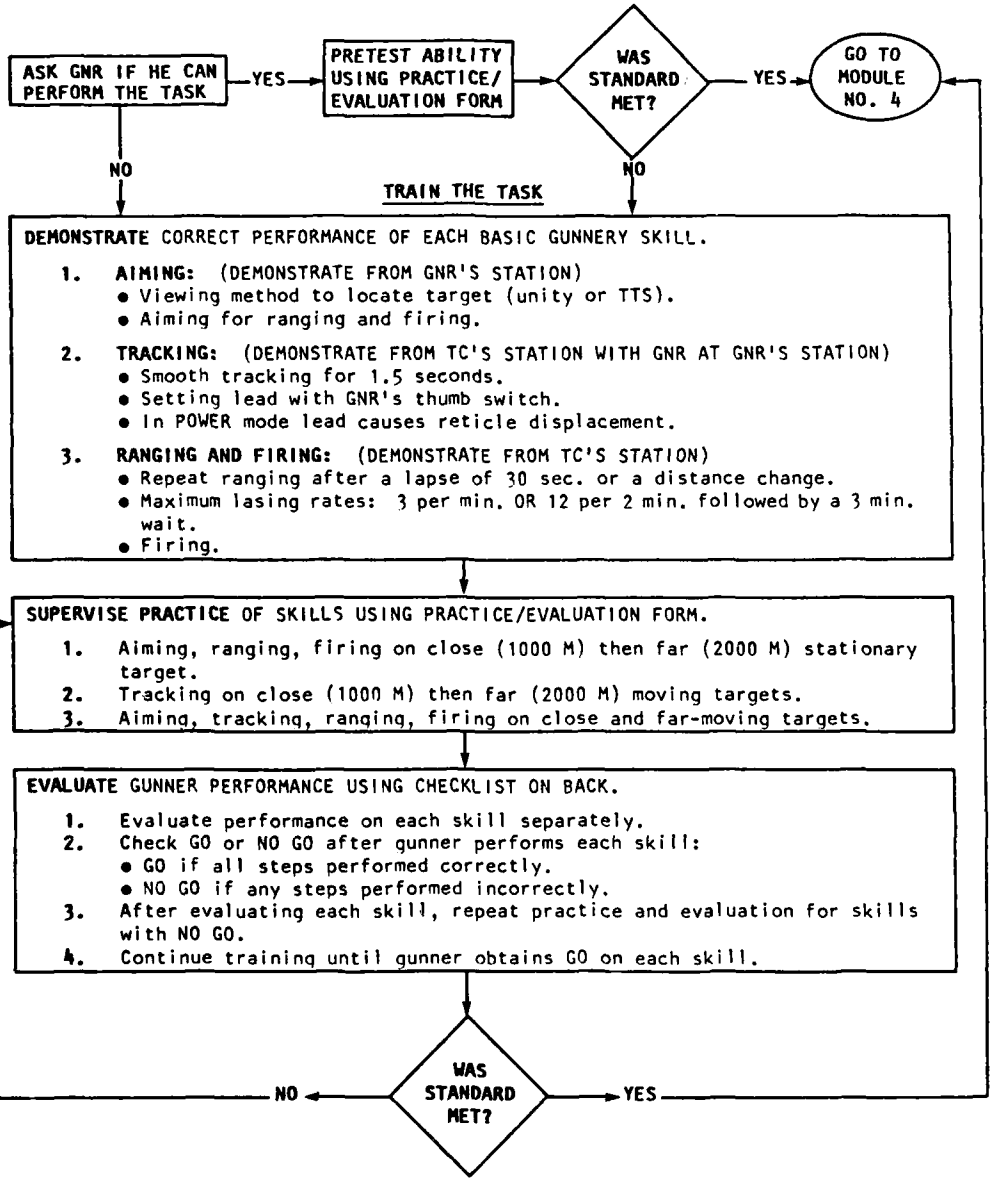
CREW POSITION: GUNNER **TRAINING MODULE NO. 3**

TASK: BASIC GUNNERY SKILLS: AIMING, TRACKING, RANGING, FIRING

PREREQUISITE TASKS: GUNNER MODULE NO. 1

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-12-3; FM 17-19 E1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); TARGET SILHOUETTES AT CLOSE (1000 M) AND FAR (2000 M) RANGES (OR AVAILABLE TARGETS, VEHICLES, PEOPLE)



PRACTICE/EVALUATION FORM

TC	GUNNER
AIMING	GO / NO GO
Begin Exercise: Specify target, lay the main gun. Check the position of switches.	1. Set fire control switches, locate target, get into TTS. 2. Identify target, grasp power controls, and announce "IDENTIFIED." 3. Lay aiming cross slightly below center of target visible mass using G-pattern.
Evaluate GNR's aim. Check GO or NO GO.	
TRACKING	GO / NO GO
Instruct GNR to set automatic lead and track a slowly moving target.	1. Track target smoothly for 1.5 seconds. 2. Depress and hold either palm switch. Lay sight reticle on target. Track for 1.5 seconds.
Check GO or NO GO.	
RANGING	GO / NO GO
Instruct GNR to aim for ranging.	1. Aim for ranging: Lay aiming cross slightly below center of target visible mass using G-pattern. Track. 2. Announce "LASING." 3. Depress LASE/LEAD button.
Evaluate range data (optional). Check GO or NO GO.	
FIRING	GO / NO GO
Instruct GNR to aim for firing. Evaluate GNR's aim.	1. Aim for firing. Relay on center of target visible mass.
Command: "FIRE"	2. Announce "ON THE WAY" and squeeze firing trigger(s).
Command: "CEASE FIRE"	
Check resetting of fire control switches.	3. Reset fire control switches to original settings.
Check GO or NO GO.	

GS4

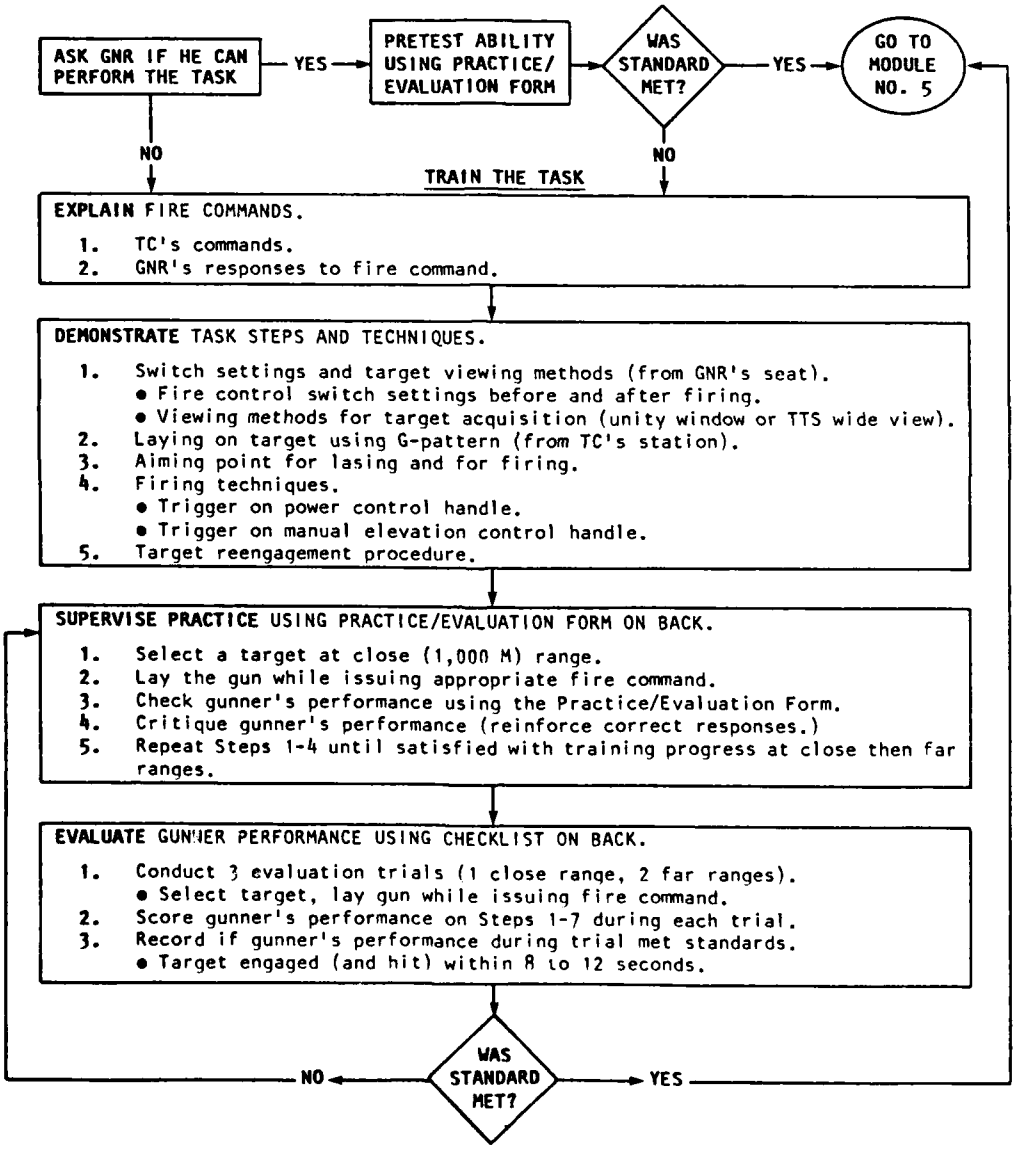
CREW POSITION: GUNNER **TRAINING MODULE NO. 4**

TASK: ENGAGE STATIONARY TARGETS WITH THE MAIN GUN USING PRECISION GUNNERY

PREREQUISITE TASKS: GUNNER MODULES NO. 1 AND 3

TRAINING REFERENCES: FM 17-12-3; SM 171-129-1020; TC 17-15-13, TEC 020-171-5360 E,F

SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 5 TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES.



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GNR-SABOT-TANK," lay the main gun, start the stopwatch, and check the position of fire control switches.	1. Set fire control switches. Locate target and get into TTS.		
	2. Identify target, grasp power controls, and announce "IDENTIFIED."		
Announce "UP" and release turret control on hearing "IDENTIFIED."	3. Lay aiming cross slightly below center of target visible mass using G-pattern.		
Check gun lay and lasing aiming point.	4. Announce "LASING" and depress LASE/LEAD button.		
Evaluate range data (optional), and command "FIRE"	5. Relay aiming cross on center of target-visible mass.		
Check relay of gun and aiming point for firing.	6. Announce "ON THE WAY" and squeeze firing trigger(s).		
Announce "CEASE FIRE." Stop stopwatch. Check resetting of fire control switches.	7. Reset fire control switches to original positions.		

Score performance trial and record time.

TRIAL 1

Close Range

GO	NO GO

Time: _____

TRIAL 2

Far Range

GO	NO GO

Time: _____

TRIAL 3

Far Range

GO	NO GO

Time: _____

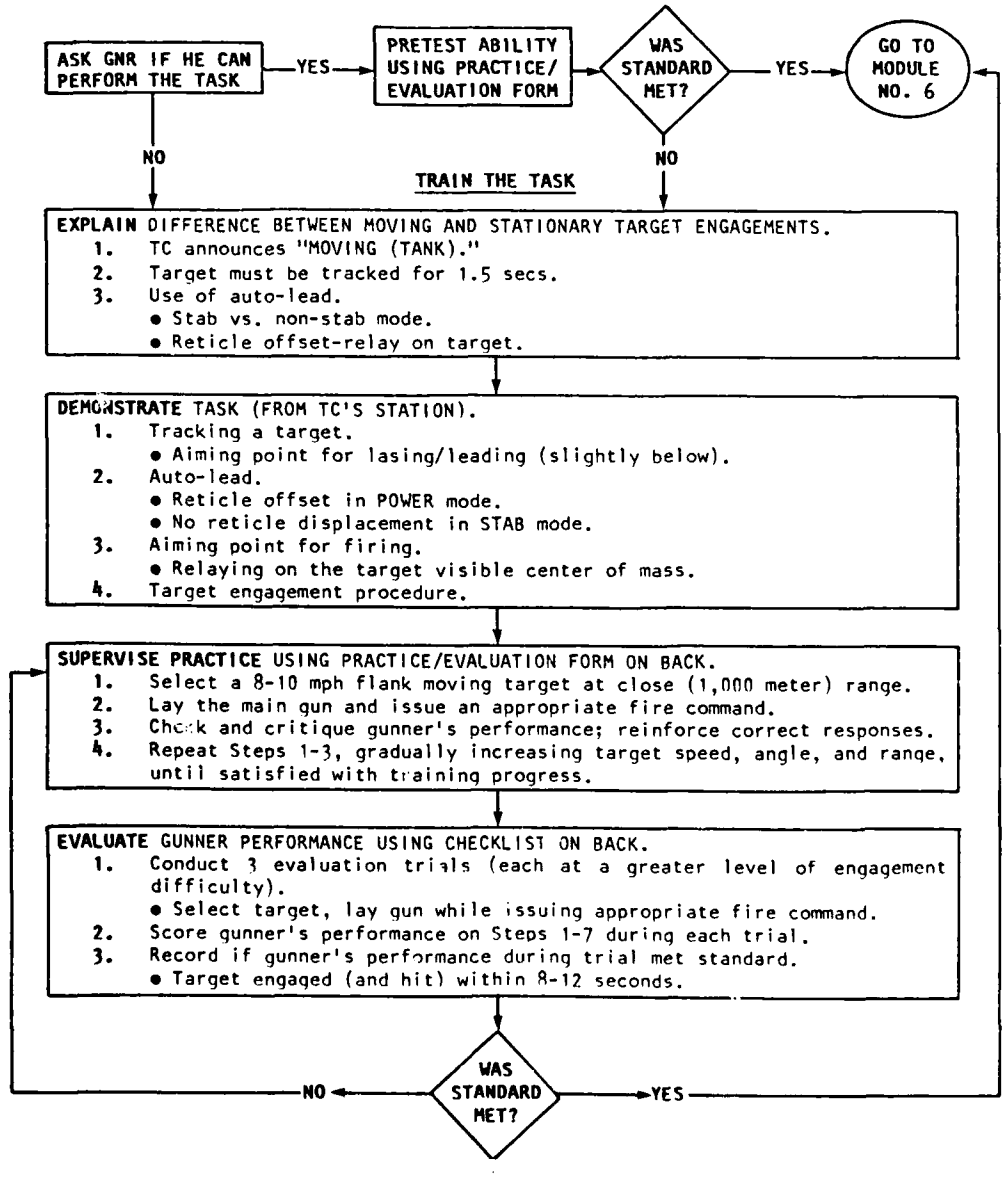
CREW POSITION: GUNNER **TRAINING MODULE NO. 5**

TASK: ENGAGE MOVING TARGETS WITH MAIN GUN USING PRECISION GUNNERY

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, AND 4

TRAINING REFERENCES: TM 9-2350-253-10; FM 17-12-3; FM 17-19E 1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; MOVING TARGETS (5-25 mph) (SILHOUETTES OR TARGETS OF CONVENIENCE); M55 LASER (OPTIONAL)



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command "GUNNER-SABOT-MOVING-TANK." Lay main gun for direction; start stopwatch, and check the position of fire control switches.	1. Set fire control switches, locate target, and get into TTS.		
	2. Identify target, grasp power control handles, and announce "IDENTIFIED."		
Announce "UP" and release turret control on hearing "IDENTIFIED."	3. Lay aiming cross slightly below center of target visible mass using G-pattern. Track for 1.5 seconds.		
Check gun lay, lasing aiming point, and tracking ability.	4. Announce "LASING" and depress LASE/LEAD button.		
Evaluate range data (optional) and command "FIRE."	5. Lay aiming cross on center of target visible mass.		
Check relay of gun and aiming point for firing.	6. Announce "ON THE WAY" and squeeze firing trigger(s) while continuing to track.		
Command "CEASE FIRE." Stop the stopwatch. Check resetting of fire control switches.	7. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if Steps 1-7 performed correctly and task standard met.)			

TRIAL 1

Low Difficulty

GO	NO GO

Time: _____

TRIAL 2

Moderate Difficulty

GO	NO GO

Time: _____

TRIAL 3

High Difficulty

GO	NO GO

Time: _____

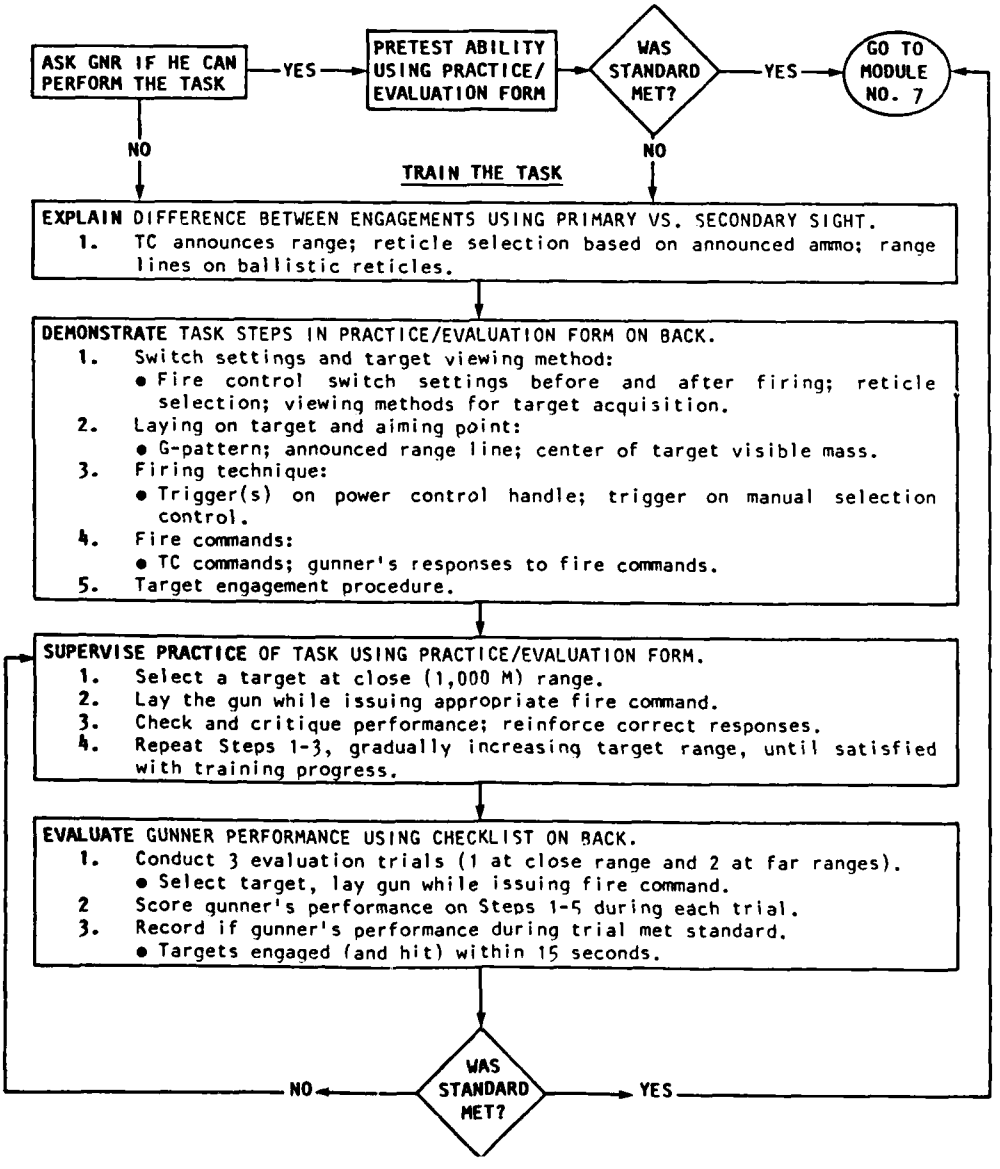
CREW POSITION: GUNNER **TRAINING MODULE NO. 6**

TASK: ENGAGE STATIONARY TARGETS WITH M105D TELESCOPE (DEGRADED)

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, AND 5

TRAINING REFERENCES: TM 9-2550-253-10; FM 17-19E 1/2; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; STATIONARY TARGETS (SILHOUETTES OR TARGETS OF CONVENIENCE) AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GUNNER-SABOT-(HEAT) (HEP) TANK 1000." Lay main gun for direction, start the stopwatch, and check the position of fire control switches and reticle selector.	1. Set fire control switches, select APDS/HEP(HEAT) reticle, locate target, and get into telescope.		
Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify target, grasp power control handles.		
	3. Lay announced range line on center of target's visible aiming mass.		
Evaluate gunner's aiming point by looking through LRF or TTS sight and command "FIRE."	4. Announce "ON THE WAY" and squeeze firing trigger(s).		
Command: "CEASE FIRE," stop the stopwatch, check resetting of fire control switches.	5. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if all steps performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Close Range	Far Range	Far Range
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

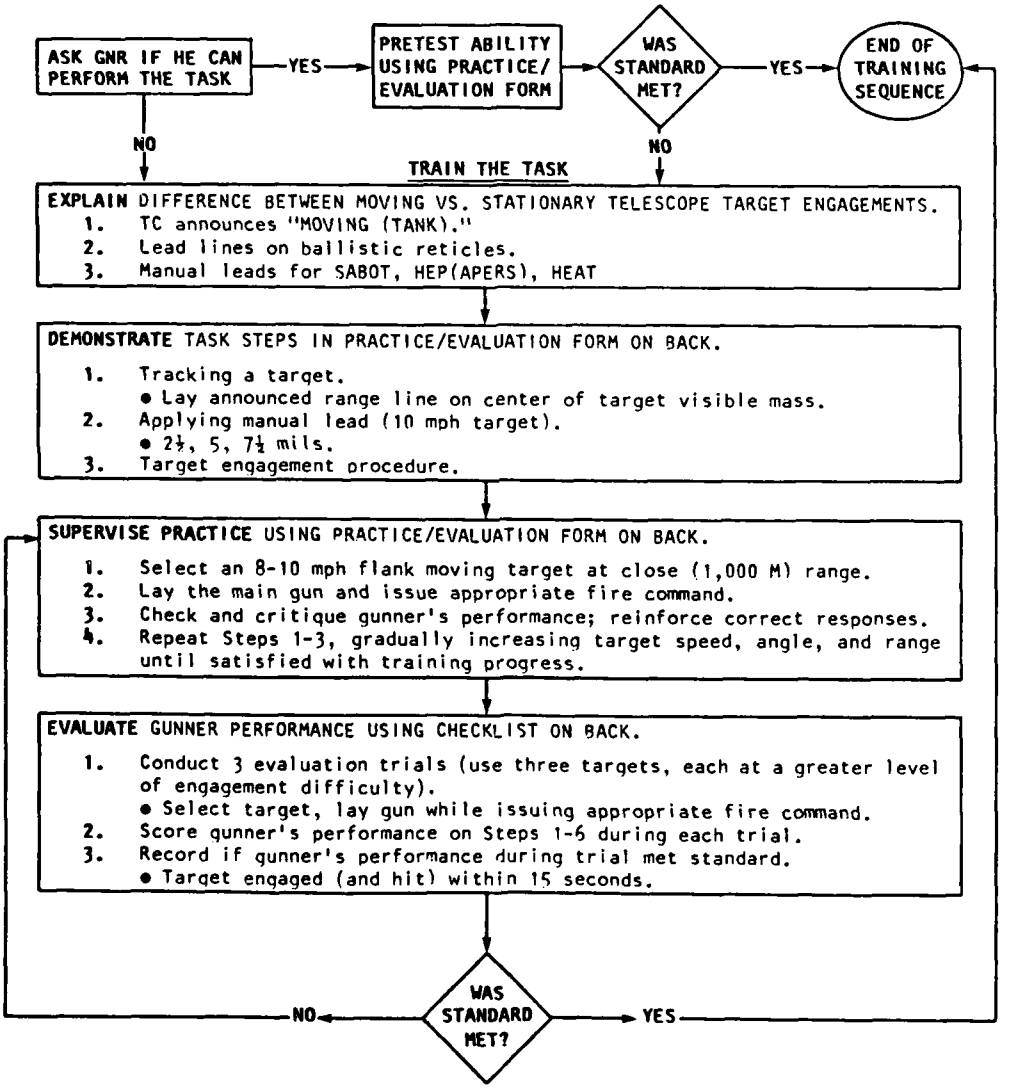
CREW POSITION: GUNNER **TRAINING MODULE NO. 7**

TASK: ENGAGE MOVING TARGETS WITH M105D TELESCOPE (DEGRADED)

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, 5, AND 6

TRAINING REFERENCES: TM 9-2550-253-10; FM 17-19E 1/2; FM 17-13-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER; STOPWATCH; MOVING TARGETS (SILHOUETTES OR TARGETS OF CONVENIENCE) AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Begin Exercise: Command: "GUNNER-SABOT-(HEAT)(HEP)-MOVING-TANK-1000." Lay main gun for direction, start the stopwatch, and check the position of fire control switches and reticle selector.	1. Set fire control switches, select APDS/HEP(HEAT) reticle, locate target, and get into telescope.		
Announce "UP" and release turret control on hearing "IDENTIFIED."	2. Identify targets, grasp control handles, announce "IDENTIFIED."		
	3. Lay announced range line on center of target's visible aiming mass.		
Evaluate GNR's aiming point and tracking ability by looking through LRF or TTS sight. Evaluate GNR's lead by looking through LRF or TTS sight and command "FIRE."	4. Apply manual lead for announced ammo from center of target's visible mass while continuing to track.		
	5. Announce "ON THE WAY" and squeeze firing trigger(s) while continuing to track with applied lead.		
Check sight picture, command "CEASE FIRE," stop the stopwatch and check resetting of fire control switches.	6. Reset fire control switches to original positions.		
Score performance trial and record time. (Check GO if all steps performed correctly and task standard met.)			

TRIAL 1	TRIAL 2	TRIAL 3
Low Difficulty	**Moderate Difficulty**	**High Difficulty**
GO / NO GO	GO / NO GO	GO / NO GO
Time: _____	Time: _____	Time: _____

GS8

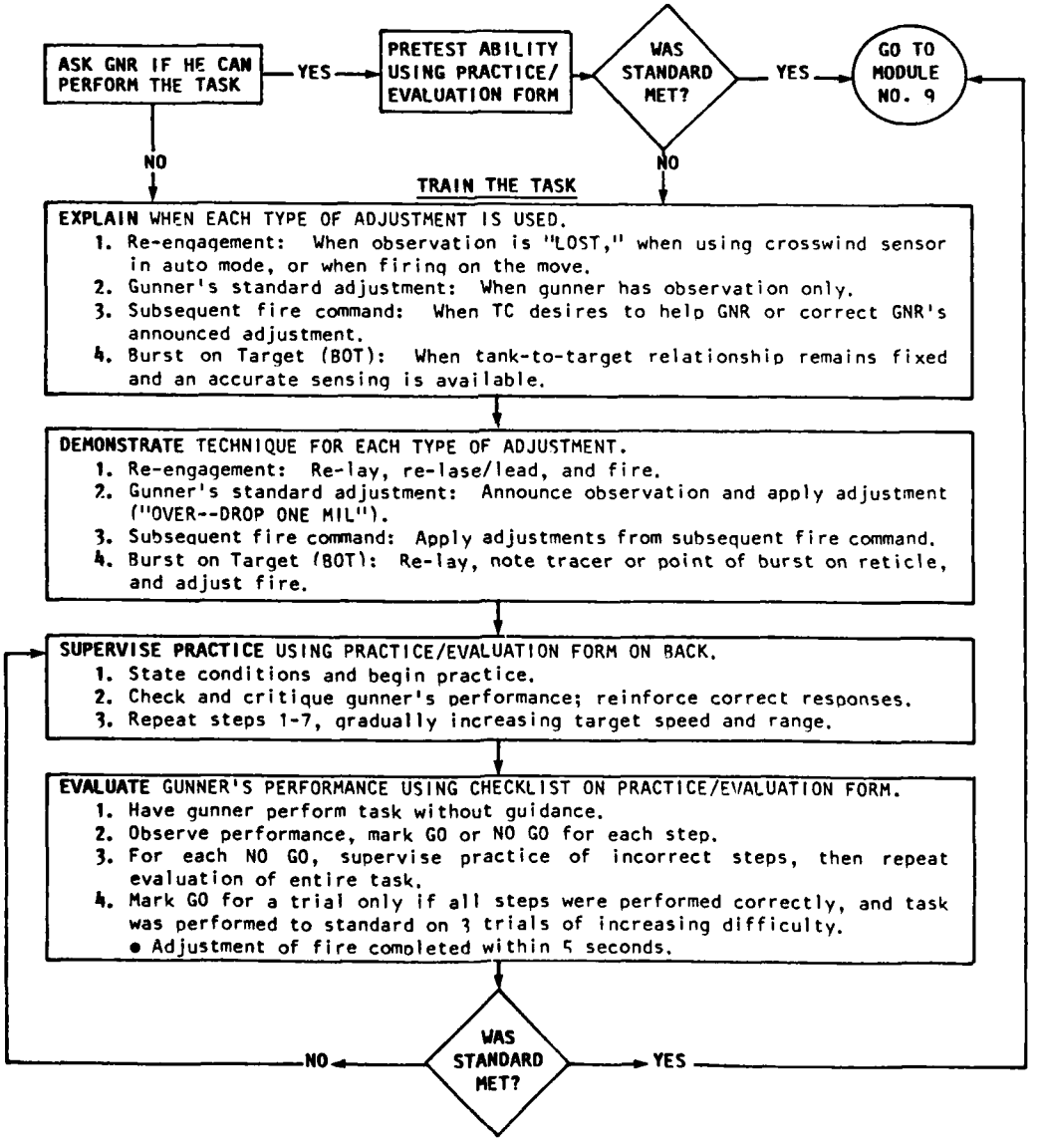
CREW POSITION: GUNNER **TRAINING MODULE NO. 8**

TASK: ADJUST MAIN GUN FIRE

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3, 4, 5, 6, 7

TRAINING REFERENCES: FM 17-12-3, FM 17-19E1/2

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER, STOPWATCH, STATIONARY AND MOVING TARGETS (5-25 mph), M55 LASER (OPTIONAL), CONDUCT-OF-FIRE TANK GUNNERY TRAINER (OPTIONAL), FOX BOT TRAINER (OPTIONAL)



GSR

PRACTICE/EVALUATION FORM

Burst-On-Target Technique

TC	GUNNER	GO	NO GO
Command "GUNNER-HEAT-MISSILE." Lay main gun, start stopwatch, check fire control switches.	1. Set fire control switches, locate target, look through unity window, announce "IDENTIFIED."		
	2. Lay aiming cross on center of target's visible mass. Apply lead if necessary.		
Announce "FIRE."	3. Announce "ON THE WAY" and fire.		
	4. Relay to maintain correct initial sight picture. Concentrate on target, note point of sight reticle where tracer appears.		
Attempt to sense round.	5. Announce sensing ("SHORT," "OVER") and BOT.		
Remain silent if you agree with GNR's announcement. Otherwise issue subsequent fire command.	6. If TC is silent, use gun controls to move the point on the reticle where the tracer appeared to the center of the target's visible mass. (Otherwise follow TC's command.)		
Announce "UP" as would the loader.	7. Announce "ON THE WAY" and fire again. Continue in this manner until otherwise commanded by TC.		
Announce "CEASE FIRE." Stop stopwatch, check resetting of fire control switches.	8. Reset fire control switches.		

TRIAL 1

Low Difficulty

GO	NO GO

Time: _____

TRIAL 2

Moderate Difficulty

GO	NO GO

Time: _____

TRIAL 3

High Difficulty

GO	NO GO

Time: _____

GS9

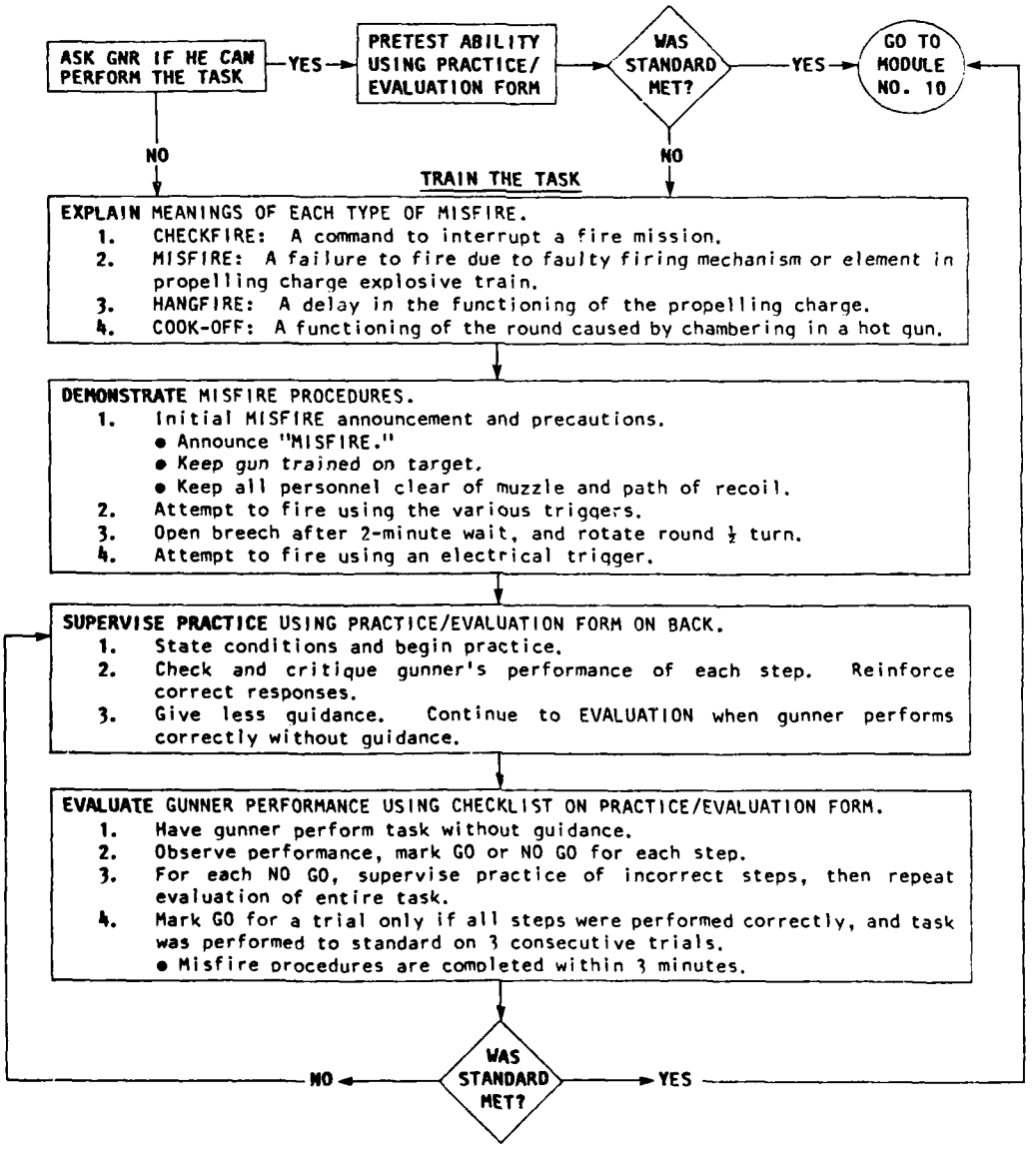
CREW POSITION: GUNNER **TRAINING MODULE NO. 9**

TASK: PERFORM MAIN GUN MISFIRE PROCEDURES

PREREQUISITE TASKS: GUNNER MODULES NOS. 1, 3-8

TRAINING REFERENCES: FM 17-19E1/2, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER



PRACTICE/EVALUATION FORM

Main Gun Misfire Procedures

TC	GUNNER	GO	NO GO
Inform gunner that main gun is loaded and has failed to fire. Start stopwatch.	1. Announce "MISFIRE." Keep gun trained on target.		
Ensure that main gun is trained on target and all personnel are clear of gun muzzle and path of recoil.	2. Attempt to fire using trigger on GNR's control handle that was not used initially. Announce "MISFIRE."		
	3. Attempt to fire using trigger on manual elevating handle. Announce "MISFIRE."		
Press override switch and attempt to fire. Do not release override switch. Announce "MISFIRE."	4. Wait for commander to attempt to fire from his position.		
	5. Place main gun switch in OFF position.		
Release override switch after GNR has placed main gun switch in OFF position.			
	6. Attempt to fire using manual firing device (blasting machine). Announce "MISFIRE."		
Place loader's switch in SAFE position. Wait 2 minutes, open breech, rotate the round ½ turn and close breech. Place loader's switch in FIRE position and announce "UP."	7. Observe the TC as he carries out the loader's actions.		
	8. Attempt to fire using an electrical trigger. Announce "MISFIRE."		
	9. Place main gun switch in OFF position.		
Place loader's safety switch in SAFE position. Stop stopwatch.			

NOTE: Inform gunner that if the round will still not fire, it is assumed faulty and must be removed. If the gun is **hot** and the round cannot be removed within 1 additional minute, the round should remain in the gun for 2 hours and all personnel must evacuate the tank.

TRIAL 1

GO	NO GO

Time: _____

TRIAL 2

GO	NO GO

Time: _____

TRIAL 3

GO	NO GO

Time: _____

GS10

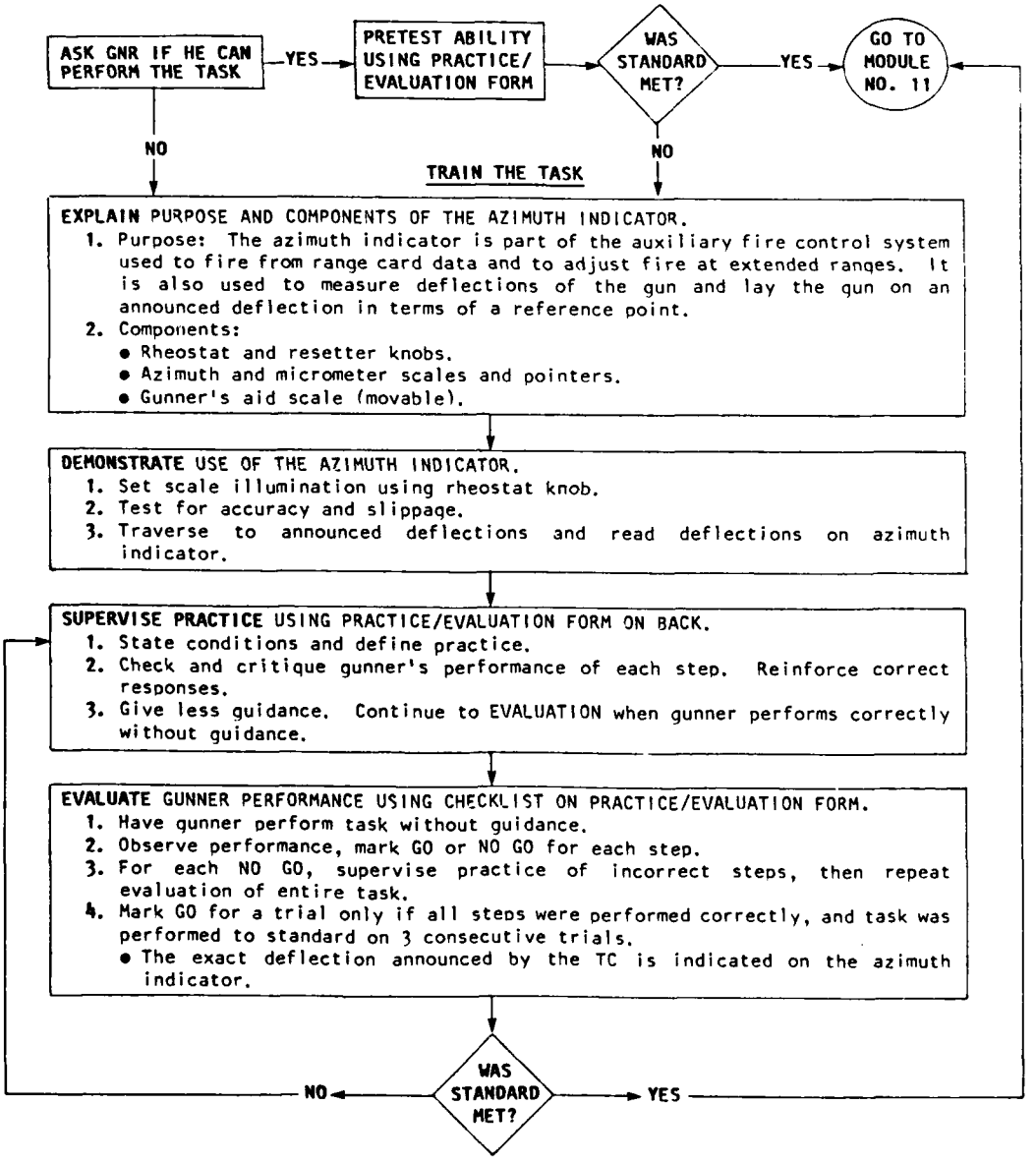
CREW POSITION: GUNNER **TRAINING MODULE NO. 10**

TASK: OPERATE M28E2 AZIMUTH INDICATOR

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: TM 9-2350-253-10, FM 17-12-3, FM 17-19E1/2

SUPPORT REQUIREMENTS: M28E2 AZIMUTH INDICATOR



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask gunner to illuminate azimuth indicator scales.	1. Set master battery switch to ON. Rotate rheostat knob on azimuth indicator to desired brightness.		
Ask gunner to perform accuracy test.	2. Perform accuracy test. • Place crosswind auto/manual switch to MANUAL. • Lay aiming dot of direct-fire sight on a clearly defined aiming point. • Zero the azimuth indicator using resetter knob. • Traverse manually 6,400 mils. Lay exactly on aiming point without overrunning it. Pointers should read zero.		
Ask gunner to perform slippage test.	3. Perform slippage test. • Place crosswind auto/manual switch to MANUAL. • Lay aiming dot of direct-fire sight on a clearly defined aiming point. • Zero the azimuth indicator using the resetter knob. • Place turret in power operation. • Traverse rapidly clockwise several times in power, stopping suddenly. • Turn off turret power. • Manually traverse counterclockwise to original aiming point without overrunning it. Both pointers should align at zero. • Repeat the procedure in the opposite direction.		
Announce DEFLECTION element of fire command.*	4. Traverse turret to the announced deflection, and repeat the deflection reading back to the TC.		

TRIAL 1	
GO	NO GO

TRIAL 2	
GO	NO GO

TRIAL 3	
GO	NO GO

*NOTE: Change setting for each trial.

GS11

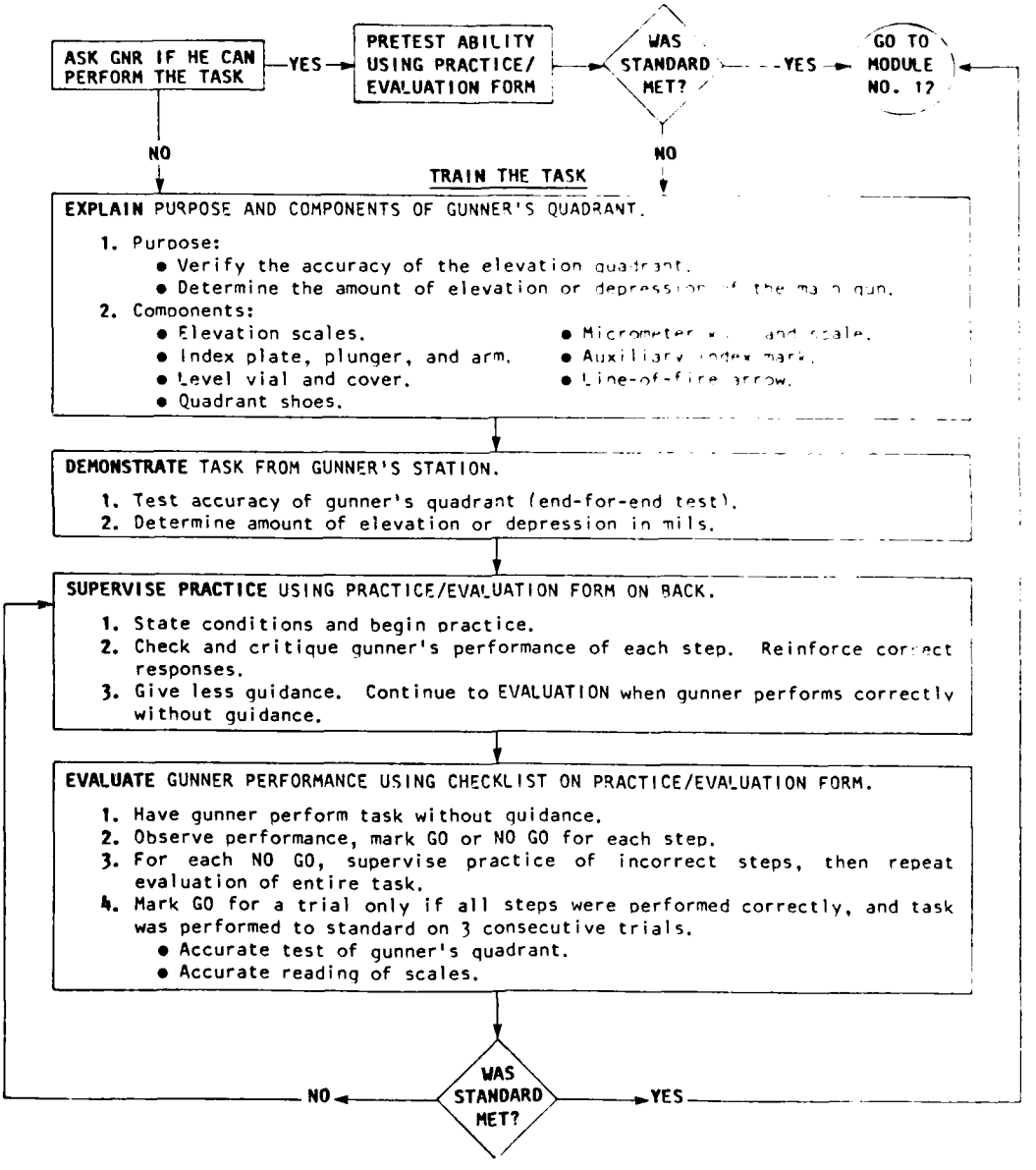
CREW POSITION: GUNNER **TRAINING MODULE NO. 11**

TASK: OPERATE GUNNER'S QUADRANT

PREREQUISITE TASKS: NONE

TRAINING REFERENCES: FM 17-12-3

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER, M1A1 GUNNER'S QUADRANT



GS11

PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask the gunner to state purpose and name components of the gunner's quadrant.	1. State purpose of using quadrant. Name the components of the quadrant.		
Ask the gunner to perform end-for-end test of the gunner's quadrant.	2. Perform end-for-end test. • Set both index arm and micrometer scale at zero. • Place the quadrant shoes on the scribed quadrant seats of the breech ring with the black "line of fire" arrow pointed toward the muzzle. • Center the bubble by elevating or depressing the main gun. • Turn the quadrant end-for-end (180°). -- If bubble recenters itself, the quadrant is in perfect adjustment and the main gun is at zero degrees elevation. -- If bubble does not recenter itself, use another gunner's quadrant and repeat end-for-end test.		
Elevate or depress the main gun. Ask the gunner to determine the amount of elevation or depression of the main gun (in mils) by using the gunner's quadrant.	3. Determine amount of elevation or depression of the main gun. • Place the gunner's quadrant shoes on the scribe marks of the main gun so the line of fire arrow cannot be seen. (Arrow is pointing toward muzzle.) • Press index plunger and move index arm until bubble in leveling vial is almost centered. Center bubble in vial by turning micrometer knob. • Add together value on elevation scale and value on micrometer scale to determine amount of elevation or depression of the main gun.		

TRIAL 1	
GO	NO GO

TRIAL 2	
GO	NO GO

TRIAL 3	
GO	NO GO

GS12

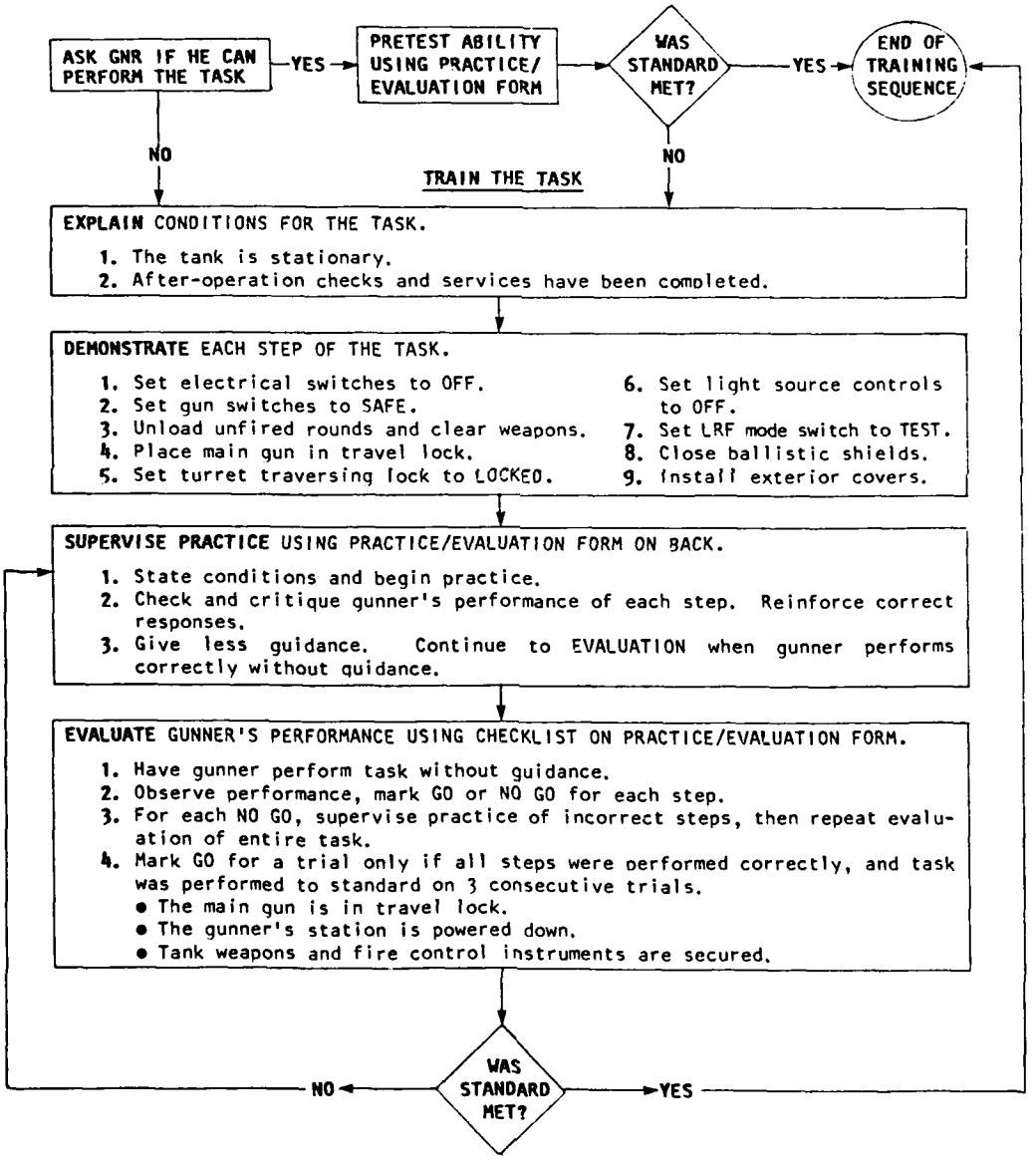
CREW POSITION: GUNNER **TRAINING MODULE NO. 12**

TASK: POWER DOWN AND SECURE GUNNER'S STATION

PREREQUISITE TASKS: GUNNER MODULE NO. 1

TRAINING REFERENCES: FM 17-19E1/2, TM 9-2350-253-10

SUPPORT REQUIREMENTS: M60A3 TANK OR TURRET TRAINER



PRACTICE/EVALUATION FORM

TC	GUNNER	GO	NO GO
Ask gunner to set electrical switches to OFF.	1. Set electrical switches to OFF. • Main gun • Machine gun • Elev/trav power		
Ask gunner to set gun safety switches to SAFE and clear weapons.	2. Set gun safety switches to SAFE. • Main gun • Cupola		
	3. Unload unfired rounds and clear weapons. • Main gun • Coax • Cal .50		
Ask gunner to place main gun in travel lock.	4. Traverse turret and put main gun in travel lock.		
	5. Set turret traversing lock to LOCKED.		
Ask gunner to turn off light sources.	6. Turn light source controls to OFF.		
Ask gunner to turn off LRF.	7. Set LRF mode switch to TEST.		
Ask gunner to close ballistic shields.	8. Close ballistic shields and LRF blister cover.		
Ask gunner to install exterior covers.	9. Install exterior covers. • Machine gun • Telescope • Main gun muzzle		

TRIAL 1	
GO	NO GO

TRIAL 2	
GO	NO GO

TRIAL 3	
GO	NO GO

TRAINER'S GUIDE

Introduction

This section contains the Trainer's Guide that was developed during the project. This guide is presented in this report on 8½ by 11 inch pages. When reproduced for actual use by trainers, its dimensions are 4½ by 6½ inches.

TRAINER'S GUIDE

Prepared for:

U.S. Army Research Institute for
the Behavioral and Social Sciences
Ft. Knox Field Unit
Ft. Knox, Kentucky 40121

Prepared by:

ANACAPA SCIENCES, INC.
P.O. Drawer Q
Santa Barbara, CA 93102

Contract MDA 903-82-C-0380

September 1983

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

This guide was written for senior NCOs such as yourself who act as unit-level trainers. These trainers include the tank commander, platoon sergeant, and others who train tank crewmen in their individual skills.

One of your most important functions as an NCO is to train your subordinates. You want to be the best trainer that you can. This guide will help you achieve that goal.

THE TRAINING PROGRAM

You are participating in a special training program. This program has two main parts:

- **Training prescriptions**--Training prescriptions tell you **how** to train. The prescriptions are contained in training modules. These modules are compact, ready-made lesson plans that you can use to train tank commanders or gunners. They are small and fit in your pocket. They make it easy for you to train because they tell you what points to cover and what training procedures to use.

- **Training guidance**--This guidance concerns **who** to train, **what** to cover, **where** to train, and **when** to train.

  Your platoon leader is in charge of the program. He will tell you what, where, and when to train, using different modules.

  You conduct the training. You evaluate the performance of soldiers. You keep track of who was trained on what tasks, and how well they performed.

HOW DO YOU FIT IN?

If you are a **tank commander,** here is what you must do:

- Train-up your gunner
- Cross-train your loader and driver for the gunner's position

If you are a **platoon sergeant,** here is what you must do:

- Train-up new tank commanders

HOW THIS GUIDE IS ORGANIZED

This guide consists of two chapters and two appendices. The chapters contain descriptive and "how-to" information concerning training. The appendices contain reference information and training tips. The contents of each chapter and appendix are described below.

Chapter 1, **Description of Training Modules,** introduces you to the training modules. It describes the training modules, what they contain, and what tasks they cover.

Chapter 2, **How to Train,** describes how to prepare for and conduct training. It describes the performance-oriented training method, and gives training guidelines to make you a better trainer.

Appendix A, **Trainer Preparation,** lists readings to use to prepare to train with the training modules.

Appendix B, **Training Tips,** contains six general tips for effective training. These are training principles that apply in many different situations.

HOW TO USE THIS GUIDE

Use this guide in two different ways:

1. To familiarize yourself with the training program
2. As a reference

To familiarize yourself with the training program, carefully read Chapters 1-2. Review Appendix A, but do not study it. Read through Appendix B. After you have done this reading, you will be familiar with the training program. From that point on, use this guide as a reference.

CHAPTER 1. TRAINING MODULES

This section describes the training modules. It lists the modules used for training tank commanders or gunners. It also describes the content of a sample module and tells how to use it.

TASKS COVERED BY MODULES

Different modules have been prepared for training tank commanders and gunners. The platoon sergeant uses Tank Commander modules to train personnel for the tank commander crew position. Tank commanders use Gunner modules to train their crew members as gunners.

The format of tank commander and gunner modules is identical. This chapter applies equally to both sets of modules.

Each module covers a specific task. Tank commander tasks covered are listed in Table 1. Gunner tasks covered are listed in Table 2.

TABLE 1

TANK COMMANDER TASKS
COVERED IN TRAINING MODULES

Module No.	Task
1	Prepare station and conduct LRF self-test.
2	Boresight a caliber .50 M85 machinegun.
3	Issue fire commands.
4	Respond to multiple LRF returns.
5	Direct main gun engagement in normal mode.
6	Engage stationary targets from TC's station using precision gunnery.
7	Engage moving targets from TC's station using auto-lead.
8	Issue subsequent fire command.
9	Engage targets with M85.
10	Direct main gun engagement using range card data.
11	Power down and secure TC station.

TABLE 2

GUNNER TASKS
COVERED IN TRAINING MODULES

Module No.	Task
1	Prepare gunner's station for operation and conduct computer self-test.
2	Boresight.
3	Basic gunnery skills: aiming, tracking, ranging, firing.
4	Engage stationary targets with main gun using precision gunnery.
5	Engage moving targets with main gun using precision gunnery.
6	Engage stationary targets with M105D telescope (degraded).
7	Engage moving targets with M105D telescope (degraded).
8	Adjust main gun fire.
9	Perform main gun misfire procedures.
10	Operate M28E2 azimuth indicator.
11	Operate gunner's quadrant.
12	Power down and secure gunner's station.

"SHORT" AND "LONG" MODULES

There are two modules for each task. One is a "short" module and the other is a "long" module. Each short module consists of a single card. Long modules are usually three or four pages long. The first page of each long module is itself a short module. However, the later pages contain additional technical and "how to train" information.

HOW TO USE A MODULE

This section describes a long module and tells how to use it. Though the discussion is for a long module, it also applies to short modules. Find Gunner's Training Module number 4 before continuing.

Look it over to familiarize yourself with its content. Lay it on the table.

Refer to it as necessary during the discussion that follows.

General Description of Module

Find the front of the module. This is the side with the words **TRAINING MODULE NO. 4** at the upper right.

The first page contains module **identification and training preparation information** at the top, and a **training plan** at the bottom.

Let us start with the information in the top box.

CREW POSITION: GUNNER	TRAINING MODULE NO. 4
TASK: ENGAGE STATIONARY TARGETS WITH THE MAIN GUN USING PRECISION GUNNERY	
PREREQUISITE TASKS: GUNNER MODULES NO. 1 AND 3	
TRAINING REFERENCES: FM 17-12-3; Sm 171-129-1020; TC 17-15-13, TEC 020-171-5360 E,F	
SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 5 TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES.	

The information in this module is described below.

CREW POSITION tells who the module is for. This will be either GUNNER or TANK COMMANDER. The sample module is for GUNNER.

TASK is the task that the module covers. It will be one of the tasks listed in either Table 1 or 2. The task in the sample module is to ENGAGE STATIONARY TARGETS FROM GUNNER'S STATION WITH THE MAIN GUN USING PRECISION FIRE.

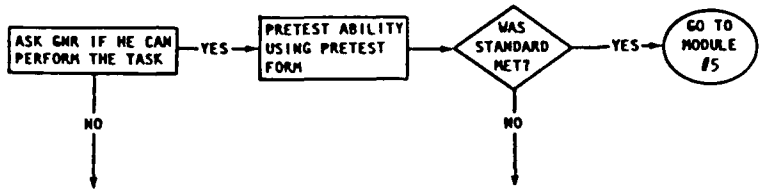
PREREQUISITE TASKS are the modules that should be completed before the current module. The sample module is for gunner task number 4, and prerequisite tasks are covered in gunner modules numbers 1 and 3.

TRAINING REFERENCES are references with information that will help you prepare to train with the module. Information on training preparation is also contained in Appendix A of this guide.

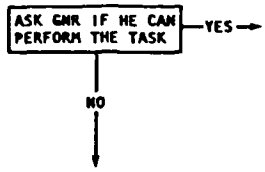
SUPPORT REQUIREMENTS are the equipment, materials, ranges, and so forth required for conducting training. The sample module requires a stopwatch, an M60A3 tank or turret trainer, and has some optional items. Optional items will make training more effective, but they are not always available. Training can be conducted without them, if necessary.

The bottom of the module contains the **training plan.** This plan describes the decisions and procedures involved in conducting training. It is described below.

Start with the top row of boxes.

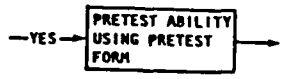


The words in the top left box say ASK GNR IF HE CAN PERFORM THE TASK.



Ask the soldier this question before starting training. What you do next depends on the soldier's answer. If the soldier answers "no," then follow the arrow that goes straight down, to the box labeled **EXPLAIN.** Otherwise, follow the arrow to the right.

Assume that the gunner answers "yes." In this case, follow the arrow to the box to the right. This box directs you to PRETEST ABILITY USING PRETEST FORM.



The PRETEST

The PRETEST is on the back of the first page of the module.

Turn the module over and look at the PRETEST.

There are three blocks of information on the PRETEST.

1. OBJECTIVES
2. GUIDELINES
3. PRETEST FORM

The OBJECTIVES are the objectives of the pretest. These define the purpose of the pretest and give the performance standard. State these to the soldier before conducting the pretest.

The GUIDELINES are general directions for conducting the pretest. They describe procedures to follow during testing.

The PRETEST FORM is the actual test. This test is based on the task that is being covered during training. It requires the soldier to demonstrate the basic skills and knowledge required to perform the task.

The PRETEST FORM has three columns, as shown below.

PRETEST FORM		GO	NO GO
TC	GUNNER		
Ask GNR to set fire control switches.	1. Set fire control switches to appropriate settings.		

The left column contains directions for the TC who is acting as the trainer. The middle column tells what the gunner should do. The right column contains GO/NO GO boxes.

The directions in the TC column tell you what to do at each step. For example, you begin the pretest by asking the soldier to set the fire control switches.

You then go through the pretest, step by step.

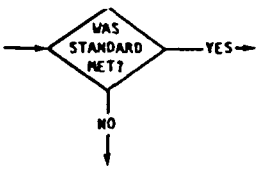
During the pretest, the gunner should know what to do, without being told. Use the information in the gunner's column to evaluate the soldier's performance.

The GO/NO GO boxes in the right column are used to score the gunner's performance. Each box is for the numbered step to its left. Check "GO" if the gunner performs the step correctly, or "NO GO" if he does not. The gunner must get a GO on every step to pass the pretest. If he gets one NO GO, he fails.

What Happens After Testing

Turn back to the first page of the module.

After testing, you will know whether or not the gunner met the standard. What to do next depends on how he performed. The diamond figure to the right of the pretest box contains the words WAS STANDARD MET?



This is a decision box. Follow the arrow that corresponds to the answer to the question. If the answer is "no," follow the arrow for "no," straight down to the box labeled **EXPLAIN.** If the answer is "yes," follow the arrow to the right to the oval box with the words GO TO MODULE #5 in it.

It will be rare for all soldiers to pass the pretest. Most of the time you will have to train them using the training exercise. This exercise is contained in the four boxes labled **EXPLAIN, DEMONSTRATE, SUPERVISE PRACTICE,** and **EVALUATE.**

To conduct the training exercise, follow the directions in each box in turn.

Start with the **EXPLAIN** box.

Next, go to the **DEMONSTRATE** box. This lists the points to cover during the demonstration. Additional information on the demonstration is contained within the module. Open the module to page 3. This page contains detailed guidance for giving the demonstration. This information is designed to help the less experienced trainer familiarize himself with the task and conduct an effective demonstration.

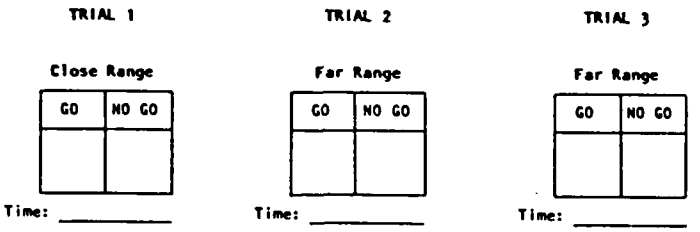
Turn back to the first page of the module. Find the **SUPERVISE PRACTICE** box. After the demonstration, give the soldier hands-on practice on the task, following the guidelines in the SUPERVISE PRACTICE box. As with the demonstration, additional information on the task is contained inside the module.

The **PRACTICE/EVALUATION FORM** is used during soldier practice to help you keep track of the procedure. This form is on the last page of the module. It is similar to the PRETEST FORM described earlier and is used in the same way. It lists each step in the procedure. It is not necessary to keep track of GOs and NO

GOs during practice. As before, additional information on the topic is contained inside the module.

After practice, go to the **EVALUATE** box.

Also use the PRACTICE/EVALUATION form during the evaluation. The evaluation is the soldier's final examination on the task. To pass this test, he must receive a GO on every step of the task on three consecutive trials. Keep score during the evaluation by checking the appropriate GO or NO GO box for each step. Also, time how long it takes the soldier to perform the entire task. Use this information to fill out the three boxes at the bottom of the form.

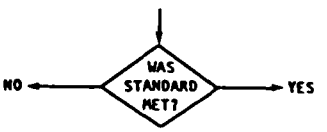


Check GO in the box for a trial only if the soldier received GOs on all steps. Write in how long each trial took on the blank line by the word "Time."

Go through three consecutive trials of the task, if time allows.

Wrapping Up Training

After the exercise, decide whether or not the gunner met the performance standard (see diamond at bottom of exercise).



If the standard was not met, repeat the practice and evaluation. If it was, then the training exercise is over.

That covers it.

Individual modules differ in content, but all have the form just described, and all are used in the same way. After you have used one once, you will quickly get the hang of them.

CHAPTER 2. HOW TO TRAIN

This chapter tells you how to train with training modules. It describes how to prepare to train, and how to conduct training.

The modules use the Army's **performance-oriented training approach.** The key feature of performance-oriented training is that the soldier must perform the task. Performance-oriented training is more effective than "book learning," watching someone do a task, or listening to a trainer talk about how a task should be performed. We all know from experience that we cannot really learn a task until we actually perform it. That's what performance-oriented training is about.

TRAINER PREPARATION

There are three steps in trainer preparation: Preparing yourself, finding out what the soldier knows, and setting the scene for training. These steps are the foundation for effective training. They are described in detail below.

1. Prepare Yourself

Before you train, you must prepare yourself in two ways. First, learn the technical content of the task. Second, learn what training procedures to follow.

To prepare yourself technically, review the readings for the task that are listed in Appendix A of this guide. If there is not enough time to review these readings, or they are not available, discuss the task with someone who knows how to do it. If you already know the task, it is not necessary to do the reading before you train on it. But don't kid yourself or others. If you don't know the task very well, find out about it. You can't train someone on something you don't know.

To prepare yourself to deliver training, see what training procedure is used. Make sure you know the following before you start:

- **Task covered.**
- **Support Requirements**--Determine what training materials, equipment, and other resources will be used to conduct training.
- **Explanation**--Prepare yourself to discuss the points required in the explanation.

- **Demonstration**--Determine what points to cover during the demonstration. Familiarize yourself with each point.
- **Practice**--Review the training exercise provided in the training module. Make sure that you understand what you must do and what the soldier must do. Decide how you will know whether to give the soldier a GO or NO GO on each performance step.
- **Evaluation**--Review the evaluation procedure. Make sure that you understand the performance standard.

Don't attempt to memorize the module. Know it well enough that you can conduct training smoothly. The better you know it, the smoother training will go.

2. Find Out What Your Soldiers Know

When you train, you must adjust the level of your training to your soldiers. To do this, you must find out what they know. If you have worked with them on the task before, then you already know. However, some of your soldiers will probably be new. Find out about their experience before you start to train them by asking these questions:

- Have they done the task before? If so, how often? How did they do?
- Do they think they can do the task already?
- Have they done any similar tasks? If so, which ones? You decide how similar the tasks are, and if they will help on the new tasks.

Based on what you know and what you find out, decide what level to give your training at. It seldom hurts to set the level low. All this means is that your experienced soldiers will get a review. That won't hurt them. On the other hand, if you set the level too high, you'll leave someone behind, and that will hurt them.

3. Set the Scene for Training

Training has some basic ground rules, and it's wise to make sure that everyone understands them before you start. Here are the rules:

- The main objective of training is for the soldier to learn to do the task.

- You are the trainer and you call the shots. Training is not a free-for-all. The trainer teaches. The soldiers watch, practice, and learn.
- You will demonstrate the task, give the soldiers practice on it, and evaluate their performance.
- Training is a serious business.
- Soldiers should ask questions if there is something they don't understand.

CONDUCTING TRAINING

Conducting training has four parts:

1. Brief the soldiers
2. Demonstrate the task
3. Give each soldier practice
4. Evaluate performance

This section will familiarize you with these four parts of training. It will also give you some training tips that you can apply when you train.

The procedures in this section are the heart and soul of performance-oriented training. It is possible to follow these procedures by rote, without really understanding them. It is much better to understand what you are doing.

What are we actually doing when we train someone?

What happens when someone is trained that makes them different afterward?

In simple terms, the person who is trained commits certain things to **memory.** For example, he memorizes the names of things, the **steps** in a procedure, the sequence in which those steps are performed, and the **physical movements** he must make. If he does this well enough, then he can recall them later and use them.

This is what learning is. Bear this in mind as you train, for your task as a trainer is to nurse this learning along. Along these lines, a useful analogy is the idea of an "internal book of knowledge." Through training and experience, you have memorized a vast amount of technical information and developed skills on armor

crew tasks. You built up your internal book gradually, over time, and probably do not fully appreciate how much it contains, or how much work it took to build it.

On the other hand, the inexperienced soldier has an internal book with mostly blank pages. You must help him fill them in.

Teach using the "crawl, walk, run" method. Soldiers seldom perform a task correctly the first time, especially if they are inexperienced. Do not expect it. Guide them step by step when they are first learning. Work on part of the task rather than the whole task. Have them perform the task slowly, and correctly. Have them practice. This is "crawling."

Next, combine the parts of the task together. Speed things up. Give them more practice. This is "walking."

When the soldier is ready, require him to perform the entire task, to standard. This is "running."

The four steps in conducting training are described below.

1. Brief the Soldiers on the Task.

Before you train, you must brief the soldiers about how training will occur and what it will cover. This will give them an idea of what to expect and make training more effective. Keep the briefing short--five minutes maximum. Cover the following points in your briefing:

- State the task that will be covered.
- Tell the soldier how his performance will be evaluated, and what he will be expected to do after training.
- Describe what training materials, equipment, or other resources will be used during training.
- Give the soldiers appropriate safety warnings in your own words. Tell them what the dangers are and what they must do (or not do) in order to be safe.
- Explain that you will demonstrate the task, a soldier will perform it, and you will then evaluate performance. In your own words, give a brief preview of what will happen during training. Explain what you will do and what each soldier will do. It is not necessary to cover the task in great detail. Give enough information so that each soldier has a general idea of how training will occur and what he will be expected to do.

After the preview, ask for questions. Address those that you can answer briefly, but defer those that will be answered when you do the demonstration.

2. Demonstrate the Task

You must demonstrate the task so that the soldier can see how it is performed. Your training module will contain specific guidelines for demonstrating the task. Follow its guidelines.

In addition, keep the following guidelines in mind as you demonstrate:

- **Explain what you are doing, as you do it.** Do not rely on your physical actions alone to explain themselves. Soldiers will learn more if you reinforce your actions with a verbal description.
- **Make sure that everyone can see what you are doing.** It does no good to give a demonstration if what you are doing is hidden from view. Since you will usually have more than one soldier, often they will have to change position so that all can see.
- **Name things.** Name them even if everyone knows what they are.
- **Describe and tell the purpose of each step.** Soldiers learn more effectively this way.
- **As you demonstrate, pause from time to time and ask the soldiers questions.** This will make them focus their attention on the task.
- **Pause from time to time and ask the soldiers if they have any questions.** If so, stop and answer them.

The above are things that will make soldiers think, and not just sit there watching you. Try these and tricks of your own to keep your soldiers peaked. If you let them fall asleep, they will learn nothing, and your training exercise will be a waste of time. Keep them awake and interested.

3. Give Each Soldier Practice

Your training module will contain specific guidelines for having soldiers practice on the task. Follow its guidelines.

In addition, keep the following general guidelines in mind.

Apply the "crawl, walk, run" training method described earlier.

Provide feedback to the soldier as you observe him perform. Feedback is the information you give to tell someone how well he is doing. This is probably the **single most important training principle.** People who are learning a new task are not very good at evaluating their own performance. Someone must be there to tell them what they are doing right and wrong. Mistakes will then be promptly corrected and learning will occur.

Here are some things to know about feedback.

Feedback is what you tell a soldier **after** he has done something. He will learn very little if you prompt his every action and give him no opportunity to think independently. Let him try--and within limits make errors--before you correct him.

Make feedback brief and specific. If he makes an error, tell him **what** he did wrong and **how** to do it right. Then let him do it again. (Check that he does it correctly.)

Provide the **right amount** of feedback. If you give too little, the soldier will be uncertain how well he is doing. If you give too much, he may get the impression that you have no confidence in him and think he is incompetent.

Do not be judgmental. Avoid the use of emotion-laden terms such as profanity or slang. These interfere with learning and are often counter-productive.

The soldier does not have to do everything right the first time. Let him perform the task two or three times or more, if necessary, and if you have time. There is very little point in having him practice the task once, make several errors, and leave it at that. Until he performs the task correctly, neither you nor he can have confidence in his ability to perform.

You will find that, if you are training several soldiers, the first ones will take longer to perform the task correctly than the later ones. Each soldier learns from the others' mistakes--which is another reason to make sure that no mistakes go uncorrected.

Practice builds confidence as well as skills. Both are important, especially on the battlefield.

4. Evaluate Soldier Performance

Your training module will contain specific guidelines for evaluating soldier performance on the task. Follow its guidelines.

In addition, keep the following general guidelines in mind.

When the performance exercise is finished, spend some time with the soldier to evaluate his performance. This feedback should be given immediately after finishing the task. Although the soldier received feedback while doing the task, he still might not know how well he did or where his strengths and weaknesses lie. **You** will know, based on your experience. Do the following:

- Discuss the task, step by step.
- Identify the steps the soldier performed well.
- Point out problems that were encountered.
- Identify the steps the soldier performed poorly. Tell him **why** he performed poorly. Tell him **what to do** to improve his performance next time.

When you finish the review, summarize the soldier's performance in a single statement, such as one of the following:

"I'm giving you a GO on this task."

"I'm giving you a NO GO on this task."

Keep the evaluation impersonal. Talk about the **task**, and what the **soldier did** correctly and incorrectly. Don't talk about the soldier. If you use insulting language, the soldier is liable to tune you out and ignore the suggestions you make to help him improve his performance. Talk about what he **did** that he should not have done. And remind him not to do it next time.

APPENDIX A

TRAINER PREPARATION

This appendix contains two tables that will help you prepare to train.

If you are using Tank Commander modules, refer to Table A-1.

If you are using Gunner modules, refer to Table A-2.

Each table lists tasks, prerequisites, and readings. Find the task you are going to train on in the table.

Identify its **prerequisites.** Make sure soldiers have been trained on the prerequisite modules before training on the new task.

Identify the **readings.** Refer to the pages in the listed documents to prepare yourself to train.

TABLE A-1

TRAINER PREPARATION FOR TANK COMMANDER MODULES

T.C. Module No.	Task	Prerequisite Modules	Readings	
			Document	Pages
1	Prepare station and conduct LRF self-test.	None	TM 9-2350-253-10 FM 17-19E3 FM 17-13-3 (Draft)	p. 3-92; pp. 2-254 through 2-258. pp. 3-86 and 3-87 pp. 4-11 through 4-18
2	Boresight a caliber .50 M85 machinegun.	None	FM 17-19E3 TM 9-2350-253-10	pp 3-22 through 3-24 pp. 2-366 through 2-372
3	Issue fire commands.	None	FM 17-12-3 FM 1713-3 20 Scenario Cards TEC 020-171-5359E TEC 020-171-5359F	pp. 9-1 through 9-30 pp. 4-34 through 4-41
4	Respond to multiple LRF returns.	6	FM 17-12-3 TM 9-2350-253-10	pp. 2-20 through 2-21 p. 2-306
5	Direct main gun engagement in normal mode.	3, 4	FM 17-12-3 TEC 020-171-5359E TEC 020-171-5359F	pp. 9-1 through 9-30
6	Engage stationary targets from TC's station using precision gunnery.	1,3,4,5	FM 17-12-3 TM 17-19E3 FM 17-13-3 (Draft)	pp. 13-2 through 13-4 pp. 3-91 through 3-97 pp. 4-34 through 4-46
7	Engage moving targets from TC's station using auto-lead.	1,3,4,5,6	FM 17-12-3 FM 17-19E3 FM 17-13-3 (Draft)	pp. 13-2 through 13-4 pp. 3-91 through 3-97 pp. 4-47 through 4-59

TABLE A-2

TRAINER PREPARATION FOR GUNNER MODULES

Gunner Module No.	Task	Prerequisite Modules	Readings	
			Document	Pages
1	Prepare gunner's station for operation, conduct computer self-test.	None	TM 9-2350-253-10 FM 17-19E 1/2	p. 3-92; 2-254 through 2-258 pp. 3-284 through 3-285
2	Boresight.	None	FM 17-19E 1/2 TRADOC TT 17-12-1 Gunner Procedure Guides M60A3 Tank	pp. 3-256 through 3-263 pp. 24-42
3	Basic gunnery skills: aiming, tracking, ranging, firing.	1	Tank Gunnery Target Tracking & Leading Practice, May 1982 TM 9-2350-253-10 FM 17-12-3 (draft) FM 17-19E 1/2	 pp. 2-298 through 2-310 pp. 14-9 through 14-26 pp. 3-266 through 3-279
4	Engage stationary targets with main gun using precision gunnery.	1, 3	TM 9-2350-253-10 FM 17-19E 1/2	pp. 2-298 through 2-310 pp. 3-266 through 3-279
5	Engage moving targets with main gun using precision gunnery.	1, 3, 4	Tank Gunnery Target Tracking & Leading Practice, May 1982 TM 9-2350-253-10 FM 17-12-3 (draft) FM 17-19E 1/2	 pp. 2-298 through 2-310 pp. 14-9 through 14-26 pp. 3-266 through 3-279
6	Engage stationary targets with M105D telescope (degraded).	1,3,4,5	TM 9-2550-253-10 FM 17-19E 1/2 Gunner Procedure Guides M60A3 Tank FM 17-13-3 (draft)	p. 2-227; pp. 2-298 through 2-310 pp. 3-269 through 3-272 pp. 6-8 pp. 4-100 to 4-106
7	Engage moving targets with M105D telescope (degraded).	1,3,4,5,6	Same as for Module 6 (above).	

APPENDIX B
Training Tips

This section contains six training tips. These training tips are general principles that you can follow in conducting training. Each training tip is described in a few paragraphs on a single page.

These training tips are easy to follow. If you do follow them, you will be a more effective trainer. Read each tip carefully. Think about it. Then attempt to apply it during training.

Some of these tips were covered in Chapter 2 of this guide. Others are new. All of them will be helpful to you as a trainer.

The tips covered in this appendix are the following:

1. The "crawl, walk, run" training technique.
2. The art of giving feedback.
3. Helping soldiers learn about equipment.
4. Helping soldiers learn procedures.
5. The value of extended practice.
6. Helping soldiers make classifications.

Each tip is defined and described, and practical guidelines are given for applying the tip during training.

TRAINING TIP #1

Crawl, Walk, Run" Training Technique

a soldier to perform a task correctly the first time he will learn a little bit at a time. With practice, he will ith what he learned before, and build his knowledge and

he soldier step by step. Work on part of the task rather ı add more. And so on. This is the only reasonable and first, have him perform the task **slowly**, and **correctly.** al times until he gets it right. This is "crawling."
parts of the task together. Link two parts of the task at to perform both, in sequence, and correctly. Then work ings up. Give the soldier more practice. Always make ıgs correctly before demanding more of him. This is

is ready, require him to perform the entire task, to " The soldier who can "run" can do the task correctly, to ld be required in combat.
should follow the "crawl, walk, run" technique. This is learn. Use it.

TRAINING TIP #2

The Art of Giving Feedback

"Feedback" is the information you give to tell someone how well he is doing. This is probably the **single most important training principle.** People who are learning a new task are not very good at evaluating their own performance. Someone must be there to tell them what they are doing right and wrong. Mistakes will then be promptly corrected and learning will occur.

Here some things to know about feedback.

Feedback is what you tell a soldier **after** he has done something. He will learn very little if you prompt his every action and give him no opportunity to think independently. Let him try--and within limits make errors--before you correct him.

Make feedback brief and specific. If the soldier makes an error, tell him **what** he did wrong and **how** to do it right. Then let him do it again. Check that he does it correctly.

Provide the **right amount** of feedback. If you give too little, the soldier will be uncertain how well he is doing. If you give him too much, he may get the impression that you have no confidence in him and think he is incompetent.

Do not be judgmental. Avoid the use of emotion-laden terms such as profanity. These interfere with learning and are often counter-productive.

TRAINING TIP #3

Helping Soldiers Learn About Equipment

The starting point in learning a task is to learn its **vocabulary**--the names and purposes of the equipment used in performing the task. Here are some ways to help a soldier learn this vocabulary.

First, tell him that he must **attempt** to learn.

Point out each piece of equipment and tell its **name** and **purpose.**

Test the soldier's knowledge. After you have told him the name and purpose of several items, ask some questions:

- **Point out items,** one at a time. Ask the soldier each item's name and purpose.
- **Give the names** of some items. Ask the soldier to point out the item and tell its purpose.
- **Describe** what one or two important items (for example, safety switches) **do.** Ask the soldier to point out and name the items.

Don't test the soldier on everything. Just pick key items. Make sure the soldier can name and tell the purpose of the most important items. If he has difficulty, keep going over the items until he learns them.

TRAINING TIP #4

Helping Soldiers Learn Procedures

Here are some ways to help soldiers learn procedures.

First, tell the soldier he must **attempt** to learn the procedure.

Each time you demonstrate a step, do the following:

- **Describe** the step.
- **Relate** the step to the step that came before and the step that comes after.

Test the soldier's knowledge. Ask questions that make him **think.** For example:

- "Why are we doing this?"
- "What comes next?"
- "What else must we do to finish this step?"

The most important thing, of course, is for the soldier to get hands-on practice on the task. Describing and demonstrating will help him learn, but he must **do** it to learn it. The more practice, the better. (See Training Tip #5.)

TRAINING TIP #5

The Value of Extended Practice

The more we practice doing a task correctly, the more skilled we become. The soldier doing a task for the first time will not perform as well as one who has done the task 10 times. The reason for this difference is **practice.**

What happens after we do a task several times is that it becomes more or less **automatic.** At this point, we stop thinking about every movement we make and simply do the task. Even experienced soldiers can benefit from extended practice.

It is not enough to perform a task correctly once or twice. The skills are not fully developed until the task has been performed correctly several times. Keep this in mind when you train. Make your soldier practice beyond the point where he does that task correctly for the first time. And never stop his practice until he has performed the task correctly at least once.

TRAINING TIP #6

Helping Soldiers Make Classifications

Here are some ways to help trainees make **classifications,** that is, tell similar things apart.

Classifications are made by comparing the **key features** of two things and applying rules to tell them apart. Tell the soldier what these features are and how they relate to classification. Put the two items (or their pictures) side by side. Then compare them point-by-point. This is the technique to use, for example, in teaching soldiers how to classify targets when targets are to be compared based on their photographs.

To become skilled at making classifications, the soldier must make several. If possible, set up a training situation that permits this to happen. For example, if you are classifying target threat, take several pictures from manuals to use as examples. Practice with different types of target threat and let the soldier classify each target.

TRAINING MANAGER'S GUIDE

Introduction

This section contains the Training Manager's Guide that was developed during the project. This guide is presented in this report on 8½ by 11 inch pages. When reproduced for actual use by training managers, its dimensions are 4½ by 6½ inches.

TRAINING MANAGER'S GUIDE

Prepared for:

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the Behavioral and Social Sciences
Ft. Knox Field Unit
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Prepared by:

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Contract MDA 903-82-C-0380

September 1983

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

This guide was written for platoon leaders such as yourself who act as unit-level training managers. This guide will explain what you must do to manage the training that is carried out by senior NCOs using training modules. These trainers include the tank commander, platoon sergeant, master gunner, and others who train tank crewmen in their individual skills.

THE TRAINING PROGRAM

You are participating in a special training program. This program has two main parts:

- **Training prescriptions**--Training prescriptions tell supervisors **how** to train. The prescriptions are contained in training modules. These modules are compact, ready-made lesson plans that can be used to train tank commanders or gunners. They are small and fit in the pocket. They make it easy to train because they tell supervisors what points to cover and what training procedures to use.

- **Training guidance**--This guidance concerns **who** to train, **what** to cover, **where** to train, and **when** to train.

  You, the platoon leader, are in charge of the program. You tell the trainers who, what, where, and when to train, using different modules.

  Trainers conduct the training. They evaluate the performance of soldiers. They keep records of who was trained on what tasks, and how well they performed.

HOW DO YOU FIT IN?

You have three main training responsibilities:

- **Plan training**--Select the time and place for training, and determine what training module will be used.

- **Oversee and control training**--Be present during training sessions and assure that training meets its objectives.

- **Evaluate training**--Evaluate (1) the effectiveness of training, and (2) the effectiveness of your trainers.

Your trainers have specific training responsibilities. You must assure that they understand these responsibilities, and that they carry them out.

The responsibilities of **tank commanders** are to:

- Train up their gunners
- Cross-train their loaders and drivers for the gunner's position

The training responsibilities of **platoon sergeants** are to:

- Train up new tank commanders

HOW THIS GUIDE IS ORGANIZED

This guide consists of three chapters. The chapters contain descriptive and "how-to" information concerning training management. The contents of each chapter are described below.

Chapter 1, **Training Modules**, introduces you to the training modules. It describes the training modules, what they contain, and what tasks they cover.

Chapter 2, **Training Procedures**, explains how the modules are to be used in your platoon's training program. In simple terms, it answers the questions of who, what, where, and when to train.

Chapter 3, **How to Manage Training**, describes how to plan your platoon's training, monitor training when it occurs, and evaluate the effectiveness of training and of your trainers.

HOW TO USE THIS GUIDE

Use this guide to familiarize yourself with the training program and as a reference.

To familiarize yourself with the training program, carefully read Chapters 1-3. After you have done this reading, you will be familiar with the training program. From that point on, use this guide as a reference.

CHAPTER 1. TRAINING MODULES

This section describes the training modules that supervisors will use to conduct training. It lists the modules used for training tank commanders or gunners. It also describes the content of a sample module and tells how to use it.

TASKS COVERED BY MODULES

Different modules have been prepared for training tank commanders and gunners. The platoon sergeant uses Tank Commander modules to train personnel for the tank commander crew position. Tank commanders use Gunner modules to train their crew members as gunners.

The format of tank commander and gunner modules is identical. This chapter applies equally to both sets of modules.

Each module covers a specific task. Tank commander tasks covered are listed in Table 1. Gunner tasks covered are listed in Table 2.

TABLE 1

TANK COMMANDER TASKS
COVERED IN TRAINING MODULES

Module No.	Task
1	Prepare station and conduct LRF self-test.
2	Boresight a caliber .50 M85 machinegun.
3	Issue fire commands.
4	Respond to multiple LRF returns.
5	Direct main gun engagement in normal mode.
6	Engage stationary targets from TC's station using precision gunnery.
7	Engage moving targets from TC's station using auto-lead.
8	Issue subsequent fire command.
9	Engage targets with M85.
10	Direct main gun engagement using range card data.
11	Power down and secure TC station.

TABLE 2

GUNNER TASKS
COVERED IN TRAINING MODULES

Module No.	Task
1	Prepare gunner's station for operation and conduct computer self-test.
2	Boresight.
3	Basic gunnery skills: aiming, tracking, ranging, firing.
4	Engage stationary targets with main gun using precision gunnery.
5	Engage moving targets with main gun using precision gunnery.
6	Engage stationary targets with M105D telescope (degraded).
7	Engage moving targets with M105D telescope (degraded).
8	Adjust main gun fire.
9	Perform main gun misfire procedures.
10	Operate M28E2 azimuth indicator.
11	Operate gunner's quadrant.
12	Power down and secure gunner's station.

HOW TO USE A MODULE

This section describes a module and tells how to use it. Find Gunner's Training Module number 4 before continuing.

Look it over to familiarize yourself with its content. Lay it on the table.

Refer to it as necessary during the discussion that follows.

General Description of Module

Find the front of the module. This is the side with the words **TRAINING MODULE NO. 4** at the upper right.

The first page contains module **identification and training preparation information** at the top, and a **training plan** at the bottom.

Let us start with the information in the top box.

CREW POSITION: GUNNER	TRAINING MODULE NO. 4
TASK: ENGAGE STATIONARY TARGETS WITH THE MAIN GUN USING PRECISION GUNNERY	
PREREQUISITE TASKS: GUNNER MODULES NO. 1 AND 3	
TRAINING REFERENCES: FM 17-12-3; Sm 171-129-1020; TC 17-15-13, TEC 020-171-536n E,F	
SUPPORT REQUIREMENTS: STOPWATCH; M60A3 TANK OR TURRET TRAINER; M55 LASER (OPTIONAL); 5 TARGET SILHOUETTES AT CLOSE (1,000 M) AND FAR (2,000 M) RANGES.	

The information in this module is described below.

CREW POSITION tells who the module is for. This will be either GUNNER or TANK COMMANDER. The sample module is for GUNNER.

TASK is the task that the module covers. It will be one of the tasks listed in either Table 1 or 2. The task in the sample module is to ENGAGE STATIONARY TARGETS FROM GUNNER'S STATION WITH THE MAIN GUN USING PRECISION FIRE.

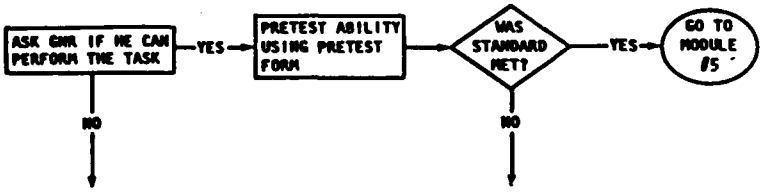
PREREQUISITE TASKS are the modules that should be completed before the current module. The sample module is for gunner task number 4, and prerequisite tasks are covered in gunner modules numbers 1 and 3.

TRAINING REFERENCES are references with information that will help the trainer prepare to train with the module. Information on training preparation is also contained in Appendix A of the Trainer's Guide.

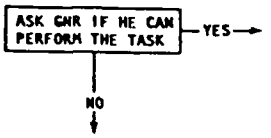
SUPPORT REQUIREMENTS are the equipment, materials, ranges, and so forth required for conducting training. The sample module requires a stopwatch, an M60A3 tank or turret trainer, and has some optional items. Optional items will make training more effective, but they are not always available. Training can be conducted without them, if necessary.

The bottom of the module contains the **training plan.** This plan describes the decisions and procedures involved in conducting training. It is described below.

Start with the top row of boxes.

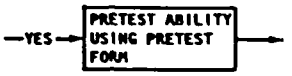


The words in the top left box say ASK GNR IF HE CAN PERFORM THE TASK.



The trainer asks the soldier this question before starting training. What he does next depends on the soldier's answer. If the soldier answers "no," the trainer follows the arrow that goes straight down, to the box labeled **EXPLAIN.** Otherwise, he follows the arrow to the right.

Assume that the gunner answers "yes." In this case, follow the arrow to the box to the right. This box directs the trainer to PRETEST ABILITY USING PRETEST FORM.



The PRETEST

The PRETEST is on the back of the first page of the module.

Turn the module over and look at the PRETEST.

There are three blocks of information on the PRETEST.

1. OBJECTIVES
2. GUIDELINES
3. PRETEST FORM

The OBJECTIVES are the objectives of the pretest. These define the purpose of the pretest and give the performance standard. The trainer states these to the soldier before conducting the pretest.

The GUIDELINES are general directions for conducting the pretest. They describe procedures for the trainer to follow during testing.

The PRETEST FORM is the actual test. This test is based on the task that is being covered during training. It requires the soldier to demonstrate the basic skills and knowledge required to perform the task.

The PRETEST FORM has three columns, as shown below.

PRETEST FORM		GO	NO GO
TC	GUNNER		
Ask GNR to set fire control switches.	1. Set fire control switches to appropriate settings.		

The left column contains directions for the TC. The middle column tells what the gunner should do. The right column contains GO/NO GO boxes.

The directions in the TC column tell the trainer what to do at each step. For example, the trainer begins the pretest by asking the soldier to set the fire control switches.

The trainer goes through the pretest, step by step.

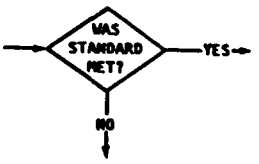
During the pretest, the gunner should know what to do, without being told. The trainer uses the information in the gunner's column to evaluate the soldier's performance.

The GO/NO GO boxes in the right column are used to score the gunner's performance. Each box is for the numbered step to its left. The trainer checks "GO" if the gunner performs the step correctly, or "NO GO" if he does not. The gunner must get a GO on every step to pass the pretest. If he gets one NO GO, he fails.

What Happens After Testing

Turn back to the first page of the module.

After testing, the trainer will know whether or not the gunner met the standard. What to do next depends on how he performed. The diamond figure to the right of the pretest box contains the words WAS STANDARD MET?



This is a decision box. Follow the arrow that corresponds to the answer to the question. If the answer is "no," follow the arrow for "no," straight down to the

box labeled **EXPLAIN**. If the answer is "yes," follow the arrow to the right to the oval box with the words GO TO MODULE #5 in it.

It will be rare for all soldiers to pass the pretest. Most of the time the trainer will have to train them using the training exercise. This exercise is contained in the four boxes labled **EXPLAIN, DEMONSTRATE, SUPERVISE PRACTICE,** and **EVALUATE.**

To conduct the training exercise, the trainer must follow the directions in each box in turn.

He starts with the **EXPLAIN** box.

Then he goes to the **DEMONSTRATE** box. This lists the points to be covered during the demonstration. Additional information on the demonstration is contained within the module. Open the module to page 3. This page contains detailed guidance for giving the demonstration. This information is designed to help the less experienced trainer familiarize himself with the task and conduct an effective demonstration.

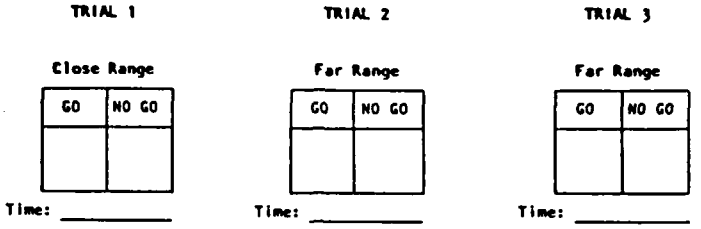
Turn back to the first page of the module. Find the **SUPERVISE PRACTICE** box. After the demonstration, the trainer gives the soldier hands-on practice on the task, following the guidelines in the SUPERVISE PRACTICE box. As with the demonstration, additional information on the task is contained inside the module.

The **PRACTICE/EVALUATION FORM** is used during soldier practice to help the trainer keep track of the procedure. This form is on the last page of the module. It is similar to the PRETEST FORM described earlier and is used in the same way. It lists each step in the procedure. It is not necessary to keep track of GOs and NO GOs during practice. As before, additional information on the topic is contained inside the module.

After practice, the trainer goes to the **EVALUATE** box.

The trainer also uses the PRACTICE/EVALUATION form during the evaluation. The evaluation is the soldier's final examination on the task. To pass this test, he must receive a GO on every step of the task on three consecutive trials. The trainer keeps score during the evaluation. He checks the appropriate GO or NO GO box for each step. Also he times how long it takes the soldier to

perform the entire task. He will use this information to fill out the three boxes at the bottom of the form.

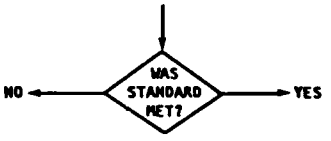


The trainer checks GO in the box for a trial only if the soldier received GOs on all steps. He writes in how long each trial took on the blank line by the word "Time."

The trainer should go through three consecutive trials of the task, if time allows.

Wrapping Up Training

After the exercise, the trainer decides whether or not the gunner met the performance standard (see diamond at bottom of exercise).



If the standard was not met, the practice and evaluation must be repeated. If it was, then the training exercise is over.

That covers it.

Individual modules differ in content, but all have the form just described, and all are used in the same way. After the trainer has used one once, he will quickly get the hang of them.

CHAPTER 2. TRAINING PROCEDURES

This chapter covers the **who, what, where,** and **when** of training with the training modules. It concerns who is trained, what training modules are used, where training is conducted, and when training occurs.

WHO TO TRAIN

The key trainers are platoon sergeants and tank commanders. Who they train depends upon their position.

Each tank commander trains the members of his crew. He has two primary responsibilities:

(1) To train up his gunner, driver, and loader in his individual crew positions.

(2) To cross-train his crew members.

Tank commanders receive gunner training modules. They use these to train up their gunner and to cross-train their loader and driver for the gunner's position.

Platoon sergeants are responsible for training up the tank commanders in their platoon. The best way to do this is to train all tank commanders in the platoon at the same time. (Since platoon sergeants are also tank commanders, they must also train the members of their crew, using gunner training modules.)

WHAT AND WHEN TO TRAIN

You, the platoon leader, **manage** training. You tell the platoon sergeants and tank commanders what to train and when to train on it.

You should design a **training plan** that covers the what and when of training. Chapter 3 of this guide contains guidelines on how to do this.

You must decide when to train and schedule it in your training plan. To the extent possible, training should be done by all tank crews together during formal training periods. You decide the time and place of this training.

Not all training can be done according to a plan. During formal training periods, some soldiers will be absent or there will not be enough time to train all those who are. To handle these problems, trainers must conduct make-up training on their own. Trainers will know who needs make-up training. They must work it in during slack time. You must assure that they do. How to do this is described in the next chapter.

WHERE TO TRAIN

Where to train depends on where you are. The modules are designed so that they can be used anywhere and at almost any time.

The modules do not require special equipment or training resources, with the exception of the M60A3 tank itself. They were designed so that they can be used with the tank alone, or with certain optional training devices, either in garrison or in the field.

Therefore, if you want to train on a particular task, you can do it wherever you are. Naturally, it is best to train in the field where things are realistic and there are few distractions. This is not always possible. If you cannot train in the field, the next best thing is to train in garrison with training devices. Again, this is not always possible. But even if you cannot use training devices, you can still train, using the M60A3 alone.

CHAPTER 3. HOW TO MANAGE TRAINING

This chapter tells you how to manage training with the training modules. It describes the three parts of training management:

1. Planning
2. Controlling
3. Evaluating.

These three topics are discussed below.

PLANNING TRAINING

You must plan your training if you want it to occur and to be effective. A simple plan is all that is required. This plan shows what training modules will be covered each week during an eight-week (or longer) time period.

Finding Time to Train

The best and most efficient way to train your platoon is together during a dedicated training period. The ideal is for the platoon to spend about four hours per week, together, training with the modules.

Part of this four-hour period is devoted to tank commander training. During this training, the platoon sergeant (or other designated trainer) uses a tank commander training module to train all of the tank commanders in the platoon on tank commander tasks.

Gunner training also occurs during the training period. During gunner training, all tank commanders (excluding the platoon leader, but including the platoon sergeant) train their tank crews on gunner tasks. The senior NCO on the platoon leader's tank conducts this training for other members of the crew.

Training the platoon this way has the following advantages:

- It permits you to oversee, control, and evaluate training.
- It demonstrates a commitment to training.
- It builds platoon spirit.

Work with your commander to set aside time for a dedicated training period each week.

The Training Plan

Prepare a training plan that shows what training modules to use each week during the next eight weeks. For each week covered, the plan should identify the crew position, module number, and task description. During most weeks, training will be for more than one crew position, and so the week's listing will show more than one crew position and module. You can base your plan on Tables 1 and 2.

This type of training plan is very simple to develop, and will only take a few minutes of your time. Update it each week, as necessary, to handle changes in the unit's schedule and other commitments. While the training plan will need to be changed often, it is still worthwhile to prepare it since it provides a set of training goals that you can aim at. Without the plan, you are much less likely to accomplish effective training in your platoon.

CONTROLLING TRAINING

Your training plan is a blueprint for training with the training modules. The trainers and the soldiers they will train should know beforehand when training will occur and what it will cover. Let people know a few days ahead of time. This will give trainers a chance to prepare, and put soldiers in the right frame of mind to receive training.

The Training Location

When the time to train arrives, focus your platoon's attention on training. Mark off the training area in your mind. Keep visitors out. Let everyone know that it's time to train, and that other routine activities are forbidden.

Get everyone started on training.

Then go from location to location and observe training. This serves two purposes:

1. It shows that you are interested in training.
2. It keeps trainers and soldiers on their toes.

Be present during the training period.

Training Priorities

During training, the first priority is to train up the individual assigned to the position. This means that platoon sergeants should train assigned tank commanders for the tank commander position before other crew members. The same goes for when the tank commander trains his crew for the gunner's position--here, he should train the assigned gunner before the loader or driver. Assure that training is conducted this way.

As a platoon leader, you are both the motivator for training and the evaluator of training.

You motivate training by being present and showing your interest in it.

You evaluate training by observing it and keeping your eyes open for certain signals. The signals to look out for are discussed below.

EVALUATING TRAINING

The most important test of training is whether or not soldiers can perform a task better after receiving it. This is the bottom line on training. The best way to tell whether performance improves is to give each soldier a performance test before training, one afterward, and compare the scores. This is not usually practical. But what you can do is pay close attention to the way your soldiers perform before and after training and make a subjective comparison. Be alert to the signs of good and bad performance. Keep a score card in your head. This is one way to evaluate training.

Another way to evaluate training is to observe training to see how well it is going. When training occurs, be on the scene and visit each training site. Here are some indicators to check:

- **Trainer preparation**--does the trainer know what he is talking about? Is he familiar with the subject? Does his training session go smoothly, or does he spend most of his time referring to his training module or fumbling with equipment or stumbling his way through the task?