TC 3-20.31-120

GUNNERY: HEAVY TANK

JULY 2025

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GUNNERY: HEAVY TANK

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Preface

This training circular provides the gunnery training plan for all prerequisite and live-fire training for the M1A2, Abrams heavy tank. It includes all training events through crew qualification following the integrated weapons training strategy structure. TC 3-20.31-120 is written using a plan, prepare, execute and assess methodology. This publication applies to all Abrams variants.

The principal audience for TC 3-20.31-120 is commanders, trainers, and Master Gunners of movement and maneuver units. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and, in some cases host-nation laws and regulations. Commanders at all levels ensure their Service members operate in accordance with the law of war and the rules of engagement. (See FM 6-27 for legal compliance.)

The use of a trade or brand name does not constitute endorsement of any specific commercial product, commodity, service, or enterprise by the U.S. Army.

This publication applies to the Army's active component and reserve component unless otherwise stated. Users and readers of this publication are invited to submit recommendations that will improve its effectiveness.

The proponent of TC 3-20.31-120 is the United States Maneuver Center of Excellence. The preparing agency is the Department of Tactics, Training, and Doctrine, United States Army Maneuver Center of Excellence. Send comments and recommendations on DA Form 2028 *(Recommended Changes to Publications and Blank Forms)* to Commander, United States Army Maneuver Center of Excellence and Fort Benning, ATZK-TDD (TC 3-20.31.120), Fort Benning, GA 31905-5410; by email to usarmy.benning.mcoe.mbx.doctrine@army.mil; or submit an electronic DA Form 2028.

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Introduction

TC 3-20.31-120 provides the details of the integrated weapons training strategy (IWTS) structure specifically designed for U.S. Army heavy tanks. This training circular provides the training strategy for maneuver commanders to train, evaluate, and assess their unit's overall proficiency at home station. The heavy tank training strategy includes only the critical training events to build crew platform readiness using the IWTS's standard training structure.

The heavy tank training strategy maximizes the training aids, devices, simulators, simulations (TADSS), and live-fire events capabilities in a systematic manner to increase and sustain Soldier and crew proficiency, effectiveness, and lethality. The training strategy is capability-based (Soldier, crew, ammunition, optics/sensors, and weapon system) and maximizes the training resources available across the force.

The heavy tank training strategy encompasses all critical training that builds a unit's ability to shoot, move, and communicate effectively and efficiently. Although units conduct other training as part of their training plan, the critical training path includes only those events that are conducted to ensure the maximum experience is achieved or gained by the trained Soldier and crew.

The terms tank, or heavy tank, are applicable to all variants of the M1A2 Abrams series main battle tank within this publication for simplicity. This publication categorizes tanks in three classes based on their chassis, armor protection, primary armament, and weight as:

- Heavy tank—a tracked armored vehicle with a 105 millimeter (mm) or larger cannon as its primary armament, and a gross weight over 60 tons.
  - Its primary purpose is to defeat all types of ground threats including heavy tanks, as well as rotary wing aircraft.
  - It operates as part of an Armor, mechanized, or heavy Cavalry company/troop formation.
- Medium tank—a tracked armored vehicle with a 90mm or larger cannon as its primary armament, with a gross weight between 35 and 60 tons.
  - Its primary purpose is to defeat all types of ground threats including light and heavy tanks, as well as rotary wing aircraft.
  - It operates tactically in an Infantry support role with fortification and armor defeating capabilities.
- Light tank—a tracked armored vehicle with a 75mm to 105mm cannon as its primary armament, with a gross weight less than 35 tons.
  - Its primary purpose is to defeat all types of ground threats including light and medium armored wheeled and tracked vehicles, as well as dismounted threats.
  - It operates tactically in an Infantry support role with light-armor and fortification defeating capabilities.

The heavy tank training strategy has six training events (called tables) that culminate in their demonstration of proficiency during a live-fire qualification event. Heavy tank training consists of all the training events required to provide the commander with an effective demonstration of crew capabilities, employment skill, and lethality to build unit readiness.

Units should maximize their time and resources by designing their heavy tank training plans such that crews train through proficiency to support the section, platoon, and company, whether as an organic small unit, an attachment, or a cross-attachment. This level of synchronization will enable the unit to transition to advanced, higher echelon collective training seamlessly. Introductory figure 1 shows the structure for the heavy tank training strategy. The training strategy described within this publication follows the standard training structure found in TC 3-20.0 and synchronizes with the training principles found in FM 7-0.

FUNCTION	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	Prerequisite	Prerequisite	Prerequisite	Zero Defense Machine Gun	Offense Defense Live Fire	Qualification External Evaluation
EVENT	GST	STX-V	STX	BASIC	PRACTICE	QUAL
PRINCIPLE	CRAWL	CRAWL	WALK	RUN	RUN	RUN
ENVIRONMENT	Live	Virtual	Live	Live-Fire	Live-Fire	Live-Fire
METHOD	Hands-on	Simulations	TADSS	Live-Fire	Live-Fire	Live-Fire
AUDIENCE	Individual	TC/Gunner	Crew	Crew	Crew	Crew

LEGEND

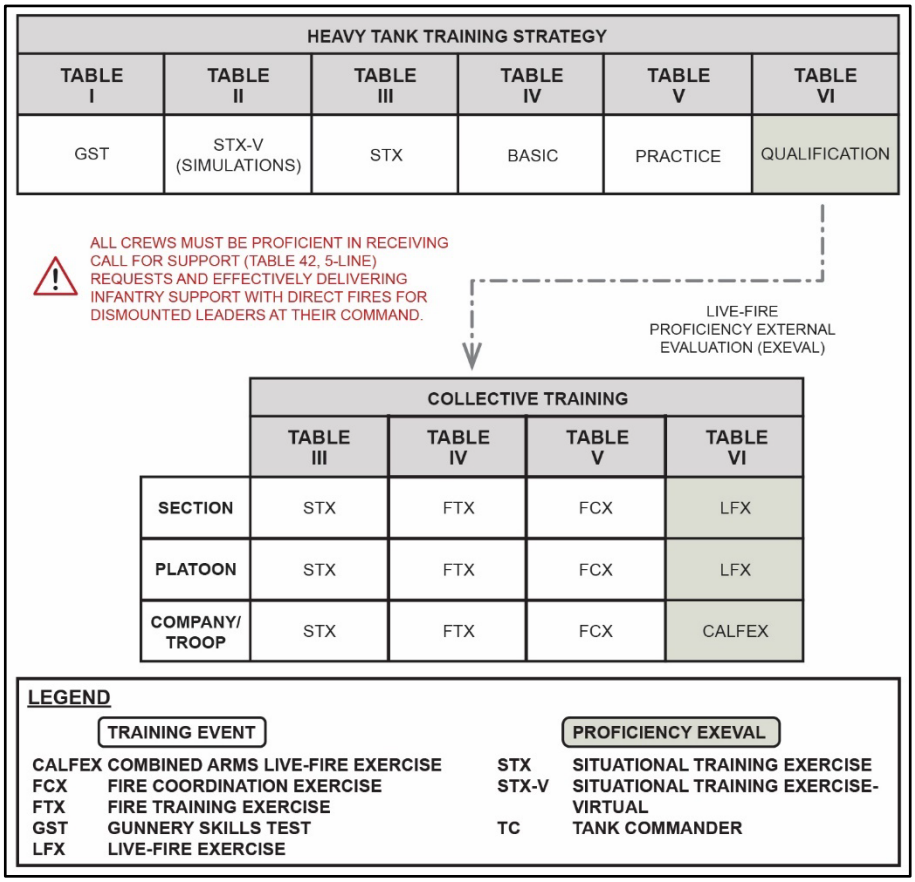
GST	GUNNERY SKILLS TEST	QUAL	QUALIFICATION
STX	SITUATIONAL TRAINING EXERCISE	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS
STX-V	SITUATIONAL TRAINING EXERCISE - VIRTUAL	TC	TANK COMMANDER

Introductory figure 1. Heavy tank training strategy overview

HEAVY TANK TABLES

Heavy tanks follow the standard six-table format of the integrated weapons training strategy through live-fire qualification (proficiency). The six heavy tank tables are listed below and shown in introductory figure 2 for context—

- Table I–Gunnery Skills Test (GST).
- Table II–Situational Training Exercise—Virtual (STX-V).
- Table III–Situational Training Exercise (STX).
- Table IV–Basic.
- Table V–Practice.
- Table VI–Qualification.



Introductory figure 2. Heavy tank tables with linkage to higher echelon collective training, example

TRAINING STRATEGY DESIGN

It is important for units to follow the training strategy as designed. Tanks are complex platforms with state-of-the-art fire control systems, ballistic computers, thermal optics, target hand-off capabilities, hunter/killer functionality, with a high level of mobility. The munitions employed are purpose-based and provide extended stand-off distances that directly impact crew survivability and mission accomplishment on the battlefield.

Engagements are designed to increase the speed of the crew's direct fire kill chain to defeat tactical dilemmas. All training and standards are based on achieving the desired effects against the tactical dilemma before those threats deliver lethal fires. Training to this standard requires a training model that instructs and evaluates the crew's ability to employ their platform, fire control system, optics, munitions, and redundant systems against the variety to target packages they are expected to defeat.

The training model identifies the general capabilities of the crew, system, optics, ammunition, most probably threat arrays, and battlefield conditions to determine the maximum number of engagements a trained crew should experience. The training model includes the maximum number of engagements possible based on the basic conditions:

- Day or night limited visibility.
- Offense or defense operations.
- Precision or degraded engagement skills.
- Threat array:
  - Number of threats—one to four within presentation.
  - Posture of threats—stationary or moving.
  - Range band—lose (less than 300 meters), mid (300 to 900 meters), long (900 meters to 1,600 meters), or extended (more than 1,600 meters).
- Chemical environment.

Without considering the possible ammunition types and two separate firers, or the ability to engage simultaneous targets with multiple weapon systems, the training model baseline includes over 10,000 engagement possibilities. Within those engagements, approximately 1,920 engagements are designed for training within precision gunnery simulations per fiscal year by a crew. Simulations are critical to the education and experience of the crew.

To augment the training strategy, the unit needs experienced tank commanders and gunners who serve as subject matter experts, have trained and certified trainers, Master Gunner, instructor/operators, vehicle crew evaluators (VCEs). Providing training resources alone is not enough. Without certified trainers and leaders, units will struggle to achieve the fundamentals of tactical employment and experience difficulty achieving trained, qualified, and lethal crews.

Training is designed to teach the crews to accurately engage and destroy enemy targets with the appropriate weapon system to build confidence between crew members and in the platform through varying conditions. Units are required to follow the training strategy without deviation unless authorized by the brigade combat team commander.

ENGAGEMENTS IN THE TRAINING STRATEGY

The training strategy structure using the general engagements presented to the crew is shown in introductory figure 3. This example is the general model in use for tank platforms.



BASIC TRAINING STRATEGY CONCEPT
CREW EXPERIENCE BY ENGAGEMENTS PRESENTED
ACTIVE COMPONENT (AC)

SIMULATIONS ENGAGEMENTS	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
4 HOURS PER MONTH 40 ENGAGEMENTS PER HOUR	160	160	160	160	160	160	160	160	160	160	160	160
TOTAL SIMULATION ENGAGEMENTS	1920											

Note: Crews are resourced 4 HOURS PER MONTH of simulations training. Crews can complete 4 scenarios per hour. Each scenario includes no less than 10 engagements. This results in 40 engagements per hour, or 160 engagements per resourced training session. Crews overall are resourced for approximately 1920 engagements per fiscal year as part of the training strategy.

LIVE FIRE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TABLE IV ZEROING	3						3					
TABLE IV DEFENSE	10						10					
TABLE V	10						10					
TABLE VI	10						10					
SECTION/PLATOON TABLE V/TABLE VI	7											
COMPANY/TROOP TABLE V/TABLE VI	7											
TOTAL LIVE FIRE ENGAGEMENTS	80											

Introductory figure 3. Training strategy structure based on crew experience by engagement

Those engagements provide the bulk of crew experience. Within those 1,920 engagements in simulation, they include a variety of the conditions based on their skill and ability to progress through the simulation's training model.

SIMULATIONS PROVIDE 95 PERCENT OF CREW ENGAGEMENT EXPERIENCE

Within simulations, with the varying number of engagements, and the varying number of targets presented, the training plan includes over 2,000 trigger squeezes for main gun engagements and an additional 1,000 for the coaxial machine gun. The main gun trigger squeezes provided in simulation equate to approximately 20 years of live-fire ammunition authorizations per crew (99.5 main gun rounds per year).

The live-fire training strategy includes 33 live fire tasks per gunnery through crew qualification. For an active component crew, firing twice per year, and additional collective live fire engagements, the total number of engagements presented for live-fire experience is approximate 80 engagements total.

FAILING TO TRAIN ENGAGEMENTS IMPACT READINESS

Units that fail to provide sufficient simulations training time for their crews and fail to execute the live-fire events to standard hinder their ability to tactically employ their platform. An example of common reductions in the training strategy across a fiscal year is shown in introductory figure 4 for comparison.



BASIC TRAINING STRATEGY CONCEPT
CREW EXPERIENCE BY ENGAGEMENTS PRESENTED
ACTIVE COMPONENT (AC)

SIMULATIONS ENGAGEMENTS	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
4 HOURS PER MONTH 40 ENGAGEMENTS PER HOUR		*80*			*80*	160	*40*				160	160
TOTAL SIMULATION ENGAGEMENTS	*680* OF 1920											
The unit reduces the amount of hours provided to the crews for a number of reasons. In this notional unit, they focus on simulations used generally right before the gunnery density only. This is shown in February, March, and April, and again in August and September.												

LIVE FIRE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
TABLE IV ZEROING	3						3					
TABLE IV DEFENSE	*0*						*0*					
TABLE V	10						*6*					
TABLE VI	10						10					
SECTION/PLATOON TABLE V/TABLE VI	*5*											
COMPANY/TROOP TABLE V/TABLE VI	*0*											
TOTAL LIVE FIRE ENGAGEMENTS	*47* OF 80											
This unit is on a tight timeline to get out the door to a Combat Training Center rotation. The commander cuts Table IV defense from both gunnery densities to save range time. In the second gunnery density, again pressed for time, the unit completes a "modified" Table V. ***Note:*** There are no events called "modified" in any maneuver training strategy.												

Introductory figure 4. Negative impacts to crew experience based on reduced training

Units that have a robust simulations training plan and follow the training strategy provide 2,000 engagements to their crews. When units cannot provide the training to the crews per the training strategy, the impacts to the crew's experience can be described using the number of engagements fired.

Introductory figure 4 on page xxi shows the impacts from the training strategy's 2,000 engagement designed structure. Common instance in the unit's training calendar causes the crew's experience on engagements to drop to 727 engagements total.

A crew that loses over 60 percent of the training strategy's programmed engagement experience may provide a unit a qualified crew initially. Crews that are not provided the training resources by their unit will not fully develop their engagement skills and lethality. In subsequent live-fire events, crew evaluations will identify basic failures in the conduct of fire, reticle aim, fire control system management, and engagement techniques. Those training gaps will ultimately result in failed qualification attempts.

When units remove the training events from their training plan, including the use and management of simulations, the proficiency and lethality of the unit diminishes rapidly. In those instances, the commander loses qualified crews, unit readiness, and the flexibility to correct talent management or personnel turbulence issues rapidly.

CHAPTER STRUCTURE

Chapters 1 through 6 in this training circular provide an overview of the training event, the training event definition, the purpose, method, and end state of the training, and a guide to plan, prepare, execute, and assess each event. Chapter 7 details methods to manage the proficiency of the crew once they achieve proficiency.

CHAPTER 1–TABLE I, GUNNERY SKILLS TEST

Chapter 1 describes the training and evaluation requirements for each Soldier's GST. It includes required training tasks for crew protection such as roll-over drills, crew evacuation from all positions, and react to multiple types of vehicle fires. The chapter provides general information for the unit to plan, prepare, execute, and assess the event using the 8-step training model.

CHAPTER 2–TABLE II, SITUATIONAL TRAINING EXERCISE–VIRTUAL

Chapter 2 describes the section-level STX-V. The chapter includes the purpose, method, and end state of the event based on the simulation system's training model and the required gate to live fire (GTLF) exercise. The chapter provides general information for the unit to plan, prepare, execute, and assess the event using the 8-step training model.

CHAPTER 3–TABLE III, SITUATIONAL TRAINING EXERCISE

Chapter 3 describes the section-level STX using various TADSS and includes the purpose, method, and end state of the event based on the platform's capabilities and crew's tasks. The chapter provides general information for the unit to plan, prepare, and execute, the event using the 8-step training model. Chapter 3 provides required training tasks for crew protection such as berm drills (defilade to enfilade movements within defensive firing positions), roll-over drills, crew evacuation from all positions, and react to multiple types of vehicle fires.

CHAPTER 4–TABLE IV, BASIC

Chapter 4 describes the live-fire task requirements for screening or zeroing the main gun and zeroing the coaxial machine gun and commander's machine gun prior to conducting further live-fire training. It continues by defining the training requirements for ten defensive live-fire engagements for the tank commander, gunner, or simultaneous execution against single and multiple stationary or moving threats.

CHAPTER 5–TABLE V, PRACTICE

Chapter 5 provides the detailed engagement requirements for the 10 live-fire engagements on the practice course of fire. It provides advanced and complex engagements built upon all previous training. The engagements are specifically designed to provide increased challenges to the crew using 3/4 scale targets at full range, complex target arrays, and high tempo changes to the fire control system to best prepare crews for their qualification event.

CHAPTER 6–TABLE VI, QUALIFICATION

Chapter 6 describes the engagement requirements for live-fire qualification for heavy tank crews. These engagements are designed to ensure the crew can effectively engage

and defeat common threat arrays expected in a tactical environment while fighting from the defense or during offensive operations. This table provides the reporting requirements for the heavy tank crew as part of the unit's readiness.

CHAPTER 7–QUALIFICATION STANDARDS

Chapter 7 describes how commanders determine crew qualification (or proficiency) as part of the unit's readiness reporting. It provides a general overview for commanders making personnel manning, talent management, and crew assignment decisions that directly impact the qualifications of their organization.

APPENDIXES

The appendices in this training circular provide a guide to units as they build their unit training plan. They provide specific information on—

- The recommended training munitions, pyrotechnics, and simulators to conduct each event.
- Alternate training methods for training in austere environments or when appropriate or authorized simulation systems are not available.

APPENDIX A—AMMUNITION REQUIREMENTS

This appendix describes the recommended training ammunition, pyrotechnics, simulators, and other munitions that support the training strategy. Appendix A provides a detailed listing of munitions by weapon, system, or platform and includes various planning considerations.

APPENDIX B—TRACKING AND MANIPULATION BOARDS

Appendix B describes locally manufactured or acquired tracking boards used in austere environments or when authorized simulation systems are not available for training. It describes a means of completing Table II, Situational Training Exercise–Virtual, using legacy training methods. It provides an example exercise that will satisfy the training objectives of Table II in less that optimal conditions.

APPENDIX C—DEPLOYED/AUSTERE QUALIFICATION

This appendix provides the targetry for units authorized to conduct a qualification in austere environments. It describes the approval authority and circumstances when this course of fire is appropriate.

APPENDIX D—BASIC SKILLS ENGAGEMENTS

Appendix D is an optional menu of basic skills engagement that may be used for additional training, re-training, or cross-training crews. They are not resourced with training ammunition. These engagements are options to the commander for use when time, facilities, and training munitions are available.

APPENDIX E—COMPLEX ENGAGEMENTS

Appendix E provides an overview of mastery engagements that can be fired by a unit provided resources are available. These ten engagements in Table C, Complex Engagements, are designed by Master Gunners for use with experienced crews at the direction of the brigade commander or above.

APPENDIX F—FORMS

This appendix describes the Department of the Army forms referenced within this manual where this publication is the proponent. It provides detailed instructions for their completion, routing, retention, and submission

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Chapter 1

Table I—Gunnery Skills Test

Understanding the weapons and weapon system platforms is instrumental in the development of the warrior skills trained in marksmanship and gunnery. The information taught and evaluated in the gunnery skills test (GST) for crew platforms teaches, tests, and evaluates the critical live-fire tasks that increase Soldiers' proficiency. The GST instructs Soldiers on how to maintain, operate, and correct malfunctions of the platform's weapons, as well as the procedures and performance measures required to place the vehicle in operation for live-fire event. It includes safety-specific tasks that reinforce the proper procedures in the event of an emergency on the vehicle.

Chapter 1 outlines how to conduct the GST for the M1A2 Abrams platform. Soldiers must complete the GST between training week/month minus the number of weeks/months until execution (in this case, 6 weeks [T-6]) and gunnery execution (active component weeks and reserve component months) before conducting any live-fire range training including sub-caliber or zeroing procedures for the platform.

OVERVIEW OF TABLE I

1-1. The crew platform, Table I, GST, is hands-on demonstration of proficiency and written evaluation of weaponry tasks, characteristics, capabilities, and vehicle safety related skills that serves as a prerequisite to any live-fire event. It verifies the Soldier's ability to perform critical tasks, has the basic understanding of combat identification, emergency procedures, and other vital skills to participate in live-fire training as part of a crew.

LIVE-FIRE PREREQUISITE

Table I is a prerequisite for any live-fire event, including zero procedures, sub-caliber or in-bore training, or any live-fire maintenance procedure. Units must maintain the training records and results, for the longer of 12 months, or through the next testing event.

1-2. Training prior to Table I is a platoon and company or troop responsibility. Table I, GST, is a test that serves as the commander's official record of training proficiency prior to entering a live-fire training density.

1-3. Units conduct GST quarterly to maintain proficiency. Units must complete Table I, GST, for record between T-6 and training execution [T-execution (commencement day)], or the week of training execution (T-week), of the live-fire event. Units can include additional tasks they require to support the training program but cannot eliminate tasks for any weapon system. Figure 1-1 shows where Table I resides withing the heavy tank training strategy through crew qualification.

CREW TABLE I	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	*WALK*	*RUN*	*RUN*	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

Note: Table I, II, and III can be conducted in any order within the T-6 to T-X time frame. This provides flexibility when developing the unit training plan.

LEGEND

GST	GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM	T-	TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]
QUAL	QUALIFICATION	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS
STX	SITUATIONAL TRAINING EXERCISE		
STX-V	SITUATIONAL TRAINING EXERCISE-VIRTUAL		

Figure 1-1. Table I, gunnery skills test

1-4. Commanders require all Soldiers to conduct the Table I, GST tasks from all crew positions. This allows Soldiers to change positions when required during training. This training strategy helps the commander to overcome such circumstances as crew changes or unforeseen absences of assigned Soldiers.

1-5. Evaluators not participating in live-fire tables must pass the GST task they are evaluating within the same standard as above. Evaluators who are part of a firing crew must pass the remaining GST tasks pertaining to their platform prior to live-fire training. The unit's Master Gunner or designated noncommissioned officer in charge (NCOIC) must validate all evaluators.

PURPOSE OF TABLE I

1-6. The GST is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD FOR TABLE I

1-7. Table I is a hands-on, performance-based evaluation of basic gunnery skills to the Army-standard of knowledge or skill. It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE FOR TABLE I

1-8. Each Soldier assigned as a member of the crew has successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned.

1-9. The tasks evaluated in Table I provide the commander a means to certify the crew's basic weapons platform proficiency prior to live-fire training. It is a guide for identifying individual and crew weapons platform strengths and weaknesses on specific fundamentals. The commander and Master Gunner when structuring the unit's crew training program should use the results from the GST.

TASK, CONDITIONS, AND STANDARD FOR TABLE I

1-10. All personnel assigned to a vehicle crew, regardless of military occupational specialty (MOS), who intend to participate in any live-fire event, must pass Table 1, GST. To pass the GST, Soldiers must receive a GO on all tasks specific to the platform from which they will execute live-fire training (see figure 1-2).

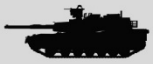


TABLE I, GUNNERY SKILLS TEST (GST)	
TASK	Demonstrate proficiency on weapon or platform specific gunnery- and safety-related skills.
CONDITIONS	Given the following: • Fully mission capable equipment, weapons, optics, and vehicles for the position assigned. • A certified evaluator. • Test and evaluation criteria.
STANDARD	The crew must successfully pass the GST using the evaluation standards between T-6 and T-execution of the combat training density.

LEGEND
T- TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]

Figure 1-2. Table I, gunnery skills test task, conditions, and standard

PLAN FOR TABLE I

1-11. This section details the resources needed for planning purposes. It includes general information on the following topics for consideration:

- Uniform—he minimum uniform requirements for the training event.
- Facilities—available facilities that support the training event.
- Training plan—the minimum tasks, execution guidelines or special instructions for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event. This includes dummy, drilled, inert (DDI) items that require coordination. This ammunition may have to be requested in the total ammunition management information system.
- Training aids, devices, simulators, simulations (TADSS)—any available training aids that directly support or augment the training event.

1-12. Units may require coordination with installation support activities such as the training support center for devices or training aids, or the ammunition supply point for DDI items. Each installation's policies and procedures vary. Units should reference their supporting installation's training standard operating procedure (SOP) or policies for detailed information.

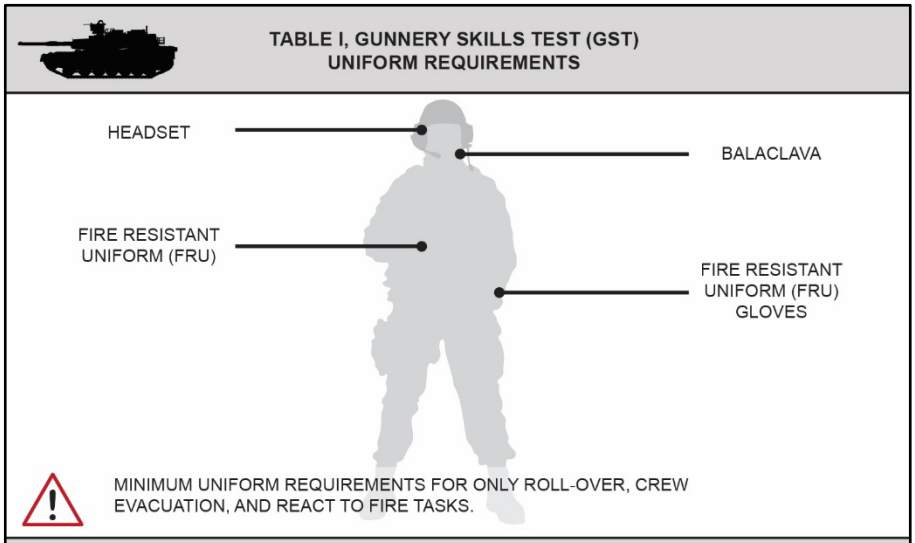
1-13. Units may require updating their signature cards, hand receipts, or other documentation to ensure the required resources are on order, secured, or drawn in advance of the training event. Additionally, installations may require additional training to draw or utilize some of the TADSS. Sufficient time for those installation or unit specific training requirements should be included in the planning process.

1-14. The battalion or squadron commander determines whether the GST is a diagnostic or a record test using the following considerations. The battalion or squadron commander may direct decentralized execution to the company or troop level. The purposes for GSTs include the following:

- Units perform diagnostic GST events quarterly to maintain proficiency when not within T-6 through T-execution of a live-fire event.
- A diagnostic GST identifies the unit's strengths and weaknesses.
- Diagnostic GSTs provide information for the direct-fire training program.
- Diagnostic GSTs serve to assess newly assigned personnel.
- A record GST allows commanders to meet table prerequisites to certify proficiency of Soldiers before conducting any live-fire training.

TABLE I UNIFORM

1-15. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor or gear inside the crew shelter or on their vehicle when using the tracking and manipulation boards (T&MBs) for testing. Figure 1-3 provides the minimum uniform training requirements for all simulations training, including the gate to live fire (GTLF).



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	3	0	3	3
0	NONE	NONE	**NONE**	NONE	NONE
1	PATROL CAP	VEST	GOGGLES	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	**FRU**		**HEADSET**	**FRU GLOVES**
4		FRU and SPALL VEST			

Figure 1-3. Uniform requirements for simulations training

TABLE I FACILITIES

1-16. Conduct Table I in the unit areas. Units will determine the amount of supporting equipment required to support the number of training stations used. An example (see figure 1-4) of the facilities needed to complete Table I are—

- A classroom—for testing vehicle and ammunition identification.
- The motor pool bay or company bay area with tables—for crew served weapons tasks.
- The motor pool or training area with armament accuracy checks and boresight panels for the primary armament collective tasks.
- The motor pool vehicle line—for vehicle safety tasks, and primary armament loading and ammunition handler tasks.

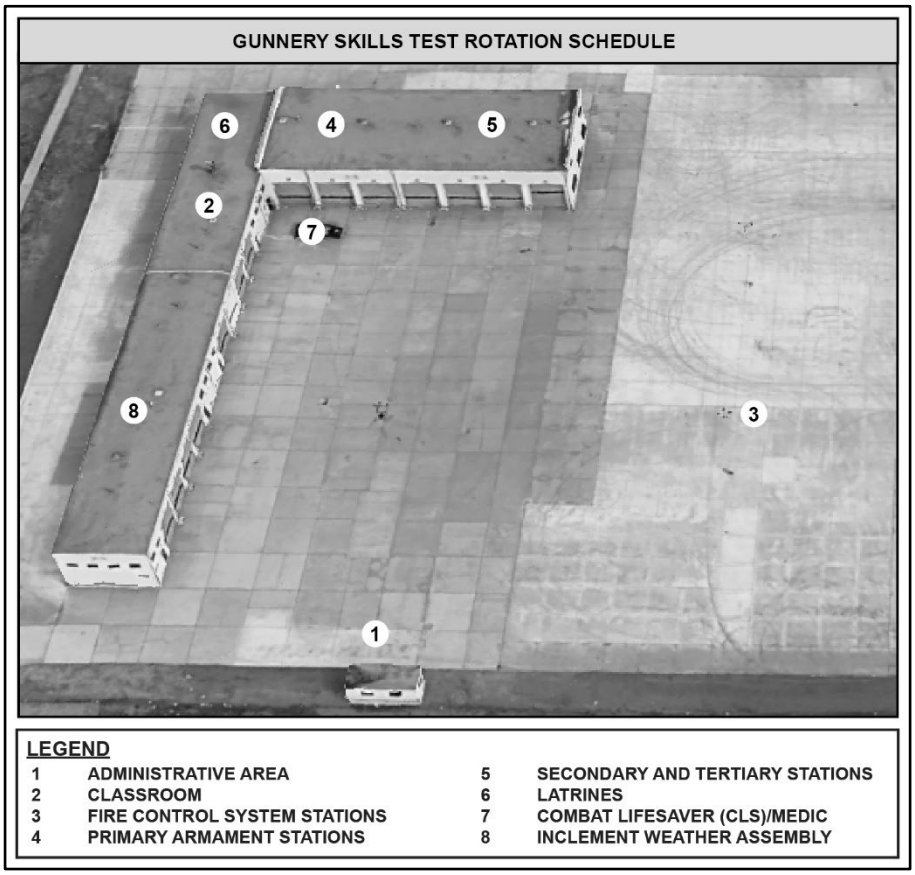
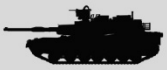


Figure 1-4. Motor pool layout, example

TABLE I TRAINING PLAN

1-17. Figure 1-5 shows the minimum tasks required for evaluation and successful completion of every crewmember prior to live fire. Units should maximize cross-training to provide additional flexibility for crew assignment and talent management.



GUNNERY SKILLS TEST GROUPS			
IDENTIFICATION			
	COMBAT IDENTIFICATION	AMMUNITION IDENTIFICATION	
PRIMARY ARMAMENT			
M256 CANNON, CLEAR	M256 CANNON, DROP BREECH	M256 CANNON, INSTALL BREECH	M256 CANNON, FUNCTION CHECK
	M256 CANNON, LOAD/RELOAD	M256 CANNON, FAILURE TO FIRE	
SECONDARY ARMAMENT			
M2A1, CLEAR	M2A1, DISASSEMBLE	M2A1, ASSEMBLE	M2A1, FUNCTION CHECK
	M2A1, LOAD	M2A1, IMMEDIATE ACTION	
TERTIARY ARMAMENT			
M240, CLEAR	M240, DISASSEMBLE	M240, ASSEMBLE	M240, FUNCTION CHECK
	M240, LOAD	M240, IMMEDIATE ACTION	
FIRE CONTROL SYSTEM			
COLLIMATE MBD	PLUMB AND SYNC GUNNERY CHECKS	BORESIGHT	MRS UPDATE
FORCE PROTECTION			
EVACUATE CREW MEMBERS	REACT TO FIRE HAZARD	ROLL-OVER DRILLS	REQUEST MEDEVAC

LEGEND

GST	GUNNERY SKILLS TEST	MEDEVAC	MEDICAL EVACUATION
MBD	MUZZLE BORESIGHT DEVICE	MRS	MUZZLE REFERENCE SENSOR

Figure 1-5. Table I, gunnery skills test, task requirements

TABLE I TIME AND THROUGHPUT

1-18. Plan GSTs to maximize training time and resources. The training unit must fully understand all evaluation procedures and criteria. Units are responsible for training and certifying the evaluators prior to conducting Table I as part of the 8-step training model.

1-19. To properly evaluate GSTs, units must consider the following factors:

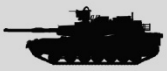
- Administrative requirements.
- Evaluator availability based on requirements and certifications.
- Test locations.
- Resource requirements.
- Time.
- Retraining.
- Retests.

1-20. Incorporate sufficient time for training, testing, retraining, and retesting into the plan based on the projected number of Soldiers to evaluate. The goal when taking the GST is to demonstrate proficiency on key tasks (individual and crew) to execute safe and effective live-fire events.

1-21. During the GST process, the Master Gunner may combine tasks at a given station to increase throughput and maximize available training time. The tasks of clearing, disassembling, assembling, conducting a function check, and loading and unloading a weapon system is an example of combining individual tasks into a single station. Combining tasks provides flexibility to Master Gunners or NCOICs in the planning and execution of their GST.

1-22. Crews in their assigned positions complete all collective tasks. Units may evaluate additional crewmembers in gunner or vehicle commander (VC) positions after their testing in the assigned position are complete. This provides additional flexibility to the commander to manage available talent within the organization and prepare for back-up manning possibilities.

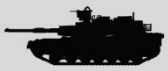
1-23. Figure 1-6 provides an example if only one vehicle is used for a notional test that requires 28 minutes per Soldier to complete. This includes the administrative and testing time for the task.



TEST TIME CALCULATIONS SINGLE VEHICLE	
STEP	**CALCULATION**
1	Multiply the total number of personnel to test by the total time to conduct the task (administrative time + test time). 50 personnel x 28 minutes = 1,400 minutes
2	Divide total test time minutes by 60 to convert to hours. 1,400 minutes/60 minutes per hour = 23.3 hours
3	Convert .33 into minutes by multiplying by 60. .33 x 60 = 19.8 (.6 or higher, round up) (20 minutes)
4	It will take 50 personnel **23 hours and 20 minutes** to conduct testing of a task that requires 28 minutes if ***only one vehicle*** is available for testing. This requires 3 complete 8-hour training days to complete.

Figure 1-6. Test time calculation with one vehicle, example

1-24. Figure 1-7 on page 10 provides an example if 3 testing vehicles are used for the same task that requires 28 minutes per Soldier to complete. This example includes all the administrative and testing time for the task.



TEST TIME CALCULATIONS MULTIPLE VEHICLES	
STEP	**CALCULATION**
1	Multiply the total number of personnel to test by the total time to conduct the task (administrative time + test time). 50 personnel x 28 minutes = 1,400 minutes (1 vehicle.)
2	Divide the total minutes of test time by the total number of vehicles used to test at that station. 1,400 minutes/3 testing vehicles = 466.6 minutes each (.6 or higher, round up) 467 minutes for 3 testing vehicles
3	Divide the total minutes from the test time with three vehicles by 60 to convert to hours. 467 minutes/60 minutes per hour = 7.78 hours
4	Convert the remainder after the whole number .78 into minutes by multiplying by 60. .78 hours x 60 minutes = 46.8 minutes (.6 or higher, round up) .78 hours = approximately 47 minutes.
5	It will take 50 personnel **7 hours and 47 minutes** to conduct testing of a task that is 28 minutes long if there are ***three testing vehicles*** available. Testing 50 personnel on this task with three testing vehicles can occur in one 8-hour training day.

Figure 1-7. Test time calculation with three vehicles, example

TABLE I TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS

1-25. Table I will require the unit to secure various TADSS, as well as DDI training munitions for training and testing. Figure 1-8 provides a list of those mandatory items for planning purposes.

1-26. Units must coordinate with their installation or supporting ammunition supply point for the DDI training munitions. The unit should coordinate for long-term hand receipt of those items to support weapons training throughout the fiscal year, not just during Table I.

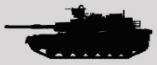


TABLE I, GUNNERY SKILLS TEST (GST)

TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS (TADSS) DRILLED, DUMMY, AND INERT (DDI) REQUIREMENTS

DODIC	NOMENCLATURE	REMARKS
AB39	CARTRIDGE, 7.62MM, LINKED, DDI, M63A1	Primary DDI, linked.
AB36	CARTRIDGE, CALIBER .50, LINKED, DDI, M2A1	
AB47	CARTRIDGE, 7.62MM, SINGLE ROUND, M63A1, DDI	May not include links. Unit must secure links to create 5- or 10-round short belts to support the training tasks.
AB48	CARTRIDGE, CALIBER .50, SINGLE ROUND, M2A1, DDI	

DEVICE	NOMENCLATURE
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T, or M1002, HEAT-TP-T
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER
SP-1	BORESIGHT PANEL
SP-2	ARMAMENT ACCURACY CHECK SOLUTION BOARD, M1A1/M1A2-SERIES

Note: Units will require 1 each dummy round by type for each testing station planned.

See TC 25-8, *Training Ranges*, for construction dimensions if not available through the installation Training Support Center or comparable activity. Units should consider coordination with the installation Range Operations for possible local manufacturing or requisitioning.

LEGEND

APFSDS-T	ARMOR PIERCING DISCARDING SABOT TRACER	HEAT-TP-T	HIGH EXPLOSIVE ANTITANK TARGET PRACTICE TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	MM	MILLIMETER
HEAT-MP-T	HIGH EXPLOSIVE ANTITANK MULTIPURPOSE TRACER	TC	TRAINING CIRCULAR
		TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT TRACER

Figure 1-8. Table I, TADSS requirements listing

PREPARE FOR TABLE I

1-27. The personnel, equipment, and material listed below are required for all tasks are—

- The primary evaluator, staff sergeant or above, who is responsible for administering the overall test.
  - This is usually the Master Gunner or designated NCOIC.
  - This evaluator may occupy a test station.
- The station evaluator, sergeant or above (one per test station).
- A test site as required by tasks.
- A stopwatch (one per evaluator).
- The criterion scoring checklist (one per Soldier).
- TC 3-20.31-1 (one per station).
- Dummy rounds (as required).

Note. The test administrative guide lists additional items, if required, for each particular station. This can include items such as desks, chairs, clipboards, pencils, and applicable references.

DETERMINE RESOURCES

1-28. The Master Gunner, or NCOIC, must determine equipment and resources needed to support the test site and conduct the testing to standard. The condition section of each individual station contains the equipment requirements. Examples of additional support requirements are—

- Vehicles with drivers.
- Transportation to and from the test site.
- Tents for warm-up and briefings.
- Tables for scoring.
- Chairs.
- Medical support.
- Class I support.
- TADSS.
- TC 3-20.31-1 and applicable publications for each testing station.

1-29. Once the needed resources have been identified, they must coordinate the use of personnel and equipment. This coordination usually is made through the chain of command and supply sergeant or the company or battalion operations staff officer, and the logistics staff officer.

IDENTIFY THE TEST SITE

1-30. Establish a test site that supports the testing of all stations. Units should consider the number of Soldiers for evaluation to ensure the selected site supports the throughput required.

CONSTRUCT A TEST STATION DIAGRAM (FLOW CHART)

1-31. Design a test station diagram or flow chart prior to any test rehearsal (see figure 1-9 on page 14). A diagram facilitates management and control of the test and aids in briefing Soldiers and evaluators. The diagram should include the following:

- Administrative area.
- Classrooms.
- Test stations.
- Retraining location.
- Movement schedule with direction of rotation, if applicable.
- Latrines.
- Aid station and warm-up tent, if available.

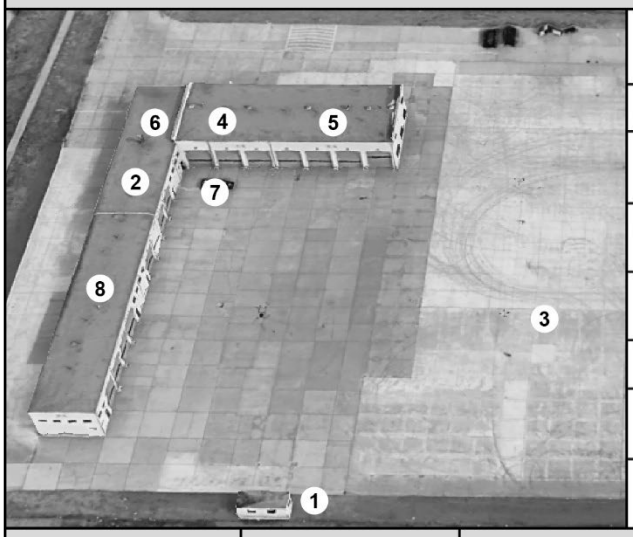
1-32. When developing a GST site, evaluators should pay particular attention to retraining vehicles and back-up vehicles.

1-33. Position retraining vehicles in such a way for use for any task requiring retraining or retesting, which is important when training, or testing boresight and zero. For example, if the personnel in the retraining vehicle cannot see the boresight panel or the vehicle is not at the correct distance, the retraining capability of that vehicle will not be effective.

1-34. Calculate back-up vehicles into the development of a GST site to address any critical failures of any primary vehicles dedicated to any task. In the event of a malfunction or catastrophic failure of a primary vehicle, the back-up vehicle is readily available to allow the GST to continue with limited loss of throughput.

1-35. Figure 1-9 on page 14 shows an example test station diagram with the test station groups. In this example, it provides a general timeline for execution at the company or troop level, rotating platoons through the test stations. This diagram is useful to brief the conduct of the event, briefing noncommissioned officer books for visitors, and in the administrative area.

GUNNERY SKILLS TEST ROTATION SCHEDULE



LEGEND

1	ADMINISTRATIVE AREA
2	CLASSROOM
3	FIRE CONTROL SYSTEM STATIONS
4	PRIMARY ARMAMENT STATIONS
5	SECONDARY AND TERTIARY STATIONS
6	LATRINES
7	COMBAT LIFESAVER (CLS)/MEDIC
8	INCLEMENT WEATHER ASSEMBLY

TIME	PLATOON	FUNCTIONAL SKILLS GROUP
0800 - 1000	ALL	IDENTIFICATION
1000 - 1200	1ST	PRIMARY ARMAMENT
	2ND	SECONDARY AND TERTIARY
	3RD	FIRE CONTROL SYSTEM
1300 - 1500	1ST	SECONDARY AND TERTIARY
	2ND	FIRE CONTROL SYSTEM
	3RD	PRIMARY ARMAMENT
1500 - 1700	1ST	FIRE CONTROL SYSTEM
	2ND	PRIMARY ARMAMENT
	3RD	SECONDARY AND TERTIARY
1700 - 1800	ALL	FORCE PROTECTION

Figure 1-9. Sample test station diagram

SELECT EVALUATORS

1-36. NCOICs should select evaluators as far in advance as possible. This gives the NCOIC time to train, to select the most qualified personnel available, and to coordinate with other units, if necessary. Early selections, in turn, allow evaluators time to prepare. If the NCOIC must draw on resources from outside their unit, they should request assistance from their company command group to make this coordination to ensure proper channel utilization for their request. After the evaluators have been selected, the NCOIC briefs them on their duties and responsibilities, the test schedule and location (using a flow chart or test station diagram), and the station they will be testing. The NCOIC must provide training and testing dates to certify the proficiency of the evaluators.

TEST EVALUATORS

1-37. Evaluators must be technically proficient in performing all tasks to standard. Typically, the GST occurs over multiple training days. Due to personnel requirements and availability issues, training, testing and certification of each evaluator on the specific GST station they are to evaluate occurs prior to the unit testing date. Each evaluator should test on all GST stations in case another evaluator becomes unavailable during testing time.

CONDUCT A REHEARSAL

1-38. Units must rehearse the test before administering it because of the size and scope. Units should conduct the rehearsal at the test site with all evaluators present. The NCOIC should check each station to make sure the evaluator is aware of their duties and responsibilities, the stations are set up correctly with all required equipment, support and test materials are on hand, and execution of each station is according to the test administrative guides.

1-39. The rehearsal day also may serve to train, test, and certify all evaluators, which also satisfies their live-fire GST prerequisite.

EXECUTE TABLE I

1-40. Before the Soldiers arrive, evaluators set up the equipment and materials needed at each station. The evaluator should have a crew roster by vehicle bumper number and position at their station to track the Soldiers. Evaluators provide the Soldiers with all the necessary materials and equipment as outlined in this chapter and in the test administrative guide for each station.

1-41. The evaluator must read the instructions for their assigned station exactly as written in the guide. The evaluator must use the criteria-scoring checklist provided for each task to evaluate each Soldier's performance to standard. Once testing is complete, the evaluator records the results on DA Form 7758 (*Gunnery Skills Test [GST] Individual Roll-up*). As each Soldier finishes or the time limit is up, whichever occurs first, the evaluator checks the Soldier's performance as either GO or NO-GO, informs them of their performance on that task, and directs them to the next station or to retraining.

1-42. The company Master Gunner or designated NCOIC, is responsible for completing DA Form 7758 and maintaining platoon and company roll-up information. They ensure that all collected roll-ups are submitted to the next higher headquarters.

1-43. Before testing, the NCOIC must make sure the stations are set up and all equipment and support requirements are available. The NCOIC also must brief the Soldiers on safety, rotational order, hours of testing, and location of the stations. Preferably, Soldiers should separate into small groups or crews and be assigned to initial test stations. During testing, the NCOIC will spot check each station to ensure the task standard and attendance rosters, with correctly annotated scorecards, are being maintained.

ASSESS—TABLE I

1-44. After action reviews (AARs), are the key to success in any training event, as well as improving the event for future iterations. There are two primary AARs for Table I: testing Soldier or crew AAR and the Table I execution AAR. Evaluators must conduct an AAR after the completion of each task for each Soldier or crew, and for the NCOIC of Table I upon completion of unit training. Without these immediate AARs, valuable lessons for the Soldier, crew, and unit can be lost.

SOLDIER INDIVIDUAL TASK AARS

1-45. At the completion of each task, the evaluator will provide feedback to each Soldier on their performance at the station. Whether a Soldier passes or fails to complete a GST task, the evaluator should be prepared to offer guidance on how the Soldier can improve their skills.

TABLE I–EVENT AFTER ACTION REVIEW

1-46. The battalion or brigade Master Gunner, designated NCOIC, or operations sergeant major should conduct an AAR to help the NCOIC understand their actions and interactions during the conduct of the GST. The AAR should be conducted prior to any debrief to the unit commander and should consist of a discussion of the strengths and weaknesses of the training event. This allows the NCOIC to debrief the commander with accurate training results and recommendations to improve the testing process for future events.

1-47. The results of the GST provide the commander with additional quantifiable testing information to assess unit proficiency. Combined and integrate the GST results and AAR comments to improve future training, testing, or evaluation.

PREPARE THE DEBRIEF

1-48. Once the test is complete, the NCOIC prepares a debriefing on the GST results for the commander. Units retain this information for training records and maintain the information throughout the weapons training density. The NCOIC collects the Soldier's scorecards as soon as they complete testing and prior to anyone leaving the test site. The evaluators can provide additional information about a Soldier's test performance. After all data is collected, the NCOIC prepares a summary of results, interpreting information from test results to determine the strengths and weaknesses of the unit. This report will, at a minimum, contain the following data:

- A roster by duty position of each Soldier tested.
- The scores of each Soldier tested.
- The percentage of Soldiers passing the GST.
- Percentage of GOs per station.
- Percentage of NO-GOs per station.

CREW GUNNERY FOLDER RECORDS—TABLE I

1-49. Once testing is complete, the evaluator records the results on DA Form 7758 (see figure 1-10) and provides that form to the unit Master Gunner for the crew's gunnery folder. Retain this form for 12 months. The GST is a live-fire prerequisite, the roll-up information must be maintained by the unit Master Gunner, designated NCOIC, or S-3 representative for two consecutive gunneries.

GUNNERY SKILLS TEST (GST) INDIVIDUAL ROLL-UP
For use of this form see TC 3-20.31-1; the proponent agency is TRADOC.

1. NAME	2. RANK	3. POSITION
SGT Hernandez, Isabella S.	SGT	GUNNER
4. UNIT	**5. PLATOON**	**6. VEHICLE PLATFORM TYPE**
D CO, 1-99 CAV	1ST	M1A2V3

7. TASK NUMBER	8. DATE: 15 AUG 23			9. DATE: 23 AUG 23			10. DATE		
	Score Go/ No-Go	Score Initials	Remarks	Score Go/ No-Go	Score Initials	Remarks	Score Go/ No-Go	Score Initials	Remarks
1. Ammunition Identification	GO	K							
2. Combat Identification	NO GO	K		GO	JW				
3. Main Gun C / D / A / FC / L	GO	K							
4. Reload Main Gun	GO	K							
5. Immediate Action Main Gun	GO	K							
6. M2A1 Machine Gun	NO GO	K		GO	JW				
7. M240 Machine Gun	GO	K							
8. Boresight	GO	K							
9. Roll-Over Drills	GO	K							
10.									
11.									
12.									
13.									
14.									
15.									

DA FORM 7758, SEP 2015 APD LC v1.00

SAMPLE

Figure 1-10. DA Form 7758, GST individual roll-up

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE I

1-50. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the Army Training Network (ATN) such as the small unit leader tool (SULT) and the digital job book (DJB). These systems interface directly with the Digital Training Management System (DTMS) to record training and evaluation results.

Note. Leaders must be granted access by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the individual critical task list (ICTL) that are trained and tested during the training event.

1-51. From within the SULT, the authorized leader is enabled to view, maintain, and update:

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting training and evaluation outlines (T&EOs) (access dependent on proponent distribution restrictions).

1-52. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

1-53. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS—TABLE I

1-54. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

1-55. Tasks that are included within this event for the crew are found in figure 1-11 through page 23. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.

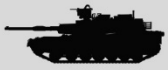


TABLE I
GUNNERY SKILLS TEST
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-122-1012	Perform Operator Maintenance on an M240 Series Machine Gun	Yes	Yes	Yes	Yes
171-122-1061	Maintain Property Accountability	Yes	Yes	Yes	Yes
171-123-1021	Prepare Ammunition for Stowing			Yes	Yes
171-123-1090	Perform Preventive Maintenance on Basic Issue Items (BII)	Yes	Yes	Yes	Yes
171-123-3001	Supervise Personnel Handling Ammunition	Yes			
171-126-1040	Evacuate a Wounded Crewman from an M1-Series Tank	Yes	Yes	Yes	Yes
171-126-1125	Perform Main Gun Misfire Procedures on an M1-Series Tank	Yes	Yes	Yes	Yes
171-131-2000	Supervise Boresighting and Calibration Checks, Screening and Proofing Test	Yes			
171-131-2009	Perform Detailed Disassembly/ Assembly of the M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2010	Perform Detailed Disassembly and Assembly of the M2 Heavy Barrel (HB) Machine Gun	Yes	Yes	Yes	Yes
171-131-2014	Perform Detailed Disassembly-Assembly of an M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-2017	Identify Ammunition Container Markings	Yes	Yes	Yes	Yes
171-131-2018	Identify the Components of Main Gun and Small Arms Ammunition	Yes	Yes	Yes	Yes

Figure 1-11. Table I, GST, individual tasks touch points



TABLE I
GUNNERY SKILLS TEST
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-131-2075	Repair Malfunctions of M2 HB .50 Caliber Machine Gun with M10 Charger	Yes	Yes	Yes	Yes
171-131-2076	Evaluate Factors of Gun Tube Serviceability for the M256A1 120MM Main Gun	Yes	Yes		
171-131-2077	Repair Malfunctions of M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2078	Repair Malfunctions of M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-138-0015	Conduct Advanced Vehicle Identification	Yes	Yes	Yes	Yes
171-138-0017	Identify Restricted and Suspended Ammunition	Yes	Yes	Yes	Yes
171-138-0022	Describe Target Acquisition Methods	Yes	Yes		
171-138-0028	Identify Combat Vehicles and Aircraft	Yes	Yes	Yes	Yes
171-19K-1021	Extinguish a Fire on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-1023	Prepare the Driver's Station for Operation on an M1A2 SEP Tank			Yes	
171-19K-1024	Prepare the Loader's Station for Operation on an M1A2 SEP Tank				Yes
171-19K-1025	Operate the Engine on an M1A2 SEP Tank			Yes	
171-19K-1026	Secure the Loader's Station on an M1A2 SEP Tank				Yes
171-19K-1040	Secure the Driver's Station on an M1-Series Tank			Yes	
171-19K-1222	Mount a Caliber .50 Browning M2 Series Machine Gun on an M1A2 SEP Tank	Yes	Yes	Yes	Yes

Figure 1-11. Table I, GST, individual tasks touch points (continued)

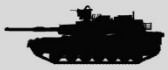


TABLE I
GUNNERY SKILLS TEST
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1237	Remove the Loader's M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1238	Unload an M250 Grenade Launcher on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1239	Unload the 120-MM Main Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1240	Load an M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1241	Unload an M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1243	Load an M250 Grenade Launcher on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1244	Load the 120-MM Main Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1250	Stow Ammunition on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1251	Service The 120-mm Main Gun On An M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1280	Inspect 120-MM Ammunition for Serviceability	Yes	Yes	Yes	Yes
171-19K-1281	Identify 120MM Main Gun Ammunition	Yes	Yes	Yes	Yes
171-19K-2001	Perform Operator Maintenance on the 120-MM Breechblock Assembly on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-2002	Supervise Preventive Maintenance Checks and Services (PMCS) on an M1-Series Tank	Yes			

Figure 1-11. Table I, GST, individual tasks touch points (continued)



TABLE I
GUNNERY SKILLS TEST
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-2006	Prepare a Tank Sketch Card for an M1-Series Tank		Yes		
171-19K-2200	Prepare the Gunner's Station for Operation on an M1A2 SEP Tank		Yes		
171-19K-2201	Secure the Gunner's Station on an M1A2 SEP Tank		Yes		
171-19K-2203	Operate the Improved Gunner's Control Display Panel (iGCDP) on an M1A2 SEP Tank	Yes			
171-19K-2237	Conduct Alternative Range Determinations on an M1 Series Tank	Yes	Yes		
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3217	Collimate the M26A1, M27A1, or M27A3 Muzzle Boresight Device (MBD)	Yes	Yes	Yes	Yes
171-19K-3221	Perform Special Gunnery Checks on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-3223	Direct Main Gun Failure-To-Fire Procedures on an M1A2 SEP Tank	Yes			
171-19K-3236	Perform Plumb and Synchronization of an M1A2 SEP Tank Fire Control System	Yes	Yes		
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0083	Enforce Rules of Engagement (ROE)	Yes	Yes	Yes	Yes
171-309-0650	Inspect DA Form 5988-E or DA Form 2404	Yes			

Figure 1-11. Table I, GST, individual tasks touch points (continued)

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Chapter 2

Table II—Situational Training Exercise–Virtual

Crew platform, Table II, Situational Training Exercise-Virtual (STX-V) is a simulations-based demonstration of performance of employing the element to its primary capabilities. Table II itself is the culminating evaluation of the crew after completing the appropriate simulations training strategy within the simulation system itself. Table II is a replication (simulation) of the crew's live-fire qualification course. It provides a measured demonstration of performance prior to any live-fire event for the element.

OVERVIEW OF TABLE II

2-1. The purpose of crew platform, Table II, STX-V, is to ensure the crew possesses the skills and experience necessary to execute live-fire events and exercises safely, which implies a functional understanding of the engagement process, fire commands, engagement techniques, and lethality. This is the culminating test of their abilities and skills on their platform in simulation after completing the appropriate simulations training plan.

LIVE-FIRE PREREQUISITE

Table II is a prerequisite for any live-fire event, including zero procedures, sub-caliber or in-bore training, or any live-fire maintenance procedure. Units must maintain the training records and results, for the longer of 12 months, or through the next testing event.

2-2. Table II is completed after successful advancement in the approved simulation system's training model. Table II is the GLTF exercise within that training system which simulates the qualification course of fire. How Table II is tied to the other training events within the crew training strategy is shown in figure 2-1 on page 26.

CREW TABLE II	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL Live	*CRAWL* Virtual	*WALK* Live TADSS	*RUN* Live-Fire	*RUN* Live-Fire	*RUN* Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

Note: Table I, II, and III can be conducted in any order within the T-6 to T-X time frame. This provides flexibility when developing the unit training plan.

LEGEND

GST	GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM	T-	TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]
QUAL	QUALIFICATION	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS
STX	SITUATIONAL TRAINING EXERCISE		
STX-V	SITUATIONAL TRAINING EXERCISE-VIRTUAL		

Figure 2-1. Table II, STX-V

PURPOSE OF TABLE II

2-3. Table II, STX-V, is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD FOR TABLE II

2-4. Table II is a hands-on, performance-based evaluation of basic gunnery skills to the Army-standard of knowledge or skill in a simulator system (crew shelter). It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE FOR TABLE II

2-5. The VC and gunner assigned as a crew have successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned.

2-6. The tasks evaluated in Table II provide the commander a means to certify the crew's basic weapons platform proficiency prior to live-fire training. It is used as a guide for identifying individual and crew weapons platform strengths and weaknesses on specific engagement techniques and employment of the vehicle's fire control system capabilities and enablers.

TASK, CONDITIONS, AND STANDARD FOR TABLE II

2-7. All crews must complete Table II, STX-V during T-6 to T-week of the upcoming live-fire training density. Figure 2-2 provides the task, conditions, and standard for the crews to achieve.



TABLE II SITUATIONAL TRAINING EXERCISE - VIRTUAL	
TASK	Engage and destroy stationary and moving targets from a stationary or moving vehicle in a simulated combat environment.
CONDITIONS	Given the following: • Operational simulator. • An instructor operator (I/O) that is a certified vehicle crew evaluator (VCE). • A prescribed gate to live fire exercise, which includes an accurate replication of Table VI, *Qualification*.
STANDARD	The crew must successfully pass the GTLF exercise using the evaluation standards of TC 3-20.31 crew evaluation between T-6 and T-week.

LEGEND
GTLF GATE TO LIVE FIRE TC TRAINING CIRCULAR

Figure 2-2. Table II, situational training exercise–virtual

PLAN FOR TABLE II

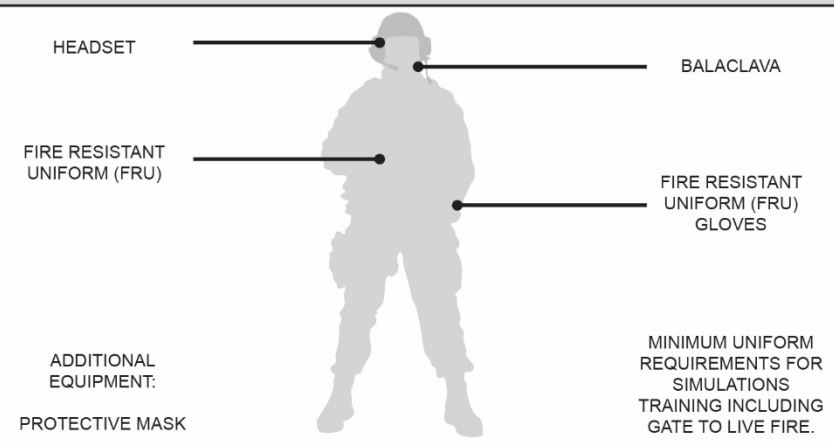
2-8. This section details the resources needed for planning purposes. Planning requires consideration of the following topics:

- Uniform—the minimum uniform requirements for the training event.
- Facilities—available facilities that support the training event.
- Crew Experience—units must consider their crew's experience (VC and gunner) when creating the plan for Table II. The experience of the crew directly affects the throughput of the event, and drives the engagement scenarios development, when required.
- Training plan—the minimum tasks, sequence, and method of execution for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event. This includes DDI items that require coordination.
- TADSS—any available training aids that directly support or augment the training event.

UNIFORM FOR TABLE II

2-9. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor or gear inside the crew shelter or on their vehicle when using the T&MBs for testing. Figure 2-3 provides the minimum uniform training requirements for all simulations training, including the GTLF.

TABLE II
SITUATIONAL TRAINING EXERCISE – VIRTUAL
UNIFORM REQUIREMENTS

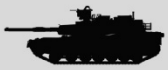


LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	3	0	3	3
0	NONE	NONE	**NONE**	NONE	NONE
1	PATROL CAP	VEST	GOGGLES	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	**FRU**		**HEADSET**	**FRU GLOVES**
4		FRU and SPALL VEST			

Figure 2-3. Uniform requirements for simulations training

FACILITIES FOR TABLE II

2-10. Table II is conducted in an approved primary simulation system. Unit training in austere environment without access to a primary device may conduct training with an approved alternate device. Figure 2-4 shows the primary and alternate facilities or methods to complete STX-V.



AUTHORIZED SIMULATION SYSTEMS
HEAVY TANK

DEVICE	PRIMARY	ALTERNATE	REMARKS
ACOFT	X		System generated GTLF.
AGTS	X		System generated GTLF.
DAGTS		X	System generated GTLF.
TAGTS		X	System generated GTLF.
C-AGTS	X		System generated GTLF.
ET	X		No GTLF. Must use Crew Shelter.
GfT		X	Master Gunner developed GTLF.
TRACKING AND MANIPULATION BOARDS		X	Master Gunner developed GTLF. Requires use of a comparable gunner's power control handle for turret movement in azimuth and elevation for engagements. Use of Auxiliary controls are not required but should be used if available.

LEGEND

ACOFT	ABRAMS CONDUCT OF FIRE TRAINER	DAGTS	DEPLOYABLE ADVANCED GUNNERY TRAINING SYSTEM
AGTS	ADVANCED GUNNERY TRAINING SYSTEM	ET	EMBEDDED TRAINING
C-AGTS	COMPUTERIZED-ADVANCED GUNNERY TRAINING SYSTEM	GfT	GAMES FOR TRAINING SYSTEMS
		GTLF	GATE TO LIVE FIRE

Figure 2-4. Table II primary and alternate simulations systems

2-11. Units may use the embedded training system, if equipped, for Table II if not equipped with the advanced gunnery training system. Units provided the advanced gunnery training system may not use the embedded trainer system to meet their Table II requirements; however, they are encouraged to use embedded trainer systems in conjunction with the advanced gunnery training system for sustainment and cross training of their crews.

Simulations Requirements

2-12. If conducting Table II, GTLF virtually, the use of a precision gunnery trainer is required. This ensures that platform systems, weapons functionality, and ballistics are

accurately represented to the crew to prevent crews from developing any poor habits that will affect lethality on their platform.

Precision Gunnery Trainer

2-13. A precision gunnery trainer is a system, stand-alone or embedded, comprised of virtual environment and physical components which enables the crew to engage targets using all modes of their vehicle's fire control system. Ballistic solutions and effects, kinematic lead, stabilization, target handoff, target designation, sight capabilities, and limitations are all accurately represented in the system. The system must accurately represent the form, fit, and function of the crew area within the vehicle. It incorporates an AAR capability which allows the evaluator and crewmembers to see the placement of each round in relation to the target, its corresponding data, and their engagement score in accordance with (IAW) applicable platform manual. While the primary purpose of the system is to train the crew on the direct fire engagement process, the real feel of switches, levers, hand stations, sights, and the room available to maneuver inside the vehicle is a critical component of basic crew proficiency.

Collective Virtual Trainer

2-14. A virtual collective trainer is a system, comprised of multiple platforms or vehicles replicated within the virtual environment. The system should have the ability to replicate air, ground, and dismounted systems and soldiers. It is comprised of both physical and virtual components which accurately represent the equipment Soldiers and crewmembers operate with. The system must enable collective units to train "shoot-move-communicate" in a virtual battlespace that accurate represents their operating environment where the commander can evaluate their ability to complete tactical tasks to standard. It incorporates a recording and AAR capability to enable commanders to review, analyze, and evaluate the performance of their units. It must give commanders the ability to incorporate branches, drivers, and sequels into their mission execution. The system also must contain the ability for the leader to command and control their training units within the virtual environment.

2-15. There are several different types of virtual trainers. Figure 2-5 on page 32 lists the capabilities for precision gunnery and collective virtual trainers.

VIRTUAL TRAINER CAPABILITIES		
CAPABILITY	PRECISION GUNNERY TRAINER	COLLECTIVE TRAINER
Accurate ammo ballistics and effects	X	X
I/O Station with real time thru-sight view and scenario control	X	
System Generated AAR	X	X
Gunnery Specific AAR capability; engagement timing, scoring, crew cuts, score sheet creation	X	
Presentation of engagements and degraded FCS modes IAW Crew Platform Qualification	X	
Scenario progression using crawl-walk-run methodology to build crew member proficiency	X	
Fully functioning fire control system	X	X
Form/fit/function of fire control system related switches/buttons/levers, handles and crew positions	X	X
User specified ammunition combat load		X
Standard platform ammunition combat load	X	X
Simulated ammunition reload times IAW Platform Crew Qualification Gunnery Skills Testing		X
Simulated own platform battle damage		X
Table-Top Configuration (if issued)	X	X
Integration of multiple vehicles (greater than 1)		X
Driver station		X
Free range maneuver through the virtual environment		X

LEGEND
AAR AFTER ACTION REVIEW
FCS FIRE CONTROL SYSTEM
IAW IN ACCORDANCE WITH
I/O INSTRUCTOR/OPERATOR

Figure 2-5. Virtual trainer capabilities, example

2-16. Any simulations trainer should present the crews with a logical progression of increasingly difficult scenarios and threat presentations. This progression should continuously build on basic crew engagement skills and techniques, eventually culminating in a GTLF qualification table that represents the platforms live-fire qualification scenario. Figure 2-6 shows the required progression matrix for precision gunnery trainers.

PRECISION GUNNERY TRAINER EXERCISE PROGRESSION THREAT PRESENTATION				
PLATFORM CONDITIONS	*SINGLE TARGET*	*MULTIPLE TARGETS*	*MULTIPLE TARGETS WITH DELAY*	*COMPLEX TARGETS WITH DELAY*
SINGLE WEAPON ***DEFENSE***	STA	STA/STA	STA/STA STA	STA/STA STA/STA
SINGLE WEAPON ***OFFENSE***	STA	STA/STA	STA/STA STA	STA/STA STA/STA
SINGLE WEAPON ***DEFENSE***	MOV	MOV/MOV	MOV/MOV MOV	MOV/MOV MOV/MOV
SINGLE WEAPON ***OFFENSE***	MOV	MOV/MOV	MOV/MOV MOV	MOV/MOV MOV/MOV
SINGLE WEAPON ***DEFENSE***		STA/MOV	STA/MOV STA	STA/MOV STA/MOV
SINGLE WEAPON ***OFFENSE***		STA/MOV	STA/MOV STA	STA/MOV STA/MOV
CHANGE OF WEAPON/AMMO ***DEFENSE***		STA/MOV	STA/MOV STA	STA/MOV STA/MOV
CHANGE OF WEAPON/AMMO ***OFFENSE***		STA/MOV	STA/MOV STA	STA/MOV STA/MOV
COMMANDER	STA	STA/MOV	STA/MOV MOV	STA/MOV STA/MOV
DEGRADED	STA	STA/MOV	STA/MOV MOV	STA/MOV STA/MOV

LEGEND
AMMO AMMUNITION **STA STATIONARY**
MOV MOVING

Figure 2-6. Precision gunnery trainer exercise progression, example

CREW EXPERIENCE

2-17. Units that develop scenarios on games for training systems must consider the level of experience of their training crews. Crews are evaluated on their experience by position and are identified in paragraphs 2-18 through 2-20.

New Crew

2-18. A crew where the VC and gunner is new to their position on the vehicle. New crews begin training in the simulations and gaming systems at the entry level to build crew coordination, engagement skills, and cohesion.

Turbulent Crew

2-19. A crew where both the VC and gunner have previous experience and have qualified within the last 12 months in those positions but have not worked together as a crew. Assessment of these crews for proper placement within the simulation's training management system is required. Typically, the assessment shows they should begin training at the lowest common training scenario both the gunner and VC have successfully completed to maximize their training time. For crews using gaming systems, the unit must develop and execute scenarios that are more difficult for the crew. This ensures the crews remain challenged in the simulations and gaming system and continue to learn direct fire engagement techniques and procedures.

Experienced Crew

2-20. The VC and gunner previously qualified within the past 12 months. Crews using simulations must continue training through the next GTLF prior to executing any live-fire event. For crews using gaming systems, the unit must develop and execute scenarios that are more challenging for the crew.

Note. Crews that have previously qualified cannot restart the simulations training program. They must continue training within the simulation system to the next higher GTLF.

2-21. To increase crew experience during the execution of the training strategy, units use certified VCEs. Properly trained and certified VCEs are an asset to the commander. Performing duties as a VCE in any capacity builds the experience of the VCE as well. It exposes the VCE to dozens of engagements to review in depth during the evaluation process that would normally require the VCE to fire.

TRAINING PLAN FOR TABLE II

2-22. Table II, STX-V, is a simulations-based exercise that replicates the engagements of the Table VI, Qualification. Within a crew shelter simulator system is a specific scenario set that replicates the training requirements and engagement skills of the qualification course of fire.

2-23. Successful completion of prescribed exercise or series of exercises in the simulator is mandatory as a prerequisite to firing live ammunition. These exercises evaluate the crew's proficiency employing its weapon system or platform against common threats, provide engagements under chemical, biological, radiological, and nuclear conditions, enhance and evaluate crew coordination, evaluate crew drills, and hone the crew's engagement techniques.

System Generated Gate to Live-Fire Scenarios

2-24. The primary simulation system module automatically generates the scenario for Table II. The system provides the scenarios after successful completion of the simulations training strategy through the minimum training requirements for live fire. This is accomplished through the system's matrix movement rules, reticle aim requirements, and system management ratings by crew.

2-25. For units utilizing the games for training system, the simulations center will develop and build the scenario for the GTLF event. The unit should proof the scenario, provide appropriate administrative prompts and tactical scripts (platoon fire commands) for each engagement, and other instructions for the crews and their evaluators to follow. These should be similar to the live-fire Table VI event and will serve as a verification of those scripts prior live-fire training.

2-26. Figure 2-7 on page 36 shows the minimum engagements for system generated simulations or the baseline standard engagements for unit created scenarios. A guideline for creating day and night phase scenarios using these engagements can be found in the crew platform training publication, TC 3-20.31.

TABLE II, SIMULATIONS GATE TO LIVE FIRE
SYSTEM GENERATED SCENARIO REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
20	VEHICLE COMMANDER	OFFENSE	VC	SABOT	H1T-FRT	STA	1,400m	11
			VC	SABOT	H1T-MOV	MOV	1,600m	13
21	MACHINE GUN	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	L2T-MOV	MOV	800m	10
22	MACHINE GUN	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	COAX	L2T-FRT	STA	800m	12
			GNR	COAX	E(7)FRT	STA	800m	13
23	MAIN GUN	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,400m	7
			GNR	SABOT	H1T-FRT	STA	1,600m	7
24	MAIN GUN	OFFENSE	GNR	MPAT	M1T-FRT	STA	1,400m	12
			GNR	MPAT	M1T-MOV	MOV	1,600m	14
25	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	MPAT	M1T-FRT	STA	1,600m	8
			GNR	SABOT	H1T-FRT	STA	2,000m	8
			GNR	SABOT	H1T-MOV	MOV	2,200m	12
26	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	SABOT	H1T-FRT	STA	1,400m	11
			GNR	COAX	E(7)FRT	STA	600m	12
			GNR	SABOT	H1T-MOV	MOV	1,400m	13
			GNR	MPAT	M1T-MOV	MOV	1,600m	14
27	DEGRADED	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,200m	6
			GNR	SABOT	H1T-MOV	MOV	1,600m	9
28	DEGRADED	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	SABOT	H1T-FRT	STA	1,600m	11
29	SIMULTANEOUS	DEFENSE	GNR	COAX	E(7)FRT	STA	600m	8
			VC	CAL .50	M2T-FRT	STA	1,600m	11
			GNR	MPAT	M1T-FRT	STA	1,600m	8

LEGEND

CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK
EM	ENGAGEMENT MODIFIER	STA	STATIONARY
GNR	GUNNER	VC	VEHICLE COMMANDER

Figure 2-7. Table II, STX-V, GTLF

Unit Developed Gate to Live-Fire Scenarios

2-27. Each of the scenarios developed must follow the engagement and scenario guidelines found in this manual and in TC 3-20.31. Each scenario provides five engagements for day (unlimited visibility) and five engagements for night (limited visibility). Units must focus on manipulation of the weapon's thermal optic and allow crews to use the thermal sensors during the day engagements. If the system can provide degraded modes of operation, a minimum of three engagements should focus on those skills.

2-28. Figure 2-8 shows the environmental conditions, platform capabilities, and threat conditions that are replicated within simulation systems. Units building their own training plans within the simulation system must exercise each of the components listed to create a comprehensive training plan for their crews.

ENVIRONMENTAL CONDITIONS	PLATFORM CONDITIONS/ CAPABILITIES	THREAT CONDITIONS
VISIBILITY • *DAY* • *NIGHT* • *BATTLEFIELD*	POSTURE • *OFFENSE* • *DEFENSE*	TYPE • *DISMOUNT* • *FORTIFICATION* • *LIGHT ARMOR* • *MEDIUM ARMOR* • *ARMORED*
CHEMICAL	WEAPON SYSTEM • *PRIMARY* • *SECONDARY* • *TERTIARY*	RANGE TO TARGET • *SHORT RANGE* • *MEDIUM RANGE* • *LONG RANGE*
	FIRE CONTROL SYSTEM • *FULLY MISSION CAPABLE (FMC)* • *DEGRADED*	POSTURE • *STATIONARY* • *MOVING* • *EVASIVE*
	AMMUNITION • *KINETIC ENERGY* • *CHEMICAL ENERGY* • *MULTIPURPOSE* • *SPECIAL PURPOSE*	THREAT COMPOSITION • *SINGLE* • *DOUBLE* • *THREE OR MORE*
	COMPLEX ENGAGEMENT • *CHANGE OF WEAPON* • *CHANGE OF AMMO* • *SIMULTANEOUS*	

Figure 2-8. Simulation system conditions and capabilities replicated

2-29. When the simulation system does not provide a generated scenario for the GTLF, the unit Master Gunner is required to create the scenario based on the unit's upcoming Table VI, qualification, scenario as the baseline (start point). Units should revise the engagements based on past performance and the experience level of the VC and gunner combinations within the formation.

2-30. Figure 2-9 provides an example of difficulty modifications that the unit Master Gunner can consider integrating into the unit-developed scenario based on the experience level of the crew. Units may utilize a different scenario for each crew's level of experience to ensure the training and evaluation pushes them to continuously challenge the crews with increased rigor, speed, and changing conditions.

UNIT DEVELOPED SCENARIO
DIFFICULTY MODIFICATIONS TO ENGAGEMENTS BASED ON CREW EXPERIENCE

ENGAGEMENT/TARGET CONDITIONS	NEW	TURBULENT	EXPERIENCED
Extended Range Primary armament	X	X	X
Extended Range Machine Gun	X	X	X
Increased CBRN		X	X
Increased Offensive Engagements		X	X
Defilade and Turret Targets		X	X
Increased Degraded Conditions			X
Evasive Moving Targets			X
3/4 Scale Targetry			X
Increased Troop, RPG and Sniper Targets			X

Note: These are guides for the Master Gunner developing scenarios within a capable simulations system. These should be altered based on past training performance, crew member experience, and training trends within the organization.

LEGEND
CBRN CHEMICAL BIOLOGICAL RADIOLOGICAL NUCLEAR
RPG ROCKET PROPELLED GRENADE

Figure 2-9. Scenario difficulty modifications by crew experience, example

Simulation System Instructor/Operators

2-31. Units are required to use certified instructor/operators on the simulation systems they plan on using. Those instructor/operators are required to receive the system training on their system. They must be certified VCEs as outlined in TC 3-20.31.

Instructor/Operators must be VCE Certified

A certified VCE or Master Gunner evaluates all simulations and games for training GTLF exercises. This reinforces the VCE training program, provides certified VCEs with additional practical application and experience, and ensures the crews receive accurate AARs comparable to those they should receive on the firing range.

2-32. Crews must successfully pass all scenarios according to the standards in TC 3-20.31. The unit's VCEs evaluate all crews IAW:

- TC 3-20.31.
- TC 3-20.31-043.

Crew Records

2-33. Units must maintain the training records for Table II, including the simulation system unit back-up and the DA Form 8265 (*Common Crew Score Sheet*) and DA Form 8265-1 (*Common Crew Roll-Up*) for each crew completing their GTLF for 12 months. Some primary devices only provide a unit roll-up with summary of each crew's performance.

2-34. Where the simulation system does not generate the DA Form 8265 and DA Form 8265-1 forms as an automatic output, the instructor evaluators are responsible for completing those forms during the GTLF scenarios.

TIME AND THROUGHPUT FOR TABLE II

2-35. Simulations have specific authorized hours per month, shown in figure 2-10. These are the standard simulations-use requirements for all crew platforms.

	SIMULATION HOUR AUTHORIZATIONS PER CREW	
	ACTIVE COMPONENT (AC)	RESERVE COMPONENT (RC)
MONTHLY	4	2
QUARTERLY	12	6
Note: The simulation system hours authorized are designed to include sufficient time to move steadily through the training model within the system where each crew is presented the Gate To Live Fire (GTLF) exercise within 12-hours of training. Successful completion of the entire simulation system's training model through certification can be accomplished within the fiscal year (FY).		

Figure 2-10. Simulations use allocations by component

Note. DA PAM 350-38 specifies simulator training requirements and skills sustainment intervals for weapons and weapon system platforms.

2-36. When completing Table II's GTLF exercise, units should expect each crew requiring 2 hours to complete the training with AAR. This assumes the crew arrives to the training facility, receives the training and testing instructions, conducts any alignment procedures required of the simulation system, and a series of warm-up exercises prior to testing. This also includes the AAR at the completion of the training scenario by the instructor/operator, or the VCE. It does not include any retraining or retesting time.

TADSS FOR TABLE II

2-37. Crewmembers conduct training prior to and for Table II using the approved primary simulator system. In extreme circumstances with approval from the brigade commander or above, they may utilize an approved alternate system or device.

2-38. Use of these systems are to train the VC and gunner on individual and crew-coordination skills, engagement techniques, and target acquisition. When using games for training systems, the unit should request comparable gunner control handles to support additional form, fit, and function to the training and evaluation.

2-39. Units that do not have access to a primary or alternate simulation systems or are training in an austere environment, should complete training using a T&MB.

2-40. The design, layout, and function of the T&MB are listed in appendix B. It includes a sample scenario for unit use or modification. Original files for the information on the T&MB that can be modified by the unit can be downloaded from the weapons and gunnery teams page (see the references at the back of this manual).

2-41. Unit must create a memorandum for record stating the crew's completion of Table II with the unit created training plan using the T&MB. This memorandum approved by the battalion or squadron commander and is included in each crew's gunnery packet (see TC 3-20.31).

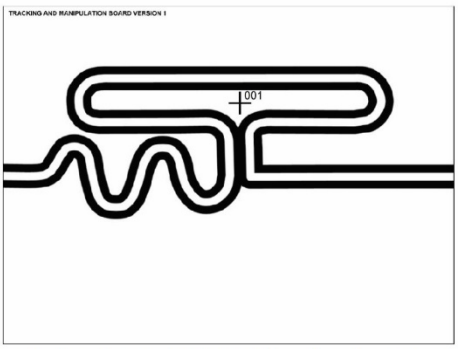
Austere Environment Training

Use T&MB when no simulation system is available or accessible to the unit or the platform type. Use T&MBs at the range for concurrent training or in austere environments to support the unit training plan.

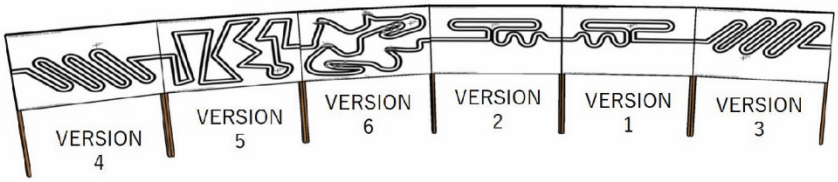
2-42. Figure 2-11 on page 42 lists the various versions of the tracking and manipulation board versions. It shows an example of one version as well as a sample layout for use.

TABLE II
SITUATIONAL TRAINING EXERCISE–VIRTUAL (STX-V)
TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS (TADSS)
AUSTERE ENVIRONMENTS

DEVICE	DESCRIPTION
T&MP-1	Tracking and Manipulation Panel, version 1
T&MP-2	Tracking and Manipulation Panel, version 2
T&MP-3	Tracking and Manipulation Panel, version 3
T&MP-4	Tracking and Manipulation Panel, version 4
T&MP-5	Tracking and Manipulation Panel, version 5
T&MP-6	Tracking and Manipulation Panel, version 6



Example Tracking and Manipulation Board, version 1.



Example layout using all six versions of the Tracking and Manipulation Boards.

Note: See Appendix B for additional information on the tracking and manipulation panels, construction methods, options, and sample scenario.

Figure 2-11. Table II, STX-V, TADSS for training in austere environments

PREPARE FOR TABLE II

2-43. Units execute the Table II, STX-V in one of two ways: with an authorized (primary or alternate) simulation system or T&MBs. The primary trainer is the company commander with and assigned VCEs. Units evaluate the Table II event internally and require the company to coordinate for training of their VCEs.

2-44. The platoon leadership in coordination with the unit Master Gunner are responsible for training their crews on the conduct of fire, engagement techniques, and movement techniques.

2-45. Units provide the following to prepare the trainers:

- Commander training objectives.
- Evaluation firing order or window for completing Table II.
- Tasks for training and evaluation (when using T&MBs).
- Risk assessment.
- Identification of supporting doctrinal publications for use as primary references.
- T&MBs, when required.

TRAIN THE TRAINER—TABLE II

2-46. Table II relies on gunner and VCs to be dual certified as instructor/operators of available simulator systems and VCEs.

2-47. Units schedule VCE training for their gunners and VCs. Each battalion will establish policies and procedures to train, certify, and recertify their VCEs to ensure common instruction from the Army-standard vehicle crew evaluation exportable package (see TC 3-20.31).

2-48. Unit Master Gunners maintain a roster of certified VCEs for the unit. They manage the recertification, as appropriate, based on unit policies and processes. Master Gunners should cross train drivers on VCE tasks to support range operations on maneuver ranges.

2-49. Where simulator systems are available, the Master Gunner schedules instructor/operator courses for those systems. Units should maintain instructor/operator and VCE certifications current for all assigned gunners and VCs, including platoon leaders, the executive officer, and commander.

2-50. Information on all the train the trainer and leader certifications required are listed in detail in TC 3-20.31. Units should review those training and certification requirements when preparing for training.

RECONNAISSANCE OF THE SITE—TABLE II

2-51. The Table II, STX-V uses an authorized simulation system. Units allow sufficient time scheduled to ensure all crews train, test, and retest as necessary within T-6 to T-execution training window. The crew shelter simulations systems, typically a battalion or brigade asset, will require coordination with battalion or brigade for use. Commanders schedule the training location as far in advance as practical following the installation's policies and procedures.

2-52. Once scheduled, the commander, Master Gunner, and platoon leaders conduct a reconnaissance of the training site to—

- Verify sufficient space is available to support training.
- Accomplish multiple iterations or rotations through the scenario with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Determine the tracking method of completed crews.
- Identify the process for completing the appropriate score cards, crew roll-up, and platoon training records as required.

Tracking and Manipulation Boards

When an approved simulation system is not available or accessible, the unit will utilize the T&MBs. This will require a 25-meter by 25-meter area to set up the panels for the 160-degree frontal arc and allow for multiple vehicle use. See appendix B for detailed information on the T&MBs including their design, placement, layout, use, and a sample training scenario.

EXECUTE TABLE II

2-53. Before the Soldiers arrive, VCEs set up the equipment and materials needed for the evaluation of the GTLF. The evaluator should have a crew roster by vehicle bumper number and position at their station to track crews and provide daily status updates to the company.

SIMULATOR GATE TO LIVE-FIRE SCENARIO

2-54. The evaluator must read the instructions exactly as written in the guide within the system instructions or provided by the unit. Evaluators are not authorized to assist in any of the following crew functions during the evaluation, such as—

- Target acquisition.
- Target detection.
- Subsequent target locations or intelligence.
- Driver movement techniques.
- Sensing of the rounds or machine gun bursts.

2-55. The evaluator must use the system generated or hard copy DA Form 8265 and DA Form 8265-1 to record each engagement and the overall scenario. Records are to be maintained in the crew's gunnery folder for 12 months. Units may also include the unit training roll-up as part of the training historical records.

TRACKING AND MANIPULATION BOARDS—TABLE II

2-56. Evaluators utilize the unit-provided criteria scoring checklist for the 10 steps of the tracking and manipulation board exercise. The evaluators will use specified prompts and evaluators may not assist the crew to perform any function.

2-57. Once testing is complete, the evaluator records the results on a locally created roll-up form. As each Soldier finishes or the time limit is up, whichever occurs first, the evaluator checks the Soldier's performance as either GO or NO-GO, informs them of their performance on that task, and directs them to the next station or to retraining.

2-58. The company Master Gunner or designated NCOIC, is responsible for completing unit and maintaining platoon and company roll-up information ensuring the next higher headquarters is informed, if required.

ASSESS—TABLE II

2-59. At the completion of the Table II, the evaluator will provide an AAR. The evaluator follows the AAR guidelines to gunnery evaluation found in TC 3-20.31 and includes any insights or recommendations to improve crew performance.

SIMULATOR SYSTEM EVALUATION

2-60. When debriefing a crew in a simulation system, the evaluator must use the DA Form 8265 for each engagement. Evaluators may require 10 to 15 minutes to complete the score sheets prior to the AAR. Units may choose to rotate evaluators to maximize the time available in the simulator. Evaluators should include information on—

- Targets, posture, and range for each engagement.
- Target classification; most dangerous, dangerous, and least dangerous.
- Time to acquire each target.
- Time to decide (issue the command of execution).
- Appropriate engagement technique.
- Reinforcement of gunner rules of lay, aim center of visible mass, end in elevation, remember sight picture.
- Opening time on primary armament and machine gun targets.
- Closing time on machine gun targets.
- Subsequent rounds and direct fire adjustment techniques.
- Supplemental engagement commands and engagement techniques.
- Ammunition selection and switchology.
- Engagement techniques.
- Overall performance and areas of improvement.

TRACKING AND MANIPULATION BOARD EVALUATION

2-61. Evaluators of crews using the T&MBs should at a minimum include information on—

- Tasks for each step.
- Skills trained during each step.
- Time to complete the tracking.
- Penalty time for the tracking (when the reticle aim point leaves the tracking path).
- Switchology errors (when the gunner removed their head from the optic brow pad or incorrect positioning).
- Tracking rate or slew rate inconsistencies.
- Reinforcement of the rules of lay.
- Overall performance and areas of improvement.

CREW GUNNERY FOLDER RECORDS—TABLE II

2-62. Annotation of all notes from the above training is on the score sheets provided. VCs are required to confirm the information by signing DA Form 8265-1 or the locally produced score sheet when using the T&MBs.

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE II

2-63. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

Note. Leaders must be granted access first by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the ICTL that are trained and tested during the training event.

2-64. From within the SULT, the authorized leader is enabled to view, maintain, and update—

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting T&EOs (access dependent on proponent distribution restrictions).

2-65. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

2-66. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and to address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS—TABLE II

2-67. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

2-68. Tasks for the crew that are included within this event are found in figure 2-12 on pages 48 through 50. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.



TABLE II
SITUATIONAL TRAINING EXERCISE–VIRTUAL (STX-V)
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1242	Engage Targets with the M240 Machine Gun from the Loader's Station on an M1-Series Tank	Yes	Yes		
171-19K-1420	Place the Nuclear, Biological, and Chemical (NBC) System into Operation on an M1A2 SEP Tank	Yes	Yes		
171-19K-1440	Operate the Nuclear, Biological, and Chemical (NBC) Backup System on an M1-Series Tank	Yes	Yes		
171-19K-2212	Engage Targets with the M240 Coaxial Machine Gun from the Gunner's Station on an M1A2 SEP Tank	Yes	Yes		
171-19K-2236	Engage Targets with the Main Gun from the Gunner's Station on an M1-Series Tank	Yes	Yes		
171-19K-3008	Operate the Improved Commander's Display Unit (ICDU) in Vehicle Systems Mode on an M1A2 SEP Tank	Yes	Yes		
171-19K-3009	Operate the Improved Commander's Display Unit (ICDU) in Diagnostics Mode on an M1A2 SEP Tank	Yes	Yes		
171-19K-3010	Operate the Improved Commander's Display Unit (ICDU) in Command, Control, and Communications (C3) Mode on an M1A2 SEP Tank	Yes	Yes		
171-19K-3011	Operate the Commander's Tactical Display (CTD) Input Device on an M1A2 SEP Tank	Yes	Yes		
171-19K-3012	Operate Commander's Independent Thermal Viewer (CITV) on an M1A2 SEP Tank	Yes	Yes		
171-19K-3207	Engage Targets With a Caliber .50 M2 Heavy Barrel (HB) Flex Machine Gun on an M1A2 SEP Tank	Yes	Yes		

Figure 2-12. Table II, STX-V, individual tasks touch points



TABLE II
SITUATIONAL TRAINING EXERCISE–VIRTUAL (STX-V)
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3211	Direct Machine Gun Engagements on an M1-Series Tank	Yes	Yes		
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3214	Fire an M250 Grenade Launcher on an M1-Series Tank	Yes	Yes		
171-19K-3219	Engage Targets with the Main Gun from the Commander's Station on an M1A2 SEP Tank	Yes	Yes		
171-19K-3222	Engage Targets with an M240 Machine Gun in the Commander's Weapon Mount on an M1A2 SEP Tank	Yes	Yes		
171-19K-3223	Direct Main Gun Engagements on an M1-Series Tank	Yes	Yes		
171-19K-3224	Operate the Commander's Weapon Station Sight (CWSS) with an M2 .50 Caliber Thermal Sight/Day TV System	Yes	Yes		
171-19K-3232	Direct Main Gun Engagements on an M1-Series Tank	Yes	Yes		
171-19K-3233	Engage Targets with an M240 Coaxial Machine Gun from the Commander's Weapon Station on an M1A2 SEP Tank	Yes	Yes		
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0049	Gain Situational Awareness as an Individual	Yes	Yes		

Figure 2-12. Table II, STX-V, individual tasks touch points (continued)

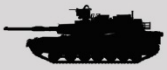


TABLE II
SITUATIONAL TRAINING EXERCISE–VIRTUAL (STX-V)
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-300-0052	Maintain Situational Awareness as an Individual	Yes	Yes		
171-300-0077	Identify Fighting Vehicles	Yes	Yes		
171-300-0083	Enforce Rules of Engagement (ROE)	Yes	Yes		
171-610-0002	Recognize Threat Tactics and Battlefield Organization	Yes	Yes		
171-924-0015	Perform Duties as a Vehicle Crew Evaluator (VCE)	Yes	Yes		

Figure 2-12. Table II, STX-V, individual tasks touch points (continued)

Chapter 3

Table III—Situational Training Exercise

Table III, STX, is a live environment, hands on training event using training aids and devices, and includes the use of blank ammunition, pyrotechnics, and battle effects simulators (BESs). STX is a station-based event that consists of three distinct training and evaluation stations that contain various crew skills that progressively build crew proficiency. All events require both day and night execution. Table III, STX is designed to be conducted independently of the direct fire engagement event. Table III is conducted in a live environment in a training area with established training lanes (course of fire and protection tasks). It is the first training event where the crew is tactically operating their platform as a crew under varying conditions.

OVERVIEW OF TABLE III

3-1. Table III verifies the crew's ability to complete effectively basic crew engagements using various platform capabilities, provides for day and night driver's training as part of the unit driver's training program, and ensures the crew demonstrates proficiency performing specific emergency procedures on their platform. It provides time for training and evaluation of these skills that are the foundation to all maneuver training focused on the ability to move, shoot, and communicate.

3-2. Units must complete Table III, STX, for record between T-6 and T-execution (T-week) of the live-fire event. Units can include additional tasks they require to support the training program but cannot eliminate tasks for any weapon system.

Live-Fire Prerequisite

Table III is a prerequisite for any live-fire event, including zero procedures, sub-caliber or in-bore training, or any live-fire maintenance procedure. Units must maintain the training records and results, for the longer of 12 months, or through the next testing event.

3-3. Figure 3-1 on page 52 shows where Table III resides withing the heavy tank training strategy through crew qualification. This is the first event with the crew operating the platform through a series of specific tasks that build experience with the platform, crew cohesion, and confidence in their platform and training. It includes a series of safety related tasks related to vehicle safety under various conditions.

CREW TABLE III	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	***WALK***	*RUN*	*RUN*	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

Crews training in austere environments may not have access to the required training devices to meet the conditions of crew Table III. Units operating under these unusual conditions should consider the use of static targets or organic vehicles to provide the necessary targetry at distance.

Note: Table I, II, and III can be conducted in any order within the T-6 to T-X time frame. This provides flexibility when developing the unit training plan.

LEGEND

GST	GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM	T-	TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]
QUAL	QUALIFICATION	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS
STX	SITUATIONAL TRAINING EXERCISE		
STX-V	SITUATIONAL TRAINING EXERCISE-VIRTUAL		

Figure 3-1. Table III, situational training exercise

PURPOSE OF TABLE III

3-4. The STX event ensures the crew demonstrates critical crew task proficiency in a live environment. The crew executes basic fire and maneuver, integrates indirect and direct fires, conducts critical tasks, and completes various emergency vehicle tasks prior to conducting the more advanced tasks under live-fire conditions.

METHOD FOR TABLE III

3-5. Crew STXs use training areas with multiple training lanes or phases that train crew collective movement and engagement techniques in real-time and at full-tempo to build proficiency. Crew STXs use structured scenarios to replicate the basic engagement techniques using the capabilities of their platform. Crews also demonstrate proficiency at emergency procedures on their vehicle to build proficiency and confidence in their ability to react rapidly to various life-threatening situations while maneuvering their platform.

END STATE OF TABLE III

3-6. Crews demonstrate in a live environment their ability to execute basic and degraded engagement tasks and crew drills in support of decisive action operations. The commander sufficiently validated the unit's vehicle load plan and portions of the SOPs for casualty evacuation. Crews received sufficient day and night administrative and tactical movement that supports the unit driver's training program and use of primary and alternate battle positions, reverse slope defense positions, and other skills.

3-7. The commander is confident in the abilities of the subordinate leaders and elements to execute those trained tasks to standard on demand based on the tactical situation. The commander gains such confidence once live-fire crew training to build experienced, proficient, and lethal crews is complete.

TASK, CONDITIONS, AND STANDARD FOR TABLE III

3-8. Figure 3-2 shows the task, conditions, and standard for Table III, STX. Units may add additional tasks to the STX as appropriate to meet the commander's intent, to correct previous training gaps, or to increase the training rigor.

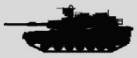


TABLE III SITUATIONAL TRAINING EXERCISE (STX)	
TASK	Engage and destroy stationary and moving targets placed in a tactical array, during day and limited visibility from a stationary or moving vehicle and require the use of laser-based training aids, devices, simulators, and simulations for all crews.
CONDITIONS	Given the following: • An operational platform with weapon or weapon system. • Appropriate laser-based training devices. • Authorized blank ammunition and pyrotechnics. • Certified vehicle crew evaluators (VCE). • Full scale or scaled targets to meet the scenario requirements.
STANDARD	The crew must: • Score a minimum of 700 of 1,000 points overall. • Score 70 points or more on all targets presented on 7 out of 10 engagements. • Qualify on at least one day and one limited visibility engagement. • Successfully pass using the evaluation standards between T-6 and T-week. • Successfully pass all Call-for/crew critical skills task.

LEGEND
T- TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]

Figure 3-2. Table III task, conditions, and standard

PLAN FOR TABLE III

3-9. Table III, STX, is a live environment, hands on training event using TADSS, and includes the use of blank ammunition, pyrotechnics, and BESs. STX is a station-based event that consists of a firing platoon, critical tasks platoon, and training support platoon.

3-10. This section details the resources needed for planning purposes. It includes general information on the following topics for consideration. The resources needed are the—

- Uniform—the minimum uniform requirements for the training event.
- Facilities—available facilities that support the training event.
- Training plan—the minimum tasks, general guidelines, and special instructions for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event. This includes DDI items that require coordination.
- TADSS—any available training aids that directly support or augment the training event.

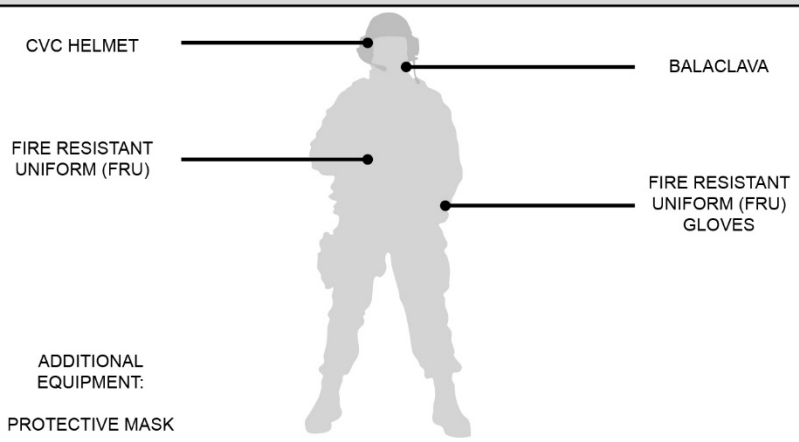
3-11. Table III is a mandatory prerequisite for any live-fire event, including zero procedures, sub-caliber or in-bore training event, or any live-fire maintenance procedure within the crew platform strategy. Units will complete Table III between T-6 and T-week to support the training events.

3-12. Units may require coordination with installation support activities such as the training support center for devices or training aids, or the ammunition supply point for DDI items. Each installation's policies and procedures vary. Units should reference their supporting installation's training SOPs or policies for detailed information.

UNIFORM FOR TABLE III

3-13. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor, ballistic plates, or gear during the training event unless directed by the commander. Figure 3-3 provides the minimum uniform training requirements for all training, including the crew critical skills tasks.

TABLE III
SITUATIONAL TRAINING EXERCISE
UNIFORM REQUIREMENTS



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	4	1	3	3
0	NONE	NONE	NONE	NONE	NONE
1	PATROL CAP	VEST	**GOGGLES**	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	FRU		**HEADSET**	**FRU GLOVES**
4		**FRU and SPALL VEST**			

Note: The Combat Vehicle Crewman (CVC) helmet includes the headset hearing protection. Goggles or appropriate eye protection are required for exposed crewmen during vehicle movement.

Figure 3-3. Uniform requirements for simulations training

FACILITIES FOR TABLE III

3-14. The conduct of Table III events is set up for use in a training area. The training unit is responsible for establishing all targetry in the training area. Units coordinate with their supporting training support center and range support for all target lifter, target, thermalization, battery, BES, and other targetry requirements. Figure 3-4 lists the primary and alternate facilities authorized for Table III.

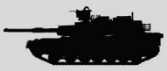


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
AUTHORIZED FACILITIES

FACILITY		
Battle Area Complex	BAX	ALTERNATE
Digital Air Ground Integration Range	DAGIR	ALTERNATE
Digital/Multipurpose Range Complex	D/MPRC	ALTERNATE
Digital/Multipurpose Training Range	D/MPTR	**PRIMARY**
Scout/Reconnaissance Gunnery Complex	SRGC	ALTERNATE
Training Area	TA	**PRIMARY**

Note: Training areas should be used to complete Table III, Situational Training Exercise-Virtual (STX-V), for crew platforms. An alternative, available on a case-by-case basis at the installation, is to use an Army-standard maneuver facility as indicated.

Figure 3-4. Recommended maneuver range facilities to support Table III, STX

TRAINING PLAN FOR TABLE III

3-15. The combined arms training strategy provides resourcing for two days of training for this event per iteration. Units should maximize the use of the training resources available to conduct as much training, retraining, and cross training as possible during the time available. Table III, STX is designed to enable unit flexibility—the stations can be conducted in a round-robin manner (independently) or concurrently. Figure 3-5 provides an example layout for a round-robin event by platoon.

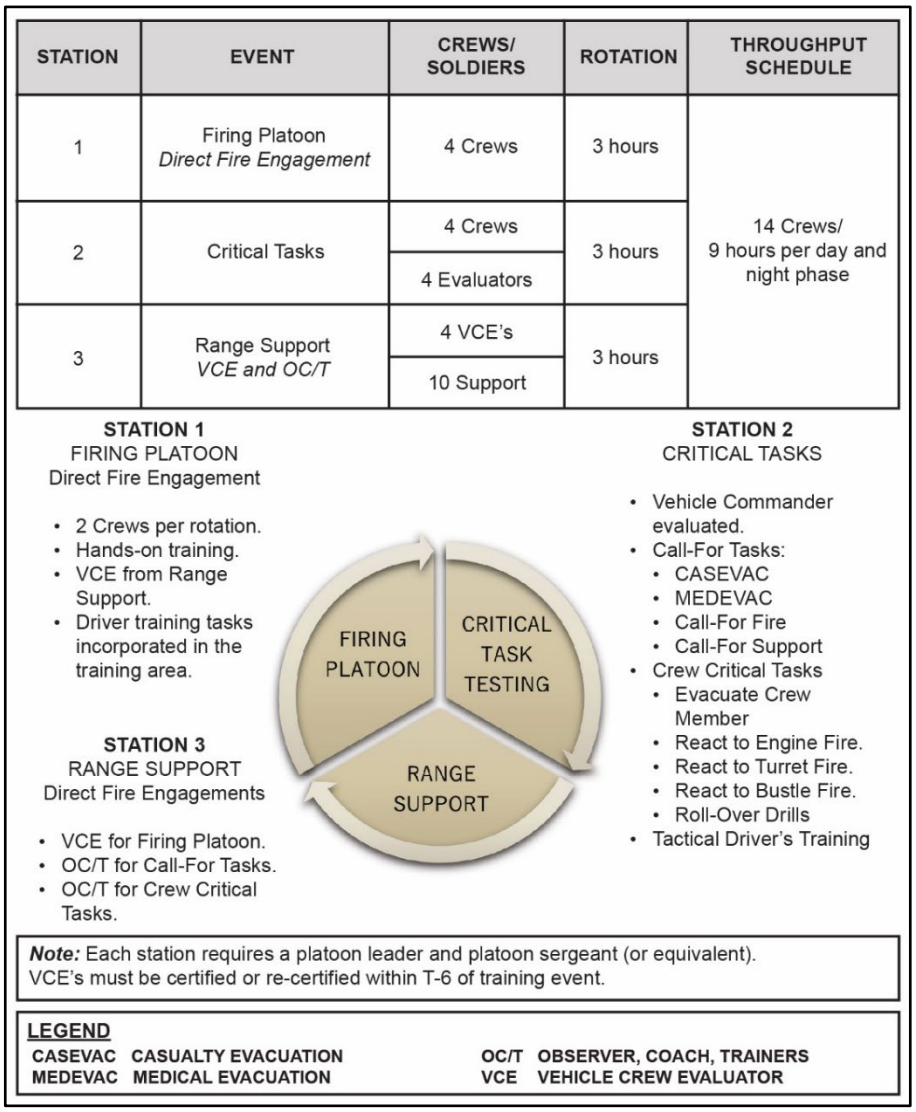


Figure 3-5. Table III situational exercise, round robin example

Firing Group

3-16. Performance of the direct fire engagements portion of the STX (firing group) is on the crew's vehicle. Table design is set up to train and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, during day and limited visibility conditions. Crews execute these tasks from the offense and defense.

3-17. The engagements may be full-scale or scaled, depending on the usable area within the training area. Figure 3-6 on page 61 lists the requirements for the ten specific engagements. Using 3/4 scale targets, the crew's target acquisition skills and engagement techniques are challenged. See TC 25-8, for additional information on target dimensions for scaled ranges.

3-18. All engagements are evaluated using certified VCEs using DA Form 8265 and DA Form 8265-1 as the official record of training. Master Gunners must ensure the training records are included in each crew's Gunnery Packet.

3-19. The engagements listings are by capability type using the standard engagement naming structure listed in TC 3-20.31. It provides the requirements for each engagement, which include the following addressed in paragraphs 3-20 through 3-29.

Task Description—Table III

3-20. The task description includes both the engagement number (the table number plus engagement task) followed by the system capability trained.

Firing Vehicle Posture—Table III

3-21. The firing vehicle posture establishes the offense or defense condition for the engagement.

Firer—Table III

3-22. The firer column identifies which crewmember is to engage the target listed. Targets defeated by a different crewmember listed as the firer result in an auto-zero penalty, failing to adhere to course conditions.

Weapon (or Ammunition)—Table III

3-23. Identifies the weapon (coaxial, caliber .50, or primary armament ammunition type) that is used to defeat the threat. Design of each engagement is for a specific weapon or ammunition type (primary armament) for use, which relates to the crew conduct of fire, optic selection, engagement techniques, or other unique implied tasks. Crews that fail to announce the appropriate weapon or ammunition, or appropriate selection for subsequent or supplemental engagements may be penalized IAW TC 3-20.31.

Target Type—Table III

3-24. The target type is the target required for the presentation, IAW TC 25-8.

Target Posture—Table III

3-25. The target posture establishes if the target is stationary, moving, or evasive for the engagement. See TC 3-20.31 for more information on target postures.

Range (to Target)—Table III

3-26. The range to target is the required range (full scale or equivalent scaled range) from the firing vehicle to the target. For offensive engagements, this distance calculation is from the center of the movement box to the target. The range to target distance is provided in meters and is displayed as a whole number, such as 600.

3-27. The target may be placed at the distance indicated, plus or minus 200 meters. For example, when the range to target is listed as 600 meters, the target may be placed between 400 meters and 800 meters. This allows flexibility designing the scenario on varying maneuver range facilities with different capabilities, target counts, emplacement locations, and terrain restrictions.

3-28. No change to the engagement modifier (EM) authorized. The range bands listed with their applied tolerances do not require any adjustment to the EM. Units are not authorized to exceed the target placement tolerances.

Engagement Modifier—Table III

3-29. The EM is the time in seconds required to achieve 100 points against the listed threat. To defeat the threat successfully, the crew must achieve the kill standard against the target and have an overall engagement time of no more than the EM plus 20 seconds. See TC 3-20.31 for the evaluation, timing, and scoring procedures.

Scenario Requirements for Table III

3-30. Units may not deviate from any target type, target posture, range, and weapon system/ammunition type for Table III. Engagements firing may be in any sequence that best supports their training area, flow of the range, and time available.

3-31. The unit options and requirements are the following:

- Unit determines how many engagements are conducted during the day phase and night phase.
- Unit determines the sequence of the engagements.
- Unit determines which tasks are conducted during the day and night phase.
- Unit determines which engagements will include chemical, biological, radiological, and nuclear conditions, and must select a minimum of one day and one night engagement conducted in a chemical environment.
- BES are required for use as described in TC 3-20.31 for all vehicle target panel presentations.
- Target panels are 3/4 scale at full range distances or scaled accordingly if using a scaled training range or training area.
- Unit may use D-type or F-type troop targets in lieu of E-type silhouettes to increase training for target detection, acquisition, and reticle aim.
- Units are required to use available force-on-target training devices or TADSS, including laser-based systems, laser-target interface devices.

- Additional TADSS use are at the discretion of the unit commander.
- All safety tasks must be conducted day and night.
- All call for tasks must be conducted day and night.

3-32. Additional information concerning the engagements, the terms of reference, or the layout for each event's scenario can be found in TC 3-20.31. Figure 3-6 shows the engagements for the firing group.

TABLE III, SITUATIONAL TRAINING EXERCISE
ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
30	VEHICLE COMMANDER	DEFENSE	VC	COAX	E(7)FRT	STA	600m	8
			VC	MPAT	M1T-FLK	MOV	1,000m	9
31	MACHINE GUN PURE	OFFENSE	GNR	COAX	E(7)FRT	STA	300m	10
			GNR	COAX	L1T-FRT	STA	600m	11
			GNR	COAX	E(7)FRT	STA	700m	13
32	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	300m	6
			GNR	COAX	E(7)FRT	STA	300m	6
33	MAIN GUN PURE	OFFENSE	GNR	MPAT	M1T-FLK	MOV	1,500m	14
34	MAIN GUN PURE	DEFENSE	GNR	MPAT	M1T-FRT	STA	1,900m	9
			GNR	MPAT	L2T-FLK	MOV	1,000m	10
			GNR	MPAT	H3T-FRT	STA	1,000m	6
35	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	SABOT	H1T-FRT	STA	1,600m	11
			GNR	COAX	E(7)FRT	STA	600m	12
			GNR	MPAT	M1T-FRT	STA	1,500m	12
36	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	MPAT	H3T-FRT	STA	1,000m	6
			GNR	COAX	E(7)FRT	STA	600m	8
			GNR	COAX	E(7)FRT	STA	300m	6
37	DEGRADED	OFFENSE	GNR	MPAT	L2T-FRT	STA	1,000m	12
			GNR	COAX	E(7)FRT	STA	600m	12
38	DEGRADED	DEFENSE	GNR	COAX	E(7)FRT	STA	500m	8
39	SIMULTANEOUS	OFFENSE	GNR	COAX	E(7)FRT	STA	500m	12
			VC	CAL .50	M2T-FRT	STA	1,400m	15

LEGEND

CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	STA	STATIONARY
GNR	GUNNER	VC	VEHICLE COMMANDER
EM	ENGAGEMENT MODIFIER		

Figure 3-6. Table III, STX scenario requirements

CRITICAL TASK GROUP

3-33. The critical task group consists of the tasks listed in figure 3-7. Each crewmember will train and demonstrate proficiency on these tasks as part of Table III. The tasks are evaluated using the approved T&EOs for each task found on the ATN or Central Army Registry.

3-34. For all safety tasks, each Soldier must be in the appropriate uniform listed earlier in this chapter. Soldiers gain the experience evacuating a crewmember using integrated safety harnesses within their uniform as part of the training and evaluation.

3-35. Call-for and crew critical skills tasks include the following tasks at a minimum. Preparatory training is the platoon sergeant's responsibility prior to the evaluation of each listed task in figure 3-7.



TABLE III
SITUATIONAL TRAINING EXERCISE
CRITICAL TASKS

SKILL SET	TASK[1]
SAFETY	React to Turret Fire
	React to Engine Fire
	React to Ammunition Compartment Fire
	Conduct Roll-Over Drill
	Evacuate Crewmember–Driver
	Evacuate Crewmember–Gunner
	Evacuate Crewmember–Vehicle Commander
	Evacuate Crewmember–Loader
COMMUNICATE[2]	Conduct a Fire Support Briefing (061-C01-1061)
	Request Medical Evacuation (081-COM-0101)
	Call for Support (uses ATP 3-09.32, Table 42)

Notes:
[1] Units may add any tasks to the list of safety tasks. Commanders should include digital messaging to reinforce those communication skills required for future collective training.
[2] Units use the performance measures for these communication tasks on the Army Training Network. Task numbers provided for reference.

LEGEND
ATP **ARMY TRAINING PUBLICATION**

Figure 3-7. Call-for and crew critical skills task requirements

3-36. Units are required to train and evaluate a notional call-for-support and call-for-close combat attack (attack aviation) in a notional manner. The purpose of this event is to train crews on their ability to serve as the weapon system contacted by a dismounted element. Following Table 42, shown in figure 3-8, the crews are evaluated using a notional dismounted leader calling for support.

CALL FOR SUPPORT
5-LINE REQUEST (TABLE 42)



LINE NUMBER/ ELEMENT	DISMOUNTED LEADER ***BLUE 3*** *(OBSERVER)*	FIRING VEHICLE (ABRAMS) ***RED 4*** *(FIRING PLATFORM)*	REMARKS
LINE 1 – OBSERVER/WARNING ORDER			
ALERT	**RED 4 THIS IS BLUE 3, HE REQUESTED, OVER**	**BLUE 3 THIS IS RED 4, SEND IT OVER**	Dismounted leader and Firing platform initiates Table 42 5-line brief as appropriate.
LINE 2 – FRIENDLY LOCATION/MARK			
FRIENDLY LOCATION	**MY POSITION** GRID MB 1223 5668 **MARKED BY** VS-17 PANEL		Firing platform may not have visibility of the dismounted element during the engagement.
LINE 3 – TARGET LOCATION			
TARGET LOCATION	**TARGET LOCATION** GRID MB 1225 5690		
LINE 4 – TARGET DESCRIPTION/MARK			
TARGET DESCRIPTION	TWO STORY BUILDING EAST OF INTERSECTION, **MARKED BY** PURPLE SMOKE, OVER	IDENTIFIED PURPLE SMOKE OVER	Firing platform clears three reticle fields of view (FoV) to the left and right of the target aiming point ensuring No Friendly Forces are within the FoV.
LINE 5 – REMARKS AND RESTRICTIONS			
METHOD	AREA FIRE SECOND FLOOR FORTIFICATION	GUN TARGET LINE CLEAR, SET, OVER	Dismounted leader identifies the METHOD as AREA FIRE and the Firing Platform confirms no friendly forces are within the hazard area of the gun-target-line.
CONTROLS	3 ROUNDS HEP AT MY COMMAND…		Used to determine the number and type of munitions and coordinate the timing of the engagement when the Dismounted Leader is prepared to sense rounds.
COMMAND OF EXECUTION	FIRE	ON THE WAY… ROUNDS COMPLETE, OVER	
TERMINATION	ROUNDS COMPLETE, SHIFT FIRES RIGHT/LEFT, OVER	ROGER, SHIFT FIRES RIGHT/LEFT, OVER	Dismounts are free to move from covered position. Firing platform shifts fires as directed away from dismounted personnel and provide support by fire (SBF).

LEGEND
HE **HIGH EXPLOSIVE** **HEP** **HIGH EXPLOSIVE PLASTIC**

Figure 3-8. Call for support 5-line format, Table 42, example

RANGE SUPPORT FOR TABLE III

3-37. The range support group provides VCE teams to evaluate the firing platoon. This requires all gunners and above to certify or recertify as VCEs between T-6 and T-execution of the training event. The range support personnel general requirements are in figure 3-9.

3-38. Certain units may require assistance evaluating the crew critical skills. The support platoon will assist with the appropriate evaluator capabilities to the training platoon.

3-39. The range support group will provide work detail personnel as required to operate the range facility. This may include targetry replacement or repair, briefing noncommissioned officers, range, or training area access, and so forth.

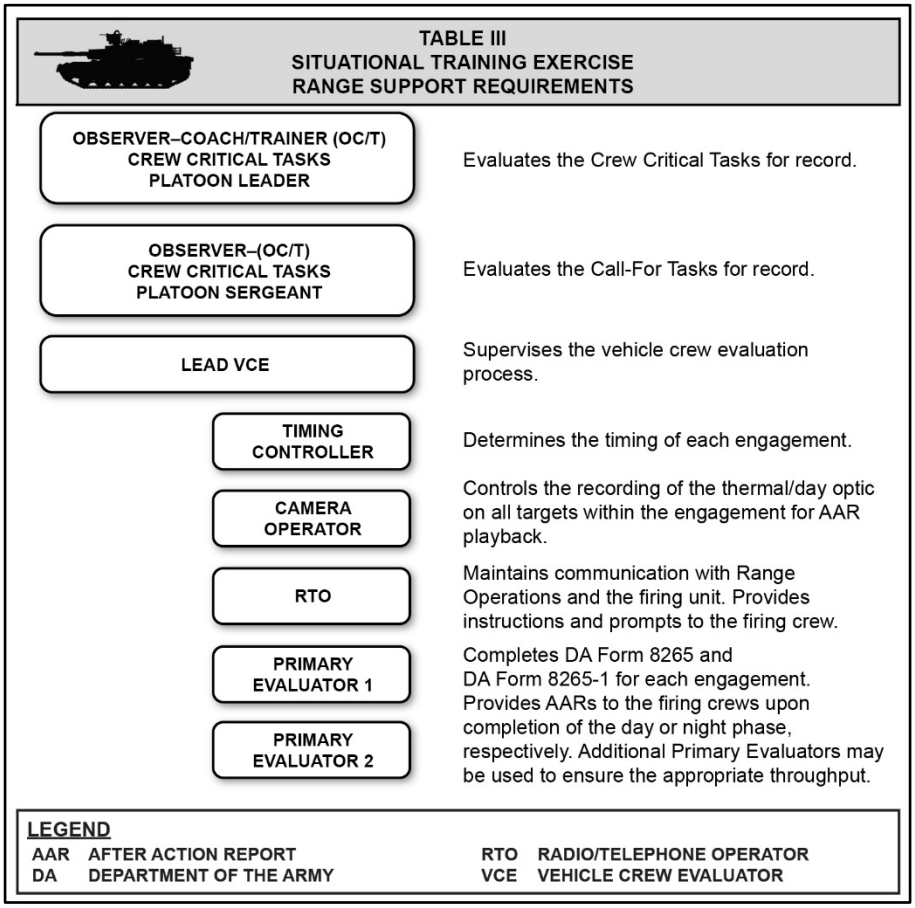


Figure 3-9. Range support personnel requirements, example

TIME AND THROUGHPUT FOR TABLE III

3-40. The throughput expectation of this table is 14 crews per day for 2 consecutive days. This allows for the appropriate amount of training, retraining, and cross training to provide the commander the fullest flexibility for crew management options and talent management opportunities prior to live fire. Depending on maintenance or other unforeseen issues, incorporating an additional half training day to the schedule is recommended, although this not resourced as part of the combined arms training strategy. Figure 3-10 shows the expected throughput schedule based on the number of vehicles for firing and the unit's day and night engagement breakdown for the engagements.

CREW PLATFORM WEAPON SYSTEM THROUGHPUT REQUIREMENTS

		NUMBER OF ENGAGEMENTS					
	DAY	8	7	6	5	4	
	NIGHT	2	3	4	5	6	
NUMBER OF CREWS	10	15.25	16.00	16.50	17.25	18.00	HOURS TO COMPLETE
	11	16.25	17.00	17.75	18.50	19.25	
	12	17.50	18.25	19.00	20.00	20.75	
	13	18.50	19.50	20.25	21.25	22.00	
	14	19.75	20.75	21.50	22.50	23.50	
	15	21.00	22.00	23.00	24.00	25.00	
	16	22.00	23.00	24.25	25.25	26.25	
	17	23.25	24.25	25.50	26.50	27.75	
	18	24.25	25.50	26.75	28.00	29.00	
	19	25.50	26.75	28.00	29.25	30.50	
	20	26.50	28.00	29.25	30.50	32.00	

Note: Overall time requirements are based on a single firing lane and include 4 hours of range maintenance down time (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

Any time shown exceeding 24 hours will not be possible in a single range day without unit action to conduct the range with a sense of urgency during preparation to fire tasks and execution of the table including tactical movement between engagements.

Figure 3-10. Table III throughput expectations

Note. Time requirements overall are based on a single firing lane and include 4 hours of target maintenance downtime (two blocks of 2 hours each). These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput. Conduct the critical task and call-for requirements (not shown) simultaneously with the more time-consuming engagement skills tasks.

AMMUNITION FOR TABLE III

3-41. The commander may choose to use the live training method for the STX proficiency course of fire using sub caliber ammunition only after crews qualify during a device-based run first to demonstrate mastery of basic skills and safety principles. Upon successful completion of Table III as a device-based event, the commander may re-fire the table with full-caliber or sub caliber ammunition if the range and ammunition resourcing permit. The use of BES cartridges will only be used with full-caliber or sub caliber ammunition after a device-based run is successfully completed. Ammunition resourcing for Table III is shown in figure 3-11.

TRAINING AMMUNITION REQUIREMENTS
TABLE III, SITUATIONAL TRAINING EXERCISE (STX)

DODIC	MUNITION TYPE	TABLE III, STX
A598	CTG, .50 CAL BLANK F/M2	50
A111	CTG, 7.62mm Blank M82/M82E1 LNKD	600
LA53	SIM, Pyrotechnic, Target Hit M35 (BES)	11
LA54	SIM, Pyrotechnic, Hostile Fire, M34 (BES)	11

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS



PYROTECHNICS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

Note: Only blank ammunition authorized for use on Table III.

LEGEND

CAL	CALIBER	LNKD	LINKED
CTG	CARTRIDGE	mm	MILLIMETER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	SIM	SIMULATION

Figure 3-11. Table III ammunition authorizations

TADSS FOR TABLE III

3-42. This course requires the use of laser based TADSS for all crews. Units with TADSS available must incorporate them and may not deviate from the TADSS requirement unless approved by the brigade commander in writing. Units should focus on training and reinforcing the skills in the direct fire kill chain on this table specifically with their thermal optics, day and night, to best prepare them for the follow-on training events. Figure 3-12 shows the TADSS required, recommended, and optional for Table III.



TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
TRAINING AIDS, DEVICES, SIMULATORS,
AND SIMULATIONS (TADSS)
REQUIREMENTS

DODIC	NOMENCLATURE	REMARKS
I-MILES CV-TESS	Instrumental-Multiple Integrated Laser Engagement System, Combat Vehicle Tactile Engagement Simulations	REQUIRED
HITS	Home Station Instrumentation Training System	REQUIRED
LTIDS	Laser Target Interface Device	REQUIRED
CMU	Crew Module Unit/Integrated Player Unit	Recommended
CMUR	Crew Module Unit Recorder (Thru-Sight Video)	Recommended
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T	Optional
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T, or M1002, HEAT-TP-T	Optional
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T	Optional
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER	Optional
SP-1	BORESIGHT PANEL	Optional

LEGEND

APFSDS-T	ARMOR PIERCING DISCARDING SABOT TRACER	HEAT-TP-T	HIGH EXPLOSIVE ANTI-TANK TARGET PRACTICE TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT TRACER
HEAT-MP-T	HIGH EXPLOSIVE ANTITANK MULTIPURPOSE TRACER		

Figure 3-12. Table III, STX, training aids, devices, simulators, and simulations requirements

Instrumentable–Multiple Integrated Laser Engagement System CVTESS

3-43. The Instrumentable–Multiple Integrated Laser Engagement System Combat Vehicle Tactical Engagement Simulation System (I-MILES CVTESS) is a laser-based training device to for use on Abrams, Bradley, heavy tank, and opposing forces tanks and fighting vehicles to provide real time casualty effects. The I-MILES CVTESS is an evolutionary approach for replacing older systems with equipment that provides better training fidelity. It will reinforce crew duties, reward proper engagement techniques, and develop tactical maneuver skills of Armor and mechanized Infantry combined arms teams up to brigade level. It provides unit commanders an integrated training system in force-on-force and force-on-target training events at home station training areas through instrumented training. The system interfaces with instrumentation systems at combat training centers.

Laser Target Interface Device

3-44. For use with I-MILES CVTESS or other laser-based training systems when the unit is conducting force-on-target training, the laser target interface device provides the appropriate hit recording at the target emplacement and when stimulated, signals the target lifting mechanism to record a hit. This is a required device on Table III.

Home Station Instrumentation Training System

3-45. Units are encouraged to integrate the home station/Army mobile instrumentation training system (HITS). This system will allow for the highest fidelity AARs for the crew's engagements. The HITS provides exercise management, monitoring, and control. It includes the ability to provide training performance feedback through onsite AARs.

3-46. HITS is a transportable system able to enhance live training at home stations up to the battalion level. HITS provides instrumentation through automated tools for unit leaders and designated observer-controller/trainers to give performance feedback to training units. AARs and take-home packages can provide training performance feedback. As part of voice communications, HITS accepts single-channel ground and airborne radio systems radio transmissions.

Crew Module Unit/Crew Module Unit Recorder

3-47. The crew module unit (CMU)/integrated player unit (IPU), and crew module unit recorder (CMUR) are an advanced eight channel audio and video recording device for combat vehicles. Some installations may refer to the CMU as the IPU for all crews. The CMU/IPU/CMUR can simultaneously record up to eight channels of video, one channel of audio, and has the capability to monitor dual 1553 data busses. The CMU/IPU/CMUR is equipped with a Global Positioning System that captures the vehicle's position location information. The CMU/IPU is for use on a digital range complex whereas the CMUR does not require any external support. The CMUR has an integrated AAR suite and stores information on a solid-state drive. The AAR suite uploads the data from the solid-state drive allowing a full AAR presentation.

PREPARE FOR TABLE III

3-48. Units execute the crew STX in a variety of ways. Typically, each platoon conducts training independently prior to the crew STX event, either in the motor pool, simulator system, or in a local training area. The primary trainers during the crew STX are the company commander with platoon sergeants and the Master Gunner providing oversight and assistance as necessary.

TRAIN THE TRAINERS—TABLE III

3-49. Units execute the crew STX in a variety of ways. Typically, each platoon conducts training independently prior to the crew STX event, either in the motor pool, simulator system, or in a local training area. The primary trainers during the crew STX are the company commander with platoon sergeants providing oversight and assistance as necessary.

Note. Much like crew platform evaluators, the evaluators for any crew exercise provide exceptional training for the evaluator, second only to executing the task with their organization. Units should dedicate sufficient time to certify the evaluators so they can provide mentorship to the training crew.

3-50. To prepare the trainers, units provide—

- Commander's training objectives.
- Scenario and lane concept with crew tasks.
- Conduct of the range briefing for the training event.
- Reviews of T&EOs and evaluation processes for all the tasks.
- Risk assessments.
- Identification of supporting doctrinal publications for use as primary references.
- TADSS, pyrotechnics, blanks, and BESs used during the training event (see appendix A for the training munitions requirements for the complete training strategy).

ENGAGEMENT TASK AND PURPOSE

3-51. The crews, leaders, and evaluators must understand the task and purpose of the engagements, the critical skills tasks, and how they are linked to their training. Each of the engagements should be reviewed to understand what they contain, the standards for each, and how they build from previous training and to the next event's engagements.

RECONNAISSANCE OF THE SITE—TABLE III

3-52. Commanders use an authorized training area or series of training areas for the Table III, STX. Commanders follow the installation's policies and procedures for scheduling the training location as far in advance as practical. Once commanders have established the method of training and evaluation, they should secure the training location and appropriate TADSS, equipment, or systems that enhance the training event.

3-53. Once scheduled, the commander, Master Gunner, platoon leaders and platoon sergeants conduct a reconnaissance of the training areas to—

- Verify sufficient space is available to support the entire unit through multiple training lanes.
- Ensure multiple iterations or rotations through the scenario can be achieved with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Provide sand table or terrain board.
- Provide terrain board kits.
- Verify the training area can support the unit's training while in a chemical environment, based on the scenario design (protection.)
- Verify casualty evacuation and medical evacuation notional capabilities in support of the training scenario, for which units mostly include—
  - Only frequency modulation reporting.
  - Requests for procedures for training purposes (sustainment).

ISSUE THE ORDER—TABLE III

3-54. Commanders can issue an operation order (OPORD), warning order (WARNORD), or use the training schedule as necessary. The WARNORD should include the appropriate tasks, required leaders, and equipment needed, as well as the unit's training timeline including walk-through, rehearsals, and AARs. WARNORDs for external organizations must include sufficient reaction time for the appropriate personnel and equipment needed.

3-55. The OPORD or WARNORD should include the list of tasks that commanders evaluate during the event, and the method of evaluation. Commanders should provide sufficient time for subordinate leaders to train the tasks and skills listed in the order. Commanders should ensure the appropriate training resources are available and accessible. Upon receipt, subordinate leaders that have SOPs for their organizations must ensure their procedures support and complement the higher headquarters publication.

REHEARSE—TABLE III

3-56. The unit uses all training resources, materials, and equipment available to conduct rehearsals of training events. During the rehearsal, commanders ensure their unit has sufficient time to train to the specified standard including AARs and retraining time. Commanders ensure their unit verifies optional scenarios that increase complexity when warranted.

3-57. Commander uses the rehearsal as an opportunity to verify the tasks selected for Table III are consistent with the commander's training guidance.

3-58. Units should rehearse the training event from start to finish, and confirm—

- The opposing forces understand the training scenarios.
- Sufficient space is available to provide appropriate distances for offensive engagements.
- Analog and digital systems are operational within the organization and to the higher headquarters regardless of their location.
- Additional evaluator training support packages are complete and provide for multiple iterations.
- Sufficient administrative areas are available.
- A review of AAR capabilities.
- Methods and actions required to provide fire support (notional).
- Integration of attack aviation and close air support during the scenario (notional inclusion for call-for tasks).
- Location of retraining for crews as necessary.

3-59. Once the unit completes the walk-through and training rehearsal, the commander makes any necessary adjustments to the plan and issues fragmentary orders (FRAGORDs) as necessary.

EXECUTE TABLE III

3-60. Once the unit arrives at the training location, they should—

- Conduct a safety briefing for the training event.
- Provide a conduct of the range briefing to establish the sequence of events for the training day.
- Conduct sensitive item checks prior to executing training.
- Assign evaluators as appropriate.
- Issue the OPORD for the training mission.
- Execute the training scenario.

3-61. The training unit conducts informal AARs of each crew completing a phase of training within the training mission. During training, the assigned evaluators, executive officer, first sergeant (1SG), and master gunner review the subordinate unit's performance. They follow the unit SOP, prescribed tactics, techniques, procedures, and the appropriate T&EOs, and review completed crew score sheets and roll-up documentation for clarity and completeness.

3-62. Figure 3-13 on page 72 through figure 3-32 on page 91 provide the task, conditions, and standards for each engagement sequentially. The unit's scenario sequence will vary based on the training area available, time, day and night mix of

engagements, and determination of which day and night engagements include operating in a chemical environment.

ENGAGEMENT 30

3-63. The VC engagement fired from the VC's position using the commander's power control handle and primary optic is demonstrated in figure 3-13 and figure 3-14. Engagement 30 serves to train and evaluate the VC's ability to engage and destroy multiple targets with multiple weapons (coaxial machine gun and main gun) from their position. This engagement can be conducted day or night.

30 

TABLE III, SITUATIONAL TRAINING EXERCISE (STX)

TASK TYPE:	VEHICLE COMMANDER	POSTURE:	DEFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	TARGET 4
				
FIRER	VC	VC		
WEAPON/AMMUNITION	COAX	MPAT		
TARGET	TROOPS	BMP		
TARGET TYPE	E(7)-FRT	M1T-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	600m	1,000m		
ENGAGEMENT MODIFIER	8	9		

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Foundation engagement with change of weapon system/ammunition. Reinforces all VC training in simulations.	Initial engagement under live-fire conditions. Building block for future live-fire training. All Table IV Engagements are DEFENSE.	Trains multiple target engagements under live-fire conditions. Specifically trains harder than the test. VC dual targets.	Qualification engagement, stationary and moving tank from the offense at medium range.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	VC	VEHICLE COMMANDER
FRT	FRONTAL		

Figure 3-13. Engagement 30 overview

30	TARGET 1	TARGET 2	TARGET 3	TARGET 4
VEHICLE COMMANDER DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
	1.5			25	1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR GUNNER'S POWER CONTROL HANDLES ARE INOPERATIVE. CONTINUE TO FIGHT. CHECK YOUR MACHINE GUNS. BATTLE CARRY MPAT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND MOVING PC
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 3-14. Table III, STX, engagement 30, ammunition and script

ENGAGEMENT 31

3-64. Engagement 31 is a machine gun pure engagement for the gunner. It trains target detection, acquisition, and machine gun engagement techniques on the offense (see figure 3-15 and figure 3-16). Range bands are close- and mid-range that require rapid acquisition and engagement.

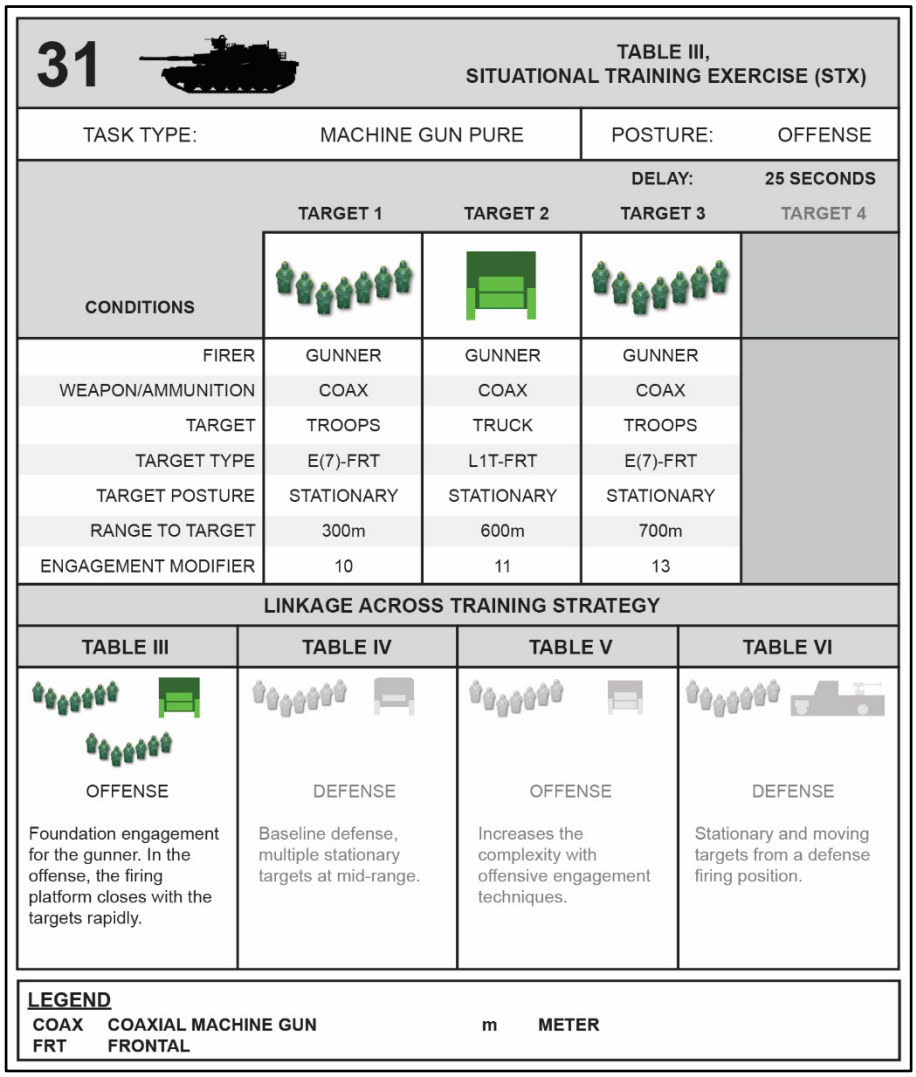


Figure 3-15. Engagement 31 overview

31	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE OFFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
			75		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS AND TRUCK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	BEGIN MOVEMENT, REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 3-16. Table III, STX, engagement 31, ammunition and script

ENGAGEMENT 32

3-65. From a defensive posture, the gunner engages multiple machine gun threats at close-range (see figure 3-17 and figure 3-18) in engagement 32. This is a foundational engagement where it presents common threats as an Infantry support vehicle.

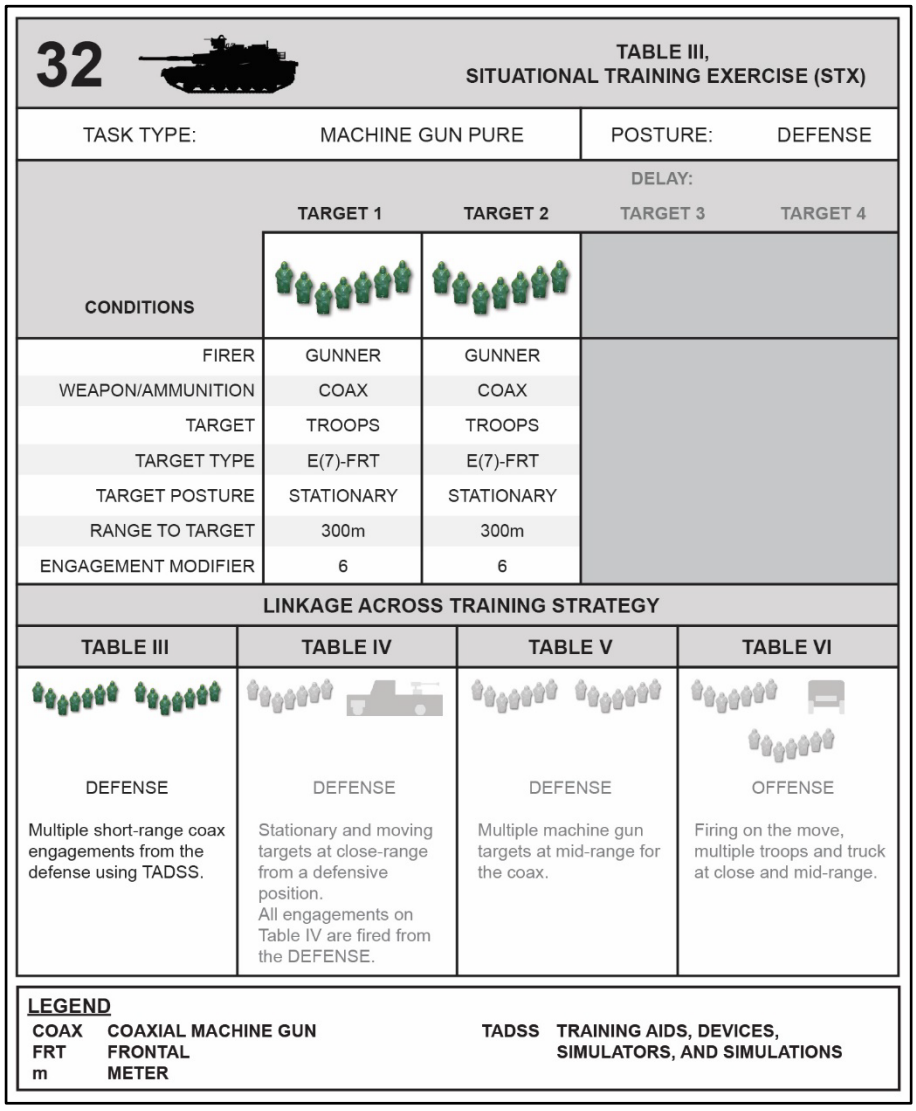


Figure 3-17. Engagement 32 overview

32	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
			50			

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR MACHINE GUNS. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS
METHOD	
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 3-18. Table III, STX, engagement 32, ammunition and script

ENGAGEMENT 33

3-66. Fired from the offense, this is a basic skills engagement for the gunner to engage a single moving target with the main gun (see figure 3-19 and figure 3-20). It builds on the skills from the simulation's training model and requires the gunner to utilize proper tracking and main gun engagement techniques.

33 

TABLE III, SITUATIONAL TRAINING EXERCISE (STX)

TASK TYPE:	MAIN GUN PURE	POSTURE:	OFFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	TARGET 4
				
FIRER	GUNNER			
WEAPON/AMMUNITION	MPAT			
TARGET	BMP			
TARGET TYPE	M1T-FLK			
TARGET POSTURE	MOVING			
RANGE TO TARGET	1,500m			
ENGAGEMENT MODIFIER	14			

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
OFFENSE	DEFENSE	OFFENSE	DEFENSE
Basic engagement with single stationary moving target using the main gun (TADSS).	Baseline multiple moving threats at mid range for the gunner with coax. All engagements on Table IV are fired from the DEFENSE.	Canister engagement for mass troops engagement.	Firing two tanks with KE in the DEFENSE.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
KE	KINETIC ENERGY		

Figure 3-19. Engagement 33 overview

33	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE OFFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS						
KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
	1.5				1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY HEAT, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	PC MOVING INTO SECTOR
METHOD	
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	BEGIN MOVEMENT, REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
HEAT	**HIGH EXPLOSIVE ANTITANK**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 3-20. Table III, STX, engagement 33, ammunition and script

ENGAGEMENT 34

3-67. Engagement 34 is a main gun pure engagement fired from the defense, and this engagement challenges the crew with a third target on delay (see figure 3-21 and figure 3-22). Although trained with TADSS, the crew must be aware of the subsequent engagement in the scenario when completing this engagement with multipurpose antitank rounds.

34 

TABLE III, SITUATIONAL TRAINING EXERCISE (STX)

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	MPAT	MPAT	MPAT	
TARGET	BMP	TECH TRUCK	BUNKER	
TARGET TYPE	M1T-FRT	L2T-FLK	H3T-FRT	
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	
RANGE TO TARGET	1,900m	1,000m	1,000m	
ENGAGEMENT MODIFIER	9	10	6	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Main gun (TADSS) with delay target.	Baseline live-fire engagement for GUNNER. All engagements on Table IV are fired from the DEFENSE.	Tests the primary function with main gun, stationary and moving targets and delay target.	Firing on the move with main gun, stationary and moving targets.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
FRT	FRONTAL		
m	METER	TECH	TECHNICAL

Figure 3-21. Engagement 34 overview

34	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
	4.5				3	3

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY SABOT, PREPARE HIGH EXPLOSIVE PLASTIC,
REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK, TRUCK, AND BUNKER
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**mm**	**MILLIMETER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 3-22. Table III, STX, engagement 34, ammunition and script

ENGAGEMENT 35

3-68. Engagement 35 challenges the crew with multiple targets and changes to the weapon or ammunition indexed (see figure 3-23 and figure 3-24). These changes within the engagement at a high tempo are prone to switchology errors by the crew.

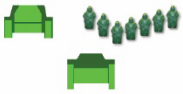
35 

TABLE III, SITUATIONAL TRAINING EXERCISE (STX)

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	OFFENSE

CONDITIONS	TARGET 1	TARGET 2	TARGET 3 (DELAY: 25 SECONDS)	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	SABOT	COAX	MPAT	
TARGET	TANK	TROOPS	BMP	
TARGET TYPE	H1T-FRT	E(7)-FRT	M1T-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	1,600m	600m	1,500m	
ENGAGEMENT MODIFIER	11	12	12	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
OFFENSE	DEFENSE	OFFENSE	DEFENSE
Trains the crew's ability to prioritize threats presented. Change of weapon and ammo on the offense.	Simultaneous GUNNER and VC engagement. All engagements on Table IV are fired from the DEFENSE.	Complex engagement with change of weapon and ammunition on the offense.	Complex 4-target engagement with change of weapon and ammunition.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	VC	VEHICLE COMMANDER

Figure 3-23. Engagement 35 overview

35	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/ AMMUNITION OFFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
1.5	1.5		25		2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY SABOT, PREPARE MPAT, AND CHECK YOUR MACHINE GUNS. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK, TRUCK, AND PC
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	BEGIN MOVEMENT, REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
MPAT	**MULTIPURPOSE ANTITANK**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 3-24. Table III, STX, engagement 35, ammunition and script

ENGAGEMENT 36

3-69. Engagement 36 is the second change of weapon or ammunition engagement for the training event (see figure 3-25 and figure 3-26). This engagement is fired from the defense which allows better target acquisition and engagement planning as part of the conduct of fire for the crew.

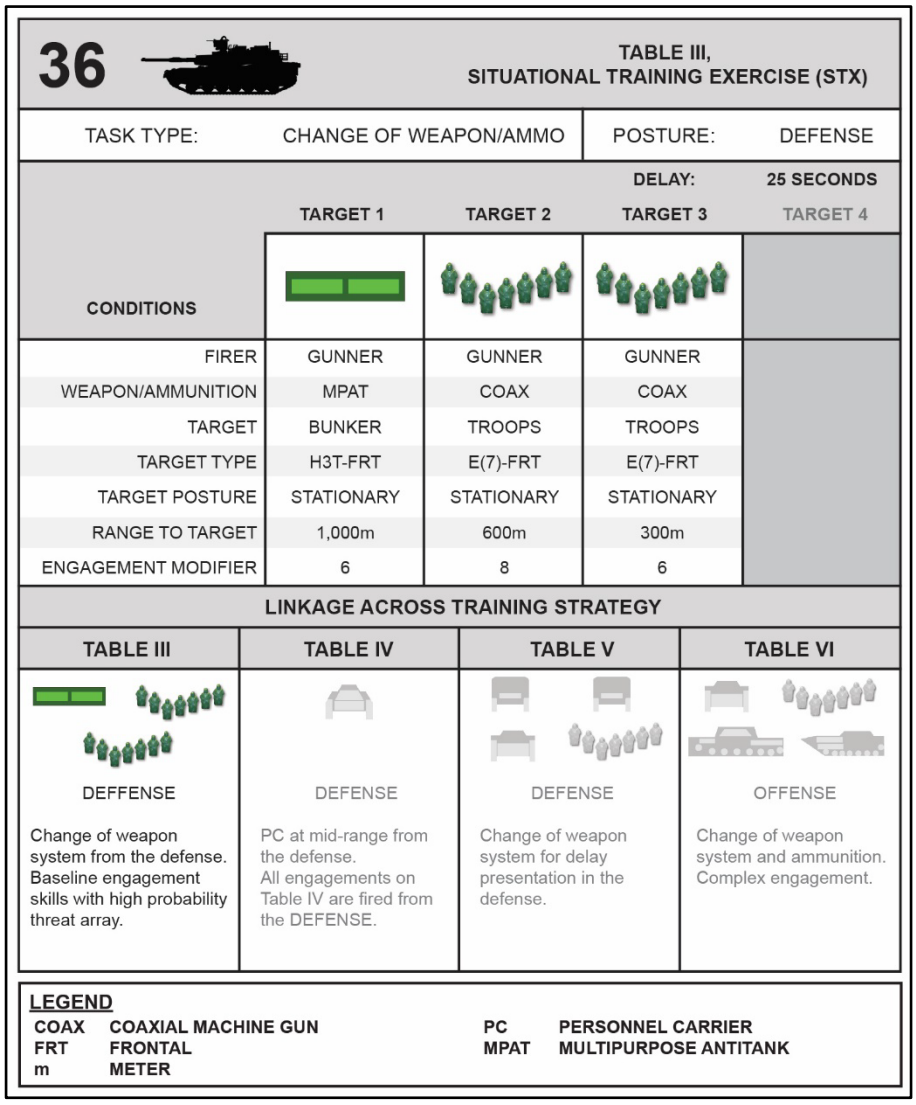


Figure 3-25. Engagement 36 overview

36	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/ AMMUNITION DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
	1.5		50		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY MPAT. CHECK YOUR MACHINE GUNS.
REPORT WHEN REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	FORTIFICATION WITH TROOPS IN SUPPORT
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

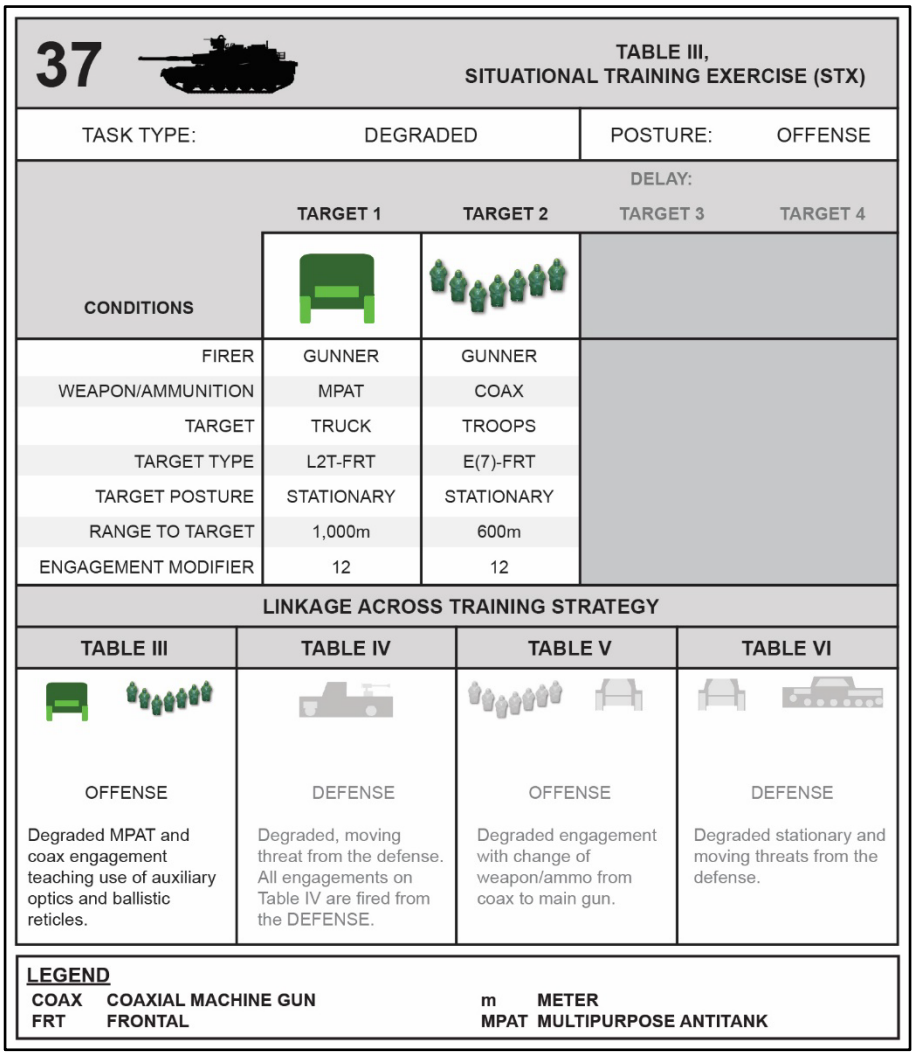
LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 3-26. Table III, STX, engagement 36, ammunition and script

ENGAGEMENT 37

3-70. Engagement 37 is a degraded engagement where the crew must engage multiple threats on the offense using degraded engagement techniques (see figure 3-27 and figure 3-28). This engagement challenges the crew by using battlesight gunnery techniques to defeat the threats.



37		TABLE III, SITUATIONAL TRAINING EXERCISE (STX)		
TASK TYPE:	DEGRADED		POSTURE:	OFFENSE
			DELAY:	
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	MPAT	COAX		
TARGET	TRUCK	TROOPS		
TARGET TYPE	L2T-FRT	E(7)-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	1,000m	600m		
ENGAGEMENT MODIFIER	12	12		

Figure 3-27. Engagement 37 overview

37	TARGET 1	TARGET 2	TARGET 3	TARGET 4
DEGRADED OFFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
	1.5		25		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

YOUR FIRE CONTROL SYSTEM IS DOWN. USE EMERGENCY MODE. BATTLECARRY MPAT. CHECK YOUR MACHINE GUNS. REPORT REDCON ONE.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND TRUCK
METHOD	NEAR TO FAR
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	BEGIN MOVEMENT, REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 3-28. Table III, STX, engagement 37, ammunition and script

ENGAGEMENT 38

3-71. Engagement 38 is a degraded engagement for the gunner to apply their auxiliary sight and apply the appropriate ballistic reticle for a mid-range coaxial threat (see figure 3-29 and figure 3-30). This requires the gunner to apply the appropriate ballistic reticle offsets to effectively engage and defeat the threat presented. Using TADSS may require the evaluator to announce target as the laser-based devices will not be aligned for the engagement.

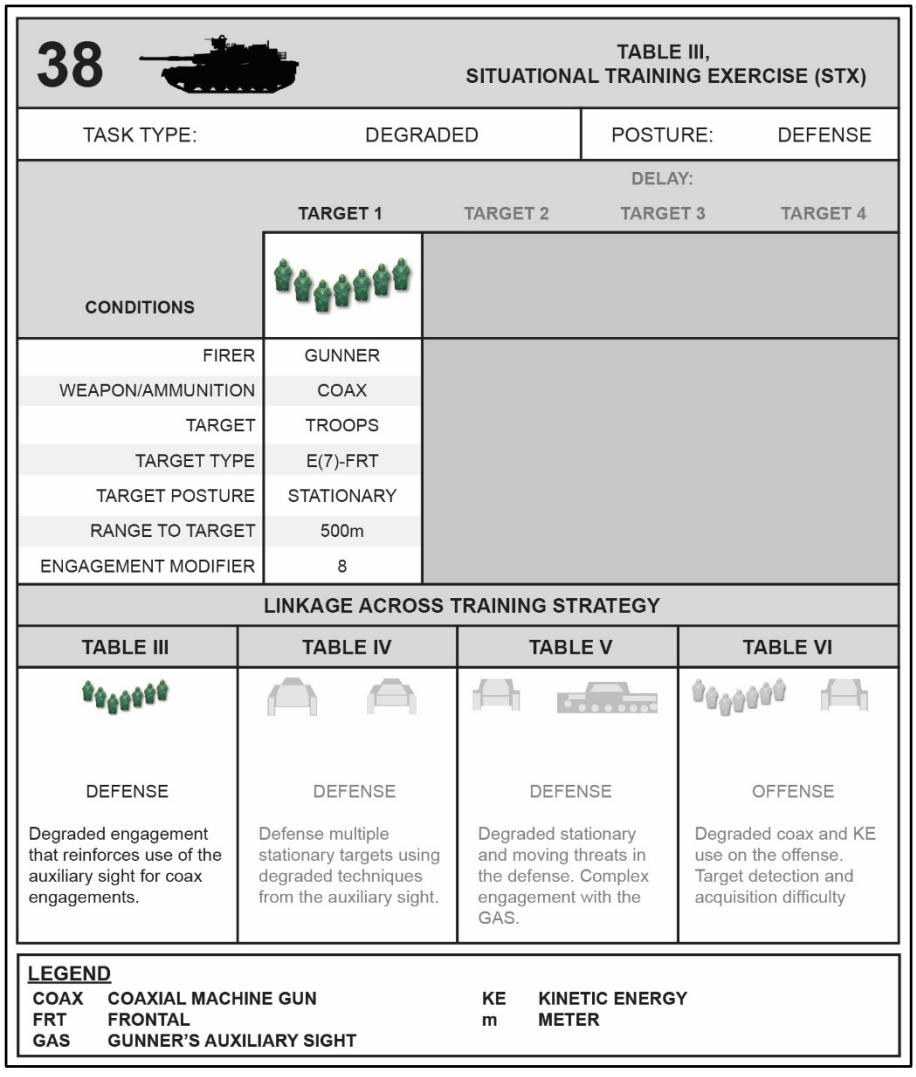


Figure 3-29. Engagement 38 overview

38 

TARGET 1	TARGET 2	TARGET 3	TARGET 4

DEGRADED DEFENSE		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
			25			

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR FIRE CONTROL SYSTEM IS OUT. CLOSE YOUR BALLISTIC DOORS. CHECK YOUR MACHINE GUNS. PREPARE FOR DEGRADED OPERATIONS AND REPORT REDCON ONE.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS
METHOD	AUXILIARY SIGHT
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 3-30. Table III, STX, engagement 38, ammunition and script

ENGAGEMENT 39

3-72. Engagement 39 is a simultaneous engagement from the offense where the gunner and VC must acquire and defeat threats using their respective machine guns (see figure 3-31 and figure 3-32). This is a complex engagement for the offense.

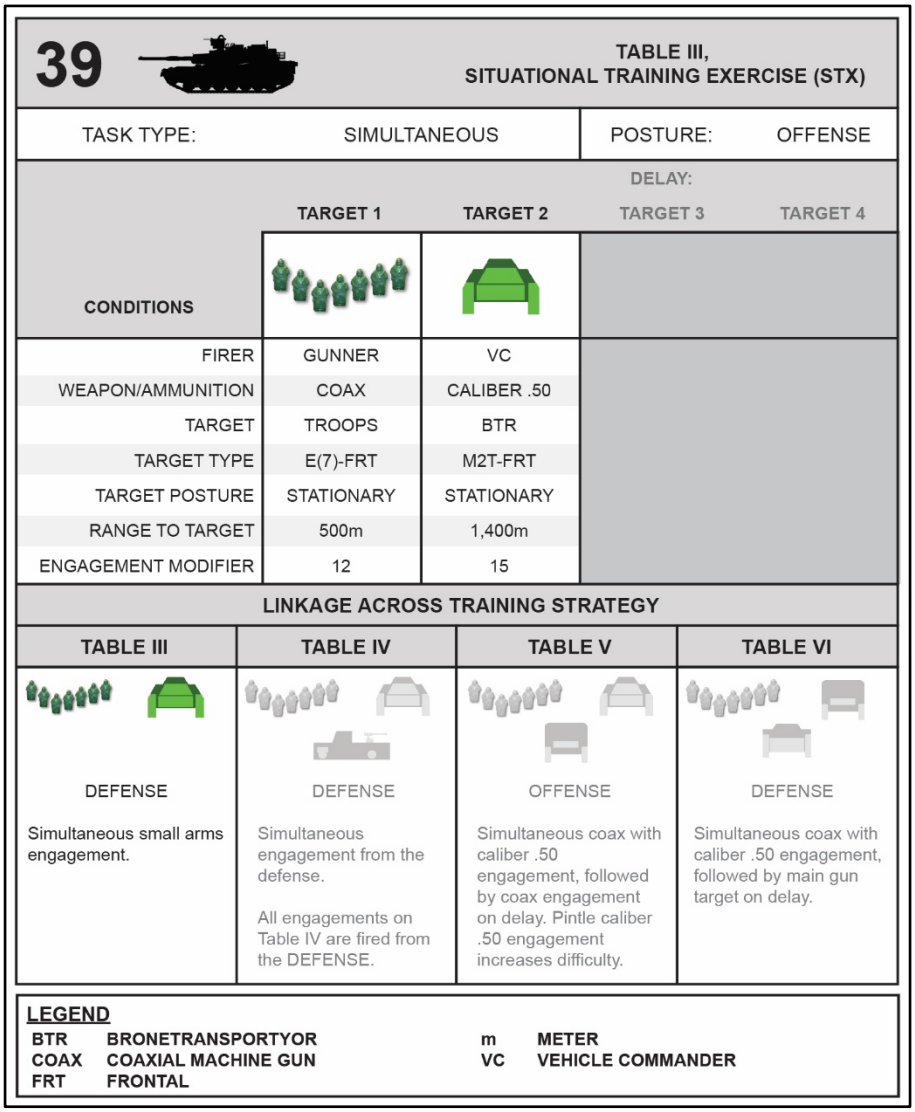


Figure 3-31. Engagement 39 overview

39	TARGET 1	TARGET 2	TARGET 3	TARGET 4
SIMULTANEOUS OFFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS						
KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**A111**	**A598**	**LA54**	**LA53**
			25	25	1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

CHECK CALIBER FIFTY AND COAX. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	CALIBER FIFTY AND COAX
TARGET DESCRIPTION	TROOPS WITH BTR IN SUPPORT
METHOD	SIMULTANEOUS
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

BTR	**BRONETRANSPORTYOR**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**

Figure 3-32. Table III, STX, engagement 39, ammunition and script

ASSESS—TABLE III

3-73. The intent of STXs is to train the crews within the organization on the appropriate conduct of fire skills, various crew critical skills, and emergency procedures across two training days. Proper evaluation and assessment of crew performance is key to improving individual and crew skills prior to moving to the live-fire events.

3-74. Units can maximize their AARs and assessments of training by fully integrating I-MILES CVTESS, HITS, laser target interface device, and CMU/IPU/CMUR systems in the training event. These systems used together provide a near-digital range facility capability at the company and battalion level.

FIRING GROUP AFTER ACTION REVIEWS

3-75. For the firing group, each crew is given an AAR at the completion of the day phase and night phase by a qualified VCE. Use DA Form 8265-1 to record and track the results of each crew's performance on each engagement at the completion of each phase. Tracking crew and platoon statistics on each engagement allow the unit leadership to identify areas for improvement.

Note: VCEs must be certified or recertified as described in TC 3-20.31. Performing the duties as a VCE during the conduct of Table III, STX is a significant part of building experience and knowledge of those gunners and VCs without firing.

3-76. Units should track the various firing information from the score sheets to identify where in the conduct of fire crews and the overall unit should apply additional training effort. Some of those indicators are—

- Target acquisition, detection, and identification.
- Time to fire.
- Time to kill.
- Opening and closing times for machine gun engagements.
- Gunner lay errors.
- Scanning techniques.
- Engagement techniques.
- Conduct of fire issues.
- Penalties by type.

3-77. Each crew should receive a formal AAR following the guidelines found in TC 3-20.31. Each evaluator should use DA Form 8265 and DA Form 8265-1 as the basis for their evaluation, identifying the firing occasional information from the score sheet timelines. The evaluator and VC each review and sign the DA Form 8265-1.

CRITICAL SKILLS TASK AFTER ACTION REVIEWS

3-78. Evaluators should provide clear and articulate comments and insight about the positive and negative actions of the crews they observed. Evaluators should use the T&EOs to guide them through the evaluation process and use the doctrinal publications to support their comments.

3-79. The evaluators should share the overall performance of the unit, including the observations, with the entire training unit. This allows the subordinate units to learn from other unit's best practices, procedures, and tactics, and at times from their shortcomings or mistakes. The commander should identify crews within the organization that demonstrate superior performance.

3-80. At the completion of this portion of crew Table III, STX, commanders, executive officers, and 1SGs should gain insight to where their unit's SOPs are working and where they need additional attention. If time is available, commanders should update and provide those changes or revisions to the unit prior to executing any live-fire event. Of particular interest is the drivers' training program, vehicle load plans, stowage of individual tactical gear, crew evacuation procedures, and medical evacuation procedures.

RETRAIN

3-81. The unit Master Gunner maintains the unit roll-up by engagement. A subcategorized roll-up by platoons provides the commander a snapshot of training trends, strengths, and weaknesses. The Master Gunner should not only identify crews that did not achieve a passing standard, but also crews that struggled on specific engagement tasks. Once done, the unit can establish and conduct the appropriate focused retraining followed by a subsequent evaluation.

3-82. All crews must successfully complete the course of fire based on the standards for the engagements listed earlier in this chapter. No crew may proceed to Table IV or any other live-fire event, including zeroing, or sub-caliber events until they have achieved the minimum standard on Table III.

3-83. Platoon sergeants and platoon leaders should identify crews that require additional training on the various crew critical skills. Although the evaluation may be completed, units should integrate sustainment training into their unit training plans, particularly when environmental conditions change, movement during limited visibility is required, or planning or expecting tactical movement through restricted or rugged terrain.

DRIVER'S TRAINING—TABLE III

3-84. Leaders should determine the number of miles driven during the day and night phases for their assigned drivers. This information should be recorded, including the miles driven, miles driven with the enhanced viewer, and any tactical (off-road) miles driven.

CREW GUNNERY FOLDER RECORDS—TABLE III

3-85. Once testing is complete, the Master Gunner records the results of all training completed in the crew gunnery folder. The records must be maintained for a minimum of 12 months.

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE III

3-86. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

Note. Leaders must be granted access by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the ICTL that are trained and tested during the training event.

3-87. From within the SULT, the authorized leader is enabled to view, maintain, and update—

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting T&EOs (access dependent on proponent distribution restrictions).

3-88. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

3-89. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS—TABLE III

3-90. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

3-91. Tasks that are included within this event for the crew are found in figure 3-33 on page 95 through page 105. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.



TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
071-025-0005	Correct Malfunctions of an M240B/M240L Machine Gun	Yes	Yes		
071-025-0040	Install the M21 Blank Firing Attachment (BFA) on the M240 Machine	Yes			
071-025-0041	Remove the M21 Blank Firing Attachment (BFA) from the M240	Yes	Yes	Yes	Yes
071-300-0001	Conduct Troop Leading Procedures	Yes			
171-091-1023	Conduct Vehicle Resupply	Yes	Yes		
171-121-3009	Control Techniques of Movement	Yes			
171-121-4017	Supervise Tank Platoon Formations and Drills	Yes			
171-121-4021	Plan Range Operations	Yes			
171-121-4028	Plan Occupation of a Battle Position	Yes			
171-121-4030	Conduct Vehicle Tactical Navigation	Yes			
171-121-4041	Conduct Combat Table Operations	Yes			
171-121-4051	Prepare a Situation Report (SITREP)	Yes			
171-121-4057	Perform Techniques of Movement	Yes			
171-121-4062	Issue an Oral Operation Order (OPORD)-Fragmentary Order (FRAGORD)	Yes			
171-121-4064	Prepare Logistical Status (LOGSTAT) Reports	Yes			

Figure 3-33. Table III, STX, individual tasks touch points

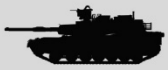


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-121-4065	Direct Vehicle Tactical Movement	Yes			
171-121-4067	Execute Platoon Precombat Operations	Yes			
171-122-1012	Perform Operator Maintenance on an M240 Series Machine Gun		Yes	Yes	Yes
171-122-1061	Maintain Property Accountability	Yes	Yes	Yes	Yes
171-123-1000	Direct Occupation of a Vehicle Fighting Position	Yes			
171-123-1021	Prepare Ammunition for Stowing		Yes	Yes	Yes
171-123-1023	Maintain Operator's Part of Equipment Record Folder			Yes	
171-123-1090	Perform Preventive Maintenance on Basic Issue Items (BII)		Yes	Yes	Yes
171-123-3001	Supervise Personnel Handling Ammunition	Yes			
171-123-4020	Perform Operator Maintenance on Gunner's Primary Sight (GPS)	Yes			
171-126-1040	Evacuate a Wounded Crewman from an M1-Series Tank	Yes	Yes	Yes	Yes
171-126-1055	Refuel an M1-Series Tank	Yes	Yes	Yes	Yes
171-126-1125	Perform Main Gun Misfire Procedures on an M1-Series Tank	Yes	Yes		

Figure 3-33. Table III, STX, individual tasks touch points (continued)

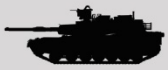


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-126-1255	Perform Operator Maintenance on M1-Series Tank Periscopes and Sights		Yes		
171-131-2009	Perform Detailed Disassembly/ Assembly of the M240 Machine Gun		Yes	Yes	Yes
171-131-2010	Perform Detailed Disassembly and Assembly, M2HB Machine Gun	Yes	Yes	Yes	Yes
171-131-2014	Perform Detailed Disassembly-Assembly of an M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-2017	Identify Ammunition Container Markings	Yes	Yes	Yes	Yes
171-131-2018	Identify the Components of Main Gun and Small Arms Ammunition	Yes	Yes	Yes	Yes
171-131-2077	Repair Malfunctions of M240 Machine Gun		Yes		
171-131-2078	Repair Malfunctions of M2 Flex Machine Gun	Yes			
171-136-0005	Mount the Thermal Identification Panel (TIP)		Yes	Yes	Yes
171-138-0009	Troubleshoot Multiple Integrated Laser Engagement System (MILES)	Yes	Yes		
171-138-0015	Conduct Advanced Vehicle Identification	Yes	Yes		

Figure 3-33. Table III, STX, individual tasks touch points (continued)



TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-138-0017	Identify Restricted and Suspended Ammunition	Yes	Yes		
171-138-0018	Communicate the Engagement of Targets from an M1A2 SEP Tank	Yes	Yes		
171-138-0021	Conduct Individual Weapon and Crew Served Ranges	Yes	Yes		
171-138-0022	Describe Target Acquisition Methods	Yes	Yes		
171-150-0001	Operate Intercommunications Set AN/VIC-3(V) on an M1 Series Tank	Yes	Yes	Yes	Yes
171-150-0002	Place the Enhanced Position Locating Reporting System (EPLRS) into Operation	Yes			
171-150-0010	Operate the Turret Systems Using the Commander's Display Unit (CDU)	Yes			
171-150-0098	Perform Built-In Tests (BITs) on the Commander's Display Unit (CDU)	Yes			
171-151-0009	Maintain the AN/VAS-5B Driver's Vision Enhancer (DVE)			Yes	
171-19K-1020	Drive an M1A2 SEP Tank			Yes	
171-19K-1021	Extinguish a Fire on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-1023	Prepare the Driver's Station for Operation on an M1A2 SEP Tank			Yes	
171-19K-1024	Prepare the Loader's Station for Operation on an M1A2 SEP Tank				Yes

Figure 3-33. Table III, STX, individual tasks touch points (continued)

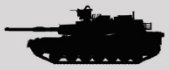


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1025	Operate the Engine on an M1A2 SEP Tank			Yes	
171-19K-1026	Secure the Loader's Station on an M1A2 SEP Tank				Yes
171-19K-1040	Secure the Driver's Station on an M1-Series Tank			Yes	
171-19K-1041	Operate the Driver's Vision Enhancer (DVE) on an M1 Series Tank			Yes	
171-19K-1043	Perform Fuel Transfer Procedures on an M1-Series Tank			Yes	
171-19K-1044	Mount Combat Identification Panels (CIPs) onto an M1-Series Tank	Yes	Yes		
171-19K-1045	Install the Driver's Vision Enhancer (DVE) on an M1 Series Tank			Yes	
171-19K-1046	Remove the Driver's Vision Enhancer (DVE) from an M1 Series Tank			Yes	
171-19K-1061	Operate Tank Urban Survivability Kit (TUSK) Autoflug Driver's Seat			Yes	
171-19K-1070	Operate the Main Gun Signature Simulator (MGSS)	Yes	Yes		
171-19K-1071	Install the Main Gun Signature Simulator (MGSS)	Yes	Yes	Yes	Yes
171-19K-1080	Apply Night Vision Principles to Tracked Vehicle Driving	Yes		Yes	
171-19K-1120	Perform Built-In Tests (BIT) on the Improved Driver's Integrated Display	Yes			
171-19K-1121	Perform Diagnostics Mode Maintenance on the Improved Driver's Integrated Display (IDID)	Yes			

Figure 3-33. Table III, STX, individual tasks touch points (continued)

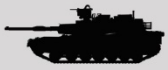


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1122	Perform PMCS on a Caliber .50 Browning M2HB Flex Machine Gun	Yes			
171-19K-1123	Service the Air Induction System on an M1A2 SEP Tank		Yes	Yes	Yes
171-19K-1143	Inspect the Hydraulics on an M1 Series Tank		Yes	Yes	Yes
171-19K-1149	Conduct Preventive Maintenance Checks and Services (PMCS) on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1150	Troubleshoot an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1152	Troubleshoot the Driver's Vision Enhancer (DVE) on an M1 Series Tank			Yes	
171-19K-1222	Mount a Caliber .50 Browning M2 Series Machine Gun	Yes	Yes	Yes	Yes
171-19K-1237	Remove the Loader's M240 Machine Gun on an M1-Series Tank				Yes
171-19K-1239	Unload the 120-MM Main Gun on an M1-Series Tank				Yes
171-19K-1240	Load an M240 Machine Gun on an M1-Series Tank		Yes		Yes
171-19K-1241	Unload an M240 Machine Gun on an M1-Series Tank		Yes		Yes
171-19K-1242	Engage Targets with the M240 Machine Gun from the Loader's Station on an M1-Series Tank		Yes		
171-19K-1244	Load the 120-MM Main Gun on an M1-Series Tank				Yes
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank				Yes

Figure 3-33. Table III, STX, individual tasks touch points (continued)



TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank				Yes
171-19K-1250	Stow Ammunition on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1251	Service The 120-mm Main Gun On An M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1420	Place the Nuclear, Biological, and Chemical (NBC) System into Operation	Yes	Yes	Yes	Yes
171-19K-1440	Operate the Nuclear, Biological, and Chemical (NBC) Backup System	Yes	Yes	Yes	Yes
171-19K-2002	Supervise Preventive Maintenance Checks and Services (PMCS)	Yes			
171-19K-2006	Prepare a Tank Sketch Card for an M1-Series Tank		Yes		
171-19K-2200	Prepare the Gunner's Station for Operation on an M1A2 SEP Tank		Yes		
171-19K-2201	Secure the Gunner's Station on an M1A2 SEP Tank		Yes		
171-19K-2203	Operate the Improved Gunner's Control Display Panel (iGCDP)		Yes		
171-19K-2210	Boresight the M1A2 SEP Tank	Yes	Yes		Yes
171-19K-2212	Engage Targets with the Coaxial from the Gunner's Station	Yes	Yes		
171-19K-2236	Engage Targets with the Main Gun from the Gunner's Station	Yes	Yes		
171-19K-2237	Conduct Alternative Range Determinations	Yes	Yes		

Figure 3-33. Table III, STX, individual tasks touch points (continued)

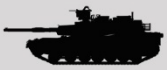


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3001	Prepare the Position/Navigation System for Operation	Yes			
171-19K-3004	Secure the Commander's Station on an M1A2 SEP Tank	Yes			
171-19K-3008	Operate the Improved Commander's Display Unit (ICDU) in Vehicle Systems Mode	Yes			
171-19K-3009	Operate the ICDU in Diagnostics Mode	Yes			
171-19K-3010	Operate ICDU in Command, Control, and Communications (C3) Mode	Yes			
171-19K-3011	Operate the Commander's Tactical Display (CTD) Input Device	Yes			
171-19K-3012	Operate Commander's Independent Thermal Viewer (CITV)	Yes			
171-19K-3013	Prepare the Commander's Station for Operation on an M1A2 SEP Tank	Yes			
171-19K-3014	Direct an Evacuation Drill on an M1-Series Tank	Yes			
171-19K-3015	Direct the Extinguishing of a Fire on an M1A2 SEP Tank	Yes			
171-19K-3101	Perform Diagnostics Mode Maintenance on the ICDU	Yes			
171-19K-3201	Load a Caliber .50 Browning M2 HB Flex Machine Gun	Yes	Yes		
171-19K-3202	Unload a Caliber .50 Browning M2 HB Flex Machine Gun	Yes	Yes		
171-19K-3207	Engage Targets With a Caliber .50 M2 Heavy Barrel (HB) Flex Machine Gun	Yes			
171-19K-3211	Direct Machine Gun Engagements on an M1-Series Tank	Yes			

Figure 3-33. Table III, STX, individual tasks touch points (continued)

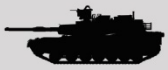


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3213	Perform Special Gunnery Checks on an M1A1 Tank	Yes	Yes		
171-19K-3219	Engage Targets with the Main Gun from the Commander's Station	Yes			
171-19K-3220	Install an M240 Machine Gun in the Commander's Weapon Mount	Yes			
171-19K-3222	Engage Targets with an M240 in the Commander's Weapon Mount	Yes			
171-19K-3223	Direct Main Gun Failure-To-Fire Procedures on an M1A2 SEP Tank	Yes	Yes		
171-19K-3224	Operate the Commander's Weapon Station System (CWSS) with an M2 .50 Caliber Thermal Sight/Day TV System	Yes			
171-19K-3232	Direct Main Gun Engagements on an M1-Series Tank	Yes			
171-19K-3233	Engage Targets with the Coax from the Commander's Station	Yes			
171-19K-4001	Execute Tank Platoon Precombat Operations	Yes	Yes	Yes	Yes
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0049	Gain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-300-0052	Maintain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-300-0064	Maintain Optical Devices for Weapons		Yes	Yes	

Figure 3-33. Table III, STX, individual tasks touch points (continued)

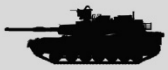


TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-300-0083	Enforce Rules of Engagement (ROE)	Yes	Yes	Yes	Yes
171-309-0650	Inspect DA Form 5988-E or DA Form 2404	Yes			
171-610-0001	Perform a Map Reconnaissance	Yes			
171-610-0002	Recognize Threat Tactics and Battlefield Organization	Yes	Yes		
171-620-0123	Employ Common Operational Terms and Graphics	Yes			
171-905-0004	Install Multiple Integrated Laser Engagement System (MILES)	Yes	Yes	Yes	Yes
171-924-0015	Perform Duties as a Vehicle Crew Evaluator (VCE)	Yes	Yes		
171-928-0001	Install the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0002	Remove the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0005	Supervise Installation of the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes		
171-928-0006	Supervise the Removal of the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes		
171-928-0009	Perform Set-Up Procedures for the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes		

Figure 3-33. Table III, STX, individual tasks touch points (continued)



TABLE III
SITUATIONAL TRAINING EXERCISE (STX)
INDIVIDUAL TASK TOUCH POINTS, CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-928-0010	Operate the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes		
171-928-0011	Perform PMCS on the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0012	Troubleshoot the Thru-Sight Video (TSV) System	Yes	Yes		
171-928-0013	Conduct an After-Action Review Using the Thru-Sight Video (TSV) System	Yes	Yes		
171-COM-0302	Conduct Occupation of an Assembly Area	Yes	Yes		
171-COM-4079	Send a Situation Report (SITREP)	Yes			
171-COM-4080	Send a Spot Report (SPOTREP)	Yes			

Figure 3-33. Table III, STX, individual tasks touch points (continued)

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Chapter 4
Table IV—Basic

Table IV, Basic, is designed to train basic skills to enable proper leader and Soldier execution of those crew skills. This table builds upon those skills trained and tested during Table I, II, and III. It is a combination of primary armament screening or zero and machine gun zero procedures.

The design of Table IV is to complete the screening and zeroing process of the primary armament and machine guns, complete main gun confirmation from the gunner and tank commander's positions, and train and evaluate the crew's ability to engage single and multiple stationary or moving targets placed in a tactical array with an operational or simulated degraded fire control system, as the conditions require. Crews execute these tasks from the defense using full-caliber ammunition.

Note. Not all Abrams-series tanks will include a commander's independent viewer or Common Remotely Operated Weapon Station (CROWS). For those variants, the VC will determine how to engage those targets.

OVERVIEW OF TABLE IV

4-1. Table IV provides crews the ability to align their fire control system, screen or zero their ammunition by type, and complete basic machine gun engagement skills from a defensive firing position. The three task sets (or sections) to Table IV, Basic are—

- Screening/zeroing.
- Main gun confirmation
- Basic machine gun engagements.

4-2. Completion of the screening and zeroing procedures must occur prior to moving to the next task group in Table IV. This is to ensure the fire control system aligns correctly and the ammunition can hit the target as expected ballistically. The main gun confirmation is conducted after successfully completing the screening and zeroing task group. It provides confirmation the fire control system is operating correctly using power control from the gunner's and tank commander's stations. It includes a muzzle reference sensor (MRS) update between those two engagements. Lastly, the basic machine gun engagements provide training on target acquisition, target hand-off, commander's independent thermal viewer use, engagement techniques, and employing the CROWS.

4-3. Figure 4-1 shows where Table IV, Basic, resides withing the heavy tank training strategy through crew qualification. This is the first event with the crew operating the platform under live-fire conditions.

4-4. All listed preparation to fire requirements must be successfully completed prior to conducting any task group within table IV. Failure to complete the preparation to fire tasks may result in a failure to successfully complete the tasks and engagements within Table IV and will cause significant loss of resources to the unit.

CREW TABLE IV	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	*WALK*	***RUN***	*RUN*	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

Platforms that require alignment, zeroing, confirmation of point of aim (PoA)/point of impact (PoI) or other critical tasks must complete Table IV prior to conducting any other live fire event with the weapon.

LEGEND

GST	**GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM**	**STX-V**	**SITUATIONAL TRAINING EXERCISE-VIRTUAL**
QUAL	**QUALIFICATION**	**TADSS**	**TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS**
STX	**SITUATIONAL TRAINING EXERCISE**		

PREP-TO-FIRE REQUIREMENTS

CREWS MAY NOT CONDUCT ANY LIVE FIRE MAIN GUN ENGAGEMENT INCLUDING SCREENING PROCEDURES WITHOUT COMPLETING ALL PREPARATION TO FIRE (PREP-TO-FIRE) TASKS AND MAINTENANCE PROCEDURES LISTED BELOW.

TASK	REMARKS
PREVENTATIVE MAINTENANCE CHECKS AND SERVICES	
RECOIL EXERCISE	180-DAYS PRIOR TO FIRING
BORESIGHT	2X DAILY (DAY AND NIGHT) DURING LIVE FIRE TRAINING
PLUMB AND SYNCHRONIZATION	30-DAYS PRIOR TO FIRING
ARMAMENT ACCURACY CHECKS	
GUNNERY CHECKS	

Figure 4-1. Table IV, Basic

4-5. Figure 4-2 shows the required sequence of events for Table IV. Units must conduct Table IV to standard in the sequence shown prior to advancing to Table V, Practice.

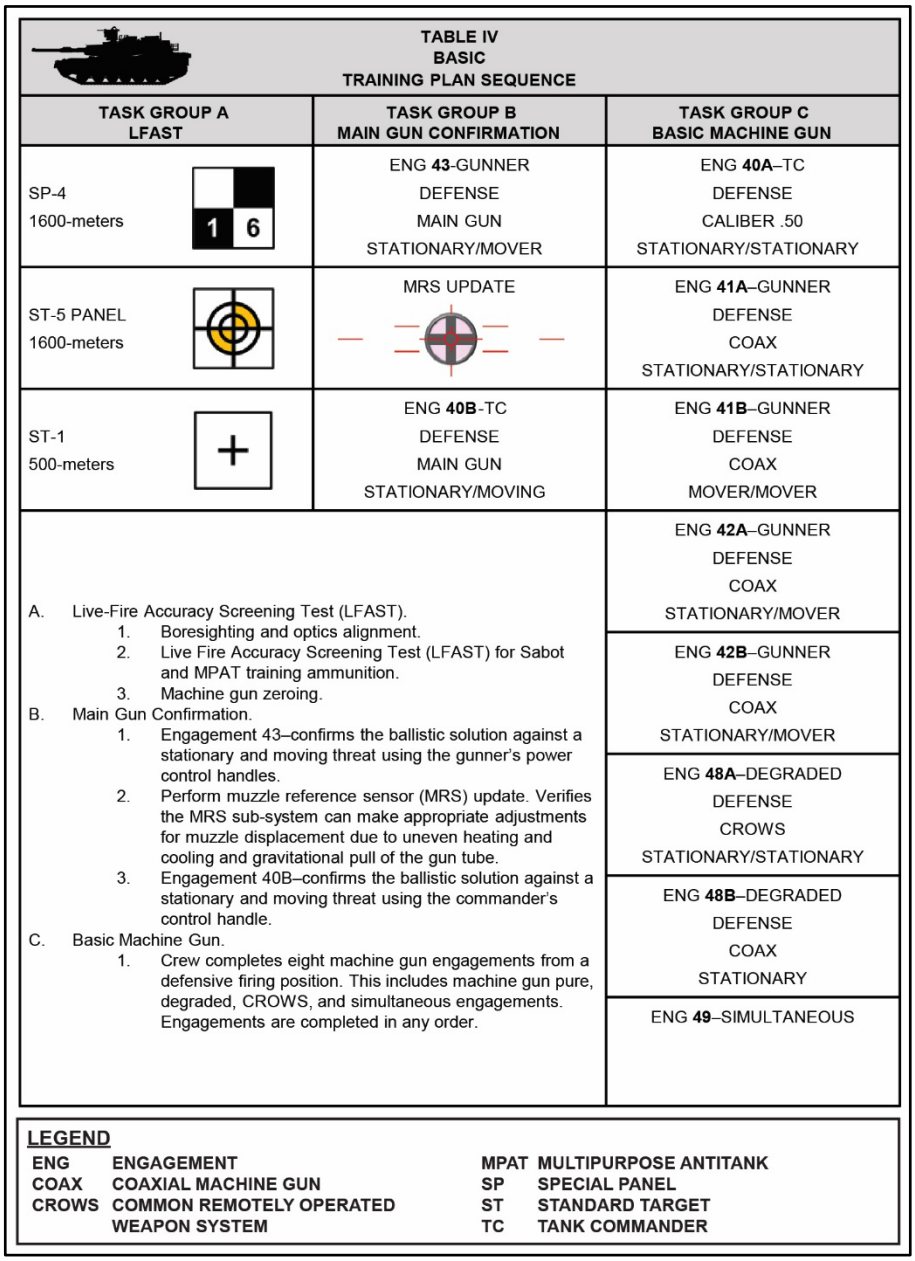


TABLE IV
BASIC
TRAINING PLAN SEQUENCE

TASK GROUP A LFAST	TASK GROUP B MAIN GUN CONFIRMATION	TASK GROUP C BASIC MACHINE GUN
SP-4 1600-meters	ENG **43**-GUNNER DEFENSE MAIN GUN STATIONARY/MOVER	ENG **40A**–TC DEFENSE CALIBER .50 STATIONARY/STATIONARY
ST-5 PANEL 1600-meters	MRS UPDATE	ENG **41A**–GUNNER DEFENSE COAX STATIONARY/STATIONARY
ST-1 500-meters	ENG **40B**-TC DEFENSE MAIN GUN STATIONARY/MOVING	ENG **41B**–GUNNER DEFENSE COAX MOVER/MOVER
A. Live-Fire Accuracy Screening Test (LFAST). 1. Boresighting and optics alignment. 2. Live Fire Accuracy Screening Test (LFAST) for Sabot and MPAT training ammunition. 3. Machine gun zeroing. B. Main Gun Confirmation. 1. Engagement 43–confirms the ballistic solution against a stationary and moving threat using the gunner's power control handles. 2. Perform muzzle reference sensor (MRS) update. Verifies the MRS sub-system can make appropriate adjustments for muzzle displacement due to uneven heating and cooling and gravitational pull of the gun tube. 3. Engagement 40B–confirms the ballistic solution against a stationary and moving threat using the commander's control handle. C. Basic Machine Gun. 1. Crew completes eight machine gun engagements from a defensive firing position. This includes machine gun pure, degraded, CROWS, and simultaneous engagements. Engagements are completed in any order.		ENG **42A**–GUNNER DEFENSE COAX STATIONARY/MOVER
		ENG **42B**–GUNNER DEFENSE COAX STATIONARY/MOVER
		ENG **48A**–DEGRADED DEFENSE CROWS STATIONARY/STATIONARY
		ENG **48B**–DEGRADED DEFENSE COAX STATIONARY
		ENG **49**–SIMULTANEOUS

LEGEND

ENG	ENGAGEMENT	MPAT	MULTIPURPOSE ANTITANK
COAX	COAXIAL MACHINE GUN	SP	SPECIAL PANEL
CROWS	COMMON REMOTELY OPERATED WEAPON SYSTEM	ST	STANDARD TARGET
		TC	TANK COMMANDER

Figure 4-2. Table IV, Basic, sequence of training, example

Note. Commanders who identify additional training needs for their crews prior to progressing to Table V can integrate additional engagements found in appendix D, using Table B, basic skills engagements. Commanders can select engagements from the training menu based on specific training gaps. When including additional engagements, the unit is responsible for coordinating and providing the necessary training resources.

PURPOSE OF TABLE IV

4-6. Table IV, Basic, is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD FOR TABLE IV

4-7. Table IV includes the live fire accuracy screening test (LFAST) and machine gun zero procedures to ensure the accuracy of the tank before training initiates. It continues with a hands-on, performance-based evaluation of basic gunnery skills to the Army-standard of knowledge or skill in a live-fire environment. For the live-fire engagements, it utilizes experienced evaluators to educate, train, test, and retrain crews to meet or exceed those standards.

END STATE FOR TABLE IV

4-8. The tank commander and gunner assigned as the crew have successfully demonstrated the skills and knowledge required to continue training on the tank through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned.

4-9. The evaluated engagements in Table IV provide the commander a means to verify the crew's basic weapons platform proficiency prior to further live-fire training. It is a guide for the commander to identify individual and crew weapons platform strengths and weaknesses on specific engagement techniques and employment of the vehicle’s fire control system capabilities and enablers. The commander and Master Gunner use the results from Table IV, Basic to structure the unit's crew training program.

TASK, CONDITIONS, AND STANDARD FOR TABLE IV

4-10. The three task groups of Table IV, have their own unique set of task, conditions, and standards. The task, conditions, and standards for each task group are presented is sequential for clarity in the following sections of this chapter. The task groups within Table VI, Basic, are:

- Task Group A, screening and zeroing.
- Task Group B, main gun confirmation.
- Task Group C, basic machine gun.

PLAN—TABLE IV

4-11. Table IV, Basic, is a live environment, live-fire event that uses large and small caliber ammunition. It will require the use of appended TADSS, and the use of BESs during the defensive engagements.

4-12. This section details the resources needed for planning purposes common to all phases of Table IV. It includes general information on the following topics for consideration, which are the—

- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—the training ammunition requirements for phase of table IV, which includes a list of the required BESs to support the Army-standard target presentations for the defensive engagements.
- Uniform—the minimum uniform requirements for the training event.
- Facilities—available facilities that support the training event.
- Range support—the administrative support requirements to run the live-fire range facility including evaluation support.
- Facilities—the Army-standard facilities capable of supporting the training event to standard.
  - These are listed as primary and alternate facilities.
  - Facility type is based on inherent capabilities, availability, and supportability.
- Standard targets—specifically used for zeroing procedures for the main gun and machine guns, these targets are required to conduct Table IV.
- Training plan—the minimum tasks, general guidelines, and special instructions for the training event.

4-13. Table IV is a critical live-fire event. Failing to conduct the screening and zeroing procedures for the platform accurately will cripple any follow-on live-fire event outcomes.

PREP-TO-FIRE ACTIONS

Crews may not conduct Table IV, V, or VI without completing the complete preparation to fire (prep-to-fire) tasks. Failure to complete the following actions to standard within 30-days of conducting any live-fire engagement may cause damage to equipment, serious injury, or death:

- **Preventative maintenance checks and services.**
- **Boresight.**
- **Plumb and synch.**
- **Armament accuracy checks.**
- **Gunnery checks.**
- **Recoil exercise.**

TIME AND THROUGHPUT—TABLE IV

4-14. The throughput expectation for Table IV is 14 crews over the course of two days. This includes one training day to conduct Table IV, Task Group A, screening and zeroing, followed by one training day for Task Group B, main gun confirmation, and Task Group C, basic machine gun engagements. When using multiple range facilities, units should begin Task Group B, main gun confirmation, as soon as practical on day one of training.

Screening and Zeroing Throughput

4-15. The throughput expectation of this table is 14 crews per day. Depending on maintenance or other unforeseen issues, recommend incorporating an additional half training day to the schedule. Figure 4-3 shows the expected throughput schedule based on the number of vehicles to complete screening and zeroing.



TABLE IV, TASK GROUP A
TANK SCREENING AND MACHINE GUN ZERO
THROUGHPUT REQUIREMENTS

NUMBER OF CREWS	8	9	10	11	12	13	14	15	16
TIME TO COMPLETE SCREENING AND ZEROING	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0

Note: The throughput rule of thumb for screening and zeroing one tank is 30 minutes. Units that have trained crews and proofing teams will enable a higher throughput. Units are expected to begin the screening and zeroing tasks at the earliest opportunity to receive a HOT/WET STATUS from range operations. Typically, all facilities are capable of first-round-down-range at 0800.

Figure 4-3. Screening and zeroing, throughput expectations

Note. Time requirements overall are based on a single firing point and include 4 hours of range maintenance downtime (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations, crew instruction, and have trained proofing team support may have an increased throughput.

Main Gun Confirmation and Basic Machine Gun Throughput

4-16. The throughput expectation for Task Groups B and C combined is 14 crews per day. Figure 4-4 shows the expected throughput schedule based on the number of vehicles for firing and the unit's day and night engagement breakdown for the engagements.

4-17. When using a separate training facility for the live-fire engagements on Table IV, the unit should plan to operate the range on day one to facilitate additional time for completion.



TABLE IV, TASK GROUP B AND C MAIN GUN CONFIRMATION AND BASIC MACHINE GUN THROUGHPUT REQUIREMENTS

		NUMBER OF ENGAGEMENTS					
	DAY	8	7	6	5	4	
	NIGHT	2	3	4	5	6	
NUMBER OF CREWS	10	15.25	16.00	16.50	17.25	18.00	HOURS TO COMPLETE
	11	16.25	17.00	17.75	18.50	19.25	
	12	17.50	18.25	19.00	20.00	20.75	
	13	18.50	19.50	20.25	21.25	22.00	
	14	19.75	20.75	21.50	22.50	23.50	
	15	21.00	22.00	23.00	24.00	25.00	
	16	22.00	23.00	24.25	25.25	26.25	
	17	23.25	24.25	25.50	26.50	27.75	
	18	24.25	25.50	26.75	28.00	29.00	
	19	25.50	26.75	28.00	29.25	30.50	
	20	26.50	28.00	29.25	30.50	32.00	

Note: Overall time requirements are based on a single firing lane and include 4 hours of range maintenance down time (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

Any time shown exceeding 24 hours will not be possible in a single range day without unit action to conduct the range with a sense of urgency during preparation to fire tasks and execution of the table including tactical movement between engagements.

Figure 4-4. Task Groups B and C throughput expectations

Note. Time requirements include 4 hours of range maintenance downtime (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations and have additional VCE support may have an increased throughput.

AMMUNITION

4-18. The ammunition requirements are provided for each task group on Table IV. It includes a roll-up for Table IV overall initially. Figures 4-5 through 4-8 on page 118 provide the training munitions requirements for successful completion of Table IV, and all required task groups. Units must calculate appropriate overages to support discrete computer correction factor (CCF) requirements, maintenance checks, machine gun zeroing issues, and retraining as appropriate.

Table IV, Basic, Ammunition Roll-Up

4-19. Figure 4-5 provides a single roll-up of all required training munitions to complete Table IV. It provides the quantities for a single tank, a 14-tank company, and planning considerations for retraining and nearest package quantities.



TABLE IV, BASIC
TRAINING AMMUNITION REQUIREMENTS
ROLL-UP

DODIC	MUNITION TYPE	CREW	COMPANY	PACKAGE
CA31	CTG, 120MM TP-T M1002	5	70	90
CA69	CTG 120MM TPCSDS-T M865A1	5	70	90
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	600	9,000	10,000
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	350	4,900	5,000
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	16	224	250
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	16	224	250

Crew quantities represent the training ammunition requirements to complete one tank to standard. When completing screening procedures for less than a tank company, additional rounds are needed to support creating a discreet computer correction factor for a vehicle.

Company quantities represent the minimum number of rounds required to support 14 tanks for Table IV.

Package quantities reflect the nearest whole carton, crate, or pallet the munitions are configured for packaging.

LEGEND

BES	BATTLE EFFECTS SIMULATOR	MM	MILLIMETER
CAL	CALIBER	SIM	SIMULATOR
CTG	CARTRIDGE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DET	DETONATION		
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TP-T	TARGET PRACTICE-TRACER
EXP	EXPLOSIVE	TRCR	TRACER
LNKD	LINKED		

Figure 4-5. Table IV ammunition requirements and planning considerations

Table IV, Task Group A, Screening and Zeroing

4-20. Figure 4-6 provides the training ammunition requirements for the screening and zeroing task group of Table IV. The unit must ensure the main gun ammunition is grouped by type and lot number to ensure no mis-matched ammunition lots are used during the gunnery density for any given tank.



TABLE IV, TASK GROUP A,
SCREENING AND ZEROING
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	2
CA69	CTG 120MM TPCSDS-T M865A1	2
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	50
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	0
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	0

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.



PYROTECHNICS

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
EXP	EXPLOSIVE	TP-T	TARGET PRACTICE-TRACER
LNKD	LINKED	TRCR	TRACER

Figure 4-6. Screening and zeroing ammunition requirements

Table IV B, Main Gun Confirmation

4-21. Figure 4-7 provides the training ammunition requirements for one crew to complete the main gun confirmation phase of Table IV. Additional resources should be planned for to accommodate any retraining or main gun issues that require additional engagements. The quantities listed are for one tank.



TABLE IV, TASK GROUP B,
MAIN GUN CONFIRMATION
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	3
CA69	CTG 120MM TPCSDS-T M865A1	3
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	0
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	0
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	4
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	4

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS



PYROTECHNICS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
EXP	EXPLOSIVE	TP-T	TARGET PRACTICE-TRACER
LNKD	LINKED	TRCR	TRACER

Figure 4-7. Main gun confirmation training ammunition requirements

Table IV C, Basic Machine Gun

4-22. Figure 4-8 shows the training ammunition requirements to complete the eight defensive engagements for the basic machine gun phase of Table IV. The quantities listed reflect the ammunition requirements for one crew.



TABLE IV, TASK GROUP C,
BASIC MACHINE GUN
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	0
CA69	CTG 120MM TPCSDS-T M865A1	0
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	550
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	300
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	12
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	12

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS



PYROTECHNICS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
EXP	EXPLOSIVE	TP-T	TARGET PRACTICE-TRACER
LNKD	LINKED	TRCR	TRACER

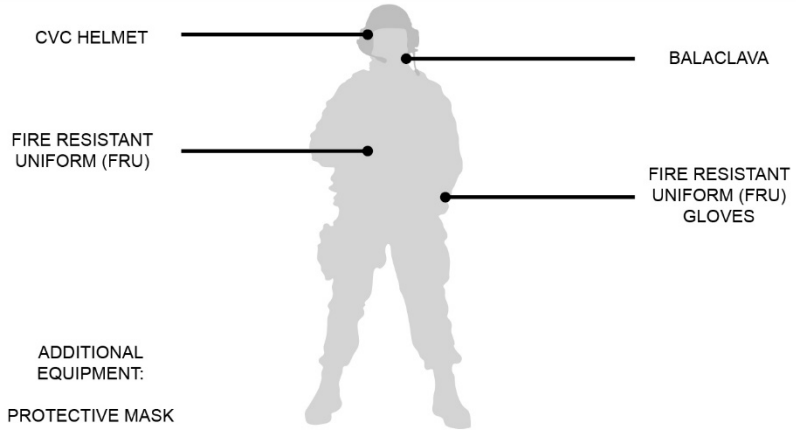
Figure 4-8. Basic machine gun training ammunition requirements

UNIFORM FOR TABLE IV

4-23. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor, ballistic plates, or gear during the training event unless directed by the commander. Figure 4-9 provides the minimum uniform training requirements this event.



TABLE IV
BASIC
UNIFORM REQUIREMENTS



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	4	1	3	3
0	NONE	NONE	NONE	NONE	NONE
1	PATROL CAP	VEST	**GOGGLES**	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	FRU		**HEADSET**	**FRU GLOVES**
4		**FRU and SPALL VEST**			

Note: The Combat Vehicle Crewman (CVC) helmet includes the headset hearing protection. Goggles or appropriate eye protection are required for exposed crewmen during vehicle movement.

Figure 4-9. Uniform requirements for simulations training

FACILITIES FOR TABLE IV

4-24. Table IV requires the use of a stationary gunnery range or better that allows live fire for large caliber, as well as 7.62 millimeter (mm) and caliber .50 small-caliber ammunition. No course road is necessary; however, moving armor targets are required.

4-25. All tasks are from a stationary (defensive) firing position. To maximize throughput, units may elect to use multiple range facilities; one for screening and zeroing procedures, and another for the main gun confirmation and basic machine gun engagements that require single and multiple stationary and moving targetry. The maneuver range facilities recommended as primary and alternate facilities are shown in figure 4-10.



TABLE IV
BASIC
AUTHORIZED FACILITIES

FACILITY		
Battle Area Complex	BAX	ALTERNATE
Digital Air Ground Integration Range	DAGIR	ALTERNATE
Digital/Multipurpose Range Complex	D/MPRC	ALTERNATE
Digital/Multipurpose Training Range	D/MPTR	**PRIMARY**
Scout/Recconnaissance Gunnery Complex	SRGC	ALTERNATE
Stationary Gunnery Range	STAGR	**SCREENING and ZERO ONLY**

Note: Units will require two training days per company to complete Table IV to standard with retraining and cross-training. Units may use two separate facilities to complete Table IV. The Stationary Gunnery Range may not have the required targetry to complete Table IV B, Main Gun Confirmation or Table IV C, Basic Machine Gun, at all installations. Units must coordinate with their supporting range operations for the specific capabilities provided.

Figure 4-10. Recommended maneuver range facilities to support screening and zeroing procedures

4-26. Units may elect to use two live-fire facilities to complete the requirements of Table IV. A unit may opt to complete the LFAST on one live-fire facility and conduct the main gun confirmation and basic machine gun engagements on another maneuver facility. Multiple ranges help to ensure sufficient time is available for vehicles having difficulty zeroing their weapons.

RANGE SUPPORT FOR TABLE IV

4-27. The range support personnel general requirements are in figure 4-11. This includes the most common support required for crew platform live-fire events. In the event the unit utilizes multiple facilities to complete the screening/zeroing task group and defensive engagement task groups, appropriate adjustments should be made to this general structure.

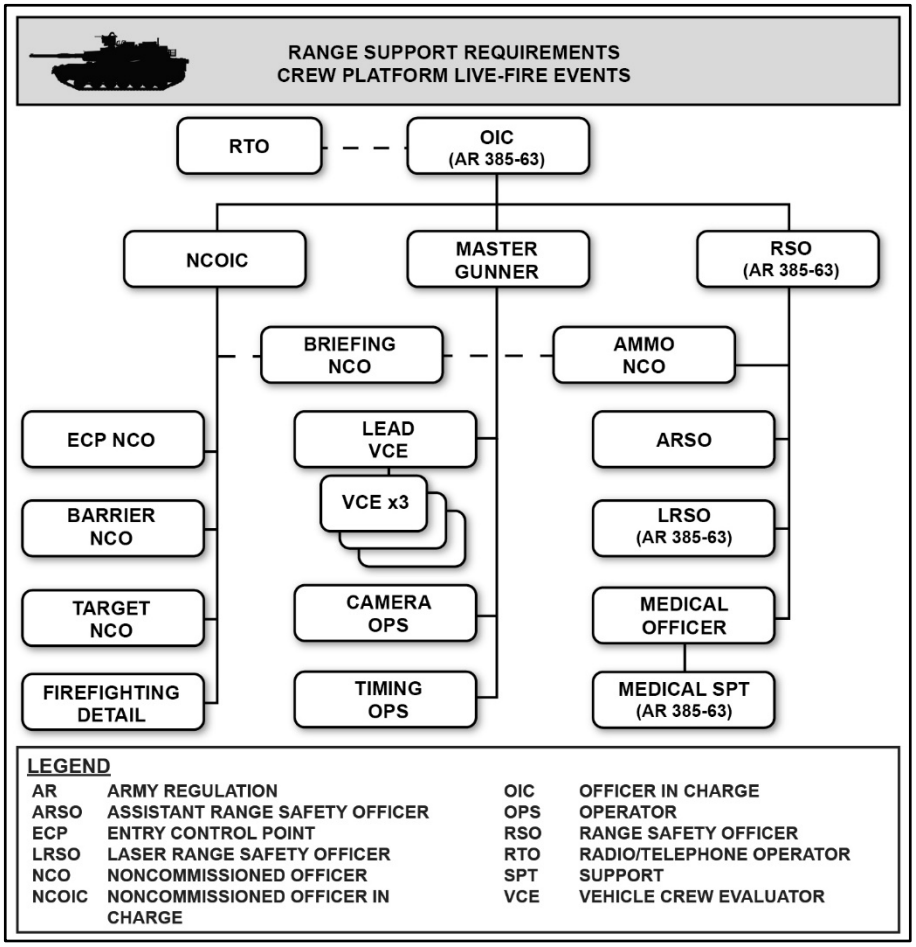


Figure 4-11. Range support personnel requirements, example

4-28. VCEs shown in figure 4-11 are required for Table IV, Task Group B, main gun confirmation, and Table IV, Task Group C, basic machine gun. The training unit provides VCE teams to evaluate the engagements in this course of fire. This requires the unit to have all gunners and above to certify or recertify as VCEs between T-6 and T-execution of the training event.

TARGETS AND PANELS

4-29. Figure 4-12 provides the dimensional information for the standard panel–one, often called SP-1, for the 1,600-meter boresighting procedures for the Abrams tank. This panel is placed at 1,600 meters, plus or minus 10 meters from the boresight line. It must include the range-to-panel indicator numbers on the lower-half of the panel.

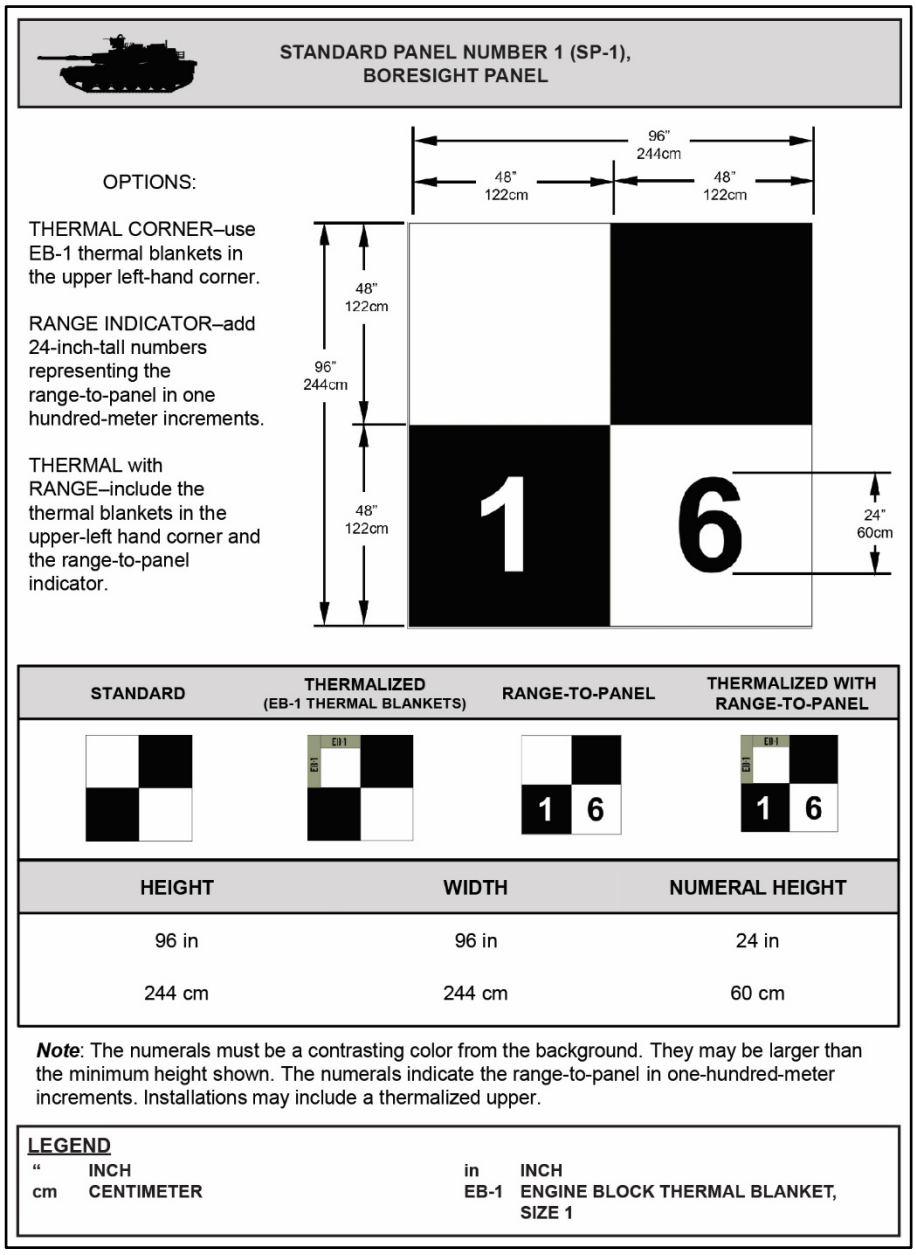
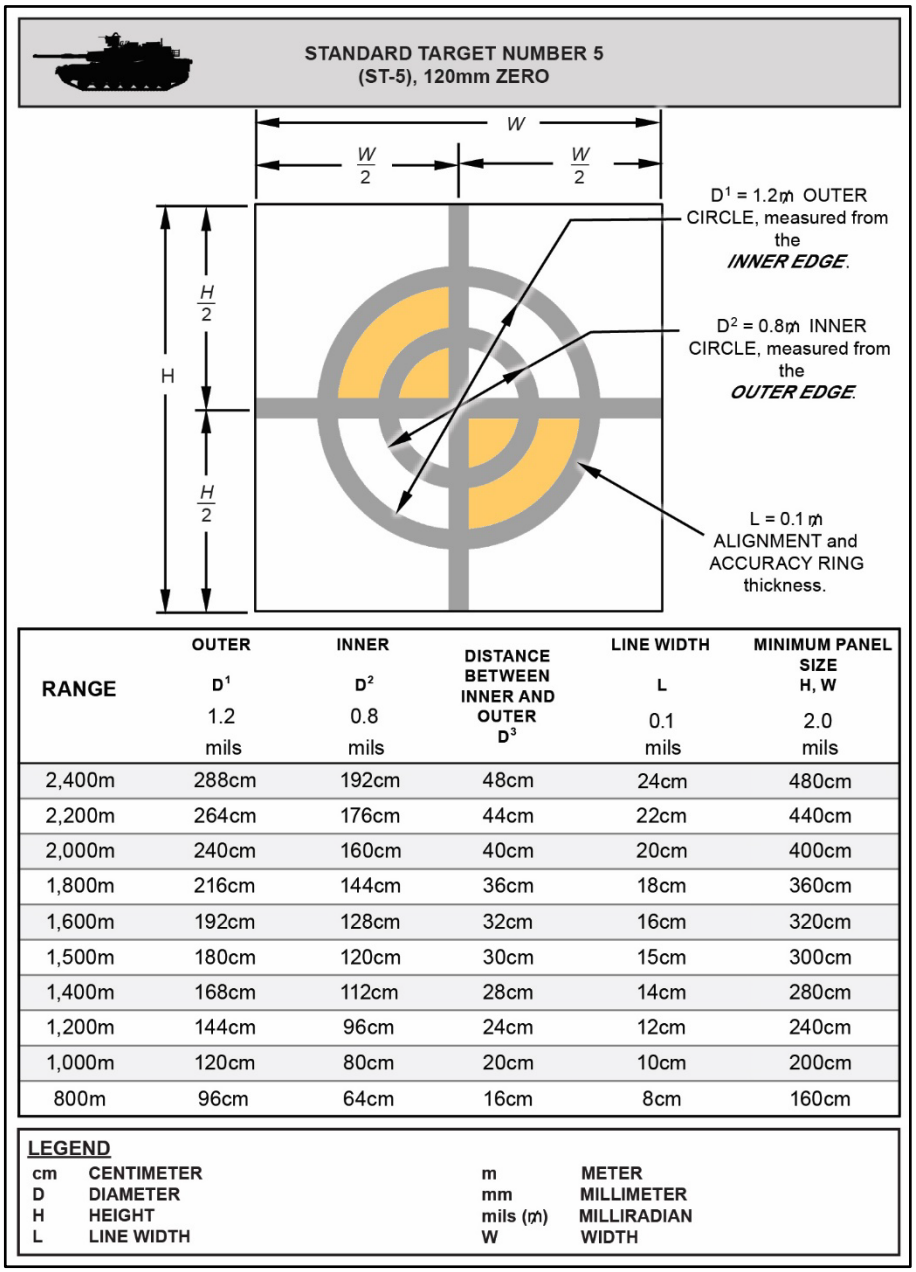


Figure 4-12. Standard panel—4 dimensions

4-30. Figure 4-13 provides the dimensional information from standard target number 5 (ST-5) for unit reference. Additional information can be found in TC 25-8.



RANGE	OUTER D^1 1.2 mils	INNER D^2 0.8 mils	DISTANCE BETWEEN INNER AND OUTER D^3	LINE WIDTH L 0.1 mils	MINIMUM PANEL SIZE H, W 2.0 mils
2,400m	288cm	192cm	48cm	24cm	480cm
2,200m	264cm	176cm	44cm	22cm	440cm
2,000m	240cm	160cm	40cm	20cm	400cm
1,800m	216cm	144cm	36cm	18cm	360cm
1,600m	192cm	128cm	32cm	16cm	320cm
1,500m	180cm	120cm	30cm	15cm	300cm
1,400m	168cm	112cm	28cm	14cm	280cm
1,200m	144cm	96cm	24cm	12cm	240cm
1,000m	120cm	80cm	20cm	10cm	200cm
800m	96cm	64cm	16cm	8cm	160cm

LEGEND

cm	CENTIMETER	m	METER
D	DIAMETER	mm	MILLIMETER
H	HEIGHT	mils (m)	MILLIRADIAN
L	LINE WIDTH	W	WIDTH

Figure 4-13. ST-5 panel for heavy tank main gun screening, example

4-31. Once complete with the screening process for each large caliber training munition type, the crew confirms the zero for the coaxially mounted and commander's weapon station machine guns. Crews follow the procedures outlined in the tank's technical manual. Figure 4-14 shows common small arms zero target information that support the zeroing procedures.

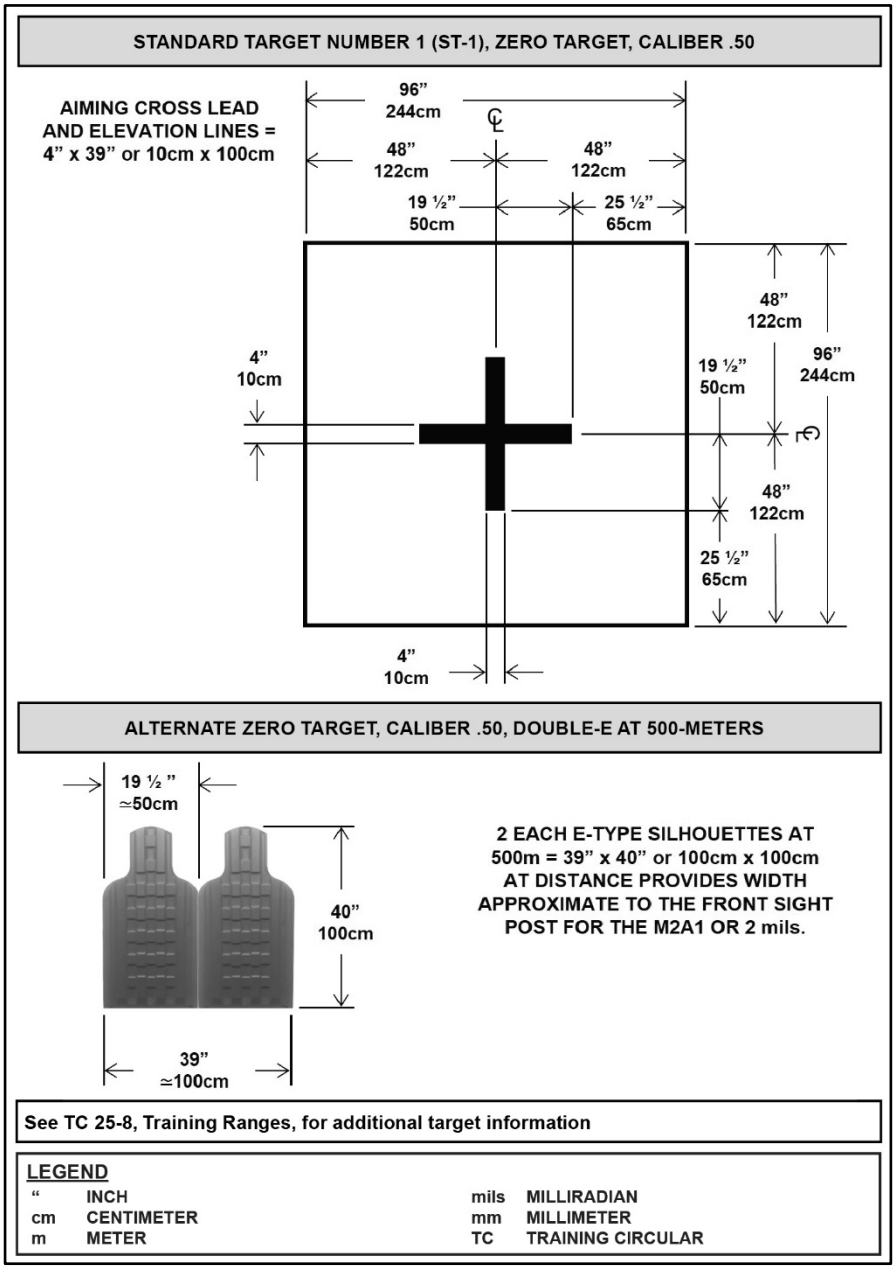


Figure 4-14. Heavy machine gun zero targets, example

TADSS FOR TABLE IV

4-32. This course requires the use of the CMU. Some installations may refer to this device as an IPU for all crews. The CMU is available on the digital range facility scheduled (if equipped). Coordination with the scheduled range facility manager will determine unit responsibilities for installation, troubleshooting, maintenance, and use of the devices ahead of the training day(s). If the range does not have a CMU available, unit may draw the CMUR from the TADSS warehouse. The CMUR differs from the CMU in that it stores all run data on a solid-state drive on the vehicle, for use with the provided AAR suite in the CMUR kit.

4-33. The brigade commander must approve authorization for deviation from this requirement if TADSS are unavailable in writing. Units should focus on training and reinforcing the skills in the direct fire kill chain on this table specifically with their thermal optics, day and night to best prepare them for the follow-on training events. Figure 4-15 shows the TADSS required or recommended for Table IV.



TABLE IV, BASIC
TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS (TADSS) REQUIREMENTS

DEVICE	NOMENCLATURE	REMARKS
CMU	Crew Module Unit/Integrated Player Unit	REQUIRED
CMUR	Crew Module Unit Recorder (Thru-Sight Video)	
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T	CONCURRENT TRAINING
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T	CONCURRENT TRAINING
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T	CONCURRENT TRAINING
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER	CONCURRENT TRAINING

LEGEND

APFSDS-T	ARMOR PIERCING DISCARDING SABOT TRACER	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT TRACER
HEAT-MP-T	HIGH EXPLOSIVE ANTITANK MULTIPURPOSE TRACER		

Figure 4-15. Table IV, Basic, TADSS requirements

PREPARE—TABLE IV

4-34. Units must coordinate for the appropriate training facility, equipment, targetry, training munitions, and TADSS (if desired) to support screening and zeroing. During the preparation phase, the unit should ensure the proofing team and other personnel receive training to standard to support their respective roles. This includes range officers in charge, range safety officers, and ammunition handlers.

TRAIN THE TRAINERS—TABLE IV

4-35. Table IV requires experienced and trained personnel to support the range. The unit must also include the field maintenance team in their preparation for screening and zeroing.

Proofing Team

4-36. Table IV, Task Group A, screening and zeroing requires an experienced proofing team in the event of a screening test failure. The unit Master Gunner provides training to the proofing team's members on the topics listed below at a minimum. The topics to be trained are—

- Preparation to fire checks.
- Armament accuracy checks.
- Gun tube technology.
- Error budget.
- Special gunnery checks.
- M1 gunner's quadrant.
- Screening procedures.
- Determination of mean point of impact (MPI).
- DA Form 2408-4 (*Weapon Record Data*).
- Fire control system overview.

4-37. These overview classes are required to ensure the Master Gunner has sufficient support during the screening process, particularly with conduct of the range, procedures, and determining discrete CCFs.

4-38. To prepare the trainers, units provide the—

- Commander's training objectives.
- Conduct of the range briefing for the training event.
- Scenario and lane concept with crew tasks for training.
- Risk assessment.
- TADSS, pyrotechnics, blanks, and BESs used during the training event (see appendix A for the training munitions requirements for the complete training strategy).

Vehicle Crew Evaluators

4-39. Typically, units have certified each VC and most gunners as VCEs prior to entering the live-fire density. Units must have certified evaluators to ensure the training objectives for the training table are set and to provide effective AARs to each crew.

4-40. A trained and certified VCE team must be available to support prior to live-fire to evaluate a gunnery density correctly. Once certification is completed, the unit must ensure sufficient VCEs are available to support the live-fire event. Evaluations of crew gunnery always come from outside the firing platoon element, and for qualification purposes, VCEs external to the battalion are required.

4-41. Depending on the size of the weapons training density (make-up gunnery, platoon, company, or battalion) and the type of range facility used, the number of evaluators may vary. Having the correct number and type of evaluators per firing range maximizes the unit's throughput of firing vehicles on the range, reduce range downtime, and provide for the highest quality evaluations.

RECONNAISSANCE OF THE SITE

4-42. Commanders use an authorized training facility as described earlier. Units may elect to use two separate training facilities to support all the Table IV task groups efficiently. Commanders follow the installation's policies and procedures for formally scheduling the training location as far in advance as practical. See TC 3-20.31 for more in-depth information concerning range operations at the unit level.

4-43. Once scheduled, the commander, Master Gunner, platoon leaders and platoon sergeants conduct a reconnaissance of the training areas to—

- Verify sufficient space is available to support the entire unit through multiple training lanes.
- Ensure multiple iterations or rotations through the scenario are achievable with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Provide sand table or terrain board.
- Identify the ammunition supply point.
- Determine the conduct of the range or the flow of training to maximize the live-fire range time.
- Identify the range operating system and verify the training scenarios have been properly loaded.
- Schedule proofing of the range, based on the higher headquarters OPORD.

ISSUE THE ORDER

4-44. Commanders can issue an OPORD, WARNORD, or use the training schedule as necessary. The WARNORD should include the appropriate tasks, required leaders, and equipment needed, as well as the unit's training timeline including walk-through, rehearsals, and AARs. WARNORDs for external organizations must include sufficient reaction time for the appropriate personnel and equipment needed.

REHEARSE—TABLE IV

4-45. The unit uses all training resources, materials, and equipment available to conduct rehearsals of training events. During the rehearsal, commanders ensure their unit has sufficient time to train to the specified standard.

4-46. Units should rehearse the training event from start to finish, and confirm—

- The proofing team understand the tasks, their role, and responsibilities.
- Sufficient space is available to provide appropriate distances for engagements ranges and target dispersion.
- Additional crew training packages are available, such as the following:
  - DA Form 8265.
  - DA Form 8265-12A (*Crew Platform Data Record*).
  - DA Form 8265-12B (*Live Fire Accuracy Screening Test [LFAST]*).
  - DA Form 8265-12C (*Live Fire Accuracy Screening Test [LFAST] Worksheet*).
  - DA Form 1594 (*Daily Staff Journal or Duty Officer's Log*) for tower logs.
- Sufficient administrative areas are available.

4-47. Once the unit completes the walk-through and rehearsal, the commander makes any necessary adjustments to the plan and issues FRAGORDs as necessary.

EXECUTE—TABLE IV

4-48. Once the unit arrives at the training location, they should—

- Conduct a safety briefing for the training event.
- Provide a conduct of the range briefing to establish the sequence of events for the training day.
- Conduct sensitive item checks prior to executing training.
- Execute Task Group A, screening and zeroing.
- Execute Task Group B, main gun confirmation engagements (evaluated).
- Execute Task Group C, basic machine gun engagements (evaluated).

4-49. The units conduct Table IV, in the sequence shown in figure 4-16. This example portrays a unit utilizing two training days for a company-sized element and two training facilities. This represents one way, not the only way to conduct the event.

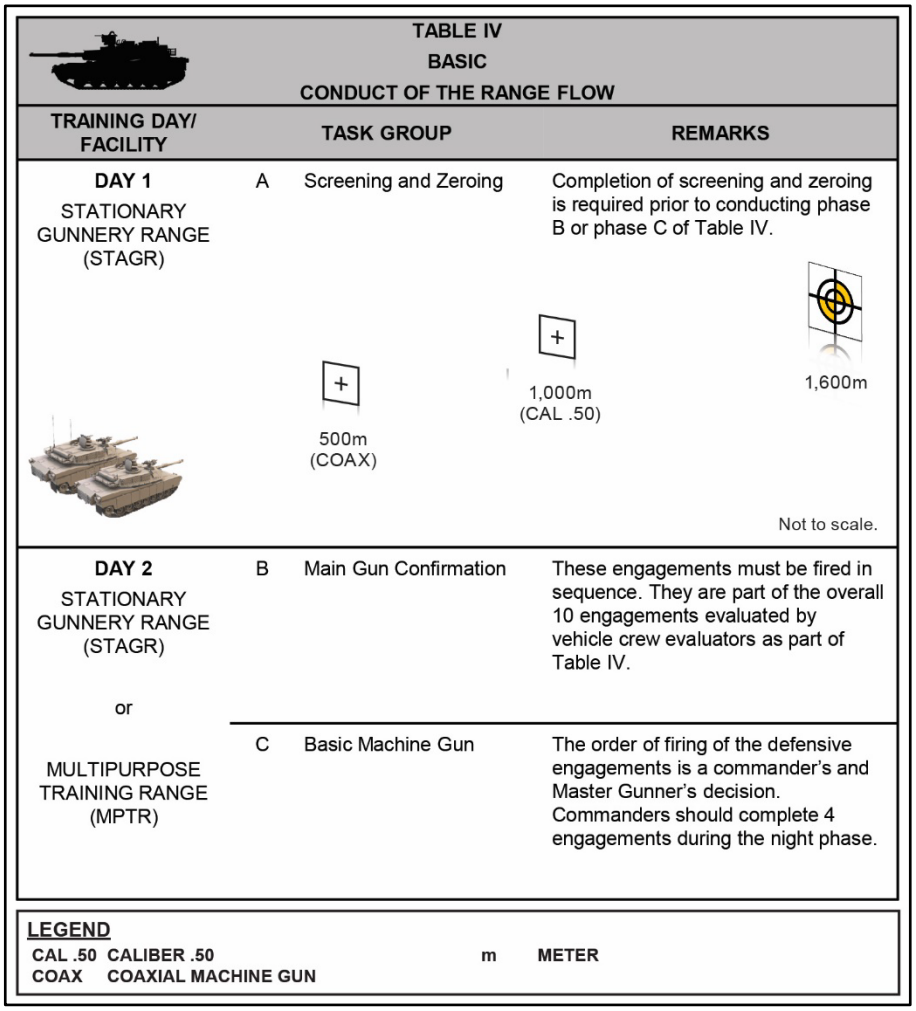


Figure 4-16. Recommended sequence of training Table IV, Basic

SCENARIO REQUIREMENTS FOR LIVE-FIRE ENGAGEMENTS

4-50. This table is designed to train and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, from the defense, during day and limited visibility conditions.

4-51. All engagements are evaluated using certified VCEs using DA Form 8265 and DA Form 8265-1 as the official record of training. Master Gunners must ensure the training records are included in each crew's gunnery packet (see TC 3-20.31).

4-52. The engagements listings are by capability type using the standard engagement naming structure listed in TC 3-20.31. It provides the requirements for each engagement, which are demonstrated in paragraphs 4-53 through 4-62.

Task Description—Table IV

4-53. The task description includes both the engagement number (the table number plus engagement task) followed by the system capability trained.

Firing Vehicle Posture—Table IV

4-54. The firing vehicle posture establishes the offense or defense condition for the engagement.

Firer—Table IV

4-55. The firer column identifies which crewmember is to engage the target listed. Targets defeated by a different crewmember listed as the firer result in an auto-zero penalty, failing to adhere to course conditions.

Weapon (or Ammunition)—Table IV

4-56. Identifies the weapon (coaxial, caliber .50, or primary armament ammunition type) that is used to defeat the threat. Design of each engagement is for a specific weapon or ammunition type (primary armament) for use, which relates to the crew conduct of fire, optic selection, engagement techniques, or other unique implied tasks. Crews that fail to announce the appropriate weapon or ammunition, or appropriate selection for subsequent or supplemental engagements may be penalized IAW TC 3-20.31.

Target Type—Table IV

4-57. The target required for the presentation. Unless a specific, non-standard is used, all targetry requirements listed are found in TC 25-8.

Target Posture—Table IV

4-58. The target posture establishes if the target is stationary, moving, or evasive for the engagement. See TC 3-20.31 for more information on target postures.

Range (to Target)—Table IV

4-59. The required range (full scale) from the firing vehicle to the target. For offensive engagements, this distance calculation is from the center of the movement box to the target. The range to target distance is provided in meters and is displayed as a whole number, such as 600.

4-60. The target may be placed at the distance indicated, plus or minus 200 meters. For example, when the range to target is listed as 600 meters, the target may be placed between 400 meters and 800 meters. This allows flexibility designing the scenario on varying maneuver range facilities with different capabilities, target counts, emplacement locations, and terrain restrictions.

4-61. No change to the EM is authorized. The range bands listed with their applied tolerances do not require any adjustment to the EM. Units are not authorized to exceed the target placement tolerances.

Engagement Modifier

4-62. The EM is the time in seconds required to achieve 100 points against the listed threat. To defeat the threat successfully, the crew must achieve the kill standard against the target and have an overall engagement time of no more than the EM plus 20 seconds. See TC 3-20.31 for the evaluation, timing, and scoring procedures.

TABLE IV, B AND C ENGAGEMENTS

4-63. Figure 4-17 depicts the 10 live-fire engagements for evaluation on Table IV B and C, collectively. It provides the engagement type, targetry requirements for each engagement, and the quantity of targets by engagement. Additional information on each engagement is provided in the task group section later in the chapter.

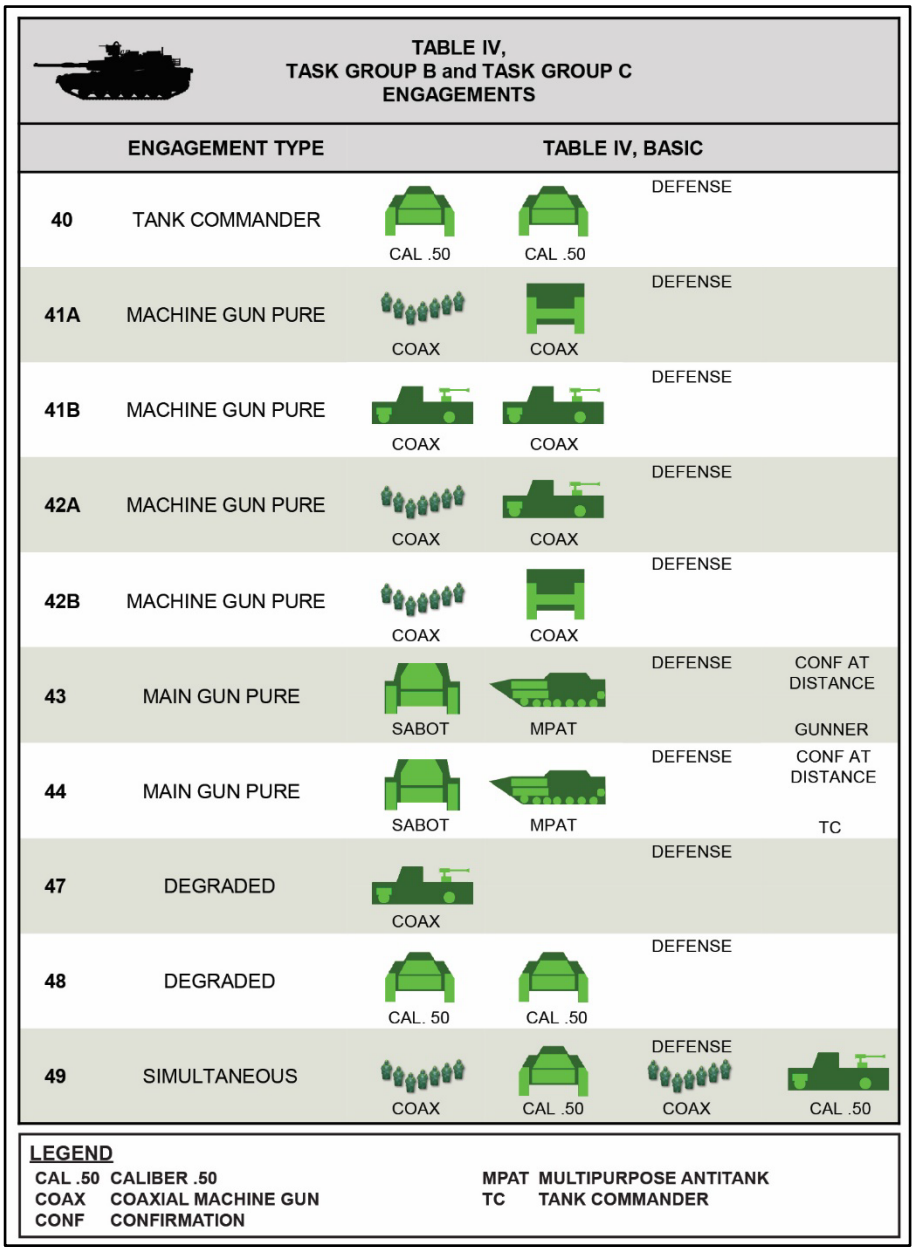


Figure 4-17. Table IV B and C live-fire engagements

4-64. Figure 4-18 provides the 10 live-fire engagements conditions for Table IV, Task Groups B and C, respectively. It provides the task description, own vehicle posture, firer, weapon, targetry, target posture, range to target requirements, and the EM.

TABLE IV, BASIC
ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
40	VEHICLE COMMANDER	DEFENSE	VC	CAL .50	M2T-FRT	STA	1,200m	10
			VC	CAL .50	M2T-FRT	STA	1,400m	11
41A	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	600m	8
			GNR	COAX	L2T-FRT	STA	800m	8
41B	MACHINE GUN PURE	DEFENSE	GNR	COAX	L2T-FLK	MOV	600m	9
			GNR	COAX	L2T-FLK	MOV	600m	9
42A	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	L2T-FRT	STA	800m	8
42B	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	600m	8
			GNR	COAX	L2T-FRT	STA	800m	8
43	MAIN GUN PURE	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,400m	7
			GNR	MPAT	M1T-FRT	STA	1,600m	8
44	MAIN GUN PURE	DEFENSE	VC	SABOT	H1T-FRT	STA	1,400m	7
			VC	MPAT	M1T-FLK	MOV	1,600m	10
47	DEGRADED	DEFENSE	GNR	COAX	L2T-FLK	MOV	600m	9
48	DEGRADED	DEFENSE	VC	CAL .50	M2T-FRT	STA	1,200m	10
			VC	CAL .50	M2T-FRT	STA	1,800m	11
49	SIMULTANEOUS	DEFENSE	GNR	COAX	E(7)FRT	STA	600m	8
			VC	CAL .50	M2T-FRT	STA	1,000m	10
			GNR	COAX	E(7)FRT	STA	600m	8
			VC	CAL .50	L2T-FLK	MOV	1,200m	13

LEGEND

CAL .50	CAILBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
EM	ENGAGEMENT MODIFIER	MOV	MOVING
FLK	FLANK	STA	STATIONARY
FRT	FRONTAL	VC	VEHICLE COMMANDER
GNR	GUNNER		

Figure 4-18. Engagement requirements, Table IV B and C

TABLE IV, TASK GROUP A—SCREENING AND ZEROING

4-65. The first task group to complete on Table IV is the screening of the tank following the Army calibration policy. Once complete with the screening and possible discrete CCF confirmation, the crew conducts machine gun zero for the coaxial machine gun and commander's caliber .50 heavy machine gun.

4-66. This task group ensures the crew can accurately align the tank's optics, and that the platform's fire control system is calculating an accurate ballistic solution for primary armament and coaxial machine gun engagements. Further, this ensures each sub-system of the fire control system is functioning properly after all non-firing preparation to fire (prep-to-fire) checks are complete.

4-67. Screening and zeroing are an empirical means of tuning the fire control system with the ballistic solution. It requires that this tuning must take place at the distance (or range to target) of the greatest tactical interest. Boresighting and screening/zeroing should both be conducted at a range which corresponds to the most likely tactical engagement range.

Army-Standard Screening Distance

The Army-standard screening distance to the ST-5 panel for all Abrams-series tanks has changed from 1,500 meters to 1,600 meters, plus or minus 20 meters.

This increase in range provides the ability to conduct screening or discrete zero procedures at a tactically relevant range to target and enables a live-fire precision alignment of the gunner's auxiliary sight.

4-68. Conduct of screening and zeroing is on a live-fire facility that can support primary armament as well as small arms surface danger zones. Crews will follow the procedures outlined in the vehicle's technical manual using an ST-5 panel at 1,600 meters, plus or minus 20 meters.

4-69. Master Gunners will record the strike of each primary armament round on the zero form and update DA Form 2408-4, where authorized by the commander, for each vehicle. Although the hard copy of the DA Form 2408-4 is in the vehicle's equipment record folder, the Master Gunner should consider consolidating the forms to ensure accuracy of information during the gunnery density.

4-70. The task, conditions, and standards for Table IV, Task Group A, screening and zeroing, is provided in figure 4-19. Master Gunners should note the change to the screening panel range to target.



TABLE IV
TASK GROUP A
SCREENING AND ZEROING

TASK	Conduct the primary armament zero and machine gun zero on an Abrams-series tank
CONDITIONS	Given the following: • A fully operational platform with weapon or weapon system, and with the following procedures successfully completed: • Tank that has successfully completed armament accuracy checks within the past 30 days. • Preventative maintenance checks and services are complete. • All special gunnery checks complete. • Bore sighting with the M27A3 completed to standard. • Plumb and synchronization completed to standard. • Authorized full-caliber training ammunition. • Appropriate ST-5 Panel at 1,600 meters +/- 20 meters. • All prerequisites to live fire for the crew platform met.
STANDARD	The crew must: • Successfully screen each 120mm training ammunition type for use during the training density. • In the event of a live fire accuracy test (LFAST) failure where no fire control system malfunctions or crew induced error exist, successfully determine discreet computer correction factor (CCF) for the ammunition type. • Successfully complete commander's weapon and coaxial machine gun zeroing procedures IAW the technical manual.



Boresighting and screening/zeroing should both be conducted at a range which corresponds to the most likely tactical engagement range.

THE ARMY-STANDARD SCREENING RANGE IS 1,600-meters, +/- 20-meters.

This allows a precision live-fire alignment of the gunner's auxiliary sight (GAS) at 1,600-meters.

LEGEND

IAW	**IN ACCORDANCE WITH**	**ST**	**STANDARD TARGET**
mm	**MILLIMETER**		

Figure 4-19. Table IV, Basic, screening and zero, task, conditions, and standard

4-71. Once crews have completed their prep-to-fire checks, boresighting, and other alignment procedures, they conduct the screening and zero procedures for their primary armament against an ST-5 screening target. The Master Gunner or designated experienced platoon sergeant is responsible for controlling the firing order, vehicle movement, and procedures for screening and zeroing from the vehicle technical manual.

4-72. The proofing team will check any crew that fails the screening process. The unit Master Gunner and maintenance chief will determine the most probable cause for the screening failure and take appropriate measures to correct the deficiencies, whether mechanical, ammunition specific, or crew induced.

4-73. Once the crew is complete with screening for all primary armament ammunition types, the crew completes coaxial and commander's weapon station machine gun zero. Typically, the VC and gunner are responsible for the conduct of the machine gun zeroing process after receiving clearance to fire from the tower.

4-74. As the crew completes the zeroing process and is prepared to conduct the next phase. Based on the conduct of the range, the crew will move to the designated holding area (firing order) and await instructions to proceed.

4-75. The screening test consists of firing first sabot, then multi-purpose antitank (MPAT) target practice tracer ammunition at a screening test target at 1,600 meters (tactically relevant distance) (see figure 4-20). The target must be placed within plus or minus 20 meters of the required range.

4-76. Screening procedures begin on an open range facility in a firing status. The tower follows the flow, as required by the actions and conduct of the crew and ballistic performance of the rounds fired.

4-77. The following sections describe the actions executed for each phase of Table IV, Basic. They include a section for the LFAST, main gun confirmation, and basic machine gun engagements.

ACTION ALPHA

4-78. During action alpha, the initial collection of firing information from the crew includes verification that the crew completed the preparation to fire checks, the appropriate Department of the Army forms were initiated, and the crew is prepared to conduct the screening process (see figure 4-20).



ALPHA

LINE	TASK	ACTION
1	PREP-TO-FIRE (P2F) CHECKS. COMPLETED BY CREW.	a. COMPLETE DA FORM 8265-12A, *CREW PLATFORM DATA RECORD.* b. COMPLETED MUZZLE BORESIGHT DEVICE COLLIMATION, UPDATED DA FORM 8265-12C. c. COMPLETED DA FORM 8265-12B, *LIVE FIRE ACCURACY SCREENING TEST (LFAST).* d. COMPLETED PLUMB AND SYNC. e. COMPLETED PMCS. f. COMPLETED BORESIGHTING PROCEDURES. g. COMPLETED DA FORM 8265-12C, *LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET.*
2	CREW REPORTS COMPLETION OF PREP-TO-FIRE CHECKS (LINE 1). CREW PROVIDES DA FORMS TO TOWER: • DA Form 8265-12A • DA Form 8265-12B • DA Form 8265-12C	a. TOWER RECORDS BUMPER NUMBER FOR FIRING ORDER. b. COMPLETES DA FORM QUALITY ASSURANCE/QUALITY CHECKS (QA/QC). c. TOWER INITIATES DA FORM 8265-12B FOR FIRING VEHICLE. d. ONCE PREPARED, TOWER DIRECTS MOVEMENT OF CREW TO FIRING POSITION.
3	CREW MOVES TO DESIGNATED FIRING POSITION. PREPARES CREW TO CONDUCT SCREENING. REPORTS REDCON ONE.	a. TOWER DIRECTS CREW TO FIRING FREQUENCY. b. ONCE ON FIRING FREQUENCY: i. PROVIDES AIR TEMPERATURE. ii. PROVIDES UNADJUSTED BAROMETRIC PRESSURE.

Note: Instructions for completing all DA Forms listed are provided in Appendix F.

LEGEND

DA	DEPARTMENT OF THE ARMY	REDCON	READINESS CONDITION
PMCS	PREVENTATIVE MAINTENANCE CHECKS AND SERVICES		

Figure 4-20. Action alpha procedures, example

ACTION BRAVO

4-79. As action alpha is complete, the tower continues with action bravo, shown in figure 4-21. This action group collects the ballistic data entered into the fire control system.



BRAVO

_____ THIS IS _____ PROVIDE ACTION BRAVO BY LINE.

TOWER RECORDS INFORMATION ON DA FORM 8265-12B, LIVE FIRE ACCURACY SCREENING TEST (LFAST).

LINE	TASK
1	GPS BORESIGHT (azimuth and elevation)
2	TIS/THERMAL BORESIGHT (azimuth and elevation)
3	CITV BORESIGHT (azimuth and elevation)
4	MRS BORESIGHT (azimuth and elevation)
5	MRS UPDATE DATA (azimuth and elevation)
6	FCS SOFTWARE VERSION
7	CROSSWIND READING (-45.00 to 45.00)
8	CANT READING (-15.00 to 15.00)
9	AMBIENT AIR TEMPERATURE (-40 to 149)
10	BAROMETRIC PRESSURE (19.68 to 33.46 INCHES OF MERCURY)
11	ALTITUDE (in meters)
12	AMMUNITION TEMPERATURE (-40 to 149)
13	AMMUNITION SUBDES (SABOT)
14	COMPUTER CORRECTION FACTOR (azimuth and elevation)
15	HYDRAULIC PRESSURE (1700 to 1750 psi)
Note: Instructions for completing all DA Forms listed are provided in Appendix F.	

LEGEND

DA	DEPARTMENT OF THE ARMY	MRS	MUZZLE REFERENCE SENSOR
CITV	COMMANDER'S INDEPENDENT THERMAL VIEWER	psi	POUNDS PER SQUARE INCH
		SUBDES	SUBDESIGNATION
FCS	FIRE CONTROL SYSTEM	TIS	THERMAL REFERENCE SYSTEM
GPS	GUNNER'S PRIMARY SIGHT		

Figure 4-21. Action bravo procedures, example

ACTION CHARLIE

4-80. On the direction of the tower, the crew executes action charlie, shown in figure 4-22. This action group confirms basic firing information prior to the first round.



CHARLIE



_____ THIS IS _____ PROVIDE ACTION CHARLIE BY LINE.
TOWER RECORDS INFORMATION ON DA FORM 8265-12C,
LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET

LINE	TASK
1	ALL AUTOMATIC INPUTS ACTIVE (NO GCP KEYS ILLUMINATED)
2	FIRE CONTROL MODE TO NORMAL.
3	GUNNER'S PRIMARY SIGHT MAGNIFICATION TO 10X OR 13X.
4	(AMMUNITION TYPE) INDEXED.
5	(AMMUNITION TYPE) LOADED.
6	GUN SELECT SWITCH TO MAIN.

ONCE LINES COMPLETE, TOWER DIRECTS THE CONDUCT OF FIRE. ALL RESPONSES ARE RECORDED ON DA FORM 8265-12C FOR THE FIRING CREW

USING POWER CONTROLS, MAKE A "G" PATTERN WITH THE LAST MOVEMENT IN ELEVATION TO THE CENTER POINT OF AIM ON PANEL _____ AND LASE TO THE TARGET. ANNOUNCE RANGE TO TARGET AND SYMBOLOGY.

REPORT REDCON ONE WHEN PREPARED TO ENGAGE.

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND

DA	DEPARTMENT OF THE ARMY	REDCON	READINESS CONDITION
GCP	GUNNER'S CONTROL PANEL		

Figure 4-22. Action charlie procedures, example

ACTION DELTA

4-81. Once the crew is prepared to engage, the tower continues with action group delta, shown in figure 4-23 through figure 4-26 on page 143. This action group directs the first main gun round fired on command for screening training sabot rounds.

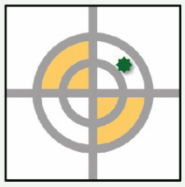
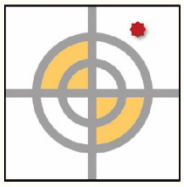


DELTA 1

_____ THIS IS _____

ROUND	TASK
1	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* **Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues:** *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
		
TOWER COMMANDS	TOWER COMMANDS	TOWER COMMANDS
CEASEFIRE *CEASEFIRE* *YOU ARE SCREENED FOR SABOT. PREPARE FOR MPAT AND REPORT WHEN SET.*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*
GO TO ACTION ECHO	*GO TO ACTION PAPA (PROOFING TEAM)*	*GO TO ACTION PAPA (PROOFING TEAM)*

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND
DA DEPARTMENT OF THE ARMY MPAT MULTIPURPOSE ANTITANK

Figure 4-23. Action delta 1 procedures, example

4-82. Action Delta 2 is utilized when a second round is required. The tower follows the scripts found in Figure 4-24 for the second sabot round fired.

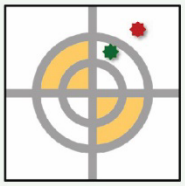
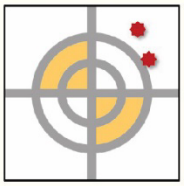
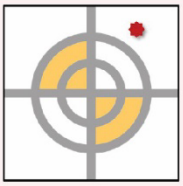


DELTA 2

_____ THIS IS _____

ROUND	TASK
2	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* **Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues:** *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
		
TOWER COMMANDS	TOWER COMMANDS	TOWER COMMANDS
CEASEFIRE *CEASEFIRE* *PREPARE FOR SABOT 3D ROUND*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *PREPARE FOR SABOT 3D ROUND*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*
GO TO ACTION DELTA 3	*GO TO ACTION DELTA 3*	*GO TO ACTION PAPA (PROOFING TEAM)*

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND
DA DEPARTMENT OF THE ARMY

Figure 4-24. Action delta 2 procedures, example

4-83. Action delta 3 is used to fire the third round of sabot when necessary. This is used to fire the third round and subsequently determine the MPI of the sabot rounds. The tower follows the script in figure 4-25 for firing the third round.

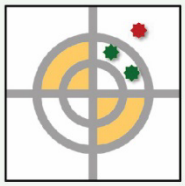
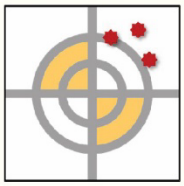
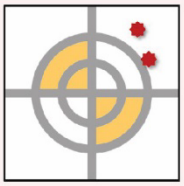


DELTA 3

_____ THIS IS _____

ROUND	TASK
3	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* **Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues:** *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
		
TOWER COMMANDS	**TOWER COMMANDS**	**TOWER COMMANDS**
CEASEFIRE *CEASEFIRE* *STANDBY FOR DISCREET COMPUTER CORRECTION FACTOR*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *STANDBY FOR DISCREET COMPUTER CORRECTION FACTOR*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM,*
GO TO ACTION ZULU (DISCREET CCF)	*GO TO ACTION ZULU (DISCREET CCF)*	*GO TO ACTION PAPA (PROOFING TEAM)*

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND
DA DEPARTMENT OF THE ARMY

Figure 4-25. Action delta 3 procedures, example

4-84. Action delta 4 is used to record the strike of each round in azimuth and elevation on the ST-5. The unit Master Gunner records each shot using the instructions in appendix F on the form similar to figure 4-26.

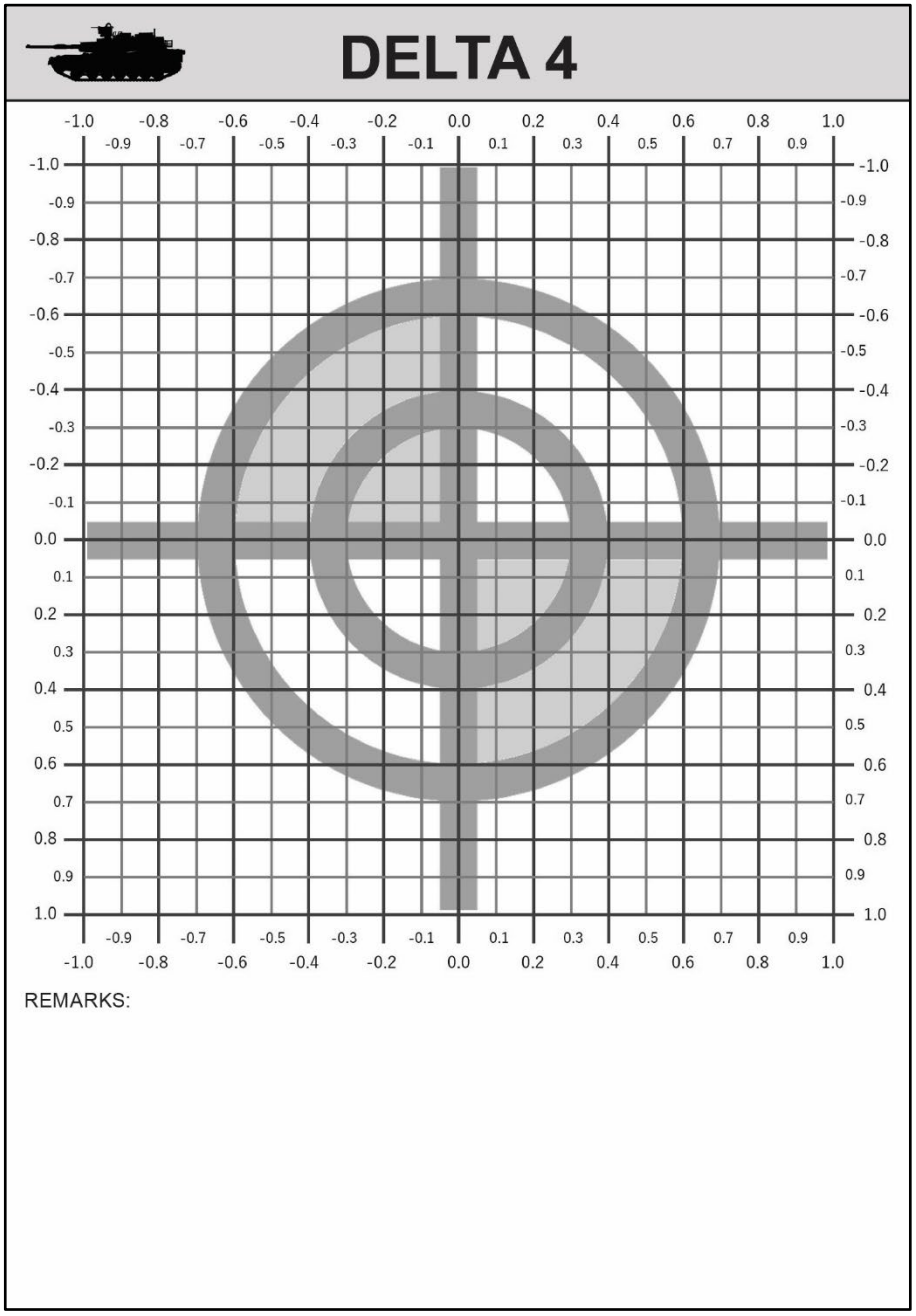


Figure 4-26. Action delta 4, round impact recording, example

ACTION ECHO

4-85. Used on demand of the firing occasion, action echo is used to transition from sabot to multipurpose antitank training munitions, as shown in figure 4-27.



ECHO



_____ THIS IS _____ PROVIDE ACTION CHARLIE BY LINE.
TOWER RECORDS INFORMATION ON DA FORM 8265-12C,
LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET

LINE	TASK
1	ALL AUTOMATIC INPUTS ACTIVE (NO GCP KEYS ILLUMINATED).
2	FIRE CONTROL MODE TO NORMAL.
3	GUNNER'S PRIMARY SIGHT MAGNIFICATION TO 10X OR 13X.
4	(AMMUNITION TYPE) INDEXED.
5	(AMMUNITION TYPE) LOADED.
6	GUN SELECT SWITCH TO MAIN.

ONCE LINES COMPLETE, TOWER DIRECTS THE CONDUCT OF FIRE. ALL RESPONSES ARE RECORDED ON DA FORM 8265-12C FOR THE FIRING CREW

USING POWER CONTROLS, MAKE A "G" PATTERN WITH THE LAST MOVEMENT IN ELEVATION TO THE CENTER POINT OF AIM ON PANEL _____ AND LASE TO THE TARGET. ANNOUNCE RANGE TO TARGET AND SYMBOLOGY.

REPORT REDCON ONE WHEN PREPARED TO ENGAGE.

Note: Instructions for completing all DA Forms listed are provided in Appendix F.

LEGEND

DA	DEPARTMENT OF THE ARMY	REDCON	READINESS CONDITION
GCP	GUNNER'S CONTROL PANEL		

Figure 4-27. Action echo procedures, example

ACTION FOXTROT

4-86. The tower uses action group foxtrot based on the firing occasion, as described in figure 4-28 through figure 4-31 on page 148. This action group is used to screen the multipurpose antitank training rounds.

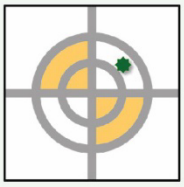
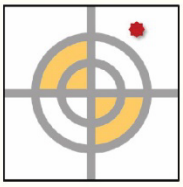
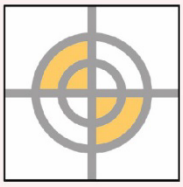


FOXTROT 1

_____ THIS IS _____

ROUND	TASK
1	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues: *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
		
TOWER COMMANDS	TOWER COMMANDS	TOWER COMMANDS
CEASEFIRE *CEASEFIRE* *YOU ARE SCREENED FOR MPAT. PREPARE FOR MACHINE GUN ZERO AND REPORT WHEN SET.*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*
GO TO ACTION MIKE	*GO TO ACTION PAPA (PROOFING TEAM)*	*GO TO ACTION PAPA (PROOFING TEAM)*

Note: Instructions for completing all DA Forms listed are provided in Appendix F.

LEGEND

DA DEPARTMENT OF THE ARMY MPAT MULTIPURPOSE ANTITANK

Figure 4-28. Action foxtrot 1 procedures, example

4-87. Action foxtrot 2 is used when the first round of MPAT strikes outside the 1.2 mil circle on the ST-5. The tower uses figure 4-29 to direct the crew to fire the second round.

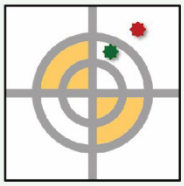
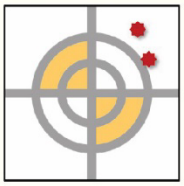
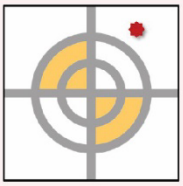


FOXTROT 2

_____ THIS IS _____

ROUND	TASK
2	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* **Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues:** *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
		
TOWER COMMANDS	TOWER COMMANDS	TOWER COMMANDS
CEASEFIRE *CEASEFIRE* *PREPARE FOR* *MPAT 3D ROUND*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *PREPARE FOR* *MPAT 3D ROUND*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*
GO TO ACTION FOXTROT 3	*GO TO ACTION FOXTROT 3*	*GO TO ACTION PAPA (PROOFING TEAM)*

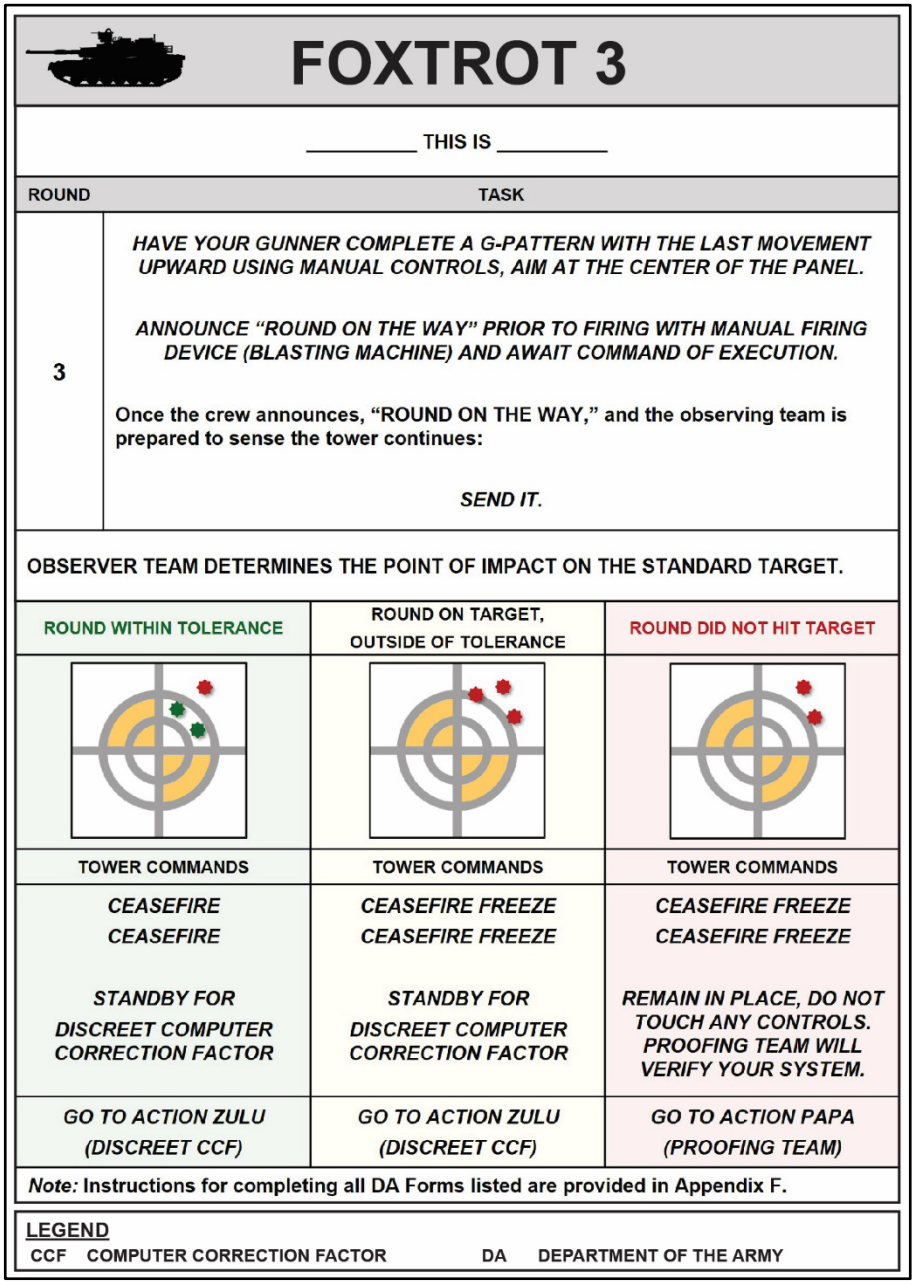
Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND

DA DEPARTMENT OF THE ARMY MPAT MULTIPURPOSE ANTITANK

Figure 4-29. Action foxtrot 2 procedures, example

4-88. Action foxtrot 3 is used to complete the three-round shot group for MPAT training rounds to determine the MPI. The tower uses the script in figure 4-30 to direct the crew to fire the third round.



FOXTROT 3

_____ THIS IS _____

ROUND	TASK
3	*HAVE YOUR GUNNER COMPLETE A G-PATTERN WITH THE LAST MOVEMENT UPWARD USING MANUAL CONTROLS, AIM AT THE CENTER OF THE PANEL.* *ANNOUNCE "ROUND ON THE WAY" PRIOR TO FIRING WITH MANUAL FIRING DEVICE (BLASTING MACHINE) AND AWAIT COMMAND OF EXECUTION.* **Once the crew announces, "ROUND ON THE WAY," and the observing team is prepared to sense the tower continues:** *SEND IT.*

OBSERVER TEAM DETERMINES THE POINT OF IMPACT ON THE STANDARD TARGET.

ROUND WITHIN TOLERANCE	ROUND ON TARGET, OUTSIDE OF TOLERANCE	ROUND DID NOT HIT TARGET
TOWER COMMANDS	TOWER COMMANDS	TOWER COMMANDS
CEASEFIRE *CEASEFIRE* *STANDBY FOR DISCREET COMPUTER CORRECTION FACTOR*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *STANDBY FOR DISCREET COMPUTER CORRECTION FACTOR*	*CEASEFIRE FREEZE* *CEASEFIRE FREEZE* *REMAIN IN PLACE, DO NOT TOUCH ANY CONTROLS. PROOFING TEAM WILL VERIFY YOUR SYSTEM.*
GO TO ACTION ZULU (DISCREET CCF)	*GO TO ACTION ZULU (DISCREET CCF)*	*GO TO ACTION PAPA (PROOFING TEAM)*

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND
CCF COMPUTER CORRECTION FACTOR DA DEPARTMENT OF THE ARMY

Figure 4-30. Action foxtrot 3 procedures, example

4-89. Action foxtrot 4 is used to record the strike of each round in azimuth and elevation on the ST-5. The unit Master Gunner records each shot using the instructions in appendix F on the form similar to figure 4-31.

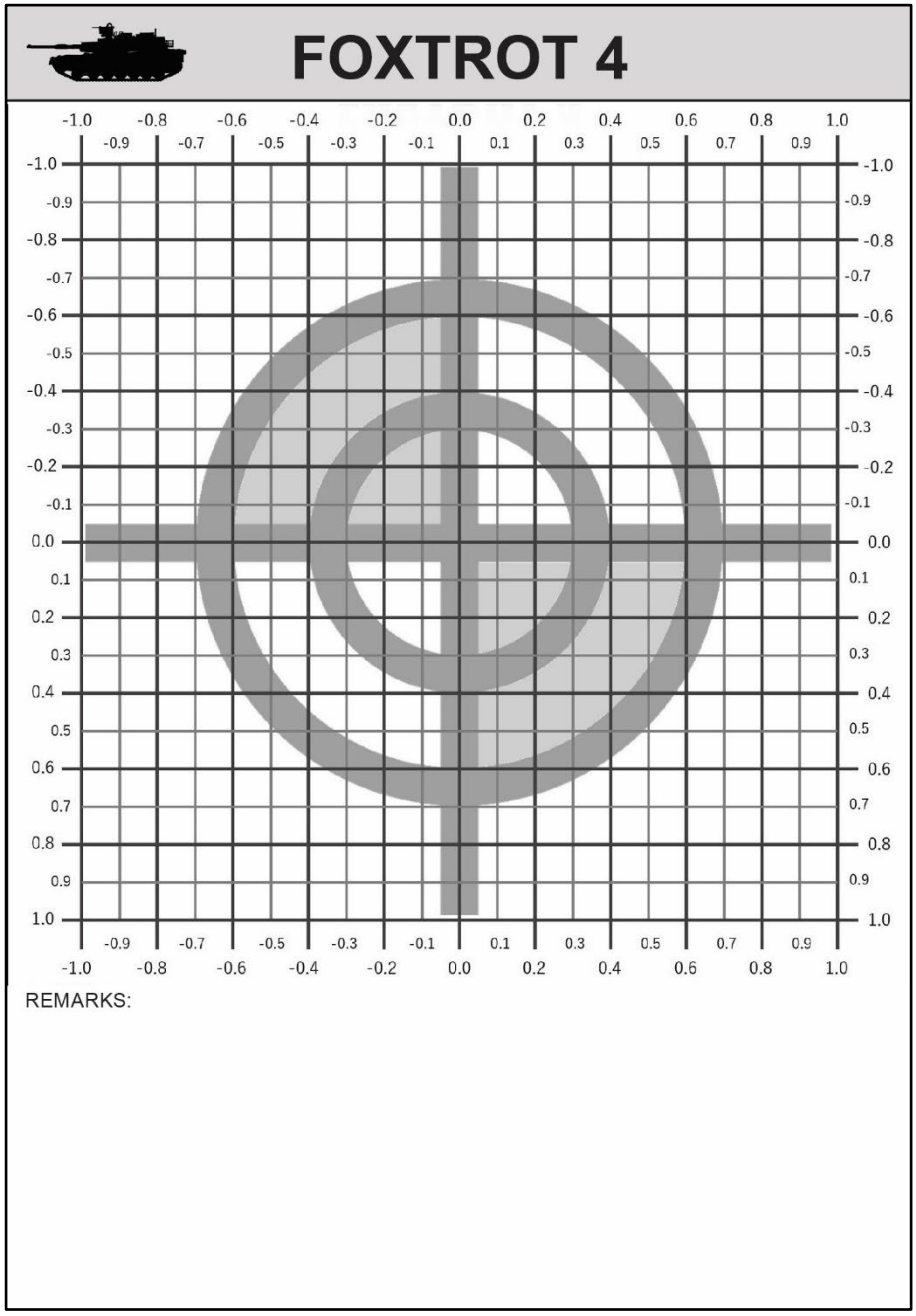
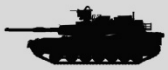


Figure 4-31. Action foxtrot 4, round impact recording, example

ACTION KILO

4-90. Action group kilo prepares the crew to fire a confirmation round once a discrete CCF is calculated. Figure 4-32 shows the process for the tower to follow on demand of the screening procedures flow.



KILO

_____ THIS IS _____ DISCREET COMPUTER CORRECTION FACTOR FOLLOWS, PREPARE TO COPY, OVER.

DISCREET COMPUTER CORRECTION FACTOR FOR _____SABOT/MPAT_____ IS

AZIMUTH _____ ELEVATION _____

COMPLETE LINES KILO ONE THROUGH SIX.

TOWER RECORDS INFORMATION ON DA FORM 8265-12C, LFAST WORKSHEET

LINE	TASK	
1	SABOT INDEXED	MPAT INDEXED
2	PRESS THE ZERO PUSH BUTTON ON THE ADJUST MENU.	
3	GUNNER ENTERS DATA USING THE GCDP KEYPAD.	
4	GUNNER PRESSES THE "ENT" PUSH BUTTON TO ENTER DATA INTO FCEU.	
5	READ BACK DISCREET CCF AZIMUTH AND ELEVATION.	
6	PLACE FIRE CONTROL MODE SWITCH TO NORMAL.	

ONCE LINES COMPLETE, TOWER DIRECTS THE CONDUCT OF FIRE. ALL RESPONSES ARE RECORDED ON DA FORM 8265-12C FOR THE FIRING CREW

REPORT REDCON ONE WHEN PREPARED TO ENGAGE.

SABOT	MPAT
GO TO ACTION CHARLIE	*GO TO ACTION ECHO*

Note: Instructions for completing all DA Forms listed are provided in Appendix F.

LEGEND

CCF	COMPUTER CORRECTION FACTOR	LFAST	LIVE FIRE ACCURACY SCREENING TEST
DA	DEPARTMENT OF THE ARMY		
FCEU	FIRE CONTROL ELECTRONICS UNIT	MPAT	MULTIPURPOSE ANTITANK
GCDP	GUNNER'S CONTROL DISPLAY PANEL	REDCON	READINESS CONDITION

Figure 4-32. Action kilo procedures, example

ACTION LIMA

4-91. Action group lima series provides a guide to master gunners to consider when conducting the LFAST (see figures 4-33 through 4-38 on page 155). It explains actions and outcomes of the first three rounds fired from one ammunition type.

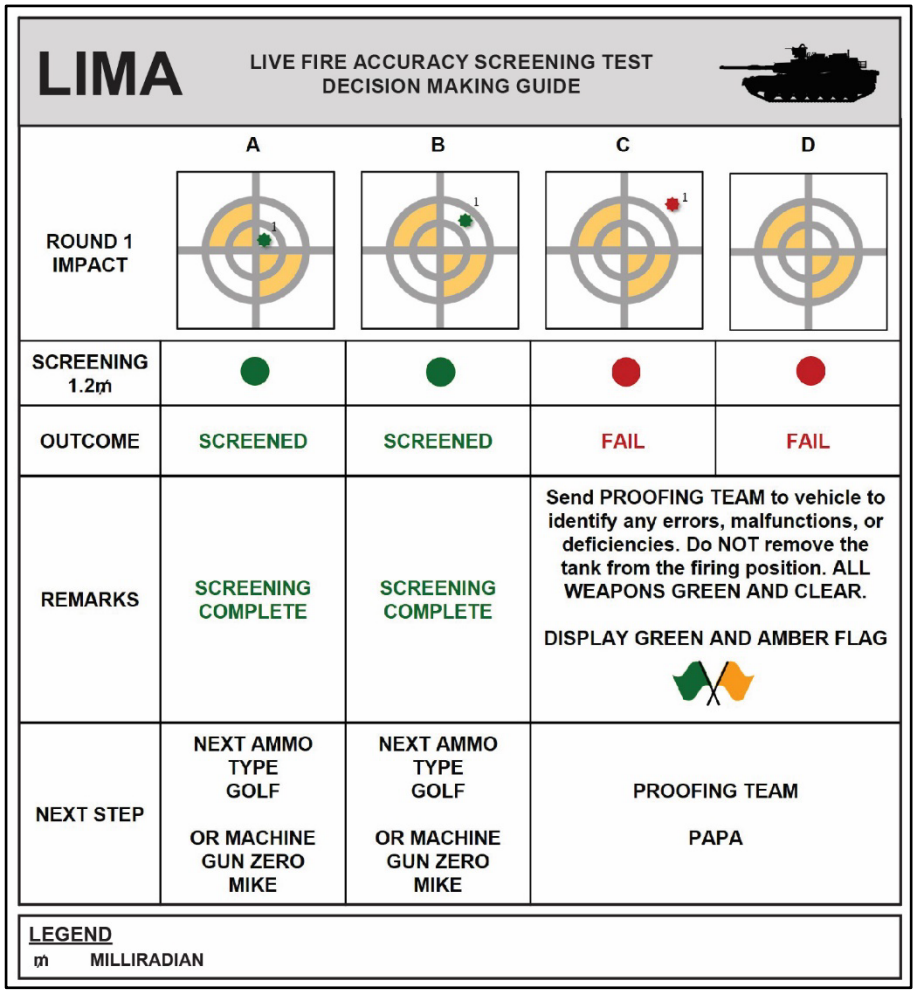


Figure 4-33. Action lima, example

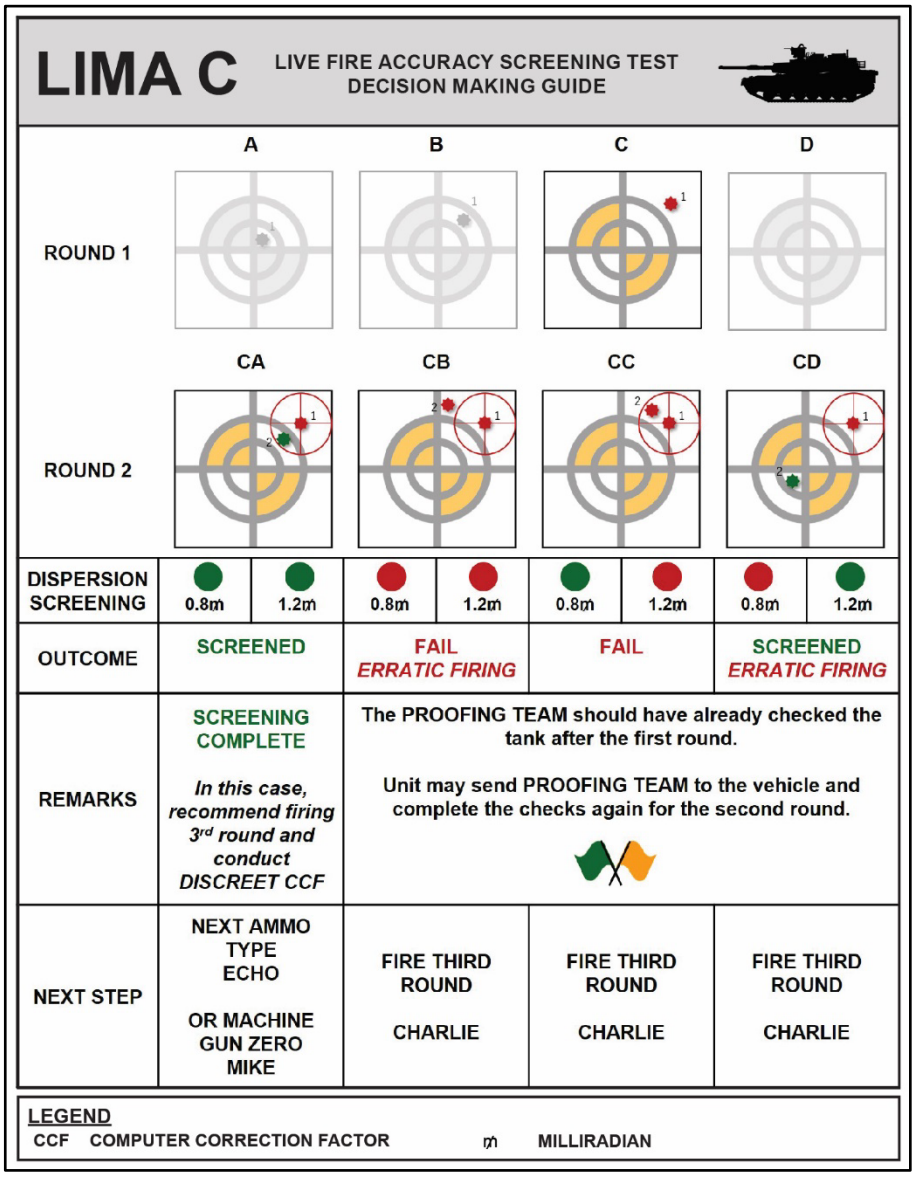


Figure 4-34. Action lima C, example

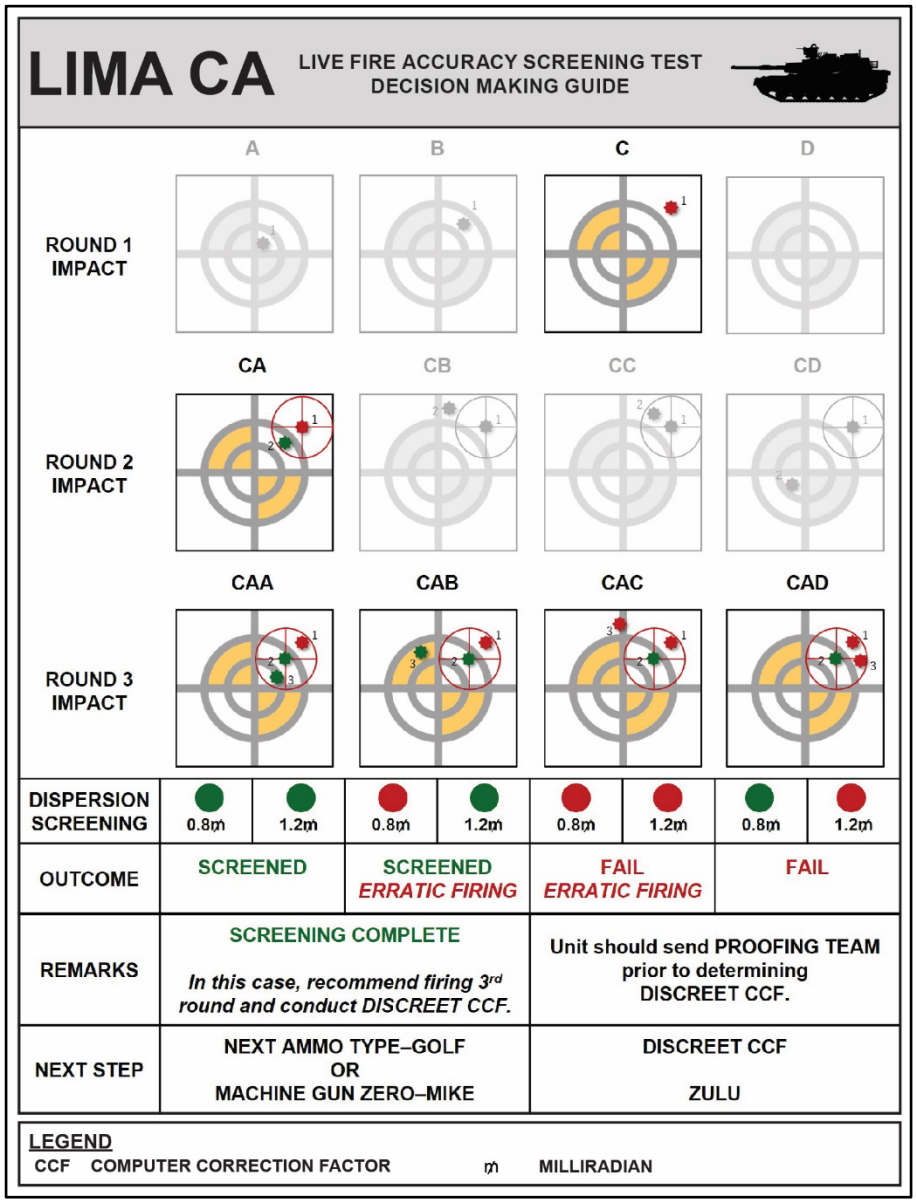


Figure 4-35. Action lima CA, example

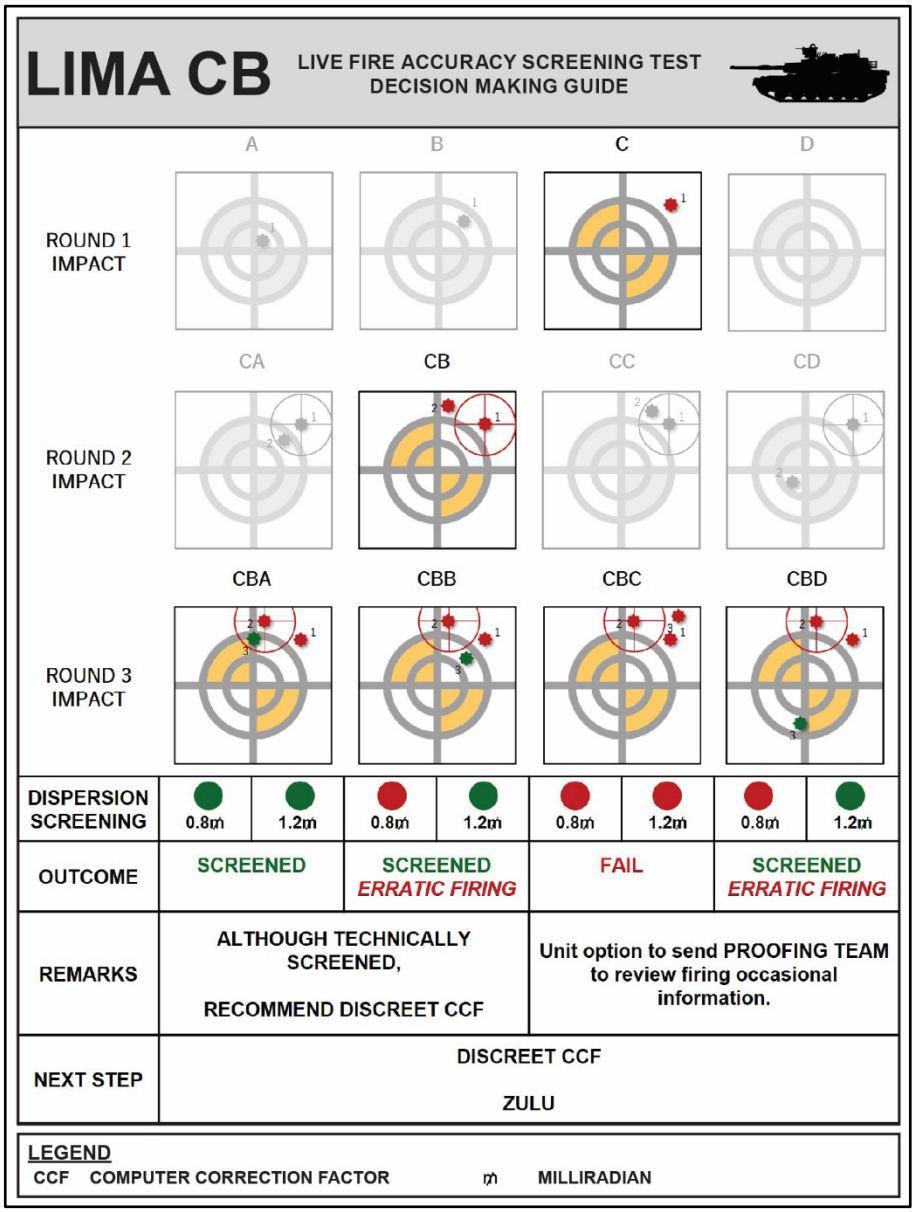


Figure 4-36. Action lima CB, example

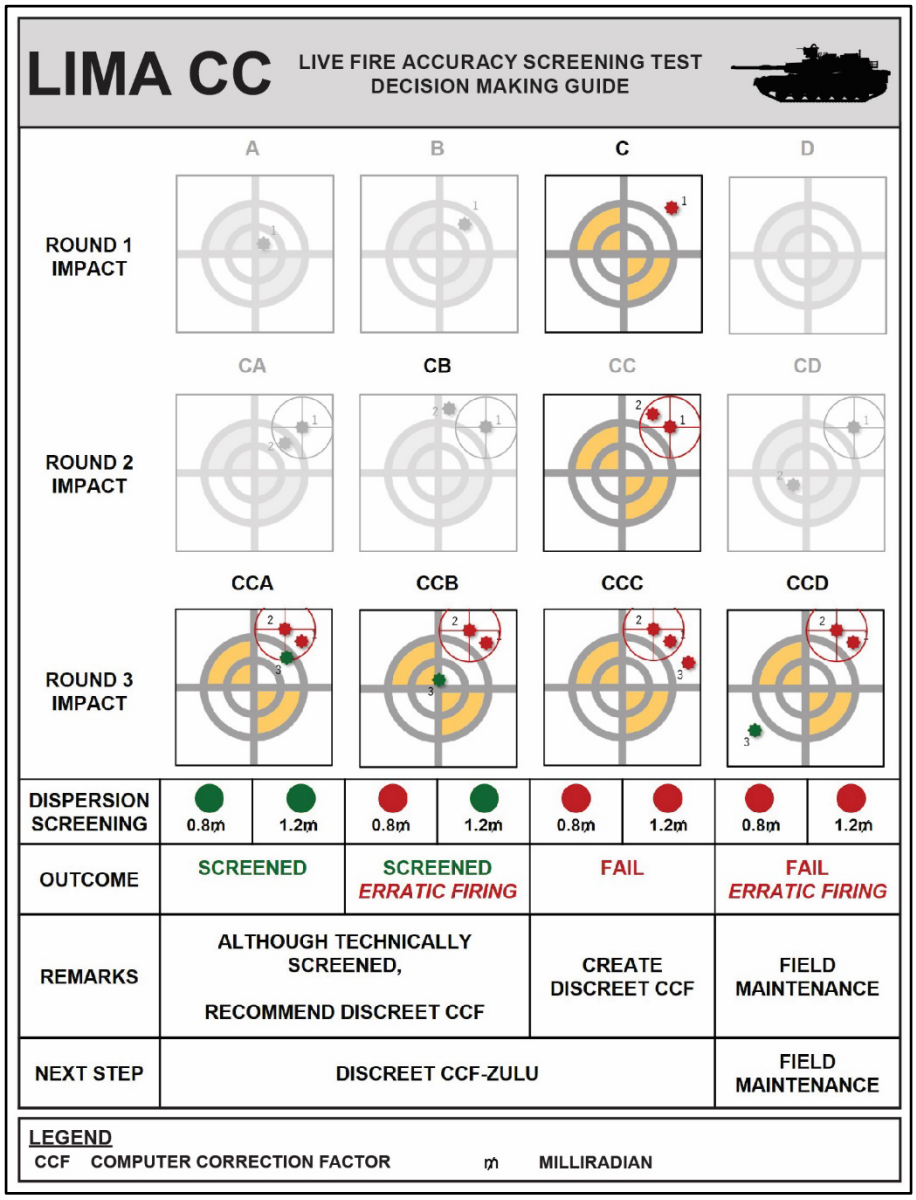


Figure 4-37. Action lima CC, example

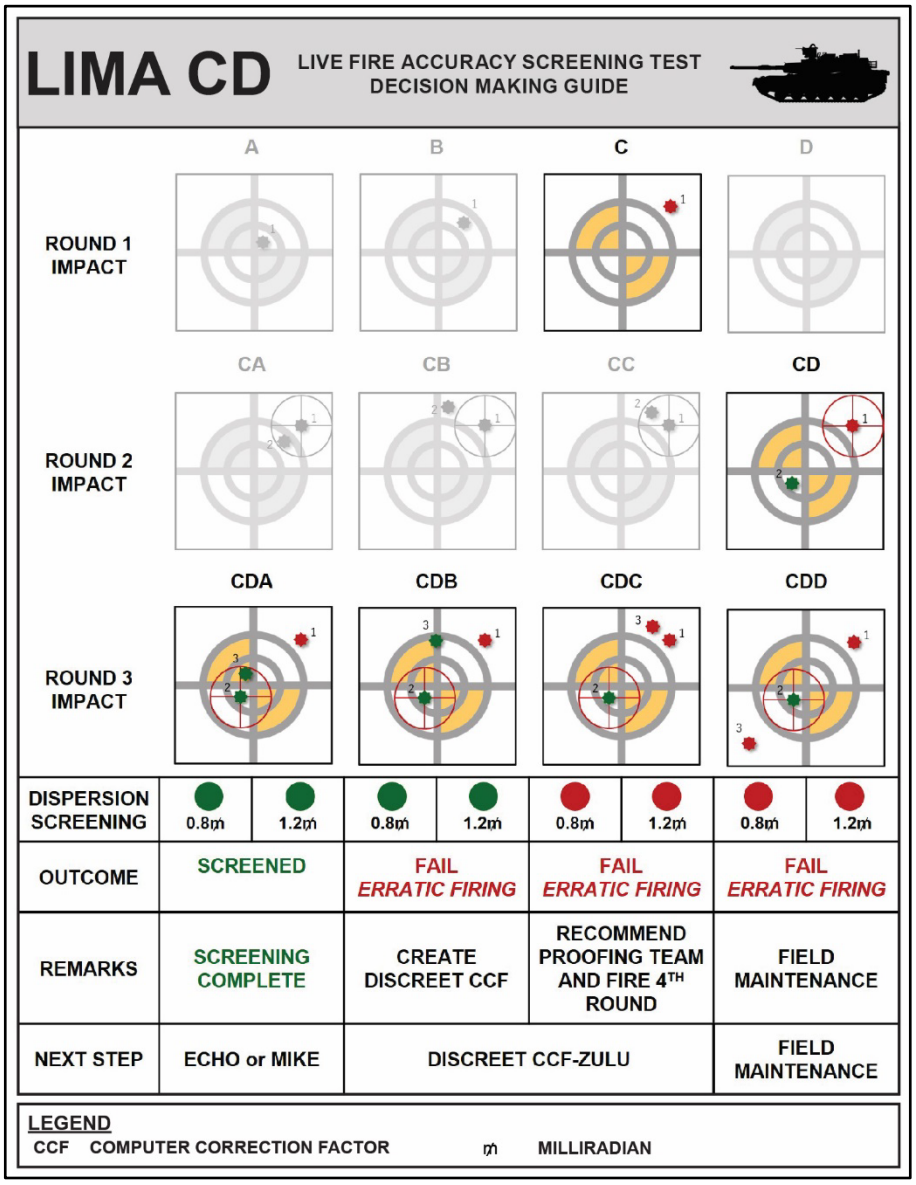
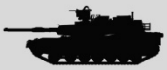


Figure 4-38. Action lima CD, example

ACTION MIKE

4-92. Action group mike is used once screening procedures are completed for all main gun training munitions. It prepares the crew to commence zeroing their machine guns, as shown in figure 4-39 and figure 4-40.



MIKE 1

_____ THIS IS _____ PROVIDE ACTION MIKE BY LINE.
TOWER RECORDS INFORMATION ON DA FORM 8265-12C,
LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET

LINE	TASK
1	INDEX COAX. GUNNER PREPARES TO LOAD COAX.
2	COMMANDER PREPARES TO LOAD CALIBER FIFTY.
3	GUN SELECT SWITCH TO TRIGGER SAFE.

CREW REPORTS REDCON ONE.

ONCE LINES COMPLETE, TOWER DIRECTS THE CONDUCT OF FIRE. ALL RESPONSES ARE RECORDED ON DA FORM 8265-12C FOR THE FIRING CREW

_____ THIS IS _____
YOU HAVE PERMISSION TO LOAD YOUR MACHINE GUNS.
ONCE LOADED, DEPRESS YOUR WEAPON SYSTEMS,
IDENTIFY THE LEFT AND RIGHT FIRING LIMITS.

REPORT REDCON ONE WHEN PREPARED TO ZERO MACHINE GUNS.

ONCE REDCON ONE RECEIVED, THE TOWER CONTINUES.

_____ THIS IS _____
YOU HAVE PERMISSION TO ZERO YOUR MACHINE GUNS.
WEAPONS FREE, WEAPONS FREE.

REPORT WHEN COMPLETE.

Note: **Instructions for completing all DA Forms listed are provided in Appendix F.**

LEGEND
COAX COAXIAL MACHINE GUN
DA DEPARTMENT OF THE ARMY
REDCON READINESS CONDITION

Figure 4-39. Action mike 1 procedures, example



MIKE 2

CREW REPORTS ALL MACHINE GUN ZERO TASKS COMPLETE.

_____ THIS IS _____

GO GREEN, GO GREEN

CLEAR AND ELEVATE ALL WEAPONS

PLACE ALL WEAPONS ON ELECTRICAL AND MECHANICAL SAFE

ONCE VISUAL CONTACT IS MADE WITH THE RSO, DIRECT THE RSO ON TO YOUR PLATFORM AND CONFIRM GREEN AND CLEAR.

ACKNOWLEDGE, OVER.

ONCE RANGE SAFETY OFFICER (RSO) CONTACTS TOWER TO REPORT GREEN AND CLEAR, THE TOWER CONTINUES

_____ THIS IS _____

CHANGE FREQUENCIES TO THE ADMIN NET AND CONTACT THE TOWER FOR FURTHER INSTRUCTIONS.

ONCE TANK COMMANDER CONTACTS THE TOWER ON THE ADMIN FREQUENCY, THE TOWER CONTINUES.

_____ THIS IS _____

YOU HAVE PERMISSION TO LEAVE THE FIRING POSITION.

MOVE TO THE AMMUNITION POINT AND DOWNLOAD ALL DUNNAGE, OVER

Note: Instructions for completing all DA Forms listed are provided in Appendix F.

LEGEND

ADMIN ADMINISTRATIVE DA DEPARTMENT OF THE ARMY

Figure 4-40. Action mike 2 procedures, example

ACTION PAPA

4-93. Action group papa is used on command by the tower to initiate proofing team procedures when a crew fails to hit the screening panel as intended. The proofing team follows the guide shown in figures 4-41 through 4-51 on page 168 to find any faults, errors, or issues with the firing vehicle prior to sending the vehicle to maintenance support.

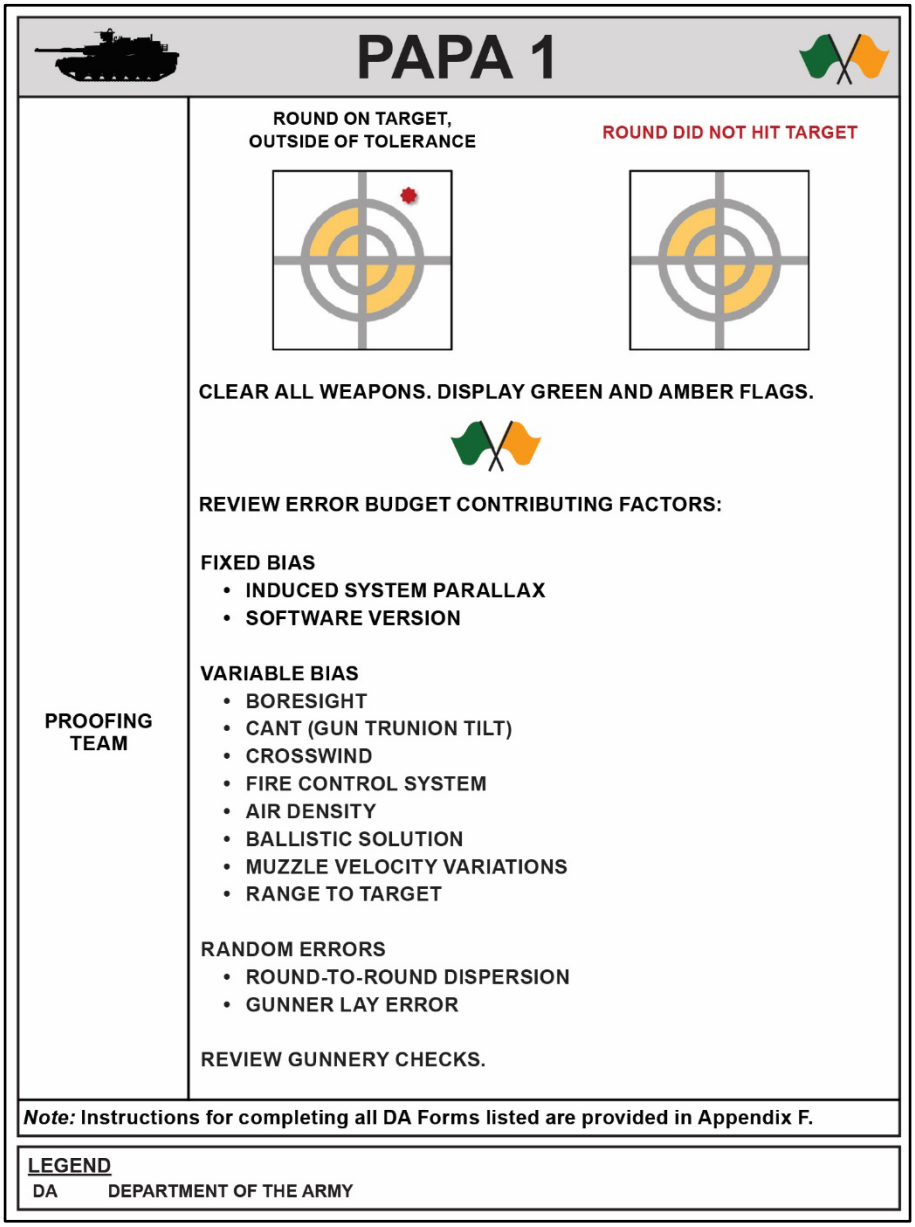
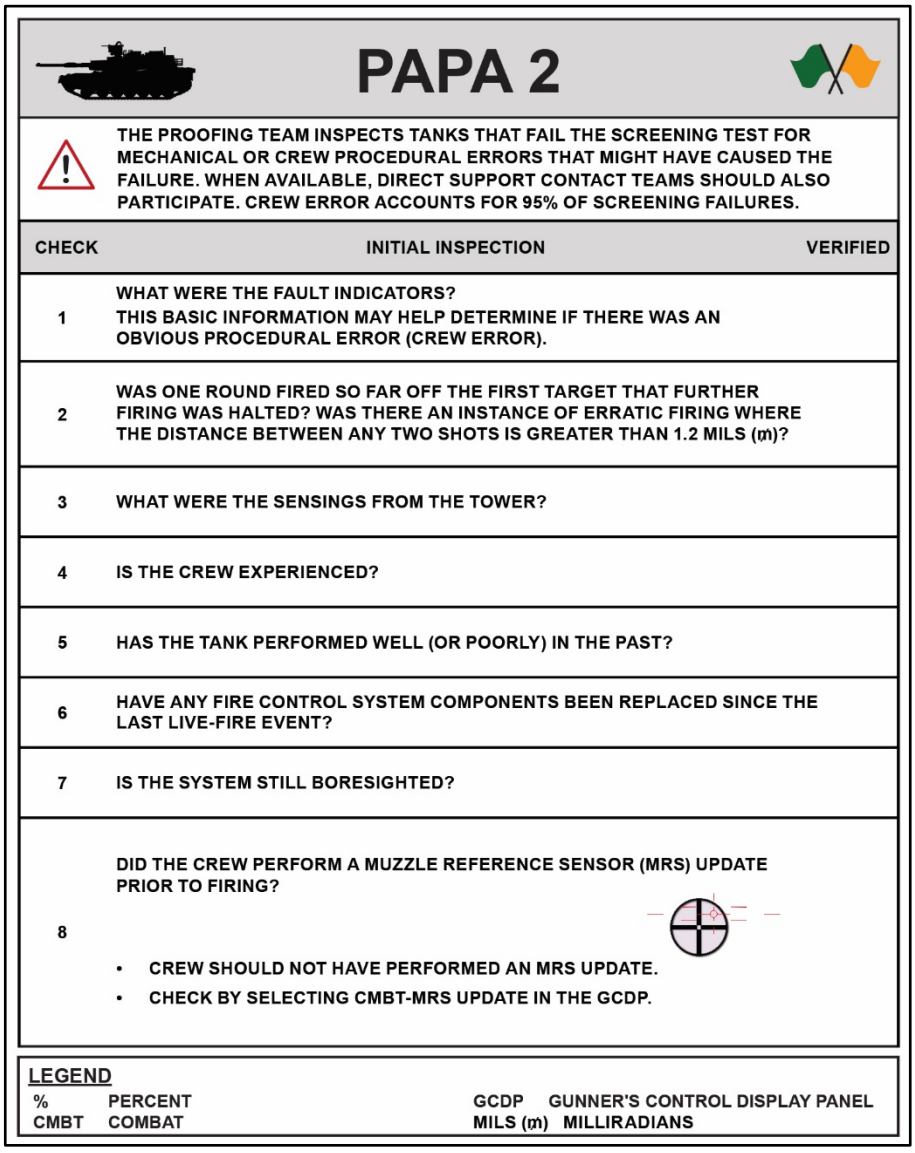


Figure 4-41. Action papa 1 procedures, example



PAPA 2

THE PROOFING TEAM INSPECTS TANKS THAT FAIL THE SCREENING TEST FOR MECHANICAL OR CREW PROCEDURAL ERRORS THAT MIGHT HAVE CAUSED THE FAILURE. WHEN AVAILABLE, DIRECT SUPPORT CONTACT TEAMS SHOULD ALSO PARTICIPATE. CREW ERROR ACCOUNTS FOR 95% OF SCREENING FAILURES.

CHECK	INITIAL INSPECTION	VERIFIED
1	WHAT WERE THE FAULT INDICATORS? THIS BASIC INFORMATION MAY HELP DETERMINE IF THERE WAS AN OBVIOUS PROCEDURAL ERROR (CREW ERROR).	
2	WAS ONE ROUND FIRED SO FAR OFF THE FIRST TARGET THAT FURTHER FIRING WAS HALTED? WAS THERE AN INSTANCE OF ERRATIC FIRING WHERE THE DISTANCE BETWEEN ANY TWO SHOTS IS GREATER THAN 1.2 MILS (m)?	
3	WHAT WERE THE SENSINGS FROM THE TOWER?	
4	IS THE CREW EXPERIENCED?	
5	HAS THE TANK PERFORMED WELL (OR POORLY) IN THE PAST?	
6	HAVE ANY FIRE CONTROL SYSTEM COMPONENTS BEEN REPLACED SINCE THE LAST LIVE-FIRE EVENT?	
7	IS THE SYSTEM STILL BORESIGHTED?	
8	DID THE CREW PERFORM A MUZZLE REFERENCE SENSOR (MRS) UPDATE PRIOR TO FIRING? • CREW SHOULD NOT HAVE PERFORMED AN MRS UPDATE. • CHECK BY SELECTING CMBT-MRS UPDATE IN THE GCDP.	

LEGEND

%	PERCENT	GCDP	GUNNER'S CONTROL DISPLAY PANEL
CMBT	COMBAT	MILS (m)	MILLIRADIANS

Figure 4-42. Action papa 2 procedures, example



PAPA 3



CHECK	INITIAL INSPECTION	VERIFIED
9	REVIEW SYMBOLOGY FOR ANY FIRE CONTROL MALFUNCTION INDICATORS.	
10	CHECK FOR POSSIBLE CREW ERROR.	
11	DID THE GUNNER REMEMBER TO DEPRESS THE PALM SWITCHES WHILE FIRING?	
12	CHECK FOR POSSIBLE MAINTENANCE PROBLEMS.	
13	DID THE VEHICLE PASS ALL CHECKS ON ARMAMENT ACCURACY CHECKS (AAC)?	
14	WERE ANY CIRCUIT BREAKERS TRIPPED OR SET TO OFF?	
15	WAS THERE ANY NORMAL/EMERGENCY MODE DRIFT IN THE FIRE CONTROL SYSTEM?	
16	DID THE GUNNER USE POWER CONTROLS OR MANUAL HANDLES?	
17	IF USING MANUAL CONTROLS, REVIEW THE BALLISTIC DATA TO ENSURE THE BALLISTIC SOLUTION WAS ENTERED USING THE POWER CONTROL HANDLES FIRST.	
18	MANUAL CONTROLS—WHAT TRIGGER WAS USED? • MANUAL BLASTING MACHINE (COMMONLY REFERRED TO AS THE "MASTER BLASTER") • MANUAL ELEVATION HANDLE THUMB TRIGGER	
19	MANUAL CONTROLS—WHAT TRIGGER WAS USED? • MANUAL BLASTING MACHINE (COMMONLY REFERRED TO AS THE "MASTER BLASTER") • GUNNER POWER CONTROL HANDLE TRIGGER	
20	IS THE LASER FIRMLY SECURED TO THE GUNNER'S PRIMARY SIGHT HOUSING? 3/4 INCH WRENCH MAY BE REQUIRED TO VERIFY.	

Figure 4-43. Action papa 3 procedures, example



PAPA 4



CHECK	REVIEW VARIABLE BIASES
21	AUTOMATIC AND MANUAL INPUTS
A	AIR TEMP (-40 to 149)
B	AMMO TEMP READING (-40 to 149)
C	CANT READING (-15.00 to 15.00) RIGHT SIDE UP = POSITIVE
D	HYDRAULIC PRESSURE (1,500 to 1,750)
E	BAROMETRIC PRESSURE (19.68 to 33.46)

AIR DENSITY	ELEVATION	BARO (inHg)	EXAMPLE LOCATIONS
MINIMUM	3,000m	19.68	CUSCU, PERU
	2,700m	21.51	BOGOTA, COLUMBIA;
	2,400m	22.33	ADDIS ABABA, ETHIOPIA
	2,100m	23.19	MEXICO CITY; SKARDU, PAKISTAN
	1,800m	24.06	FCCO; KABUL, AFG
	1,500m	24.97	SHIRAZ, IRAN;
	1,200m	25.9	CHOSIN, FRK; TEHRAN, IRAN
	900m	26.86	YAKIMA TNG AREA; ARMENIA
	600m	27.85	SARAJEVO; JALALABAD, AFG
	300m	28.87	KURSK
STANDARD	0m	29.92	SEA LEVEL; FSGA; BAGHDAD; KUWAIT
		30.82	CTC; DEATH VALLEY; NEW ORLEANS
		31.70	
		32.58	
MAXIMUM		33.45	

LEGEND

AFG	AFGHANISTAN	FSGA	FORT STEWART, GEORGIA
BARO	BAROMETER	inHG	INCHES OF MERCURY
CTC	COMBAT TRAINING CENTER	m	METER
FCCO	FORT CARSON, COLORADO	TEMP	TEMPERATURE
FRK	FORT RILEY, KANSAS	TNG	TRAINING

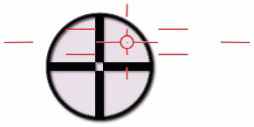
Figure 4-44. Action papa 4 procedures, example



PAPA 5

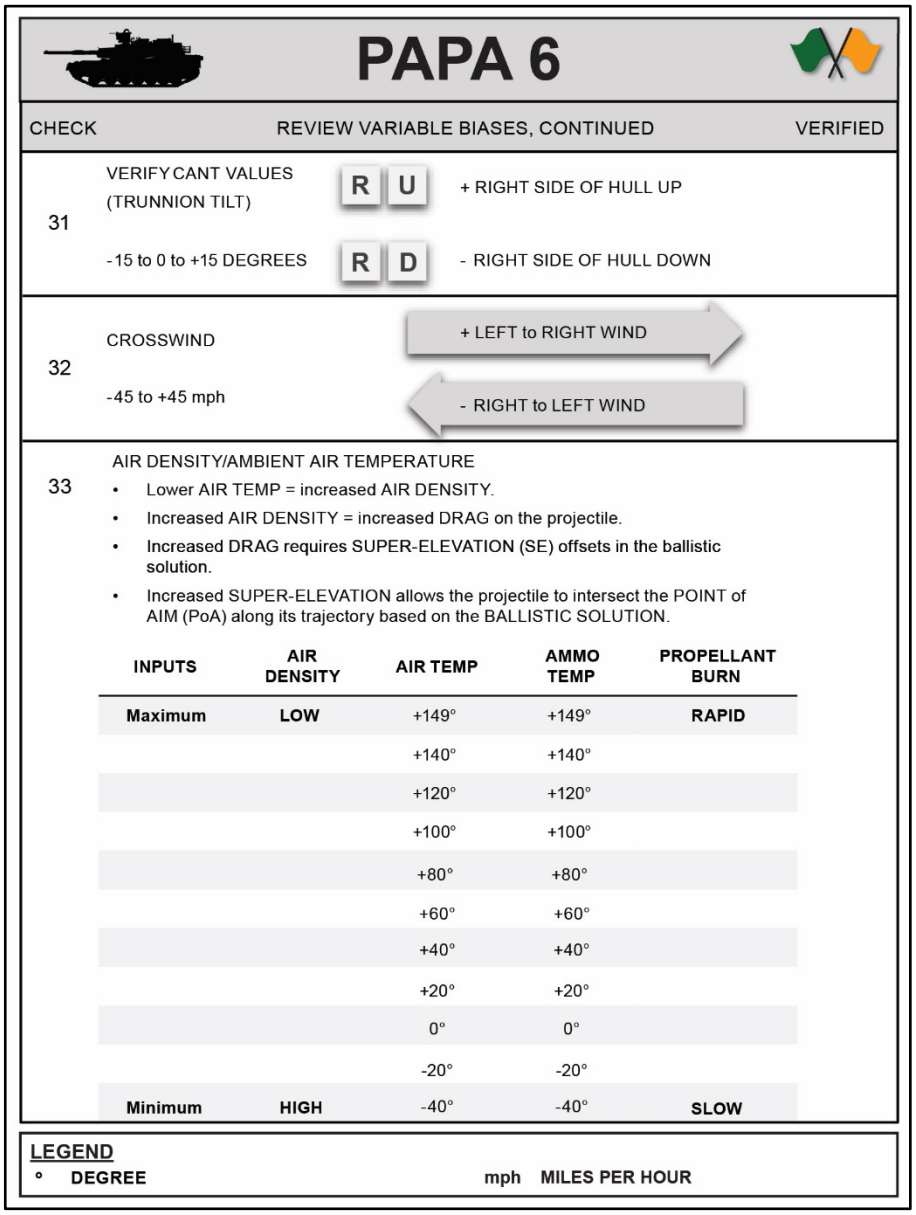


CHECK	REVIEW VARIABLE BIASES, CONTINUED	VERIFIED
22	CONFIRM BORESIGHT MATH	
23	CONFIRM BORESIGHTING PROCEDURES	
24	CONFIRM BORESIGHT POINT OF AIM FOR GUNNER AND MUZZLE BORESIGHT DEVICE OPERATOR	
25	CHECK MUZZLE BORESIGHT DEVICE TOLERANCE	
26	VERIFY MUZZLE BORESIGHT DEVICE COLLIMATION PROCEDURES AND ACCURACY	
27	REVIEW BORESIGHT RETENTION ERRORS	
28	THERMAL BENDING POSSIBLE BETWEEN ROUNDS FIRED?	
29	GRAVITATIONAL BENDING POSSIBLE BETWEEN BORESIGHT AND FIRING, OR BETWEEN ROUNDS?	
30	DID THE CREW PERFORM A MUZZLE REFERENCE SENSOR (MRS) UPDATE PRIOR TO FIRING?	



- CREW SHOULD NOT HAVE PERFORMED AN MRS UPDATE.
- CHECK BY MOVING THE MRS LEVER TO "IN" AND EXAMINING THE DISPLAY NUMBERS ON THE COMPUTER CONTROL PANEL. THE NUMBERS SHOULD READ 0.0 / 0/0.

Figure 4-45. Action papa 5 procedures, example



PAPA 6

CHECK	REVIEW VARIABLE BIASES, CONTINUED	VERIFIED

31 VERIFY CANT VALUES (TRUNNION TILT)

-15 to 0 to +15 DEGREES

R U + RIGHT SIDE OF HULL UP

R D - RIGHT SIDE OF HULL DOWN

32 CROSSWIND

-45 to +45 mph

+ LEFT to RIGHT WIND

- RIGHT to LEFT WIND

33 AIR DENSITY/AMBIENT AIR TEMPERATURE

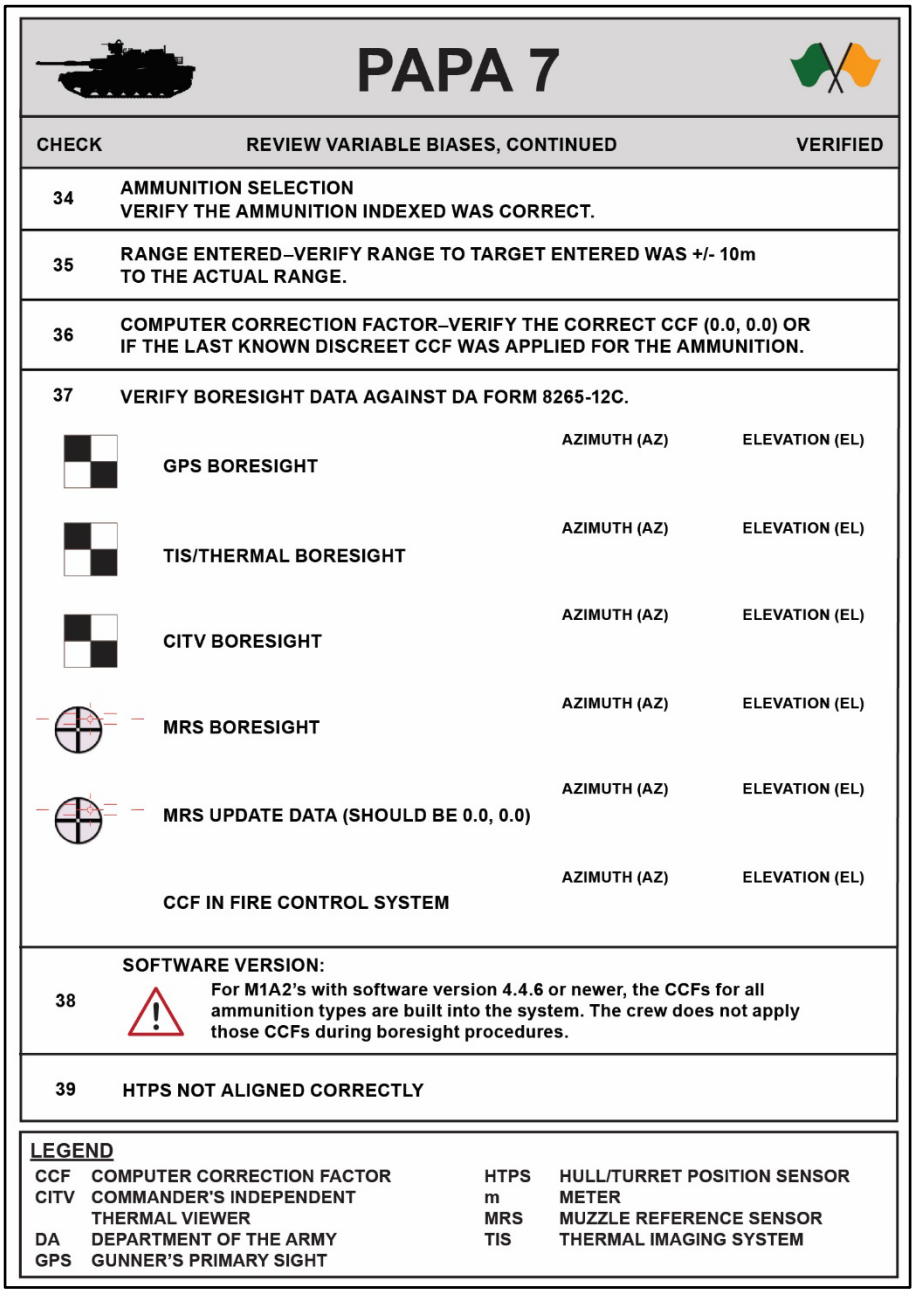
- Lower AIR TEMP = increased AIR DENSITY.
- Increased AIR DENSITY = increased DRAG on the projectile.
- Increased DRAG requires SUPER-ELEVATION (SE) offsets in the ballistic solution.
- Increased SUPER-ELEVATION allows the projectile to intersect the POINT of AIM (PoA) along its trajectory based on the BALLISTIC SOLUTION.

INPUTS	AIR DENSITY	AIR TEMP	AMMO TEMP	PROPELLANT BURN
Maximum	**LOW**	+149°	+149°	**RAPID**
		+140°	+140°	
		+120°	+120°	
		+100°	+100°	
		+80°	+80°	
		+60°	+60°	
		+40°	+40°	
		+20°	+20°	
		0°	0°	
		-20°	-20°	
Minimum	**HIGH**	-40°	-40°	**SLOW**

LEGEND

° **DEGREE** **mph** **MILES PER HOUR**

Figure 4-46. Action papa 6 procedures, example



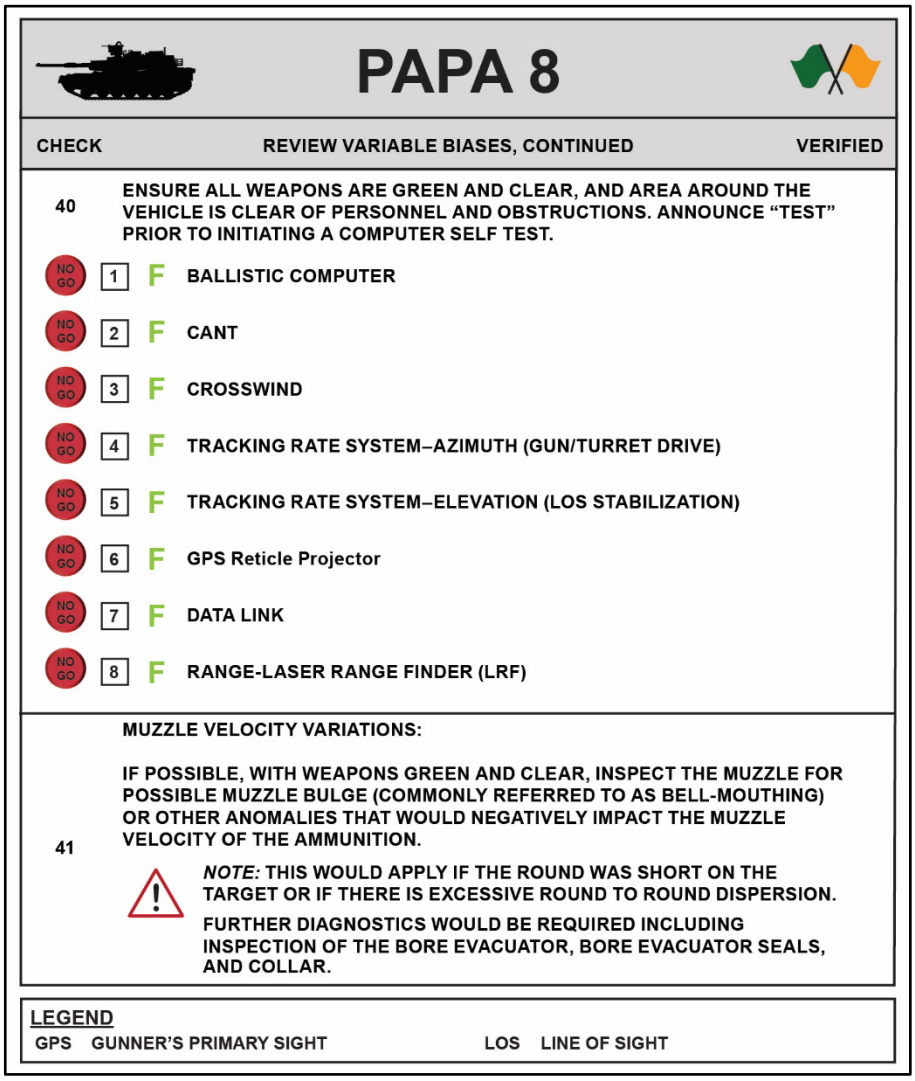
PAPA 7

CHECK	REVIEW VARIABLE BIASES, CONTINUED	VERIFIED
34	AMMUNITION SELECTION VERIFY THE AMMUNITION INDEXED WAS CORRECT.	
35	RANGE ENTERED–VERIFY RANGE TO TARGET ENTERED WAS +/- 10m TO THE ACTUAL RANGE.	
36	COMPUTER CORRECTION FACTOR–VERIFY THE CORRECT CCF (0.0, 0.0) OR IF THE LAST KNOWN DISCREET CCF WAS APPLIED FOR THE AMMUNITION.	
37	VERIFY BORESIGHT DATA AGAINST DA FORM 8265-12C.	
	GPS BORESIGHT — AZIMUTH (AZ) ELEVATION (EL)	
	TIS/THERMAL BORESIGHT — AZIMUTH (AZ) ELEVATION (EL)	
	CITV BORESIGHT — AZIMUTH (AZ) ELEVATION (EL)	
	MRS BORESIGHT — AZIMUTH (AZ) ELEVATION (EL)	
	MRS UPDATE DATA (SHOULD BE 0.0, 0.0) — AZIMUTH (AZ) ELEVATION (EL)	
	CCF IN FIRE CONTROL SYSTEM — AZIMUTH (AZ) ELEVATION (EL)	
38	SOFTWARE VERSION: For M1A2's with software version 4.4.6 or newer, the CCFs for all ammunition types are built into the system. The crew does not apply those CCFs during boresight procedures.	
39	HTPS NOT ALIGNED CORRECTLY	

LEGEND

CCF	COMPUTER CORRECTION FACTOR	HTPS	HULL/TURRET POSITION SENSOR
CITV	COMMANDER'S INDEPENDENT THERMAL VIEWER	m	METER
		MRS	MUZZLE REFERENCE SENSOR
DA	DEPARTMENT OF THE ARMY	TIS	THERMAL IMAGING SYSTEM
GPS	GUNNER'S PRIMARY SIGHT		

Figure 4-47. Action papa 7 procedures, example



PAPA 8

CHECK	REVIEW VARIABLE BIASES, CONTINUED	VERIFIED

40 ENSURE ALL WEAPONS ARE GREEN AND CLEAR, AND AREA AROUND THE VEHICLE IS CLEAR OF PERSONNEL AND OBSTRUCTIONS. ANNOUNCE "TEST" PRIOR TO INITIATING A COMPUTER SELF TEST.

NO GO 1 F BALLISTIC COMPUTER

NO GO 2 F CANT

NO GO 3 F CROSSWIND

NO GO 4 F TRACKING RATE SYSTEM–AZIMUTH (GUN/TURRET DRIVE)

NO GO 5 F TRACKING RATE SYSTEM–ELEVATION (LOS STABILIZATION)

NO GO 6 F GPS Reticle Projector

NO GO 7 F DATA LINK

NO GO 8 F RANGE-LASER RANGE FINDER (LRF)

41 MUZZLE VELOCITY VARIATIONS:

IF POSSIBLE, WITH WEAPONS GREEN AND CLEAR, INSPECT THE MUZZLE FOR POSSIBLE MUZZLE BULGE (COMMONLY REFERRED TO AS BELL-MOUTHING) OR OTHER ANOMALIES THAT WOULD NEGATIVELY IMPACT THE MUZZLE VELOCITY OF THE AMMUNITION.

NOTE: THIS WOULD APPLY IF THE ROUND WAS SHORT ON THE TARGET OR IF THERE IS EXCESSIVE ROUND TO ROUND DISPERSION.

FURTHER DIAGNOSTICS WOULD BE REQUIRED INCLUDING INSPECTION OF THE BORE EVACUATOR, BORE EVACUATOR SEALS, AND COLLAR.

LEGEND

GPS GUNNER'S PRIMARY SIGHT LOS LINE OF SIGHT

Figure 4-48. Action papa 8 procedures, example

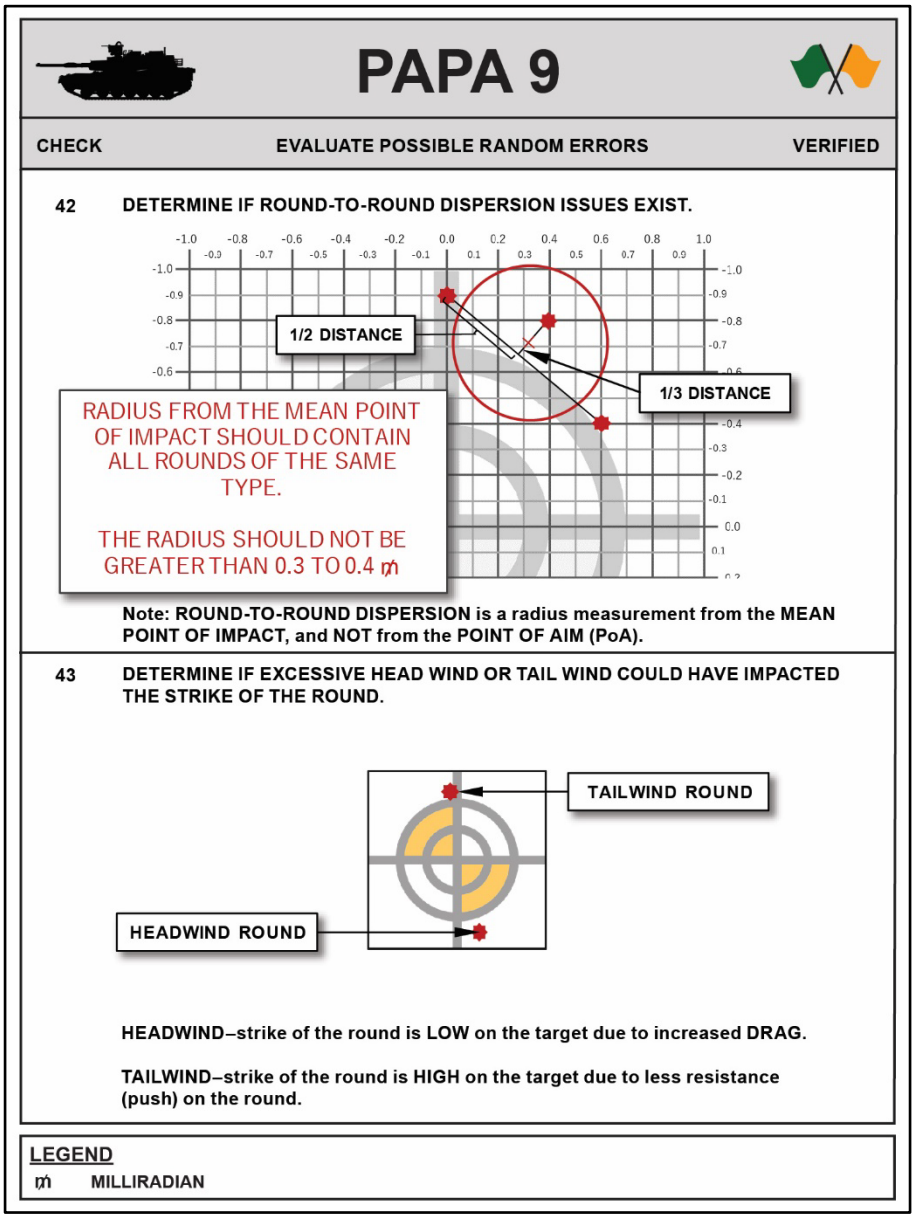
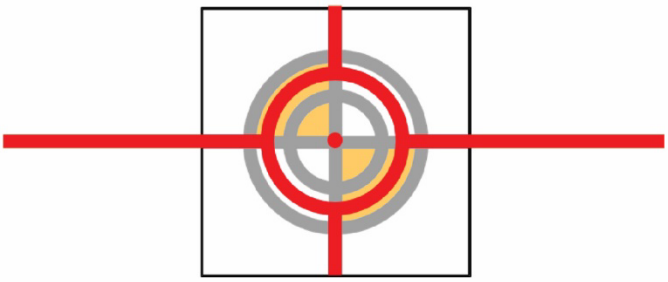


Figure 4-49. Action papa 9 procedures, example

PAPA 10

CHECK	EVALUATE POSSIBLE RANDOM ERRORS, CONTINUED	VERIFIED

44 DETERMINE IF GUNNER LAY ERROR INDUCED.



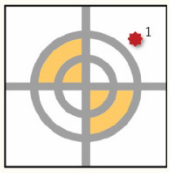
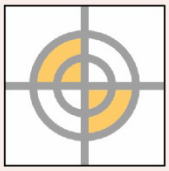
GUNNER LAY ERRORS are influenced by the following:

- Inability to identify the center of the target.
- Inability to properly superimpose the reticle onto the CENTER OF VISIBLE MASS (CoVM) of the target. The ST-5 is designed to center the aiming circle (1.0㎜) between the two concentric tolerance circles (0.8㎜ inner circle and 1.2㎜ outer circle).
- Firing prior to refining the sight picture due to the criticality of time.
- Optical path bending.
- Parallax (Typically where the headrest is not properly adjusted for the CVC).

LEGEND

CVC	COMBAT VEHICLE CREWMAN	ST-5	STANDARD TARGET NUMBER 5
㎜	MILLIRADIAN		

Figure 4-50. Action papa 10 procedures, example

<table>
<tr><td colspan="3">PAPA 11</td></tr>
<tr><td>CHECK</td><td colspan="2">EVALUATE POSSIBLE RANDOM ERRORS, CONTINUED</td><td>VERIFIED</td></tr>
<tr><td colspan="4">45 SEND RECOMMENDATION TO TOWER FOR DECISION.</td></tr>
<tr><td></td><td>ROUND ON TARGET, OUTSIDE OF TOLERANCE
</td><td colspan="2">ROUND DID NOT HIT TARGET
</td></tr>
<tr><td>NO FAULTS FOUND</td><td>NOTIFY TOWER NO FAULTS FOUND. CONTINUE WITH SCREENING PROCESS.

RETURN TO CHARLIE or ECHO AS APPROPRIATE.</td><td colspan="2" rowspan="3">NOTIFY TOWER TO:

CLEAR AND ELEVATE.

DISPLAY GREEN AND AMBER FLAG.


SEND TO FIELD MAINTENANCE FOR TROUBLESHOOTING OR REPAIR.</td></tr>
<tr><td rowspan="2">FAULTS FOUND</td><td>IF FAULTS CAN BE CORRECTED WITHOUT MOVING VEHICLE, COMPLETE CORRECTIVE ACTION AND NOTIFY TOWER WHEN COMPLETE.

ONCE COMPLETE–RETURN TO CHARLIE or ECHO AS APPROPRIATE.</td></tr>
<tr><td>IF FAULTS REQUIRE LEAVING THE FIRING LINE (FOR REASONS SUCH AS BORESIGHTING, REPAIR, OR OTHER).

CONFIRM ALL WEAPONS ARE CLEARED AND ELEVATED.

DISPLAY GREEN FLAG.


LEAVE FIRING POSITION AND SEND TO FIELD MAINTENANCE.</td></tr>
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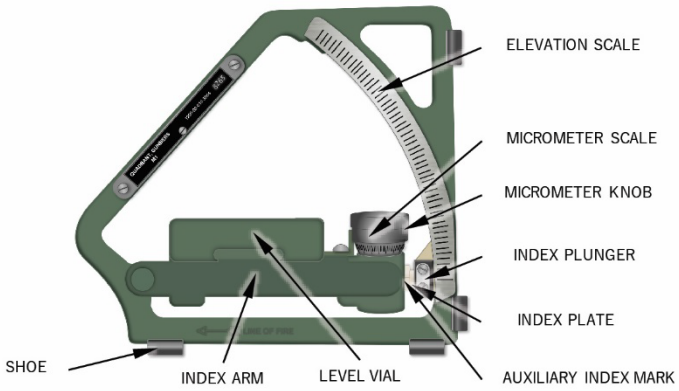
Figure 4-51. Action papa 11 procedures, example

ACTION QUEBEC

4-94. Action group quebec (see figure 4-52 and figure 4-53 on page 170) provides instructions on the use of the end-for-end test for the M1A1/M1A3 gunner's quadrant. This device is used by the crew and proofing team to verify various ballistic solutions, verify gun trunnion tilt, and determine the super elevation of the gun tube when required.

QUEBEC 1

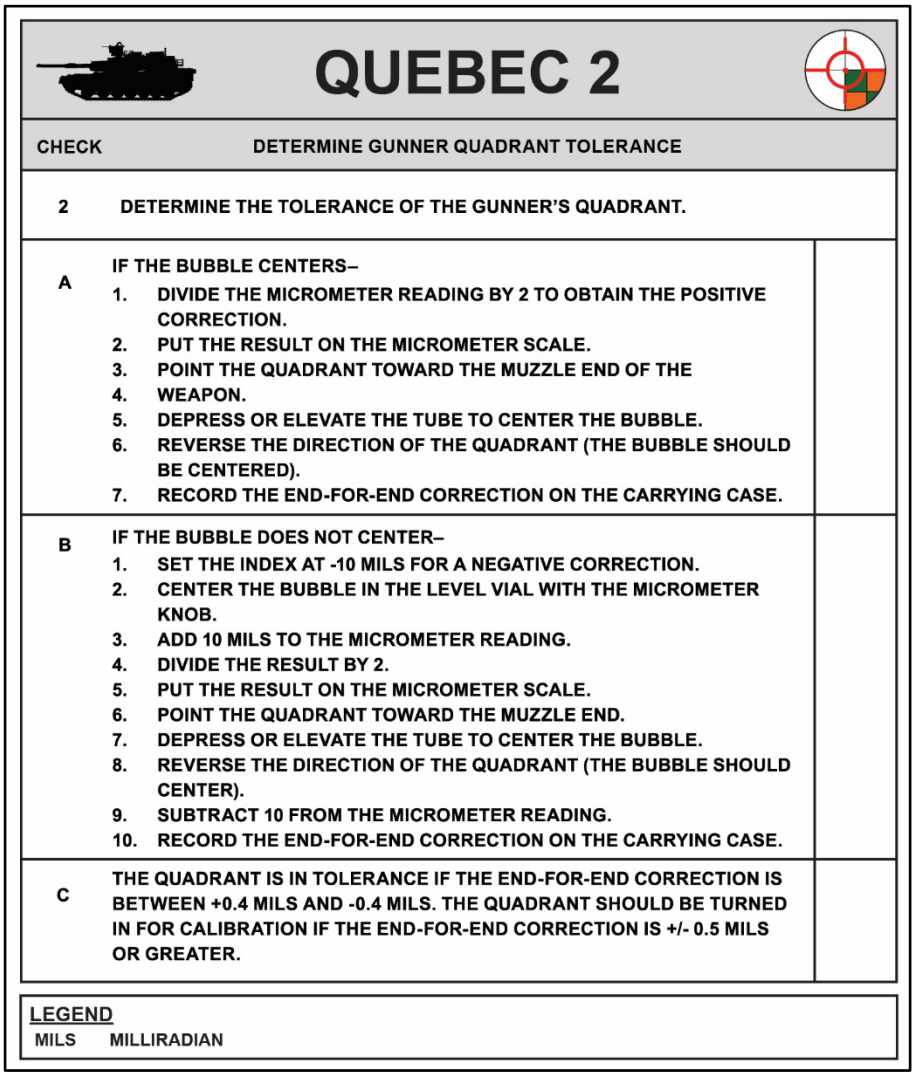
CHECK	PERFORM END FOR END TEST ON GUNNER'S QUADRANT	
1	THE CREW MUST PERFORM AN END FOR END TEST TO ENSURE THE DEVICE IS WITHIN TOLERANCE.	



A	INSPECT THE ELEVATION QUADRANT SEATS ON THE WEAPON.	
B	INSPECT THE QUADRANT SHOES (2 EACH).	
C	ZERO THE MICROMETER BY TURNING THE MICROMETER KNOB.	
D	SET THE INDEX AT ZERO MILS (m).	
E	POSITION THE QUADRANT ON THE WEAPON POINTING TOWARD THE MUZZLE.	
F	DEPRESS OR ELEVATE THE TUBE TO CENTER THE BUBBLE IN THE LEVEL VIAL.	
G	REVERSE THE DIRECTION OF THE QUADRANT. (THE BUBBLE SHOULD REMAIN CENTERED.)	
H	IF THE BUBBLE CENTERS, TEST COMPLETE–CHECK ELEVATION ON WEAPON, IF THE BUBBLE DOES NOT CENTER, DETERMINE TOLERANCE.	

LEGEND
MILS (m) MILLIRADIAN

Figure 4-52. Action quebec 1 procedures, example



QUEBEC 2

CHECK	DETERMINE GUNNER QUADRANT TOLERANCE	
2	DETERMINE THE TOLERANCE OF THE GUNNER'S QUADRANT.	
A	IF THE BUBBLE CENTERS– 1. DIVIDE THE MICROMETER READING BY 2 TO OBTAIN THE POSITIVE CORRECTION. 2. PUT THE RESULT ON THE MICROMETER SCALE. 3. POINT THE QUADRANT TOWARD THE MUZZLE END OF THE 4. WEAPON. 5. DEPRESS OR ELEVATE THE TUBE TO CENTER THE BUBBLE. 6. REVERSE THE DIRECTION OF THE QUADRANT (THE BUBBLE SHOULD BE CENTERED). 7. RECORD THE END-FOR-END CORRECTION ON THE CARRYING CASE.	
B	IF THE BUBBLE DOES NOT CENTER– 1. SET THE INDEX AT -10 MILS FOR A NEGATIVE CORRECTION. 2. CENTER THE BUBBLE IN THE LEVEL VIAL WITH THE MICROMETER KNOB. 3. ADD 10 MILS TO THE MICROMETER READING. 4. DIVIDE THE RESULT BY 2. 5. PUT THE RESULT ON THE MICROMETER SCALE. 6. POINT THE QUADRANT TOWARD THE MUZZLE END. 7. DEPRESS OR ELEVATE THE TUBE TO CENTER THE BUBBLE. 8. REVERSE THE DIRECTION OF THE QUADRANT (THE BUBBLE SHOULD CENTER). 9. SUBTRACT 10 FROM THE MICROMETER READING. 10. RECORD THE END-FOR-END CORRECTION ON THE CARRYING CASE.	
C	THE QUADRANT IS IN TOLERANCE IF THE END-FOR-END CORRECTION IS BETWEEN +0.4 MILS AND -0.4 MILS. THE QUADRANT SHOULD BE TURNED IN FOR CALIBRATION IF THE END-FOR-END CORRECTION IS +/- 0.5 MILS OR GREATER.	

LEGEND
MILS MILLIRADIAN

Figure 4-53. Action quebec 2 procedures, example

ACTION ZULU

4-95. Action group zulu is conducted by the tower to determine an appropriate and effective discrete CCF for the firing crew. The authorized master gunner follows the process listed in figures 4-54 through 4-57 on page 174 as appropriate.

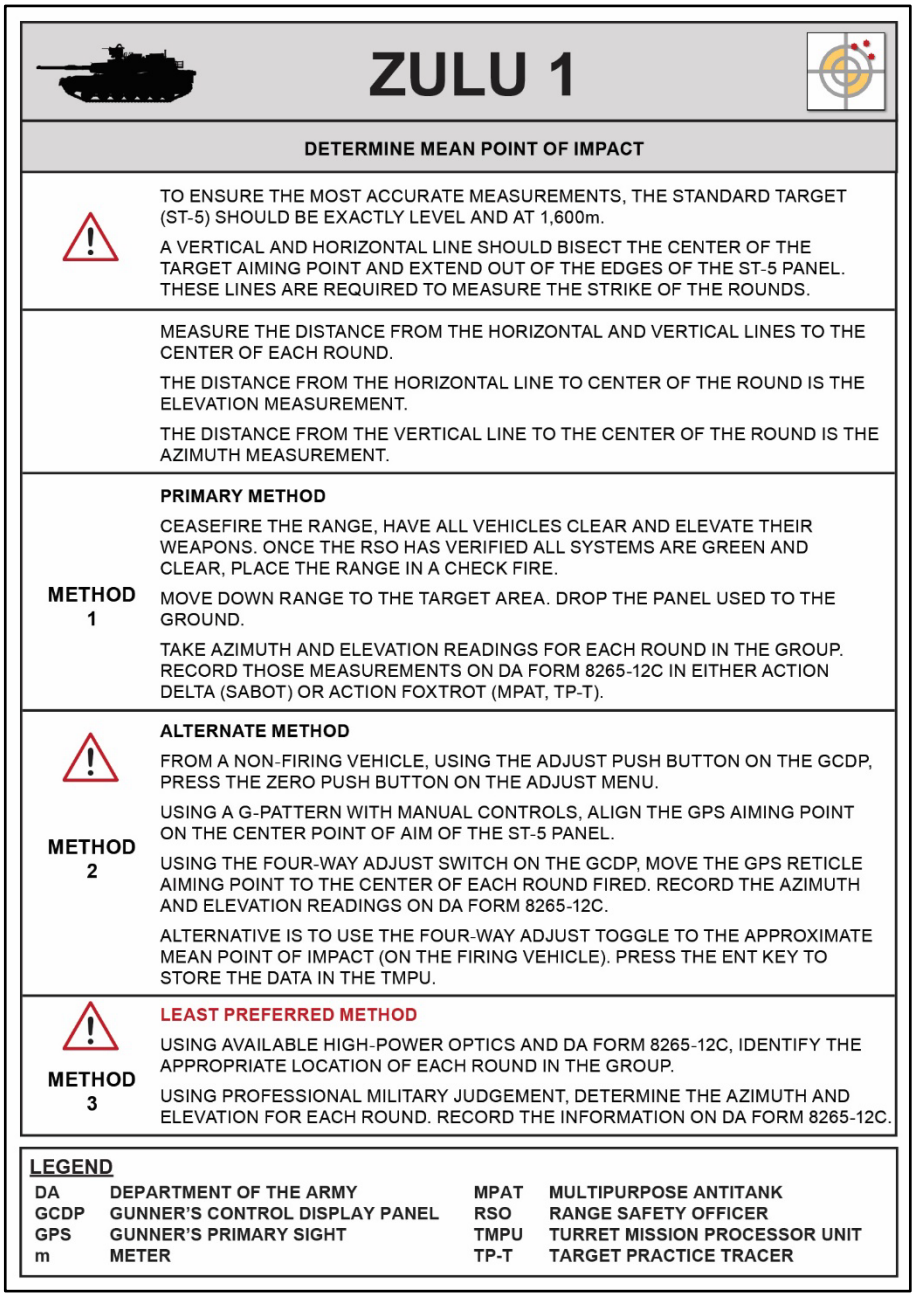


Figure 4-54. Action zulu 1 procedures, example

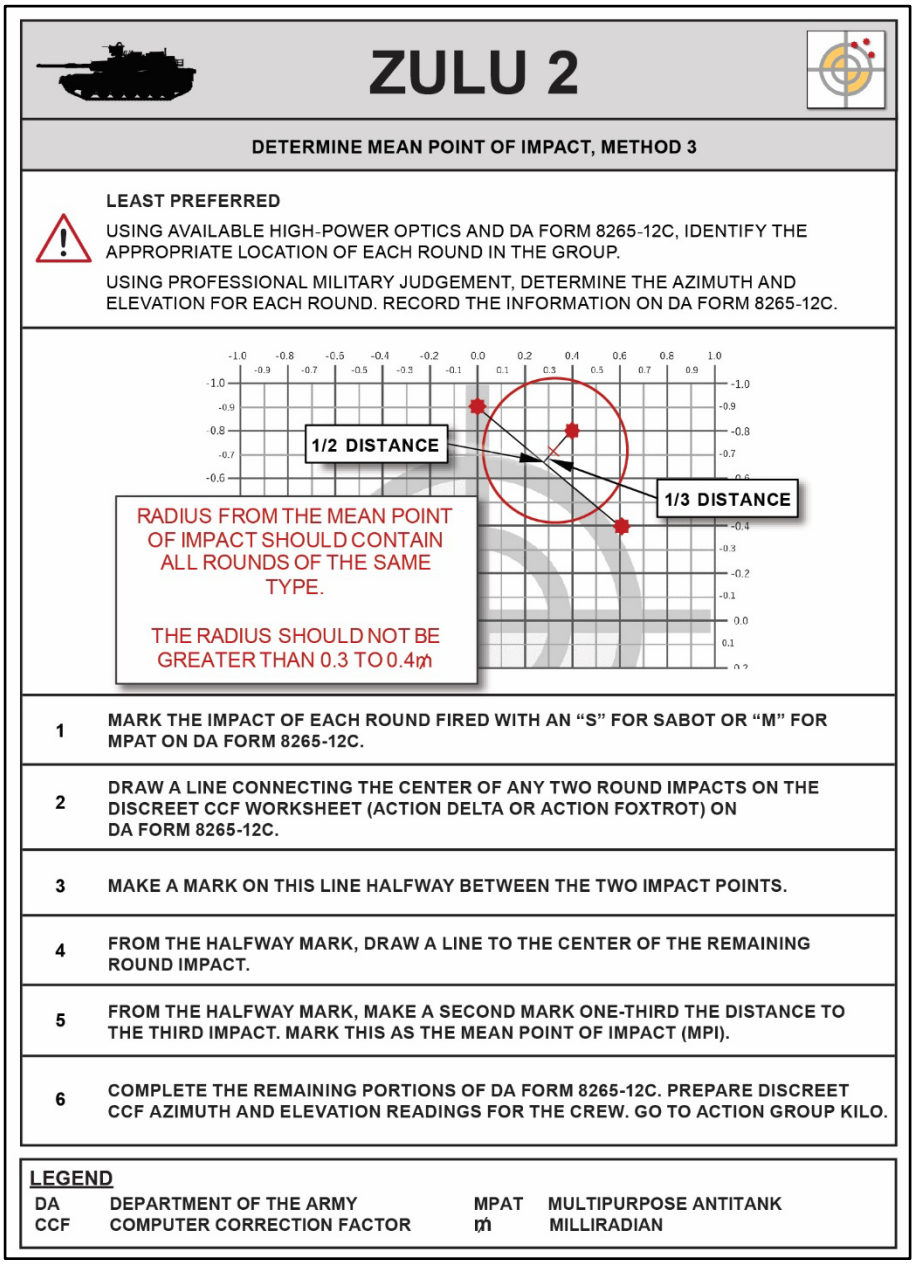
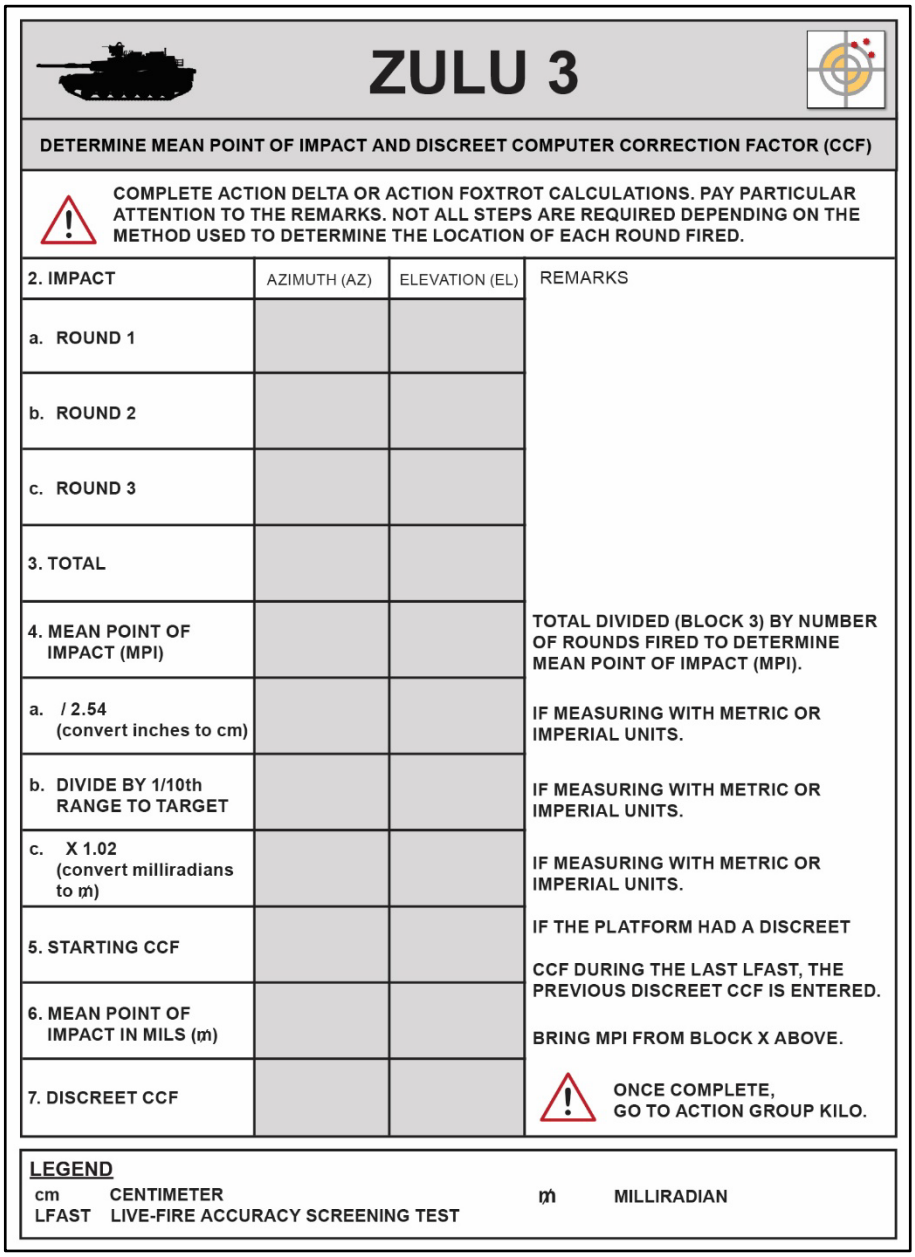


Figure 4-55. Action zulu 2 procedures, example



ZULU 3

DETERMINE MEAN POINT OF IMPACT AND DISCREET COMPUTER CORRECTION FACTOR (CCF)

COMPLETE ACTION DELTA OR ACTION FOXTROT CALCULATIONS. PAY PARTICULAR ATTENTION TO THE REMARKS. NOT ALL STEPS ARE REQUIRED DEPENDING ON THE METHOD USED TO DETERMINE THE LOCATION OF EACH ROUND FIRED.

2. IMPACT	AZIMUTH (AZ)	ELEVATION (EL)	REMARKS
a. ROUND 1			
b. ROUND 2			
c. ROUND 3			
3. TOTAL			
4. MEAN POINT OF IMPACT (MPI)			TOTAL DIVIDED (BLOCK 3) BY NUMBER OF ROUNDS FIRED TO DETERMINE MEAN POINT OF IMPACT (MPI).
a. / 2.54 (convert inches to cm)			IF MEASURING WITH METRIC OR IMPERIAL UNITS.
b. DIVIDE BY 1/10th RANGE TO TARGET			IF MEASURING WITH METRIC OR IMPERIAL UNITS.
c. X 1.02 (convert milliradians to m̓)			IF MEASURING WITH METRIC OR IMPERIAL UNITS.
5. STARTING CCF			IF THE PLATFORM HAD A DISCREET CCF DURING THE LAST LFAST, THE PREVIOUS DISCREET CCF IS ENTERED.
6. MEAN POINT OF IMPACT IN MILS (m̓)			BRING MPI FROM BLOCK X ABOVE.
7. DISCREET CCF			ONCE COMPLETE, GO TO ACTION GROUP KILO.

LEGEND

cm	CENTIMETER	m̓	MILLIRADIAN
LFAST	LIVE-FIRE ACCURACY SCREENING TEST		

Figure 4-56. Action zulu 3 procedures, example

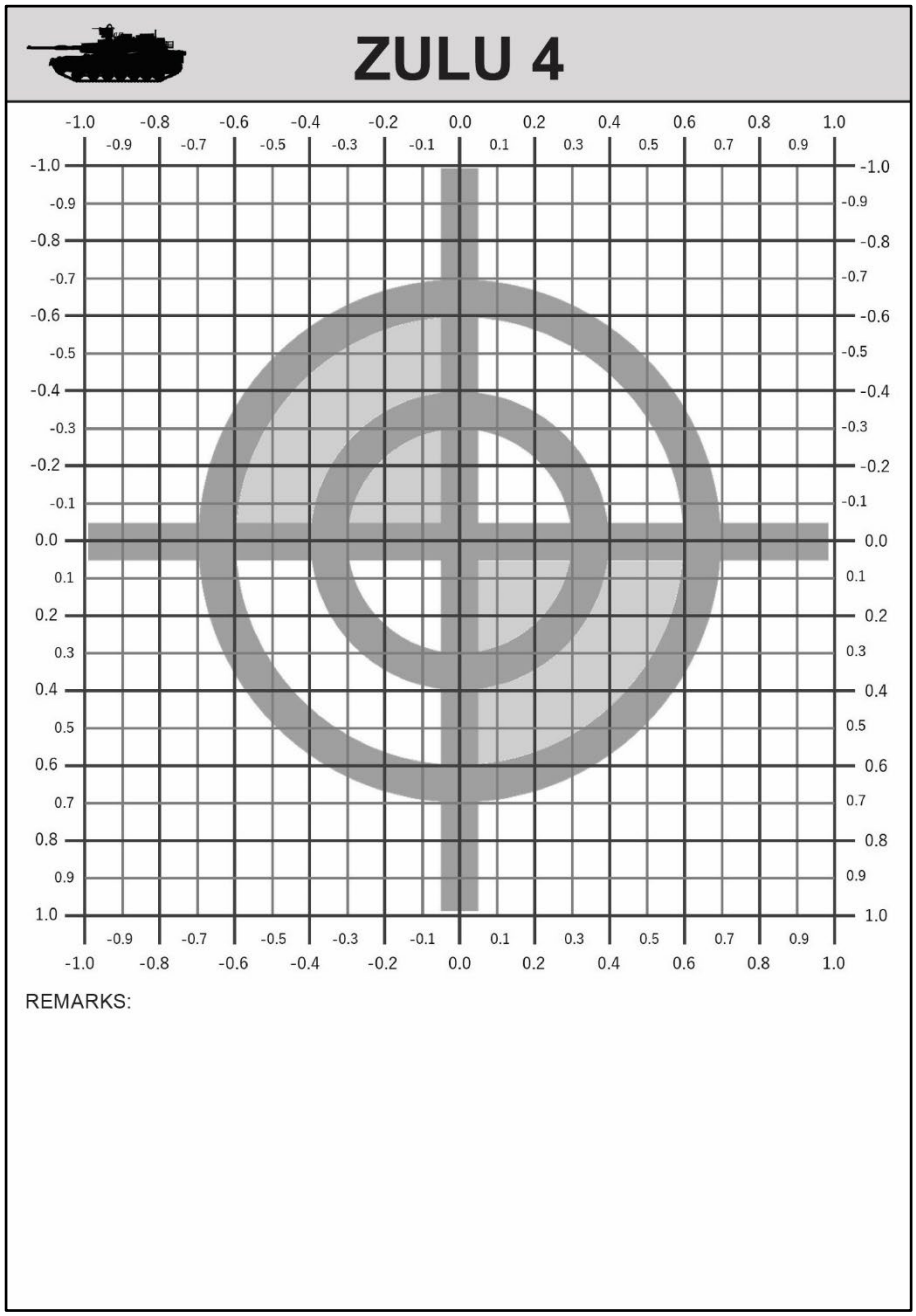


Figure 4-57. Action zulu 4, recording strike of rounds for reference, example

TABLE IV, TASK GROUP B—MAIN GUN CONFIRMATION

4-96. The second task group to complete is main gun confirmation. These are conducted only after successful completion of Task Group A, screening and zeroing by the crew.

PURPOSE

4-97. Table IV, Basic, Task Group B, main gun confirmation, provides the crew a means to verify their ability to employ the fire control system against stationary and moving targets from a defensive firing position. The two live-fire engagements provide an evaluation of the crew's conduct of fire and coordination, lethality against common threats, and ensure the fire control system operates as expected in normal mode. It also reinforces the crew's use of the MRS update to make corrections to the ballistic solution to offset for uneven heating and cooling of the gun tube common during main gun firing.

METHOD

4-98. The main gun confirmation engagements include three distinct steps: the gunner's defensive main gun engagement, MRS update, and the tank commander's defensive main gun engagement. Coupled with the LFAST and machine gun zero, completing Table B, main gun confirmation, builds crew confidence in the system, maintenance functions, crew coordination and cohesion, and berm drills.

END STATE

4-99. The crew is confident in their fire control system, ballistic solutions, accuracy of the MRS update, tactical movement and engagements from a defensive position, and their crew coordination. The crew is confident in their conduct of fire process, driver actions, crew responses, and the ability to hit stationary and moving targets from the gunner's and tank commander's position with a fully mission capable system.

4-100. Task Group B's two live-fire engagements are the first of 10 evaluated engagements. The task, conditions, and standard for Task Group B, main gun confirmation, are shown in figure 4-58.



TABLE IV TASK GROUP B MAIN GUN CONFIRMATION	
TASK	Engage stationary and moving targets from a defensive firing position, from the gunner's and tank commander's position. Conduct a muzzle reference sensor update between engagements.
CONDITIONS	Given the following: • An operational platform with weapon or weapon systems. • Unit resourced training ammunition. • Full-scale targets. • All prerequisites to live fire for the crew platform achieved. • Live Fire Accuracy Screening Test (LFAST) successfully completed.
STANDARD	The gunner: • Successfully hits the stationary and moving targets. The crew: • Completes a muzzle reference sensor update. The tank commander: • Successfully hits the stationary and moving targets.
Note: These engagements are evaluated by certified vehicle crew evaluators. They are the first two live-fire engagements on Table IV. Each engagement is recorded on DA Form 8265, *Crew Common Score Card* as part of the crew's packet for Table IV.	

LEGEND
DA DEPARTMENT OF THE ARMY

Figure 4-58. Table IV B, main gun confirmation task, conditions, and standard

4-101. Crews may only perform Task Group B, main gun confirmation, on the crew's vehicle. It is designed to train and evaluate the crew's ability to engage single and multiple stationary and moving targets placed in a tactical array, during the day or night, with a fully operational fire control system, as depicted in the task, conditions, and standard for each engagement. Crews execute these tasks from the defense using full-caliber training munitions.

4-102. These engagements require the use of full-scale targetry as described in the planning section. The unit may increase the range to target to challenge the crew's engagement skills as their training goals and objectives direct, however, the EM for each target may not change.

DEFENSIVE FIGHTING POSITIONS

4-103. As the tower is prepared to conduct the confirmation engagements from the defense, they will control the movement of all vehicles in the firing order. The tower will direct the crew to the appropriate defensive firing position and await further instructions.

4-104. Once set, the tower directs the crew to MOVE TO RED STATUS, test fire their machine guns (if necessary), and report when set. As the crew completes the test firing, they report SET to the tower. As the conduct of the range allows, the tower directs the crew to conduct the engagements for evaluation. Units must enforce the appropriate firing position within the battle positions to reinforce their proper tactical use as shown in figure 4-59.

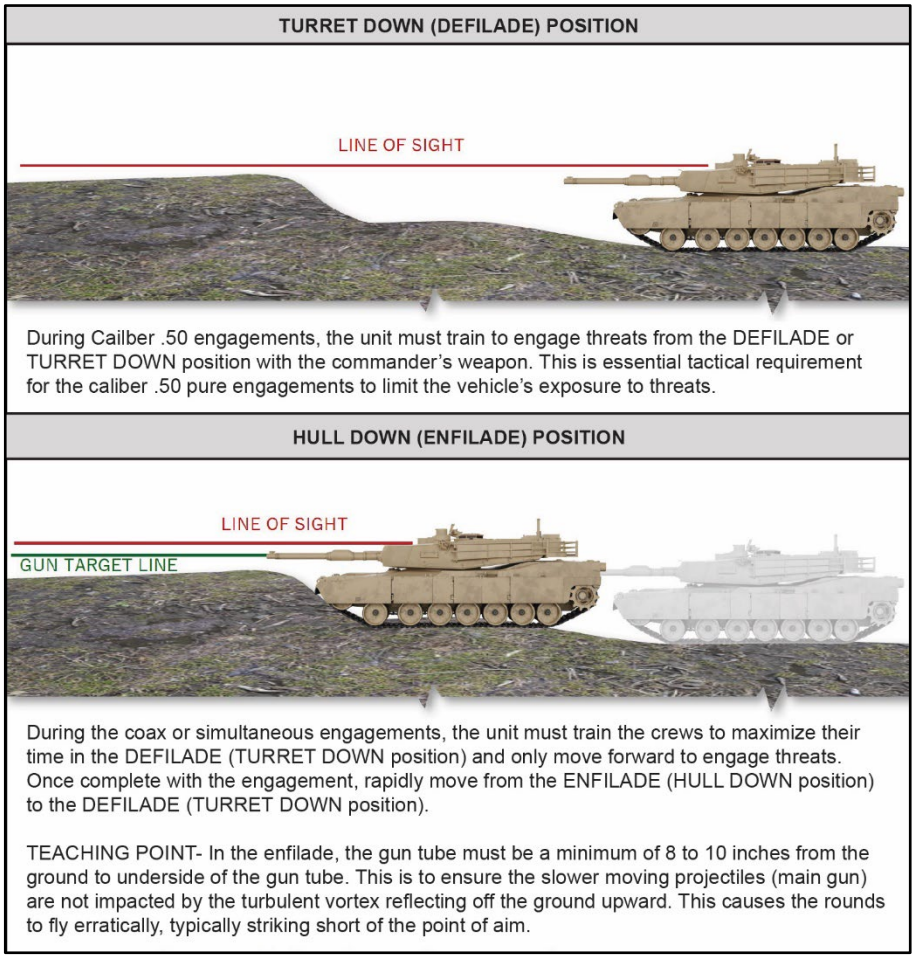


Figure 4-59. Using defensive battle positions

ENGAGEMENTS—TASK GROUP B, MAIN GUN CONFIRMATION

4-105. Figure 4-60 shows the location of the main gun confirmation engagement within Table IV's live-fire engagements. This figure provides a quick overview of the tank commander and gunner's main gun pure engagements.

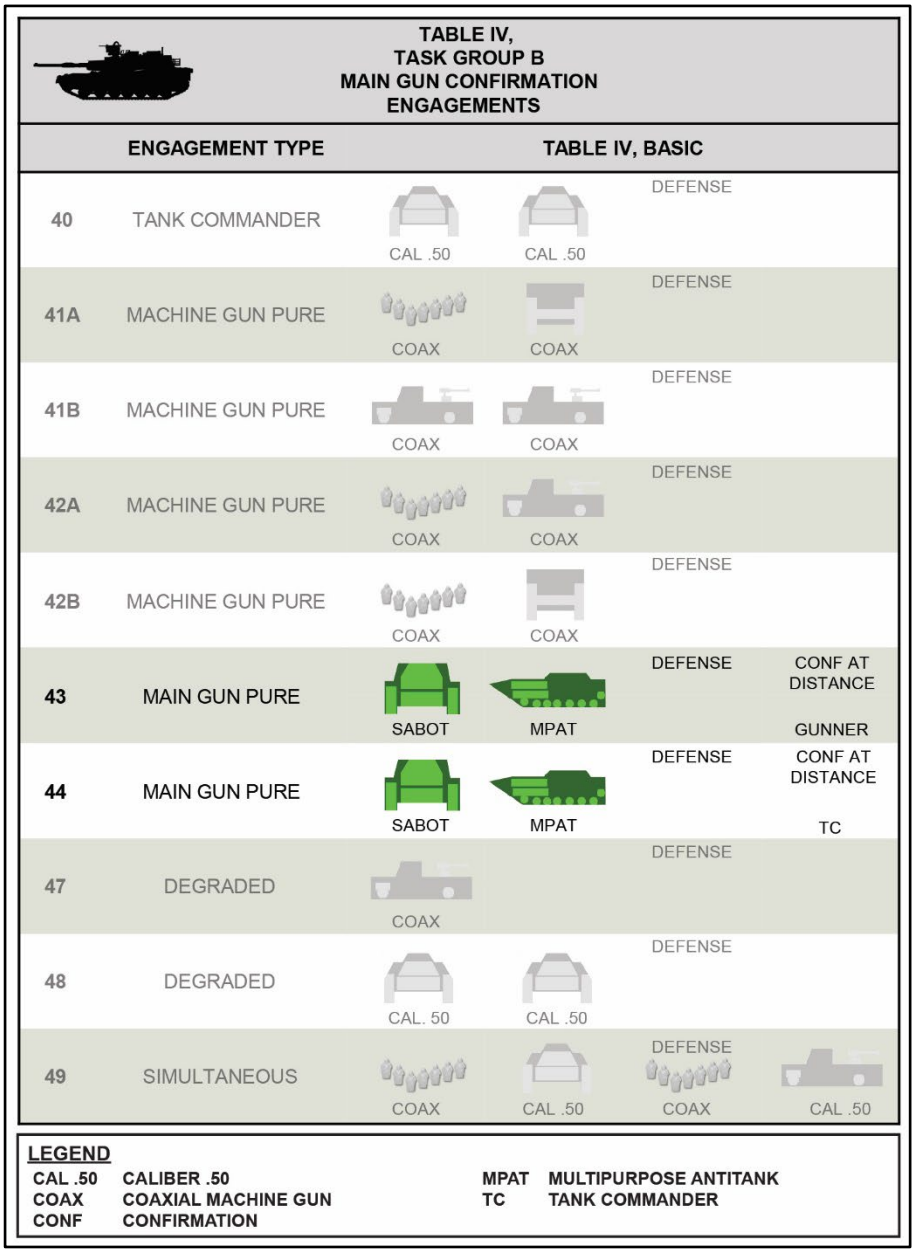


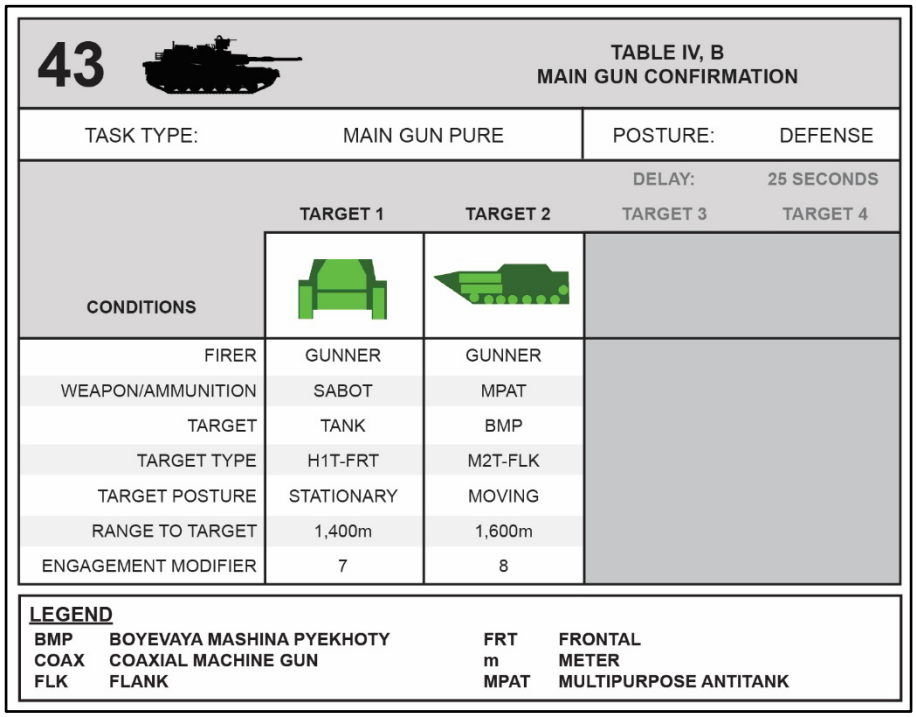
Figure 4-60. Table IV B, main gun confirmation engagements

4-106. Figure 4-61 on page 180 through figure 4-70 on page 189 depict the gunner's engagement, MRS update, and tank commander engagement actions. For the engagements, they provide the target type, target posture, range and weapon system or ammunition type used. Key processes for the MRS update task are depicted as a training aid to platoon sergeants that may be observing and evaluating that task. Units are not allowed to deviate from any target type, target posture, range, and weapon system or ammunition type for Task Group B, main gun confirmation.

Engagement 43

4-107. Engagement 43 is the gunner's engagement and fired from the defense with a fully operational fire control system using power controls. This engagement is against a stationary tank at 1,400 meters and moving personnel carrier at 1,600 meters, as shown in figure 4-61. This verifies the gunner's ability to engage multiple main gun threats, change ammunition type, and confirm the ballistic solution for sabot and MPAT rounds. The MPAT round is used on the moving target to provide the maximum amount of determined lead in the ballistic solution (lowest muzzle velocity projectile at distance while tracking a moving threat).

4-108. This is required to be the first engagement. This ensures the fire control system and gunner's power control handles are working as intended. This engagement is evaluated by the VCEs using DA Form 8265.



43

TABLE IV, B
MAIN GUN CONFIRMATION

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	MPAT		
TARGET	TANK	BMP		
TARGET TYPE	H1T-FRT	M2T-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	1,400m	1,600m		
ENGAGEMENT MODIFIER	7	8		

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	FRT	FRONTAL
COAX	COAXIAL MACHINE GUN	m	METER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK

Figure 4-61. Engagement 43, overview

4-109. The tower script for engagement 43 is shown in figure 4-62. It includes all the information the crew requires to understand the conditions of the engagement's task.

43

	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5	1.5				2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY SABOT, PREPARE MPAT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK AND MOVING BMP IN SECTOR
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

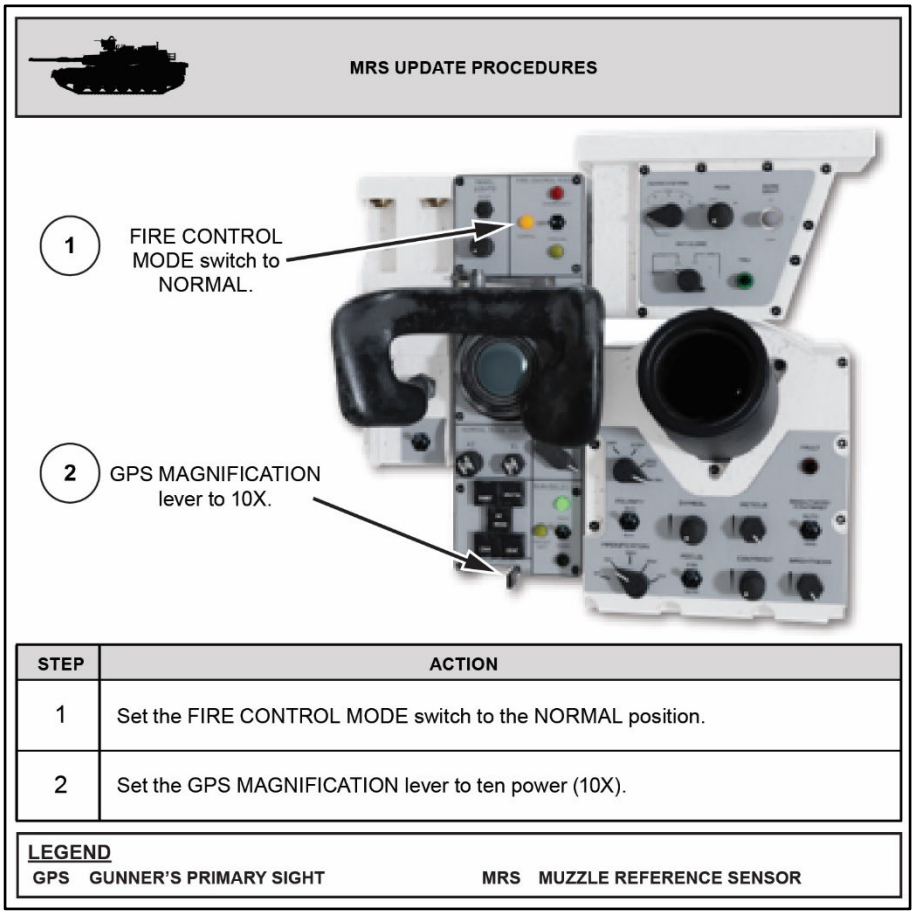
BMP	**BOYEVAYA MASHINA PYEKHOTY**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**

Figure 4-62. Engagement 43 ammunition and script

Muzzle Reference Sensor Update

4-110. Once the crew completes engagement 43, they conduct a MRS update. This allows the crew to confirm their system adjusts the ballistic solution during firing where uneven heating and cooling changes the position of the muzzle. This task must be completed prior to advancing to the next engagement.

4-111. Figure 4-63 through figure 4-68 on page 187 provide an overview of the steps required. Units may evaluate the crew's performance using these figures.



STEP	ACTION
1	Set the FIRE CONTROL MODE switch to the NORMAL position.
2	Set the GPS MAGNIFICATION lever to ten power (10X).

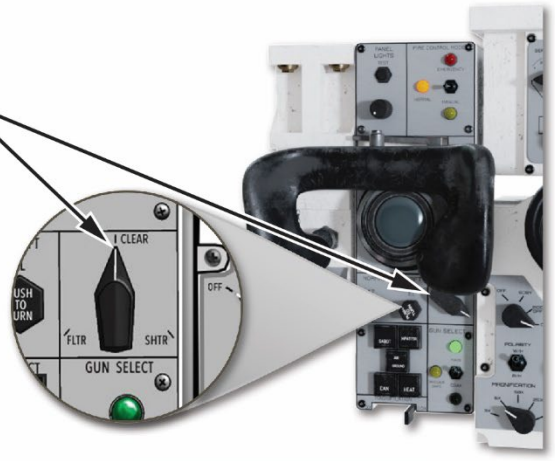
LEGEND
GPS GUNNER'S PRIMARY SIGHT MRS MUZZLE REFERENCE SENSOR

Figure 4-63. MRS update, prepare fire control system for update



MRS UPDATE PROCEDURES, CONTINUED

3 Set FLTR/CLR/ SHTR switch to CLEAR.



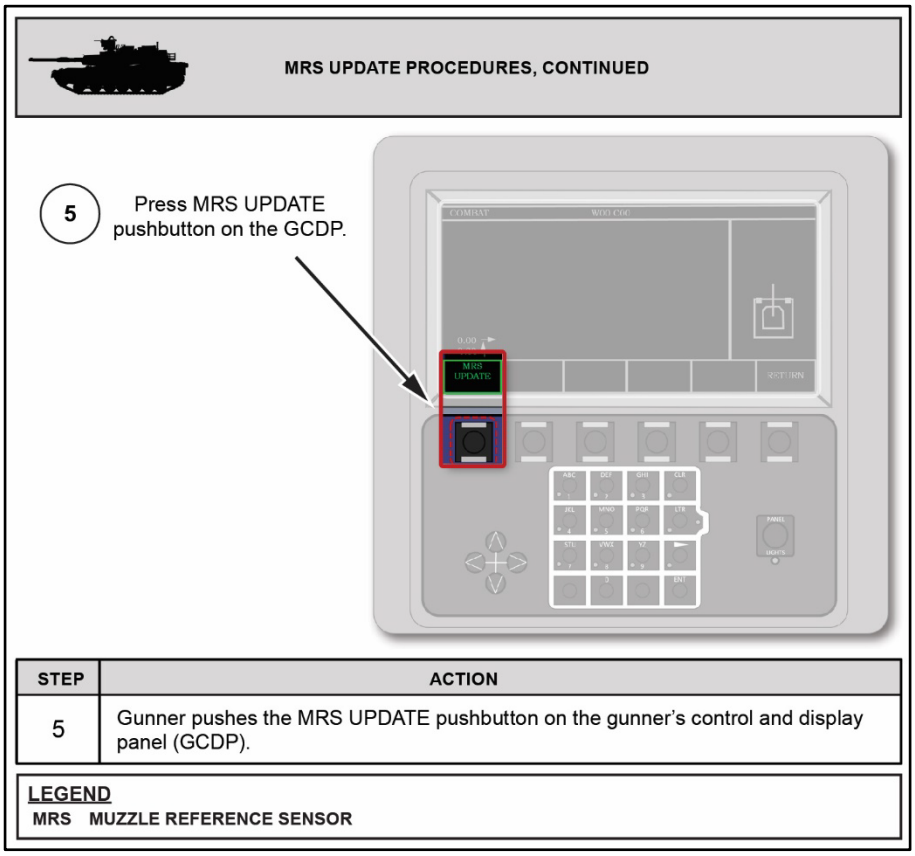
4 Press MRS UPDATE pushbutton on GCDP.



STEP	ACTION
3	Set the filter (FLTR)/clear (CLEAR)/shutter (SHTR) switch to the CLEAR position.
4	With gunner's control and display panel (GCDP) on MAIN MENU, press the MRS UPDATE pushbutton.

LEGEND
MRS MUZZLE REFERENCE SENSOR

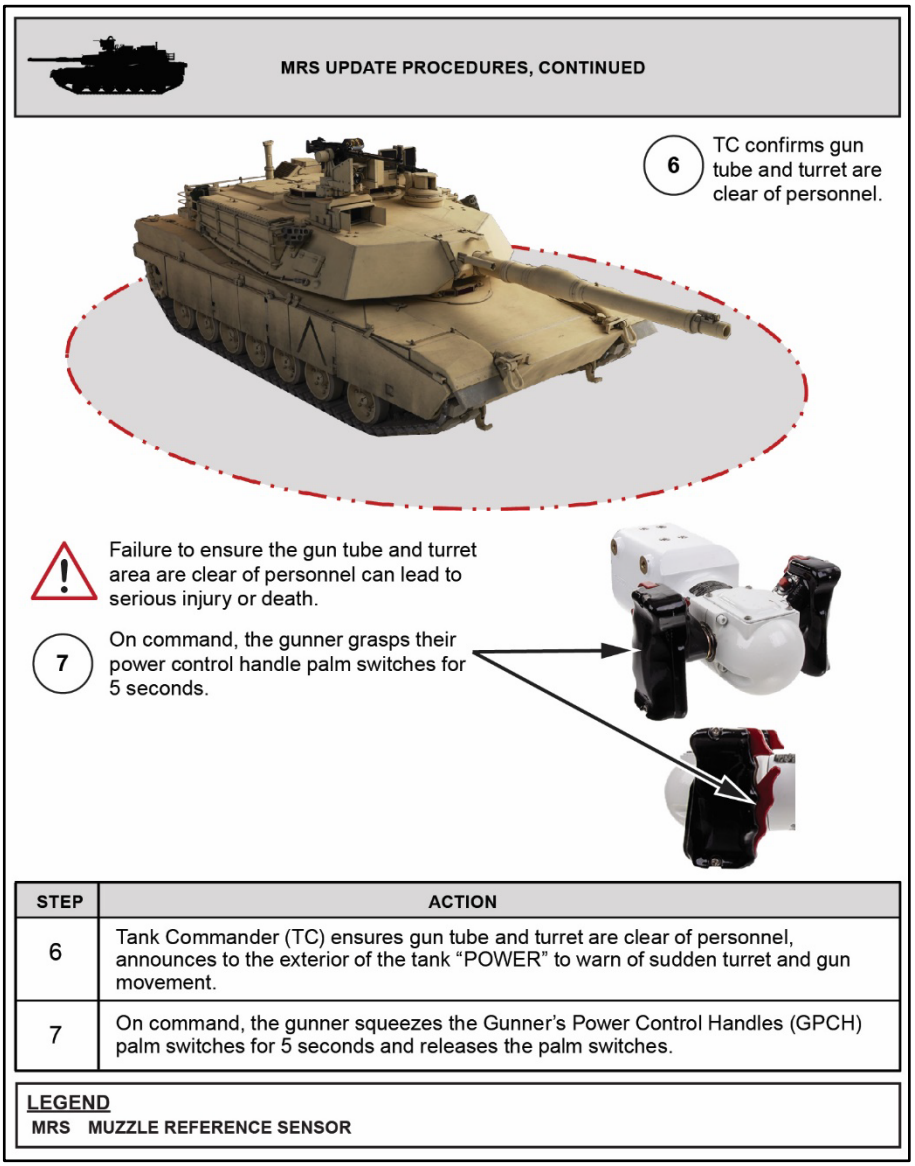
Figure 4-64. MRS update, prepare for update, continued



STEP	ACTION
5	Gunner pushes the MRS UPDATE pushbutton on the gunner's control and display panel (GCDP).

LEGEND
MRS MUZZLE REFERENCE SENSOR

Figure 4-65. MRS update, prepare for update, continued



STEP	ACTION
6	Tank Commander (TC) ensures gun tube and turret are clear of personnel, announces to the exterior of the tank "POWER" to warn of sudden turret and gun movement.
7	On command, the gunner squeezes the Gunner's Power Control Handles (GPCH) palm switches for 5 seconds and releases the palm switches.

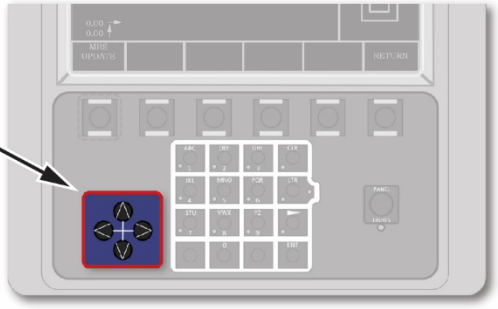
LEGEND
MRS MUZZLE REFERENCE SENSOR

Figure 4-66. MRS update, confirm gun tube and turret are clear, example



MRS UPDATE PROCEDURES, CONTINUED

8 Gunner uses the four-way switches to align the reticle to the MRS alignment cross.

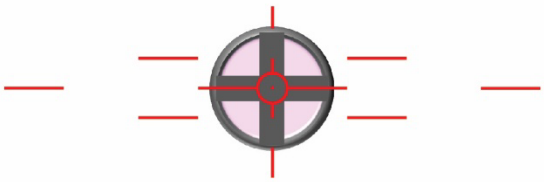


STEP	ACTION
8	Using the four-way switches on the Gunner's Control and Display Panel (GCDP), adjust the reticle to the center of the muzzle reference sensor (MRS) alignment cross.
9	Tank Commander (TC) verifies the MRS Update and alignment.

9

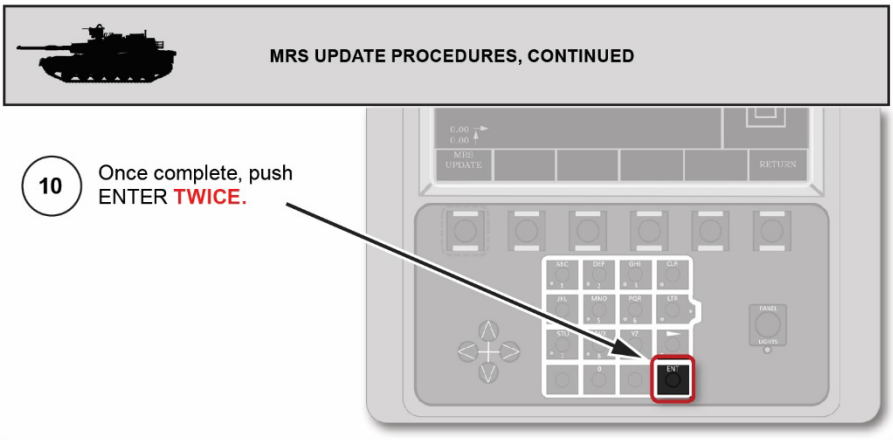


INCORRECT ALIGNMENT



CORRECT ALIGNMENT

Figure 4-67. MRS update, conduct update, example



STEP	ACTION
10	Once complete, press the ENTER pushbutton TWICE to store the new value.

LEGEND
MRS MUZZLE REFERENCE SENSOR

Figure 4-68. MRS update, save update, example

Engagement 44

4-112. Engagement 44 is conducted after the crew completes the MRS update. This is required to be the second engagement. The tank commander's engagement fired from the defense with a fully operational fire control system using power controls. This engagement is against a stationary tank at 1,400 meters and moving personnel carrier at 1,600 meters, as shown in figure 4-69 on page 188.

4-113. This engagement verifies the tank commander's ability to engage multiple main gun threats, change ammunition type, and confirm the ballistic solution for sabot and MPAT rounds. The MPAT round is used on the moving target to provide the maximum amount of determined lead in the ballistic solution (lowest muzzle velocity projectile at distance while tracking a moving threat).

4-114. This engagement ensures the fire control system and tank commander's power control handles are working as intended. This engagement is evaluated by the VCEs using DA Form 8265.

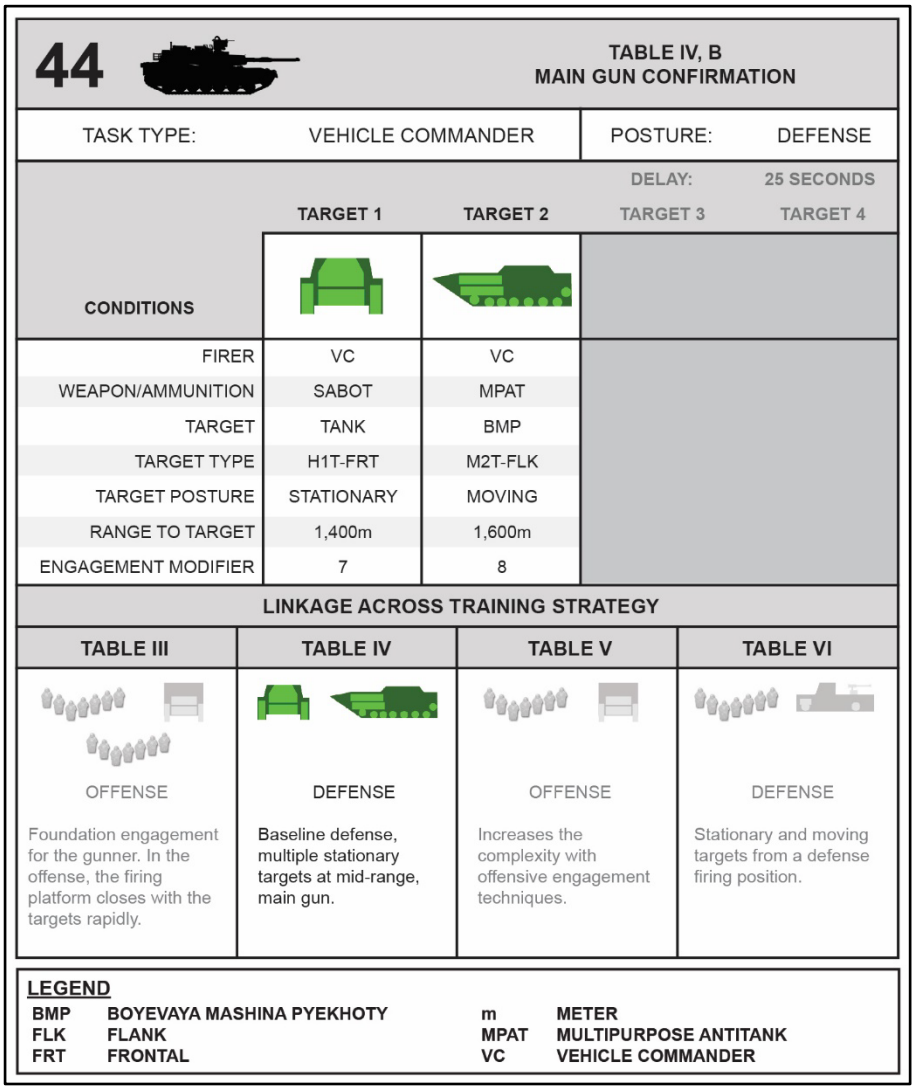


Figure 4-69. Engagement 44 overview

4-115. The tower script for engagement 44 is shown in figure 4-70. It includes all the information the crew requires to understand the conditions of the engagement's task.

44

	TARGET 1	TARGET 2	TARGET 3	TARGET 4
VEHICLE COMMANDER DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5	1.5				2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR GUNNER'S CONTROL HANDLES ARE INOPERATIVE. CONTINUE TO FIGHT.
BATTLECARRY SABOT, PREPARE MPAT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK AND MOVING BMP IN SECTOR
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**

Figure 4-70. Engagement 44 ammunition and script

TABLE IV, TASK GROUP C—BASIC MACHINE GUN

4-116. The third task group to complete are the basic machine gun engagements. These are only conducted after successful completion of the screening, zeroing, and main gun confirmation tasks by the crew.

PURPOSE

4-117. Table IV, Task Group C, basic machine gun, is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD

4-118. Task Group C is a hands-on, performance-based evaluation of basic machine gun engagement skills to the Army-standard of knowledge or skill in a live-fire environment. It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE

4-119. The tank crew has successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldiers' abilities in the position assigned.

4-120. The tasks evaluated in Task Group C provide the commander a means to verify the crew's basic weapons platform proficiency prior to further live-fire training. It is a guide for the commander to identify individual and crew weapons platform strengths and weaknesses on specific engagement techniques and employment of the vehicle's fire control system capabilities and enablers. The commander and Master Gunner use the results from Table IV, Basic, to structure the unit's crew training program.

4-121. Completion of Task Groups A and B must occur successfully before conducting Task Group C, basic machine gun. Vehicles that fail to screen may not progress to any live-fire table including the defensive engagements. The task, conditions, and standard for Table IV, Task Group C, basic machine gun, are in figure 4-71.



TABLE IV TASK GROUP C BASIC MACHINE GUN	
TASK	Engage and destroy stationary and moving targets placed in a tactical array, during the day using day and thermal channels from a defensive firing position on a heavy tank using full-caliber ammunition.
CONDITIONS	Given the following: • An operational platform with weapon or weapon systems. • Allotted ammunition. • Certified vehicle crew evaluators. • Full-scale targets. • All prerequisites to live fire for the crew platform achieved.
STANDARD	The crew: • Scores a minimum of 700 of 1,000 points overall. • Scores 70 points or more on all targets presented on 7 out of the 10 engagements. This includes the 2 engagements fired during Table IV B, Main Gun Confirmation.
Note: These engagements are evaluated by certified vehicle crew evaluators. They are 8 of the 10 engagements for evaluation on Table IV. Each engagement is recorded on DA Form 8265, *Crew Common Score Card* as part of the crew's packet for Table IV.	

LEGEND
DA DEPARTMENT OF THE ARMY

Figure 4-71. Table IV, Basic, defensive engagements, task, conditions, and standard

Note. If any individual target score on an engagement is less than 70 points, the engagement is unqualified, regardless of overall engagement score.

4-122. Crews should perform Task Group B on the crew's vehicle. It is designed to train and evaluate the crew's ability to engage single and multiple stationary and moving targets placed in a tactical array, during the day and night, with a fully operational or simulated degraded fire control system, as depicted in the task, conditions, and standard for each engagement. Crews execute these tasks from the defense using small arms ammunition (7.62mm and caliber .50). Crews may execute this table using TADSS only when ammunition is unavailable or to conduct retraining after live-fire training is complete.

ENGAGEMENTS—BASIC MACHINE GUN

4-123. Figure 4-72 shows the breakdown of what target type, target posture, range and weapon system or ammunition type used for each task number. Units are not allowed to deviate from any target type, target posture, range, and weapon system or ammunition type. The engagements can be fired in any order to suit the unit.

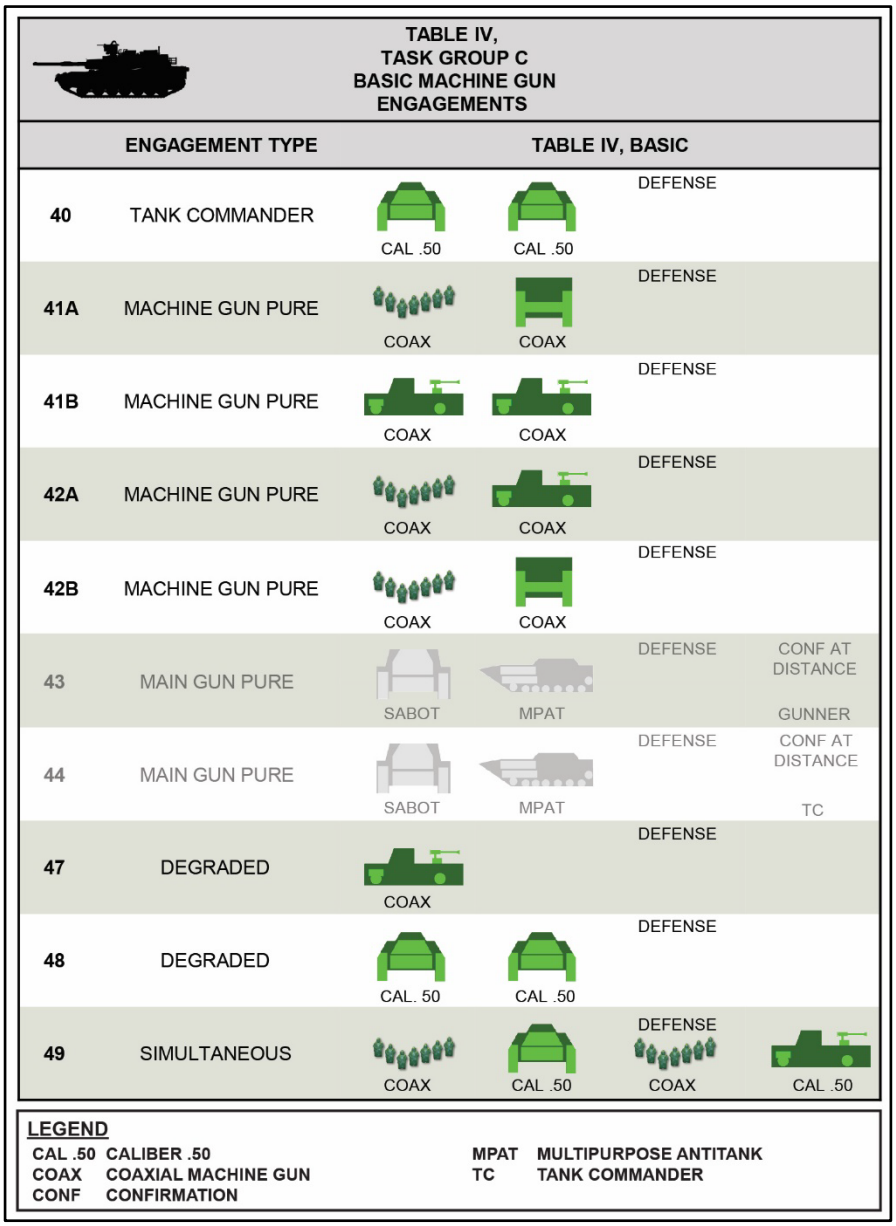


TABLE IV, TASK GROUP C BASIC MACHINE GUN ENGAGEMENTS

	ENGAGEMENT TYPE	TABLE IV, BASIC			
40	TANK COMMANDER	CAL .50	CAL .50	DEFENSE	
41A	MACHINE GUN PURE	COAX	COAX	DEFENSE	
41B	MACHINE GUN PURE	COAX	COAX	DEFENSE	
42A	MACHINE GUN PURE	COAX	COAX	DEFENSE	
42B	MACHINE GUN PURE	COAX	COAX	DEFENSE	
43	MAIN GUN PURE	SABOT	MPAT	DEFENSE	CONF AT DISTANCE GUNNER
44	MAIN GUN PURE	SABOT	MPAT	DEFENSE	CONF AT DISTANCE TC
47	DEGRADED	COAX		DEFENSE	
48	DEGRADED	CAL. 50	CAL .50	DEFENSE	
49	SIMULTANEOUS	COAX	CAL .50	DEFENSE COAX	CAL .50

LEGEND

CAL .50	CALIBER .50	MPAT	MULTIPURPOSE ANTITANK
COAX	COAXIAL MACHINE GUN	TC	TANK COMMANDER
CONF	CONFIRMATION		

Figure 4-72. Task Group C, basic machine gun engagements scenario requirements

ENGAGEMENT 40

4-124. The VC engagement fired from the tank commander's position using the commander's weapon is shown in figure 4-73 and figure 4-74. Engagement 40 serves to train and evaluate the VC's ability to engage and destroy multiple stationary threats with their heavy machine gun.

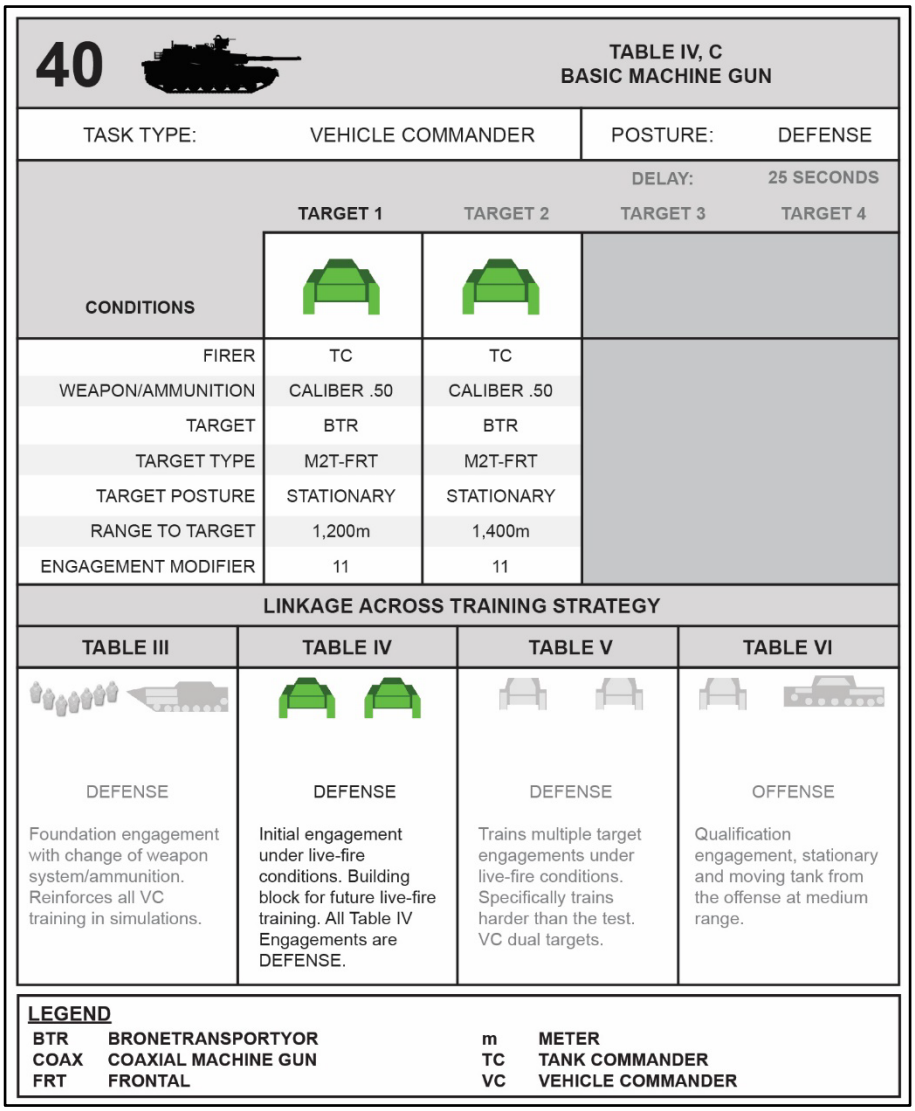


Figure 4-73. Engagement 40 overview

40

TARGET 1	TARGET 2	TARGET 3	TARGET 4
VEHICLE COMMANDER DEFENSE			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
				100	2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR GUNNER'S POWER CONTROL HANDLES ARE INOPERATIVE. CONTINUE TO FIGHT. CHECK YOUR MACHINE GUNS. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	CALIBER FIFTY
TARGET DESCRIPTION	MULTIPLE PERSONNEL CARRIERS
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 4-74. Engagement 40 ammunition and script

ENGAGEMENT 41A

4-125. Engagement 41A is a machine gun pure engagement for the gunner. It trains target detection, acquisition, and machine gun engagement techniques from the defense (see figure 4-75 and figure 4-76). Range bands are mid-range. Crews must tactically use the battle position and build stability in their forward and rearward movements.

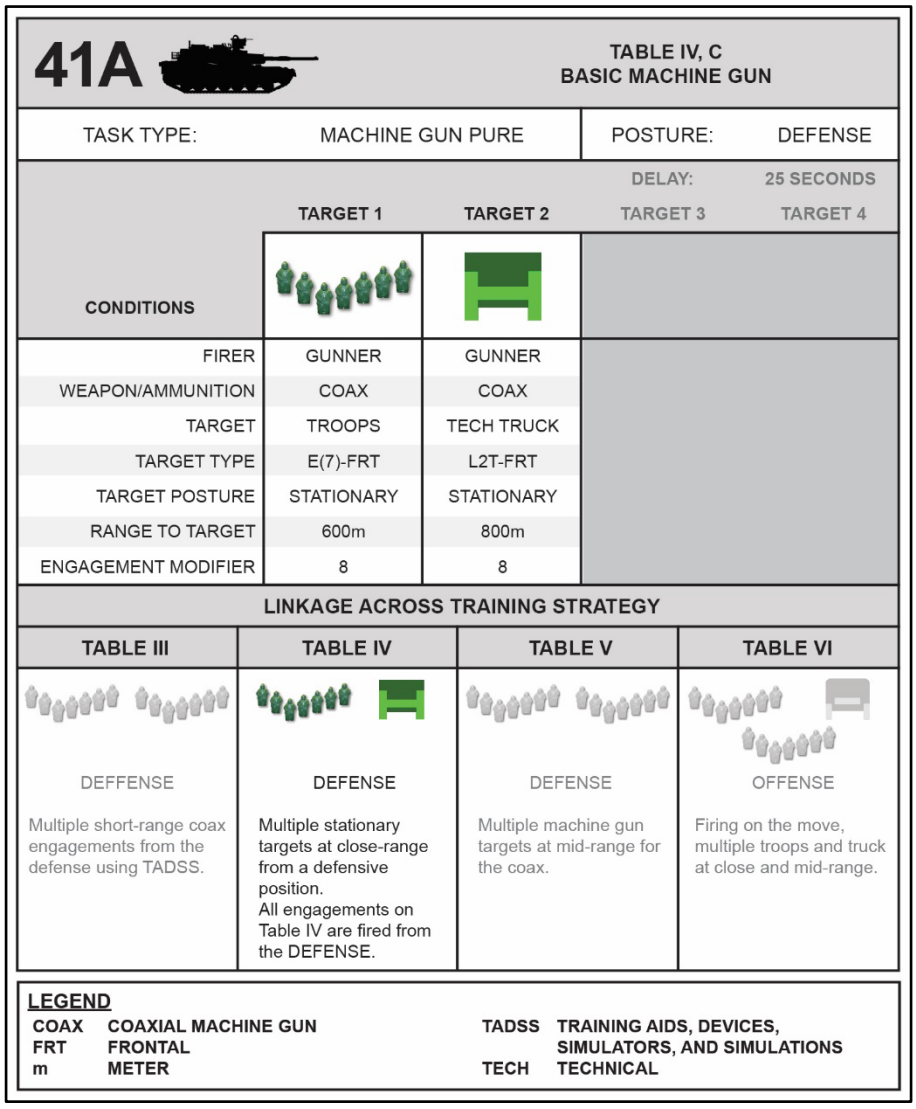


Figure 4-75. Engagement 41A overview

41A

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	RECON AND TECH TRUCK IN SECTOR
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**TECH**	**TECHNICAL**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 4-76. Engagement 41A ammunition and script

ENGAGEMENT 41B

4-126. From a defensive posture, the gunner engages multiple machine gun threats at mid-range (see figure 4-77 and figure 4-78). Engagement 41B introduces the gunner to machine gun engagement techniques against multiple moving threats while utilizing the battle position, verifying the gun tube is clear.

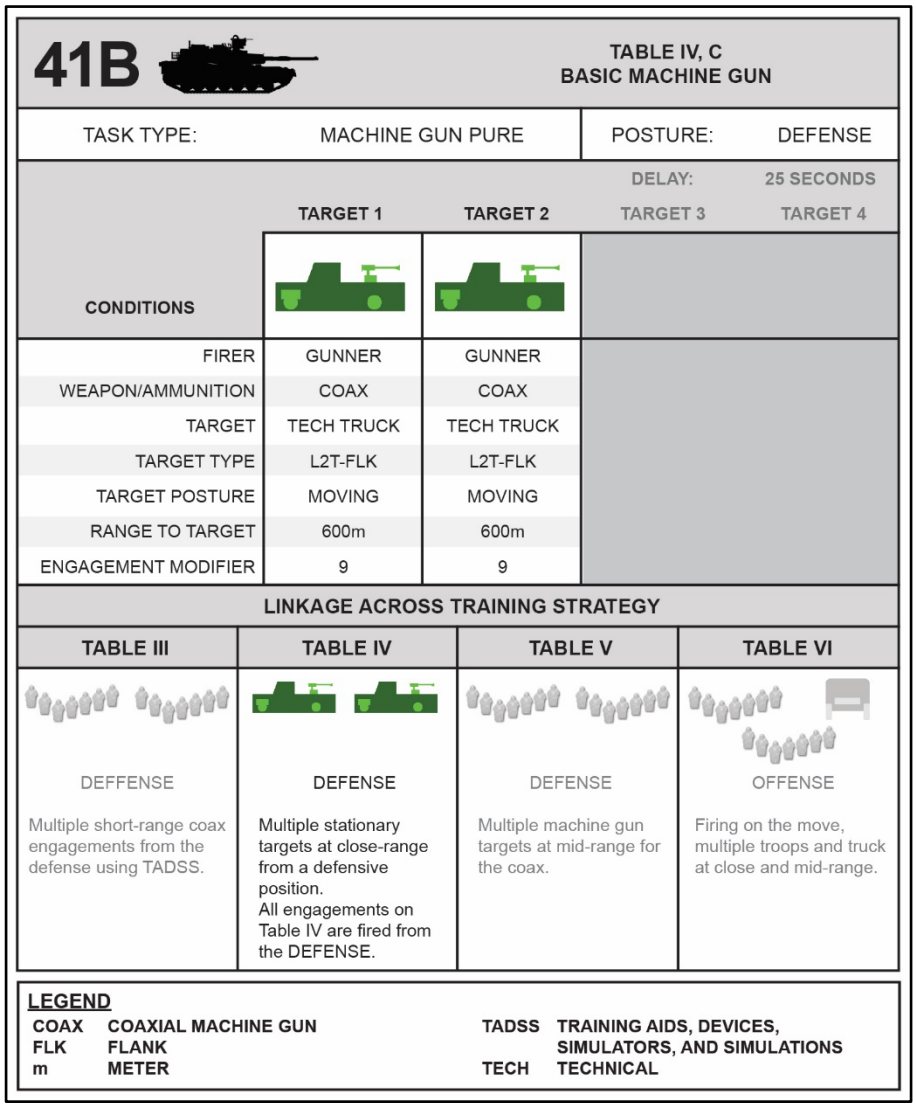


Figure 4-77. Engagement 41B overview

41B	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	MULTIPLE TECHNICAL TRUCKS MOVING IN SECTOR
METHOD	NEAR TO FAR
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 4-78. Engagement 41B ammunition and script

ENGAGEMENT 42A

4-127. Engagement 42A provides the gunner training on engagement techniques from the defilade position. The gunner engages stationary and moving threats with the coaxial machine gun (see figure 4-79 and figure 4-80). It reinforces the crew's ability to use a defensive firing position, clear the gun-target line and ensure the gun tube is clear prior to engaging with the coaxial machine gun. Alternate stationary targets may be required depending on range configuration.

42A

TABLE IV, C
BASIC MACHINE GUN

TASK TYPE:	MACHINE GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	COAX		
TARGET	TROOPS	TECH TRUCK		
TARGET TYPE	E(7)-FRT	L2T-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	400m	800m		
ENGAGEMENT MODIFIER	6	8		

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Main gun (TADSS) with delay target.	Baseline live-fire engagement for GUNNER. All engagements on Table IV are fired from the DEFENSE.	Tests the primary function with main gun, stationary and moving targets and delay target.	Firing on the move with main gun, stationary and moving targets.

LEGEND

COAX	COAXIAL MACHINE GUN	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
FLK	FLANK	TECH	TECHNICAL
FRT	FRONTAL		
m	METER		

Figure 4-79. Engagement 42A overview

42A

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR COAX MACHINE GUN. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS AND TRUCK MOVING INTO SECTOR
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**m**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 4-80. Engagement 42A ammunition and script

ENGAGEMENT 42B

4-128. Engagement 42B is a machine gun pure engagement for the gunner fired from the defense (see figure 4-81 and figure 4-82). This transition from mid- to long-range threats with the machine gun. The defensive posture of the engagement continues to train the crew cohesion required to effectively use battle positions to their advantage.

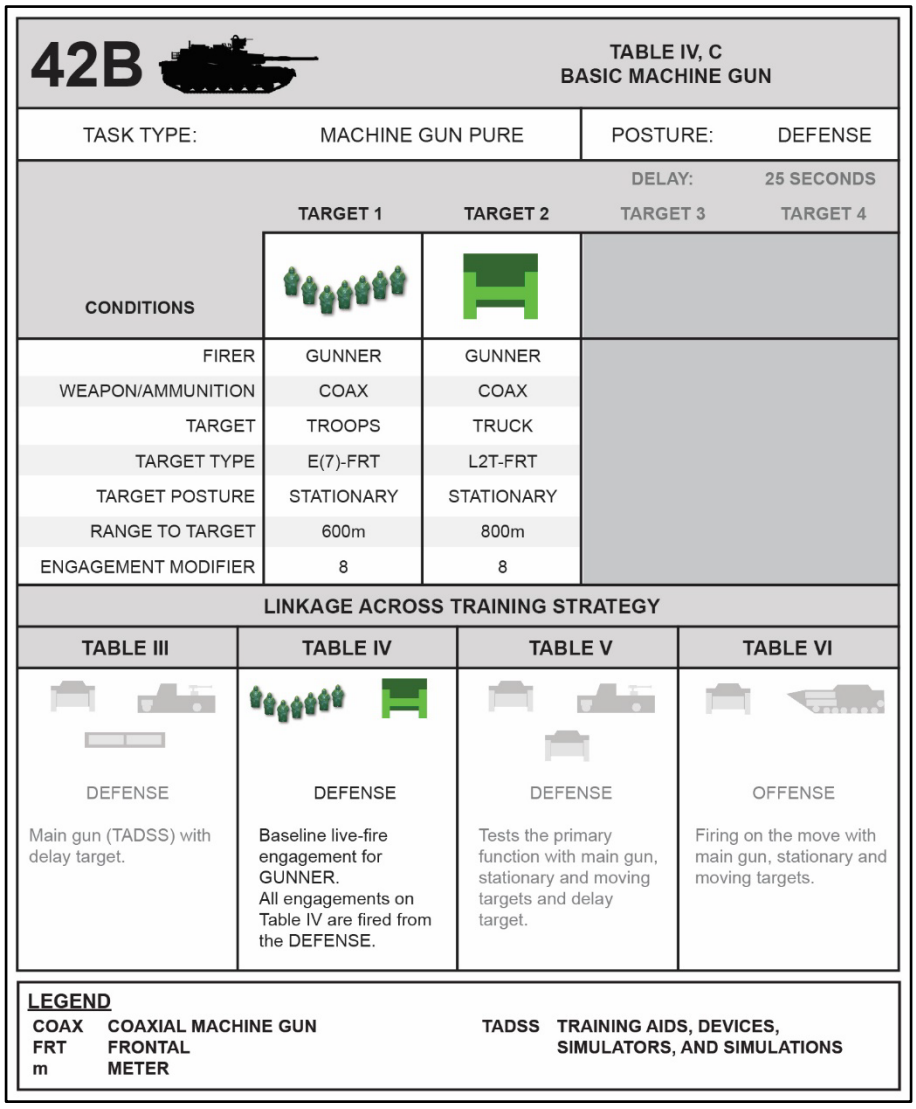


Figure 4-81. Engagement 42B overview

42B	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE DEFENSE				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR COAX MACHINE GUN. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND TRUCK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 4-82. Engagement 42B ammunition and script

ENGAGEMENT 47

4-129. Engagement 47 is a degraded engagement for the gunner's auxiliary sight (that uses power controls) using degraded gunnery techniques (see figure 4-83 and figure 4-84). The gunner must clear the gun-target line effectively and control the movement of the vehicle.

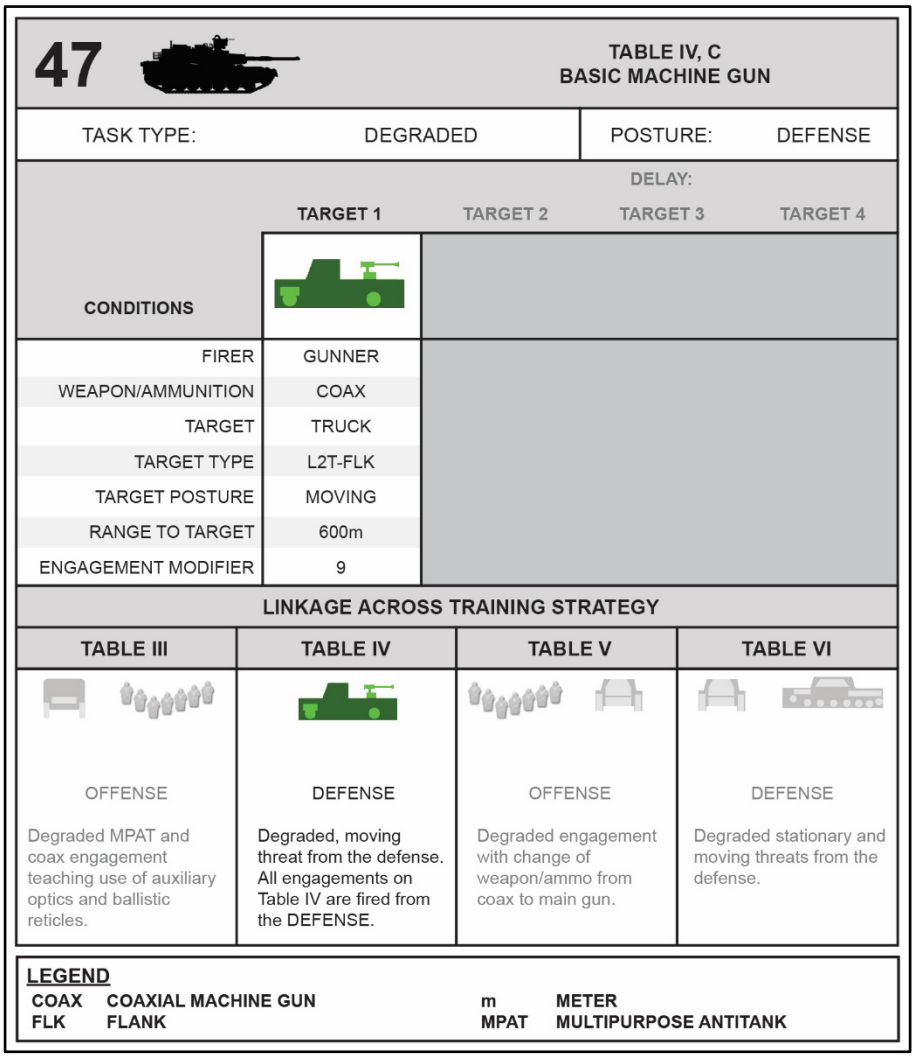


Figure 4-83. Engagement 47 overview

47

TARGET 1	TARGET 2	TARGET 3	TARGET 4
COAX DEGRADED **DEFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			50		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR FIRE CONTROL SYSTEM IS OUT. CLOSE YOUR BALLISTIC DOORS. CHECK YOUR MACHINE GUNS. PREPARE FOR DEGRADED OPERATIONS AND REPORT REDCON ONE.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	MOVING TRUCK
METHOD	DEGRADED (GAS, POWER CONTROLS)
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**mm**	**MILLIMETER**
COAX	**COAXIAL MACHINE GUN**	**MPAT**	**MULTIPURPOSE ANTITANK**
GAS	**GUNNER'S AUXILIARY SIGHT**	**REDCON**	**READINESS CONDITION**

Figure 4-84. Engagement 47 ammunition and script

ENGAGEMENT 48

4-130. Engagement 48 is a caliber .50 engagement for the tank commander (see figure 4-85 and figure 4-86). This engagement is fired from the defilade position. Crews that move to the enfilade position are not penalized although their use must be included in the AAR as a teaching point.

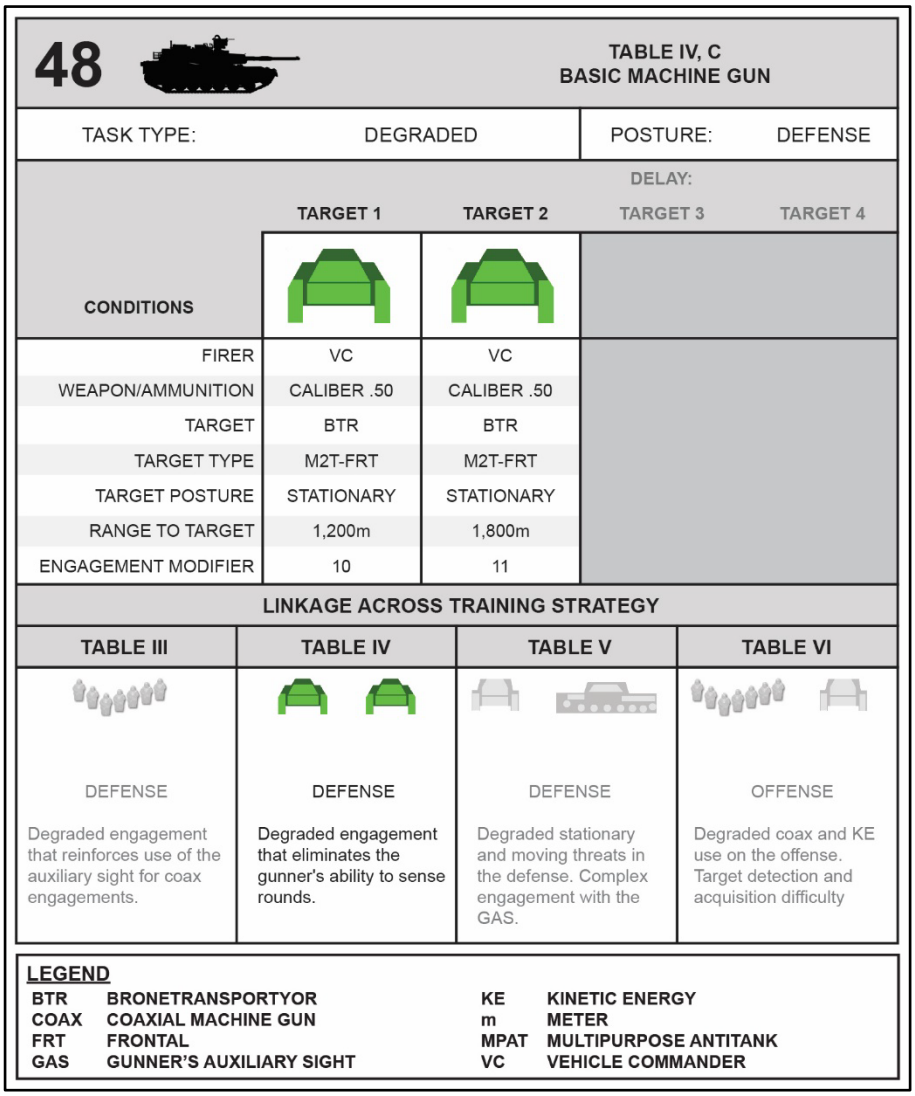


Figure 4-85. Engagement 48 overview

48

	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CROWS DEGRADED **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
				100	2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR FIRE CONTROL SYSTEM IS OUT. CLOSE YOUR BALLISTIC DOORS. CHECK YOUR MACHINE GUNS. PREPARE FOR DEGRADED OPERATIONS AND REPORT REDCON ONE.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	CALIBER FIFTY
TARGET DESCRIPTION	MULTIPLE PCs
METHOD	DEGRADED
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**m**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
CROWS	**COMMON REMOTELY OPERATED WEAPON SYSTEM**	**PC**	**PERSONNEL CARRIER**
		REDCON	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 4-86. Engagement 48 ammunition and script

ENGAGEMENT 49

4-131. Engagement 49 is a simultaneous engagement fired from the defense where the gunner and tank commander must acquire and defeat threats using their respective machine guns (see figure 4-87 and figure 4-88). This introduces the crew to simultaneous engagements against stationary and moving targets causing a challenging complex engagement sequence for the crew to coordinate through. Alternate stationary target may be required depending on range configuration.

49



TABLE IV, C
BASIC MACHINE GUN

TASK TYPE:	SIMULTANEOUS	POSTURE:	DEFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	VC	GUNNER	VC
WEAPON/AMMUNITION	COAX	CALIBER .50	COAX	CALIBER .50
TARGET	TROOPS	BTR	TROOPS	TRUCK
TARGET TYPE	E(7)-FRT	M2T-FRT	E(7)-FRT	L2T-FLK
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	MOVING
RANGE TO TARGET	600m	1,000m	600m	1,200m
ENGAGEMENT MODIFIER	8	10	8	13

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	OFFENSE	DEFENSE
Simultaneous small arms engagement.	Simultaneous engagement from the defense. All engagements on Table IV are fired from the DEFENSE.	Simultaneous coax with caliber .50 engagement, followed by coax engagement on delay. Pintle caliber .50 engagement increases difficulty.	Simultaneous coax with caliber .50 engagement, followed by main gun target on delay.

LEGEND

BTR	BRONETRANSPORTYOR	FRT	FRONTAL
COAX	COAXIAL MACHINE GUN	m	METER
FLK	FLANK	VC	VEHICLE COMMANDER

Figure 4-87. Engagement 49 overview

49	TARGET 1	TARGET 2	TARGET 3	TARGET 4
SIMULTANEOUS **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100	100	2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK CALIBER FIFTY AND COAX. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	CALIBER FIFTY AND COAX
TARGET DESCRIPTION	TROOPS AND PC WITH TROOPS AND MOVING TRUCK IN SUPPORT
METHOD	SIMULTANEOUS
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 4-88. Engagement 49 ammunition and script

ASSESS—TABLE IV

4-132. For Table IV, the screening and zeroing portion of the event is a maintenance and crew confidence exercise. The crew must ensure the fire control system is functioning as intended after all prep-to-fire procedures have been complete. In doing so, it provides the crew confidence in the procedures, policies, equipment, ammunition, and their own skill.

4-133. The assessment of the live-fire engagements provides feedback to the crew and commander on the crew's ability to tactically employ the tank against common threat scenarios. The feedback from these AARs identifies strengths and weaknesses within the crew and organization to address in future training plans.

LFAST CREW FEEDBACK

4-134. The platoon sergeant or Master Gunner should provide an informal AAR for zeroing procedures that includes at a minimum:

- Actions for each ammunition type.
- Location of hits for each ammunition type.
- Review of fixed biases, variable biases, and random errors that contribute to the accuracy of the round.
- Zeroing procedures for each machine gun.
- Methods to reduce round-to-round dispersion and crew error.

LIVE-FIRE ENGAGEMENTS CREW FEEDBACK

4-135. Each crew should receive an informal AAR following the guidelines found in TC 3-20.31. Each evaluator will provide the general time to engage the threat, time to move to and from the enfilade firing position, and sensings for each target engaged. The evaluator should discuss the process of the MRS update and subsequent strikes of the round.

4-136. Units should track the various firing information from the score sheets to identify where in the conduct of fire crews and the overall unit should apply additional training effort. Some of those indicators are—

- Target acquisition, detection, and identification.
- Time to fire.
- Time to kill.
- Opening and closing times for machine gun engagements.
- Gunner lay errors.
- Scanning techniques.
- Engagement techniques.
- Conduct of fire issues.

RETRAIN—TABLE IV

4-137. The unit Master Gunner maintains the crew screening and zeroing information. The company Master Gunner reviews the DA Form 8265-12 series documents, the tower log, and DA Form 2408-4 documents to identify crews that require additional training on prep-to-fire checks, armament accuracy checks, boresight device collimation, boresighting, plumb and synchronization, screening, or zeroing procedures.

4-138. The unit Master Gunner maintains the unit roll-up by engagement. A subcategorized roll-up by platoons provides the commander a snapshot of training trends, strengths, and weaknesses. The Master Gunner should not only identify crews that did not achieve a passing standard, but also crews that struggled on specific engagement tasks. Once done, the unit can establish and conduct the appropriate focused retraining followed by a subsequent evaluation.

Note. All crews should successfully complete the course of fire based on the standards for the engagements listed earlier in this chapter. No crew should proceed to Table V or any other live-fire event until they have achieved the minimum standard on Table IV. The commander and Master Gunner may assess the crews' capability to proceed without qualifying the table based on target acquisition, target kills, fire commands and engagement techniques without achieving the minimum standard.

4-139. Unit Master Gunners should include chair drills for the crews using the scenarios for each engagement for retraining purposes. Considerations include additional low-impact training drills to meet the demands of the 3 and 4 target engagements. Units should include future table's engagements (Table V and Table VI, respectively) in the chair drills training to best prepare the crews for those events. Additional information on chair drills is in TC 3-20.31.

4-140. Retraining for the live-fire engagements focus on the lowest scored engagements. Those provide the details during the direct fire kill chain that show where the training gaps exist.

4-141. Units can retrain the failed engagements after addressing various corrective measures. Commanders may also select from the available list of basic engagement skills engagements in appendix D. The basic engagement skills engagements, called Table B, are not resourced. Units can use first round hit savings or other harvested munitions to self-resource those events for specific crews as the commander directs.

DRIVER RECORDS

4-142. Leaders should determine the number of miles driven during the day and night phases for their assigned drivers. This information should be recorded, including the miles driven, miles driven with the enhanced viewer, and any tactical (off-road) miles driven. The miles driven build the driver's experience base, mileage credit toward their Army-standard driver's license requirements, and cumulative miles, hours, and assignment time for the expert driver's badge for tracked vehicles.

SOLDIER INDIVIDUAL TASK PERFORMANCE

4-143. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE IV

4-144. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

Note. Leaders must be granted access by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the ICTL that are trained and tested during the training event.

4-145. From within the SULT, the authorized leader is enabled to view, maintain, and update—

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting T&EOs (access dependent on proponent distribution restrictions).

4-146. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

4-147. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS

4-148. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

4-149. Tasks that are included within this event for the crew are found in figure 4-89 through page 221. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-091-1023	Conduct Vehicle Resupply	Yes			
171-121-3009	Control Techniques of Movement	Yes			
171-121-4020	Conduct Live Fire Ranges	Yes			
171-121-4023	Conduct Live Fire Range Operations	Yes			
171-121-4028	Plan Occupation of a Battle Position	Yes			
171-121-4030	Conduct Vehicle Tactical Navigation	Yes			
171-121-4045	Conduct Troop Leading Procedures	Yes	Yes		
171-121-4051	Prepare a Situation Report (SITREP)	Yes			
171-121-4057	Perform Techniques of Movement	Yes			
171-121-4062	Issue an Operation Order (OPORD) - Fragmentary Order (FRAGORD)	Yes			
171-121-4064	Prepare Logistical Status (LOGSTAT) Reports	Yes	Yes		
171-121-4065	Direct Vehicle Tactical Movement	Yes			
171-121-4067	Execute Platoon Precombat Operations	Yes			
171-122-1012	Perform Operator Maintenance on an M240 Series Machine Gun	Yes	Yes	Yes	Yes

Figure 4-89. Table IV, Basic, individual tasks touch points

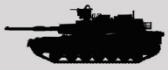


TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-122-1061	Maintain Property Accountability	Yes	Yes	Yes	Yes
171-123-1000	Direct Occupation of a Vehicle Fighting Position	Yes			
171-123-1021	Prepare Ammunition for Stowing		Yes	Yes	Yes
171-123-1023	Maintain Operator's Part of Equipment Record Folder			Yes	
171-123-1079	Troubleshoot Malfunctions on an M240-Series Machine Gun		Yes		Yes
171-123-1090	Perform Preventive Maintenance on Basic Issue Items (BII)	Yes	Yes	Yes	Yes
171-123-3001	Supervise Personnel Handling Ammunition	Yes	Yes		
171-123-4020	Perform Operator Maintenance on Global Positioning System (GPS)	Yes	Yes		
171-126-1055	Refuel an M1-Series Tank	Yes	Yes	Yes	Yes
171-126-1125	Perform Main Gun Misfire Procedures on an M1-Series Tank	Yes	Yes		
171-131-0016	Demonstrate Target Acquisition Methods	Yes	Yes		
171-131-2009	Perform Detailed Disassembly/ Assembly of the M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2010	Perform Detailed Disassembly and Assembly of the M2 Machine Gun	Yes	Yes	Yes	Yes
171-131-2011	Determine Ballistic Data Using Firing Tables	Yes	Yes		

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-131-2012	Determine the Effects of Error Budget on Main Gun Accuracy	Yes	Yes		
171-131-2014	Perform Detailed Disassembly-Assembly of an M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-2017	Identify Ammunition Container Markings	Yes	Yes	Yes	Yes
171-131-2018	Identify the Components of Main Gun and Small Arms Ammunition	Yes	Yes	Yes	Yes
171-131-2076	Evaluate Factors of Gun Tube Serviceability for the M256 Cannon	Yes	Yes		
171-131-2077	Repair Malfunctions of M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2078	Repair Malfunctions of M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-3008	Use the Electronic 2408-4 Weapons Data Card Program	Yes	Yes		
171-138-0013	Conduct Armament Accuracy Checks (AAC) on an M1-Series Tank	Yes	Yes		
171-138-0015	Conduct Advanced Vehicle Identification	Yes	Yes		
171-138-0017	Identify Restricted and Suspended Ammunition	Yes	Yes		
171-138-0018	Communicate the Engagement of Targets from an M1A2 SEP Tank	Yes	Yes		
171-138-0027	Conduct Alternative Range Determinations	Yes	Yes		
171-150-0001	Operate Intercommunications Set AN/VIC-3(V) on an M1 Series Tank	Yes	Yes	Yes	Yes

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-150-0002	Place the Enhanced Position Locating Reporting System (EPLRS) on an M1A2 SEP Tank into Operation	Yes	Yes		
171-150-0010	Operate the Turret Systems Using the Commander's Display Unit (CDU)	Yes			
171-150-0098	Perform Built-In Tests (BITs) on the Commander's Display Unit (CDU)	Yes			
171-19K-1020	Drive an M1A2 SEP Tank			Yes	
171-19K-1023	Prepare the Driver's Station for Operation on an M1A2 SEP Tank			Yes	
171-19K-1024	Prepare the Loader's Station for Operation on an M1A2 SEP Tank				Yes
171-19K-1025	Operate the Engine on an M1A2 SEP Tank			Yes	
171-19K-1026	Secure the Loader's Station on an M1A2 SEP Tank				Yes
171-19K-1040	Secure the Driver's Station on an M1-Series Tank			Yes	
171-19K-1043	Perform Fuel Transfer Procedures on an M1-Series Tank			Yes	
171-19K-1061	Operate Tank Urban Survivability Kit (TUSK) Autoflug Driver's Seat			Yes	
171-19K-1123	Service the Air Induction System on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-1143	Inspect the Hydraulics on an M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1149	Conduct Preventative Maintenance Checks and Services (PMCS) on an M1-Series Tank	Yes	Yes	Yes	Yes

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1150	Troubleshoot an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1237	Remove the Loader's M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1239	Unload the 120-MM Main Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1240	Load an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1241	Unload an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1244	Load the 120-MM Main Gun on an M1-Series Tank		Yes		Yes
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank				Yes
171-19K-1250	Stow Ammunition on an M1-Series Tank	Yes	Yes		Yes
171-19K-1251	Service The 120-MM Main Gun On An M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1280	Inspect 120-MM Ammunition for Serviceability	Yes	Yes	Yes	Yes
171-19K-1281	Identify 120-MM Main Gun Ammunition	Yes	Yes	Yes	Yes
171-19K-2001	Perform Operator Maintenance on the 120-MM Breechblock Assembly		Yes		Yes
171-19K-2002	Supervise Preventive Maintenance Checks and Services (PMCS)	Yes			
171-19K-2006	Prepare a Tank Sketch Card for an M1-Series Tank	Yes	Yes		

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)

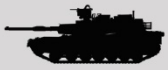


TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-2200	Prepare the Gunner's Station for Operation on an M1A2 SEP Tank		Yes		
171-19K-2201	Secure the Gunner's Station on an M1A2 SEP Tank		Yes		
171-19K-2203	Operate the Improved Gunner's Control Display Panel (iGCDP)	Yes			
171-19K-2210	Boresight the M1A2 SEP Tank	Yes	Yes		
171-19K-2212	Engage Targets with the Coaxial from the Gunner's Station		Yes		
171-19K-2236	Engage Targets with the Main Gun from the Gunner's Station		Yes		
171-19K-3001	Prepare the Position/Navigation System for Operation	Yes			
171-19K-3004	Secure the Commander's Station on an M1A2 SEP Tank	Yes			
171-19K-3008	Operate the Improved Commander's Display Unit (ICDU) in Vehicle Systems Mode on an M1A2 SEP Tank	Yes			
171-19K-3009	Operate the ICDU in Diagnostics Mode on an M1A2 SEP Tank	Yes			
171-19K-3010	Operate the ICDU in Command, Control, and Communications Mode	Yes			
171-19K-3011	Operate the Commander's Tactical Display (CTD) Input Device	Yes			
171-19K-3012	Operate Commander's Independent Thermal Viewer (CITV)	Yes			
171-19K-3013	Prepare the Commander's Station for Operation on an M1A2 SEP Tank	Yes			

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3101	Perform Diagnostics Mode Maintenance on the Improved Commander's Display Unit (ICDU)	Yes			
171-19K-3201	Load a Caliber .50 Browning M2 HB Flex Machine Gun	Yes			
171-19K-3202	Unload a Caliber .50 Browning M2 HB Flex Machine Gun	Yes	Yes	Yes	Yes
171-19K-3207	Engage Targets With a Caliber .50 M2 Heavy Barrel (HB) Flex Machine Gun	Yes			
171-19K-3211	Direct Machine Gun Engagements on an M1-Series Tank	Yes			
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3213	Perform Special Gunnery Checks on an M1A1 Tank	Yes	Yes		
171-19K-3217	Collimate the M27A1, or M27A3 Muzzle Boresight Device (MBD)	Yes	Yes		
171-19K-3219	Engage Targets with the Main Gun from the Commander's Station	Yes			
171-19K-3221	Perform Special Gunnery Checks on an M1A2 SEP Tank	Yes	Yes		
171-19K-3222	Engage Targets with an M240 in the Commander's Weapon Mount	Yes			
171-19K-3223	Direct Main Gun Failure-To-Fire Procedures on an M1A2 SEP Tank	Yes	Yes		Yes
171-19K-3224	Operate the Commander's Weapon Station Sight (CWSS)	Yes			
171-19K-3232	Direct Main Gun Engagements on an M1-Series Tank	Yes			

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3233	Engage Targets with the Coax from the Commander's Station	Yes			
171-19K-3236	Perform Plumb and Synchronization of an M1A2 SEP Fire Control System	Yes	Yes	Yes	Yes
171-19K-4001	Execute Tank Platoon Precombat Operations	Yes			
171-19K-4205	Verify Factors of Gun Tube Serviceability for the M256 Cannon	Yes	Yes		
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0049	Gain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-300-0052	Maintain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-309-0650	Inspect DA Form 5988-E or DA Form 2404	Yes	Yes	Yes	Yes
171-928-0001	Install the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0002	Remove the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0005	Supervise Installation of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0006	Supervise the Removal of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0009	Perform Pre-Operational Set-Up Procedures for the TSV-R	Yes	Yes		
171-928-0010	Operate the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)



TABLE IV, BASIC
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-928-0011	Perform Preventive Maintenance Checks and Services (PMCS) on the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0012	Troubleshoot the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0013	Conduct an After-Action Review Using the Thru-Sight Video (TSV) System	Yes	Yes		
171-COM-4079	Send a Situation Report (SITREP)	Yes			
171-COM-4080	Send a Spot Report (SPOTREP)	Yes			

Figure 4-89. Table IV, Basic, individual tasks touch points (continued)

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Chapter 5
Table V—Practice

Crew platform, Table V, Practice, is a live-environment training event under live-fire conditions using full-caliber training ammunition, 3/4 scale realistic targetry and engagement scenarios, at a combat tempo on an authorized live-fire facility. Regardless of crew platform type, this table reinforces the basic skills trained during previous events but increases the tempo to expected engagement sequence capabilities to build leader and element tactical and technical mastery.

This table includes execution of critical skills in a live environment. Table V prepares the crew to employ their weapons and systems against most common threat scenarios using prescribed targetry to a required standard.

Note. This table requires the use of 3/4-scale targets to reinforce crew engagement speed and precision prior to qualification.

OVERVIEW OF TABLE V

5-1. Table V, Practice, trains and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, during day and limited visibility conditions, with an operational or simulated degraded fire control system, as applicable. Crews execute these tasks from the offense and defense using full-caliber ammunition against 3/4 scale targets placed at full range.

5-2. This table requires each crew to successfully complete the live-fire prerequisites, all zeroing procedures for their platform, and complete the defensive engagements on Table IV. This table is designed to train complex engagement skills, day and night, while fighting from the defense and during offensive engagements.

5-3. Figure 5-1 shows where Table V, Practice, resides within the heavy tank training strategy through crew qualification. Table V is the first live-fire event where the crew conducts live-fire main gun engagements from the defense, as well as complex engagements while on the offense.

CREW TABLE V	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	*WALK*	*RUN*	***RUN***	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

This event is not required; however, the majority of high payoff skills, engagement techniques, firing positions, and other critical tactical employment tasks are trained and reinforced during this course of fire.

Units that fail to include Table V in their unit training plan dramatically reduce the crew's ability to qualify their platform on the first attempt and reduce the unit's lethality.

In general, crew platforms have a minimum of 2,400 basic engagement possibilities the crews should experience to achieve proficiency. The training strategy leverages simulations to provide those engagement experiences to each crew. Select, high-payoff engagements that demonstrate performance on critical engagement skills are conducted during crew live-fire training. Failure to provide Table V to the crews cuts the crew's potential lethality by 50 percent.

LEGEND

GST	**GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM**	**STX**	**SITUATIONAL TRAINING EXERCISE-VIRTUAL**
QUAL	**QUALIFICATION**	**TADSS**	**TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS**
STX	**SITUATIONAL TRAINING EXERCISE**		

Figure 5-1. Table V, Practice

PURPOSE OF TABLE V

5-4. Table V is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD FOR TABLE V

5-5. Table V is a performance-based evaluation of basic and advanced gunnery skills to the Army-standard of knowledge or skill in a live environment under live-fire conditions. Conduct of Table V is on vehicle using full-caliber ammunition, and BESs, and 3/4-scale targetry at full-distance to provide the most challenging training prior to the qualification course of fire. It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE OF TABLE V

5-6. The tank commander and gunner assigned as a crew have successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned. The tasks evaluated in Table V provide the commander a means to certify the crew's basic and advanced weapons platform proficiency prior to the qualification course of fire using full-caliber munitions. The commander and Master Gunner use the results from the qualification course when structuring the unit's crew training program and is a readiness reportable item.

TASK, CONDITIONS, AND STANDARD OF TABLE V

5-7. Outlined in figure 5-2 are the task, conditions, and standard for Table V, Practice. Units should not add to the live-fire requirements or tasks associate with Table V. If the commander is confident with the crew's skills, they may increase the chemical, biological, radiological, and nuclear requirements from one day and one night engagement to suit their experience.



TABLE V PRACTICE	
TASK	Engage and destroy stationary and moving targets placed in a tactical array, during day and limited visibility from a stationary or moving vehicle by using full-caliber ammunition.
CONDITIONS	Given the following: • An operational platform with weapon or weapon systems. • Allotted ammunition. • Certified vehicle crew evaluators. • 3/4 scale targets. • All prerequisites to live-fire for the crew platform achieved.
STANDARD	The crew must: • Score a minimum of 700 to 1,000 points overall. • Score 70 points or more on all targets presented on 7 out of 10 engagements. • Qualify on at least one day and one limited visibility engagement.

Figure 5-2. Table V, Practice, task, conditions, and standard

Note. If any individual target score on an engagement is less than 70 points, the engagement is unqualified, regardless of overall engagement score.

PLAN FOR TABLE V

5-8. Table V, Practice, is a live-fire training environment event using TADSS, and simulators, and includes the use of full-caliber and small arms training ammunition and BESs.

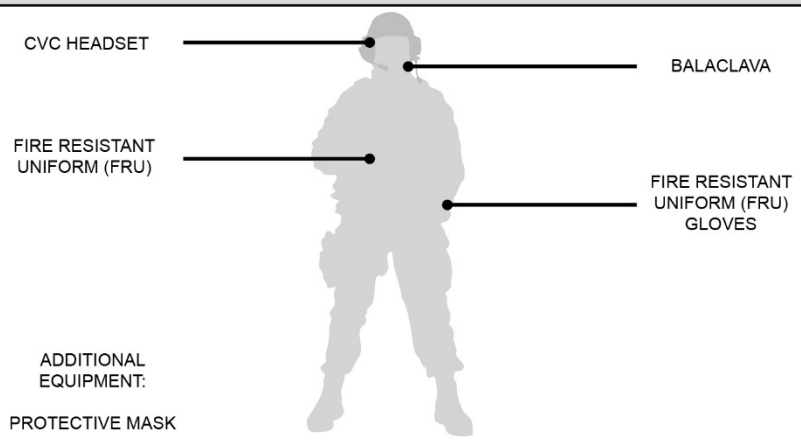
5-9. This section details the resources needed for planning purposes. It includes general information on the following topics for consideration:

- Uniform—the minimum requirements for the combat vehicle crewmember's fire-retardant clothing and protective equipment.
- Facilities—available facilities that support the training event.
- Training plan—the minimum tasks, general guidelines, and special instructions for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event.
- TADSS—any available training aids that directly support or augment the training event.

UNIFORM FOR TABLE V

5-10. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor, ballistic plates, or gear during the training event unless directed by the commander. Figure 5-3 provides the minimum uniform training requirements this event.

TABLE V
PRACTICE
UNIFORM REQUIREMENTS



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	4	1	3	3
0	NONE	NONE	NONE	NONE	NONE
1	PATROL CAP	VEST	**GOGGLES**	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	FRU		**HEADSET**	**FRU GLOVES**
4		**FRU and SPALL VEST**			

Note: The Combat Vehicle Crewman (CVC) helmet includes the headset hearing protection. Goggles or appropriate eye protection are required for exposed crewmen during vehicle movement.

Figure 5-3. Uniform requirements for simulations training

FACILITIES FOR TABLE V

5-11. Table V requires the use of a maneuver gunnery range that allows live fire for large caliber and below training ammunition. To maximize throughput, units may elect to use multiple lanes on the facility.

5-12. Master Gunners must be familiar with the family of maneuver ranges, the range operations control area, and the specific instrumentation and target sets available on the range facility selected for Table V. The maneuver range facilities recommended as primary and alternate facilities are shown in figure 5-4.

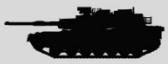


TABLE V
PRACTICE
AUTHORIZED FACILITIES

FACILITY		
Battle Area Complex	BAX	ALTERNATE
Digital Air Ground Integration Range	DAGIR	ALTERNATE
Digital/Multipurpose Range Complex	D/MPRC	ALTERNATE
Digital/Multipurpose Training Range	D/MPTR	**PRIMARY**
Scout/Reconnaissance Gunnery Complex	SRGC	ALTERNATE

Note: Units may should consider using a separate facility to conduct zeroing procedures if it assists with increased throughput.

Figure 5-4. Maneuver range facilities to support Table V, Practice

RANGE SUPPORT

5-13. The range support group provides VCE teams to evaluate the course of fire. This requires all gunners and above to certify or recertify as VCEs between T-6 and T-execution of the training event.

5-14. The range support personnel general requirements are in figure 5-5. This includes the most common support required for crew platform live-fire events.

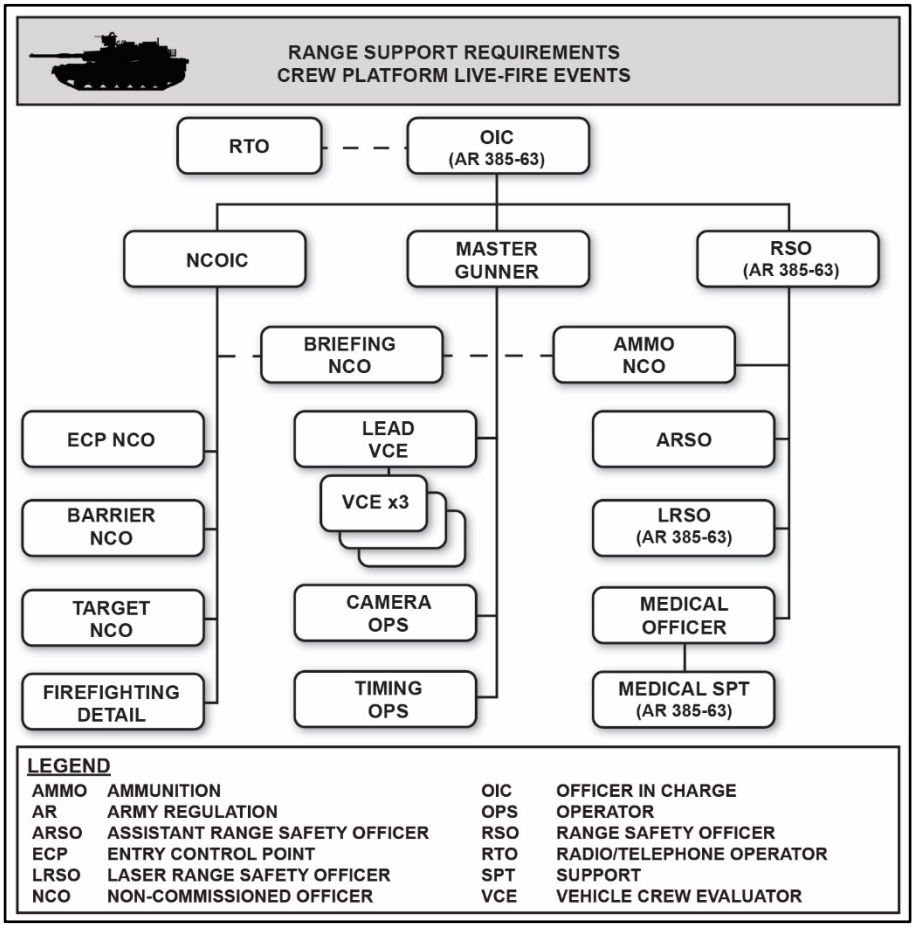


Figure 5-5. Range support personnel requirements, example

TRAINING PLAN

5-15. Table V, Practice, provides a challenging scenario to the crews to prepare them for qualification and future collective training. It relies on engagements with a moderately higher level of difficulty that the qualification course of fire that exercises the crew's conduct of fire and engagement skills. The increased difficulty in relation to the qualification course of fire is provided through:

- Smaller targetry.
- Increased number of targets.
- Increased range to target for the majority of the engagements.
- Greater dispersion between targets laterally and in depth.

5-16. Units are required to use 3/4 scale targets at full range for the training scenarios unless specifically directed to use full-scale targetry (degraded engagements, for example). The Master Gunner has the option to use F-type rather than E-type silhouettes to increase the difficulty during machine gun engagements. (See TC 25-8, for additional information on scaled targetry.)

5-17. This table prepares crews for the Table VI, Qualification. The table design is purposefully more difficult to master than the qualification. Units should retrain as necessary with full-caliber ammunition when possible. Units should use available resources to ensure all crews successfully complete Table V before proceeding to the qualification course of fire, Table VI.

Scenario Requirements for Table V

5-18. This table is designed to train and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, from the defense, during day and limited visibility conditions.

5-19. Units must use 3/4 scale targets at full range for all scenarios except degraded engagements. Units may consider using full-scale for degraded engagements based on the units' level of expertise. The Master Gunner may consider using F-type silhouettes rather than E-type silhouettes. (Refer to TC 25-8 for more information.)

5-20. All engagements are evaluated using certified VCEs using DA Form 8265 and DA Form 8265-1 as the official record of training. Master Gunners must ensure the training records are included in each crew's gunnery packet (see TC 3-20.31).

5-21. The engagements listings are by capability type using the standard engagement naming structure listed in TC 3-20.31. The requirements for each engagement are listed in paragraphs 5-22 through 5-31.

Task Description—Table V

5-22. The task description includes both the engagement number (the table number plus engagement task) followed by the system capability trained.

Firing Vehicle Posture—Table V

5-23. The firing vehicle posture establishes the offense or defense condition for the engagement.

Firer—Table V

5-24. The firer column identifies which crewmember is to engage the target listed. Targets defeated by a different crewmember listed as the firer result in an auto-zero penalty, failing to adhere to course conditions.

Weapon (or Ammunition)—Table V

5-25. Identifies the weapon (coaxial, caliber .50, or primary armament ammunition type) that is used to defeat the threat. Design of each engagement is for a specific weapon or ammunition type (primary armament) for use, which relates to the crew conduct of fire, optic selection, engagement techniques, or other unique implied tasks. Crews that fail to announce the appropriate weapon or ammunition, or appropriate selection for subsequent or supplemental engagements may be penalized IAW the evaluation procedures in TC 3-20.31.

Target Type—Table V

5-26. The target required for the presentation, IAW TC 25-8.

Target Posture—Table V

5-27. The target posture establishes if the target is stationary, moving, or evasive for the engagement. See TC 3-20.31 for more information on target postures.

Range (to Target)—Table V

5-28. The required range (full scale or equivalent scaled range) from the firing vehicle to the target. For offensive engagements, this distance calculation is from the center of the movement box to the target. The range to target distance is provided in meters and is displayed as a whole number, such as 600.

5-29. The target may be placed at the distance indicated, plus or minus 200 meters. For example, when the range to target is listed as 600 meters, the target may be placed between 400 meters and 800 meters. This allows flexibility designing the scenario on varying maneuver range facilities with different capabilities, target counts, emplacement locations, and terrain restrictions.

5-30. No change to the EM is authorized. The range bands listed with their applied tolerances do not require any adjustment to the EM. Units are not authorized to exceed the target placement tolerances.

Engagement Modifier—Table V

5-31. The EM is the time in seconds required to achieve 100 points against the listed threat. To defeat the threat successfully, the crew must achieve the kill standard against the target and have an overall engagement time of no more than the EM plus 20 seconds. See TC 3-20.31 for the evaluation, timing, and scoring procedures.

Engagements—Table V

5-32. Figure 5-6 on page 234 shows the breakdown of what target type, target posture, range and weapon system or ammunition type used for each task number. Units are not allowed to deviate from any target type, target posture, range, and weapon system or ammunition type for Table V, Practice.

TABLE V, PRACTICE
ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
50	VEHICLE COMMANDER	DEFENSE	VC	SABOT	H1T-FRT	STA	1,500m	7
			VC	SABOT	H1T-FRT	STA	2,000m	8
51	MACHINE GUN PURE	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	COAX	L2T-FRT	STA	600m	11
52	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	E(7)FRT	STA	800m	9
53	MAIN GUN PURE	OFFENSE	GNR	CAN	E(7)FRT	STA	300m	10
54	MAIN GUN PURE	DEFENSE	GNR	MPAT	M1T-FRT	STA	1,200m	7
			GNR	MPAT	L2T-FLK	MOV	1,200m	10
			GNR	MPAT	M1T-FRT	STA	1,400m	8
55	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	MPAT	M1T-FRT	STA	1,400m	12
			GNR	COAX	L2T-FLK	MOV	600m	13
			GNR	MPAT	M1T-FRT	STA	1,600m	12
			GNR	COAX	E(7)FRT	STA	500m	12
56	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	COAX	L2T-FRT	STA	400m	5
			GNR	COAX	L2T-FRT	STA	600m	7
			GNR	SABOT	H1T-FRT	STA	1,800m	7
			GNR	MPAT	M1T-FLK	MOV	2,000m	11
57	DEGRADED	OFFENSE	GNR	COAX	E(7)FRT	STA	600m	12
			GNR	MPAT	M1T-FRT	STA	1,600m	12
58	DEGRADED	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,600m	7
			GNR	SABOT	H1T-FLK	MOV	1,600m	9
59	SIMULTANEOUS	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			VC	CAL .50	M2T-FRT	STA	1,000m	14
			GNR	COAX	L2T-FRT	STA	800m	12

LEGEND

CAL .50	CAILBER .50	GNR	GUNNER
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
EM	ENGAGEMENT MODIFIER	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	STA	STATIONARY
FRT	FRONTAL	VC	VEHICLE COMMANDER

Figure 5-6. Table V, Practice, scenario requirements

TIME AND THROUGHPUT—TABLE V

5-33. The throughput expectation of this table is 14 crews per day. Depending on maintenance or other unforeseen issues, recommend incorporating an additional half training day to the schedule. Figure 5-7 shows the expected throughput schedule based on the number of vehicles for firing and the unit's day and night engagement breakdown for the engagements.

CREW PLATFORM WEAPON SYSTEM THROUGHPUT REQUIREMENTS

		NUMBER OF ENGAGEMENTS					
	DAY	8	7	6	5	4	
	NIGHT	2	3	4	5	6	
NUMBER OF CREWS	10	15.25	16.00	16.50	17.25	18.00	HOURS TO COMPLETE
	11	16.25	17.00	17.75	18.50	19.25	
	12	17.50	18.25	19.00	20.00	20.75	
	13	18.50	19.50	20.25	21.25	22.00	
	14	19.75	20.75	21.50	22.50	23.50	
	15	21.00	22.00	23.00	24.00	25.00	
	16	22.00	23.00	24.25	25.25	26.25	
	17	23.25	24.25	25.50	26.50	27.75	
	18	24.25	25.50	26.75	28.00	29.00	
	19	25.50	26.75	28.00	29.25	30.50	
	20	26.50	28.00	29.25	30.50	32.00	

Note: Overall time requirements are based on a single firing lane and include 4 hours of range maintenance down time (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

Any time shown exceeding 24 hours will not be possible in a single range day without unit action to conduct the range with a sense of urgency during preparation to fire tasks and execution of the table including tactical movement between engagements.

Figure 5-7. Table V throughput expectations

Note. Time requirements overall are based on a single firing lane and include 4 hours of range maintenance downtime (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

AMMUNITION—TABLE V

5-34. Figure 5-8 provides the ammunition requirements for Table V, Practice. Units are required to include the BESs as part of the Army standard target presentations during training.



TABLE V, PRACTICE
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120mm TP-T M1002	11
CA69	CTG 120mm TPCSDS-T M865A1	8
CA38	CTG, 120mm CANISTER M1028	1
AB86	CTG, 7.62mm 4 ball M80/1 TRCR M62 LNKD	550
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	18
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	18

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS



PYROTECHNICS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	SIM	SIMULATION
CTG	CARTRIDGE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
LNKD	LINKED	TP-T	TARGET PRACTICE-TRACER
mm	MILLIMETER	TRACER	TRACER

Figure 5-8. Table V, ammunition requirements

TADSS—TABLE V

5-35. This course requires the use of the CMU. The CMU is available on the digital range facility scheduled (if equipped). Coordination with the scheduled range facility manager will determine unit responsibilities for installation, troubleshooting, maintenance, and use of the devices ahead of the training day(s). If the range does not have a CMU available, unit may draw the CMUR from the TADSS warehouse. The CMUR differs from the CMU in that it stores all run data on a solid-state drive on the vehicle, for use with the provided AAR suite in the CMUR kit.

5-36. The brigade commander must approve authorization for deviation from this requirement if TADSS are unavailable in writing. Units should focus on training and reinforcing the skills in the direct fire kill chain on this table specifically with their thermal optics, day and night to best prepare them for the follow-on training events. Figure 5-9 shows the TADSS required or recommended for Table V.



TABLE V, PRACTICE
TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS REQUIREMENTS

DEVICE	NOMENCLATURE	REMARKS
CMU	Crew Module Unit/Integrated Player Unit	REQUIRED
CMUR	Crew Module Unit Recorder (Thru-Sight Video)	
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T	CONCURRENT TRAINING
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T, or M1002, HEAT-TP-T	CONCURRENT TRAINING
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T	CONCURRENT TRAINING
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER	CONCURRENT TRAINING
SP-1	BORESIGHT PANEL	REQUIRED

LEGEND

APFSDS-T	ARMOR PIERCING DISCARDING SABOT-TRACER	HEAT-TP-T	HIGH EXPLOSIVE ANTI-TANK TARGET PRACTICE TRACER
HEAT-MP-T	HIGH EXPLOSIVE ANTI-TANK MULTI-PURPOSE TRACER	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER

Figure 5-9. Table V, Practice, TADSS

PREPARE FOR TABLE V

5-37. Units must coordinate for the appropriate training facility, equipment, targetry, training munitions, TADSS (if desired), and pyrotechnics to support Table V. During the preparation phase, the unit should ensure the proofing team, VCEs, and other personnel receive training to standard to support their role as evaluators and trainers. This includes range officers in charge, range safety officers, and ammunition handlers.

TRAIN THE TRAINERS—TABLE V

5-38. Typically, units have certified each VC and most gunners as VCEs prior entering the live-fire density. Units must have certified evaluators to ensure the training objectives for the training table are set and to provide effective AARs to each crew.

5-39. Additional information on leader certification and train the trainer actions is found in TC 3-20.31. Units should review and plan for the appropriate training and certifications well in advance of the training event.

PREPARE VEHICLE CREW EVALUATORS

5-40. A trained and certified VCE team must be available to support prior to live fire to evaluate a gunnery density correctly. After certification, the unit must ensure sufficient VCEs are available to support the live-fire event. Evaluations of crew gunnery always come from outside the firing platoon element, and for qualification purposes, VCEs external to the battalion are required.

5-41. Depending on the size of the weapons training density (make-up gunnery, platoon, company, or battalion) and the type of range facility used, the number of evaluators may vary. Having the correct number and type of evaluators per firing range maximizes the unit's throughput of firing vehicles on the range, reduce range downtime, and provide for the highest quality evaluations. See TC 3-20.31 for more in-depth information on VCEs, the evaluation team, and the evaluation process.

5-42. To prepare the trainers, units provide—

- Commander training objectives.
- Conduct of the range briefing for the training event.
- Scenario and lane concept with crew tasks for training.
- Risk assessments.
- Identification of supporting doctrinal publications for use as primary references.
- TADSS, pyrotechnics, blanks, and BESs used during the training event (see appendix A for the training munitions requirements for the complete training strategy).

RECONNAISSANCE OF THE SITE FOR TABLE V

5-43. Commanders use an authorized training facility for Table V, Practice. Commanders follow the installation's policies and procedures for formally scheduling the training location as far in advance as practical. See TC 3-20.31 for more in-depth information concerning range operations at the unit level.

5-44. Once scheduled, the commander, Master Gunner, platoon leaders and platoon sergeants conduct a reconnaissance of the training areas to—

- Verify sufficient space is available to support the entire unit through multiple training lanes.
- Ensure multiple iterations or rotations through the scenario are achievable with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Provide sand table or terrain board.
- Identify the ammunition supply point.
- Determine the conduct of the range or the flow of training to maximize the live-fire range time.
- Identify the range operating system. Verify the training scenarios have been properly loaded.
- Schedule proofing of the range, based on the higher headquarters OPORD.
- Ensure requested TADSS are available if provided by the range facility.
- Issue the order.

5-45. Commanders can issue an OPORD, WARNORD, or use the training schedule as necessary. The WARNORD should include the appropriate tasks, required leaders, and equipment needed, as well as the unit's training timeline including walk-through, rehearsals, and AARs. WARNORDs for external organizations must include sufficient reaction time for the appropriate personnel and equipment needed.

REHEARSE TABLE V

5-46. The unit uses all training resources, materials, and equipment available to conduct rehearsals of training events. During the rehearsal, commanders ensure their unit has sufficient time to train to the specified standard including AARs and retraining time. Commanders ensure their unit verifies optional scenarios that increase complexity when warranted.

5-47. Units should rehearse the training event from start to finish, and confirm—

- The VCEs and proofing team understand the training scenarios and tasks.
- Sufficient space is available to provide appropriate distances for engagements ranges and target dispersion.
- Analog and digital systems are operational within the organization and to the higher headquarters regardless of their location.
- Additional crew training packages (DA Form 8265, DA Form 8265-1, and appropriate zero documentation) are complete and provide for multiple iterations.
- Sufficient administrative areas are available.
- Review AAR capabilities, encouraging use of thru-sight video systems to increase the fidelity and quality of the AARs.
- Location of retraining for crews as necessary.
- Accessibility to crew simulator systems, plumb and synchronization ramps, tracking and manipulation panels, and additional bore sighting locations are available.

5-48. Once the unit completes the walk-through and training rehearsal, the commander makes any necessary adjustments to the plan and issues FRAGORDs as necessary.

EXECUTE TABLE V

5-49. Once the unit arrives at the training location, they should—

- Conduct a safety briefing for the training event.
- Provide a conduct of the range briefing to establish the sequence of events for the training day.
- Conduct sensitive item checks prior to executing training.
- Assign VCE support as appropriate.
- Issue the OPORD for the training mission.
- Execute the training scenario.

5-50. The training unit conducts formal AARs of each crew completing a phase of training within the training mission. During training, the assigned VCEs, executive officer, 1SG, and Master Gunner review the subordinate unit's performance. They follow the unit SOP, prescribed tactics, techniques, procedures, and the appropriate T&EOs, and review completed crew score sheets and roll-up documentation for clarity and completeness.

ENGAGEMENT 50

5-51. The tank commander engagement is fired from their position using the commander's control handle assembly firing the main gun as shown in figure 5-10 and figure 5-11. Engagement 50 trains and evaluates the VC's ability to engage and destroy multiple stationary targets from the defense.

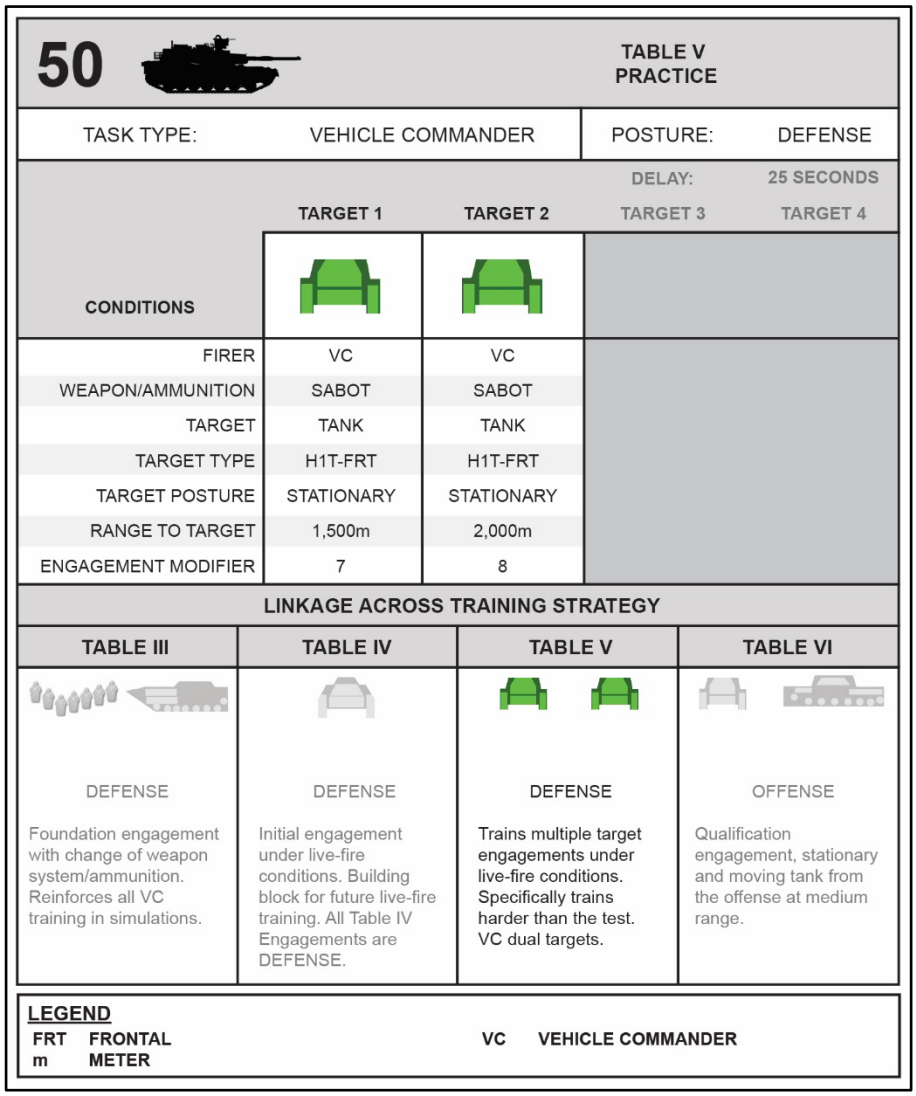


Figure 5-10. Engagement 50 overview

50

TARGET 1	TARGET 2	TARGET 3	TARGET 4
VEHICLE COMMANDER **DEFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR GUNNER'S POWER CONTROL HANDLES ARE INOPERATIVE. CONTINUE TO FIGHT. BATTLE CARRY SABOT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANKS IN SECTOR
METHOD	NEAR TO FAR
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 5-11. Engagement 50 ammunition and script

ENGAGEMENT 51

5-52. Engagement 51 is a machine gun pure engagement for the gunner. It trains target detection, acquisition, and machine gun engagement techniques during offensive engagements (see figure 5-12 and figure 5-13). Range bands are near- and mid-range. Crews must tactically use the course road and build a stable firing platform.

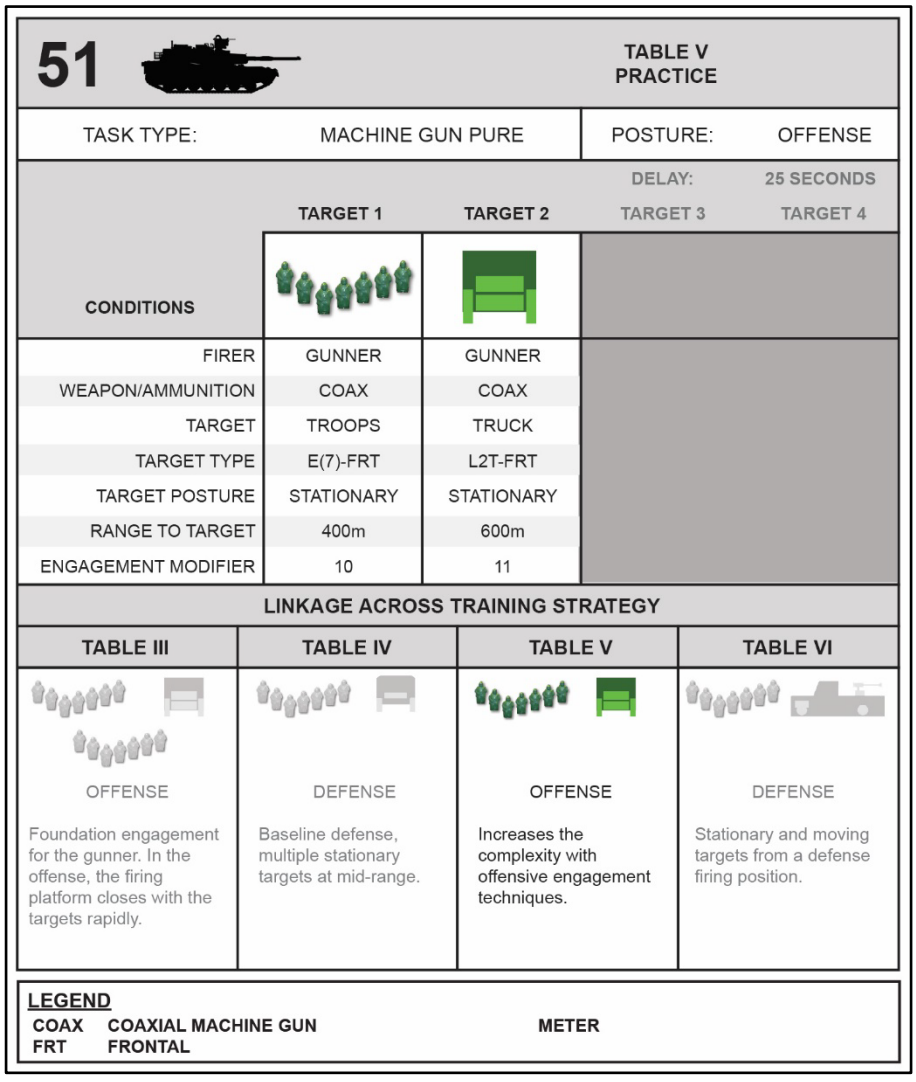


Figure 5-12. Engagement 51 overview

51

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE **OFFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS AND TRUCK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 5-13. Engagement 51 ammunition and script

ENGAGEMENT 52

5-53. From a defensive posture, the gunner engages multiple machine gun threats at mid- and long-range for the coaxial machine gun (see figure 5-14 and figure 5-15). Engagement 52 continues the gunner's education on machine gun engagement techniques against multiple threats while utilizing the battle position and verifying the gun tube and gun-target-line is clear.

52 

TABLE V PRACTICE

TASK TYPE:	MACHINE GUN PURE	POSTURE:	DEFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	COAX		
TARGET	TROOPS	TROOPS		
TARGET TYPE	E(7)-FRT	E(7)-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	400m	800m		
ENGAGEMENT MODIFIER	6	9		

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Multiple short-range coax engagements from the defense using TADSS.	Stationary and moving targets at close-range from a defensive position. All engagements on Table IV are fired from the DEFENSE.	Multiple machine gun targets at mid-range for the coax.	Firing on the move, multiple troops and truck at close and mid-range.

LEGEND

COAX	COAXIAL MACHINE GUN	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
FRT	FRONTAL		
m	METER		

Figure 5-14. Engagement 52 overview

52	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100			

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS
METHOD	
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 5-15. Engagement 52 ammunition and script

ENGAGEMENT 53

5-54. Engagement 53 is a main gun engagement for the gunner using a canister round on the offense against mass troops (see figure 5-16 and figure 5-17). Units can utilize multiple troops sets in close proximity to provide a massed troop threat. Care needs to be taken firing the canister round on the offense in support of dismounted Infantry elements. Master Gunners must proof the speed and distance requirements during proofing the engagement.

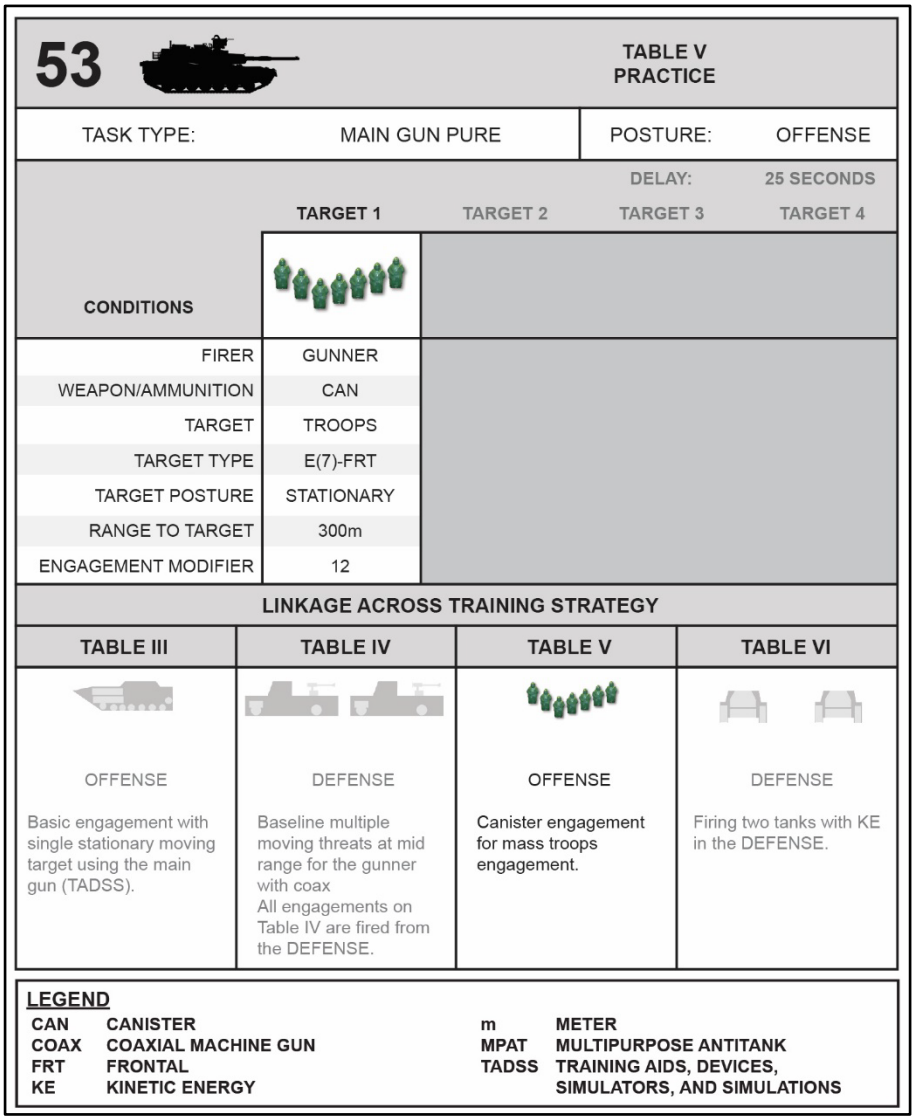


Figure 5-16. Engagement 53 overview

53 

TARGET 1	TARGET 2	TARGET 3	TARGET 4

MAIN GUN PURE

OFFENSE



ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
		1				

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY CANISTER, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS IN SECTOR
METHOD	
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 5-17. Engagement 53 ammunition and script

ENGAGEMENT 54

5-55. Engagement 54 is a main gun engagement from a defensive firing position against multiple stationary and moving threats (see figure 5-18 and figure 5-19). This teaches the gunner main gun engagement techniques using chemical energy rounds. The primary teaching point on the main gun engagements is for the crew to effectively use their battle position through multiple main gun rounds and the potential for an MRS update at the conclusion of the engagement.

54 

TABLE V PRACTICE

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	MPAT	MPAT	MPAT	
TARGET	BMP	TRUCK	BMP	
TARGET TYPE	M1T-FRT	L2T-FLK	M1T-FRT	
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	
RANGE TO TARGET	1,200m	1,200m	1,400m	
ENGAGEMENT MODIFIER	7	10	8	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Main gun (TADSS) with delay target.	Baseline live-fire engagement for GUNNER. All engagements on Table IV are fired from the DEFENSE.	Tests the primary function with main gun, stationary and moving targets and delay target.	Firing on the move with main gun, stationary and moving targets.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
FRT	FRONTAL		
m	METER		

Figure 5-18. Engagement 54 overview

54

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	4.5				3	3

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY MPAT, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	PC AND MOVING TRUCK WITH PC IN SUPPORT
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 5-19. Engagement 54 ammunition and script

ENGAGEMENT 55

5-56. Engagement 55 challenges the crew with a change of weapon and ammunition while on the offense (see figure 5-20 and figure 5-21). This is the most complex and rigorous engagement on this table. This engagement is designed to include the changes to weapon types requiring increased switchology awareness as well as the crew's cohesive efforts on target acquisition while on the offense. The crew will be challenged with obscuration while on the offense.

55 

TABLE V PRACTICE

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	OFFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	MPAT	COAX	MPAT	COAX
TARGET	BMP	TRUCK	BMP	TROOPS
TARGET TYPE	M1T-FRT	L2T-FLK	M1T-FRT	E(7)-FRT
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	STATIONARY
RANGE TO TARGET	1,400m	600m	1,600m	500m
ENGAGEMENT MODIFIER	12	13	12	12

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
OFFENSE	DEFENSE	OFFENSE	DEFENSE
Trains the crew's ability to prioritize threats presented. Change of weapon and ammo on the offense.	Simultaneous GUNNER and VC engagement. All engagements on Table IV are fired from the DEFENSE.	Complex engagement with change of weapon and ammunition on the offense.	Complex 4-target engagement with change of weapon and ammunition.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	VC	VEHICLE COMMANDER
FRT	FRONTAL		

Figure 5-20. Engagement 55 overview

55	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/AMMUNITION **OFFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	3		100		3	3

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY MPAT AND CHECK YOUR MACHINE GUNS.
REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	PC AND MOVING TRUCK, PC AND TROOPS IN SUPPORT
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 5-21. Engagement 55 ammunition and script

ENGAGEMENT 56

5-57. Engagement 56 is a change of weapon and ammunition engagement fired from a defensive firing position (see figure 5-22 and figure 5-23). This is a complex engagement and requires the crew to tactically move from the defilade to the enfilade while managing their switchology, ammunition type, and conduct of fire. This is one of the most complex engagements for the crew to master. This engagement includes a change of main gun ammunition to ensure the appropriate munitions are employed against the threats.

56 

TABLE V PRACTICE

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	DEFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	25 SECONDS TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	COAX	SABOT	MPAT
TARGET	TRUCK	TRUCK	TANK	BMP
TARGET TYPE	L2T-FRT	L2T-FRT	H1T-FRT	M1T-FLK
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	MOVING
RANGE TO TARGET	400m	600m	1,800m	2,000m
ENGAGEMENT MODIFIER	5	7	7	11

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFFENSE	DEFENSE	DEFENSE	OFFENSE
Change of weapon system from the defense. Baseline engagement skills with high probability threat array.	PC at mid-range from the defense. All engagements on Table IV are fired from the DEFENSE.	Change of weapon system for delay presentation in the defense.	Change of weapon system and ammunition. Complex engagement.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTI-PURPOSE ANTITANK
FLK	FLANK	PC	PERSONNEL CARRIER
FRT	FRONTAL		

Figure 5-22. Engagement 56 overview

56	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/AMMUNITION **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5	1.5		100		4	4

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY SABOT. CHECK YOUR MACHINE GUNS. PREPARE MPAT
REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TRUCK WITH TANK AND MOVING PC IN SUPPORT
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 5-23. Engagement 56 ammunition and script

ENGAGEMENT 57

5-58. Engagement 57 is a degraded engagement where the gunner must engage multiple threats on the offense without a laser range finder using degraded gunnery techniques (see figure 5-24 and figure 5-25). This engagement challenges the crew by using degraded gunnery techniques and reinforces battlecarry and battlesight preparation to fire, battlesight gunnery, and advanced target acquisition with a mid- and long-range threat array. The CROWS is still operational for target acquisition and range determination.

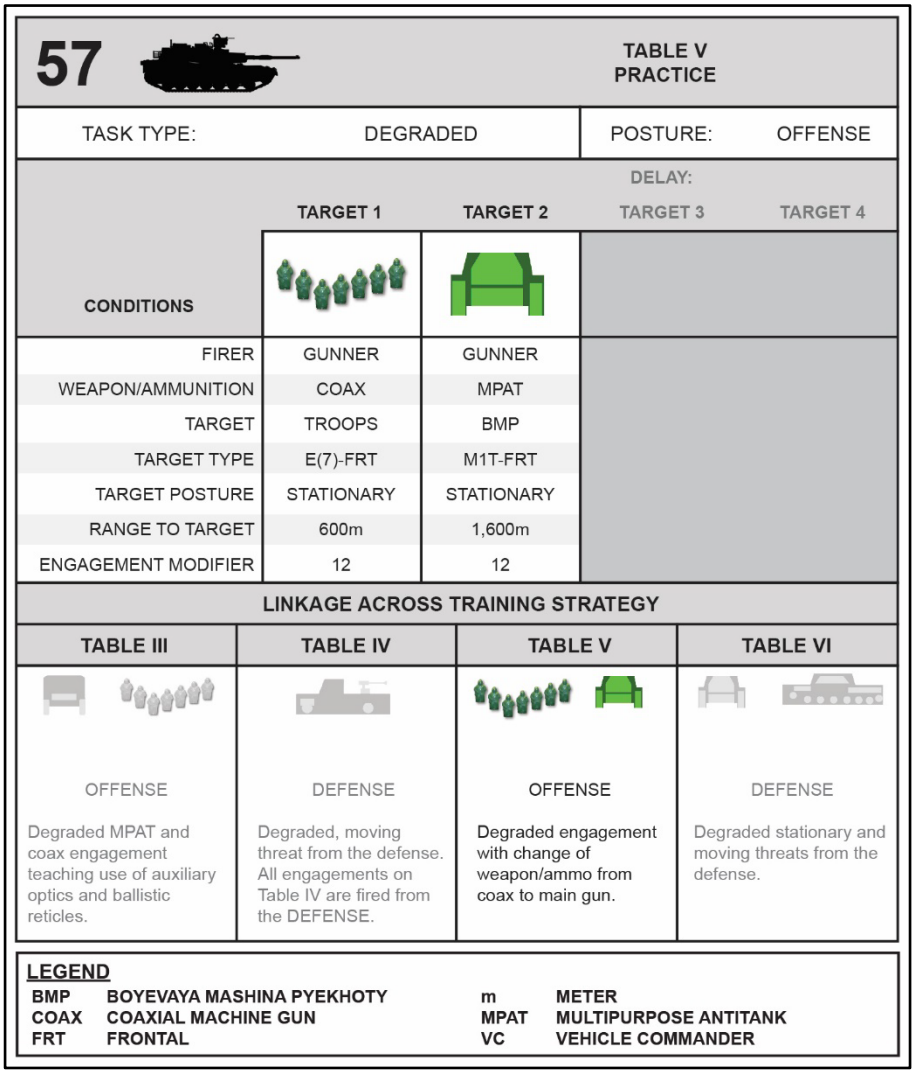


Figure 5-24. Engagement 57 overview

57 

TARGET 1	TARGET 2	TARGET 3	TARGET 4
DEGRADED **OFFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	1.5		50		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

YOUR LASER RANGE FINDER IS INOPERABLE. TURN OFF YOUR LASER, BATTLECARRY MPAT, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND TANK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 5-25. Engagement 57 ammunition and script

ENGAGEMENT 58

5-59. Engagement 58 is a degraded engagement for the gunner to apply the gunner's auxiliary sight and apply the appropriate ballistic reticle for stationary and moving main gun threats (see figure 5-26 and figure 5-27). This engagement includes the required use of manual controls. The gunner must clear the gun-target line effectively and control the movement of the vehicle once clear. The tank commander may not use their power control handle or the commander's independent thermal viewer's (CITV) designate function to place the gunner near the threat. The CROWS is still operational for target acquisition and range determination.

58 

TABLE V PRACTICE

TASK TYPE:	DEGRADED	POSTURE:	DEFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	H1T-FRT	H1T-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	1,600m	1,600m		
ENGAGEMENT MODIFIER	7	9		

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Degraded engagement that reinforces use of the auxiliary sight for coax engagements.	Defense multiple stationary targets using degraded techniques from the auxiliary sight.	Degraded stationary and moving threats in the defense. Complex engagement with the GAS.	Degraded coax and KE use on the offense. Target detection and acquisition difficulty

LEGEND

COAX	COAXIAL MACHINE GUN	KE	KINETIC ENERGY
FLK	FLANKING	m	METER
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK
GAS	GUNNER'S AUXILIARY SIGHT	VC	VEHICLE COMMANDER

Figure 5-26. Engagement 58 overview

58

	TARGET 1	TARGET 2	TARGET 3	TARGET 4
DEGRADED **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR FIRE CONTROL SYSTEM IS OUT. CLOSE YOUR BALLISTIC DOORS. BATTLECARRY SABOT. PREPARE FOR DEGRADED OPERATIONS. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	STATIONARY AND MOVING TANKS
METHOD	AUXILIARY SIGHT
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 5-27. Engagement 58 ammunition and script

ENGAGEMENT 59

5-60. Engagement 59 is a simultaneous engagement fired on the offense where the gunner and tank commander must acquire and defeat threats using their machine guns (see figure 5-28 and figure 5-29). Units should use caution designing the engagement to ensure the tank commander's target is presented to the right side of both the gunner's target arrays.

59 

TABLE V PRACTICE

TASK TYPE:	SIMULTANEOUS	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	VC	GUNNER	
WEAPON/AMMUNITION	COAX	CALIBER .50	COAX	
TARGET	TROOPS	BTR	TRUCK	
TARGET TYPE	E(7)-FRT	M2T-FRT	L2T-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	400m	1,000m	800m	
ENGAGEMENT MODIFIER	10	14	12	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	OFFENSE	DEFENSE
Simultaneous small arms engagement.	Simultaneous engagement from the defense. All engagements on Table IV are fired from the DEFENSE.	Simultaneous coax with caliber .50 engagement, followed by coax engagement on delay. Pintle caliber .50 engagement increases difficulty.	Simultaneous coax with caliber .50 engagement, followed by main gun target on delay.

LEGEND

BTR	BRONETRANSPORTYOR	m	METER
COAX	COAXIAL MACHINE GUN	VC	VEHICLE COMMANDER
FRT	FRONTAL		

Figure 5-28. Engagement 59 overview

59	TARGET 1	TARGET 2	TARGET 3	TARGET 4
SIMULTANEOUS **OFFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100	50	2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

CHECK COAX AND CALIBER FIFTY. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX AND CALIBER FIFTY
TARGET DESCRIPTION	TROOPS and BTR WITH TRUCK IN SUPPORT
METHOD	SIMULTANEOUS
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

BTR	**BRONETRANSPORTYOR**	**mm**	**MILLIMETER**
CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 5-29. Engagement 59 ammunition and script

ASSESS TABLE V

5-61. The intent of the practice course of fire is to train the crews within the organization on the appropriate conduct of fire skills in both offensive and defensive postures against common threat arrays using the primary armament, coaxial machine gun, and commander's machine gun. Proper evaluation and assessment of crew performance is key to improving individual and crew skills prior to moving to the qualification course of fire.

5-62. Each crew should receive a formal AAR following the guidelines found in TC 3-20.31. Each evaluator should use DA Form 8265 and DA Form 8265-1 as the basis for their evaluation, identifying the firing occasional information from the score sheet timelines. The evaluator and VC each review and sign the DA Form 8265-1.

Note. VCEs must be certified or recertified as described in TC 3-20.31. Performing the duties as a VCE during the conduct of Table V, Practice is a significant part of building experience and knowledge of those gunners and VCs without firing.

5-63. Units should track the various firing information from the score sheets to identify where in the conduct of fire crews and the overall unit should apply additional training effort. Some of those indicators are—

- Target acquisition, detection, and identification.
- Time to fire.
- Time to kill.
- Opening and closing times for machine gun engagements.
- Gunner lay errors.
- Scanning techniques.
- Engagement techniques.
- Conduct of fire issues.
- Penalties by type.

RETRAIN—TABLE V

5-64. The unit Master Gunner maintains the unit roll-up by engagement. A subcategorized roll-up by platoon provides the commander a snapshot of training trends, strengths, and weaknesses. The Master Gunner should not only identify crews that did not achieve a passing standard, but also crews that struggled on specific engagement tasks. Once done, the unit can establish and conduct the appropriate focused retraining followed by a subsequent evaluation.

5-65. All crews successfully complete the course of fire based on the standards for the engagements listed earlier in this chapter.

Note. All crews should successfully complete the course of fire based on the standards for the engagements listed earlier in this chapter. No crew should proceed to Table VI or any other live-fire event until they have achieved the minimum standard on Table V. The commander and Master Gunner may assess the crews' capability to proceed without qualifying the table based on target acquisition, target kills, fire commands, and engagement techniques.

5-66. Unit Master Gunners should include chair drills for the crews using the scenarios for each engagement for retraining purposes. Units should include future table's engagements in the chair drills training to best prepare the crews for those events. Additional information on chair drills is in TC 3-20.31.

DRIVER'S TRAINING—TABLE V

5-67. Leaders should determine the number of miles driven during the day and night phases for their assigned drivers. This information should be recorded, including the miles driven, miles driven with the enhanced viewer, and any tactical (off-road) miles driven. The miles driven build the driver's experience base, mileage credit toward their Army-standard driver's license requirements, and cumulative miles, hours, and assignment time for the expert driver's badge for tracked vehicles.

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE V

5-68. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

Note. Leaders must be granted access by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the ICTL that are trained and tested during the training event.

5-69. From within the SULT, the authorized leader is enabled to view, maintain, and update:

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting T&EOs (access dependent on proponent distribution restrictions).

5-70. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

5-71. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS—TABLE V

5-72. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

5-73. Tasks that are included within this event for the crew are found in figure 5-30 on page 265 through page 272. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-091-1023	Conduct Vehicle Resupply	Yes			
171-121-3009	Control Techniques of Movement	Yes			
171-121-4020	Conduct Live Fire Ranges	Yes			
171-121-4023	Conduct Live Fire Range Operations	Yes			
171-121-4028	Plan Occupation of a Battle Position	Yes			
171-121-4030	Conduct Vehicle Tactical Navigation	Yes			
171-121-4045	Conduct Troop Leading Procedures	Yes	Yes		
171-121-4051	Prepare a Situation Report (SITREP)	Yes			
171-121-4057	Perform Techniques of Movement	Yes			
171-121-4062	Issue an Operation Order (OPORD)-Fragmentary Order (FRAGORD)	Yes			
171-121-4064	Prepare Logistical Status (LOGSTAT) Reports	Yes	Yes		
171-121-4065	Direct Vehicle Tactical Movement	Yes			
171-121-4067	Execute Platoon Precombat Operations	Yes			
171-122-1012	Perform Operator Maintenance on an M240 Series Machine Gun	Yes	Yes	Yes	Yes

Figure 5-30. Table V, Practice, individual tasks touch points



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-122-1061	Maintain Property Accountability	Yes	Yes	Yes	Yes
171-123-1000	Direct Occupation of a Vehicle Fighting Position	Yes			
171-123-1021	Prepare Ammunition for Stowing		Yes	Yes	Yes
171-123-1023	Maintain Operator's Part of Equipment Record Folder			Yes	
171-123-1079	Troubleshoot Malfunctions on an M240-Series Machine Gun		Yes		Yes
171-123-1090	Perform Preventive Maintenance on Basic Issue Items (BII)	Yes	Yes	Yes	Yes
171-123-3001	Supervise Personnel Handling Ammunition	Yes	Yes		
171-123-4020	Perform Operator Maintenance on Gunner's Primary Sight (GPS)	Yes	Yes		
171-126-1055	Refuel an M1-Series Tank	Yes	Yes	Yes	Yes
171-126-1125	Perform Main Gun Misfire Procedures on an M1-Series Tank	Yes	Yes		
171-131-0016	Demonstrate Target Acquisition Methods	Yes	Yes		
171-131-2009	Perform Detailed Disassembly/ Assembly of the M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2010	Perform Detailed Disassembly and Assembly of the M2 Machine Gun	Yes	Yes	Yes	Yes
171-131-2012	Determine the Effects of Error Budget on Main Gun Accuracy	Yes	Yes		

Figure 5-30. Table V, Practice, individual tasks touch points (continued)



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-131-2014	Perform Detailed Disassembly - Assembly of an M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-2017	Identify Ammunition Container Markings	Yes	Yes	Yes	Yes
171-131-2077	Repair Malfunctions of M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2078	Repair Malfunctions of M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-138-0015	Conduct Advanced Vehicle Identification	Yes	Yes		
171-138-0017	Identify Restricted and Suspended Ammunition	Yes	Yes		
171-138-0018	Communicate the Engagement of Targets from an M1A2 SEP Tank	Yes	Yes		
171-138-0027	Conduct Alternative Range Determinations	Yes	Yes		
171-150-0001	Operate Intercommunications Set AN/VIC-3(V) on an M1 Series Tank	Yes	Yes	Yes	Yes
171-150-0002	Place the Enhanced Position Locating Reporting System (EPLRS) on an M1A2 SEP Tank into Operation	Yes	Yes		
171-150-0010	Operate the Turret Systems Using the Commander's Display Unit (CDU)	Yes	Yes		
171-150-0098	Perform Built-In Tests (BITs) on the Commander's Display Unit (CDU)	Yes	Yes		
171-19K-1020	Drive an M1A2 SEP Tank			Yes	
171-19K-1023	Prepare the Driver's Station for Operation on an M1A2 SEP Tank			Yes	

Figure 5-30. Table V, Practice, individual tasks touch points (continued)



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1024	Prepare the Loader's Station for Operation on an M1A2 SEP Tank				Yes
171-19K-1025	Operate the Engine on an M1A2 SEP Tank			Yes	
171-19K-1026	Secure the Loader's Station on an M1A2 SEP Tank				Yes
171-19K-1040	Secure the Driver's Station on an M1-Series Tank			Yes	
171-19K-1043	Perform Fuel Transfer Procedures on an M1-Series Tank			Yes	
171-19K-1061	Operate Tank Urban Survivability Kit (TUSK) Autoflug Driver's Seat			Yes	
171-19K-1123	Service the Air Induction System on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-1143	Inspect the Hydraulics on an M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1149	Conduct Preventive Maintenance Checks and Services (PMCS) on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1150	Troubleshoot an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1237	Remove the Loader's M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1239	Unload the 120-MM Main Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1240	Load an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1241	Unload an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes

Figure 5-30. Table V, Practice, individual tasks touch points (continued)

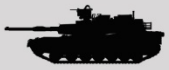


TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1244	Load the 120-MM Main Gun on an M1-Series Tank		Yes		Yes
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank				Yes
171-19K-1250	Stow Ammunition on an M1-Series Tank	Yes	Yes		Yes
171-19K-1251	Service The 120-MM Main Gun On An M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1280	Inspect 120-MM Ammunition for Serviceability	Yes	Yes	Yes	Yes
171-19K-1281	Identify 120-MM Main Gun Ammunition	Yes	Yes	Yes	Yes
171-19K-2001	Perform Operator Maintenance on the 120-MM Breechblock Assembly		Yes		Yes
171-19K-2002	Supervise Preventive Maintenance Checks and Services (PMCS)	Yes			
171-19K-2006	Prepare a Tank Sketch Card for an M1-Series Tank	Yes	Yes		
171-19K-2200	Prepare the Gunner's Station for Operation on an M1A2 SEP Tank	Yes	Yes		
171-19K-2201	Secure the Gunner's Station on an M1A2 SEP Tank	Yes	Yes		
171-19K-2203	Operate the Improved Gunner's Control Display Panel (iGCDP)	Yes	Yes		
171-19K-2212	Engage Targets with the Coaxial from the Gunner's Station	Yes	Yes		

Figure 5-30. Table V, Practice, individual tasks touch points (continued)



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-2236	Engage Targets with the Main Gun from the Gunner's Station		Yes		
171-19K-3001	Prepare the Position/Navigation System for Operation	Yes			
171-19K-3004	Secure the Commander's Station on an M1A2 SEP Tank	Yes			
171-19K-3008	Operate the ICDU in Vehicle Systems Mode on an M1A2 SEP Tank	Yes			
171-19K-3009	Operate the Improved Commander's Display Unit (ICDU) in Diagnostics Mode on an M1A2 SEP Tank	Yes			
171-19K-3010	Operate the ICDU in Command, Control, and Communications Mode	Yes			
171-19K-3011	Operate the Commander's Tactical Display (CTD) Input Device	Yes			
171-19K-3012	Operate Commander's Independent Thermal Viewer (CITV)	Yes			
171-19K-3013	Prepare the Commander's Station for Operation on an M1A2 SEP Tank	Yes			
171-19K-3101	Perform Diagnostics Mode Maintenance on the ICDU	Yes			
171-19K-3201	Load a Caliber .50 Browning M2 HB Flex Machine Gun	Yes			
171-19K-3202	Unload a Caliber .50 Browning M2 HB Flex Machine Gun	Yes	Yes	Yes	Yes
171-19K-3207	Engage Targets With a Caliber .50 M2 Heavy Barrel (HB) Flex Machine Gun	Yes			
171-19K-3211	Direct Machine Gun Engagements on an M1-Series Tank	Yes			

Figure 5-30. Table V, Practice, individual tasks touch points (continued)



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3219	Engage Targets with the Main Gun from the Commander's Station	Yes			
171-19K-3222	Engage Targets with an M240 in the Commander's Weapon Mount	Yes			
171-19K-3223	Direct Main Gun Failure-To-Fire Procedures on an M1A2 SEP Tank	Yes	Yes		Yes
171-19K-3224	Operate the Commander's Weapon Station Sight (CWSS)	Yes			
171-19K-3232	Direct Main Gun Engagements on an M1-Series Tank	Yes			
171-19K-3233	Engage Targets with the Coax from the Commander's Station	Yes			
171-19K-4001	Execute Tank Platoon Precombat Operations	Yes			
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0049	Gain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-300-0052	Maintain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-309-0650	Inspect DA Form 5988-E or DA Form 2404	Yes	Yes	Yes	Yes
171-928-0001	Install the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0002	Remove the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes

Figure 5-30. Table V, Practice, individual tasks touch points (continued)



TABLE V, PRACTICE
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-928-0005	Supervise Installation of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0006	Supervise the Removal of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0009	Perform Pre-Operational Set-Up Procedures for the TSV-R	Yes	Yes		
171-928-0010	Operate the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0011	Perform PMCS on the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0012	Troubleshoot the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0013	Conduct an After-Action Review Using the Thru-Sight Video (TSV) System	Yes	Yes		
171-COM-4079	Send a Situation Report (SITREP)	Yes			
171-COM-4080	Send a Spot Report (SPOTREP)	Yes			
17-CW-5695	Boresight a M1A2 Sep Tank with a Muzzle Boresight Device-Crew	Yes	Yes	Yes	Yes

Figure 5-30. Table V, Practice, individual tasks touch points (continued)

Chapter 6

Table VI—Qualification

Crew platform, Table VI, Qualification, is the record course of fire used to determine the live-fire proficiency of a crew platform. Table VI serves as the live-fire proficiency event for readiness reporting. It serves as the live-fire prerequisite for the crew to move to collective live-fire events. Table VI, Qualification, is a live environment-training event under live-fire conditions using full-caliber training ammunition, realistic targetry and engagement scenarios, at a combat tempo, conducted on an authorized live-fire facility. Regardless of crew platform type, this table reinforces the basic skills trained during previous events but increases the tempo to expected engagement sequence capabilities to build leader and element tactical and technical mastery.

OVERVIEW OF TABLE VI

6-1. Table VI, Qualification, is from the crew's vehicle and uses full caliber training ammunition on an authorized live-fire facility or safety certified training area that assesses an element's tactical employment proficiency and lethality. Table VI trains and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, during day and limited visibility conditions, with an operational or simulated degraded fire control system, as applicable. Crews execute these tasks from the offense and defense using full-caliber ammunition.

6-2. This table requires each crew to successfully complete the live-fire prerequisites, all zeroing procedures for their platform, and complete the defensive engagements on Table VI. This table is designed to train and evaluate complex engagement skills, day and night, while fighting from the defense and during offensive engagements. It is the qualification event for heavy tank crews.

Table VI, Qualification

This event is an external evaluation for qualification purposes. Failing indicates a clear lack of proficiency at basic engagement skills.

6-3. Figure 6-1 shows where Table VI, Qualification, resides withing the heavy tank training strategy through crew qualification. Table VI is the qualification event where the crew is evaluated on their demonstrated proficiency executing critical live-fire main gun, machine gun, and simultaneous engagements from the offense and defense, during the day and night phases. It requires the crew to demonstrate their ability to effectively employ the heavy tank's weapons using fully mission capable fire control system components as well as degraded engagements.

CREW TABLE VI	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	*WALK*	*RUN*	*RUN*	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
	GST	STX-V	STX	BASIC	PRACTICE	QUAL

CREW QUALIFICATION–A commander's tool to assess the minimum proficiency of a crew during live-fire that ensures the crew understands and demonstrates:

- Their understanding of and compliant to the rules of weapons safety.
- How to properly employ the weapon against most probable threats.
- A general understanding of employment techniques of the primary and redundant optics and capabilities of the system.
- The ability to defeat common threat presentations with the primary and redundant optics to a minimum standard.
- A minimum level of performance that satisfies the Commander's requirements to assign the crew to the BATTLE ROSTER for readiness reporting.



This event is required for readiness reporting by Army policy. Failure to follow the guidelines found in the training publication will condemn the qualification status of the crew.

In general, crew platforms have a minimum of 2,400 basic engagement possibilities the crews should experience. The training strategy leverages simulations to provide those engagement experiences to each crew. Select, high-payoff engagements that demonstrate performance on critical engagement skills are conducted during crew live-fire training.

LEGEND

GST	GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM	STX	SITUATIONAL TRAINING EXERCISE-VIRTUAL
QUAL	QUALIFICATION	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
STX	SITUATIONAL TRAINING EXERCISE		

Figure 6-1. Table VI, Qualification

PURPOSE OF TABLE VI

6-4. Table VI is a skills assessment and risk mitigation tool for the commander and is the platform's qualification for reporting purposes. It is also a proficiency gate the crew must successfully complete prior to entering any collective live-fire event. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD—TABLE VI

6-5. Table VI is a performance-based evaluation of basic and advanced gunnery skills to the Army-standard of knowledge or skill in a live environment under live-fire conditions. Conduct of Table VI is on vehicle using full-caliber ammunition, and BESs. It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE—TABLE VI

6-6. The VC and gunner assigned as a crew have successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned. The tasks evaluated in Table VI provide the commander a means to certify the crew's basic and advanced weapons platform proficiency prior to collective live-fire events. The commander and Master Gunner use the results from the qualification course when structuring the unit's crew training program and is a readiness reportable item.

TASK, CONDITIONS, AND STANDARD—TABLE VI

6-7. Outlined in figure 6-2 are the task, conditions, and standard for Table VI, Qualification. Units may not add to the live-fire requirements or tasks associate with Table VI. The division commander or equivalent maintains the qualification course of fire standards and approved scenarios.



TABLE VI QUALIFICATION	
TASK	Engage and destroy stationary and moving targets placed in a tactical array, during day and limited visibility from a stationary or moving vehicle by using full-caliber ammunition.
CONDITIONS	Given the following: • An operational platform with weapon or weapon systems. • Allotted ammunition. • Certified vehicle crew evaluators. • Full-scale targets. • All prerequisites to live fire for the crew platform achieved.
STANDARD	The crew must: • Score a minimum of 700 of 1,000 points overall. • Score 70 points or more on all targets presented on 7 out of the 10 engagements. • Qualify on at least one day and one limited visibility engagement.

Figure 6-2. Table VI, Qualification, task, conditions, and standard

Note. If any individual target score on an engagement is less than 70 points, the engagement is unqualified, regardless of overall engagement score.

PLAN

6-8. Table VI, Qualification, is a live-fire training environment event using TADSS and includes the use of full-caliber and small arms training ammunition and BESs. The qualification course of fire requires external VCEs and coordination with the higher headquarters for support.

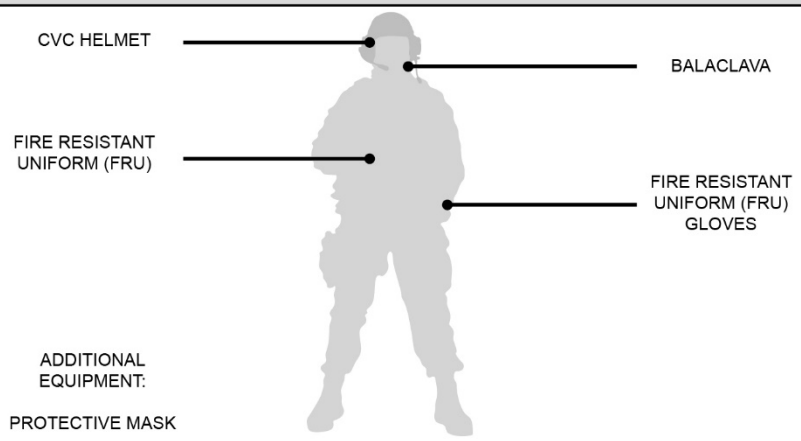
6-9. This section details the resources needed for planning purposes. It includes general information on the following topics for consideration, which are—

- Uniform—the minimum requirements for the combat vehicle crewmember's fire-retardant clothing and protective equipment.
- Facilities—available facilities that support the training event.
- Training plan—the minimum tasks, general guidelines, and special instructions for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event.
- TADSS—any available training aids that directly support or augment the training event.

UNIFORM FOR TABLE VI

6-10. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor, ballistic plates, or gear during the training event unless directed by the commander. Figure 6-3 provides the minimum uniform training requirements this event.

TABLE VI
QUALIFICATION
UNIFORM REQUIREMENTS



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	4	1	3	3
0	NONE	NONE	NONE	NONE	NONE
1	PATROL CAP	VEST	**GOGGLES**	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	FRU		**HEADSET**	**FRU GLOVES**
4		**FRU and SPALL VEST**			

Note: The Combat Vehicle Crewman (CVC) helmet includes the headset hearing protection. Goggles or appropriate eye protection are required for exposed crewmen during vehicle movement.

Figure 6-3. Uniform requirements for simulations training

FACILITIES FOR TABLE VI

6-11. Table VI requires the use of a maneuver gunnery range that allows live fire for small and large caliber ammunition. Master Gunners must be familiar with the family of maneuver ranges, the range operations control area, and the specific instrumentation and target sets available on the range facility selected for Table VI. The maneuver range facilities recommended as primary and alternate facilities are shown in figure 6-4.

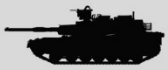


TABLE VI
QUALIFICATION
AUTHORIZED FACILITIES

FACILITY		
Battle Area Complex	BAX	ALTERNATE
Digital Air Ground Integration Range	DAGIR	ALTERNATE
Digital/Multipurpose Range Complex	D/MPRC	ALTERNATE
Digital/Multipurpose Training Range	D/MPTR	**PRIMARY**
Scout/Reconnaissance Gunnery Complex	SRGC	ALTERNATE

Note: Units may should consider using a separate facility to conduct zeroing procedures if it assists with increased throughput.

Figure 6-4. Recommended maneuver range facilities to support Table VI, Qualification

Thru-Sight Video Required

Units are required to utilize the thru-sight video system available for their platform on the qualification event. This is to ensure the highest fidelity AAR and take-home packages are created for the crews and commanders to build future unit training plans.

RANGE SUPPORT FOR TABLE VI

6-12. The range support group provides VCE teams to evaluate the course of fire. This requires all gunners and above to certify or recertify as VCEs between T-6 and T-execution of the training event.

6-13. The range support personnel general requirements are in figure 6-5. This includes the most common support required for crew platform live-fire events.

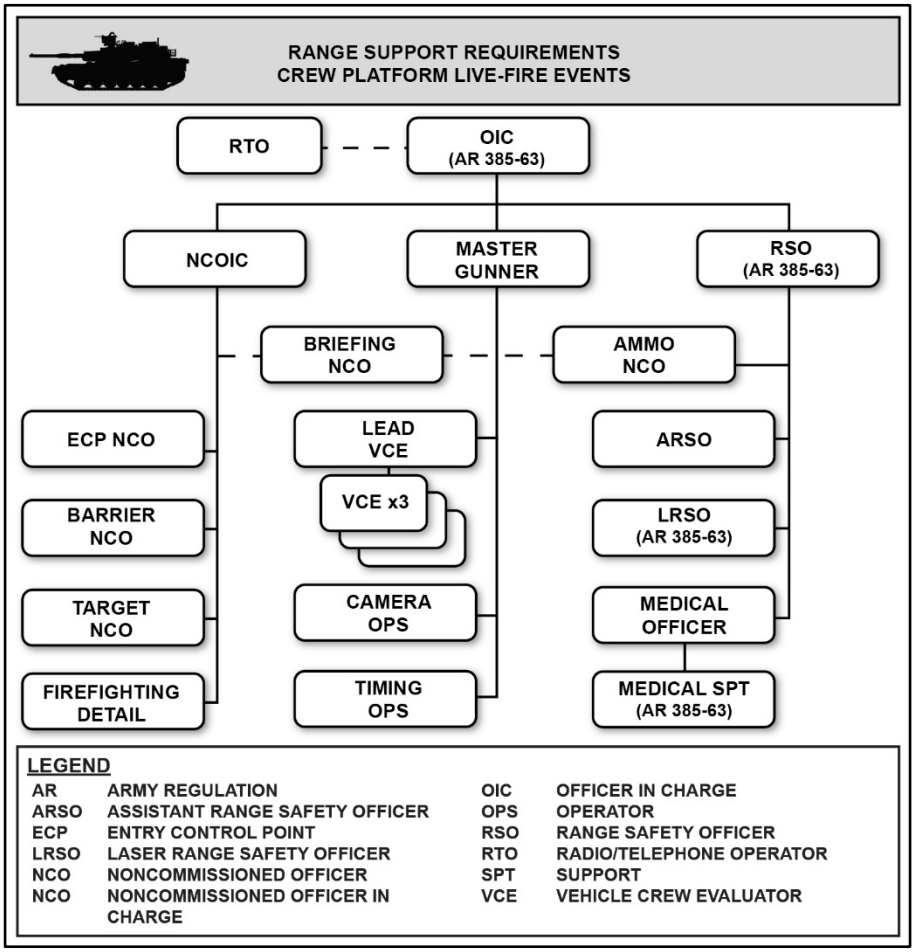


Figure 6-5. Range support personnel requirements, example

TRAINING PLAN FOR TABLE VI

6-14. Table VI, Qualification, provides a challenging scenario to the crews to prepare them for collective live-fire events and deployment. The qualification course exercises the crew's conduct of fire and engagement skills in a demanding manner that demonstrates the minimum proficiency of the crew.

6-15. Units are required to use full-scale targets at full range for the engagement scenarios unless specifically directed. To maintain training standards across the Army, there is no authorization for deviation from the engagements on Table VI beyond the guidelines listed in TC 3-20.31 for alternate targetry.

6-16. The design of Table VI is purposefully challenging to the crews while providing realistic engagements that exercise the crew's ability to utilize the key capabilities of the vehicle's fire control system. Units retrain as necessary with full-caliber ammunition using first-round hit savings (harvested ammunition) from the previous tables in the training strategy. Units must manage the available resources to ensure all crews successfully complete Table VI before proceeding to any collective live-fire event or deployment.

6-17. All crew platform tables are "multiple qualification criteria" tables. Crews must score at least 70 points per target according to the target kill standards in TC 3-20.31 on single and multiple target engagements to qualify the engagement. Crews must also score more than 700 points overall with a minimum of 70 points per target during 7 of 10 engagements on the qualification table to be used. Crews must qualify at least one engagement during day and one engagement during limited visibility to be qualified.

6-18. Table VI uses full caliber training ammunition on an authorized live-fire facility or safety certified training area that assesses an element's tactical employment proficiency and lethality.

6-19. Crews must successfully complete the qualification course prior to executing any collective live-fire training. Units must follow the training guidelines for those gates in the appropriate TC. Units may conduct "make-up" qualifications prior to live collective training when required but units must accomplish live-fire prerequisites as directed.

Scenario Requirements for Table VI

6-20. This table is designed to train and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, from the defense, during day and limited visibility conditions.

6-21. All engagements are evaluated using certified VCEs using DA Form 8265 and DA Form 8265-1 as the official record of training. Master Gunners must ensure the training records are included in each crew's gunnery packet (see TC 3-20.31).

6-22. The engagements listings are by capability type using the standard engagement naming structure listed in TC 3-20.31. It provides the requirements for each engagement, which are listed in paragraphs 6-23 through 6-32.

Task Description—Table VI

6-23. The task description includes both the engagement number (the table number plus engagement task) followed by the system capability trained.

Firing Vehicle Posture—Table VI

6-24. The firing vehicle posture establishes the offense or defense condition for the engagement.

Firer—Table VI

6-25. The firer column identifies which crewmember is to engage the target listed. Targets defeated by a different crewmember listed as the firer result in an auto-zero penalty, failing to adhere to course conditions.

Weapon (or Ammunition)—Table VI

6-26. Identifies the weapon (coaxial, caliber .50, or primary armament ammunition type) that is used to defeat the threat. Design of each engagement is for a specific weapon or ammunition type (primary armament) for use, which relates to the crew conduct of fire, optic selection, engagement techniques, or other unique implied tasks. Crews that fail to announce the appropriate weapon or ammunition, or appropriate selection for subsequent or supplemental engagements may be penalized IAW TC 3-20.31.

Target Type—Table VI

6-27. The target required for the presentation, IAW TC 25-8.

Target Posture—Table VI

6-28. The target posture establishes if the target is stationary, moving, or evasive for the engagement. See TC 3-20.31 for more information on target postures.

Range (to Target)—Table VI

6-29. The required range (full scale or equivalent scaled range) from the firing vehicle to the target. For offensive engagements, this distance calculation is from the center of the movement box to the target. The range to target distance is provided in meters and is displayed as a whole number, such as 600.

6-30. The target may be placed at the distance indicated, plus or minus 200 meters. For example, when the range to target is listed as 600 meters, the target may be placed between 400 meters and 800 meters. This allows flexibility designing the scenario on varying maneuver range facilities with different capabilities, target counts, emplacement locations, and terrain restrictions.

6-31. No change to the EM is authorized. The range bands listed with their applied tolerances do not require any adjustment to the EM. Units are not authorized to exceed the target placement tolerances.

Engagement Modifier—Table VI

6-32. The EM is the time in seconds required to achieve 100 points against the listed threat. To defeat the threat successfully, the crew must achieve the kill standard against the target and have an overall engagement time of no more than the EM plus 20 seconds. See TC 3-20.31 for the evaluation, timing, and scoring procedures.

Engagements—Table VI

6-33. Figure 6-6 on page 284 shows the breakdown of what target type, target posture, range and weapon system or ammunition type used for each task number. Units are not allowed to deviate from any target type, target posture, range, and weapon system and ammunition.

TABLE VI, QUALIFICATION ENGAGEMENT REQUIREMENTS								
TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
60	VEHICLE COMMANDER	OFFENSE	VC	SABOT	H1T-FRT	STA	1,400m	11
			VC	SABOT	H1T-FLK	MOV	1,600m	13
61	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	L2T-FLK	MOV	800m	10
62	MACHINE GUN PURE	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	COAX	L2T-FRT	STA	800m	12
			GNR	COAX	E(7)-FRT	STA	800m	13
63	MAIN GUN PURE	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,400m	7
			GNR	SABOT	H1T-FRT	STA	1,600m	7
64	MAIN GUN PURE	OFFENSE	GNR	MPAT	M1T-FRT	STA	1,400m	12
			GNR	MPAT	M1T-FLK	MOV	1,600m	14
65	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	COAX	E(7)-FRT	STA	400m	6
			GNR	MPAT	M1T-FRT	STA	1,600m	8
			GNR	SABOT	H1T-FRT	STA	2,000m	8
			GNR	SABOT	H1T-FLK	MOV	2,200m	12
66	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	SABOT	H1T-FRT	STA	1,400m	11
			GNR	COAX	E(7)-FRT	STA	600m	12
			GNR	SABOT	H1T-FLK	MOV	1,400m	13
			GNR	MPAT	M1T-FLK	MOV	1,600m	14
67	DEGRADED	DEFENSE	GNR	SABOT	H1T-FRT	STA	1,200m	6
			GNR	SABOT	H1T-FLK	MOV	1,600m	9
68	DEGRADED	OFFENSE	GNR	COAX	E(7)-FRT	STA	400m	10
			GNR	SABOT	H1T-FRT	STA	1,600m	11
69	SIMULTANEOUS	DEFENSE	GNR	COAX	E(7)-FRT	STA	600m	8
			VC	CAL .50	L2T-FRT	STA	1,200m	11
			GNR	MPAT	M1T-FRT	STA	1,800m	8

LEGEND

CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	STA	STATIONARY
EM	ENGAGEMENT MODIFIER	VC	VEHICLE COMMANDER
GNR	GUNNER		

Figure 6-6. Table VI, qualification scenario requirements

TIME AND THROUGHPUT—TABLE VI

6-34. The throughput expectation of this table is 14 crews per day. Depending on maintenance or other unforeseen issues, recommend incorporating an additional half training day to the schedule. Figure 6-7 shows the expected throughput schedule based on the number of vehicles for firing and the unit's day and night engagement breakdown for the engagements.

CREW PLATFORM WEAPON SYSTEM THROUGHPUT REQUIREMENTS

		NUMBER OF ENGAGEMENTS					
	DAY	8	7	6	5	4	
	NIGHT	2	3	4	5	6	
NUMBER OF CREWS	10	15.25	16.00	16.50	17.25	18.00	HOURS TO COMPLETE
	11	16.25	17.00	17.75	18.50	19.25	
	12	17.50	18.25	19.00	20.00	20.75	
	13	18.50	19.50	20.25	21.25	22.00	
	14	19.75	20.75	21.50	22.50	23.50	
	15	21.00	22.00	23.00	24.00	25.00	
	16	22.00	23.00	24.25	25.25	26.25	
	17	23.25	24.25	25.50	26.50	27.75	
	18	24.25	25.50	26.75	28.00	29.00	
	19	25.50	26.75	28.00	29.25	30.50	
	20	26.50	28.00	29.25	30.50	32.00	

Note: Overall time requirements are based on a single firing lane and include 4 hours of range maintenance down time (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

Any time shown exceeding 24 hours will not be possible in a single range day without unit action to conduct the range with a sense of urgency during preparation to fire tasks and execution of the table including tactical movement between engagements.

Figure 6-7. Table VI, qualification, throughput expectations

Note. Time requirements overall are based on a single firing lane and include 4 hours of range maintenance downtime (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

AMMUNITION—TABLE VI

6-35. Figure 6-8 provides the ammunition requirements for Table VI, Qualification. Failure to forecast, schedule, or provide the BES devices or munitions violates the conditions of the engagements for readiness reporting.

TABLE VI, QUALIFICATION
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120mm TP-T M1002	8
CA69	CTG 120mm TPCSDS-T M865A1	17
AB86	CTG, 7.62mm 4 ball M80/1 TRCR M62 LNKD	450
A557	CTG, .50 cal, 4 ball /1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	19
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	19

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.



PYROTECHNICS

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	SIM	SIMULATION
CTG	CARTRIDGE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
LNKD	LINKED	TP-T	TARGET PRACTICE-TRACER
mm	MILLIMETER	TRACER	TRACER

Figure 6-8. Table VI, qualification, ammunition requirements

TADSS—TABLE VI

6-36. This course requires the use of the CMU. The CMU is available on the digital range facility scheduled (if equipped). Coordination with the scheduled range facility manager will determine unit responsibilities for installation, troubleshooting, maintenance, and use of the devices ahead of the training day(s). If the range does not have a CMU available, unit may draw the CMUR from the TADSS warehouse. The CMUR differs from the CMU in that it stores all run data on a solid-state drive on the vehicle, for use with the provided AAR suite in the CMUR kit.

6-37. The brigade commander must approve authorization for deviation from this requirement if TADSS are unavailable. Units should focus on training and reinforcing the skills in the direct fire kill chain on this table specifically with their thermal optics, day and night to best prepare them for the follow-on training events. Figure 6-9 shows the TADSS required or recommended for Table VI.

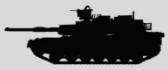


TABLE VI, QUALIFICATION
TRAINING AIDS, DEVICES, SIMULATORS,
AND SIMULATIONS REQUIREMENTS

DEVICE	NOMENCLATURE	REMARKS
CMU	Crew Module Unit/Integrated Player Unit	REQUIRED
CMUR	Crew Module Unit Recorder (Thru-Sight Video)	
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T	CONCURRENT TRAINING
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T, or M1002, HEAT-TP-T	CONCURRENT TRAINING
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T	CONCURRENT TRAINING
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER	CONCURRENT TRAINING
SP-1	BORESIGHT PANEL	REQUIRED

LEGEND

APFSDS-T	ARMOR PIERCING DISCARDING SABOT-TRACER	HEAT-TP-T	HIGH EXPLOSIVE ANTITANK TARGET PRACTICE TRACER
HEAT-MP-T	HIGH EXPLOSIVE ANTITANK MULTIPURPOSE TRACER	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER

Figure 6-9. Table VI, qualification, training aids, devices, simulators, and simulations requirements

PREPARE FOR TABLE VI

6-38. Units must coordinate for the appropriate training facility, equipment, targetry, training munitions, TADSS (if desired), and pyrotechnics to support Table VI. During the preparation phase, the unit should ensure the proofing team, VCEs, and other personnel receive training to standard to support their role as evaluators and trainers. This includes range officers in charge, range safety officers, and ammunition handlers.

TRAIN THE TRAINERS—TABLE VI

6-39. Typically, units have certified each VC and gunner as VCEs prior entering the live-fire density. Units must have certified evaluators to ensure the training objectives for the training table are set and to provide effective AARs to each crew.

6-40. Additional information on leader certification and train the trainer actions is found in TC 3-20.31. Units should review and plan for the appropriate training and certifications well in advance of the training event.

VEHICLE CREW EVALUATORS—TABLE VI

6-41. A trained and certified VCE team must be available to support prior to live fire to evaluate a gunnery density correctly. After certification, the unit must ensure sufficient VCEs are available to support the live-fire event. Evaluations of crew gunnery always come from outside the firing platoon element, and for qualification purposes, VCEs external to the battalion are required.

6-42. Depending on the size of the weapons training density (make-up gunnery, platoon, company, or battalion) and the type of range facility used, the number of evaluators may vary. Having the correct number and type of evaluators per firing range maximizes the unit's throughput of firing vehicles on the range, reduce range downtime, and provide for the highest quality evaluations. See TC 3-20.31 for more in-depth information on VCEs, the evaluation team, and the evaluation process.

6-43. To prepare the trainers, units provide—

- Commander training objectives.
- Conduct of the range briefing for the training event.
- Scenario and lane concept with crew tasks for training.
- Risk assessments.
- Identification of supporting doctrinal publications for use as primary references.
- TADSS, pyrotechnics, blanks, and BESs used during the training event (see appendix A for the training munitions requirements for the complete training strategy).

RECONNAISSANCE OF THE SITE—TABLE VI

6-44. Commanders use an authorized training facility for Table VI, Qualification. Commanders follow the installation's policies and procedures for formally scheduling the training location as far in advance as practical. See TC 3-20.31 for more in-depth information concerning range operations at the unit level.

6-45. Once scheduled, the commander, Master Gunner, platoon leaders and platoon sergeants conduct a reconnaissance of the training areas to—

- Verify sufficient space is available to support the entire unit through multiple training lanes.
- Ensure multiple iterations or rotations through the scenario are achievable with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Provide sand table or terrain board.
- Identify the ammunition supply point.
- Determine the conduct of the range or the flow of training to maximize the live-fire range time.
- Identify the range operating system and verify the training scenarios have been properly loaded.
- Schedule proofing of the range, based on the higher headquarters OPORD.
- Ensure requested TADSS are available if provided by the range facility.

ISSUE THE ORDER—TABLE VI

6-46. Commanders can issue an OPORD, WARNORD, or use the training schedule as necessary. The WARNORD should include the appropriate tasks, required leaders, and equipment needed, as well as the unit's training timeline including walk-through, rehearsals, and AARs. WARNORDs for external organizations must include sufficient reaction time for the appropriate personnel and equipment needed.

REHEARSE—TABLE VI

6-47. The unit uses all training resources, materials, and equipment available to conduct rehearsals of training events. During the rehearsal, commanders ensure their unit has sufficient time to train to the specified standard including AARs and retraining time. Commanders ensure their unit verifies optional scenarios that increase complexity when warranted.

6-48. Units should rehearse the training event from start to finish, and confirm—

- The VCEs and proofing team understand the training scenarios and tasks.
- Sufficient space is available to provide appropriate distances for engagements ranges and target dispersion.
- Analog and digital systems are operational within the organization and to the higher headquarters regardless of their location.
- Additional crew training packages [DA Form 8265, DA Form 8265-1, and appropriate CCFs (zero) documentation] are complete and provide for multiple iterations.
- Sufficient administrative areas are available.
- Review AAR capabilities. Use of thru-sight video systems is encouraged to increase the fidelity and quality of the AARs.
- Location of retraining for crews as necessary.
- Accessibility to crew simulator systems, plumb and synchronization ramps, tracking and manipulation panels, and additional bore sighting locations are available.

6-49. Once the unit completes the walk-through and training rehearsal, the commander makes any necessary adjustments to the plan and issues FRAGORDs as necessary.

EXECUTE TABLE VI

6-50. Once the unit arrives at the training location, they should—

- Conduct a safety briefing for the training event.
- Provide a conduct of the range briefing to establish the sequence of events for the training day.
- Conduct sensitive item checks prior to executing training.
- Receive briefing from the external VCE team.
- Establish the firing order.
- Identify the maintenance support area for any fire control or weapons issues on the range.
- Install TADSS as required.

6-51. The training unit conducts informal AARs of each crew completing a phase of training within the training mission. During training, the commander, executive officer, 1SG, and Master Gunner review the crew's performance. They follow the unit SOP, prescribed tactics, techniques, procedures, and the appropriate T&EOs, and review completed crew score sheets and roll-up documentation for clarity and completeness.

Note. The sequence of the engagements as well as which engagements are fired in a chemical environment are determined as unit policy directs.

ENGAGEMENT 60

6-52. The tanker commander engagement is fired from their position using the main gun at stationary and moving threats as shown in figure 6-10 and figure 6-11. Engagement 60 serves to train and evaluate the tank commander's ability to control their vehicle on an offensive engagement while simultaneously defeating multiple threats.

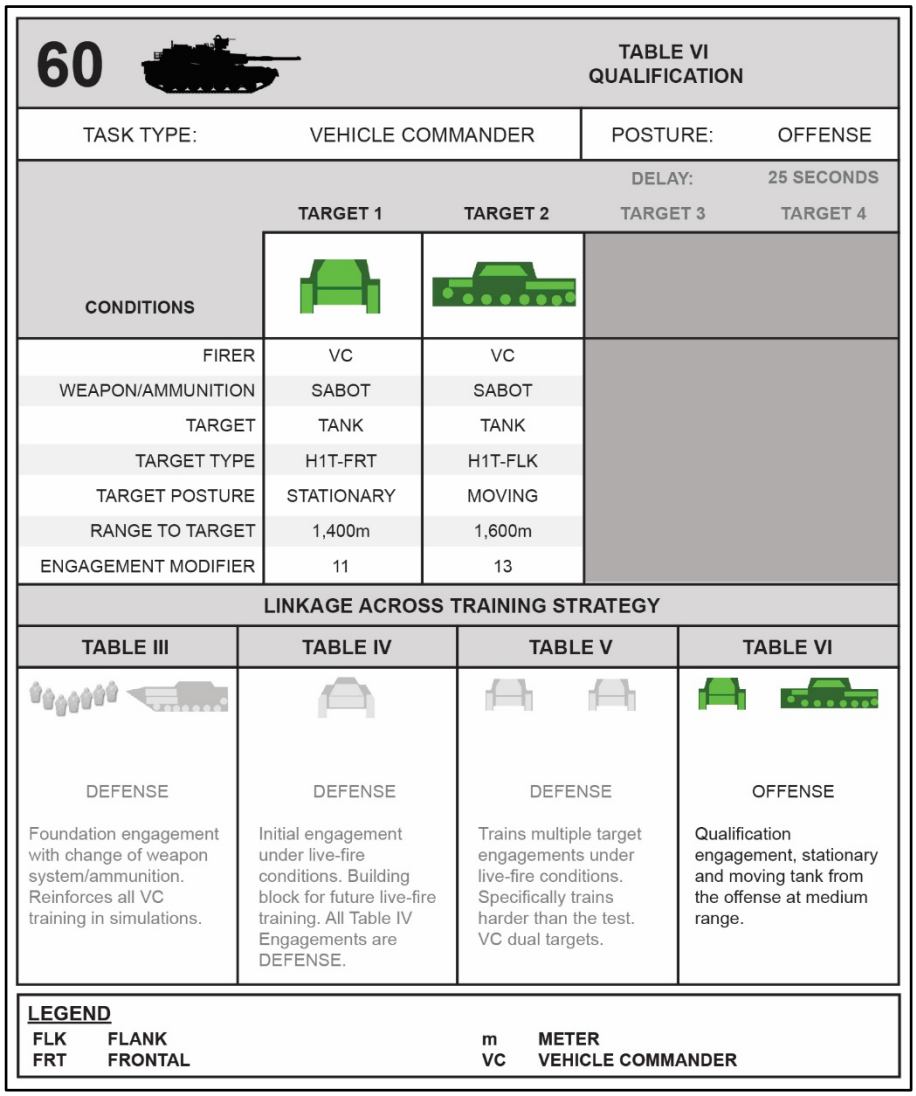


Figure 6-10. Engagement 60 overview

60

TARGET 1	TARGET 2	TARGET 3	TARGET 4
VEHICLE COMMANDER **OFFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

YOUR GUNNER'S POWER CONTROL HANDLES ARE INOPERATIVE. CONTINUE TO FIGHT. BATTLECARRY SABOT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANKS AND MOVING TANK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 6-11. Engagement 60 ammunition and script

ENGAGEMENT 61

6-53. Engagement 61 is a machine gun pure engagement for the gunner. It trains target detection, acquisition, and machine gun engagement techniques from the defense (see figure 6-12 and figure 6-13). Range bands are mid-range. Crews must tactically use the battle position and build stability in their forward and rearward movements.

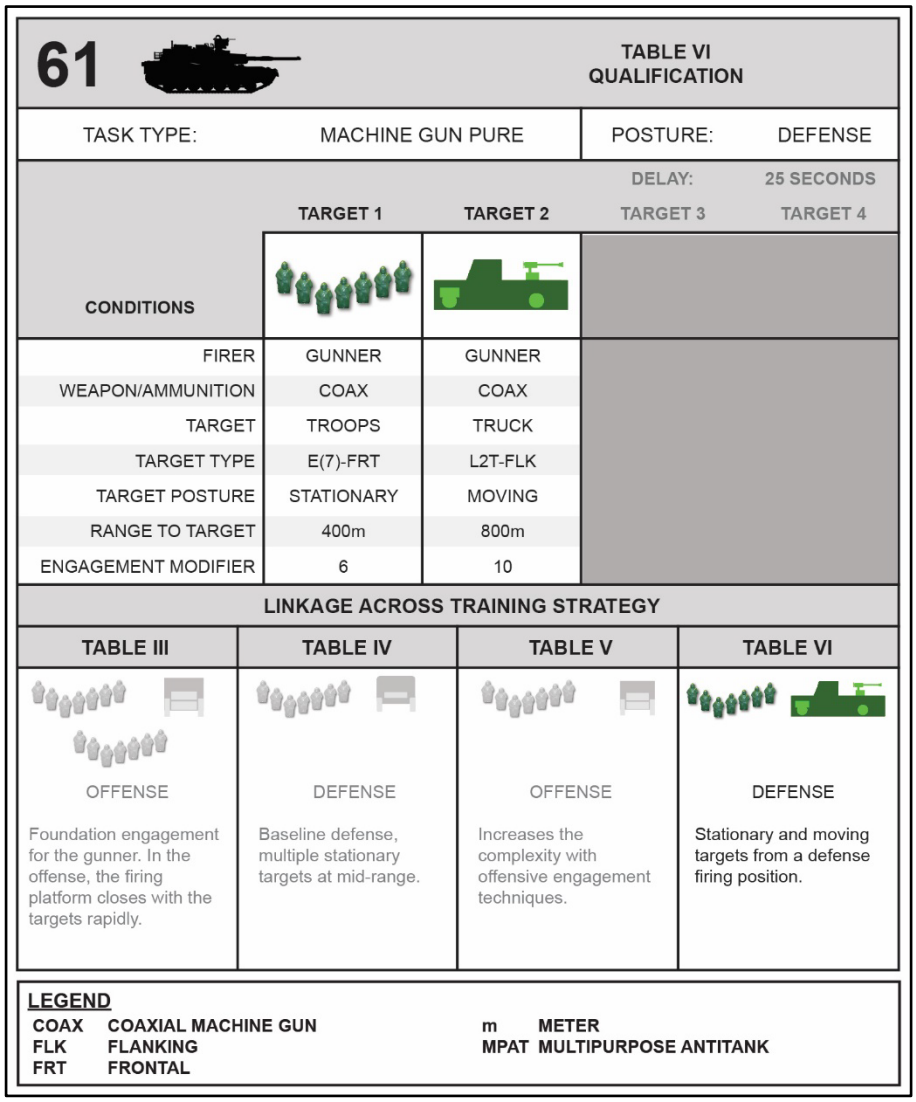


Figure 6-12. Engagement 61 overview

61

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE **DEFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS AND MOVING TRUCK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 6-13. Engagement 61 ammunition and script

ENGAGEMENT 62

6-54. While on the offense, the gunner engages multiple machine gun threats at close- and mid-range (see figure 6-14 and figure 6-15). Engagement 62 reinforces machine gun engagement techniques against stationary threats. The unit should observe the vehicle speed in relation to the close-range targets to ensure the firing platform does not bypass the threat.

62 

TABLE VI QUALIFICATION

TASK TYPE:	MACHINE GUN PURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	COAX	COAX	COAX	
TARGET	TROOPS	TRUCK	TROOPS	
TARGET TYPE	E(7)-FRT	L2T-FRT	E(7)-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	400m	800m	800m	
ENGAGEMENT MODIFIER	10	12	13	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	DEFENSE	OFFENSE
Multiple short-range coax engagements from the defense using TADSS.	Stationary and moving targets at close-range from a defensive position. All engagements on Table IV are fired from the DEFENSE.	Multiple machine gun targets at mid-range for the coax.	Firing on the move, multiple troops and truck at close and mid-range.

LEGEND

COAX	COAXIAL MACHINE GUN	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
FRT	FRONTAL		
m	METER		

Figure 6-14. Engagement 62 overview

62	TARGET 1	TARGET 2	TARGET 3	TARGET 4
MACHINE GUN PURE **OFFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			150		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

CHECK YOUR MACHINE GUNS, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	COAX
TARGET DESCRIPTION	TROOPS AND TRUCK WITH TROOP SUPPORT
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
COAX	**COAXIAL MACHINE GUN**	**REDCON**	**READINESS CONDITION**
KE	**KINETIC ENERGY**		

Figure 6-15. Engagement 62 ammunition and script

ENGAGEMENT 63

6-55. Engagement 63 provides the gunner main gun engagements from a defensive posture (see figure 6-16 and figure 6-17). This engagement requires the crew to coordinate the tactical movement from the defilade to the enfilade firing positions, ensuring appropriate gun tube clearance of the berm. Units should place the two main gun targets a minimum of 20 mils apart where they are not observable in narrow field of view.

63 

TABLE VI QUALIFICATION

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	H1T-FRT	H1T-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	1,400m	1,600m		
ENGAGEMENT MODIFIER	7	7		

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
OFFENSE	DEFENSE	OFFENSE	DEFENSE
Basic engagement with single stationary moving target using the main gun (TADSS).	Baseline multiple moving threats at mid range for the gunner with coax All engagements on Table IV are fired from the DEFENSE.	Canister engagement for mass troops engagement.	Firing two tanks with KE in the DEFENSE.

LEGEND

COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS
KE	KINETIC ENERGY		
m	METER		

Figure 6-16. Engagement 63 overview

63

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE **DEFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY SABOT, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANKS
METHOD	NEAR TANK FIRST
LOCATION	VICINITY _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 6-17. Engagement 63 ammunition and script

ENGAGEMENT 64

6-56. Engagement 64 is an offensive engagement using the main gun against a stationary and moving threat (see figure 6-18 and figure 6-19). This engagement may cause excessive obscuration at the firing vehicle while on the offense. It reinforces tactical movement through obscuration.

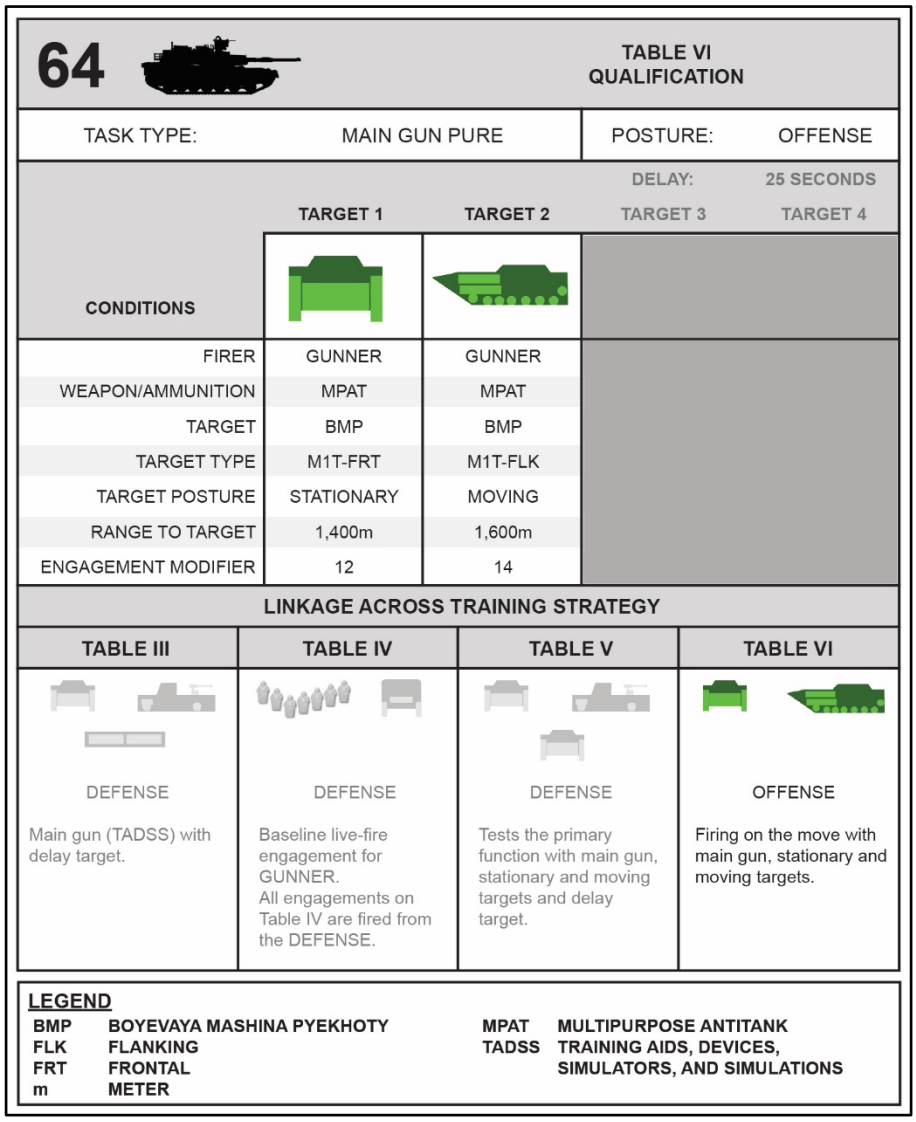


Figure 6-18. Engagement 64 overview

64

TARGET 1	TARGET 2	TARGET 3	TARGET 4
MAIN GUN PURE **OFFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	3				2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY MPAT, REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	PC AND MOVING PC
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 6-19. Engagement 64 ammunition and script

ENGAGEMENT 65

6-57. Engagement 65 challenges the crew with a change of weapon system and ammunition type from a defensive position (see figure 6-20 and figure 6-21). This is a complex engagement and requires the crew to tactically move from the defilade to the enfilade while managing their switchology, ammunition type, and conduct of fire. This is one of the most complex engagements for the crew to master.

65 

TABLE VI QUALIFICATION

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	DEFENSE

CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	25 SECONDS TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	MPAT	SABOT	SABOT
TARGET	TROOPS	BMP	TANK	TANK
TARGET TYPE	E(7)-FRT	M1T-FRT	H1T-FRT	H1T-FLK
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	MOVING
RANGE TO TARGET	400m	1,600m	2,000m	2,200m
ENGAGEMENT MODIFIER	6	8	8	12

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
OFFENSE	DEFENSE	OFFENSE	DEFENSE
Trains the crew's ability to prioritize threats presented. Change of weapon and ammo on the offense.	Simultaneous GUNNER and VC engagement. All engagements on Table IV are fired from the DEFENSE.	Complex engagement with change of weapon and ammunition on the offense.	Complex 4-target engagement with change of weapon and ammunition.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANKING	VC	VEHICLE COMMANDER
FRT	FRONTAL		

Figure 6-20. Engagement 65 overview

65	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/AMMUNITION **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3	1.5		50		3	3

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

BATTLECARRY MPAT, PREPARE SABOT, AND CHECK YOUR MACHINE GUNS.
REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND PC, TANK AND MOVING TANK IN SUPPORT
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 6-21. Engagement 65 ammunition and script

ENGAGEMENT 66

6-58. Engagement 66 challenges the crew with a change of weapon and ammunition during while on the offense (see figure 6-22 and figure 6-23). This is the most complex and rigorous engagement on this table. This engagement is designed to include the most changes to weapon and ammunition types requiring increased switchology awareness. Units should take additional time proofing this engagement to ensure it is presented to standard for all crews.

66 

TABLE VI QUALIFICATION

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	OFFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	SABOT	COAX	SABOT	MPAT
TARGET	TANK	TROOPS	TANK	BMP
TARGET TYPE	H1T-FRT	E(7)-FRT	H1T-FLK	M1T-FLK
TARGET POSTURE	STATIONARY	STATIONARY	MOVING	MOVING
RANGE TO TARGET	1,400m	600m	1,400m	1,600m
ENGAGEMENT MODIFIER	11	12	13	14

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFFENSE	DEFENSE	DEFENSE	OFFENSE
Change of weapon system from the defense. Baseline engagement skills with high probability threat array.	PC at mid-range from the defense. All engagements on Table IV are fired from the DEFENSE.	Change of weapon system for delay presentation in the defense.	Change of weapon system and ammunition. Complex engagement.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANKING	PC	PERSONNEL CARRIER
FRT	FRONTAL		

Figure 6-22. Engagement 66 overview

66	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF WEAPON/AMMUNITION **OFFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3	1.5		50		3	3

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

BATTLECARRY SABOT. CHECK YOUR MACHINE GUNS.
REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK WITH TROOPS, MOVING TANK WITH MOVING PC IN SUPPORT
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 6-23. Engagement 66 ammunition and script

ENGAGEMENT 67

6-59. Engagement 67 is a degraded engagement for the gunner's auxiliary sight using power controls. The gunner must apply the appropriate ballistic reticle for the stationary and moving threats (see figure 6-24 and figure 6-25). The gunner must clear the gun-target line effectively and control the movement of the vehicle.

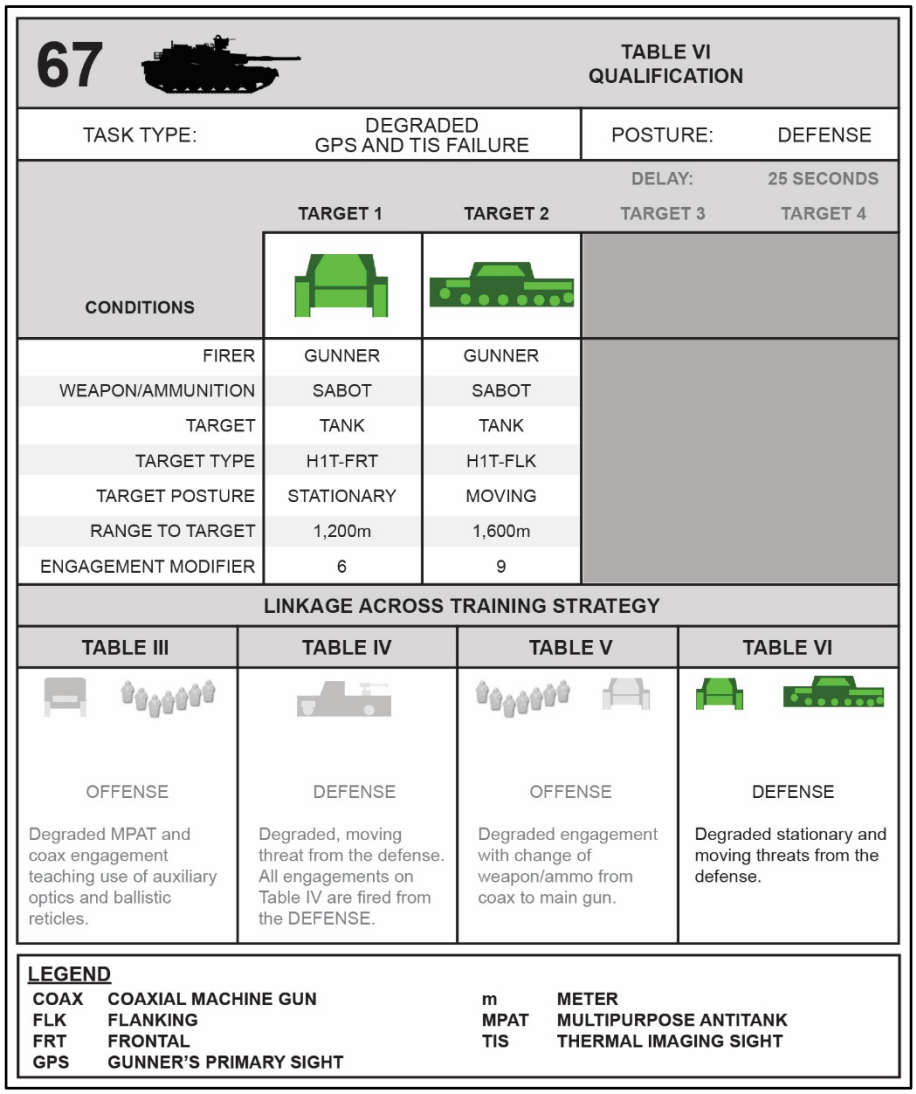


Figure 6-24. Engagement 67 overview

67

TARGET 1	TARGET 2	TARGET 3	TARGET 4
DEGRADED **DEFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

YOUR GPS AND TIS ARE OUT. CLOSE YOUR BALLISTIC DOORS.
BATTLECARRY SABOT. REPORT REDCON ONE.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TANK AND MOVING TANK
METHOD	MOST DANGEROUS FIRST
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
GPS	**GUNNER'S PRIMARY SIGHT**	**TIS**	**THERMAL IMAGING SIGHT**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 6-25. Engagement 67 ammunition and script

ENGAGEMENT 68

6-60. Engagement 68 is a degraded engagement where the gunner must engage a threat on the offense without a laser range finder (see figure 6-26 and figure 6-27). This engagement challenges the crew by using degraded gunnery techniques and reinforces battlecarry and battlesight preparation to fire, battlesight gunnery, and advanced target acquisition.

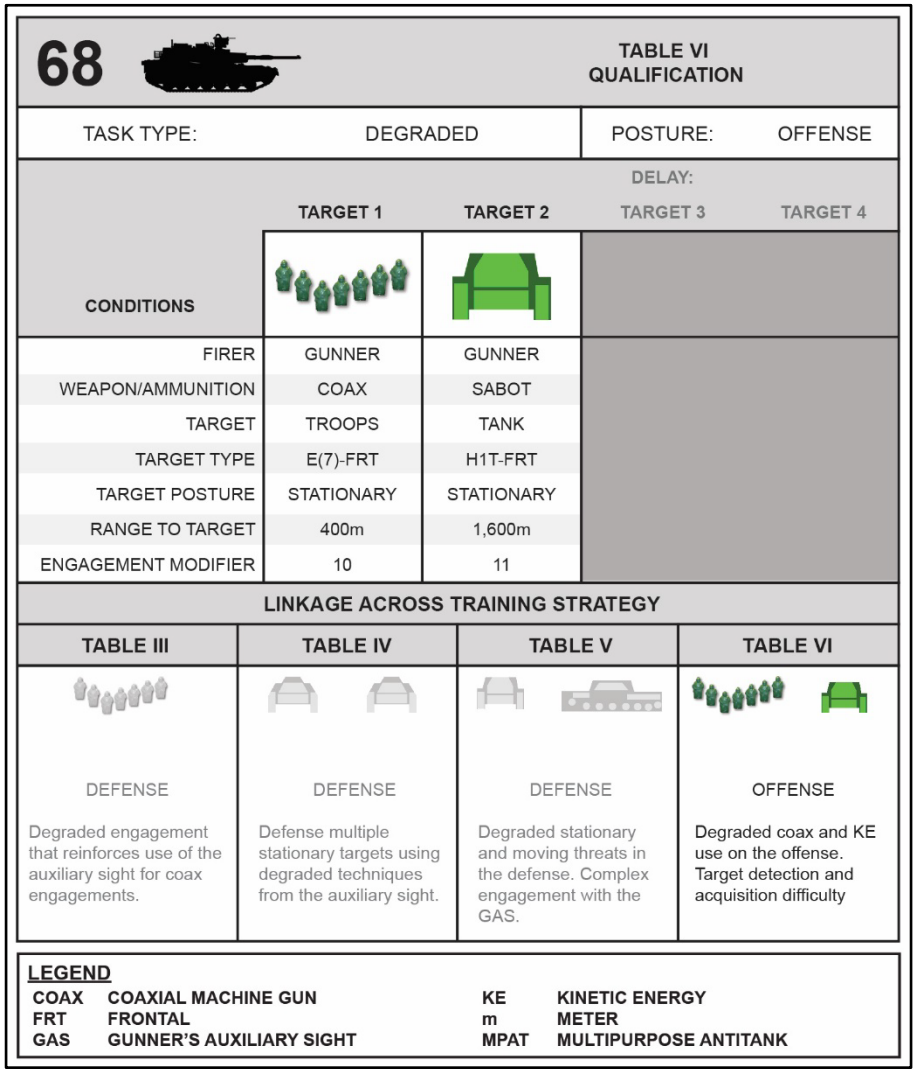


Figure 6-26. Engagement 68 overview

68

TARGET 1	TARGET 2	TARGET 3	TARGET 4
DEGRADED **OFFENSE**			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5			50		1	1

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR OFFENSIVE OPERATIONS. MOVE TO A SHORT HALT POSITION ALONG ROUTE _____

YOUR LASER RANGE FINDER IS OUT, USE ALTERNATE MEANS OF RANGE DETERMINATION, BATTLECARRY SABOT, CHECK YOUR MACHINE GUNS. REPORT REDCON ONE..

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND TANK
METHOD	
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**mm**	**MILLIMETER**
CAN	**CANISTER**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**

Figure 6-27. Engagement 68 ammunition and script

ENGAGEMENT 69

6-61. Engagement 69 is a simultaneous engagement fired from a defensive firing position where the gunner and VC must acquire and defeat threats using their machine guns and main gun (see figure 6-28 and figure 6-29). Units should use caution designing the engagement to ensure the tank commander's target is presented to the right side of the gunner's targets.

69 

TABLE VI QUALIFICATION

TASK TYPE:	SIMULTANEOUS	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	VC	GUNNER	
WEAPON/AMMUNITION	COAX	CALIBER .50	MPAT	
TARGET	TROOPS	TRUCK	BMP	
TARGET TYPE	E(7)-FRT	L2T-FRT	M1T-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	600m	1,200m	1,800m	
ENGAGEMENT MODIFIER	8	11	8	

LINKAGE ACROSS TRAINING STRATEGY

TABLE III	TABLE IV	TABLE V	TABLE VI
			
DEFENSE	DEFENSE	OFFENSE	DEFENSE
Simultaneous small arms engagement.	Simultaneous engagement from the defense. All engagements on Table IV are fired from the DEFENSE.	Simultaneous coax with caliber .50 engagement, followed by coax engagement on delay. Pintle caliber .50 engagement increases difficulty.	Simultaneous coax with caliber .50 engagement, followed by main gun target on delay.

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	VC	VEHICLE COMMANDER

Figure 6-28. Engagement 69 overview

69	TARGET 1	TARGET 2	TARGET 3	TARGET 4
SIMULTANEOUS **DEFENSE**				

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	1.5		50	50	2	2

PREPARE FOR ENGAGEMENT

_____ THIS IS _____

PREPARE FOR DEFENSIVE OPERATIONS IN BATTLE POSITION _____

CHECK COAX AND CALIBER FIFTY, BATTLECARRY MPAT. REPORT REDCON ONE, OVER.

PROMPT

ALERT	_____ THIS IS _____
WEAPON/AMMO	
TARGET DESCRIPTION	TROOPS AND TRUCK WITH PC IN SUPPORT
METHOD	SIMULTANEOUS
LOCATION	VICINITY _____ AND _____
RANGE	
CONTROLS	ENGAGE UPON POSITIVE IDENTIFICATION
EXECUTION	WEAPONS FREE, WEAPONS FREE.
CONTROLS	REPORT WHEN SECTOR CLEAR, OVER.

LEGEND

CAL .50	**CALIBER .50**	**MPAT**	**MULTIPURPOSE ANTITANK**
CAN	**CANISTER**	**PC**	**PERSONNEL CARRIER**
KE	**KINETIC ENERGY**	**REDCON**	**READINESS CONDITION**
mm	**MILLIMETER**		

Figure 6-29. Engagement 69 ammunition and script

ASSESS TABLE VI

6-62. The intent of the qualification course of fire is to train the crews within the organization on the appropriate conduct of fire skills during offensive and defensive postures against common threat arrays using the primary armament, coaxial machine gun, and commander's machine gun. Proper evaluation and assessment of crew performance is key to improving individual and crew skills prior to moving to collective live-fire events.

6-63. Each crew should receive a formal AAR following the guidelines found in TC 3-20.31. Each evaluator should use DA Form 8265 and DA Form 8265-1 as the basis for their evaluation, identifying the firing occasional information from the score sheet timelines. The evaluator and VC each review and sign the DA Form 8265-1.

Note. Certified VCEs externally evaluate Table VI, Qualification. Units coordinate with their higher headquarters for those personnel. Typically, the brigade combat team will train and certify those evaluators. If there is no external unit that can meet the requirements for the primary evaluator, brigade coordination outside the division may be required to provide the appropriate personnel to evaluate the crews (see TC 3-20.31). When that level of support is not feasible, the division commander (or equivalent) must authorize self-evaluation using senior subject matter experts.

6-64. Units should track the various firing information from the score sheets to identify where in the conduct of fire crews and the overall unit should apply additional training effort. Some of those indicators are—

- Target acquisition, detection, and identification.
- Time to fire.
- Time to kill.
- Opening and closing times for machine gun engagements.
- Gunner lay errors.
- Scanning techniques.
- Engagement techniques.
- Conduct of fire issues.
- Penalties by type.

RETRAIN TABLE VI

6-65. The unit Master Gunner maintains the unit roll-up by engagement. A subcategorized roll-up by platoons provides the commander a snapshot of training trends, strengths, and weaknesses. The Master Gunner should not only identify crews that did not achieve a passing standard, but also crews that struggled on specific engagement tasks. Once done, the unit can establish and conduct the appropriate focused retraining followed by a subsequent evaluation.

6-66. All crews must successfully complete the course of fire based on the standards for the engagements listed earlier in this chapter. No crew should proceed to a collective live-fire event until they have achieved the minimum standard on Table VI, Qualification.

6-67. Unit Master Gunners should include chair drills for the crews using the scenarios for each engagement for retraining purposes. Additional information on chair drills is in TC 3-20.31.

6-68. Any crew that disqualified for any reason may not re-fire without brigade commander approval after corrective training is complete. See Chapter 7 for additional information on disqualified crews.

DRIVER'S TRAINING FOR TABLE VI

6-69. Leaders should determine the number of miles driven during the day and night phases for their assigned drivers. This information should be recorded, including the miles driven, miles driven with the enhanced viewer, and any tactical (off-road) miles driven. The miles driven build the driver's experience base, mileage credit toward their Army-standard driver's license requirements, and cumulative miles, hours, and assignment time for the expert driver's badge for tracked vehicles.

RECORD INDIVIDUAL TASK PERFORMANCE—TABLE VI

6-70. Leaders track and train their Soldier's individual and collective tasks trained and evaluated using tools provided by the ATN such as the SULT and the DJB. These systems interface directly with the DTMS to record training and evaluation results.

> ***Note***. Leaders must be granted access by their commander or DTMS manager to enroll or assign their Soldiers the specific tasks from the ICTL that are trained and tested during the training event.

6-71. From within the SULT, the authorized leader is enabled to view, maintain, and update—

- Warrior tasks and battle drills.
- MOS-specific individual critical tasks.
- Unit-mandated training tasks.
- Supporting T&EOs (access dependent on proponent distribution restrictions).

6-72. Leaders should update their Soldier's individual training records for training and evaluation of the following tasks, based on their assigned position. This is not an

all-inclusive list of the trained and tested tasks for this event. Leaders should adjust based on the unit's additions to the event.

6-73. This ensures historical data is available throughout the Army force generation training cycle for the chain of command to assess strengths and weaknesses of crews and address these concerns in upcoming GST training. The most current GST records must accompany the unit or crew throughout the entire weapons training density.

UPDATING INDIVIDUAL TRAINING RECORDS—TABLE VI

6-74. Leaders update their SULT application with the appropriate training and evaluation outcomes for their crew members. The lists provided show the touch points associated with this training event.

6-75. Tasks that are included within this event for the crew are found in figure 6-30 on page 315 through page 322. Leaders must determine if the tasks were effectively trained to the Soldier and the level of proficiency based upon their performance. Leaders then update the tasks for each Soldier based on their assessment.



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-091-1023	Conduct Vehicle Resupply	Yes			
171-121-3009	Control Techniques of Movement	Yes			
171-121-4020	Conduct Live Fire Ranges	Yes			
171-121-4023	Conduct Live Fire Range Operations	Yes			
171-121-4028	Plan Occupation of a Battle Position	Yes			
171-121-4030	Conduct Vehicle Tactical Navigation	Yes			
171-121-4045	Conduct Troop Leading Procedures	Yes	Yes		
171-121-4051	Prepare a Situation Report (SITREP)	Yes			
171-121-4057	Perform Techniques of Movement	Yes			
171-121-4062	Issue an Operation Order (OPORD)-Fragmentary Order (FRAGORD)	Yes			
171-121-4064	Prepare Logistical Status (LOGSTAT) Reports	Yes	Yes		
171-121-4065	Direct Vehicle Tactical Movement	Yes			
171-121-4067	Execute Platoon Precombat Operations	Yes			
171-122-1012	Perform Operator Maintenance on an M240 Series Machine Gun	Yes	Yes	Yes	Yes

Figure 6-30. Table VI, Qualification, individual tasks touch points



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-122-1061	Maintain Property Accountability	Yes	Yes	Yes	Yes
171-123-1000	Direct Occupation of a Vehicle Fighting Position	Yes			
171-123-1021	Prepare Ammunition for Stowing		Yes	Yes	Yes
171-123-1023	Maintain Operator's Part of Equipment Record Folder			Yes	
171-123-1079	Troubleshoot Malfunctions on an M240-Series Machine Gun		Yes		Yes
171-123-1090	Perform Preventive Maintenance on Basic Issue Items (BII)	Yes	Yes	Yes	Yes
171-123-3001	Supervise Personnel Handling Ammunition	Yes	Yes		
171-123-4020	Perform Operator Maintenance on Gunner's Primary Sight (GPS)	Yes	Yes		
171-126-1055	Refuel an M1- Series Tank	Yes	Yes	Yes	Yes
171-126-1125	Perform Main Gun Misfire Procedures on an M1- Series Tank	Yes	Yes		
171-131-0016	Demonstrate Target Acquisition Methods	Yes	Yes		
171-131-2009	Perform Detailed Disassembly/ Assembly of the M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2010	Perform Detailed Disassembly and Assembly of the M2 Machine Gun	Yes	Yes	Yes	Yes
171-131-2012	Determine the Effects of Error Budget on Main Gun Accuracy	Yes	Yes		

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-131-2014	Perform Detailed Disassembly-Assembly of an M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-131-2017	Identify Ammunition Container Markings	Yes	Yes	Yes	Yes
171-131-2077	Repair Malfunctions of M240 Machine Gun	Yes	Yes	Yes	Yes
171-131-2078	Repair Malfunctions of M2 Flex Machine Gun	Yes	Yes	Yes	Yes
171-138-0015	Conduct Advanced Vehicle Identification	Yes	Yes		
171-138-0017	Identify Restricted and Suspended Ammunition	Yes	Yes		
171-138-0018	Communicate the Engagement of Targets from an M1A2 SEP Tank	Yes	Yes		
171-138-0027	Conduct Alternative Range Determinations	Yes	Yes		
171-150-0001	Operate Intercommunications Set AN/VIC-3(V) on an M1 Series Tank	Yes	Yes	Yes	Yes
171-150-0002	Place the Enhanced Position Locating Reporting System (EPLRS) on an M1A2 SEP Tank into Operation	Yes	Yes		
171-150-0010	Operate the Turret Systems Using the Commander's Display Unit (CDU)	Yes	Yes		
171-150-0098	Perform Built-In Tests (BITs) on the Commander's Display Unit (CDU)	Yes	Yes		
171-19K-1020	Drive an M1A2 SEP Tank			Yes	
171-19K-1023	Prepare the Driver's Station for Operation on an M1A2 SEP Tank			Yes	

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1024	Prepare the Loader's Station for Operation on an M1A2 SEP Tank				Yes
171-19K-1025	Operate the Engine on an M1A2 SEP Tank			Yes	
171-19K-1026	Secure the Loader's Station on an M1A2 SEP Tank				Yes
171-19K-1040	Secure the Driver's Station on an M1-Series Tank			Yes	
171-19K-1043	Perform Fuel Transfer Procedures on an M1-Series Tank			Yes	
171-19K-1061	Operate Tank Urban Survivability Kit (TUSK) Autoflug Driver's Seat			Yes	
171-19K-1123	Service the Air Induction System on an M1A2 SEP Tank	Yes	Yes	Yes	Yes
171-19K-1143	Inspect the Hydraulics on an M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1149	Conduct Preventive Maintenance Checks and Services (PMCS) on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1150	Troubleshoot an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1237	Remove the Loader's M240 Machine Gun on an M1-Series Tank	Yes	Yes	Yes	Yes
171-19K-1239	Unload the 120-MM Main Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1240	Load an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes
171-19K-1241	Unload an M240 Machine Gun on an M1-Series Tank	Yes	Yes		Yes

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-1244	Load the 120-MM Main Gun on an M1-Series Tank		Yes		Yes
171-19K-1245	Install the Loader's M240 Machine Gun on an M1-Series Tank				Yes
171-19K-1250	Stow Ammunition on an M1-Series Tank	Yes	Yes		Yes
171-19K-1251	Service The 120-MM Main Gun On An M1 Series Tank	Yes	Yes	Yes	Yes
171-19K-1280	Inspect 120-MM Ammunition for Serviceability	Yes	Yes	Yes	Yes
171-19K-1281	Identify 120-MM Main Gun Ammunition	Yes	Yes	Yes	Yes
171-19K-2001	Perform Operator Maintenance on the 120-MM Breechblock Assembly		Yes		Yes
171-19K-2002	Supervise Preventive Maintenance Checks and Services (PMCS)	Yes			
171-19K-2006	Prepare a Tank Sketch Card for an M1-Series Tank	Yes	Yes		
171-19K-2200	Prepare the Gunner's Station for Operation on an M1A2 SEP Tank	Yes	Yes		
171-19K-2201	Secure the Gunner's Station on an M1A2 SEP Tank	Yes	Yes		
171-19K-2203	Operate the Improved Gunner's Control Display Panel (iGCDP)	Yes	Yes		
171-19K-2210	Boresight the M1A2 SEP Tank	Yes	Yes		
171-19K-2212	Engage Targets with the Coaxial from the Gunner's Station	Yes	Yes		

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-2236	Engage Targets with the Main Gun from the Gunner's Station		Yes		
171-19K-3001	Prepare the Position/Navigation System for Operation	Yes			
171-19K-3004	Secure the Commander's Station on an M1A2 SEP Tank	Yes			
171-19K-3008	Operate the ICDU in Vehicle Systems Mode on an M1A2 SEP Tank	Yes			
171-19K-3009	Operate the Improved Commander's Display Unit (ICDU) in Diagnostics Mode on an M1A2 SEP Tank	Yes			
171-19K-3010	Operate the ICDU in Command, Control, and Communications Mode	Yes			
171-19K-3011	Operate the Commander's Tactical Display (CTD) Input Device	Yes			
171-19K-3012	Operate Commander's Independent Thermal Viewer (CITV)	Yes			
171-19K-3013	Prepare the Commander's Station for Operation on an M1A2 SEP Tank	Yes			
171-19K-3101	Perform Diagnostics Mode Maintenance on the ICDU	Yes			
171-19K-3201	Load a Caliber .50 Browning M2 HB Flex Machine Gun	Yes			
171-19K-3202	Unload a Caliber .50 Browning M2 HB Flex Machine Gun	Yes	Yes	Yes	Yes
171-19K-3207	Engage Targets With a Caliber .50 M2 Heavy Barrel (HB) Flex Machine Gun	Yes			
171-19K-3211	Direct Machine Gun Engagements on an M1-Series Tank	Yes			

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)



TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-19K-3212	Acquire Targets from an M1-Series Tank	Yes	Yes		
171-19K-3219	Engage Targets with the Main Gun from the Commander's Station	Yes			
171-19K-3222	Engage Targets with an M240 in the Commander's Weapon Mount	Yes			
171-19K-3223	Direct Main Gun Failure-To-Fire Procedures on an M1A2 SEP Tank	Yes	Yes		Yes
171-19K-3224	Operate the Commander's Weapon Station Sight (CWSS)	Yes			
171-19K-3232	Direct Main Gun Engagements on an M1-Series Tank	Yes			
171-19K-3233	Engage Targets with the Coax from the Commander's Station	Yes			
171-19K-4001	Execute Tank Platoon Precombat Operations	Yes			
171-300-0048	Apply the Detect, Identify, Decide, Engage, and Assess (DIDEA) Process	Yes	Yes		
171-300-0049	Gain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-300-0052	Maintain Situational Awareness as an Individual	Yes	Yes	Yes	Yes
171-309-0650	Inspect DA Form 5988-E or DA Form 2404	Yes	Yes	Yes	Yes
171-928-0001	Install the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0002	Remove the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)

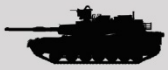


TABLE VI, QUALIFICATION
INDIVIDUAL TASK TOUCH POINTS
CONTINUED

TASK NUMBER	TITLE	TANK COMMANDER (TC)	GUNNER	DRIVER	LOADER
171-928-0005	Supervise Installation of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0006	Supervise the Removal of the Thru-Sight Video-Recorder (TSV-R)	Yes			
171-928-0009	Perform Pre-Operational Set-Up Procedures for the TSV-R	Yes	Yes		
171-928-0010	Operate the Thru-Sight Video-Recorder (TSV-R)	Yes	Yes	Yes	Yes
171-928-0011	Perform PMCS on the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0012	Troubleshoot the Thru-Sight Video (TSV) System	Yes	Yes	Yes	Yes
171-928-0013	Conduct an After-Action Review Using the Thru-Sight Video (TSV) System	Yes	Yes		
171-COM-4079	Send a Situation Report (SITREP)	Yes			
171-COM-4080	Send a Spot Report (SPOTREP)	Yes			

Figure 6-30. Table VI, Qualification, individual tasks touch points (continued)

Chapter 7
Qualification Standards

The crew tables culminate in the evaluation of the crew's ability to destroy threat targets using full caliber ammunition both day and night. Qualification on Table VI is a prerequisite for crews to advance to collective live-fire training.

Crew Table VI, Qualification, is the record course of fire used to determine the live-fire proficiency of a crew platform. Table VI serves as the commander's assessment of lethality and proficiency of the crew platform. This qualification is required by AR 350-1 and described as a metric of unit readiness within AR 220-1. Crew platform qualification is the cornerstone of company, battalion or squadron, and brigade combat team readiness.

OVERVIEW OF TABLE VI

7-1. Crew Table VI, Qualification, is the Army's standard demonstration of a crew's employment proficiency the crew platform during a live-fire event. Crews must successfully complete Table VI, Qualification, to progress to higher echelon live-fire collective events. Crew qualification is also used as prerequisites for additional training, certifications, and functional courses.

7-2. All crew platform tables include multiple qualification criteria to determine when a crew is qualified. The multiple qualification criteria are not waiverable on the qualification table. The qualification requirements are discussed in the next sections.

Qualified Crew

A qualified crew is a VC and gunner combination that successfully completes crew platform, Table VI, Qualification and have not met any of the condemnation criteria of the qualification period.

TERMS OF REFERENCE

7-3. Units must be familiar with the training terminology used to describe the various components of proficiency, qualification, and readiness. The following terms are used within this appendix when discussing qualification.

QUALIFICATION

7-4. A qualified crew is a VC and gunner combination that successfully completes crew platform, Table VI, Qualification and have not met any of the condemnation criteria of the qualification period.

QUALIFICATION DURATION

7-5. The length of time a qualification is valid provided all other qualification conditions exist. For crew platforms, the qualification duration is 12months.

PREREQUISITES

7-6. Training events prior to live-fire that must be successfully completed by the Soldier or crew. Official records of the training must be maintained for a minimum of 12 months.

EXTERNAL EVALUATION

7-7. Qualification events require external evaluations by certified VCEs. Evaluators are typically external to the battalion or squadron (see figure 7-1). For some units in remote locations, the unit must conduct the evaluations with trained leaders within the organization. In those circumstances, the evaluator for any crew should not have influence over the promotion potential or be in any professional competition with the VC or gunner.

EVENT	EXTERNAL TO	REMARKS
Table VI, Crew Platform Qualification	Battalion/ Squadron	Typically tasked within brigade.

Figure 7-1. External evaluations, crew platforms

QUALIFICATION PERIOD

7-8. The period that begins the day a qualification is awarded and continues for 365 days. This term is used to describe the time since qualification occurred.

CONDEMNATION CRITERIA

7-9. The rules that determine if any given qualification is still valid. For crew platforms, these rules are time, key leader turn over, and commander assessment.

MULTIPLE-QUALIFICATION CRITERIA

7-10. The rules used to crew platform live-fire to determine their qualification status or rating based on their performance during Table VI's engagements.

QUALIFICATION STANDARDS

7-11. Crew Table VI, Qualification, is the record course of fire used to determine the live-fire proficiency of a crew platform. Table VI serves as the commander's assessment of lethality and proficiency of the crew platform. This qualification is required by AR 350-1 and described as a metric of unit readiness within AR 220-1. Crew platform qualification is the cornerstone of company, battalion or squadron, and brigade combat team readiness.

7-12. Crew Table VI, Qualification, is the Army's standard demonstration of a crew's employment proficiency the crew platform during a live-fire event. Crews must successfully complete Table VI, Qualification, to progress to higher echelon live-fire collective events. Crew qualification is also used as prerequisites for additional training, certifications, and functional courses. Certified, experienced leaders external to the unit evaluate crew platforms on the qualification course of fire.

7-13. Crew qualification uses multiple-qualification criteria to determine the live-fire proficiency. To qualify on Table VI, the qualification course of fire, the crew must at a minimum successfully:

- Qualify 7 of 10 engagements by achieving a minimum of 70 points on all targets presented within the engagement overall.
- Score a minimum of 700 points out of a possible 1,000 points, overall.
- Qualify a minimum of one day engagement and one night engagement.

7-14. With proper training and adherence to the training strategy, units should achieve qualification on the first run attempt (termed "first run") on a minimum of 90 percent of their crews.

First Run Qualification

Units that fail to achieve 90 percent qualified crews on their first run, which is often referred to as Q1 indicate a failure to train the necessary skills at the company and troop level.

7-15. The qualification standards for heavy tank crews are listed in figure 7-2. These standards establish the reporting requirements for crew platforms for readiness reporting.

QUALIFICATION DURATION: 12 months	
PREREQUISITES Each TANK COMMANDER/GUNNER COMBINATION must successfully complete:	
Table I *GST*	Table I between T-6 and T-execution of the combat training density for qualification.
Table II *STX-V*	Table II and III between T-6 and T-execution of the combat training density for qualification.
Table III *STX (Drills)*	
LIVE FIRE TRAINING Each TANK COMMANDER/GUNNER COMBINATION successfully completes:	
Table IV *Basic*	All appropriate optics zeroing, screening, or calibration procedures within 30 days of live fire training.
Table V *Practice*	The practice course of fire within the previous qualification period. Units should successfully complete Table V prior to conducting the qualification course of fire.
STANDARD Each TANK COMMANDER/GUNNER COMBINATION successfully completes:	
Table VI *Qualification* *or* *Table A* *Austere* *Qualification*	An authorized qualification course of fire within the last qualification period, has not triggered any condemnation criteria, and has met the minimum qualification standards listed in the respective training publication.
Note: Crew (TC/Gunner combination, as directed) must successfully complete Table VI prior to executing any collective live-fire event.	

LEGEND

GST	**GUNNERY SKILLS TEST**	**T-**	**TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION]**
STX	**SITUATIONAL TRAINING EXERCISE**		
STX-V	**SITUATIONAL TRAINING EXERCISE-VIRTUAL**	**TC**	**TANK COMMANDER**

Figure 7-2. Crew platform qualification standards

CREW PLATFORM RATINGS

7-16. Crew evaluation basis is on their level of competence on their platform using the standard evaluation procedures as described in the platform's training publication. The end state for each crew after completing Table VI is a crew that is confident and competent to a standard that best prepares them for combat.

7-17. The crew rating is an overall snapshot of the performance on the crew qualification table that provides commanders an overview of the crew's performance and competence employing their platform. It is an indicator of unit readiness and training deficiencies for future training events.

7-18. Crews will receive an overall qualification rating for Table VI, Crew Qualification, based on the multiple-qualification criteria as outlined in figure 7-3. Commanders are authorized to award crewmembers the appropriate weapons qualification badge based on the live-fire proficiency event rating including the corresponding qualification clasp.

 QUALIFICATION RATINGS	
RATING	**THE CREW MUST**
DISTINGUISHED 	On the first attempt to qualify (FIRST RUN): • Qualify 9 of 10 engagements and • Score a minimum of 900 points of a possible 1,000 and • Qualify a minimum of 3 day and 1 night engagements.
SUPERIOR 	On the FIRST RUN: • Qualify 8 of 10 engagements and • Score a minimum of 800 points of a possible 1,000 and • Qualify a minimum of 2 day and 1 night engagements.
QUALIFIED 	On the FIRST RUN: • Qualify 7 of 10 engagements and • Score a minimum of 700 points of a possible 1,000 and • Qualify a minimum of 1 day and 1 night engagements.
NO BADGE or CLASP AUTHORIZED	When more than one attempt to qualify is conducted in order to meet the minimum standards.

Figure 7-3. Crew platform qualification badges authorized

7-19. When units require multiple attempts to qualify, units traditionally classify them by the maximum number of iterations of any engagement on the course of fire as described in figure 7-4.

QUALIFICATION AFTER MULTIPLE ATTEMPTS	
RATING	**INABILITY TO ACHIEVE STANDARD BY**
Q2	Failed to achieve Qualification or Certification standards on the first run, where one or more engagements were fired TWO times by the crew to achieve the minimum qualification standards.
Q3	Failed to achieve Qualification or Certification standards on the first run, where one or more engagements were fired THREE times by the crew to achieve the minimum qualification standards.
Note: The number following the "Q" indicates the largest number of iterations the crew executed any single engagement to achieve the minimum qualification requirements. There is no "Q1" rating as the crew should therefore receive a QUALIFIED, SUPERIOR, or DISTINGUISHED rating.	

Figure 7-4. Qualifying with multiple attempts

7-20. The "Q#" ratings are used to identify weak performing crews that require additional training to achieve the appropriate readiness level expected of their MOS, assigned position, and unit readiness. Beyond the crew's score, Q# ratings provide a rapid indication to the commander about where training deficiencies or gaps are present.

> ***Note***. For an example of the Q# rating, a crew refires the 62 engagement 3 times on Table VI to achieve the required 700 minimum points with 7 qualified engagements. As the 62 engagement was fired multiple times (three in this case), the crew is rated qualified as Q3.

7-21. Units that train according to the training strategy throughout the training period with proactive leadership involvement will achieve the desired training outcomes. These units typically achieve the benchmarks listed in figure 7-5.

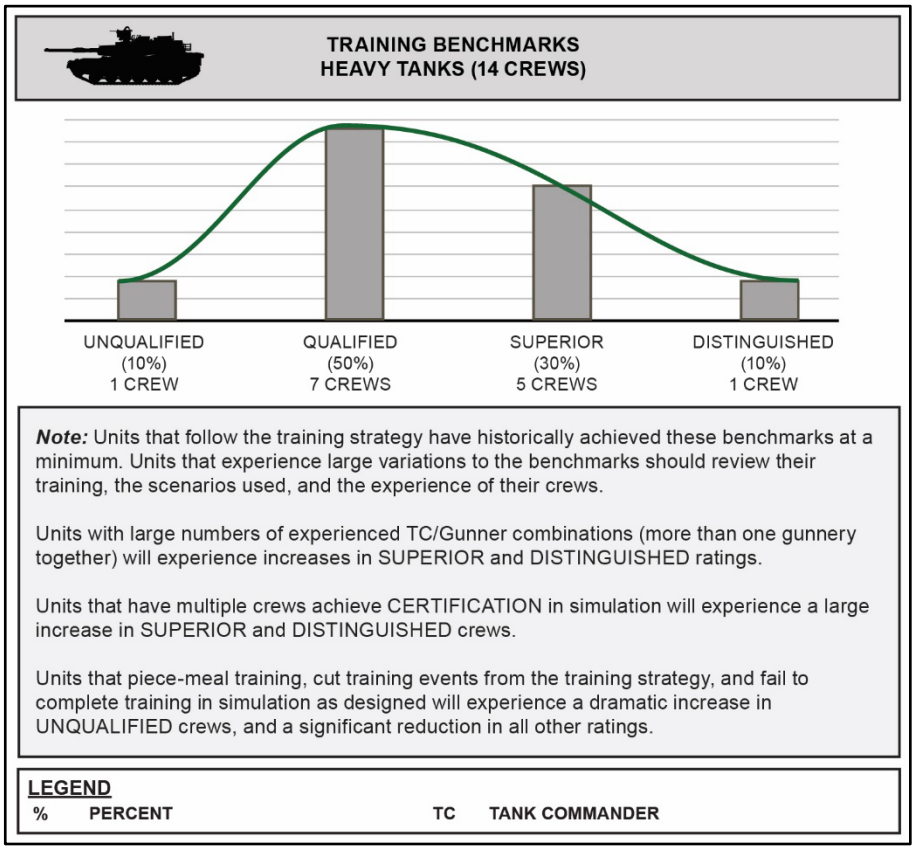


Figure 7-5. Training benchmarks achieved by following the training strategy

QUALIFICATION RE-FIRES

7-22. If a crew fails to qualify, they must re-fire select engagements for qualification. The highest rating that a crew can earn when re-firing is QUALIFIED.

7-23. A crew re-fires only the engagements that they failed to achieve the minimum standard. Units should initially focus on those nonqualified engagements that provide the most points to gain. A crew re-fires only the number of engagements required to obtain a qualified rating.

7-24. AR 220-1 and AR 350-1 delineates the qualification standards reporting requirements. They relate directly to the individual and collective training proficiency goals of the readiness model found in AR 525-29.

DISQUALIFICATION

7-25. A disqualification is the immediate removal from live training of any unsafe crew until the crew satisfactorily completes a recertification program. Disqualification is a critical failure in the safe conduct of the range by leaders using weapons or weapon systems in such a manner that has the potential to injure or kill Soldiers or civilians, or excessive damage to government property.

7-26. The following is a list of disqualification criteria:

- A crew that performs any actions listed in the "immediate disqualification" section of DA Form 8265-1.
- A crew that performs three each 30-point penalties as listed on DA Form 8265-1 during the same table.
- A crewmember or entire crew can be disqualified and require recertification for actions not associated with firing.
  - The unit commander may disqualify individuals or crews that consistently perform unsafe acts during non-firing or preparation tasks.
  - This type of disqualification will be at the discretion of the unit commander.

7-27. Any crew disqualified for any reason may not re-fire without brigade commander approval after corrective training is complete. Corrective training for disqualified crews includes, at a minimum, repeating and successful completion of:

- Table I, GST.
- Table II, STX-V. GTLF on the authorized training system.
- Table III, STX.

7-28. Disqualified crews indicate a significant lack of awareness for safety on the vehicle. The requirement for retraining on Tables I, II, and III, at a minimum, may be waived by the first general officer in the chain of command and may not be delegated.

Note. The battalion or squadron commander is the approving authority for all recertification. A commander may impose additional retraining requirements as desired to ensure the crew's safety and effective performance during live-fire training.

SUSTAINING CREW PROFICIENCY

7-29. Once the element has successfully completed their qualification event, the unit must consider how the condemnation criteria impact their subordinate's proficiency. The following section describes how crew platforms maintain their proficiency, how to identify when a proficiency rating has triggered one or more condemnation criteria, and any options the commander can consider to lessen or mitigate those impacts.

CREW PLATFORM CONDEMNATION CRITERIA

7-30. Qualifications remain valid until one of the condemnation criteria is met. The qualification condemnation criteria for crew platforms are noted in paragraphs 7-31 through 7-34.

Time

7-31. Twelve months is the maximum allowable time before recertification. This is the maximum qualification duration for any qualification, certification, or proficiency rating.

Key Leaders

7-32. The minimum identified key leaders on the crew platform (tank commander and gunner for the heavy tank) are no longer assigned to their qualified position.

Commander Assessment

7-33. Any commander within the chain of command determines the crew no longer maintains crew platform proficiency for any reason. Any condemnation based on the commander's assessment will instigate immediate retraining.

NO ALTERATIONS TO THE CONDEMNATION CRITERIA AUTHORIZED

Units may not alter, change, or modify the condemnation criteria. Evaluation commanders have the option, based on their assessment of the element, to condemn any proficiency rating they are authorized to assign.

7-34. Once any crew loses their qualification status that crew must be removed from the battle roster. Once removed from the battle roster, commanders and their advisors review the potential to maintain the remaining crew members on either the crew roster or cross-train roster based on each situation.

TALENT MANAGEMENT

7-35. Commanders can mitigate the impacts to their unit's proficiency in a variety of methods. Talent management skills before, during, and after conducting the crew platform training strategy is required by leaders to ensure the maximum proficiency is maintained and sustained within the larger organization. Crew platform qualification has a direct impact on the unit's overall readiness and contribute to the unit's level of proficiency.

7-36. To best manage crew turbulence when establishing crew rosters, the commander and staff consider the following process outlined in paragraphs 7-37 through 7-46 on page 334.

Identify

7-37. Identify high performing Soldiers that demonstrate technical and tactical understanding who are prepared for increased responsibility. Consider their previous assignments and experience for potential assignment as a gunner or VC. Identify the Soldier's year month available or date of expected return from overseas assignment for permanent change of station. Determine those Soldiers eligible for stabilization following established Army personnel policies.

Assess

7-38. Units must assess new Soldier and crewmember proficiency on their platform. Commanders that receive new leaders who achieved proficiency within the last qualification period have assessment options to maintain element qualifications. Commanders can assess two previously qualified key leaders from different positions (tank commander or gunner) to determine their proficiency status if they are assigned together as a crew. This is the least preferred method of talent management and requires the commander to make assessments using previous crew records, sustainment training in simulations, and other assessments to determine their proficiency status.

Assign

7-39. Select the tank commander/gunner combinations together. This maximizes the key leader's longevity and future proficiency ratings more stable. Assign each crewmember to their position on their potential and longevity. Place those leaders in the next higher position (gunner to VC, or driver to gunner, for example).

Transfer

7-40. When promotions occur, commanders should make every effort to keep the trained key leaders together, including inter-battalion transfers. Commanders should consider moving the newly promoted key leader and key leader combination together where the gaining unit within the battalion will benefit from maintaining proficient key leaders.

Cross-train

7-41. Experienced Soldiers are easier to train than new Soldiers. Units should utilize harvested training ammunition to train and qualify alternate firers to build experience. Units should invest first-round-hit ammunition savings, commonly referred to as ammunition harvesting, to cross training young leaders in key leader positions. In doing so, commanders can mitigate key leader turnover with trained and proficient leaders in stride with key leader turbulence. Ammunition available through first round hit savings vary from training event to training event. Units must be prepared to execute training based on the varying training munitions availability and plan for additional time on range facilities to build depth in their trained and qualified cross-trained crews.

Stabilize

7-42. Commanders must ensure the personnel officer is involved in crew management through requesting stabilization for Soldiers or organizations in unique situations. Some of these situations are described in paragraphs 7-43 to 7-45.

Functional Course Graduation

7-43. Soldier attendance to the various platform mastery courses or instructor courses provide units with a graduate stabilization capability. These types of requests maximize the unit's investment in the Soldier's by effectively stabilizing the Soldier with the unit for up to 24 months.

Stop Move

7-44. Units request to stabilize specific Soldiers, small unit, or an entire organization six months prior to latest arrival date. This does not apply to Soldiers already on assignment instructions. The stop move is effective 180 days prior to the unit's latest arrival date and continues through redeployment to at least 90 days.

7-45. The special actions branch at human resources command provides oversight and action against all stabilization, stop movement, and crew stabilization requests. For units that have an assigned latest arrival date the brigade commander requests stabilization for those VC and gunner combinations they foresee becoming turbulent in the next four quarters. For additional information, see the human resources command website.

Plan

7-46. Commanders with the assistance of their Master Gunner must anticipate future turbulence before it happens. As the key leader turbulence periods occur (permanent change of station, date of expected return from overseas assignment, reenlistment options, promotion potential, and so forth), the commander must be able to visualize and identify the most common causes, their impacts on proficiency and readiness, and identify the most probable points of failure in sustaining readiness.

CREW PLATFORM TURBULENCE

7-47. The commander may consider a turbulent crew as qualified (proficient) in extreme circumstances. Commanders accept the risk when assigning turbulent crewmembers together and carry that crew as qualified for reporting purposes. It is the least preferred method of crew management and is approved by the brigade commander.

7-48. The commander should review the VC and gunner have displayed cohesion and proficiency on critical skills on their platform that build experience and proficiency without live-fire and—

- Previously qualified in their assigned position on a different crew within the previous qualification period (12 months).
- Successfully completed Table I, GST, for the unit within the previous qualification period or on a diagnostic exam.
- Completed the simulations training strategy from entry-level through the GTLF exercise and typically takes between 8 and 12 hours in the simulator with a qualified instructor/operator and platoon sergeant oversight.
- Successfully completed the crew platform, Table II, STX V GTLF with a score of 850 or above.

7-49. If commanders are not completely confident in the crew cohesion, capability, experience, and performance, they must rate them as unqualified the next training density.

CREW TURBULENCE AND QUALIFICATION

7-50. There are only two key leaders on the heavy tank. Units must develop talent management skills to maintain the crew's qualification status and proficiency as long as possible. Figure 7-6 provides an example of a proficient Abrams crew.

PROFICIENT CREW	HEAVY TANK CREW	
TIME	**KEY LEADER TURN-OVER**	**COMMANDER ASSESSMENT**
Twelve months has elapsed since the date of the qualification.	Minimum identified key leader(s) (TC or Gunner) are no longer assigned to the position(s) since the completion of the qualification.	Any commander within the chain of command determines the subordinate unit's proficiency is no longer at a trained level.



Key Leaders:

TANK COMMANDER

GUNNER

QUALIFIED CREW

A qualified crew is a tank commander and gunner combination that successfully completes Crew Platform, Table VI (Qualification) and have not met any of the condemnation criteria of the qualification period.

Note: Crew Platform Drivers are MOS qualified separately (licensed) and are not required for crew management purposes to maintain proficiency/qualification rating.

LEGEND

MOS MILITARY OCCUPATIONAL SPECIALTY **TC** TANK COMMANDER

Figure 7-6. Abrams proficient crew example

Crew Turbulence Example 1

7-51. Figure 7-7 shows an Abrams crew losing its proficiency rating due to a trigger from the condemnation criteria. In the example below, the tank commander, one of the crew's key leaders, leaves the organization.

UNQUALIFIED CREW	HEAVY TANK CREW	
TIME	KEY LEADER TURN-OVER	COMMANDER ASSESSMENT
Twelve months has elapsed since the date of the qualification.	Minimum identified key leader(s) (TC or Gunner) are no longer assigned to the position(s) since the completion of the qualification.	Any commander within the chain of command determines the subordinate unit's proficiency is no longer at a trained level.



Key Leaders:

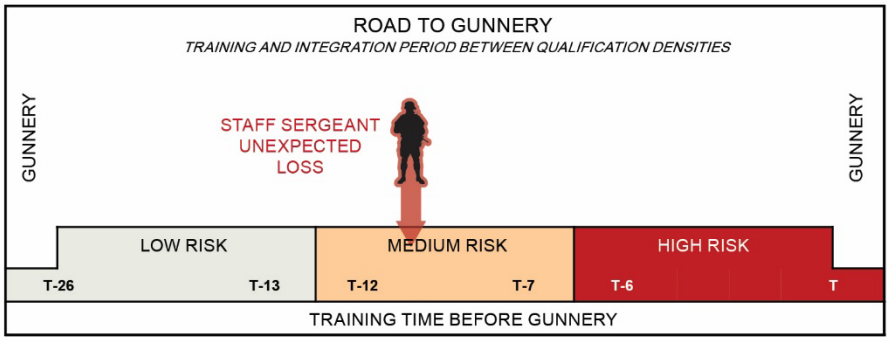
TANK COMMANDER

GUNNER

SITUATION 1

The TANK COMMANDER is no longer assigned.

THE BCT HAS A ROBUST MASTER GUNNER CANDIDATE ASSESSMENT PROGRAM AND SABOT ACADEMY SCHEDULE FOR EACH BATTALION. THIS INCLUDES THOSE ARMOR CREWMEMBERS THAT ARE ASSIGNED WITHIN THE BCT BUT ARE NOT ASSIGNED TO A CREW. THE BCT ENSURES THEIR CONTINUING EDUCATION WITH CROSS-TRAINING OPPORTUNITIES, SIMULATIONS USE, AND MENTORSHIP FROM EXPERIENCED PLATOON SERGEANTS AND MASTER GUNNERS.



LEGEND

BCT	BRIGADE COMBAT TEAM	T-	TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION]
TC	TANK COMMANDER		

Figure 7-7. Unqualified Abrams crew example

7-52. The commander can exercise their assessment options to potentially restore or build a qualified crew. Figure 7-8 describes an example of a commander applying talent management techniques assigning a VC that continued to train on critical skills when assigned within the battalion but not assigned to a crew.

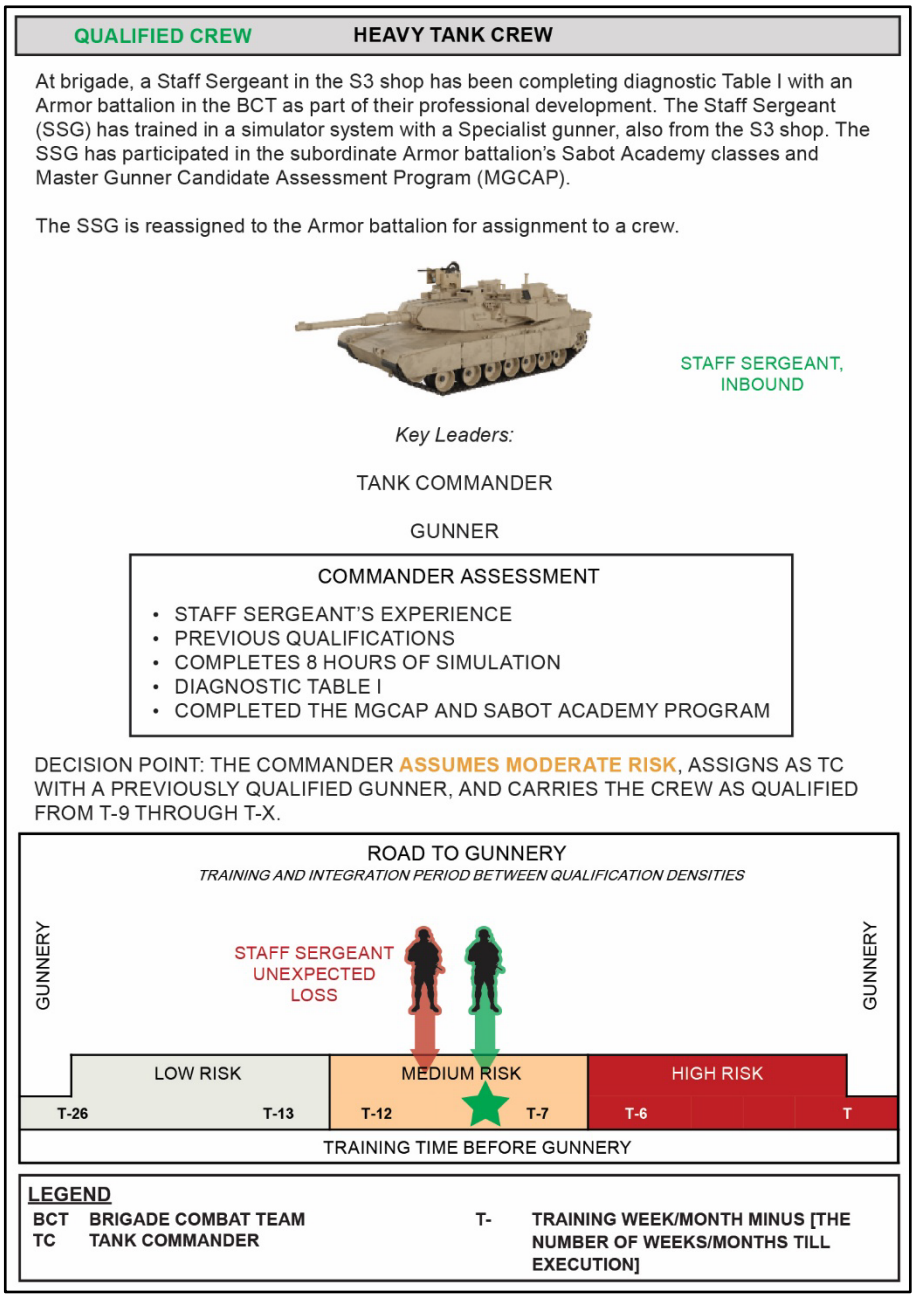


Figure 7-8. Commander assessment and mitigation example

Crew Turbulence Example 2

7-53. Figure 7-9 shows two crews losing their qualifications. In the example below, a tank commander from one vehicle and the gunner from another leave the organization. This causes a loss of two qualified crews in the company.

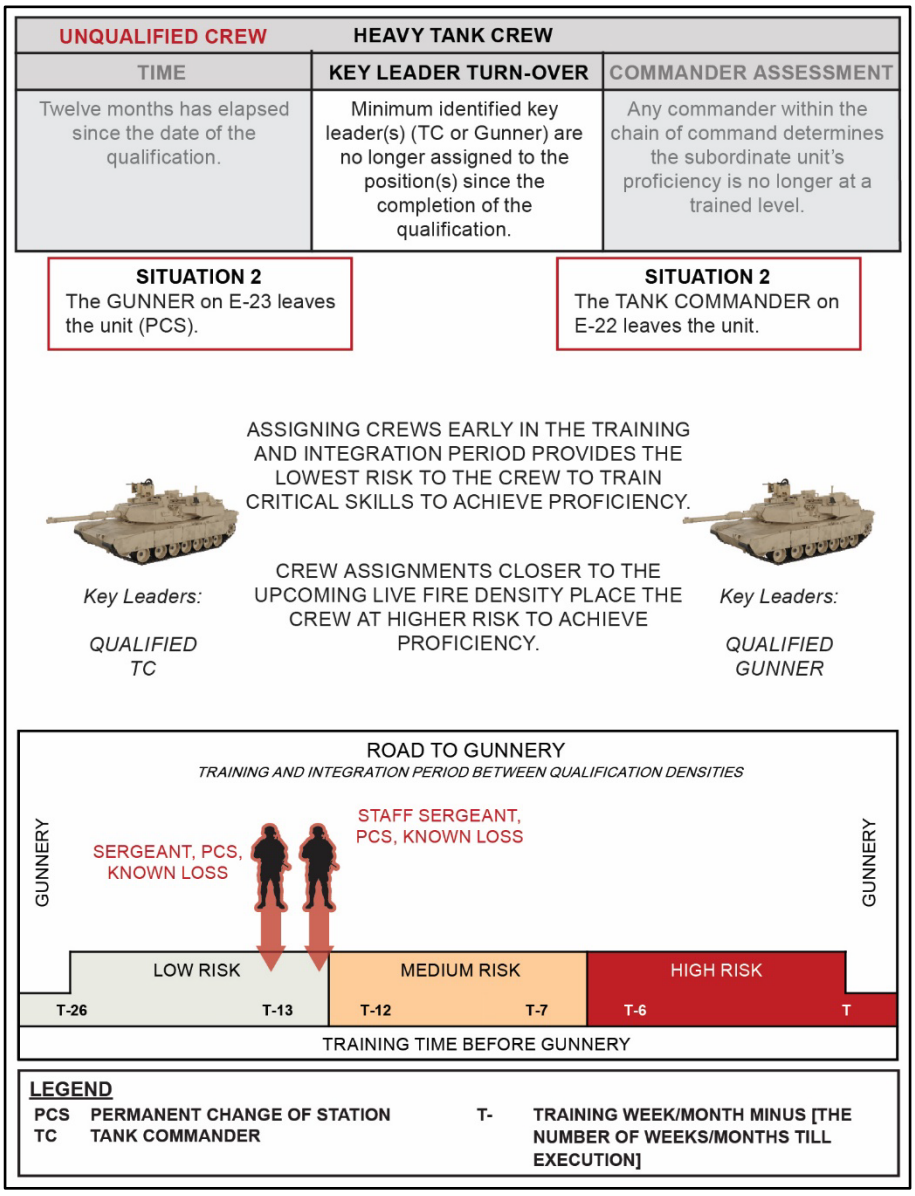


Figure 7-9. Crew turbulence example

7-54. Figure 7-10 shows where the commander assesses the two remaining key leaders from the two broken crews. The commander places them together to salvage one qualification out of the loss of two, minimizing the overall loss at the company level.

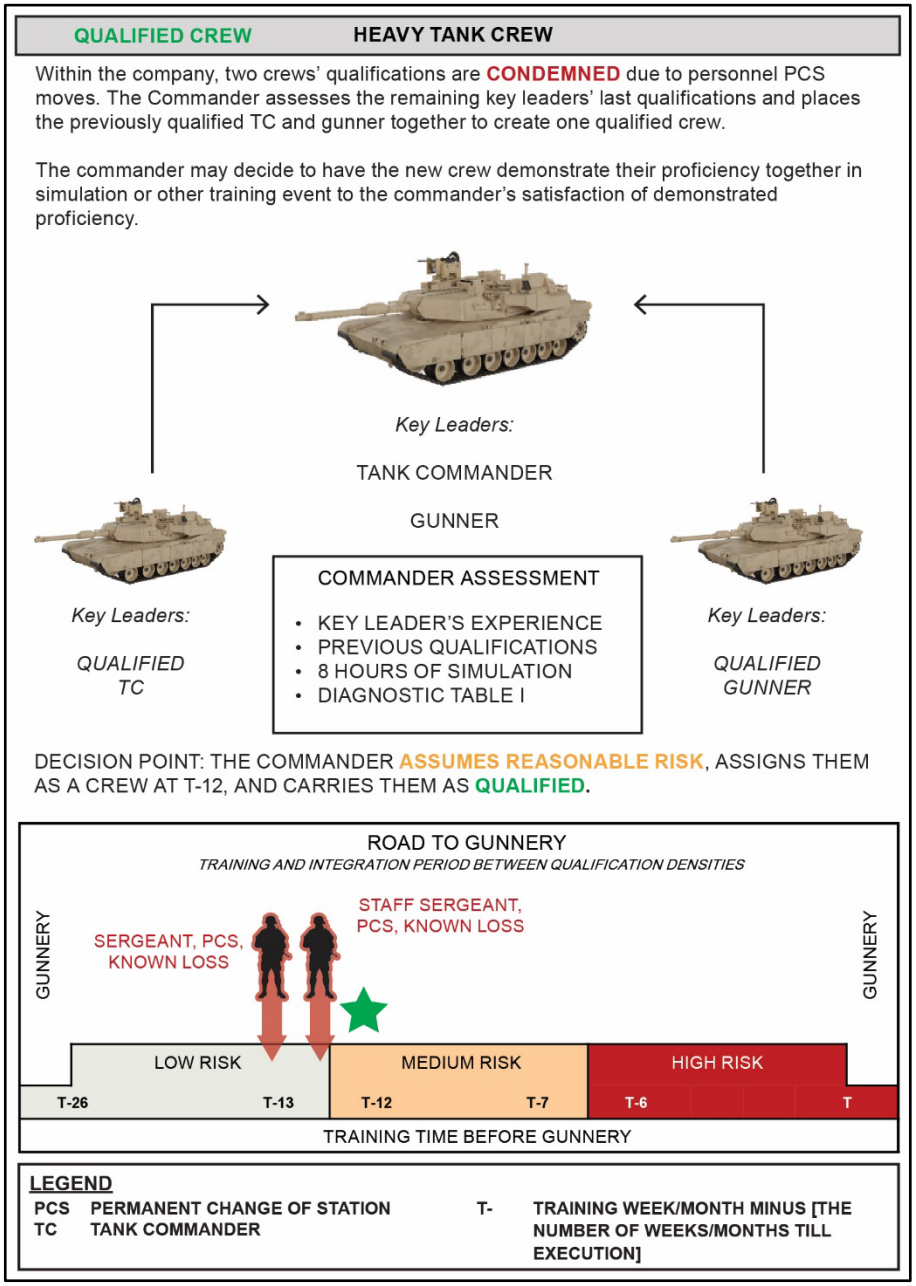


Figure 7-10. Creating one qualified crew from two broken crews

7-55. The commander must understand what they can, should, and should not do to mitigate crew turbulence. When assessing turbulent crews, the commander should make use of the authorized simulations systems, GSTs, the VCE course, and other training assets. See the turbulent crew section in this chapter for additional information.

Assignments with Qualified Rating Approval Authority

Commanders should not carry turbulent crews without previous live fire demonstrated proficiency in position. Providing as much trigger time on the system as possible, as often as possible, will create less difficult talent management decisions.

Commander Risk

Carrying a turbulent crew as qualified is a commander option. The commander accepts the risk to the crew and small unit when reporting readiness for a crew in this manner.
Approval to carry the crew as qualified resides with the brigade commander.

Appendix A

Ammunition

The heavy tank ammunition requirements, capabilities, and description are outlined within this appendix. The ammunition provided is for training purposes.

AMMUNITION REQUIREMENTS

A-1. The Abrams heavy tank crews complete the following events as indicated within this training circular. The actions listed below are in T-week for active component and T-month for reserve component concept. Frequency of execution of the training strategy is twice per fiscal year for active component and once per training year for reserve component. The events are—

- Table I—GST should be completed between T-6 and T-X (execution) of a live-fire event.
- Table II—Simulations should be completed between T-6 and T-X (execution) of a live-fire event, wherein each crew is authorized one hour per month with an authorized simulations system.
- Table III—STX should be completed between T-6 and T-X (execution) of a live-fire event, and units should conduct Table III as concurrent training on all other listed Tables.
- Table IV—Basic should be completed prior to Table V.
- Table V—Practice should be completed prior to Table VI.
- Table VI—Qualification, for which the duration is 12 months.

A-2. The ammunition requirements for Tables III through VI is listed by table on figure A-1 on page 342. The requirements may not match DA Pam 350-38 (*Standard in Weapons Training*), which is commonly referred to as STRAC or Standards in Training Commission, which is the authorization. The unit Master Gunner must determine the annual forecast of ammunition required to meet the training goals and objectives of the commander. The Master Gunner uses the total ammunition management information system, often referred to as TAMIS, to review, validate, and submit unit ammunition requirements and forecast their training ammunition authorizations by month.

DODIC	Munition Type	Frequency		Quantity
		AC	RC	
Table III – Situational Training Exercise (STX)				
A598	CTG, .50 CAL BLANK F/M2 (MILES)	2	1	50
A111	CTG 7.62MM BLANK M82 LINKED	2	1	600
LA53	SIM, TARGET HIT XM35 (BES)	2	1	11
LA54	SIM, EXP DET XM34 (BES)	2	1	11
Live-Fire Accuracy Screening Test (LFAST)				
CA69	CTG 120 MM TPCSDS-T M865A1	2	1	2
CA31	CTG, 120MM TP-T M1002	2	1	2
A557	CTG .50 CAL BALL/TRACER LINKED M33	2	1	50
AB86	CTG , 7.62MM 4 BALL/1 TRACER LINKED, LEAD FREE	2	1	50
Table IV – Basic				
CA69	CTG 120 MM TPCSDS-T M865A1	2	1	3
CA31	CTG, 120MM TP-T M1002	2	1	3
A557	CTG .50 CAL BALL/TRACER LINKED M33	2	1	300
AB86	CTG, 7.62MM 4 BALL/1 TRACER LINKED, LEAD FREE	2	1	550
LA53	SIM, TARGET HIT XM35 (BES)	2	1	16
LA54	SIM, EXP DET XM34 (BES)	2	1	16
Table V – Practice				
CA69	CTG 120 MM TPCSDS-T M865A1	2	1	8
CA31	CTG, 120MM TP-T M1002	2	1	11
CA38	CTG, 120MM CANISTER M1028	2	1	1
A557	CTG .50 CAL BALL/TRACER LINKED M33	2	1	50
AB86	CTG , 7.62MM 4 BALL/1 TRACER LINKED, LEAD FREE	2	1	550
LA53	SIM, TARGET HIT XM35 (BES)	2	1	18
LA54	SIM, EXP DET XM34 (BES)	2	1	18
Table VI – Qualification				
CA69	CTG, 120 MM TPCSDS-T M865A1	2	1	17
CA31	CTG , 120MM TP-T M1002	2	1	8
A557	CTG.50 CAL BALL/TRACER LINKED M33	2	1	50
AB86	CTG , 7.62MM 4 BALL/1 TRACER LINKED, LEAD FREE	2	1	450
LA53	SIM, TARGET HIT XM 35 (BES)	2	1	19
LA54	SIM, EXP DET XM34 (BES)	2	1	19

LEGEND

AC	ACTIVE COMPONENT	MM	MILLIMETER
BES	BATTLEFIELD EFFECTS SIMULATOR	RC	RESERVE COMPONENT
CAL	CALIBER	SIM	SIMULATION
CTG	CARTRIDGE	TP-T	TARGET PRACTICE-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
EXP DET	EXPLOSIVE DETONATION		
MILES	MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM		

Figure A-1. Crew gunnery ammunition, requirements

A-3. Each chapter within this training circular represents the requirement by firing table, and may not match DA PAM 350-38, which is the authorization. Figure A-2 shows the total roll-up of ammunition for Tables III through VI.

DODIC	Munition Type	Quantity
Table III – VI Total (One Frequency)		
CA69	CTG 120MM TPCSDS-T M865A1	30
CA31	CTG, 120MM TP-T M1002	24
CA38	CTG, 120MM CANISTER M1028	1
A557	CTG .50 CAL BALL/TRACER LINKED M33	450
AB86	CTG, 7.62MM 4 BALL/1 TRACER LINKED, LEAD FREE	1600
A598	CTG, .50 CAL BLANK F/M2 (MILES)	50
A111	CTG 7.62MM BLANK M82 LINKED	600
LA53	SIM, TARGET HIT XM35 (BES)	64
LA54	SIM, EXP DET XM34 (BES)	64

LEGEND

BES	BATTLEFIELD EFFECTS SIMULATOR	MM	MILLIMETER
CAL	CALIBER	SIM	SIMULATION
CTG	CARTRIDGE	TP-T	TARGET PRACTICE-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
EXP DET	EXPLOSIVE DETONATION		
MILES	MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM		

Figure A-2. Crew gunnery ammunition requirements, totals

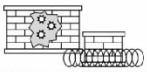
BES Resourcing

Units are resourced various BES cartridges on Tables III through VI as shown in figure A-3 on page 344. Units are responsible to forecast the BES cartridges using the total ammunition management information system, coordinate pick-up, and provide them to the appropriate range support personnel prior to training. The training unit resource BES pyrotechnics to support retraining or re-fires internally.

AMMUNITION CAPABILITIES

A-4. Units are authorized three types of training ammunition. The ammunition and its capabilities are outlined in figure A-3. Crews should use this as an outline to familiarize themselves with the ammunition.

120MM TRAINING AMMUNITION CAPABILITIES BY TARGET TYPE

THREAT TYPE	MODEL (DODIC) TYPE		
	M865A1 (CA69) TPCSDS-T	M1002 (CA31) TP-T	M1028 (CA38) CANISTER
 ARMORED	PRIMARY		
 MEDIUM ARMORED	*Secondary*	PRIMARY	
 LIGHT ARMORED	*Secondary*	PRIMARY	*Secondary*
 WALL BREACH BUNKERS OBSTACLES		PRIMARY	*Secondary (Non-Reinforced)*
 DISMOUNTED THREAT			PRIMARY

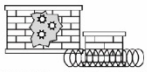
LEGEND

DODIC	DEPARTMENT OF DEFENSE IDENITIFICATION CODE	TP-T	TARGET PRACTICE-TRACER
MM	MILLIMETER	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER

Figure A-3. Training ammunition capabilities

A-5. Units are authorized two types of service ammunition. The ammunition and its capabilities are outlined in figure A-4. Crews should use this as an outline to familiarize themselves with the ammunition.

120mm Service Ammunition Capabilities by Target Type

THREAT TYPE	MODEL (DODIC) TYPE	
	M829A4 (CA64) APFSDS-T	M1147 (CA71) HEMP-T
 ARMORED	PRIMARY	*Secondary (Flank or Rear)*
 MEDIUM ARMORED	*Secondary*	PRIMARY
 LIGHT ARMORED		PRIMARY
 WALL BREACH BUNKERS OBSTACLES		PRIMARY
 DISMOUNTED THREAT		PRIMARY

LEGEND

APFSDS-T	ARMOR PIERCING FIN STABILIZED DISCARDING SABOT-TRACER	HEMP-T	HIGH EXPLOSIVE MULTIPURPOSE-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	mm	MILLIMETER

Figure A-4. Service ammunition capabilities

120MM AMMUNITION COMPONENTS

A-6. All 120mm ammunition cartridges consist of four basic components, the case base, cartridge case, propellant, and projectile. See figure A-5 for more information.

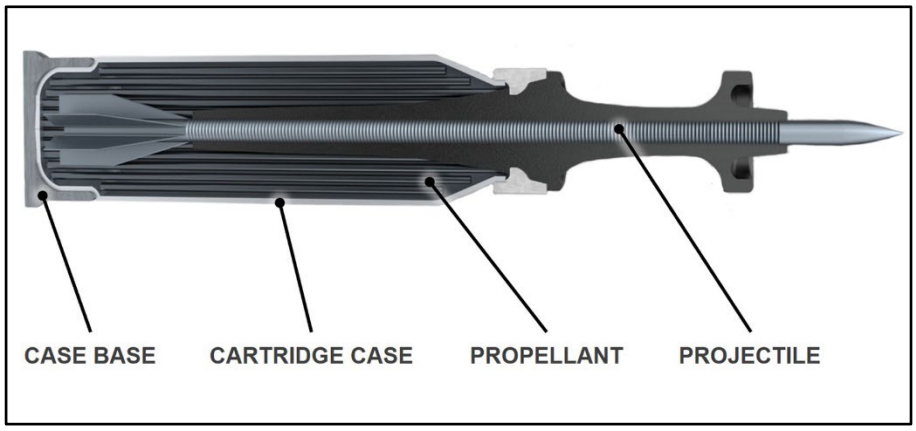


Figure A-5. 120mm ammunition components

CASE BASE

A-7. The case base houses the primer element and supports the rear seal which provides rear obturation. This holds the combustible cartridge case with a spring disc pinned around the primer base thread assembly. The markings on the case base identify the nomenclature, lot number, primer lot number, and round type. See figure A-6 for detailed view of the case base.

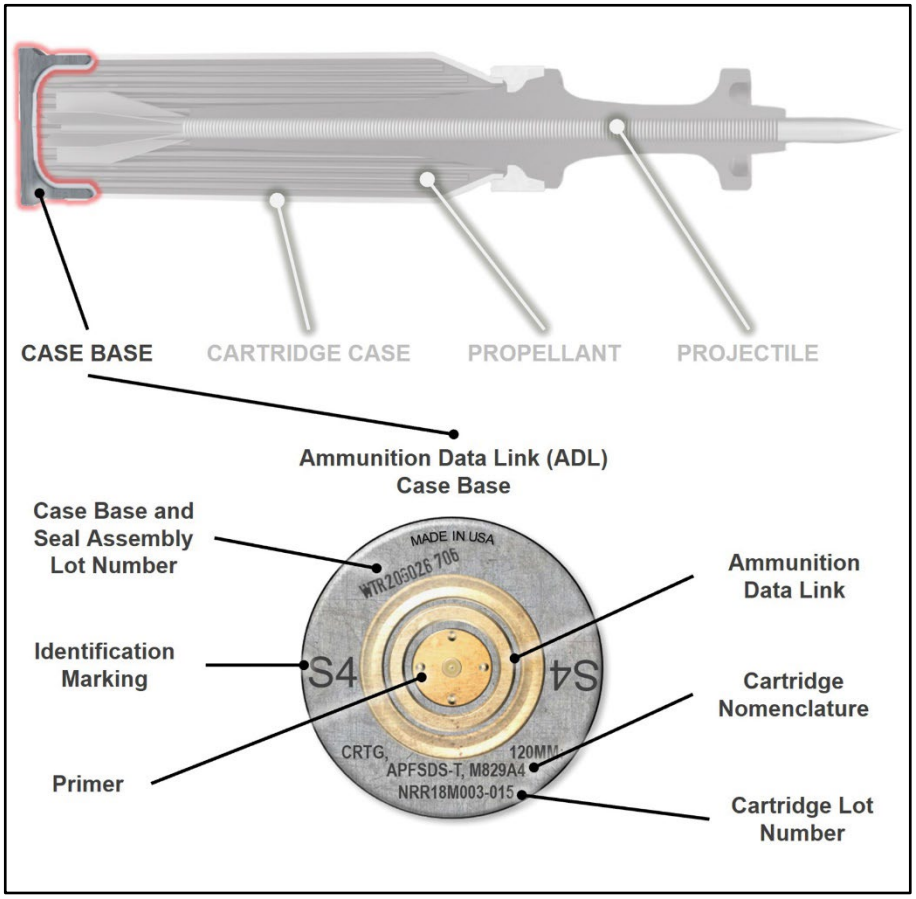


Figure A-6. Case base

CASE BASE AND PRIMER

A-8. The primer, as shown in figure A-7, is screwed into the case base. This receives the electrical charge from the circuit which ignites the primer filler. The primer filler is a volatile igniter made of benite strands that ignite the propellant.

A-9. Benite is extruded strands of black powder (potassium nitrate, charcoal, and sulfur) embedded in nitrocellulose. When the electrical charge is applied to the ignitor, the ignitor actuates the benite strands which vent through the primer case holes causing deflagration of the propellant. Activation of the ignitor occurs between 280 mA (milliamp) and 1.25A (amps).

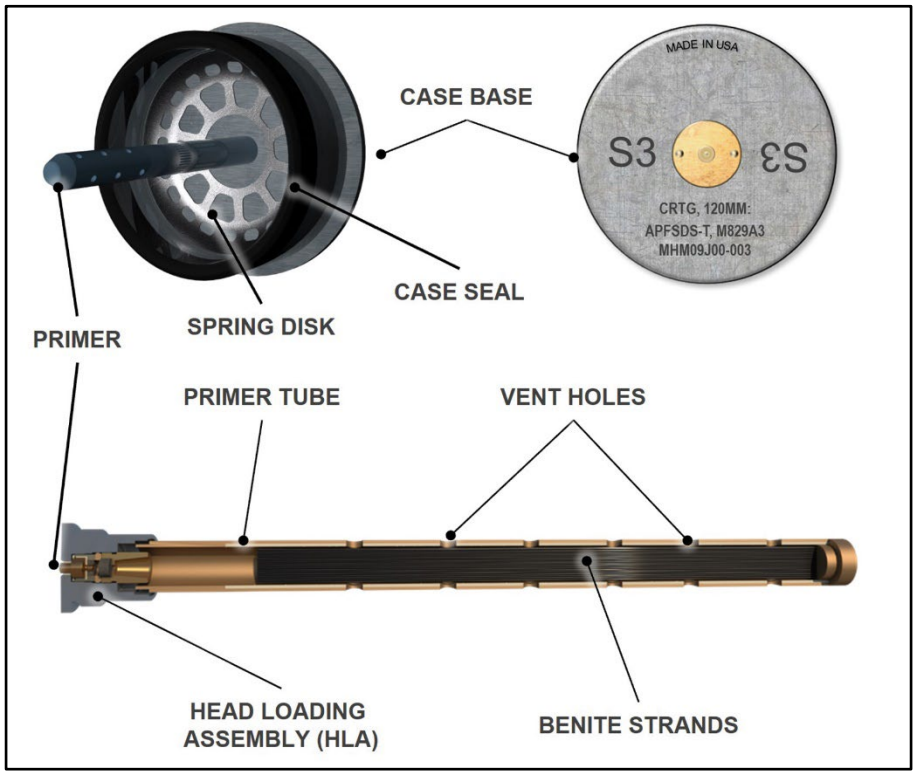


Figure A-7. Case base and primer

CARTRIDGE CASE

A-10. The cartridge case houses the propellant and the projectile. The cartridge case is locked with the case base, case seal, and the forward obturator. The forward obturator, located at the font of the cartridge case, causes forward obturation. Forward obturation is the action of the cartridge case expanding against the front portion of the chamber region by the high pressure of the internal and forward gases (see figure A-8).

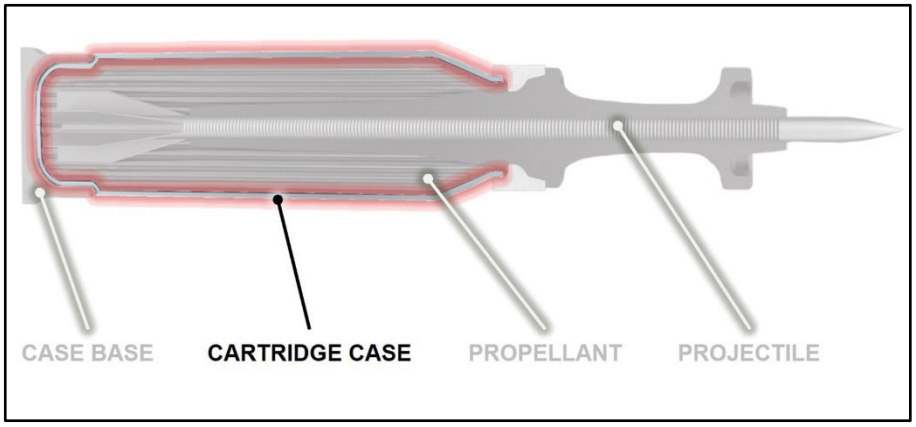


Figure A-8. Cartridge case

PROPELLANT

A-11. The propellant is contained within the cartridge case (see figure A-9). The different propellant types vary by the model number of the round, listed later within this appendix.

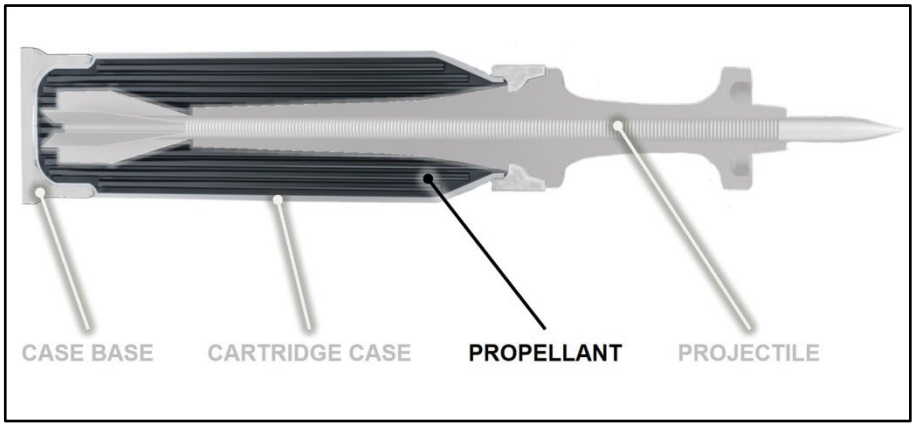


Figure A-9. Propellant

PROJECTILE

A-12. The projectile is the cylindrical portion of the cartridge between the end of the primer tube and the end of the cartridge case that is fitted with a tracer assembly to the rear. The projectile travels down the bore toward the target. The projectile, based on the type of round, may house a sub-projectile, payload, or explosive chemical energy compound and fuze.

A-13. Based on the type of round, after shot exit, the round may—

- Arm a chemical warhead.
- Begin separating sabot petals from a sub-projectile.
- Continue down range on the ballistic path.

A-14. The projectile has three different color applications: black, olive drab, or light blue. The black projectile is an armor defeating round, olive drab is for anti-personnel or anti-material, and the light blue color indicates training (target practice). See figure A-10 for an illustration of the projectile location.

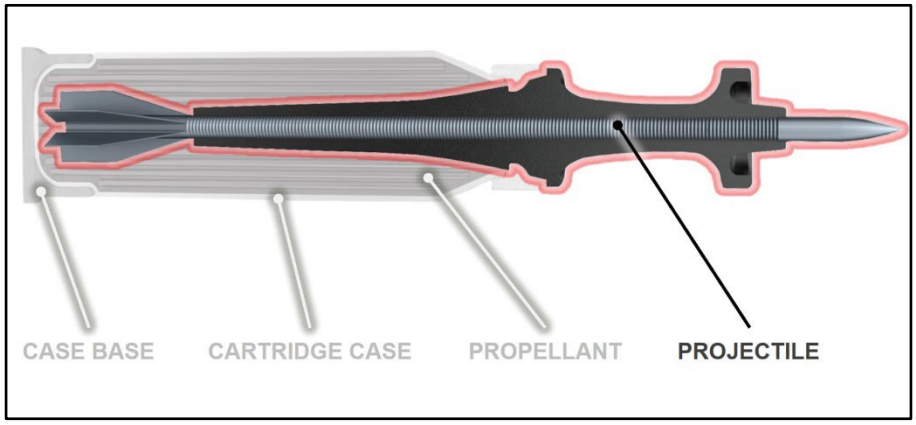


Figure A-10. Projectile

120MM AMMUNITION DESCRIPTION

A-15. The following information describes each of the service and training 120mm ammunition cartridges for reference. Additional detailed information can be found on the Sabot Academy teams page.

A-16. Figures A-11 on page 352 through figure A-15 on page 356 provide the basic ammunition data card information for the service and training cartridges. The cards include information on—

- Department of Defense identification code.
- Complete nomenclature.
- Fins and tracer assemblies.
- Obturator.
- Projectile and subprojectile.
- Primer.
- Propellant.
- Cartridge case.
- Hazard classification.
- Case base markings.



Figure A-11. Cartridge, 120mm APFSDS-T, M829A4 data card

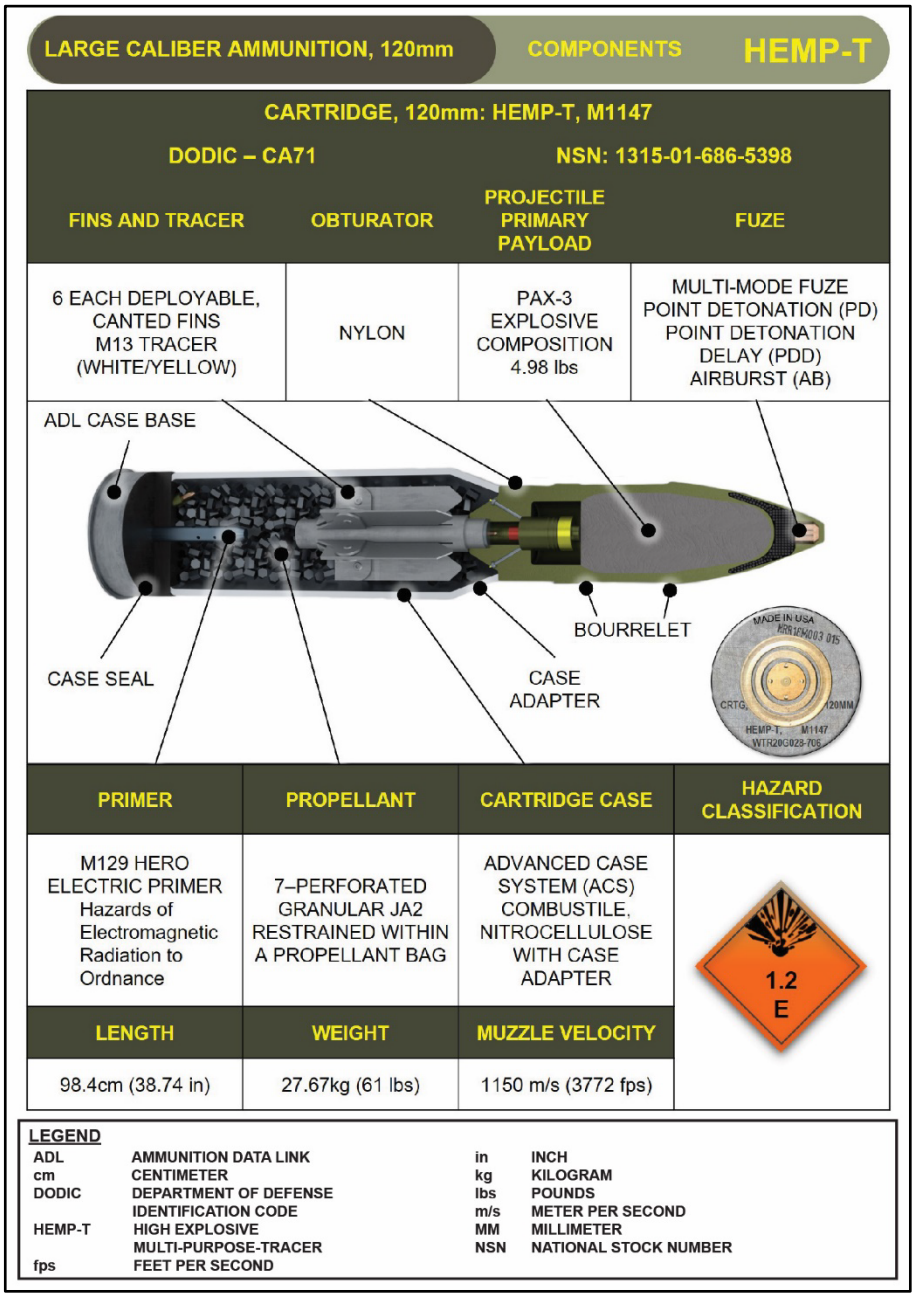


Figure A-12. Cartridge, 120mm HEMP-T, M1147 data card

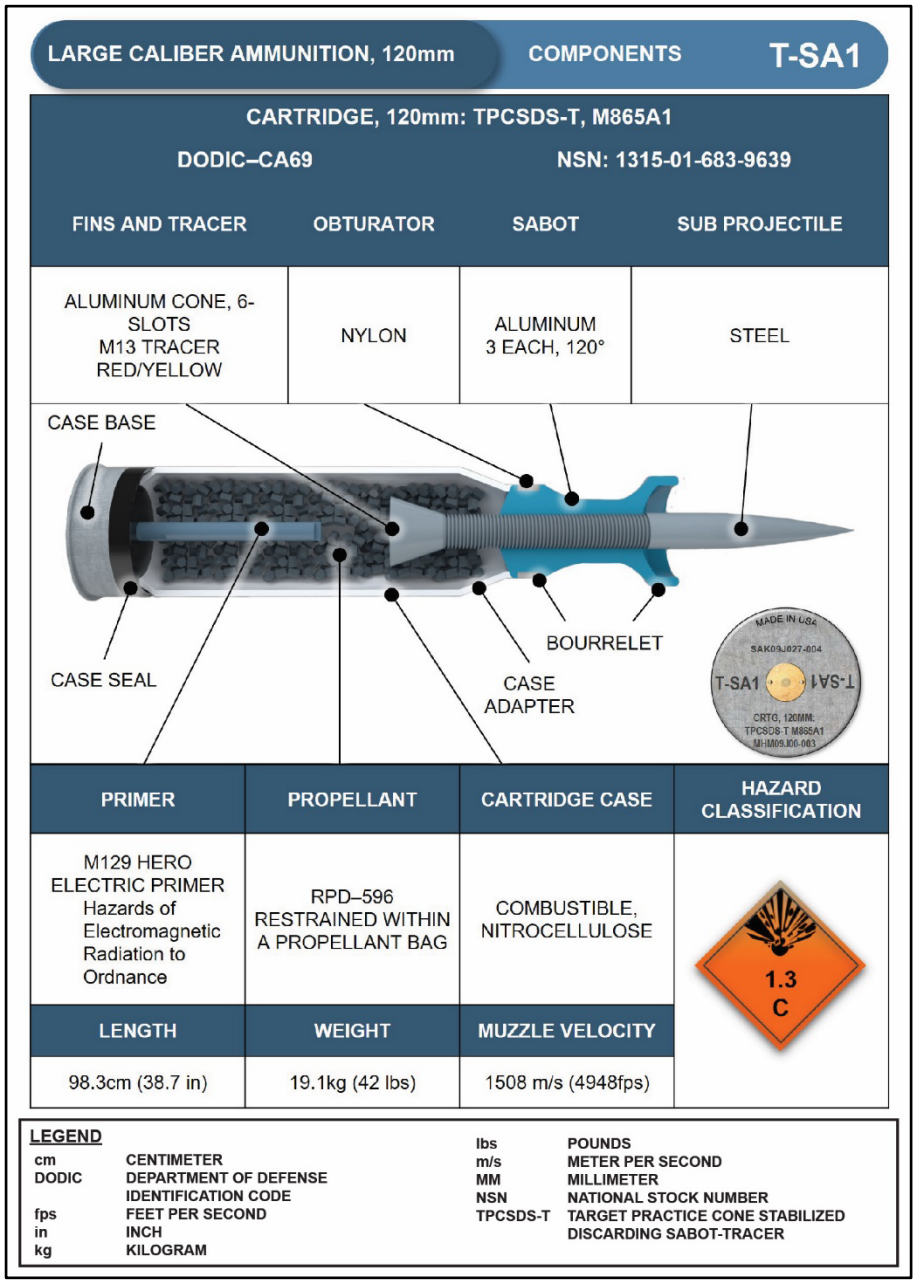


Figure A-13. Cartridge, 120mm TPCSDS-T, M865A1 data card

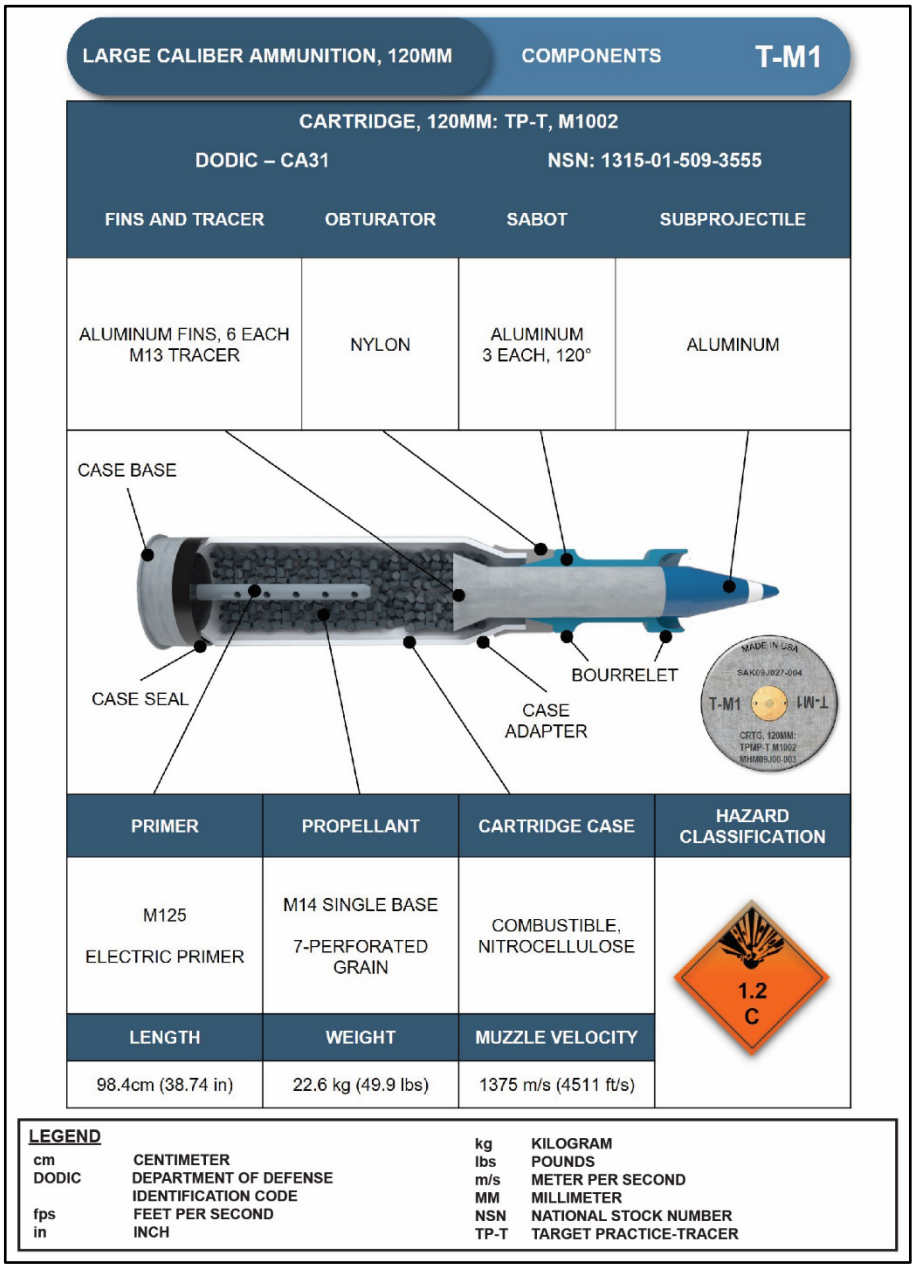


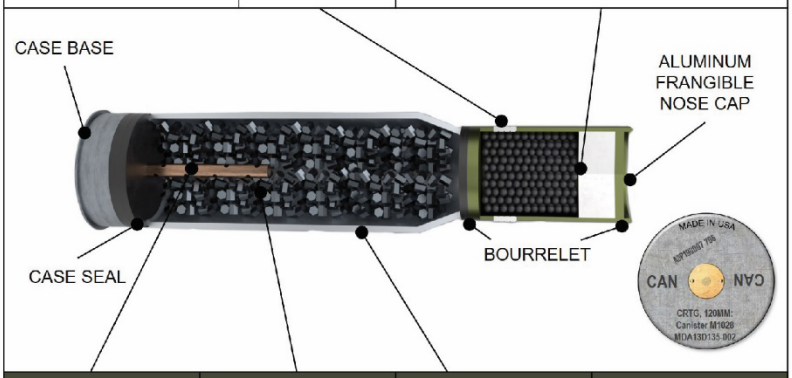
Figure A-14. Cartridge, 120mm TP-T, M1002 data card

LARGE CALIBER AMMUNITION, 120MM	COMPONENTS	CAN

CARTRIDGE, 120MM: CANISTER, M1028

DODIC – CA38 **NSN: 1315-01-659-8359**

FINS AND TRACER	OBTURATOR	SUBPROJECTILE
NO FIN AND TRACER ASSEMBLY	NYLON	ALUMINUM FRANGIBLE NOSE CAP PAYLOAD OF APPROXIMATELY 1097 each, 9.525mm, 8.3g TUNGSTEN BALLS (0.375" or 3/8", 0.29 oz)



PRIMER	PROPELLANT	CARTRIDGE CASE	HAZARD CLASSIFICATION
MODIFIED ELECTRIC PRIMER WITH BLACK POWDER CHARGE AND 400 GRAINS OF BENITE	JA2 7 or 19 PERFORATED GRAIN CONTAINED WITHIN A PROPELLANT BAG	COMBUSTIBLE, NITROCELLULOSE	

LENGTH	WEIGHT	MUZZLE VELOCITY
77.9cm (30.67 in)	22.9kg (50.5 lbs)	1375-1430 m/s

LEGEND

cm	CENTIMETER	lbs	POUNDS
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	m/s	METER PER SECOND
g	GRAM	MM	MILLIMETER
in	INCH	NSN	NATIONAL STOCK NUMBER
kg	KILOGRAM	oz	OUNCE

Figure A-15. Cartridge, 120mm CANISTER, M1028 data card

Appendix B

Tracking and Manipulation Boards

T&MBs are tools to train hand-and-eye, coordination, gun control, speed, and accuracy using the platform's fire control system. In this appendix, there are six variations as examples for units to consider; however, units can create unique layouts, as their training program requires.

T&MBs, more commonly referred to as snake boards, should have a wide variety of designs with horizontal, vertical, and oblique motion in any direction. The panels may also incorporate (along the panel's tracking path) scaled targets that replicate the most effective way to lay on, lase, and engage a target. Paths on the boards can be tracked in all fire control modes and incorporate the use of all sights in most cases.

OVERVIEW OF SNAKE BOARDS

B-1. Use tracking and manipulation board exercises to augment the STX-V or use when no simulator system is available or accessible to the crew. T&MBs are locally manufactured based on the unit need. Completion of the tracking board exercise is the least preferred method of completing Table II for live fire.

B-2. It should only be used in extreme cases (new vehicle with no simulator system, unit is deployed, or retraining is necessary in an austere or field environment) or as opportunity training in the motor pool, training area, or admin area on a range facility.

B-3. The purpose of crew platform, Table II, STX-V, is to ensure the crew possesses the skills and experience necessary to execute live-fire events and exercises safely, which implies a functional understanding of the engagement process, fire commands, engagement techniques, and lethality. This is the culminating test of their abilities and skills on their platform in simulation after completing the appropriate simulations training plan (see figure B-1).

CREW TABLE II	TABLE I	TABLE II	TABLE III	TABLE IV	TABLE V	TABLE VI
	CRAWL	*CRAWL*	*WALK*	*RUN*	*RUN*	*RUN*
	Live	Virtual	Live TADSS	Live-Fire	Live-Fire	Live-Fire
CREW PLATFORM	GST	STX-V	STX	BASIC	PRACTICE	QUAL

Note: Table I, II, and III can be conducted in any order within the T-6 to T-X time frame. This provides flexibility when developing the unit training plan.

LEGEND

GST	GUNNERY SKILLS TEST OR GUNNER'S/FIRE DIRECTION CENTER EXAM	T-	TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]
QUAL	QUALIFICATION	TADSS	TRAINING AIDS, DEVICES, SIMULATORS, SIMULATIONS
STX	SITUATIONAL TRAINING EXERCISE		
STX-V	SITUATIONAL TRAINING EXERCISE-VIRTUAL		

Figure B-1. Table II, STX-V

B-4. Table II, STX-V, is a mandatory prerequisite for any live-fire event, including zero procedures, sub caliber or in-bore training event, or any live-fire maintenance procedure within the crew training strategy. Complete Table II between T-6 and T-week to support the training events.

B-5. Units use the T&MB when training in austere environments or when simulation systems are unavailable or unacceptable. This appendix provides general information on the purpose and use of the T&MB.

PURPOSE

B-6. Table II, STX-V, is a skills assessment and risk mitigation tool for the commander. It assists the commander in determining the safe and effective use of the platform, its weapons, identification of threats and common ammunition by the crewmembers in the unit. Further, it identifies shortfalls and training gaps in those gunnery specific skills, which build crew proficiency and unit readiness.

METHOD

B-7. Table II is a hands-on, performance-based evaluation of basic gunnery skills to the Army-standard of knowledge or skill in a simulator system (crew shelter). It utilizes experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE

B-8. The VC and gunner assigned as a crew have successfully demonstrated the skills and knowledge required to continue training on the platform through platform qualification. Commanders are confident in their Soldier's abilities in the position assigned.

B-9. The tasks evaluated in Table II provide the commander a means to certify the crew's basic weapons platform proficiency prior to live-fire training. It is used as a guide for identifying individual and crew weapons platform strengths and weaknesses on specific engagement techniques and employment of the vehicle's fire control system capabilities and enablers.

B-10. The goal of this training is for the firer to reach the level of expertise with the system at which the firer anticipates movements of the sight and can maintain the point of aim while tracking. Examples of tracking boards are in appendix B with sample scripts for use and construction requirements. The tracking board exercise increase the level of expertise of the firer to manipulate the weapon system rapidly and without hesitation, commonly referred to as switchology.

TASK, CONDITIONS, AND STANDARD—SNAKE BOARDS

B-11. Figure B-2 provides the action, conditions, and standard when using the T&MBs for Table II.

TABLE II, SITUATIONAL TRAINING EXERCISE-VIRTUAL USING TRACKING AND MANIPULATION BOARDS	
TASK	Navigate tracking boards to increase the level of expertise of the firer to manipulate the weapon system.
CONDITIONS	Given the following: • A stationary vehicle with operational sights. • Six tracking boards spaced, progressing from simple to more difficult. • Tracking boards placed 15 meters from front of vehicle. • Using a scenario developed by the unit Master Gunner.
STANDARD	The firer must successfully complete the unit-developed training between T-6 and T-execution, demonstrating: • Use the appropriate sight to track. • Track each panel route, keeping the reticle in the between the parallel tracking lines. • The aiming point on the reticle should not be outside the shaded area for more than 2 seconds on each tracking exercise. • When switchology indicator is present within the 1 mil reticle of the optic being used, the gunner successfully manipulates the fire control system as indicated without moving their head from the optic brow pad.

LEGEND

mil	**MILLIRADIAN**	**T-**	**TRAINING WEEK/MONTH MINUS [THE NUMBER OF WEEKS/MONTHS TILL EXECUTION (X)]**

Figure B-2. Table II, STX-T&MBs

SCENARIO REQUIREMENT CONSIDERATIONS

B-12. When using the T&MBs to meet Table II testing, units should use no less than 10 separate movements to another panel across the array, complete the series of movements on each panel before assessing the gunner's performance. As the layout, design, and functioning will vary, units must create their own timing and evaluation procedures, however, the standards listed in Figure B-2 should not change.

B-13. When used as the GTLF on Table II, the unit should maintain a record of the crew's performance and evaluator notes. The method the unit records the training is up to the design and script developed for training. It should include information like the administrative data on DA Form 8265, including crew roster, evaluator name, date of training, to name a few.

B-14. Units should provide enough scorecards and performance measures for the evaluators. Maintain these records in the crew's gunnery folder for 12 months.

DESIGN

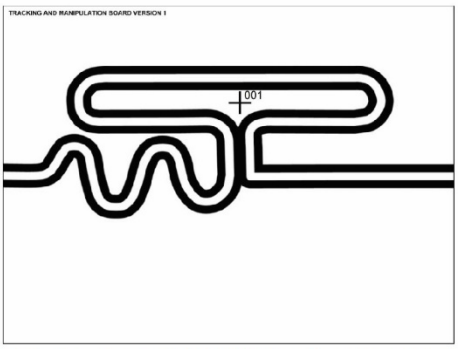
B-15. Platoon sergeants, the 1SG, or the unit Master Gunner will provide the VC training using the primary sight or independent thermal viewer as appropriate. Use of manual controls is not required for the VC's exercise.

B-16. The panels are constructed using 4-foot by 8-foot plywood, target cloth, or other suitable material. Tracking lines are 1-inch-wide black borders with a 2-inch-wide inner white path. Multiple panels can be aligned together by placing the start-point and endpoint of each panel at the height halfway point on the left and right side of the panel.

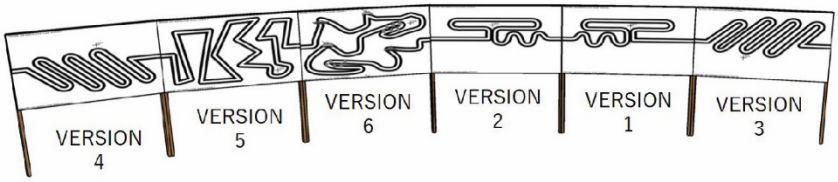
B-17. The design of the panel track is up to the unit. Example panel designs are in figures B-3 on page 362 through B-9 on page 366. Variations should include—

- Vertical track.
- Horizontal track.
- Right oblique to left oblique (diagonal movement).
- Left oblique to right oblique (diagonal movement).
- Random directional changes.
- Targetry—removable, adjustable.
- Switchology indicators—removable, adjustable.

TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS (TADSS) TABLE II, SITUATIONAL TRAINING EXERCISE – VIRTUAL (STX-V) AUSTERE ENVIRONMENTS	
DEVICE	**DESCRIPTION**
T&MP-1	Tracking and Manipulation Panel, version 1
T&MP-2	Tracking and Manipulation Panel, version 2
T&MP-3	Tracking and Manipulation Panel, version 3
T&MP-4	Tracking and Manipulation Panel, version 4
T&MP-5	Tracking and Manipulation Panel, version 5
T&MP-6	Tracking and Manipulation Panel, version 6



Example Tracking and Manipulation Board, version 1.



Example layout using all six versions of the Tracking and Manipulation Boards.

Figure B-3. Tracking and manipulation board versions

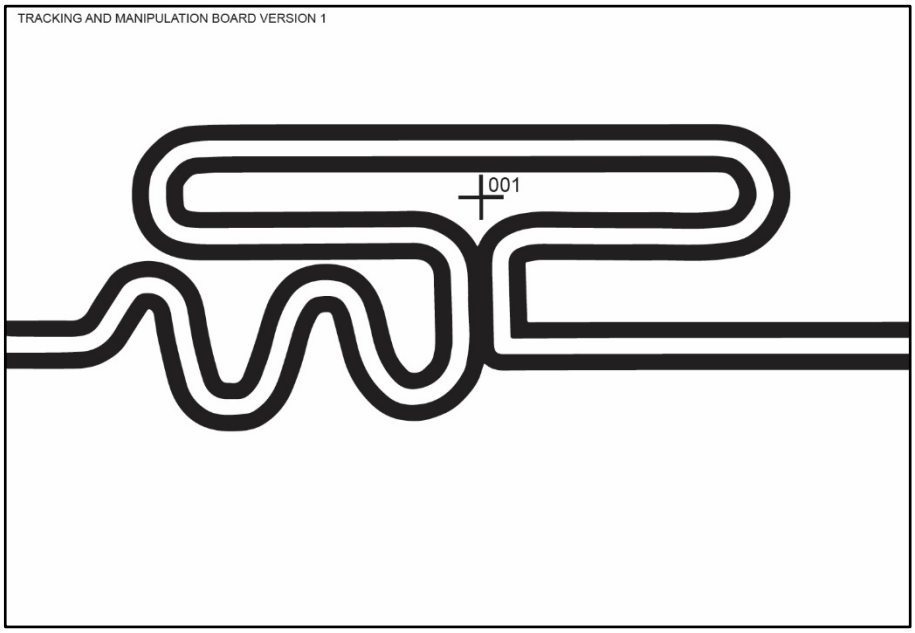


Figure B-4. Tracking and manipulation board, version 1, example

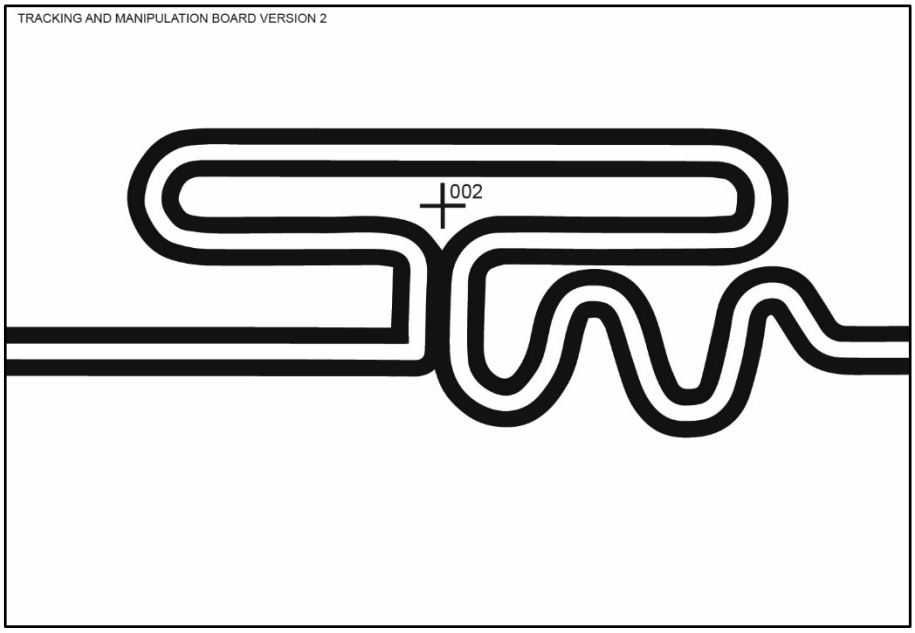


Figure B-5. Tracking and manipulation board, version 2, example

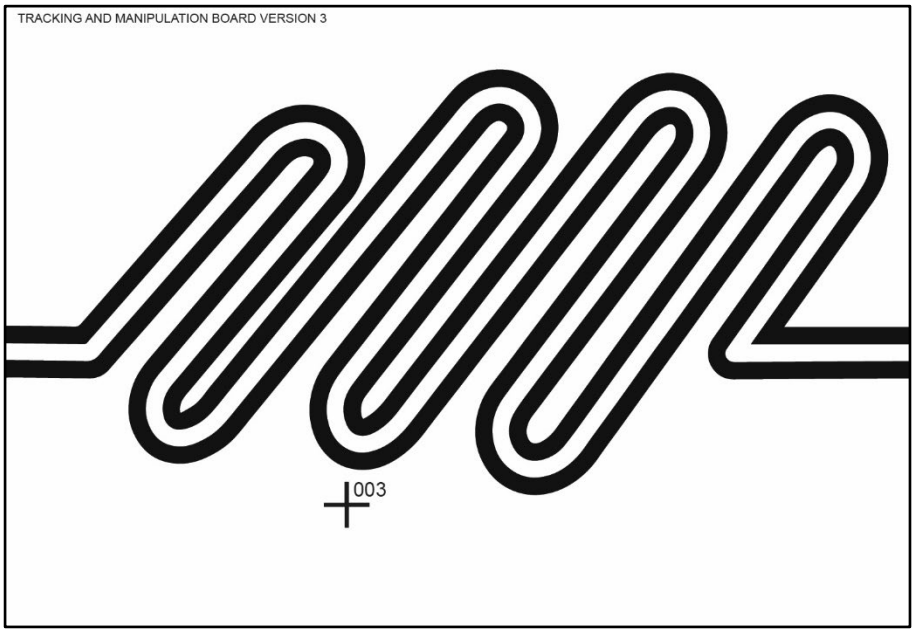


Figure B-6. Tracking and manipulation board, version 3, example

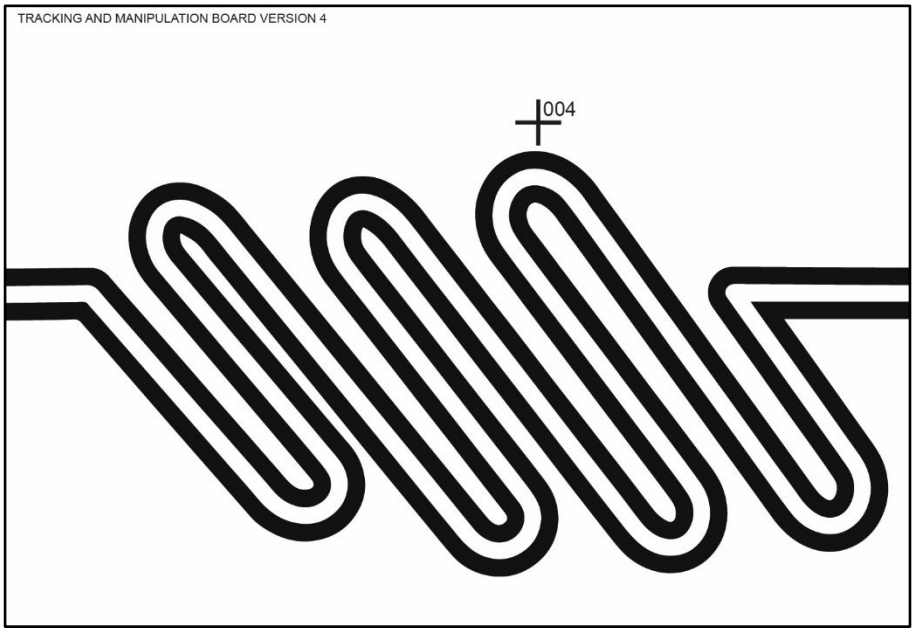


Figure B-7. Tracking and manipulation board, version 4, example

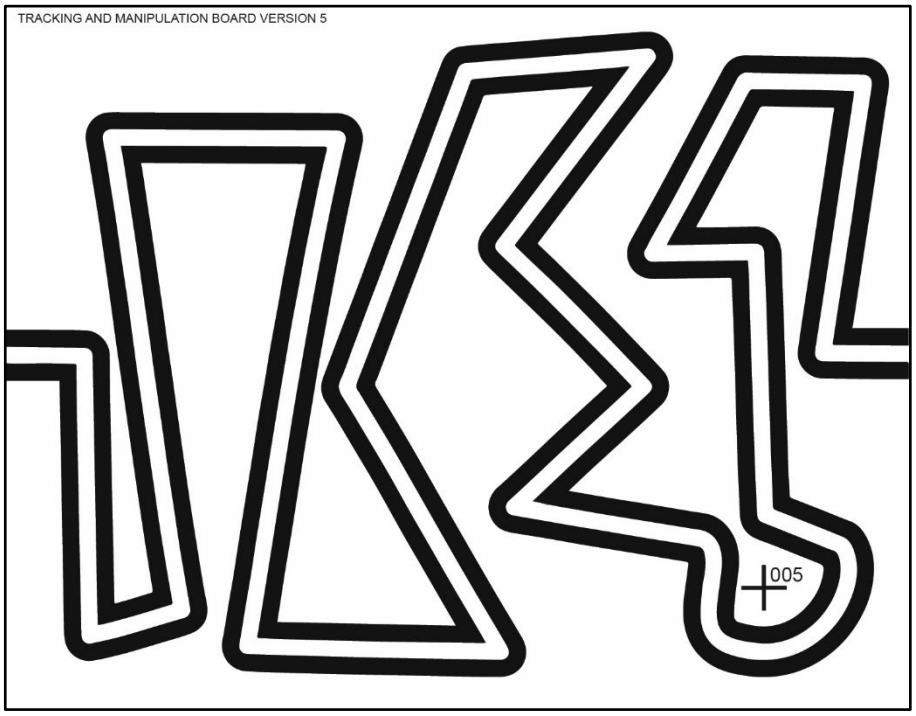


Figure B-8. Tracking and manipulation board, version 5, example

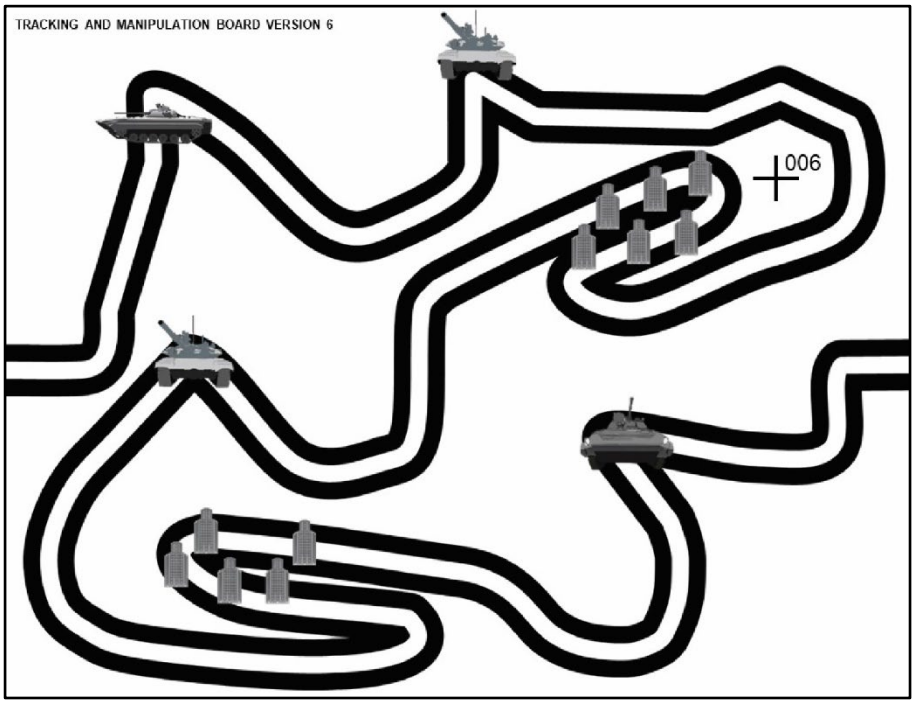


Figure B-9. Tracking and manipulation board, version 6, example

SET UP

B-18. Units add the switchology indicators and targetry to any panel to stimulate the gunner and VC to index or manipulate the fire control system panels appropriately through the most common selections. Units should include a unique target reference point to each panel to support conduct of the event.

B-19. Figure B-10 provides an example of the fire control system capability indicators. These indicators appear on the T&MB based on the Master Gunner's concept of training, and the established enabling and terminal learning objectives. These indicators can be a permanent part of the panel or can be modular in nature to facilitate rapid alteration of the training to focus on specific skills. Paragraph B-20 through paragraph B-23 on page 369 provide an example layout of various capability indicators on a single T&MB.

FIRE CONTROL CAPABILITY	EXAMPLE SWITCHOLOGY INDICATORS			
MAGNIFICATION	3X	6X	11X	25X
	LOW MAG	WIDE	NARROW	HIGH MAG
AMMUNITION	SABOT	HEAT	MPAT	MPAT AIR
	AP	HE	HEAB	HEP
	COAX	AMP	CAN	
WEAPON SAFETY STATUS	TRIGGER SAFE	MAIN		
TARGET REFERENCE POINT	001	002	003	004
DEGRADED	MANUAL	POWER	CHOKE	

LEGEND

AMP	ADVANCED MULTIPURPOSE	HEAB	HIGH EXPLOSIVE AIR BURSTING
AP	ARMOR PIERCING	HEP	HIGH EXPLOSIVE PLASTIC
CAN	CANISTER	MAG	MAGAZINE
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
HE	HIGH EXPLOSIVE		

Figure B-10. Fire control system capability indicator examples

B-20. Figure B-11 on page 368 provides an example of a way to apply the various indicators on a panel. These indicators on the panel can be permanent or temporary applications to add flexibility and variation to the training.

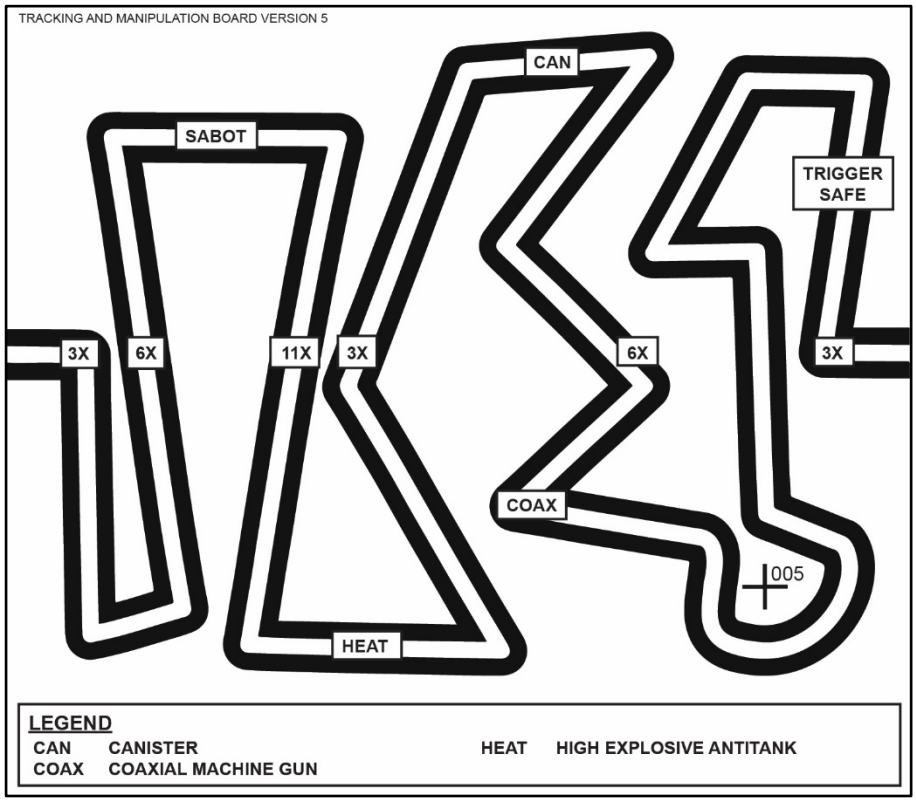


Figure B-11. T&MB with reconfigurable switchology indicators example

SCENARIO EXAMPLE

B-21. Figures B-12 through B-23 on page 380 provide an example scenario using the T&MBs. In this example, conduct evaluation of the ten engagements for speed and accuracy using power and manual controls, along with the primary and auxiliary sights.

B-22. Once the unit secures the appropriate T&MB and associated switchology indicators, they set up the training location. The panels are placed approximately 15 meters across the frontal arc of the front slope of the tank (see figure B-12). The centerline entrance and exit points for each panel are aligned for smooth tracking.

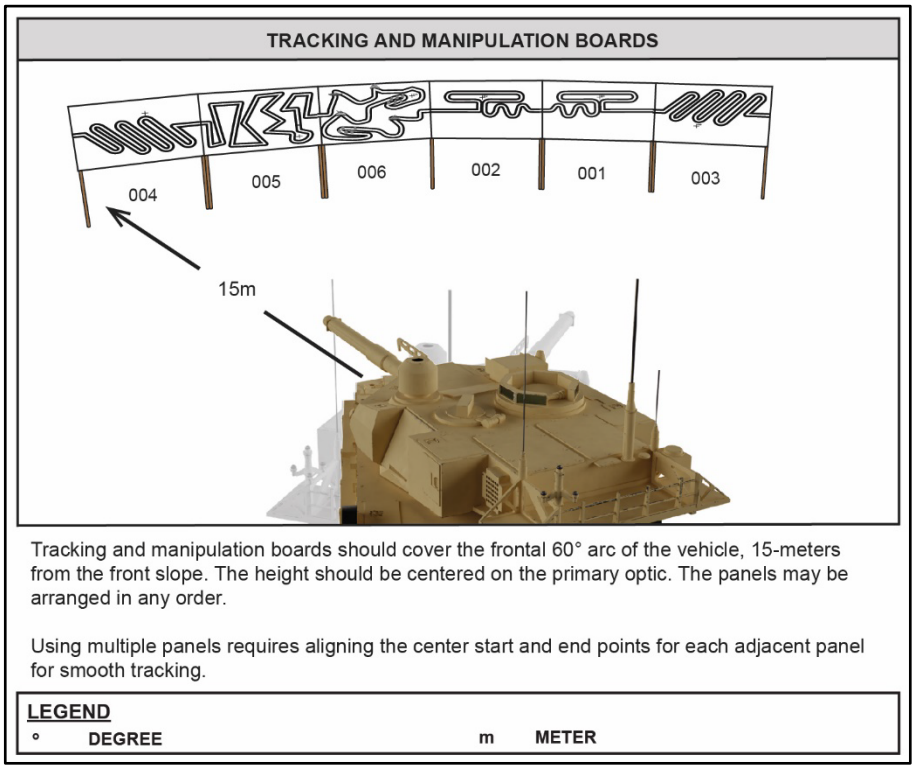
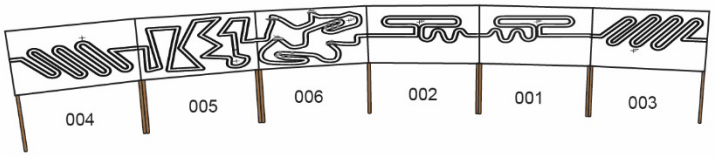


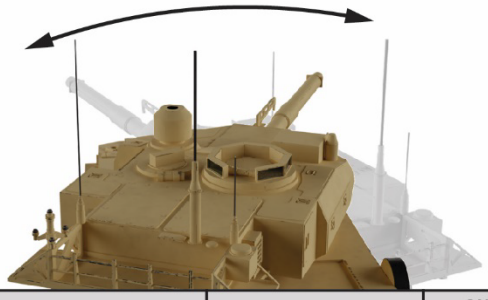
Figure B-12. Establish training site

B-23. The center of the panel should be comparable in height to the primary optic of the vehicle. This allows for limited downward movement of the gun tube. The vehicles will need sufficient space to traverse the turret left and right beyond the limits of the panels. Units should ensure at least 5-meter separation between training vehicles.

TRACKING AND MANIPULATION BOARDS



STEP **0**



REMARKS	TIME	ONCE COMPLETE MOVE TO
IDENTIFY ALL TRPs BEFORE START	20 SECONDS	TRP 004

OPTIONS:

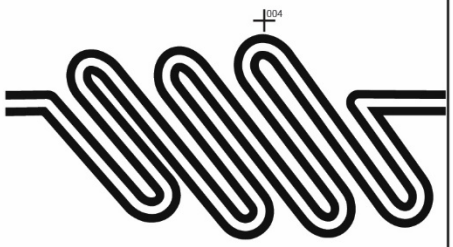
GPS

GAS

POWER CONTROLS

MANUAL CONTROLS, LOW POWER

MANUAL CONTROLS, HIGH POWER



TC directs the gunner to identify all Target Reference Point (TRPs) in sector. Once complete, TC directs the GUNNER off panel (in this example, to the right side of the Tracking and Manipulation Boards).

From off the Tracking and Manipulation Boards, TC directs the gunner to the first exercise by announcing the corresponding TRP.

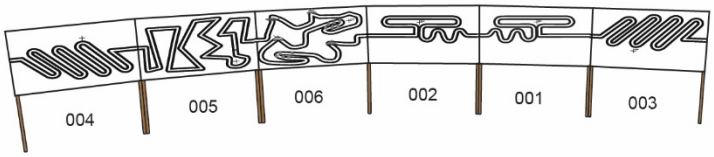
As the GUNNER nears the appropriate TRP, the TC may announce STEADY…STEADY…ON.

LEGEND

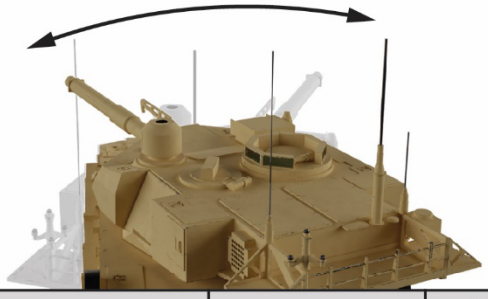
GAS GUNNER'S AUXILIARY SIGHT
GPS GUNNER'S PRIMARY SIGHT
TC TANK COMMANDER

Figure B-13. Tracking and manipulation exercise start point, example

TRACKING AND MANIPULATION BOARDS



STEP **1**



REMARKS	TIME	ONCE COMPLETE MOVE TO
TRAVERSE RIGHT	10 SECONDS	TRP 003

OPTIONS:

LEFT TO RIGHT

RIGHT TO LEFT

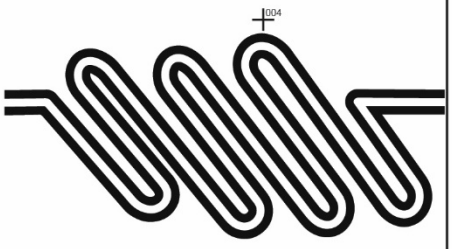
GPS

GAS

POWER CONTROLS

MANUAL CONTROLS, LOW POWER

MANUAL CONTROLS, HIGH POWER



Start point on TRP. Track along path after TRAVERSE command is given.
Announce tracking direction, optic, and controls used. Gunner repeats to confirm instructions.
Once confirmed, VC announces TRAVERSE to begin the exercise.

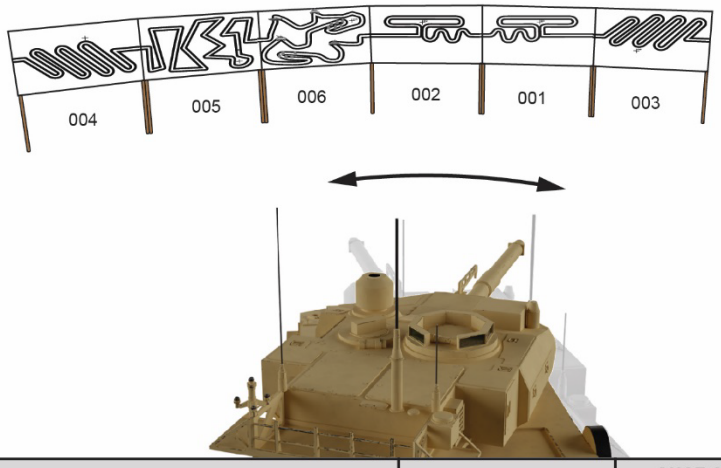
EXAMPLE: RIGHT TO LEFT, GAS, MANUAL, LOW POWER
GNR: RIGHT TO LEFT, GAS, MANUAL, LOW POWER
VC: TRAVERSE

LEGEND

GAS GUNNER'S AUXILIARY SIGHT
GNR GUNNER
GPS GUNNER'S PRIMARY SIGHT
TRP TARGET REFERENCE POINT
VC VEHICLE COMMANDER

Figure B-14. Tracking and manipulation step 1, example

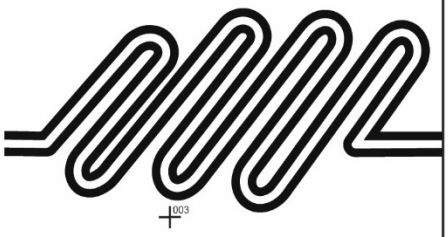
TRACKING AND MANIPULATION BOARDS



REMARKS	TIME	ONCE COMPLETE MOVE TO
TRAVERSE LEFT	10 SECONDS	TRP 006

OPTIONS:

LEFT TO RIGHT
RIGHT TO LEFT
GPS
GAS
POWER CONTROLS
MANUAL CONTROLS, LOW POWER
MANUAL CONTROLS, HIGH POWER



Start point on TRP. Track along path after TRAVERSE command is given.
Announce tracking direction, optic, and controls used. GUNNER repeats to confirm instructions.
Once confirmed, TC announces TRAVERSE to begin the exercise.

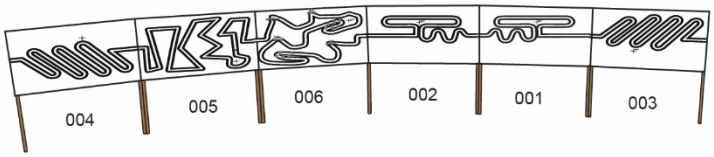
EXAMPLE: LEFT TO RIGHT, GPS, GUNNER CONTROL HANDLES
GNR: LEFT TO RIGHT, GPS, GUNNER CONTROL HANDLES
VC: TRAVERSE

LEGEND

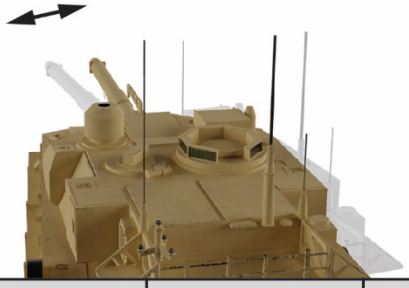
GAS	**GUNNER'S AUXILIARY SIGHT**	**TC**	**TANK COMMANDER**
GNR	**GUNNER**	**TRP**	**TARGET REFERENCE POINT**
GPS	**GUNNER'S PRIMARY SIGHT**	**VC**	**VEHICLE COMMANDER**

Figure B-15. Tracking and manipulation step 2, example

TRACKING AND MANIPULATION BOARDS



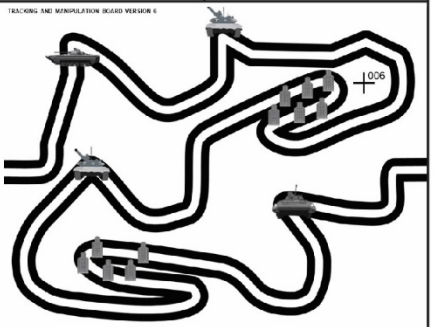
STEP **3**



REMARKS	TIME	ONCE COMPLETE MOVE TO
CHANGE OF WEAPON SYSTEM	20 SECONDS	TRP 005

SWITCHOLOGY OPTIONS:

TROOPS, LEFT TROOPS
TROOPS, RIGHT TROOPS
TANKS, LEFT TANK
TANKS, RIGHT TANK
TANK, PC–TANK FIRST
TANK, PC–PC FIRST
PC
PC, TROOPS–PC FIRST



Once set on TRP, TC announces REDUCED FIRE COMMAND for each target set. GUNNER uses BATTLESIGHT RANGE for the appropriate weapon/ammunition based on the unit SOP.

TANK AND PC, TANK FIRST
IDENTIFIED TANK, TWELVE HUNDRED
FIRE, FIRE AMP

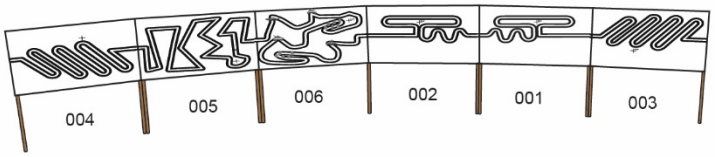
Fire Commands continue through a minimum of 5 target sets of the TC's choosing.

LEGEND

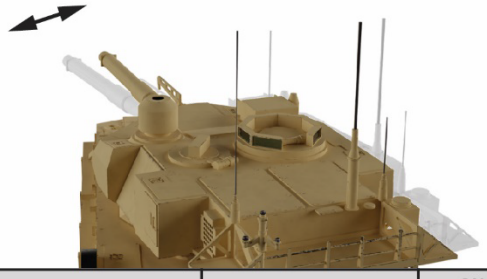
AMP	**ADVANCED MULTI-PURPOSE**	**TC**	**TANK COMMANDER**
PC	**PERSONNEL CARRIER**	**TRP**	**TARGET REFERENCE POINT**
SOP	**STANDARD OPERATING PROCEDURE**		

Figure B-16. Tracking and manipulation step 3, example

TRACKING AND MANIPULATION BOARDS



STEP **4**



REMARKS	TIME	ONCE COMPLETE MOVE TO
TC OVERRIDE	20 SECONDS	TRP 004

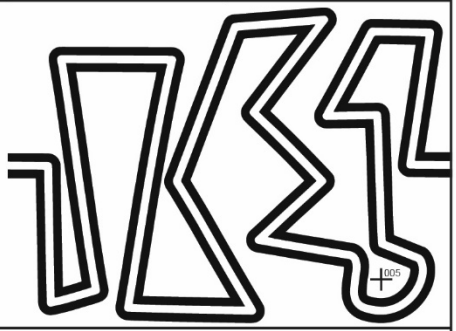
OPTIONS:

LEFT TO RIGHT

RIGHT TO LEFT

CITV

GPS



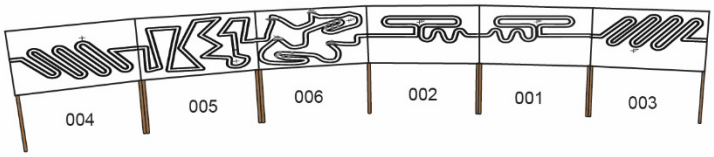
Start point on TRP. Track along path after TRAVERSE command is given.
TC announces FROM MY POSITION. Tracking is from TRP to RIGHT EDGE to LEFT EDGE
Once complete, TC directs TRAVERSE LEFT, TRP 004

LEGEND

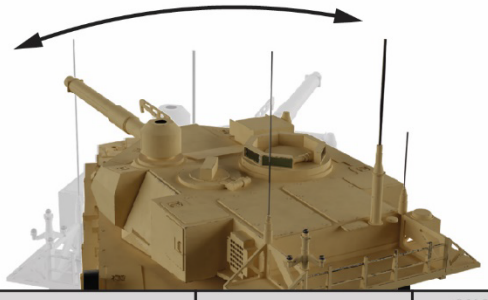
CITV COMMANDER'S INDEPENDENT THERMAL VIEWER
GPS GUNNER'S PRIMARY SIGHT
TC TANK COMMANDER
TRP TARGET REFERENCE POINT

Figure B-17. Tracking and manipulation step 4, example

TRACKING AND MANIPULATION BOARDS



STEP **5**



REMARKS	TIME	ONCE COMPLETE MOVE TO
LONG TRACK RIGHT	60 SECONDS	TRP 003

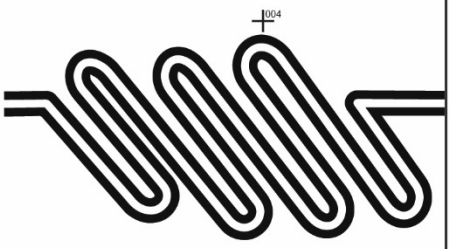
GUNNER TRACKS FROM RIGHT EDGE ALONG TRACK TO THE FAR-LEFT EDGE (ACROSS ALL SIX PANELS)

OPTIONS:

POWER CONTROL HANDLES

MANUAL CONTROLS (LOW)

MANUAL CONTROLS (HIGH)



TC directs gunner to LEFT LIMIT, CONTINUOUS TRACK RIGHT TO TRP 003.

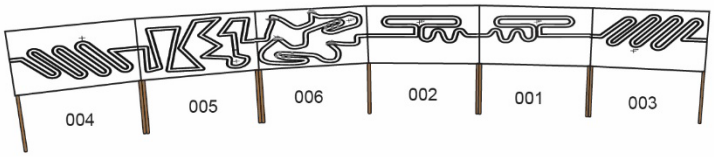
Once GUNNER arrives at TRP 003, move to next event.

LEGEND

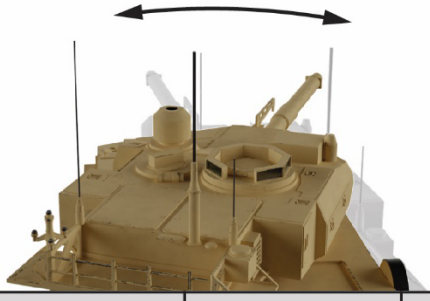
TC **TANK COMMANDER** **TRP** **TARGET REFERENCE POINT**

Figure B-18. Tracking and manipulation step 5, example

TRACKING AND MANIPULATION BOARDS



STEP **6**



REMARKS	TIME	ONCE COMPLETE MOVE TO
LONG TRACK LEFT	60 SECONDS	TRP 006

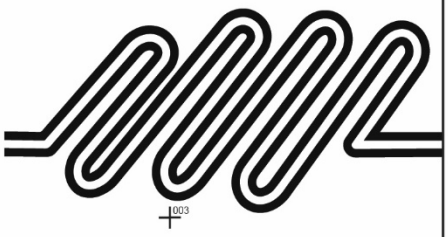
GUNNER TRACKS FROM RIGHT EDGE ALONG TRACK TO THE FAR-LEFT EDGE (ACROSS ALL SIX PANELS)

OPTIONS:

POWER CONTROL HANDLES

MANUAL CONTROLS (LOW)

MANUAL CONTROLS (HIGH)



Once the GUNNER is on TRP 003, the TC directs the GUNNER to track from the far-RIGHT EDGE to the far-LEFT panel EDGE and BACK to TRP 003.

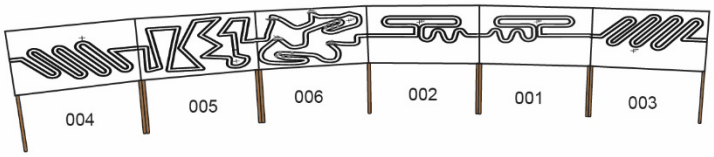
Once complete, TC directs the GUNNER to TRAVERSE LEFT to TRP 006 using POWER CONTROLS.

LEGEND

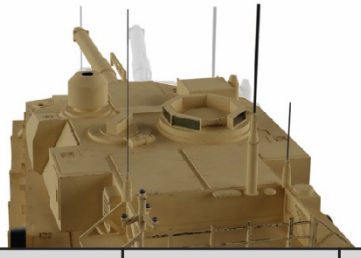
TC TANK COMMANDER **TRP TARGET REFERENCE POINT**

Figure B-19. Tracking and manipulation step 6, example

TRACKING AND MANIPULATION BOARDS

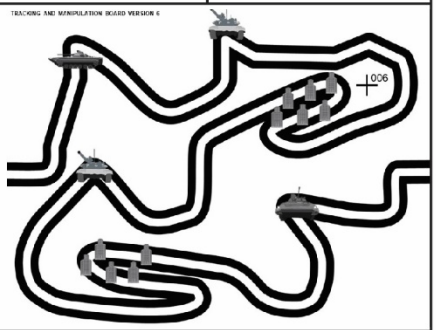


STEP **7**



REMARKS	TIME	ONCE COMPLETE MOVE TO
TC ENGAGEMENTS	60 SECONDS	TRP 002

TC ENGAGES ALL TARGETS
FROM MOST DANGEROUS
TO
LEAST DANGEROUS
USING OVERRIDE



Evaluated by PSG or Master Gunner.

TC engages all threats from MOST DANGEROUS to LEAST DANGEROUS, changing weapon and ammunition as appropriate.

TC uses OVERRIDE for all traversing.

LEGEND

PSG PLATOON SERGEANT
TC TANK COMMANDER
TRP TARGET REFERENCE POINT

Figure B-20. Tracking and manipulation step 7, example

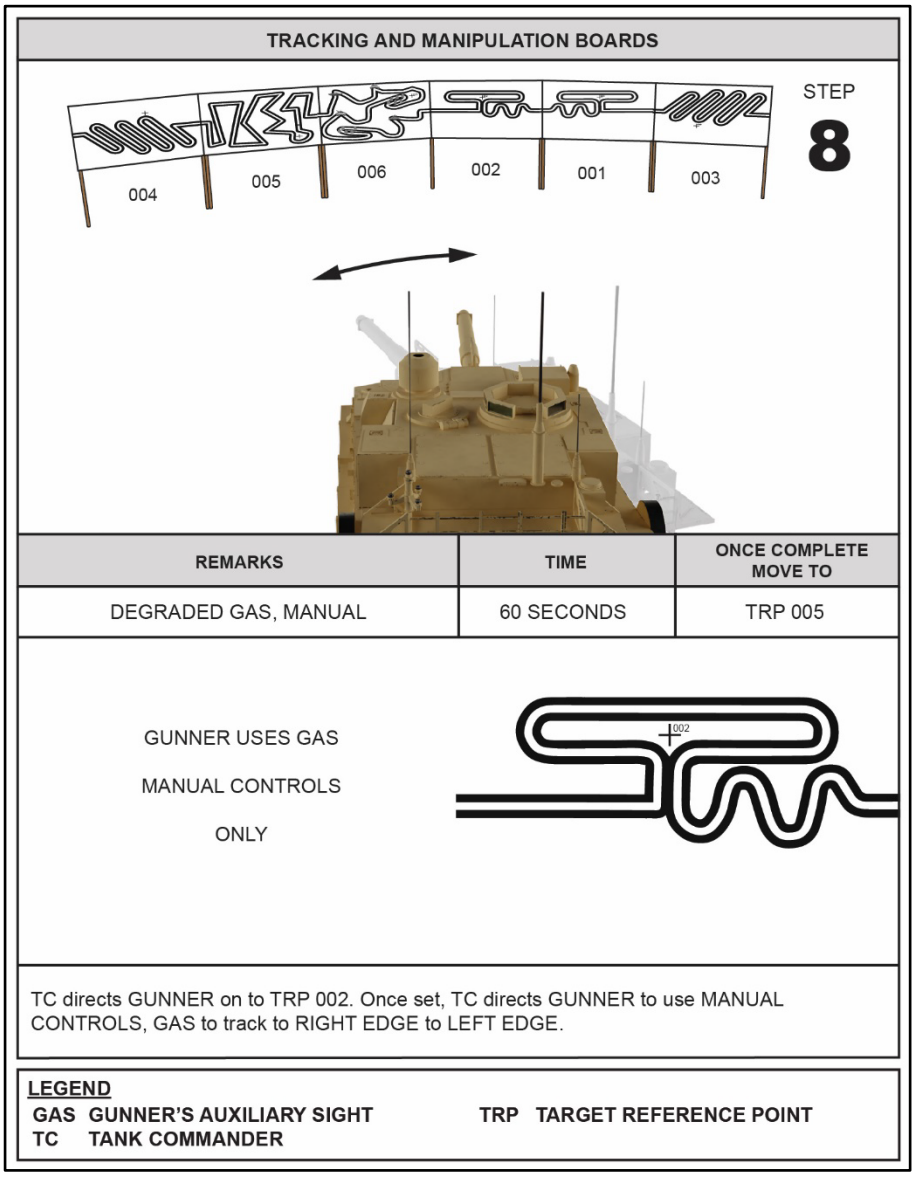
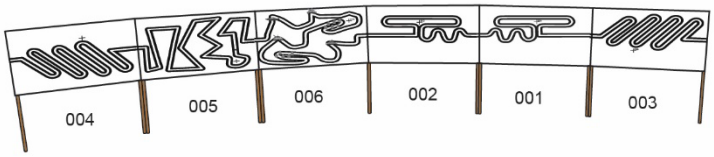


Figure B-21. Tracking and manipulation step 8, example

TRACKING AND MANIPULATION BOARDS



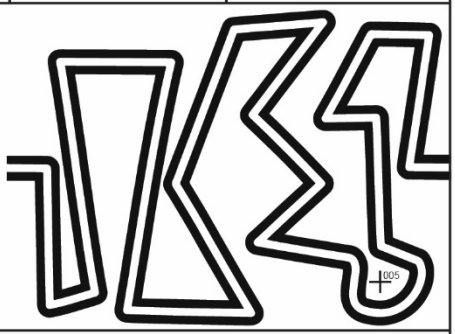
STEP **9**



REMARKS	TIME	ONCE COMPLETE MOVE TO
3X TRACKING (LOW POWER)	60 SECONDS	TRP 004

GUNNER USES 3X FOR TRACKING

POWER CONTROLS



TC directs the GUNNER to use POWER CONTROL, LOW MAG, to track from TRP 005 to RIGHT EDGE to LEFT EDGE to RIGHT EDGE.

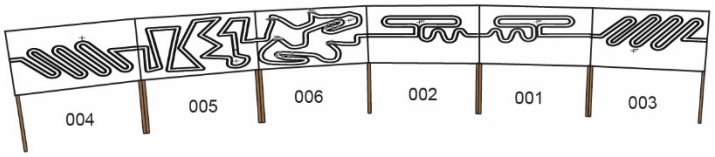
Once complete, TC announces TRAVERSE LEFT TRP FOUR

LEGEND

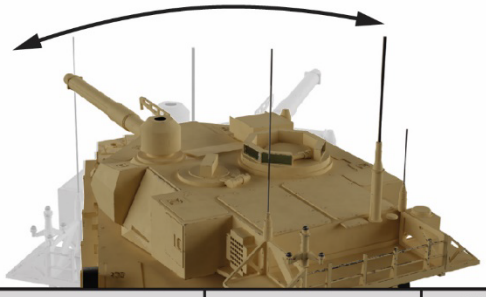
TC TANK COMMANDER **TRP TARGET REFERENCE POINT**

Figure B-22. Tracking and manipulation step 9, example

TRACKING AND MANIPULATION BOARDS



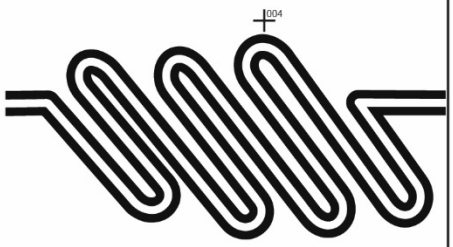
STEP **10**



REMARKS	TIME	ONCE COMPLETE MOVE TO
DEGRADED MANUAL GAS	60 SECONDS	CHECK YOUR WORK

VERTICAL AND HORIZONTAL MANUAL TRACKING SKILLS

GNR USES GAS AND MANUAL CONTROLS ONLY



TC directs GUNNER on to TRP 004. Once set, TC directs GUNNER to use MANUAL CONTROLS, GAS to track to LEFT EDGE to RIGHT EDGE to LEFT EDGE.

Once complete, TC announces CHECK YOUR WORK IN POWER.

GUNNER tracks along the entire track across all six (6) panels (RANGE FAN TO RANGE FAN) for any available targets.

LEGEND

GAS GUNNER'S AUXILIARY SIGHT
GNR GUNNER
TC TANK COMMANDER
TRP TARGET REFERENCE POINT

Figure B-23. Tracking and manipulation step 10, example

EXECUTION

B-24. Evaluators utilize the unit provided criteria scoring checklist for the ten steps of the tracking and manipulation board exercise. The evaluators will use specified prompts and evaluators may not assist the crew to perform any function.

B-25. Once testing is complete, the evaluator records the results on a locally created roll-up form. As each Soldier finishes or the time limit is up, whichever occurs first, the evaluator checks the Soldier's performance as either GO or NO-GO, informs them of their performance on that task, and directs them to the next station or to retraining.

B-26. The company Master Gunner or designated NCOIC, is responsible for completing unit and maintaining platoon and company roll-up information ensuring the next higher headquarters is informed, if required.

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Appendix C

Deployed/Austere Qualification

The austere qualification event, called Table A, is a record course of fire used to determine the live-fire proficiency of a crew platform. Table A serves as the live-fire proficiency event for readiness reporting for units requiring crew qualification in extreme circumstances while deployed. It is used by exception only, with permission from the first general officer in the chain of command.

It serves as the live-fire prerequisite for the crew to move to collective live-fire events. Table A, Austere Qualification, is a live environment-training event under live-fire conditions using full-caliber training ammunition, austere targetry at half distance (1/2-scale range to target) and engagement scenarios, at a combat tempo, conducted on an authorized live-fire facility.

This table reinforces the basic skills trained during previous events but is tailored for use on non-standard, host nation live-fire training facilities that do not meet the scenario requirements in Chapter 6.

OVERVIEW OF TABLE A

C-1. Table A, austere qualification, is conducted from the crew's vehicle and uses full caliber training ammunition on an authorized live-fire facility or safety certified training area. Table A trains and evaluate the crew's ability to engage stationary or moving targets placed in a tactical array, during day and limited visibility conditions, with an operational or simulated degraded fire control system, as applicable. Crews execute these tasks from the offense and defense using full-caliber ammunition with scaled targetry at half-scale distances.

C-2. This table requires each crew to successfully complete the live-fire prerequisites, all screening and zeroing procedures for their platform. The crew may complete this course without any additional live-fire training at an increased risk.

Requires General Officer Authorization

Table A is an alternate means of qualification for heavy tank crews while deployed where no Army-standard range facilities are available. The first general officer in the chain of command authorizes its use.

C-3. The planning and preparation process, including the uniform, facilities, and range support requirements are the same as Table VI, Qualification. Refer to chapter 6 for detailed information for those processes.

TARGETRY

C-4. Figure C-1 and figure C-2 provide the dimensional information and thermal blanket placement for the austere targets used during these engagements. These are non-standard, locally manufactured targets. They use common building material found internationally to facilitate unit purchase, if necessary.

C-5. They are specific to the half-scale range (range to target) requirements to ensure the course of fire retains its level of complexity while training in austere conditions. Units may not use North Atlantic Treaty Organization standard targets in lieu of the austere targets when executing this course of fire for qualification purposes.

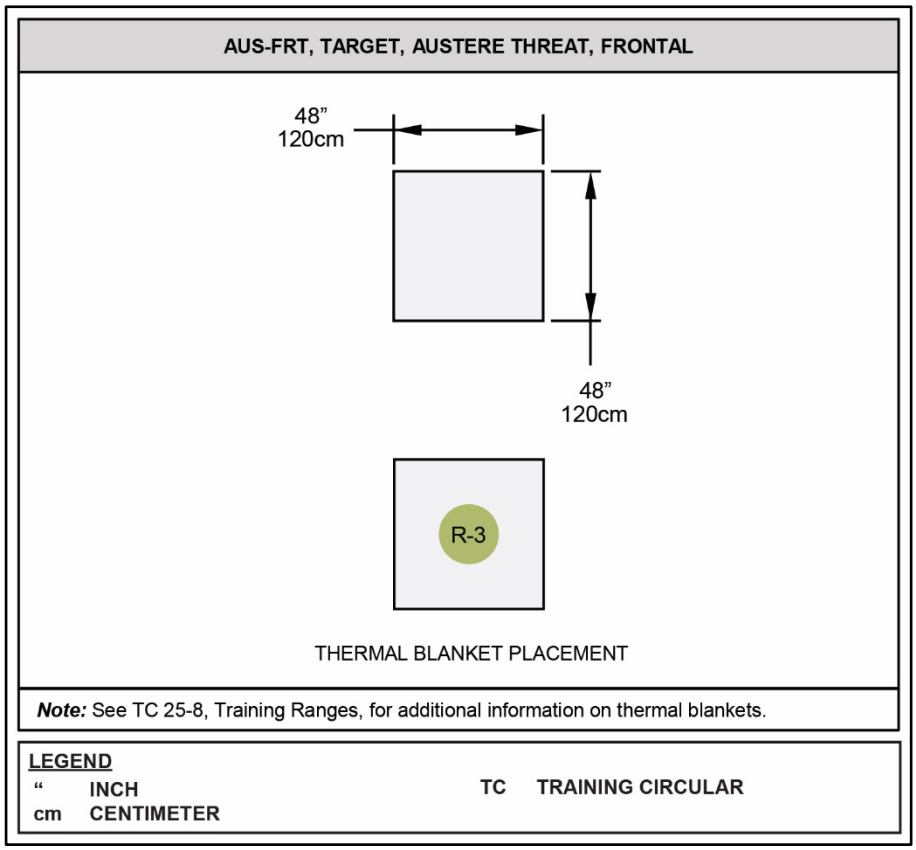


Figure C-1. Austere stationary frontal target design

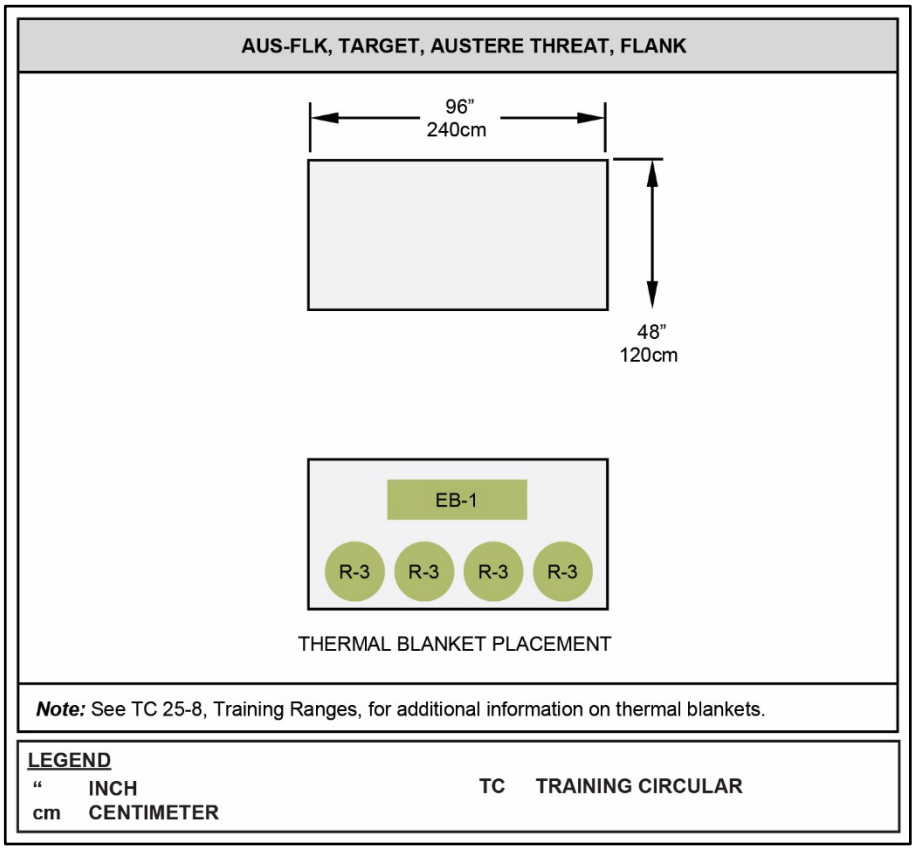


Figure C-2. Austere moving flank target design

AUSTERE QUALIFICATION AMMUNITION REQUIREMENTS

C-6. Each engagement has a separate ammunition requirement. Those requirements are listed for each engagement separately. An overview of all 10 engagement's ammunition requirements is provided if figure C-3.

TABLE A, AUSTERE QUALIFICATION TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	8
CA69	CTG 120MM TPCSDS-T M865A1	17
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	450
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	19
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	19

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS



PYROTECHNICS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		
EXP	EXPLOSIVE	TP-T	TARGET PRACTICE-TRACER
LNKD	LINKED	TRCR	TRACER

Figure C-3. Table A, Austere Qualification, ammunition requirements

AUSTERE QUALIFICATION ENGAGEMENTS

C-7. The engagement conditions are listed for all 10 engagements in figure C-4. Units determine the order and day/night engagement composition for the table.

TABLE A, AUSTERE QUALIFICATION ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
A0	VEHICLE COMMANDER	OFFENSE	VC	SABOT	AUS-FRT	STA	800m	10
			VC	SABOT	AUS-FLK	MOV	800m	12
A1	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	200m	6
			GNR	COAX	AUS-FLK	MOV	400m	7
A2	MACHINE GUN PURE	OFFENSE	GNR	COAX	E(7)FRT	STA	200m	10
			GNR	COAX	AUS-FRT	STA	600m	11
			GNR	COAX	E(7)FRT	STA	400m	10
A3	MAIN GUN PURE	DEFENSE	GNR	SABOT	AUS-FRT	STA	800m	6
			GNR	SABOT	AUS-FRT	STA	800m	6
A4	MAIN GUN PURE	OFFENSE	GNR	MPAT	AUS-FRT	STA	800m	11
			GNR	MPAT	AUS-FLK	MOV	800m	13
A5	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	COAX	E(7)FRT	STA	200m	6
			GNR	MPAT	AUS-FRT	STA	800m	7
			GNR	SABOT	AUS-FRT	STA	1,000m	6
			GNR	SABOT	AUS-FLK	MOV	1,000m	8
A6	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	SABOT	AUS-FRT	STA	800m	10
			GNR	COAX	E(7)FRT	STA	400m	10
			GNR	SABOT	AUS-FLK	MOV	800m	12
			GNR	MPAT	AUS-FLK	MOV	800m	13
A7	DEGRADED	DEFENSE	GNR	SABOT	AUS-FRT	STA	600m	5
			GNR	SABOT	AUS-FLK	MOV	800m	8
A8	DEGRADED	OFFENSE	GNR	COAX	E(7)FRT	STA	200m	10
			GNR	SABOT	AUS-FRT	STA	800m	10
A9	SIMULTANEOUS	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			VC	CAL .50	AUS-FRT	STA	600m	10
			GNR	COAX	AUS-FRT	STA	800m	7

LEGEND

AUS	AUSTERE	GNR	GUNNER
CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
EM	ENGAGEMENT MODIFIER	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	STA	STATIONARY
FLK	FLANK	VC	VEHICLE COMMANDER

Figure C-4. Basic skills engagement selection

ENGAGEMENT A0

C-8. The tank commander engagement fired from their position using the main gun at stationary and moving threats as shown in figure C-5. Engagement A0 serves to train and evaluate the tank commander's ability to control their vehicle on an offensive engagement while simultaneously defeating multiple threats. The ranges to target listed are scaled and require no adjustment.

A0 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	VEHICLE COMMANDER	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	VC	VC		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	AUS-FRT	AUS-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	800m	800m		
ENGAGEMENT MODIFIER	10	12		

⚠ ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

LEGEND

AUS	AUSTERE	KE	KINETIC ENERGY
CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	VC	VEHICLE COMMANDER

Figure C-5. Engagement A0 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A1

C-9. Engagement A1 is a machine gun pure engagement for the gunner. It trains target detection, acquisition, and machine gun engagement techniques from the defense. Range bands are mid-range. Crews must tactically use the battle position and build stability in their forward and rearward movements (see figure C-6). The ranges to target listed are scaled and require no adjustment.

A1 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	MACHINE GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	COAX		
TARGET	TROOPS	TRUCK		
TARGET TYPE	E(7)-FRT	AUS-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	200m	400m		
ENGAGEMENT MODIFIER	6	7		

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

LEGEND

AUS	AUSTERE	FRT	FRONTAL
CAL .50	CALIBER .50	KE	KINETIC ENERGY
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK

Figure C-6. Engagement A1 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A2

C-10. While on the offense, the gunner engages multiple machine gun threats at close- and mid-range (see figure C-7). Engagement A2 reinforces machine gun engagement techniques against stationary threats. The unit should observe the vehicle speed in relation to the close-range targets to ensure the firing platform does not bypass the threat. The ranges to target listed are scaled and require no adjustment.

A2 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	MACHINE GUN PURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	COAX	COAX	COAX	
TARGET	TROOPS	TRUCK	TROOPS	
TARGET TYPE	E(7)-FRT	AUS-FRT	E(7)-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	200m	600m	400m	
ENGAGEMENT MODIFIER	10	11	10	

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			150		1	1

LEGEND

AUS	**AUSTERE**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
COAX	**COAXIAL MACHINE GUN**	**MPAT**	**MULTIPURPOSE ANTITANK**
FRT	**FRONTAL**		

Figure C-7. Engagement A2 overview

ENGAGEMENT A3

C-11. Engagement A3 provides the gunner main gun engagements from a defensive posture (see figure C-8). This engagement requires the crew to coordinate the tactical movement from the defilade to the enfilade firing positions, ensuring appropriate gun tube clearance of the berm. Units should place the two main gun targets a minimum of 20 mils apart where they are not observable in narrow field of view. The ranges to target listed are scaled and require no adjustment.

A3 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	AUS-FRT	AUS-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	800m	800m		
ENGAGEMENT MODIFIER	6	6		

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

LEGEND

AUS	**AUSTERE**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure C-8. Engagement A3 overview

ENGAGEMENT A4

C-12. Engagement A4 is an offensive engagement using the main gun against a stationary and moving threat (see figure C-9). This engagement may cause excessive obscuration at the firing vehicle while on the offense. It reinforces tactical movement through obscuration. The ranges to target listed are scaled and require no adjustment.

A4



TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	MAIN GUN PURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	MPAT	MPAT		
TARGET	BMP	BMP		
TARGET TYPE	AUS-FRT	AUS-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	800m	800m		
ENGAGEMENT MODIFIER	11	13		

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	3				2	2

LEGEND

AUS	AUSTERE	FRT	FRONTAL
BMP	BOYEVAYA MASHINA PYEKHOTY	KE	KINETIC ENERGY
CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK

Figure C-9. Engagement A4 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A5

C-13. Engagement A5 challenges the crew with a change of weapon system and ammunition type from a defensive position (see figure C-10). This is a complex engagement and requires the crew to tactically move from the defilade to the enfilade while managing their switchology, ammunition type, and conduct of fire. The ranges to target listed are scaled and require no adjustment.

A5 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	CHANGE OF WEAPON/AMMO		POSTURE:	DEFENSE
			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	MPAT	SABOT	SABOT
TARGET	TROOPS	BMP	TANK	TANK
TARGET TYPE	E(7)-FRT	AUS-FRT	AUS-FRT	AUS-FLK
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	MOVING
RANGE TO TARGET	200m	800m	1,000m	1,000m
ENGAGEMENT MODIFIER	6	7	6	8

 ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3	1.5		50		3	3

LEGEND

AUS	AUSTERE	FRT	FRONTAL
CAL .50	CALIBER .50	KE	KINETIC ENERGY
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK

Figure C-10. Engagement A5 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A6

C-14. Engagement A6 challenges the crew with a change of weapon and ammunition during while on the offense (see figure C-11). This engagement is designed to require increased switchology awareness. Units should take additional time proofing this engagement to ensure it is presented to standard for all crews. The ranges to target listed are scaled and require no adjustment.

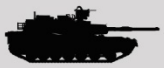
A6 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	OFFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	SABOT	COAX	SABOT	MPAT
TARGET	TANK	TROOPS	TANK	BMP
TARGET TYPE	AUS-FRT	E(7)-FRT	AUS-FLK	AUS-FLK
TARGET POSTURE	STATIONARY	STATIONARY	MOVING	MOVING
RANGE TO TARGET	800m	400m	800m	800m
ENGAGEMENT MODIFIER	10	10	12	13

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3	1.5		50		3	3

LEGEND

AUS	**AUSTERE**	**FRT**	**FRONTAL**
BMP	**BOYEVAYA MASHINA PYEKHOTY**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
COAX	**COAXIAL MACHINE GUN**	**MPAT**	**MULTIPURPOSE ANTITANK**
FLK	**FLANK**		

Figure C-11. Engagement A6 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A7

C-15. Engagement A7 is a degraded engagement for the gunner's auxiliary sight using power controls (see figure C-12). The gunner must clear the gun-target line effectively and control the movement of the vehicle. The tank commander may not use their power control handle or the CITV's designate function to place the gunner near the threat. The ranges to target listed are scaled and require no adjustment.

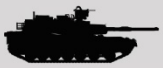
A7 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	DEGRADED GPS AND TIS FAILURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	AUS-FRT	AUS-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	600m	800m		
ENGAGEMENT MODIFIER	5	8		

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

LEGEND

AUS	AUSTERE	KE	KINETIC ENERGY
CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	TIS	THERMAL IMAGING SYSTEM
GPS	GUNNER'S PRIMARY SIGHT		

Figure C-12. Engagement A7 overview

Moving Targets Unavailable

When moving targetry is not available, units will use a stationary flank target at the same range to target listed.

ENGAGEMENT A8

C-16. Engagement A8 is a degraded engagement where the gunner must engage a threat on the offense without a laser range finder or fully functioning fire control system (see figure C-13). This engagement challenges the crew by using degraded gunnery techniques and reinforces battlecarry and battlesight preparation to fire, battlesight gunnery, and advanced target acquisition. The ranges to target listed are scaled and require no adjustment.

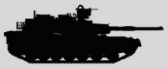
A8 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	DEGRADED LRF FAILURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	SABOT		
TARGET	TROOPS	TANK		
TARGET TYPE	E(7)-FRT	AUS-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	200m	800m		
ENGAGEMENT MODIFIER	10	10		

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5			50		1	1

LEGEND

AUS	**AUSTERE**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**LRF**	**LASER RANGE FINDER**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure C-13. Engagement A8 overview

ENGAGEMENT A9

C-17. Engagement A9 is a simultaneous engagement fired from a defensive firing position where the gunner and VC must acquire and defeat threats using their machine guns (see figure C-14). Units should use caution designing the engagement to ensure the tank commander's target is presented to the right side of the gunner's targets. The ranges to target listed are scaled and require no adjustment.

A9 

TABLE A, AUSTERE QUALIFICATION

TASK TYPE:	SIMULTANEOUS		POSTURE:	DEFENSE
			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	VC	GUNNER	
WEAPON/AMMUNITION	COAX	CALIBER .50	MPAT	
TARGET	TROOPS	TRUCK	BMP	
TARGET TYPE	E(7)-FRT	AUS-FRT	AUS-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	400m	600m	800m	
ENGAGEMENT MODIFIER	6	10	7	

ALL RANGES HAVE BEEN ADJUSTED FOR HALF-SCALE

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	1.5		50	50	2	2

LEGEND

AUS	AUSTERE	KE	KINETIC ENERGY
BMP	BOYEVAYA MASHINA PYEKHOTY	m	METER
CAL .50	CALIBER .50	mm	MILLIMETER
CAN	CANISTER	MPAT	MULTIPURPOSE ANTITANK
COAX	COAXIAL MACHINE GUN	VC	VEHICLE COMMANDER
FRT	FRONTAL		

Figure C-14. Engagement A9 overview

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Appendix D

Table B—Basic Skills Engagements

Basic skills engagements, called Table B, are designed to assist the commander by providing additional on-demand training for those crews having difficulty obtaining appropriate reticle aim prior to advancing to Table V. These engagements are built as a training stepping-stone to Table V for crews experiencing difficulty on specific live-fire capabilities tasks. The basic skills engagements are a menu-based, commander-selected engagements to incorporate into the unit training plan. They augment the engagements on Table IV when retraining on failed tasks will not best prepare the crew for advancement to Table V, Practice, or utilization of a simulator system are unavailable.

These engagements are focused on the six capabilities-based tasks for the Abrams-series tank; tank commander, machine gun, main gun, change of weapon system or ammunition, degraded skills, or simultaneous engagements. Commanders select any engagement for integration into their training plan based on available resources (time and training ammunition) to provide experience to struggling crews prior to Table V, Practice.

OVERVIEW OF TABLE B

D-1. Table B provides crews the ability to retrain on specific capability-based skills in areas where they are experiencing difficulties. Rather than refire failed engagements on Table IV, Basic, the commander can select an appropriate Table B engagement that builds additional rigor and skills during retraining opportunities.

D-2. These engagements are not resourced. They are provided as a training tool for commanders to conduct retraining and cross-training opportunities with additional variety and increased rigor to best prepare crews for Table V.

D-3. The planning and preparation process—including the uniform, facilities, targetry, and range support requirements—are the same as Table IV, Basic. Refer to chapter 4 for detailed information for those processes.

BASIC SKILLS AMMUNITION REQUIREMENTS

D-4. Each engagement has a separate ammunition requirement. Those requirements are listed for each engagement separately. An overview of all 10 engagement's ammunition requirements is provided in figure D-1.

TABLE B, BASIC SKILLS TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	11
CA69	CTG 120MM TPCSDS-T M865A1	8
CA38	CTG, 120MM CANISTER M1028	1
AB86	CTG, 7.62MM 4 ball M80/1 TRCR M62 LNKD	550
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	18
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	18

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.



PYROTECHNICS

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TP-T	TARGET PRACTICE-TRACER
EXP	EXPLOSIVE	TRCR	TRACER
LNKD	LINKED		

Figure D-1. Table B, Basic skills, ammunition requirements

BASIC SKILLS ENGAGEMENTS

D-5. The engagement conditions are listed for all 10 engagements in figure D-2. Units select the engagements based on the task type and the training gaps identified for the crew.

TABLE B, BASIC SKILLS ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
B0	VEHICLE COMMANDER	OFFENSE	VC	SABOT	H1T-FRT	STA	1,200m	10
			VC	SABOT	H1T-FRT	STA	1,800m	11
B1	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	L2T-FRT	STA	600m	7
B2	MACHINE GUN PURE	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	COAX	E(7)FRT	STA	600m	12
B3	MAIN GUN PURE	DEFENSE	GNR	CAN	E(7)FRT	STA	400m	6
B4	MAIN GUN PURE	OFFENSE	GNR	MPAT	M1T-FRT	STA	1,000m	11
			GNR	MPAT	L2T-FLK	MOV	1,000m	14
			GNR	MPAT	M1T-FRT	STA	1,200m	11
B5	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	MPAT	M1T-FRT	STA	1,200m	7
			GNR	COAX	L2T-FLK	MOV	600m	9
			GNR	MPAT	M1T-FRT	STA	1,200m	7
			GNR	COAX	E(7)FRT	STA	600m	8
B6	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	COAX	L2T-FRT	STA	400m	9
			GNR	COAX	L2T-FRT	STA	600m	11
			GNR	SABOT	H1T-FRT	STA	1,400m	11
			GNR	MPAT	M1T-FLK	MOV	1,800m	14
B7	DEGRADED	DEFENSE	GNR	COAX	E(7)FRT	STA	600m	8
			GNR	MPAT	M1T-FRT	STA	1,600m	8
B8	DEGRADED	OFFENSE	GNR	SABOT	H1T-FRT	STA	1,200m	10
			GNR	SABOT	H1T-FLK	MOV	1,200m	12
B9	SIMULTANEOUS /MULTIPLE TARGET	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			VC	CAL .50	M2T-FRT	STA	800m	10
			GNR	COAX	L2T-FRT	STA	600m	7

LEGEND

CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
EM	ENGAGEMENT MODIFIER	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK	STA	STATIONARY
FRT	FRONTAL	VC	VEHICLE COMMANDER
GNR	GUNNER		

Figure D-2. Basic skills engagement selection

ENGAGEMENT B0

D-6. Engagement B0 is selected for retraining tank commanders on their ability to engage multiple stationary threats with the main gun. This engagement is executed on the offense. The tank commander engagement fired from their position using the commander's override firing the main gun (see figure D-3).

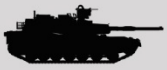
B0 

TABLE B, BASIC SKILLS

TASK TYPE:	VEHICLE COMMANDER	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	VC	VC		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	H1T-FRT	H1T-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	1,200m	1,800m		
ENGAGEMENT MODIFIER	11	12		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

LEGEND

CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**VC**	**VEHICLE COMMANDER**

Figure D-3. Engagement B0 overview

ENGAGEMENT B1

D-7. Engagement B1 is a machine gun pure engagement designed for crews having difficulty with machine gun engagement skills in the defense. It trains target detection, acquisition, and machine gun engagement techniques from the defense (see figure D-4).

B1 

TABLE B, BASIC SKILLS

TASK TYPE:	MACHINE GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	COAX		
TARGET	TROOPS	TRUCK		
TARGET TYPE	E(7)-FRT	L2T-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	400m	600m		
ENGAGEMENT MODIFIER	6	7		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100		1	1

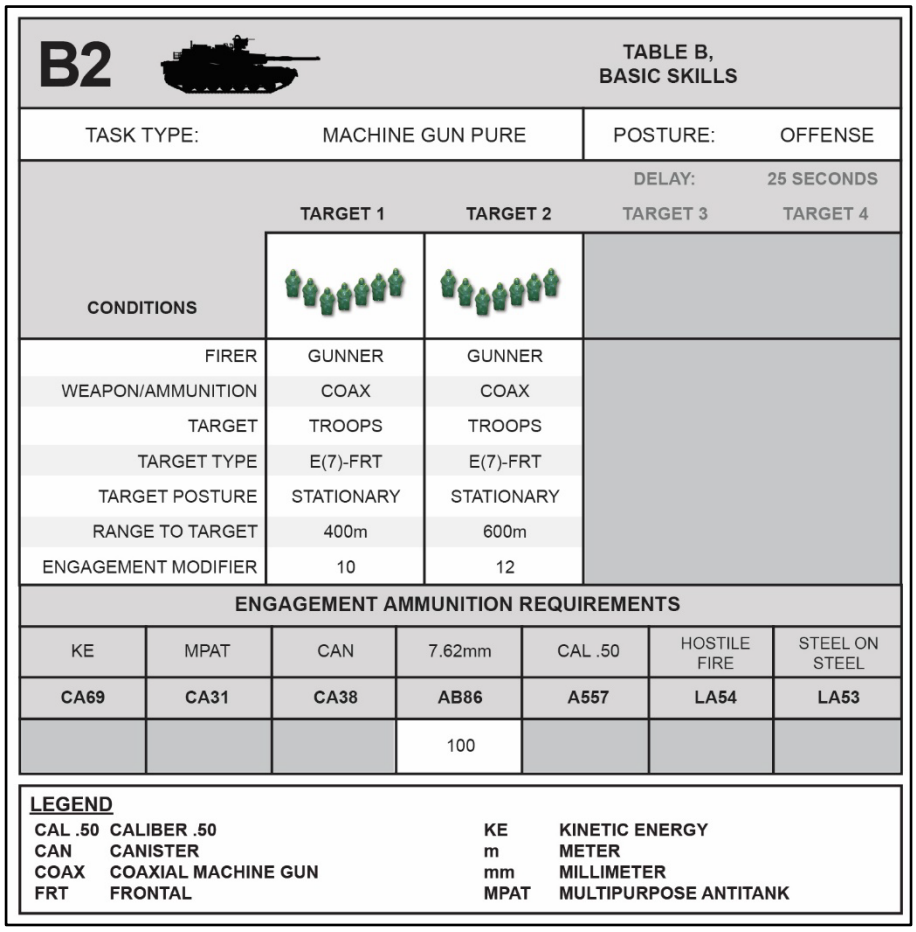
LEGEND

CAL .50	CALIBER .50	KE	KINETIC ENERGY
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	mm	MILLIMETER
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK

Figure D-4. Engagement B1 overview

ENGAGEMENT B2

D-8. While on the offense, the gunner engages multiple machine gun threats at mid-range for the coaxial machine gun (see figure D-5). Engagement B2 continues the gunner's education on machine gun engagement techniques against multiple threats while on the offense.



B2

TABLE B, BASIC SKILLS

TASK TYPE:	MACHINE GUN PURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	COAX		
TARGET	TROOPS	TROOPS		
TARGET TYPE	E(7)-FRT	E(7)-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	400m	600m		
ENGAGEMENT MODIFIER	10	12		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100			

LEGEND

CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure D-5. Engagement B2 overview

ENGAGEMENT B3

D-9. Engagement B3 is a main gun engagement for the gunner using a canister round from the defense against mass troops (see figure D-6). Units can utilize multiple troops sets in close proximity to provide a massed troop threat. Care needs to be taken firing the canister round from a fixed firing position.

B3 

TABLE B, BASIC SKILLS

TASK TYPE:	MAIN GUN PURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER			
WEAPON/AMMUNITION	CAN			
TARGET	TROOPS			
TARGET TYPE	E(7)-FRT			
TARGET POSTURE	STATIONARY			
RANGE TO TARGET	400m			
ENGAGEMENT MODIFIER	6			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
		1				

LEGEND

CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK
KE	KINETIC ENERGY		

Figure D-6. Engagement B3 overview

ENGAGEMENT B4

D-10. Engagement B4 is a main gun engagement on the offense against multiple stationary and moving threats (see figure D-7). This teaches the gunner main gun engagement techniques using chemical energy rounds. The primary teaching point on the main gun engagements is for the crew to effectively use the speed of their vehicle to their advantage against multiple main gun rounds. Crews should conduct a MRS update at the conclusion of the engagement.

B4 

TABLE B, BASIC SKILLS

TASK TYPE:	MAIN GUN PURE	POSTURE:	OFFENSE
		DELAY:	**25 SECONDS**

CONDITIONS	**TARGET 1** 	**TARGET 2** 	**TARGET 3** 	**TARGET 4**
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	MPAT	MPAT	MPAT	
TARGET	BMP	TRUCK	BMP	
TARGET TYPE	M1T-FRT	L2T-FLK	M1T-FRT	
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	
RANGE TO TARGET	1,000m	1,000m	1,200m	
ENGAGEMENT MODIFIER	11	14	11	

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	4.5				3	3

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
FLK	**FLANK**	**MPAT**	**MULTIPURPOSE ANTITANK**
FRT	**FRONTAL**		

Figure D-7. Engagement B4 overview

ENGAGEMENT B5

D-11. Engagement B5 challenges the crew with a change of weapon and ammunition during a defensive engagement (see figure D-8). This is one of the most complex and rigorous engagement on this table. This engagement is designed to include the changes to weapon and ammunition types requiring increased switchology awareness as well as the crew's cohesive efforts on target acquisition.

B5 

TABLE B, BASIC SKILLS

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	MPAT	COAX	MPAT	COAX
TARGET	BMP	TRUCK	BMP	TROOPS
TARGET TYPE	M1T-FRT	L2T-FLK	M1T-FRT	E(7)-FRT
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	STATIONARY
RANGE TO TARGET	1,200m	600m	1,200m	600m
ENGAGEMENT MODIFIER	7	9	7	8

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	3		100		3	3

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	KE	KINETIC ENERGY
CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FLK	FLANK		
FRT	FRONTAL		

Figure D-8. Engagement B5 overview

ENGAGEMENT B6

D-12. Engagement B6 is a change of weapon and ammunition engagement fired while on the offense (see figure D-9). This is a complex engagement and requires the crew to tactically move while managing their switchology, ammunition type, and conduct of fire. This is one of the most complex engagements for the crew to master. This engagement includes a change of main gun ammunition to ensure the appropriate munitions are employed against the threats.

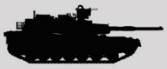
B6 

TABLE B, BASIC SKILLS

TASK TYPE:	CHANGE OF WEAPON/AMMO		POSTURE:	OFFENSE
			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	COAX	SABOT	MPAT
TARGET	TRUCK	TRUCK	TANK	BMP
TARGET TYPE	L2T-FRT	L2T-FRT	H1T-FRT	M1T-FLK
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	MOVING
RANGE TO TARGET	400m	600m	1,400m	1,800m
ENGAGEMENT MODIFIER	9	11	11	14

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5	1.5		100		4	4

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**FRT**	**FRONTAL**
CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FLK	**FLANK**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure D-9. Engagement B6 overview

ENGAGEMENT B7

D-13. Engagement B7 is a degraded engagement where the gunner must engage multiple threats from a defensive firing position without a laser range finder, power controls, or primary sight using degraded gunnery techniques (see figure D-10). This engagement challenges the crew by using degraded gunnery techniques and reinforces battlecarry and battlesight preparation to fire, battlesight gunnery, and advanced target acquisition with a mid- and long-range threat array.

B7 

TABLE B, BASIC SKILLS

TASK TYPE:	DEGRADED GAS/MANUAL CONTROLS	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1 	TARGET 2 	TARGET 3	TARGET 4
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	COAX	MPAT		
TARGET	TROOPS	BMP		
TARGET TYPE	E(7)-FRT	M1T-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	600m	1,600m		
ENGAGEMENT MODIFIER	8	8		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	1.5		50		1	1

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**GAS**	**GUNNER'S AUXILIARY SIGHT**
CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure D-10. Engagement B7 overview

ENGAGEMENT B8

D-14. Engagement B8 is a degraded engagement for the gunner to apply the gunner's auxiliary sight and apply the appropriate ballistic reticle for stationary and moving main gun threats (see figure D-11). This engagement uses power control of the turret and primary armament but without the day or thermal optic.

B8 

TABLE B, BASIC SKILLS

TASK TYPE:	DEGRADED LRF FAILURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	SABOT	SABOT		
TARGET	TANK	TANK		
TARGET TYPE	H1T-FRT	H1T-FLK		
TARGET POSTURE	STATIONARY	MOVING		
RANGE TO TARGET	1,200m	1,200m		
ENGAGEMENT MODIFIER	10	12		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
3					2	2

LEGEND

CAL .50	**CALIBER .50**	**LRF**	**LASER RANGE FINDER**
CAN	**CANISTER**	**m**	**METER**
FLK	**FLANK**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**		

Figure D-11. Engagement B8 overview

ENGAGEMENT B9

D-15. Engagement B9 is a simultaneous engagement in the defense where the gunner and tank commander must acquire and defeat threats using their machine guns (see figure D-12). Units should use caution designing the engagement to ensure the tank commander's target is presented to the right side of both the gunner's target arrays.

B9 

TABLE B, BASIC SKILLS

TASK TYPE:	SIMULTANEOUS	POSTURE:	DEFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	VC	GUNNER	
WEAPON/AMMUNITION	COAX	CALIBER .50	COAX	
TARGET	TROOPS	BTR	TRUCK	
TARGET TYPE	E(7)-FRT	M2T-FRT	L2T-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	400m	800m	600m	
ENGAGEMENT MODIFIER	10	14	12	

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			100	50	2	2

LEGEND

BTR	**BRONETRANSPORTYOR**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
COAX	**COAXIAL MACHINE GUN**	**MPAT**	**MULTIPURPOSE ANTITANK**
FRT	**FRONTAL**	**VC**	**VEHICLE COMMANDER**

Figure D-12. Engagement B9 overview

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Appendix E

Complex Engagements

Table C, Complex Engagements, is a course of fire developed for commanders to challenge their best crews. Table C serves as a live-fire check on mastery skills on an Abrams platform. It is intended for use after a crew has successfully qualified on their tank within the past six months.

The engagements were specifically designed by Master Gunners to focus on the capabilities of the Abrams tank, its ammunition, and fire control system functionality. It should only be used for crews that have demonstrated an exceptional level of skill with their tank.

This event is scored in the same manner as other engagements in this publication. Units electing to execute this course of fire will require detailed coordination with their supporting range operations branch to build a safe and effective scenario.

OVERVIEW OF TABLE C

E-1. Table C, Complex Engagements, is fired from the crew's vehicle and uses full caliber training ammunition on an authorized live-fire facility or safety certified training area. The training ammunition required to conduct Table C are not resourced. The unit may use training munitions available in their account or coordinate with their ammunition management office for additional resources, as available.

E-2. Table C trains and evaluate the experienced crew's ability to engage stationary or moving targets placed in a tactical array, during day and limited visibility conditions, with an operational or simulated degraded fire control system, as applicable. Crews execute these tasks from the offense and defense using full-caliber ammunition.

E-3. This table requires each crew to successfully complete the live-fire prerequisites, all screening and zeroing procedures for their platform, successfully complete Table VI, Qualification, and are selected by the commander to conduct this event.

Experienced Crews Only

Crews must be selected by the battalion commander or above to conduct this event. This table is designed to train and evaluate complex engagement skills, day and night, while fighting from the defense and during offensive engagements.

PURPOSE OF TABLE C

E-4. Table C provides a series of live-fire engagements to showcase a unit's experienced crews on an Abrams tank, demonstrate their master of their profession, and to demonstrate their lethality in a rigorous, competitive course of fire.

METHOD—TABLE C

E-5. Table C is a performance-based evaluation of advanced gunnery skills in a live environment under live-fire conditions. Conduct of Table C is from the crew's tank using full-caliber ammunition and BESs. It utilizes the unit's most experienced evaluators to educate, train, test, and retrain Soldiers to meet or exceed those standards.

END STATE—TABLE C

E-6. The crew demonstrates mastery of their tank across a series of demanding engagements. The crews are challenged by introducing them to mastery-level engagements designed by Master Gunners based on large scale combat operations threat dilemmas. The unit receives an exceptionally well-trained crew that trains others on their knowledge and experiences gained.

TASK, CONDITIONS, AND STANDARD—TABLE C

E-7. Outlined in figure E-1 are the task, conditions, and standard for Table VI, Qualification. Units may not add to the live-fire requirements or tasks associate with Table VI. The division commander or equivalent maintains the qualification course of fire standards and approved scenarios.

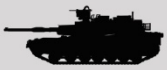
 TABLE C COMPLEX ENGAGEMENTS	
TASK	Engage and destroy stationary and moving targets placed in a tactical array, during day and limited visibility from a stationary or moving vehicle by using full-caliber ammunition.
CONDITIONS	Given the following: • An operational platform with weapon or weapon systems. • Allotted ammunition. • Certified and experienced vehicle crew evaluators. • Full-scale targets. • Qualified crew on Table VI, Qualification, selected by the commander.
STANDARD	The crew must: • Score a minimum of 700 of 1,000 points overall. • Score 70 points or more on all targets presented on 7 out of the 10 engagements. • Qualify on at least one day and one limited visibility engagement.

Figure E-1. Table C, Complex Engagements, task, conditions, and standard

PLAN FOR TABLE C

E-8. Table C, Complex Engagements, is a live-fire training environment event using full-caliber and small arms training ammunition, BESs, and specific TADSS. This course of fire requires experienced VCEs and coordination with the higher headquarters for support.

Use Experienced Vehicle Crew Evaluators

Units should consider having experienced Master Gunners serve as VCEs for these engagements due to their inherent complexity.

E-9. This section details the resources needed for planning purposes. It includes general information on the following topics for consideration during the planning process, which are—

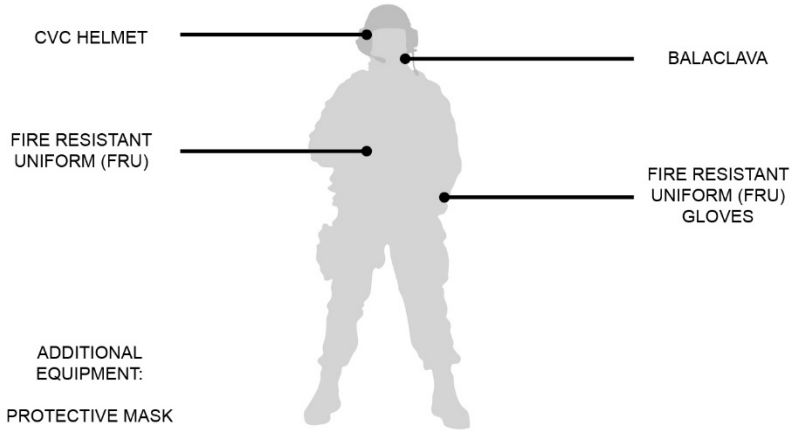
- Uniform—the minimum requirements for the combat vehicle crewmember's fire-retardant clothing and protective equipment.
- Facilities—available facilities that support the training event.
- Training plan—the minimum tasks, general guidelines, and special instructions for the training event.
- Time and throughput—the estimated time required to complete the training event including throughput considerations for planning.
- Ammunition—any training munitions required to complete the training event.
- TADSS—any available training aids that directly support or augment the training event.

UNIFORM FOR TABLE C

E-10. Crews must be in the appropriate vehicle crewmember uniform or prescribed unit uniform and protective mask. Crews are not required to have any additional body armor, ballistic plates, or gear during the training event unless directed by the commander. Figure E-2 provides the minimum uniform training requirements this event.



TABLE C
COMPLEX ENGAGEMENTS
UNIFORM REQUIREMENTS



LEVEL	S SKULL	T TORSO	E EYES	E EARS	L LIMBS
MINIMUM REQUIRED	3	4	1	3	3
0	NONE	NONE	NONE	NONE	NONE
1	PATROL CAP	VEST	**GOGGLES**	SINGLE EAR PROTECTION	GLOVES
2	HELMET	VEST with PLATES	BALLISTIC	DOUBLE EAR PROTECTION	LEATHER GLOVES
3	**BALACLAVA**	FRU		**HEADSET**	**FRU GLOVES**
4		**FRU and SPALL VEST**			

Note: The Combat Vehicle Crewman (CVC) helmet includes the headset hearing protection. Goggles or appropriate eye protection are required for exposed crewmen during vehicle movement.

Figure E-2. Uniform requirements for simulations training

FACILITIES FOR TABLE C

E-11. Table C requires the use of a maneuver gunnery range that allows live fire for small and large caliber ammunition. Master Gunners must be familiar with the family of maneuver ranges, the range operations control area, and the specific instrumentation and target sets available on the range facility selected for Table C. The maneuver range facilities recommended as primary and alternate facilities are shown in figure E-3.



TABLE C
COMPLEX ENGAGEMENTS
FACILITIES

FACILITY		PURPOSE
Battle Area Complex	BAX	ALTERNATE
Digital Air Ground Integration Range	DAGIR	ALTERNATE
Digital/Multipurpose Range Complex	D/MPRC	**PRIMARY**
Multipurpose Training Range	MPTR	**PRIMARY**

Note: Units planning Table C must use a range facility that provides a minimum of four moving armored targets simultaneously. This requires the use of a multipurpose range complex or better facility.

Figure E-3. Recommended maneuver range facilities to support Table C

Thru-Sight Video Required

Units are required to utilize the thru-sight video system available for their platform on the qualification event. This is to ensure the highest fidelity AAR and take-home packages are created for the crews and commanders to build future unit training plans.

Lift Line Usage

Several engagements require the use of lift lines within the range operating software. The Master Gunner must coordinate with range operations during the scenario development process to integrate lift lines to present targetry in the appropriate timed sequence during offensive and retrograde engagements.

RANGE SUPPORT FOR TABLE C

E-12. The range support group provides VCE teams to evaluate the course of fire. This requires all gunners and above to certify or recertify as VCEs between T-6 and T-execution of the training event.

E-13. The range support personnel general requirements are in figure E-4. This includes the most common support required for tank crew live-fire events. In the event the unit utilizes multiple facilities to complete the zero and defensive engagements, appropriate adjustments should be made to this general structure.

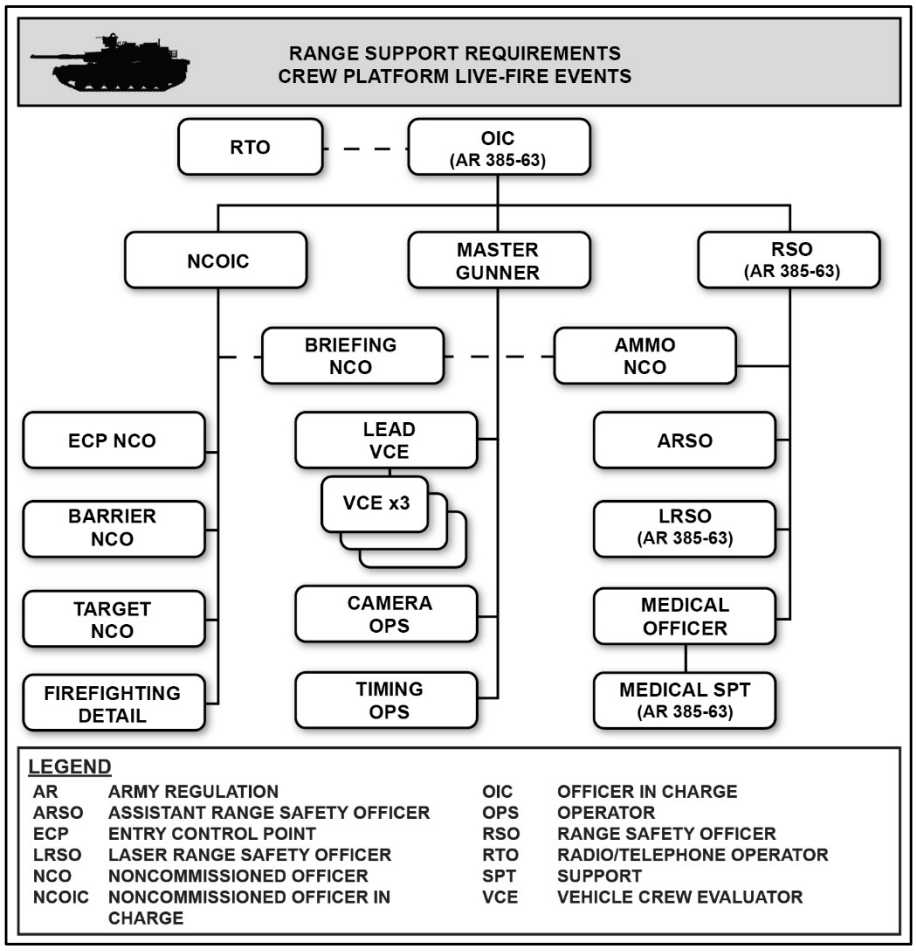


Figure E-4. Range support personnel requirements, example

TRAINING PLAN FOR TABLE C

E-14. The design of Table C is purposefully challenging to the crews while providing realistic engagements that exercise the crew's ability to utilize the key capabilities of the vehicle's fire control system. Units retrain as necessary with full-caliber ammunition using first-round hit savings (harvested ammunition) from the previous tables in the training strategy.

E-15. All crew platform tables are multiple qualification criteria tables. Crews must score at least 70 points per target according to the target kill standards in TC 3-20.31 on single and multiple target engagements to qualify the engagement. Crews must also score more than 700 points overall with a minimum of 70 points per target during 7 of 10 engagements on the qualification table to be used. Crews must qualify at least one engagement during day and one engagement during limited visibility to be rated as the top gun.

E-16. Table C uses full caliber training ammunition on an authorized live-fire facility or safety certified training area that assesses an element's tactical employment proficiency and lethality. Units are required to use full-scale targets at full range for the engagement scenarios unless specifically directed.

Scenario Requirements for Table C

E-17. All engagements are evaluated using certified VCEs using DA Form 8265 and DA Form 8265-1 as the official record of training. Master Gunners must ensure the training records are included in each crew's gunnery packet (see TC 3-20.31).

E-18. The engagements listings are by capability type using the standard engagement naming structure listed in TC 3-20.31. It provides the requirements for each engagement, which are described in paragraphs E-19 through E-28.

Task Description—Table C

E-19. The task description includes both the engagement number (the table number plus engagement task) followed by the system capability trained.

Firing Vehicle Posture—Table C

E-20. The firing vehicle posture establishes the offense or defense condition for the engagement.

Firer—Table C

E-21. The firer column identifies which crewmember is to engage the target listed. Targets defeated by a different crewmember listed as the firer result in an auto-zero penalty, failing to adhere to course conditions.

Weapon (or Ammunition)—Table C

E-22. Identifies the weapon (coaxial, caliber .50, or primary armament ammunition type) that is used to defeat the threat. Design of each engagement is for a specific weapon or ammunition type (primary armament) for use, which relates to the crew conduct of

fire, optic selection, engagement techniques, or other unique implied tasks. Crews that fail to announce the appropriate weapon or ammunition, or appropriate selection for subsequent or supplemental engagements may be penalized IAW TC 3-20.31.

Target Type—Table C

E-23. The target required for the presentation, IAW TC 25-8.

Target Posture—Table C

E-24. The target posture establishes if the target is stationary, moving, or evasive for the engagement. See TC 3-20.31 for more information on target postures.

Range (to Target)—Table C

E-25. The required range (full scale or equivalent scaled range) from the firing vehicle to the target. For offensive engagements, this distance calculation is from the center of the movement box to the target. The range to target distance is provided in meters and is displayed as a whole number, such as 600.

E-26. The target may be placed at the distance indicated, plus or minus 200 meters. For example, when the range to target is listed as 600 meters, the target may be placed between 400 meters and 800 meters. This allows flexibility designing the scenario on varying maneuver range facilities with different capabilities, target counts, emplacement locations, and terrain restrictions.

E-27. No change to the EM is authorized. The range bands listed with their applied tolerances do not require any adjustment to the EM. Units are not authorized to exceed the target placement tolerances.

Engagement Modifier—Table C

E-28. The EM is the time in seconds required to achieve 100 points against the listed threat. To defeat the threat successfully, the crew must achieve the kill standard against the target and have an overall engagement time of no more than the EM plus 20 seconds. See TC 3-20.31 for the evaluation, timing, and scoring procedures.

No Deviations Authorized

Units are not authorized to deviate from the specified target type, posture, range band, firing vehicle posture, or ammunition type. This maintains the standards for the complex engagements across the force.

Engagements—Table C

E-29. Figure E-5 shows the conditions for each engagement. No deviation is authorized for any condition of the listed tasks.

TABLE C, COMPLEX ENGAGEMENTS
ENGAGEMENT REQUIREMENTS

TASK DESCRIPTION		POSTURE	FIRER	WEAPON	TARGET TYPE	TARGET POSTURE	RANGE	EM
C0	VEHICLE COMMANDER	DEFENSE	VC	SABOT	H1T-FRT	STA	3,000m	26
C1	MACHINE GUN PURE	OFFENSE RETROGRADE	GNR	COAX	L2T-FRT	STA	400m	9
			GNR	COAX	L2T-FRT	STA	800m	12
			GNR	COAX	E(7)FRT	STA	200m	10
C2	MACHINE GUN PURE	DEFENSE	GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	E(7)FRT	STA	400m	6
			GNR	COAX	E(7)FRT	STA	600m	8
			GNR	COAX	E(7)FRT	STA	600m	8
C3	MAIN GUN PURE	OFFENSE LATERAL MOVEMENT	GNR	MPAT	M1T-FLK	MOV	1,600m	14
			GNR	MPAT	M1T-FLK	MOV	1,600m	14
C4	MAIN GUN PURE	OFFENSE	GNR	SABOT	H1T-FLK	MOV	1,800m	13
			GNR	SABOT	H1T-FLK	MOV	1,800m	13
			GNR	SABOT	H1T-FLK	MOV	1,200m	12
			GNR	SABOT	H1T-FLK	MOV	1,200m	12
C5	CHANGE OF WEAPON/ AMMUNITION	OFFENSE	GNR	COAX	E(7)FRT	STA	400m	10
			GNR	SABOT	H1T-FRT	STA	1,800m	11
			GNR	COAX	E(7)FRT	STA	600m	12
			GNR	MPAT	M1T-FLK	MOV	1,800m	14
C6	CHANGE OF WEAPON/ AMMUNITION	DEFENSE	GNR	MPAT	M1T-FRT	STA	1,000m	7
			GNR	COAX	L2T-FRT	STA	600m	7
			GNR	COAX	E(7)FRT	STA	400m	6
			GNR	SABOT	H1T-FLK	MOV	2,000m	10
C7	DEGRADED	DEFENSE	GNR	COAX	E(3)-FRT	STA	400m	6
			GNR	SABOT	H1T-FRT	STA	1,800m	7
C8	DEGRADED	DEFENSE	VC	COAX	E(3)FRT	STA	400m	6
			VC	SABOT	H1T-FRT	STA	1,800m	7
C9	SIMULTANEOUS /MULTIPLE TARGET	OFFENSE	GNR	MPAT	M1T-FLK	MOV	1,800m	14
			VC	CAL .50	M2T-FRT	STA	1,600m	15
			GNR	COAX	E(7)FRT	STA	600m	12
			GNR	COAX	E(7)FRT	STA	600m	12

LEGEND

CAL .50	CALIBER .50	m	METER
COAX	COAXIAL MACHINE GUN	MOV	MOVING
EM	ENGAGEMENT MODIFIER	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	STA	STATIONARY
FLK	FLANK	VC	VEHICLE COMMANDER
GNR	GUNNER		

Figure E-5. Table C scenario requirements

TIME AND THROUGHPUT—TABLE C

E-30. The throughput expectation of this table is 14 crews per day. Depending on maintenance or other unforeseen issues, recommend incorporating an additional half training day to the schedule. Figure E-6 shows the expected throughput schedule based on the number of vehicles for firing and the unit's day and night engagement breakdown for the engagements.

CREW PLATFORM WEAPON SYSTEM THROUGHPUT REQUIREMENTS

		NUMBER OF ENGAGEMENTS					
	DAY	8	7	6	5	4	
	NIGHT	2	3	4	5	6	
NUMBER OF CREWS	10	15.25	16.00	16.50	17.25	18.00	HOURS TO COMPLETE
	11	16.25	17.00	17.75	18.50	19.25	
	12	17.50	18.25	19.00	20.00	20.75	
	13	18.50	19.50	20.25	21.25	22.00	
	14	19.75	20.75	21.50	22.50	23.50	
	15	21.00	22.00	23.00	24.00	25.00	
	16	22.00	23.00	24.25	25.25	26.25	
	17	23.25	24.25	25.50	26.50	27.75	
	18	24.25	25.50	26.75	28.00	29.00	
	19	25.50	26.75	28.00	29.25	30.50	
	20	26.50	28.00	29.25	30.50	32.00	

Note: Overall time requirements are based on a single firing lane and include 4 hours of range maintenance down time (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

Any time shown exceeding 24 hours will not be possible in a single range day without unit action to conduct the range with a sense of urgency during preparation to fire tasks and execution of the table including tactical movement between engagements.

Figure E-6. Table C throughput expectations

Note. Time requirements overall are based on a single firing lane and include 4 hours of range maintenance downtime (two blocks of 2 hours each). This is standard at most facilities. These calculations are for planning purposes only. Units that are more proficient in tower operations may have an increased throughput.

AMMUNITION—TABLE C

E-31. Figure E-7 provides the ammunition requirements for Table C. Ammunition requirements are not resourced and must be coordinated for execution.

TABLE C, COMPLEX ENGAGEMENTS
TRAINING AMMUNITION REQUIREMENTS

DODIC	MUNITION TYPE	QUANTITY
CA31	CTG, 120MM TP-T M1002	8
CA69	CTG 120MM TPCSDS-T M865A1	14
AB86	CTG, 7.62-MM 4 ball M80/1 TRCR M62 LNKD	750
A557	CTG, .50 cal, 4 ball/1 TRCR LNKD M33 for M2	50
LA53	SIM, target hit XM35 (BES)–Steel-on-Steel	18
LA54	SIM, EXP DET XM34 (BES)–Hostile Fire Simulator	18

ADDITIONAL CERTIFICATIONS:



BES SYSTEMS

Certify junior leaders on the components, functioning, hazards, use, and troubleshooting of available Battle Effects Simulator (BES) systems.



PYROTECHNICS

Provides a working understanding of the components, functioning, emplacement, use, troubleshooting, and hazards when:

- Placing BES systems into operation.
- Synchronizing functioning.
- Installing BES cartridges.
- Troubleshooting BES systems.
- Removing unused BES cartridges.
- Conducting safe operations of BES systems.

LEGEND

CAL	CALIBER	MM	MILLIMETER
CTG	CARTRIDGE	SIM	SIMULATOR
DET	DETONATION	TPCSDS-T	TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	TP-T	TARGET PRACTICE-TRACER
EXP	EXPLOSIVE	TRCR	TRACER
LNKD	LINKED		

Figure E-7. Table VI, qualification, ammunition requirements

Training Munitions Not Resourced

When units do not have sufficient munitions remaining in their ammunition account, they must coordinate with their installation ammunition management office to secure the necessary munitions.

TADSS—TABLE C

E-32. This course requires the use of the CMU. The CMU is available on the digital range facility scheduled (if equipped). Coordination with the scheduled range facility manager will determine unit responsibilities for installation, troubleshooting, maintenance, and use of the devices ahead of the training day(s). If the range does not have a CMU available, unit may draw the CMUR from the TADSS warehouse. The CMUR differs from the CMU in that it stores all run data on a solid-state drive on the vehicle, for use with the provided AAR suite in the CMUR kit.

E-33. The brigade commander must approve authorization for deviation from this requirement if TADSS are unavailable. Units should focus on training and reinforcing the skills in the direct fire kill chain on this table specifically with their thermal optics, day and night to best prepare them for the follow-on training events. Figure E-8 shows the TADSS required or recommended for Table C.

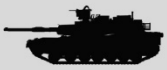


TABLE C, COMPLEX ENGAGEMENTS TRAINING AIDS, DEVICES, SIMULATORS, AND SIMULATIONS REQUIREMENTS

DEVICE	NOMENCLATURE	REMARKS
CMU	Crew Module Unit/Integrated Player Unit	REQUIRED
CMUR	Crew Module Unit Recorder (Thru-Sight Video)	
T-17-107	DUMMY, TRAINING ROUND, M865, TPCSDS-T	CONCURRENT TRAINING
T-17-111	DUMMY, TRAINING ROUND, M830A1, HEAT-MP-T, or M1002, HEAT-TP-T	CONCURRENT TRAINING
T-17-112	DUMMY, TRAINING ROUND, M829A1, APFSDS-T	CONCURRENT TRAINING
T-17-113	DUMMY, TRAINING ROUND, M1028, CANISTER	CONCURRENT TRAINING
SP-1	BORESIGHT PANEL	REQUIRED

LEGEND

APFSDS-T ARMOR PIERCING DISCARDING SABOT-TRACER
HEAT-MP-T HIGH EXPLOSIVE ANTITANK MULTIPURPOSE TRACER
HEAT-TP-T HIGH EXPLOSIVE ANTITANK TARGET PRACTICE TRACER
TPCSDS-T TARGET PRACTICE CONE STABILIZED DISCARDING SABOT-TRACER

Figure E-8. Table C TADSS requirements

PREPARE FOR TABLE C

E-34. Units must coordinate for the appropriate training facility, equipment, targetry, training munitions, TADSS, and pyrotechnics to support Table C. During the preparation phase, the unit should ensure the proofing team, VCEs, and other personnel receive training to standard to support their role as evaluators and trainers. This includes range officers in charge, range safety officers, and ammunition handlers.

TRAIN THE TRAINERS—TABLE C

E-35. Typically, units have certified each VC and gunner as VCEs prior entering the live-fire density. Units must have certified evaluators to ensure the training objectives for the training table are set and to provide effective AARs to each crew.

E-36. Additional information on leader certification and train the trainer actions is found in TC 3-20.31. Units should review and plan for the appropriate training and certifications well in advance of the training event.

VEHICLE CREW EVALUATORS—TABLE C

E-37. A trained and certified VCE team must be available to support prior to live fire to evaluate a gunnery density correctly. After certification, the unit must ensure sufficient VCEs are available to support the live-fire event. Evaluations of crew gunnery always come from outside the firing platoon element, and for qualification purposes, VCEs external to the battalion are required.

E-38. Having the correct number and type of evaluators per firing range maximizes the unit's throughput of firing vehicles on the range, reduce range downtime, and provide for the highest quality evaluations. See TC 3-20.31 for more in-depth information on VCEs, the evaluation team, and the evaluation process.

E-39. To prepare the trainers, units provide—

- Commander training objectives.
- Conduct of the range briefing for the training event.
- Scenario and lane concept with crew tasks for training.
- Risk assessments.
- Identification of supporting doctrinal publications for use as primary references.
- TADSS, pyrotechnics, blanks, and BESs used during the training event (see appendix A for the training munitions requirements for the complete training strategy).

RECONNAISSANCE OF THE SITE—TABLE C

E-40. Commanders use an authorized training facility for Table C. Commanders follow the installation's policies and procedures for formally scheduling the training location as far in advance as practical. See TC 3-20.31 for more in-depth information concerning range operations at the unit level.

E-41. Once scheduled, the commander, Master Gunner, platoon leaders and platoon sergeants conduct a reconnaissance of the training areas to—

- Verify sufficient space is available to support the entire unit through multiple training lanes.
- Ensure multiple iterations or rotations through the scenario are achievable with appropriate retraining opportunities.
- Ensure sufficient administrative areas are available to support group discussions, briefings, and AARs.
- Provide sand table or terrain board.
- Identify the ammunition supply point.
- Determine the conduct of the range or the flow of training to maximize the live-fire range time.
- Identify the range operating system and verify the training scenarios have been properly loaded.
- Schedule proofing of the range, based on the higher headquarters OPORD.
- Ensure requested TADSS are available if provided by the range facility.

ISSUE THE ORDER—TABLE C

E-42. Commanders can issue an OPORD, WARNORD, or use the training schedule as necessary. The WARNORD should include the appropriate tasks, required leaders, and equipment needed, as well as the unit's training timeline including walk-through, rehearsals, and AARs. WARNORDs for external organizations must include sufficient reaction time for the appropriate personnel and equipment needed.

REHEARSE—TABLE C

E-43. The unit uses all training resources, materials, and equipment available to conduct rehearsals of training events. During the rehearsal, commanders ensure their unit has sufficient time to train to the specified standard including AARs and retraining time. Commanders ensure their unit verifies optional scenarios that increase complexity when warranted.

E-44. Units should rehearse the training event from start to finish, and confirm—

- The VCEs understand the training scenarios and tasks.
- Sufficient space is available to provide appropriate distances for engagements ranges and target dispersion.
- Analog and digital systems are operational within the organization and to the higher headquarters regardless of their location.
- Additional crew training packages [DA Form 8265, DA Form 8265-1, and appropriate CCFs(zero) documentation] are complete and provide for multiple iterations.
- Sufficient administrative areas are available.
- Review AAR capabilities. Use of thru-sight video systems is encouraged to increase the fidelity and quality of the AARs.
- Location of retraining for crews as necessary.
- Accessibility to crew simulator systems, plumb and synchronization ramps, T&MBs, and additional bore sighting locations are available.

E-45. Once the unit completes the walk-through and training rehearsal, the commander makes any necessary adjustments to the plan and issues FRAGORDs as necessary.

Proofing the Scenario

The proofing of the scenario is a demanding process that requires a minimum of one training day. It should include all targetry, BESs, and sequencing of the approved scenario. Proofing must be completed from the firing vehicle type using the optics described in the conditions of the firing task.

E-46. The Master Gunner is required to proof the scenario from a tank using the appropriate optics from the established firing positions and firing boxes from the approved scenario. This is a time-consuming task that will require one day to complete to standard. All targets must be 90-percent visible through the optic directed by the conditions of each task. For offensive or retrograde engagements, the targets must be 90-percent visible through 90-percent of the maneuver box, minimum.

EXECUTE—TABLE C, COMPLEX ENGAGEMENTS

E-47. This section provides a basic overview of the engagements of Table C during execution. Units should refer to TC 3-20.31 for comprehensive information on establishing the range, opening instructions, hot and cold times, and other actions necessary to conduct live-fire training.

E-48. Once the unit arrives at the training location, they should—

- Conduct a safety briefing for the training event.
- Provide a conduct of the range briefing to establish the sequence of events for the training day.
- Conduct sensitive item checks prior to executing training.
- Receive briefing from the VCE team.
- Establish the firing order.
- Identify the maintenance support area for any fire control or weapons issues on the range.
- Install, align, and place TADSS into operation, as required.

E-49. The training unit conducts informal AARs of each crew completing a phase of training within the training mission. During training, the commander, executive officer, 1SG, and Master Gunner review the crew's performance. They follow the unit SOP, prescribed tactics, techniques, procedures, and the appropriate T&EOs, and review completed crew score sheets and roll-up documentation for clarity and completeness.

Note. The sequence of the engagements, the number of engagements during the day and night phases, and which engagements are fired in a chemical environment are determined by the evaluation commander.

ENGAGEMENT C0

E-50. Demonstrated in figure E-9, engagement C0 is a tank commander engagement from the defense at extended range. It provides a single stationary tank at 3,000 meters from the tank commander's position using the commander's handle.

C0 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	VEHICLE COMMANDER	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1	TARGET 2	TARGET 3	TARGET 4
				
FIRER	VC			
WEAPON/AMMUNITION	SABOT			
TARGET	TANK			
TARGET TYPE	H1T-FRT			
TARGET POSTURE	STATIONARY			
RANGE TO TARGET	3,000m			
ENGAGEMENT MODIFIER	26			

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1.5					1	1

LEGEND

CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**
KE	**KINETIC ENERGY**	**VC**	**VEHICLE COMMANDER**

Figure E-9. Engagement C0 overview

INDUCED ENGAGEMENT COMPLEXITY—C0

E-51. The tank crew is presented with several complex issues that require advanced understanding. This engagement introduces the crew to the following advanced topics:

- Fire control system capabilities.
- Laser range finder.
  - Principles of operation.
  - Logic.
  - Laser divergence.
- Immediate range determination.
- Battlesight range determination and application.
- Extended range target detection, recognition, and acquisition.
- Extended range engagement techniques.
- Ammunition.
  - Ballistic performance.
  - Exterior ballistics.
  - Round-to-round dispersion.
  - Angle of fall/angle of attack.

E-52. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-53. The Master Gunner must pay particular attention to the visibility of the target and its thermal signature presented to the firing crew. The critical issues for the Master Gunner to address are listed in figure E-10.

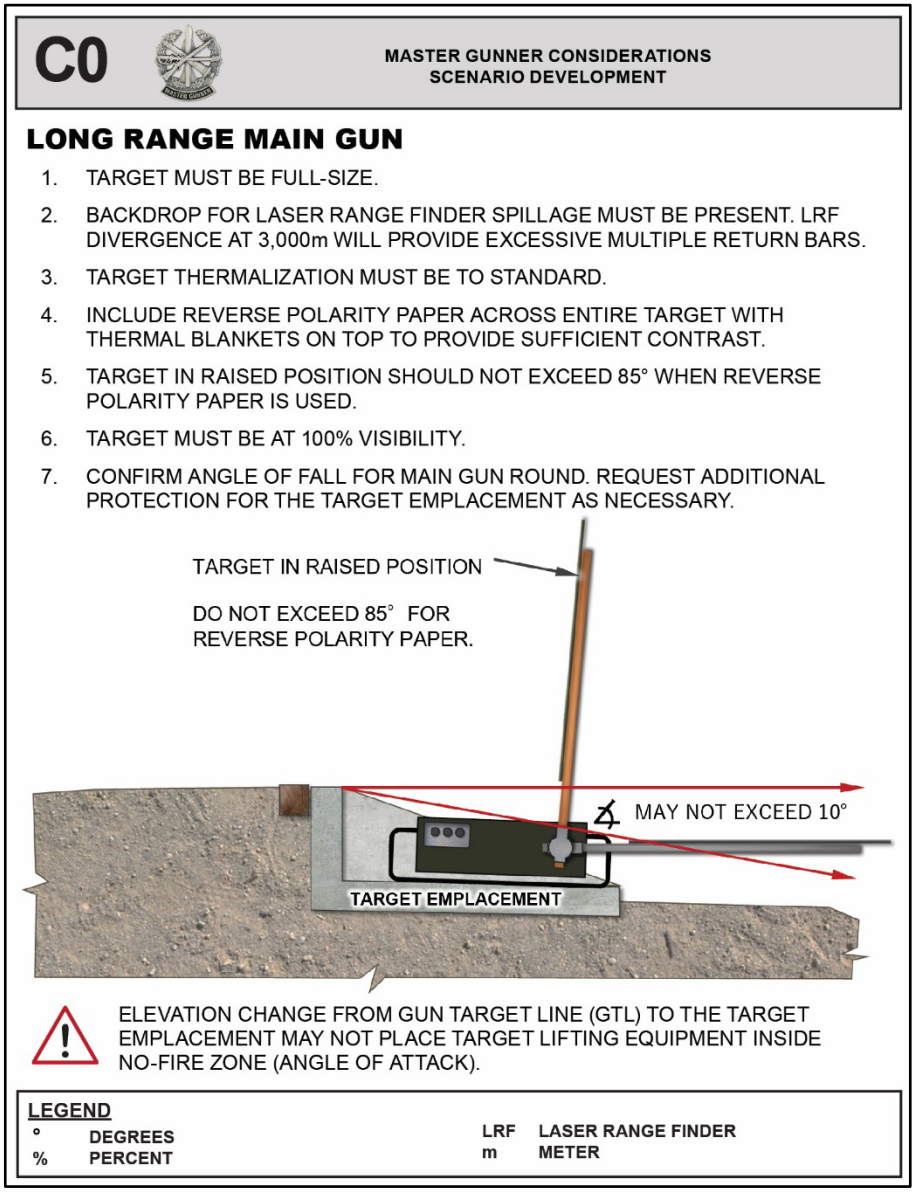


Figure E-10. Engagement C0 Master Gunner discussion

E-54. For crews, figure E-11 provides key considerations for the tank commander and crew prior to executing this engagement. Tank commanders should review and discuss these items and the overall engagement with their peers, crew, and Master Gunner to gain a complete understanding of the difficulties they will be presented with.

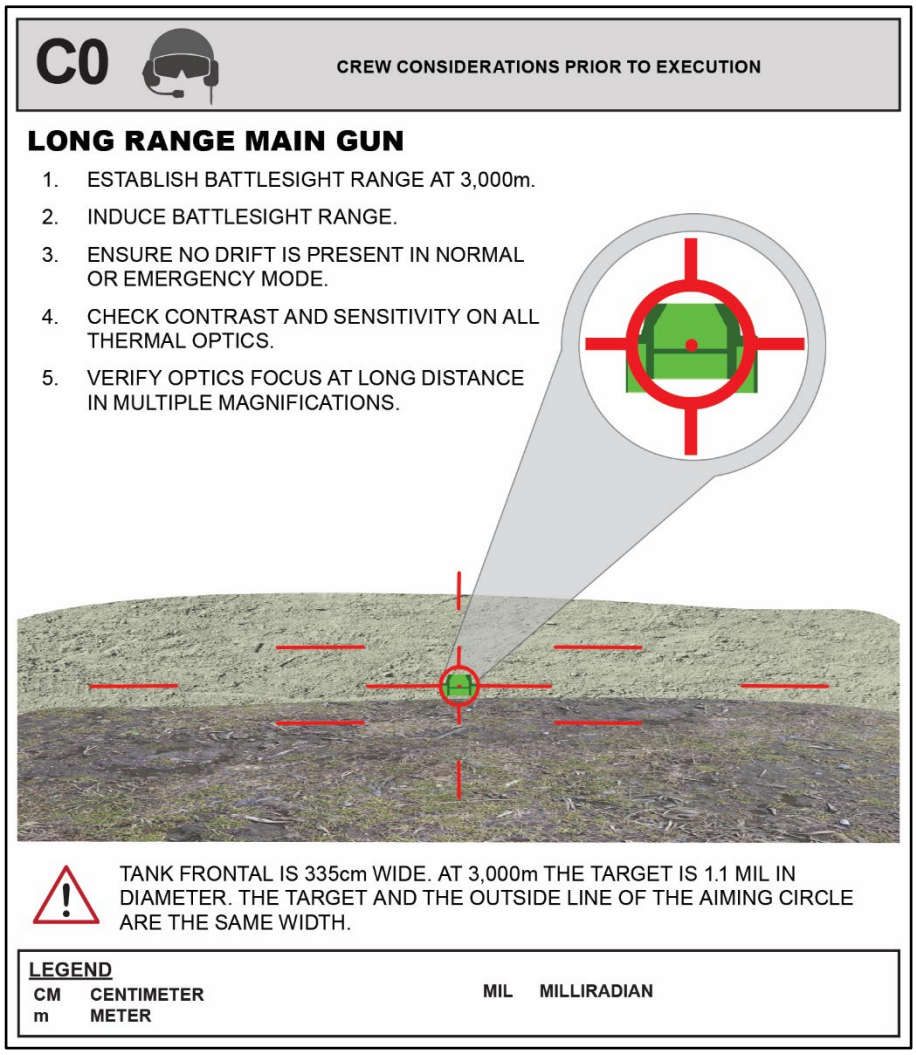


Figure E-11. Engagement C0 crew discussion

ENGAGEMENT C1

E-55. Engagement C1 is a retrograde engagement for the gunner using the coaxial machine gun. While on the offense, returning up-range with the main armament over the back deck of the tank, the crew is presented three stationary targets as shown in figure E-12.

C1 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	MACHINE GUN PURE	POSTURE:	OFFENSE

RETROGRADE

CONDITIONS

	TARGET 1	TARGET 2	DELAY: 25 SECONDS TARGET 3	TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	
WEAPON/AMMUNITION	COAX	COAX	COAX	
TARGET	TRUCK	TRUCK	TROOPS	
TARGET TYPE	L2T-FRT	L2T-FRT	E(7)-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	
RANGE TO TARGET	400m	800m	200m	
ENGAGEMENT MODIFIER	9	12	10	

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			150		2	2

LEGEND

CAL .50	CALIBER .50	KE	KINETIC ENERGY
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	mm	MILLIMETER
FRT	FRONTAL	MPAT	MULTIPURPOSE ANTITANK

Figure E-12. Engagement C1 overview

INDUCED ENGAGEMENT COMPLEXITY—C1

E-56. A retrograde engagement with the vehicle engaging targets with the main armament over the back deck presents several challenges. This engagement replicates a tank moving from one battle position to another when the contact occurs.

E-57. The tank crew is presented with several complex issues that require advanced understanding. This engagement introduces the crew to the following advanced topics:

- Firing inhibits (back deck clearance switch).
- Advanced target detection (fleeting threats).
- Advanced machine gun engagement techniques.
- Engaging threats using wide field of view.
- Obscuration mitigation.
- Driver movement techniques.

E-58. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the crew, particularly on advanced engagement techniques. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-59. The Master Gunner must pay particular attention to:

- Target visibility and thermal signature presented to the firing crew.
- Synchronizing the third target presentation using lift lines in the range operating software suite.
- Adjustment of the delay time from 25 seconds to reflect the synchronized presentation time of the third target for evaluation purposes.
- Educating the VCEs on the fluid nature of synchronized target evaluation (presentation time is based on firing vehicle proximity to the third target during movement and adjusts the standard 25 second delay).
- Slow tank movement results in the third target presented behind the crew expending exposure time.
- Appropriate tactical movement results in the third target presentation where the crew can acquire and engage rapidly.
- Aggressive tactical movement results in the third target presented earlier than expected.
    - The movement may occur where the first two threats are still active.
    - It results in a much greater engagement time for one or two targets in the array.

E-60. The critical issues for the Master Gunner to address are listed in figures E-13 and E-14 on page 436. These should be addressed during planning, preparation, and proofing of the range. The Master Gunner should provide instruction on the variable presentation nature of the targetry based on the tactical movement of the crew.

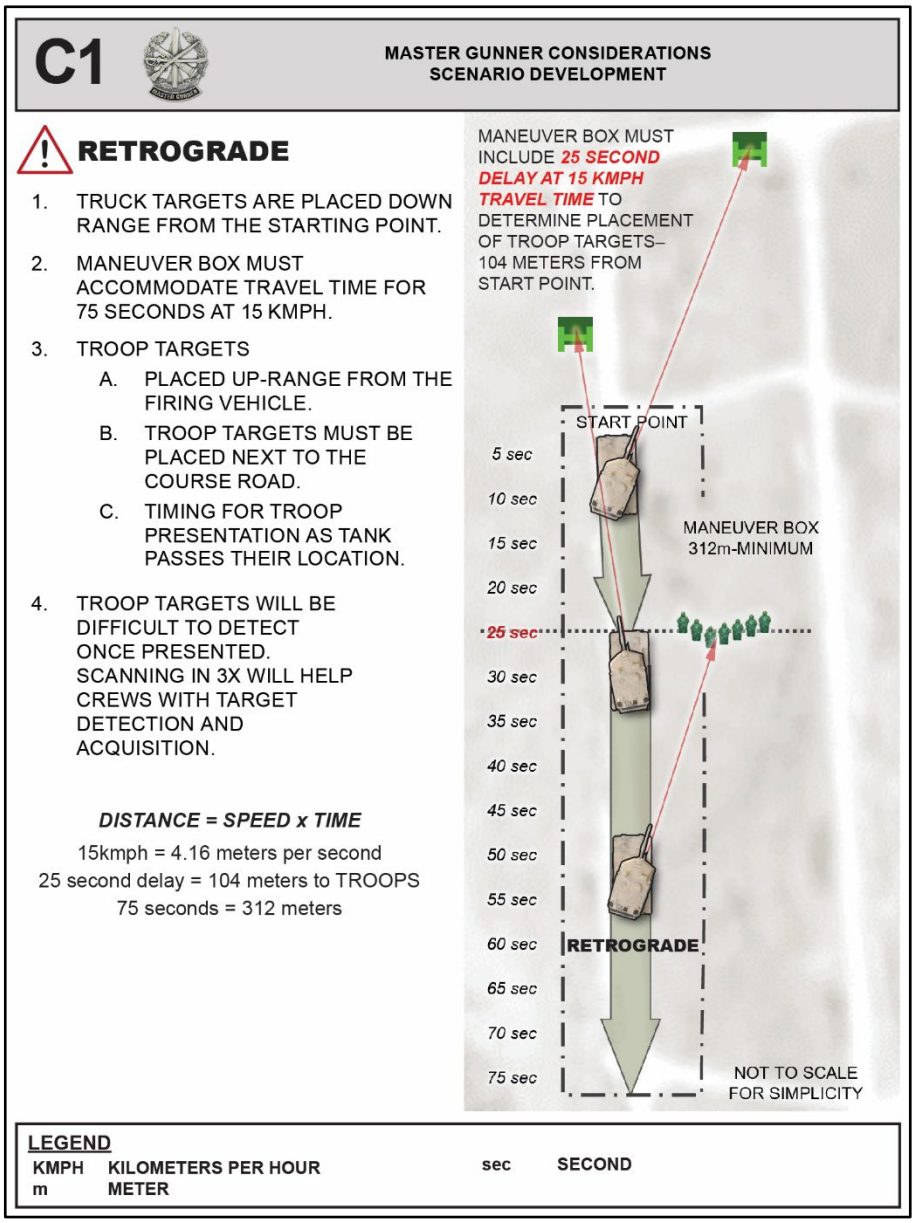


Figure E-13. Engagement C1 Master Gunner discussion

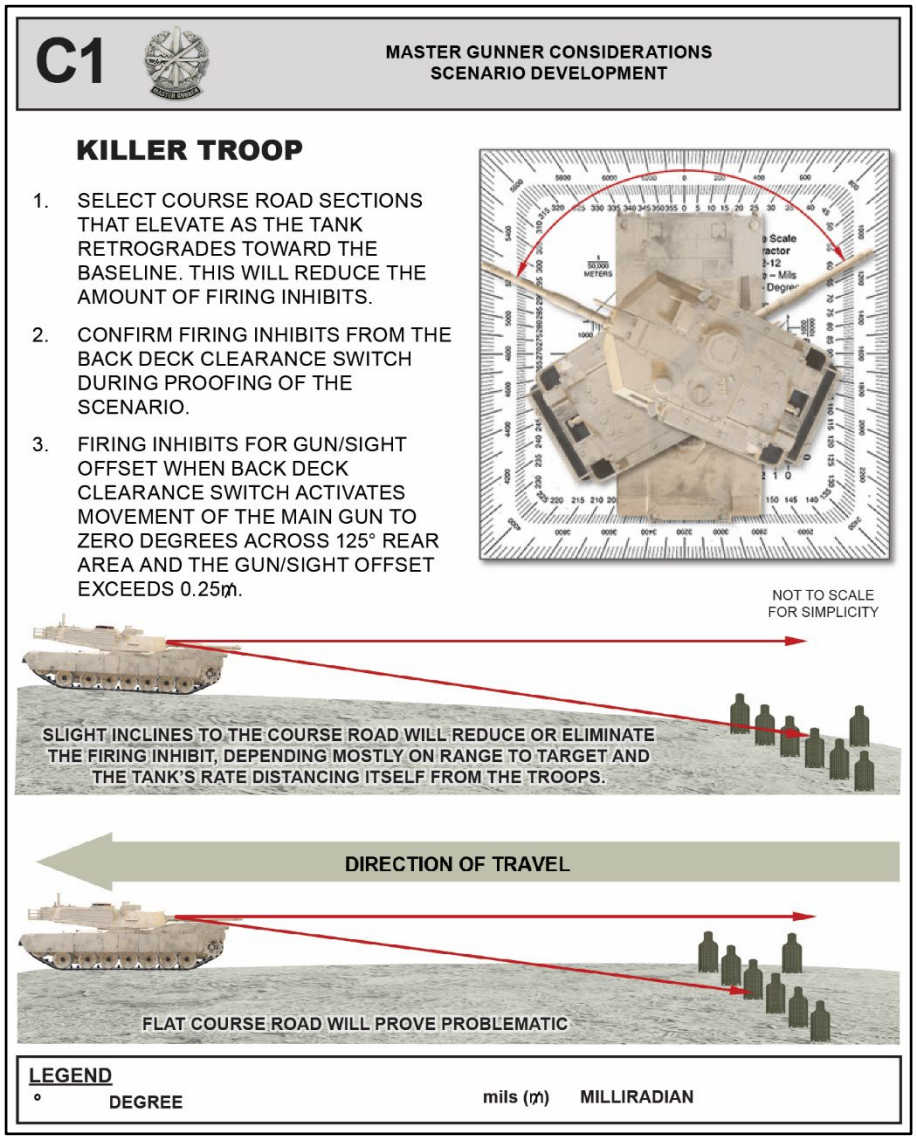


Figure E-14. C1 Master Gunner discussion, continued

E-61. For crews, figure E-15 provides key considerations to address prior to executing this engagement. Tank commanders should review and discuss these items and the overall engagement with their peers, crew, and Master Gunner to gain a complete understanding of the complex nature of the engagement.

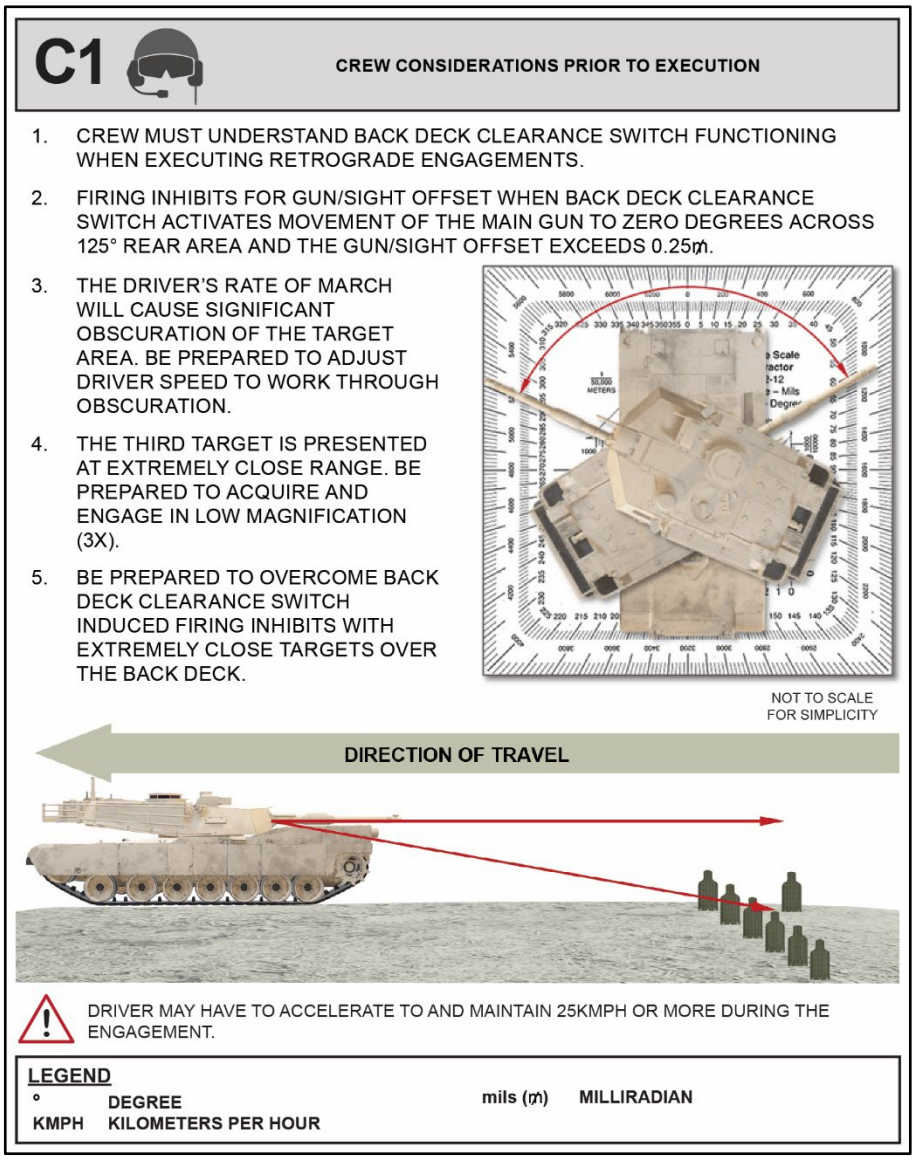


Figure E-15. Engagement C1 crew discussion

ENGAGEMENT C2

E-62. Engagement C2 is a machine gun pure engagement executed from a defensive firing position as shown in figure E-16. This engagement requires the crew to manage their defensive firing position effectively. Crew success is tied to their ability to efficiently employ multiple optics and leverage the designate function.

C2 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	MACHINE GUN PURE	POSTURE:	DEFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
KILLER TROOP CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	COAX	COAX	COAX
TARGET	TROOPS	TROOPS	TROOPS	TROOPS
TARGET TYPE	E(7)-FRT	E(7)-FRT	E(7)-FRT	E(7)-FRT
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	STATIONARY
RANGE TO TARGET	400m	400m	600m	600m
ENGAGEMENT MODIFIER	6	6	8	8

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
			200			

LEGEND

CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure E-16. Engagement C2 overview

INDUCED ENGAGEMENT COMPLEXITY—C2

E-63. Typically, crews misunderstand how to use the defensive firing position to their benefit. This engagement reinforces the need of the crew to understand and master—

- Defensive firing positions.
- Use of the CITV to detect supplemental threats.
- Use of designate to rapidly place the armament on target.
- Crew target detection skills—during the machine gun engagements, the loader is another sensor to increase target detection and acquisition.
- Machine gun engagement techniques.
- Machine gun mounting.
- Smoke box fitment.
- Coaxial read ammunition box and feed chute alignment and serviceability.

E-64. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the crew. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-65. The Master Gunner must pay particular attention to the visibility of the target and its thermal signature presented to the firing crew. The troop sets presented initially and on delay must be separated sufficiently to clearly define they are separate entities and not a mass-troop presentation.

E-66. The critical issues for the Master Gunner to address are listed in figure E-17. The major focus is on the maintenance and functioning of the coax, the mount, ready-ammunition box, feed chute, and rollers.

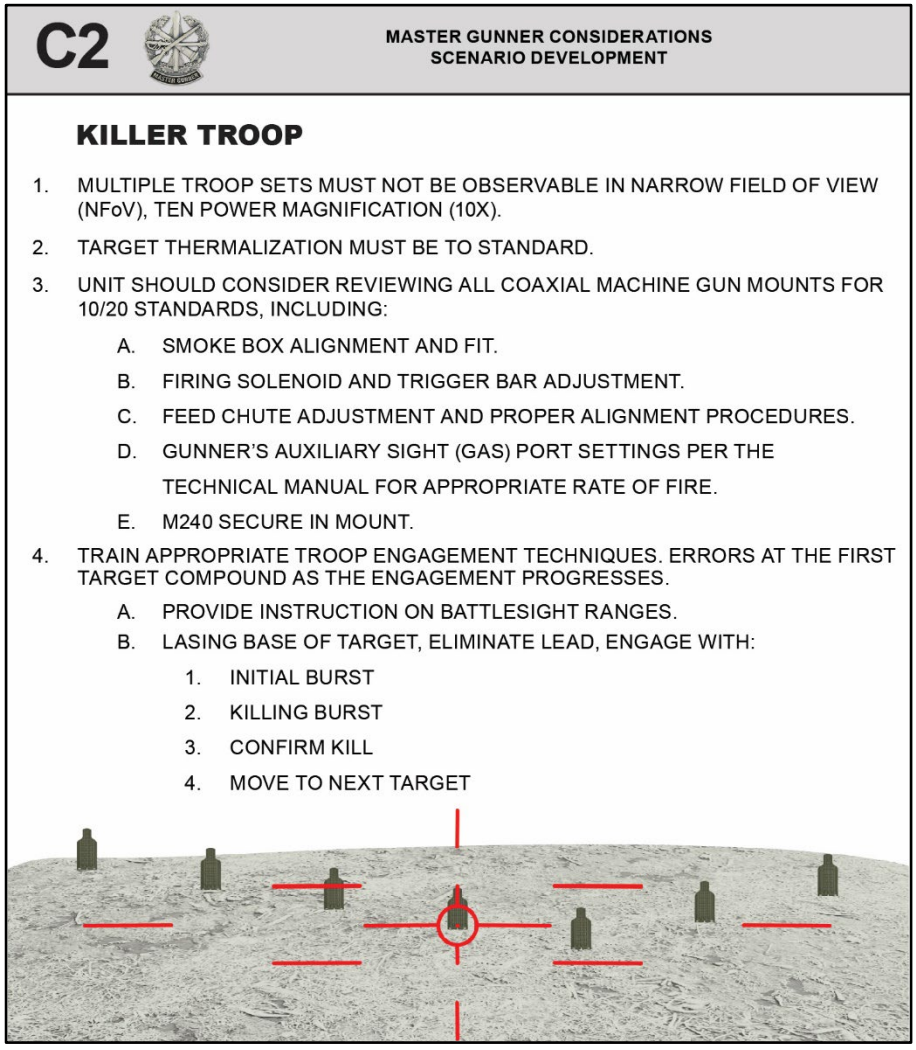


Figure E-17. Engagement C2 Master Gunner discussion

E-67. For crews, figure E-18 provides key considerations to discuss prior to executing this engagement. The crew should have addressed most these items during training through Table VI, Qualification. The crew must complete a detailed inspection of their coaxial machine gun, its mount, ready-ammunition box, and feed chute.

E-68. Crews must also review immediate action steps for machine gun use. One malfunction of the coaxial machine gun on this engagement will jeopardize their success.

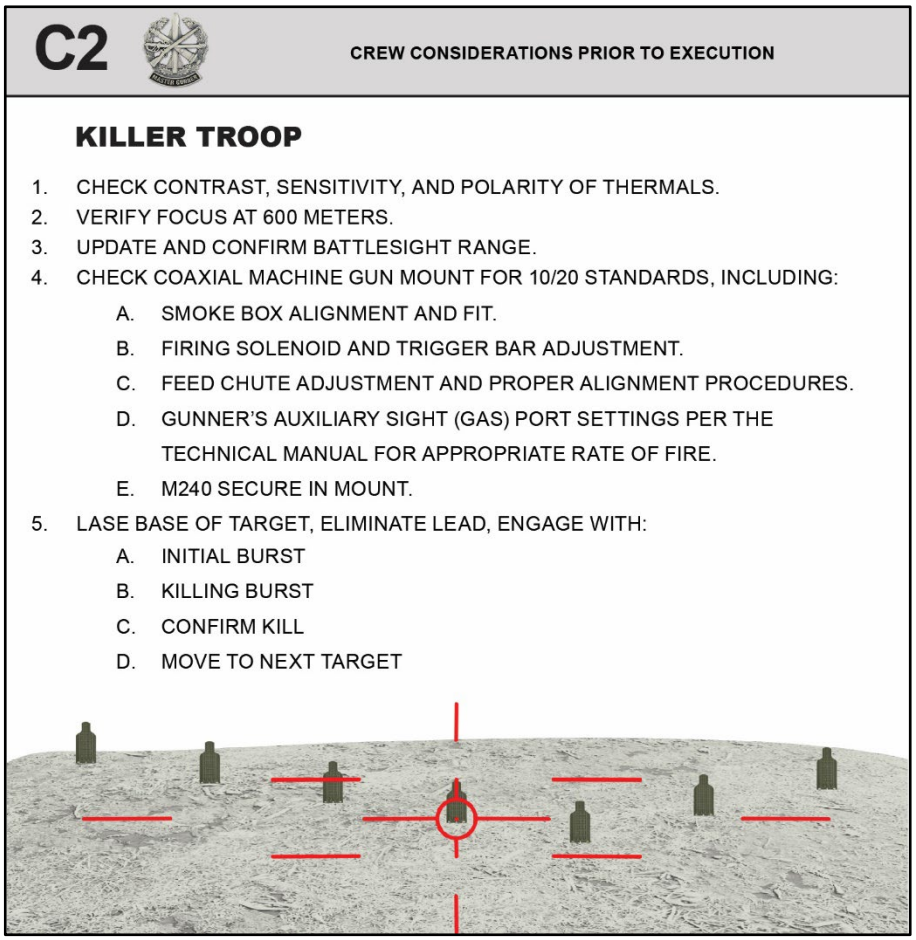


Figure E-18. Engagement C2 Crew discussion

ENGAGEMENT C3

E-69. Engagement C3 is an offensive engagement with flanking movement using the main gun (see figure E-19). It emphasizes the ability of the lead-angle sensor of the tank to overcome counter-rotation issues when firing at threats moving in the opposite direction of the tank and turret rotation.

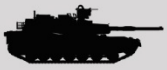
C3 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	MAIN GUN PURE	POSTURE:	OFFENSE
		DELAY:	25 SECONDS

	TARGET 1	TARGET 2	TARGET 3	TARGET 4
COUNTER-ROTATION CONDITIONS				
FIRER	GUNNER	GUNNER		
WEAPON/AMMUNITION	MPAT	MPAT		
TARGET	BMP	BMP		
TARGET TYPE	M1T-FLK	M1T-FLK		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	1,600m	2,000m		
ENGAGEMENT MODIFIER	14	14		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	3				2	2

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**KE**	**KINETIC ENERGY**
CAL .50	**CALIBER .50**	**m**	**METER**
CAN	**CANISTER**	**mm**	**MILLIMETER**
FLK	**FLANK**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure E-19. Engagement C3 overview

INDUCED ENGAGEMENT COMPLEXITY—C3

E-70. This engagement presents the crew with several complex issues that require advanced understanding. This engagement introduces the crew to the following advanced topics:

- Fire control system capabilities.
- Lead/angle sensor.
- Application of automatic lead.
- Manual lead application.
- Battlesight gunnery skills.
- Target detection, recognition, and acquisition to the flank.
- Ammunition.
  - Ballistic performance.
  - Exterior ballistics.
  - Standard lead adjustments.

E-71. Ballistically, the MPAT round was selected for this engagement to emphasize the flight of a slower main gun ammunition type against extended range moving threats. For the unit, having crews observe the conduct of this engagement is a training opportunity on ballistics, fire control system capabilities, automatic lead, and other advanced topics.

E-72. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the crew. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-73. The Master Gunner must consider the route approved for the flanking movement of this offensive engagement. Proofing of the course road and targetry includes line-of-sight issues where from the gunner's auxiliary sight, a berm, firing position, or other structure may obstruct the flight of the round that is unobservable through the primary sight.

VERIFY LINE OF SIGHT

The Master Gunner proofing the range must verify there are no gun-target line obstructions that cannot be observed through the primary optic. Failing to verify the gun-target line through the entire maneuver box against all targets may cause a main gun round strike on range infrastructure.

E-74. The critical issues for the Master Gunner to address are listed in figure E-20. The Master Gunner must pay particular attention to the conditions of the firing task with direction of travel for the firing tank and direction of travel with speed of the target presentations.

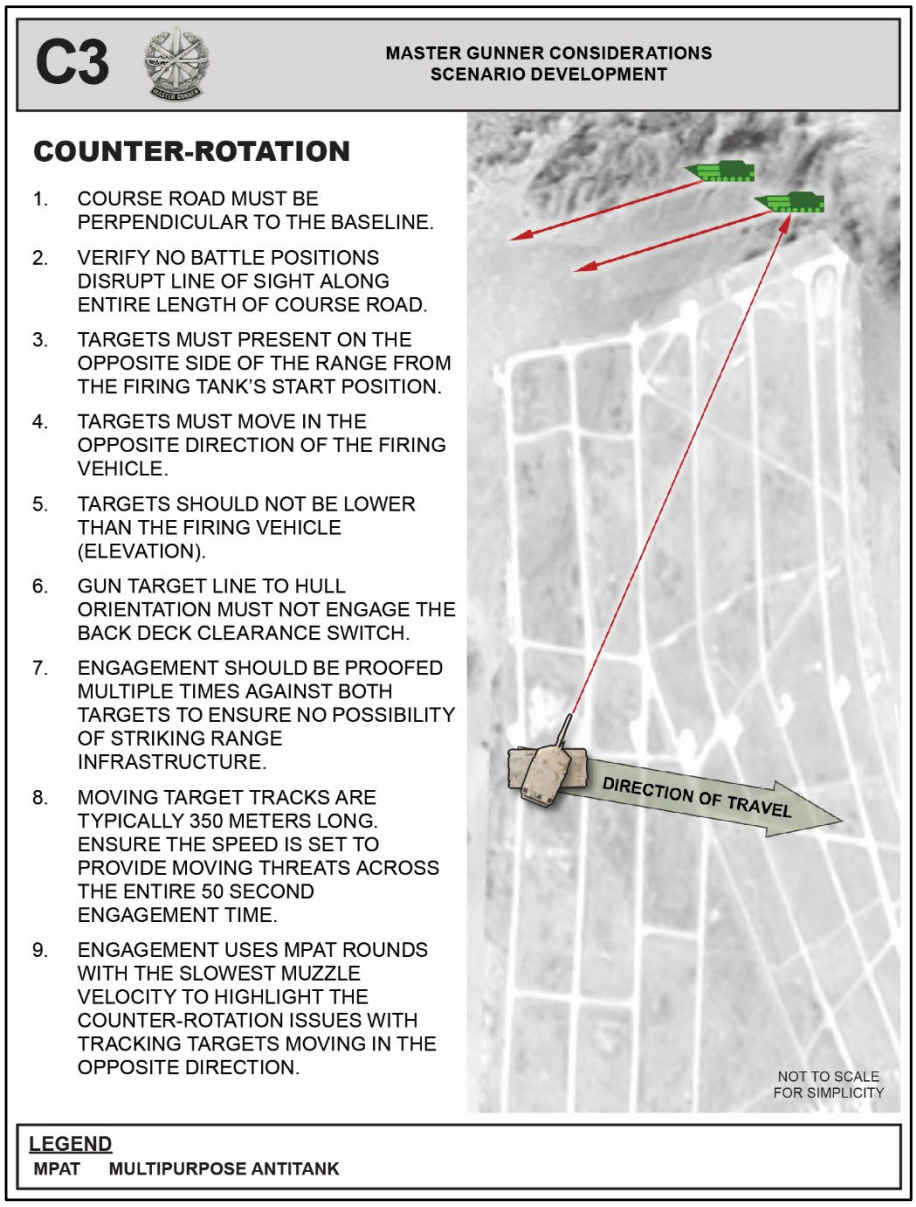


Figure E-20. Engagement C3 Master Gunner discussion

E-75. For crews, figure E-21 provides key considerations for the tank commander and crew prior to executing this engagement. Tank commanders should review and discuss these items and the overall engagement with their peers, crew, and Master Gunner to gain a complete understanding of the complexity of the engagement.

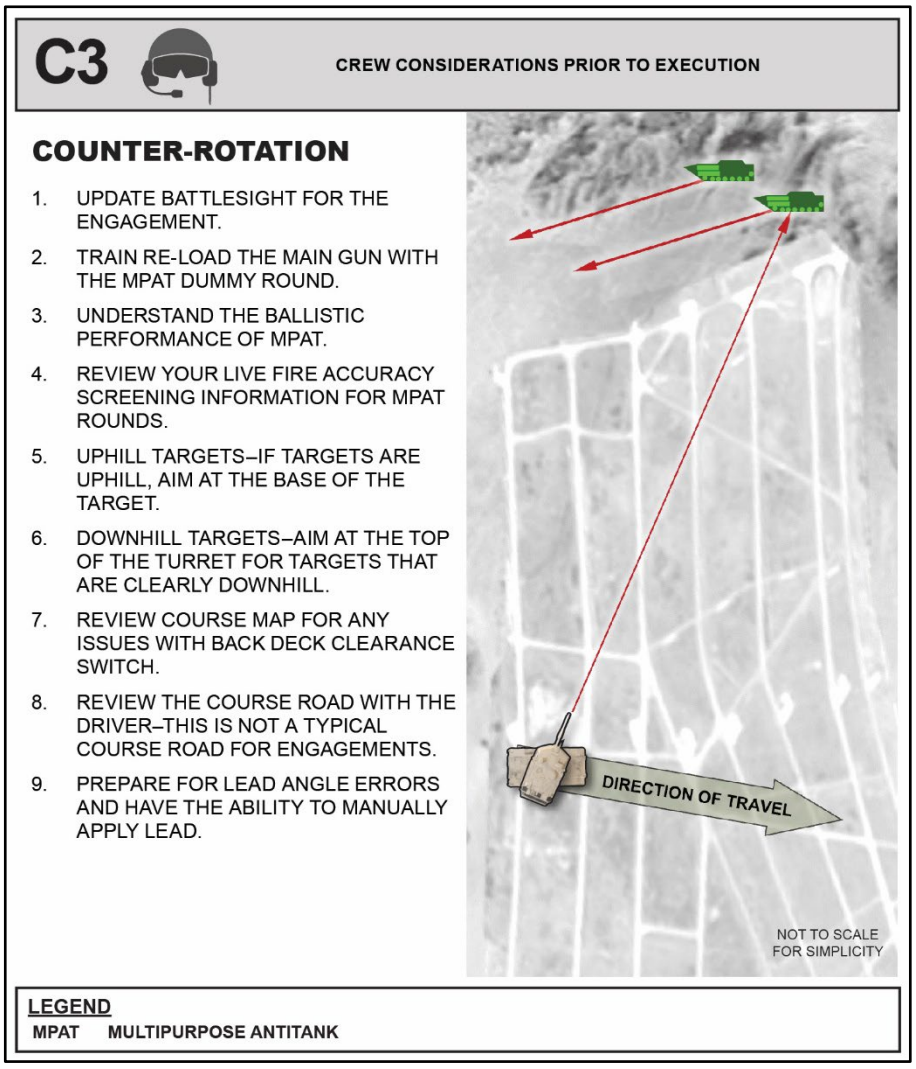


Figure E-21. Engagement C3 crew discussion

ENGAGEMENT C4

E-76. Engagement C4 is an offensive main gun engagement for the gunner against multiple moving tanks (see figure E-22). Engagement C4 emphasizes speed, audacity, reloading skills, accuracy, and lethality; and is often referred to as the killer tank scenario.

C4 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	MAIN GUN PURE	POSTURE:	OFFENSE

KILLER TANK CONDITIONS	TARGET 1	TARGET 2	DELAY: TARGET 3	25 SECONDS TARGET 4
				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	SABOT	SABOT	SABOT	SABOT
TARGET	TANK	TANK	TANK	TANK
TARGET TYPE	H1T-FLK	H1T-FLK	H1T-FLK	H1T-FLK
TARGET POSTURE	MOVING	MOVING	MOVING	MOVING
RANGE TO TARGET	1,800m	1,800m	1,200m	1,200m
ENGAGEMENT MODIFIER	13	13	12	12

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
6					4	4

LEGEND

CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK
KE	KINETIC ENERGY		

Figure E-22. Engagement C4 overview

Four Moving Targets

Units must ensure the range facility supports four moving targets from a firing box. Where range bands cannot be met, the unit will use moving targets at the ranges available and capable of safe execution.

INDUCED ENGAGEMENT COMPLEXITY—C4

E-77. This engagement reinforces the need for a MRS update before and after the engagement. This engagement introduces the crew to the following advanced topics:

- Error budget.
- Ballistics.
- MRS subsystem.
- Plumb and synchronization (lead in elevation).
- Gun tube technology.

E-78. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-79. The Master Gunner must consider—

- The difficulty in accommodating the use of four moving targets during one engagement on some maneuver facilities.
- The necessity of alignment of moving target speed with the presentation time requirements and the mover track length.
- The criticality of thermalization of the moving targets, particularly when moving through varying terrain.
- Early proofing of the range correctly to identify any line-of-sight issues.
- The requirement to present the initial two moving targets on opposing sides of the range to ensure they are not viewable together in high magnification (10x).
- The desire to delay moving targets on opposing sides of the range (as well as presentation of targets moving outward to opposite sides of the range, pending range facility support of side-by-side presentation of the delay targets).

Delay Moving Presentation

The delay presentation may be presented from the center of the range and move outward to the edges of the range. Units may alter the presentation sequence based on the facility capabilities.

E-80. The Master Gunner must pay particular attention to the visibility of the target and its thermal signature presented to the firing crew. The critical issues for the Master Gunner to address are listed in figure E-23.

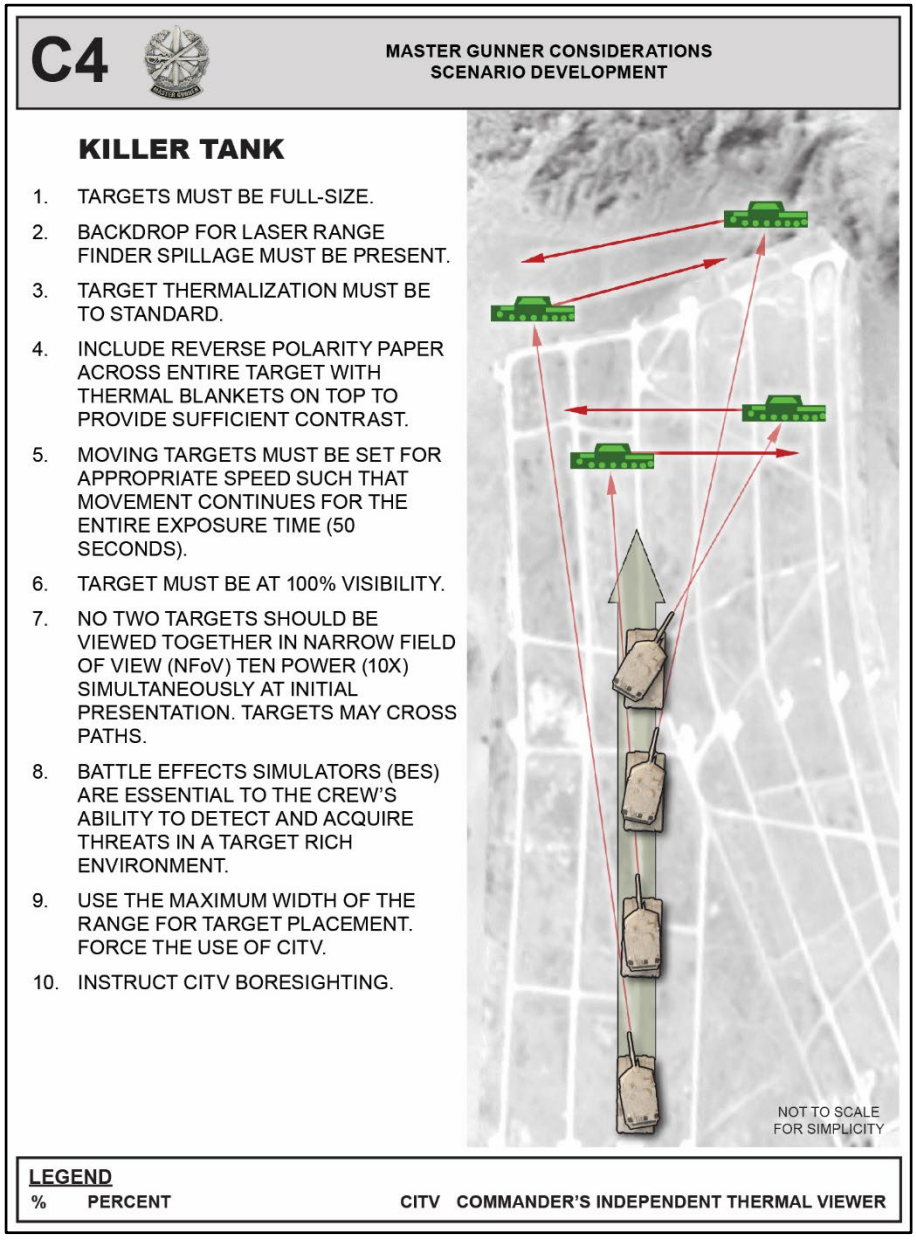


Figure E-23. Engagement C4 Master Gunner discussion

E-81. For crews, figure E-24 provides key considerations for the crew prior to executing this engagement. Tank commanders should review and discuss these items and the overall engagement to gain a complete understanding of the difficulties they will be presented with.

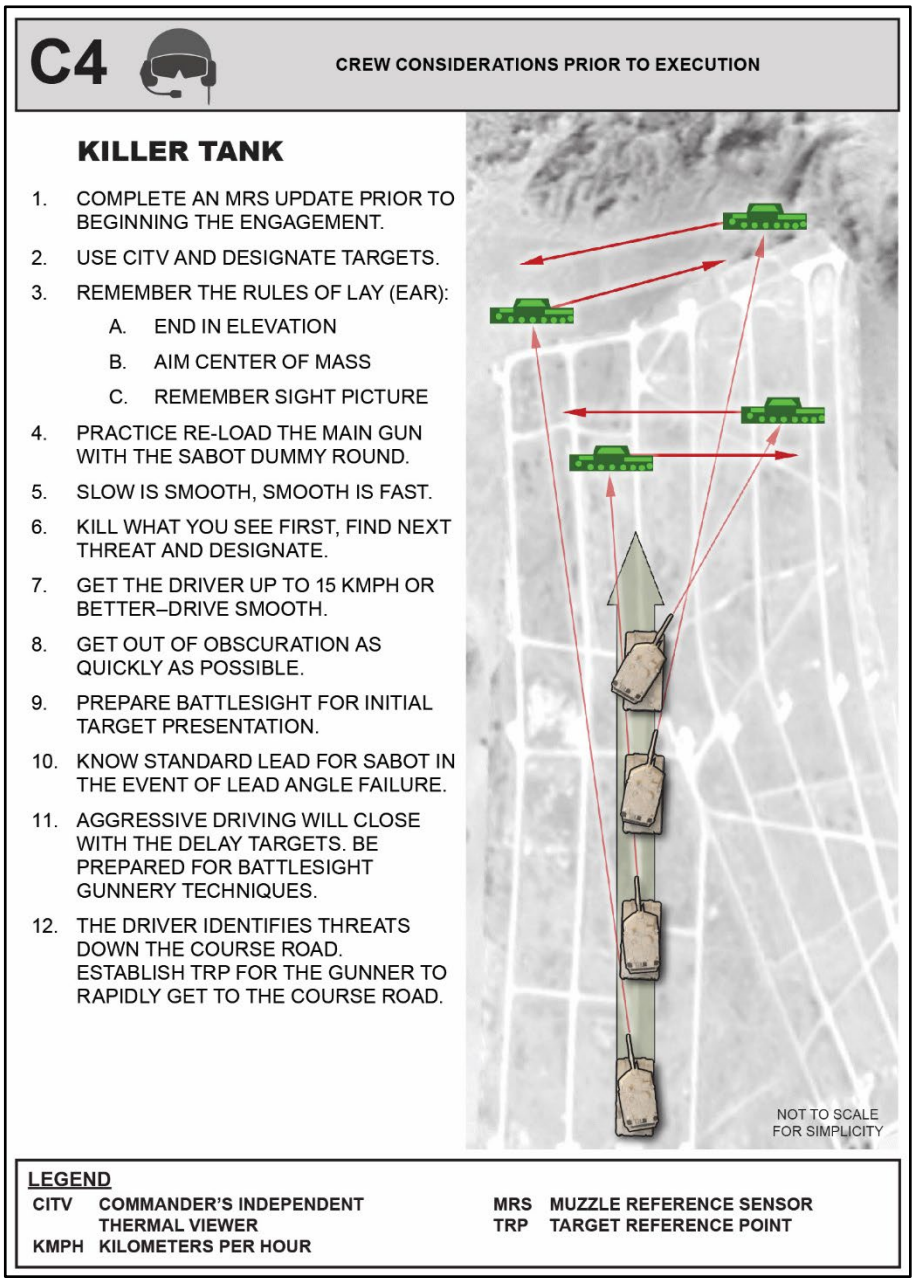


Figure E-24. Engagement C4 crew discussion

ENGAGEMENT C5

E-82. Engagement C5 is one of the most complex with increased switchology and conduct of fire requirements. Figure E-25 provides an overview of the engagement and the required training munitions.

C5 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	OFFENSE
KILLER		**DELAY:**	**25 SECONDS**

CHANGE OF WEAPON SYSTEM / **CHANGE OF AMMUNITION** / **CONDITIONS**	**TARGET 1** 	**TARGET 2** 	**TARGET 3** 	**TARGET 4** 
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	COAX	SABOT	COAX	MPAT
TARGET	TROOPS	TANK	TROOPS	BMP
TARGET TYPE	E(7)-FRT	H1T-FLK	E(7)-FRT	M1T-FLK
TARGET POSTURE	STATIONARY	MOVING	STATIONARY	MOVING
RANGE TO TARGET	400m	1,800m	600m	1,800m
ENGAGEMENT MODIFIER	10	11	12	14

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1	2		100		2	2

LEGEND

BMP	**BOYEVAYA MASHINA PYEKHOTY**	**FRT**	**FRONTAL**
CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FLK	**FLANK**	**MPAT**	**MULTIPURPOSE ANTITANK**

Figure E-25. Engagement C5 overview

INDUCED ENGAGEMENT COMPLEXITY—C5

E-83. Success on this engagement requires the crew to have exceptional crew coordination, conduct of fire, crew responses, reloading, and engagement skills. The complexity of the engagement requires the crew to understand—

- Conduct of fire/fire commands.
- Crew responses.
- Switchology (smooth and timely application of changes to the ballistic solution using the gunner's lower panel).
- Fire control system capabilities and function.
- Battlesight range use and application.
- Advanced machine gun engagement techniques.
- Engagements with wide field of view, operations under unusual conditions.
- Target acquisition with the CITV and designate function.
- Target acquisition with the CROWS on the offense.

E-84. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-85. During scenario development, the Master Gunner must ensure the timing of the targetry is synchronized in time and space where the tank does not pass by the second set of troops during tactical movement. This requires the Master Gunner to assess the size of the maneuver box, the expected firing tank speed, and the range band requirement.

Synchronize Delay Targets

On the offense, the Master Gunner must take additional time to proof the range based on the expected pace of the firing vehicle. Aggressive movement will result in by-passing delay presentations.

E-86. The Master Gunner must pay particular attention to the visibility of the target and its thermal signature presented to the firing crew. The critical issues for the Master Gunner to address are listed in figure E-26.

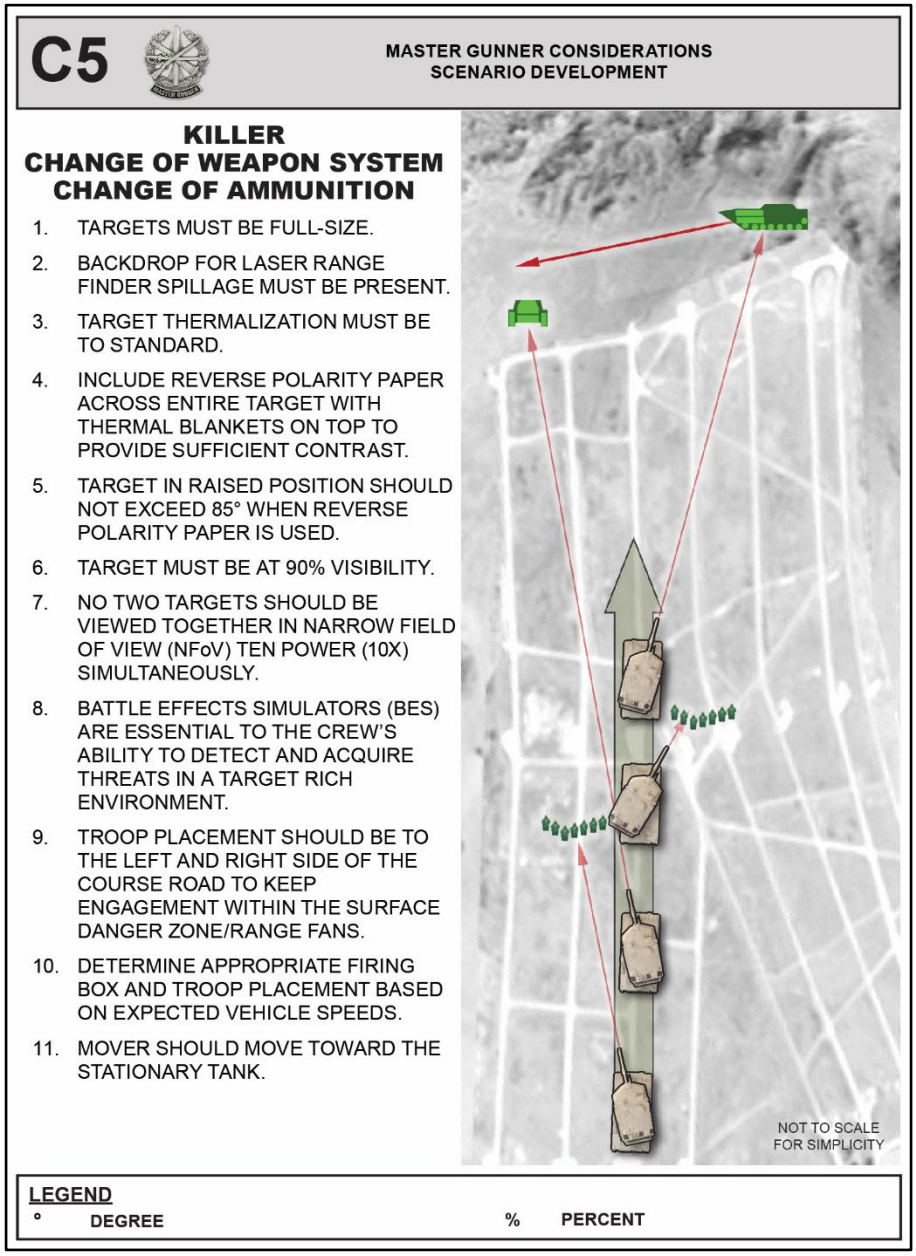


Figure E-26. Engagement C5 Master Gunner discussion

E-87. For crews, figure E-27 provides key considerations for the crew prior to executing this engagement. Tank commanders should review and discuss these items with the crew and discuss how to overcome the tactical dilemmas.

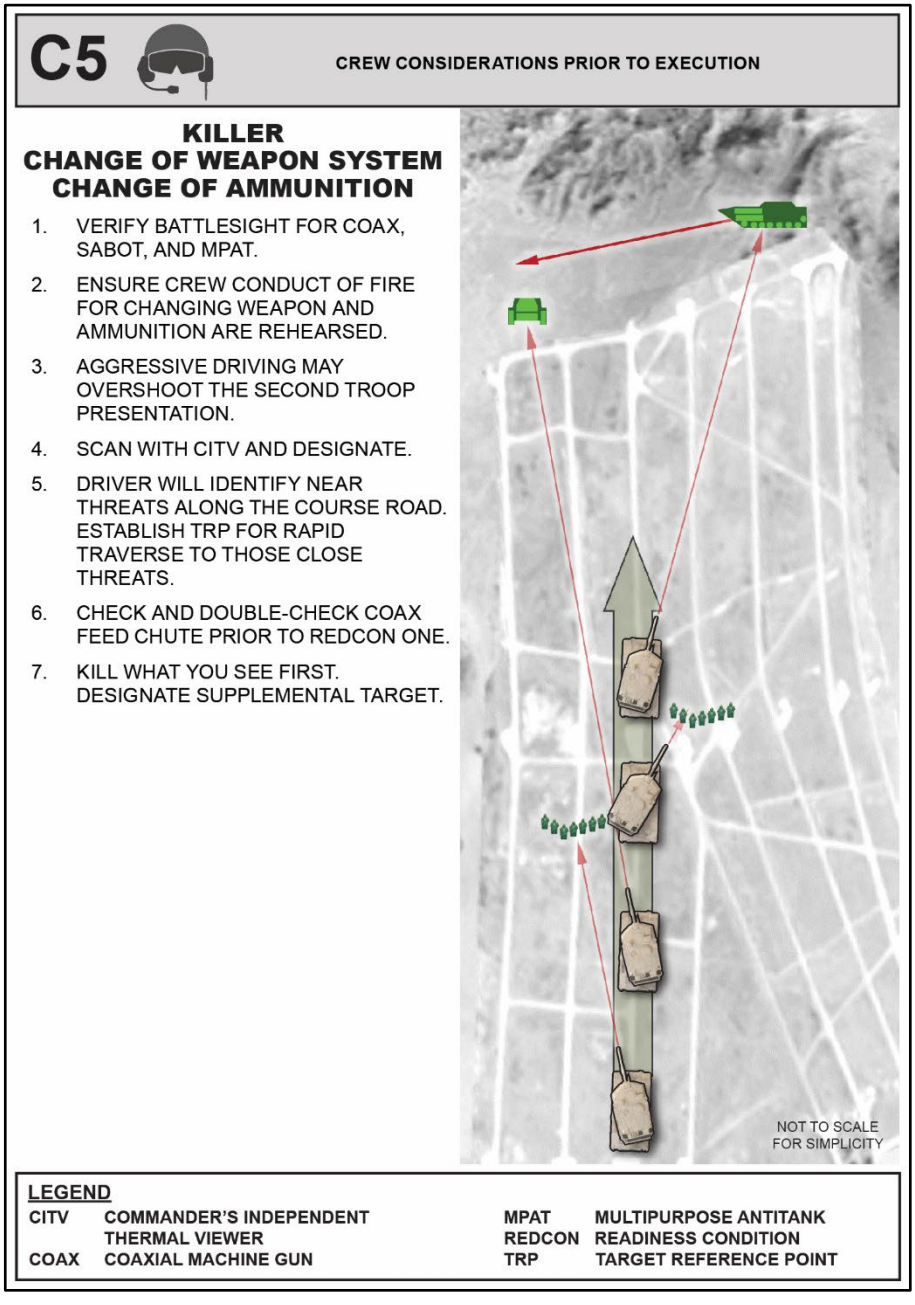


Figure E-27. Engagement C5 crew discussion

ENGAGEMENT C6

E-88. Engagement C6 requires full use of the weapon and ammunition from the gunner's position in the defense. It is one of the most complex with increased switchology and conduct of fire requirements. Figure E-28 provides an overview of the engagement and the required training munitions.

C6 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	CHANGE OF WEAPON/AMMO	POSTURE:	DEFENSE

KILLER			DELAY:	25 SECONDS
CHANGE OF WEAPON SYSTEM	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CHANGE OF AMMUNITION				
CONDITIONS				
FIRER	GUNNER	GUNNER	GUNNER	GUNNER
WEAPON/AMMUNITION	MPAT	COAX	COAX	SABOT
TARGET	BMP	TRUCK	TROOPS	TANK
TARGET TYPE	M1T-FRT	L2T-FRT	E(7)-FRT	H1T-FRT
TARGET POSTURE	STATIONARY	STATIONARY	STATIONARY	STATIONARY
RANGE TO TARGET	1,000m	600m	400m	2,000m
ENGAGEMENT MODIFIER	7	7	6	10

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
2	1		100		3	3

LEGEND

BMP	BOYEVAYA MASHINA PYEKHOTY	KE	KINETIC ENERGY
CAL .50	CALIBER .50	m	METER
CAN	CANISTER	mm	MILLIMETER
COAX	COAXIAL MACHINE GUN	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL		

Figure E-28. Engagement C6 overview

INDUCED ENGAGEMENT COMPLEXITY—C6

E-89. Success on this engagement requires the crew to have exceptional crew coordination, conduct of fire, crew responses, reloading, and engagement skills. The complexity of the engagement requires the crew to understand—

- Conduct of fire/fire commands.
- Crew responses.
- Switchology (smooth and timely application of changes to the ballistic solution using the gunner's lower panel).
- Fire control system capabilities and function.
- Battlesight range use and application.
- Advanced machine gun engagement techniques.
- Target acquisition with the CITV and designate function.
- Target acquisition with the CROWS in the defense.
- Effective use of defensive firing positions.

E-90. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-91. The Master Gunner must consider the lateral dispersion of the first and second target arrays presented. Targets within the same array should not be visible to the crew in narrow field of view, as described in figure E-29.

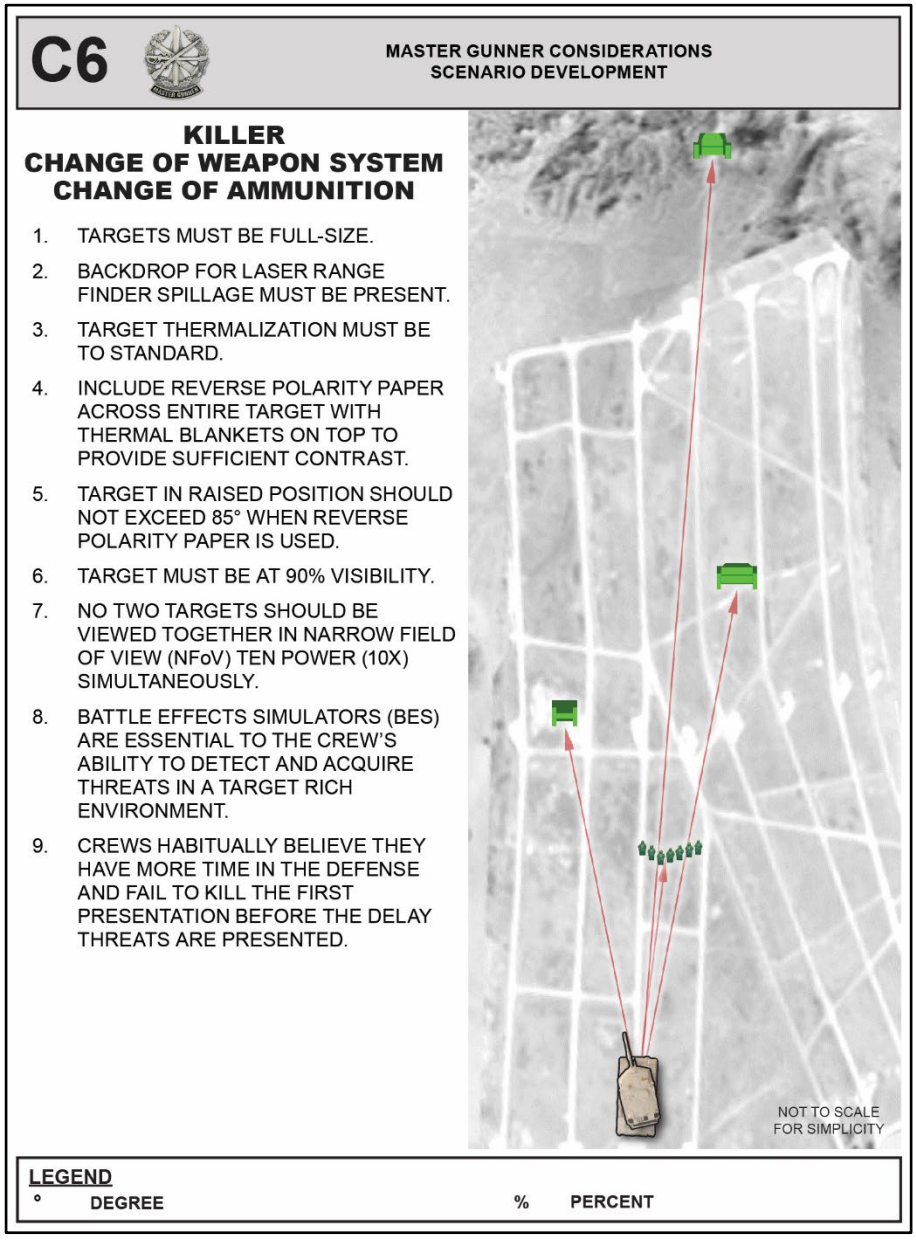


Figure E-29. Engagement C6 Master Gunner discussion

E-92. For crews, figure E-30 provides insights to the engagement to assist preparing for their success. Tank commanders should rehearse this engagement and focus on crew duties, conduct of fire, and crew duties.

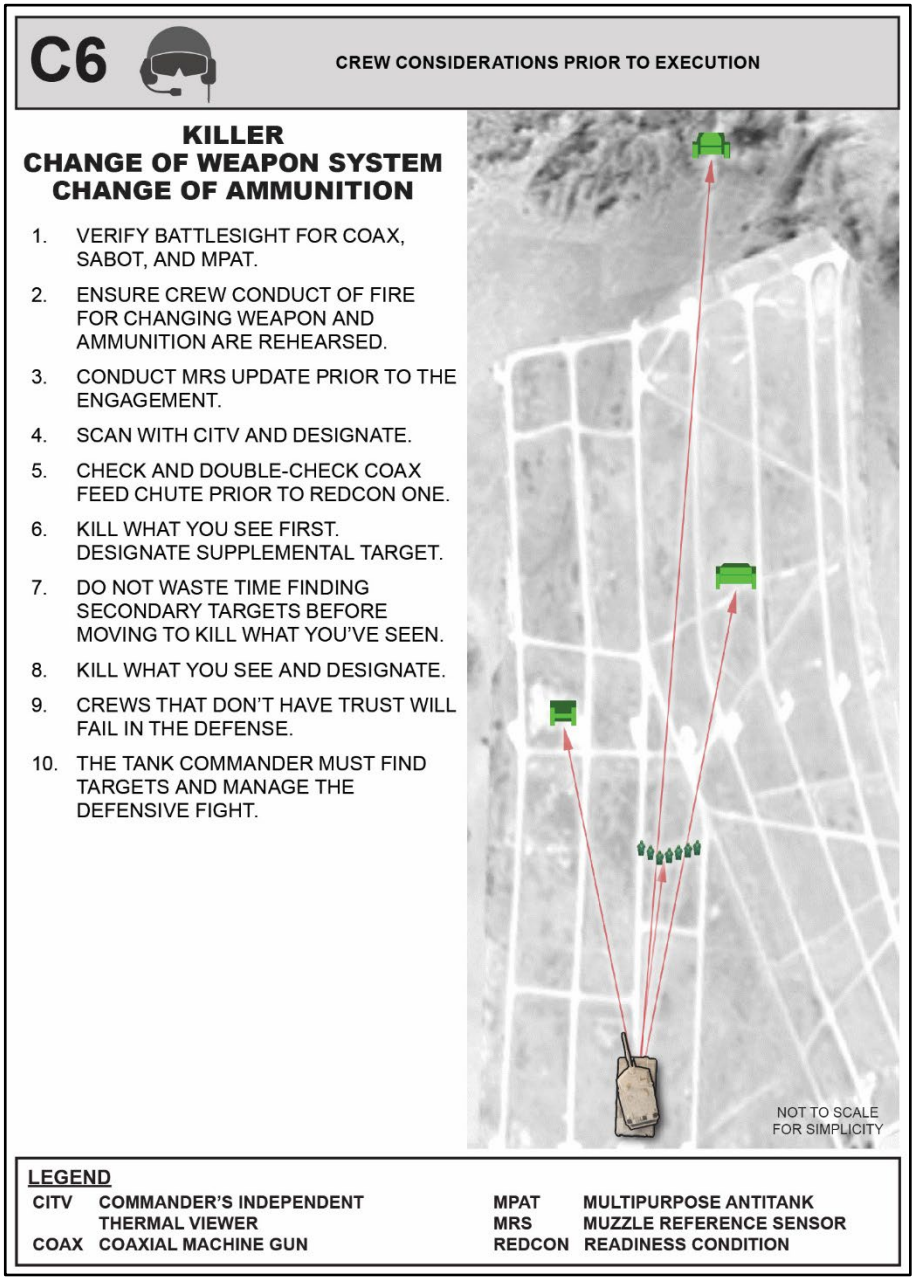
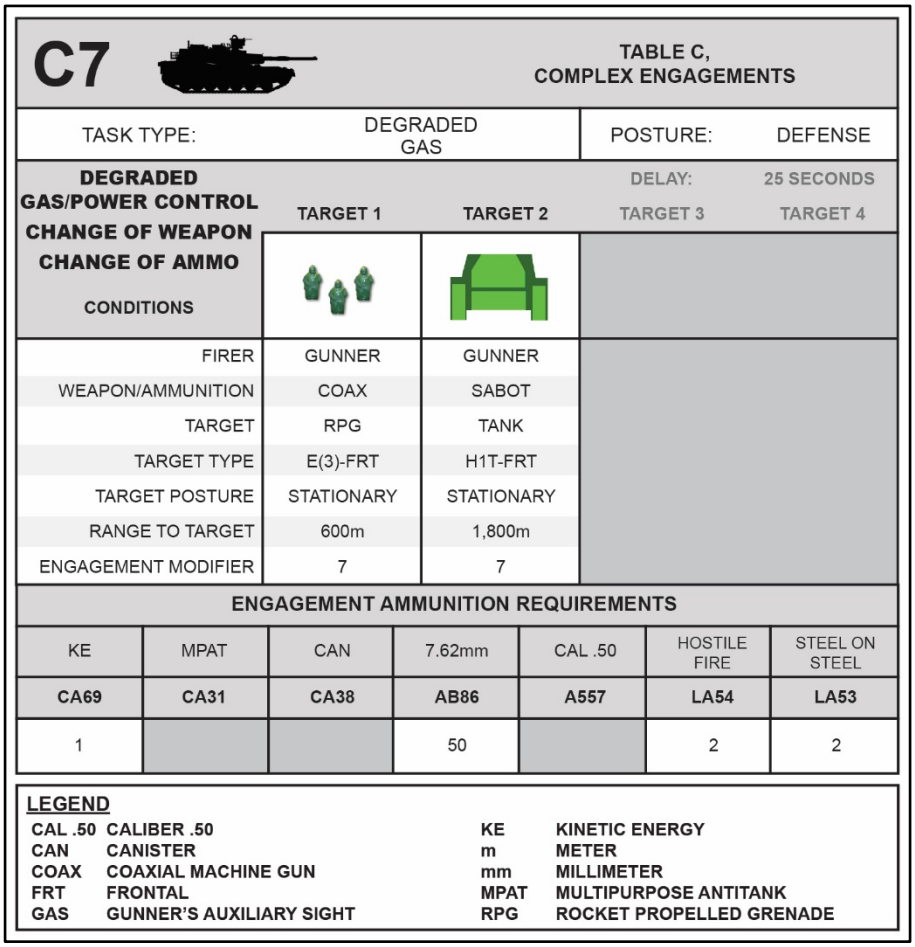


Figure E-30. Engagement C6 crew discussion

ENGAGEMENT C7

E-93. Engagement C7 is a complex degraded engagement fired from the defense (see figure E-31). The complexity includes use of the gunner's auxiliary sight for the coaxial machine gun then transitioning reticles to the sabot reticle.



C7

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	DEGRADED GAS	POSTURE:	DEFENSE
DEGRADED GAS/POWER CONTROL CHANGE OF WEAPON CHANGE OF AMMO		DELAY:	25 SECONDS
CONDITIONS	**TARGET 1**	**TARGET 2**	TARGET 3 / TARGET 4
FIRER	GUNNER	GUNNER	
WEAPON/AMMUNITION	COAX	SABOT	
TARGET	RPG	TANK	
TARGET TYPE	E(3)-FRT	H1T-FRT	
TARGET POSTURE	STATIONARY	STATIONARY	
RANGE TO TARGET	600m	1,800m	
ENGAGEMENT MODIFIER	7	7	

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
1			50		2	2

LEGEND

CAL .50	**CALIBER .50**	**KE**	**KINETIC ENERGY**
CAN	**CANISTER**	**m**	**METER**
COAX	**COAXIAL MACHINE GUN**	**mm**	**MILLIMETER**
FRT	**FRONTAL**	**MPAT**	**MULTIPURPOSE ANTITANK**
GAS	**GUNNER'S AUXILIARY SIGHT**	**RPG**	**ROCKET PROPELLED GRENADE**

Figure E-31. Engagement C7 overview

INDUCED ENGAGEMENT COMPLEXITY—C7

E-94. The tank crew is presented with several complex issues that require advanced understanding. This engagement introduces the crew to the following advanced topics:

- Fire control system capabilities.
- Gunner's auxiliary sight reticle use.
- Degraded gunnery engagement techniques.
- Gunner's auxiliary sight application for 7.62mm ballistic drop compensation.
- Auxiliary sight switchology.
- Target detection and acquisition with the gunner's auxiliary sight.
- Use of CROWS for target hand-off during degraded operations.
- Immediate range determination.
- Battlesight range determination and application.
- Ammunition
  - Ballistic performance.
  - Exterior ballistics.
  - Ballistic drop.

E-95. The Master Gunner should provide instruction on the capabilities of the CROWS system. The CROWS has an orientation feature similar that indicated the CROWS and the guns orientation that supports target hand-off. This system, similar to the hull turret position sensor on the gunner's control display panel and CITV, can be used during this engagement to increase the lethality of the crew.

E-96. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-97. The Master Gunner should provide instruction on the alignment of the gunner's auxiliary sight during the screening process (see figure E-32). Instruction should include how to slip the scales for precision alignment of sabot and MPAT. It must include application of the auxiliary sight's high explosive antitank reticle for ballistic use during coaxial engagements.

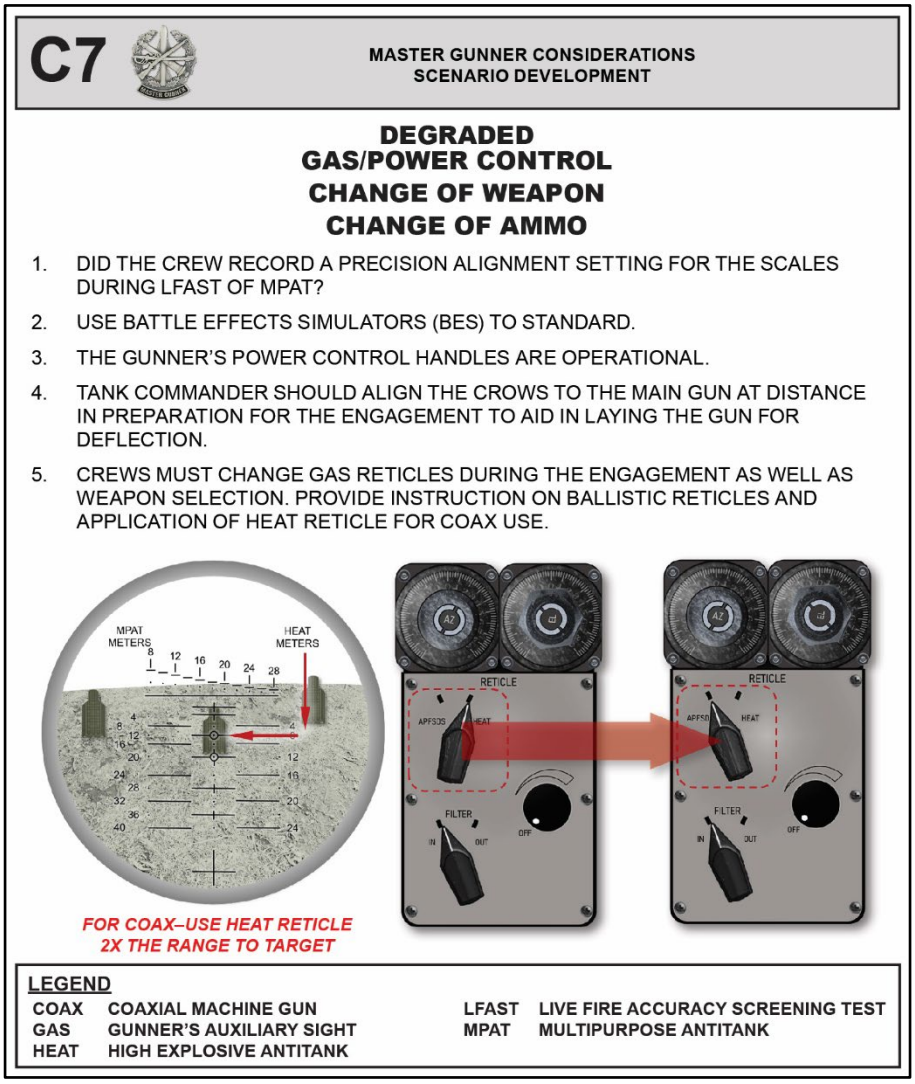


Figure E-32. Engagement C7 Master Gunner discussion

E-98. Figure E-33 provides key considerations the crew should discuss, practice, and rehearse for this engagement. The crew must have a fundamental understanding of the use of all reticles in the gunner's auxiliary sight. They also must refine and practice their skills detecting threats in the CROWS and handing those threats off to the gunner during degraded operations.

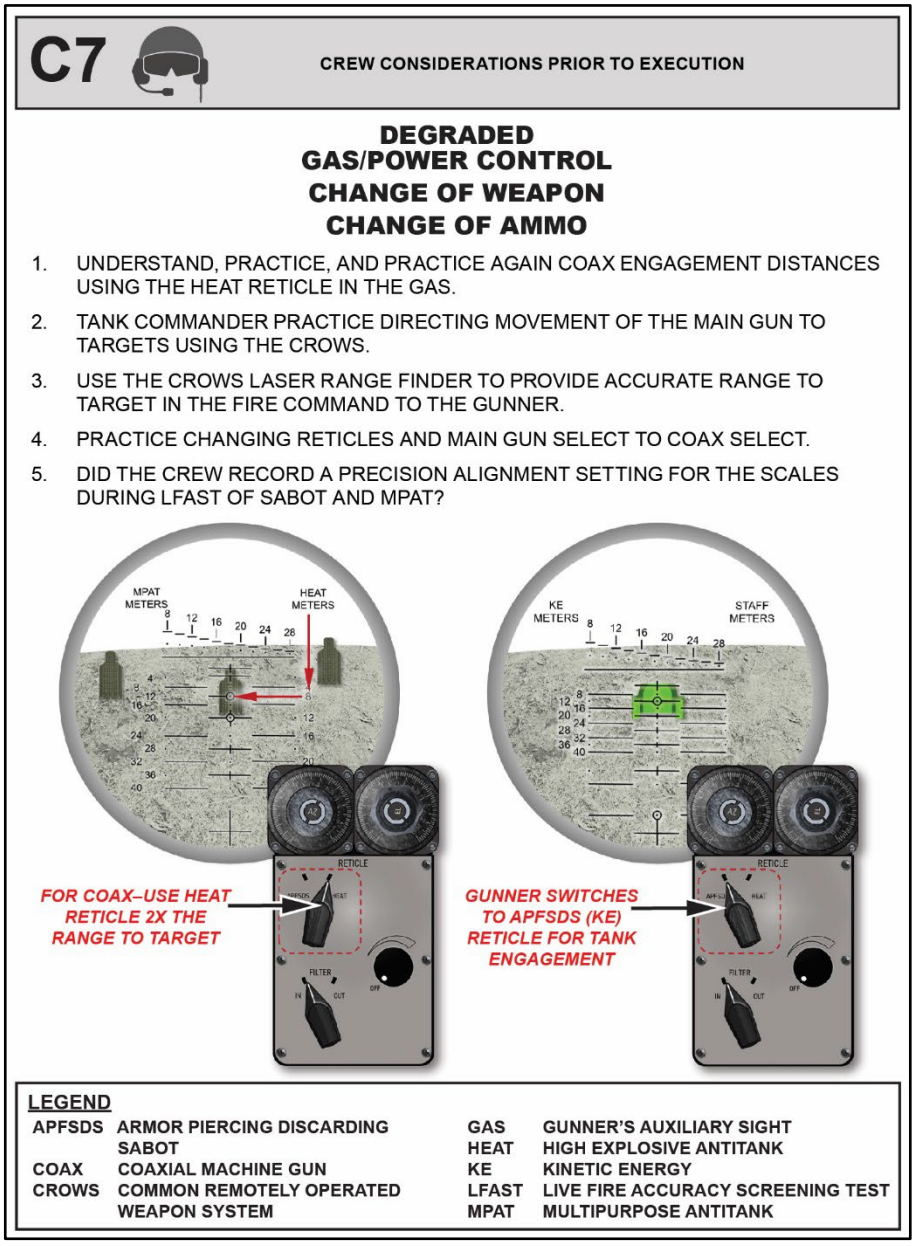


Figure E-33. Engagement C7 crew discussion

ENGAGEMENT C8

E-99. Engagement C8 is a tank commander engagement using the CITV to engage multiple stationary threats during a fire control system failure, including use of the laser range finder (see figure E-34). It requires the tank commander to determine the range to target and engage the threats with the CITV.

C8 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	DEGRADED CITV CHOKE/LRF FAILURE	POSTURE:	DEFENSE
		DELAY:	25 SECONDS

CONDITIONS	TARGET 1 	TARGET 2 	TARGET 3	TARGET 4
FIRER	VC	VC		
WEAPON/AMMUNITION	COAX	SABOT		
TARGET	RPG TEAM	TANK		
TARGET TYPE	E(3)-FRT	H1T-FRT		
TARGET POSTURE	STATIONARY	STATIONARY		
RANGE TO TARGET	600m	1,800m		
ENGAGEMENT MODIFIER	7	7		

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
2			50		2	2

LEGEND

CAL .50	CALIBER .50	LRF	LASER RANGE FINDER
CAN	CANISTER	m	METER
CITV	COMMANDER'S INDEPENDENT THERMAL VIEWER	mm	MILLIMETER
		MPAT	MULTIPURPOSE ANTITANK
COAX	COAXIAL MACHINE GUN	RPG	ROCKET PROPELLED GRENADE
FRT	FRONTAL	VC	VEHICLE COMMANDER
KE	KINETIC ENERGY		

Figure E-34. Engagement C8 overview

INDUCED ENGAGEMENT COMPLEXITY—C8

E-100. The engagement requires the tank commander to have a mastery of the CITV during degraded operations. This engagement introduces the tank commander to the following advanced topics:

- Fire control system capabilities.
- Battlesight gunnery techniques.
- CITV stadia reticle use.
- Range determination with the CITV.
- Engage targets using the CITV as the primary optic.

E-101. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

E-102. Master Gunners should provide advanced instruction on the CITV, reticles available, reticle adjustment, range determination using the stadia reticle, commander control handle use and switchology, and degraded engagement techniques.

E-103. The Master Gunner should provide information on the use and application of the stadia/choke reticle in the CITV. This should include detailed reticle relationship information to enable the tank commanders to validate the range determined to prevent lost rounds during coaxial engagements (see figure E-35).

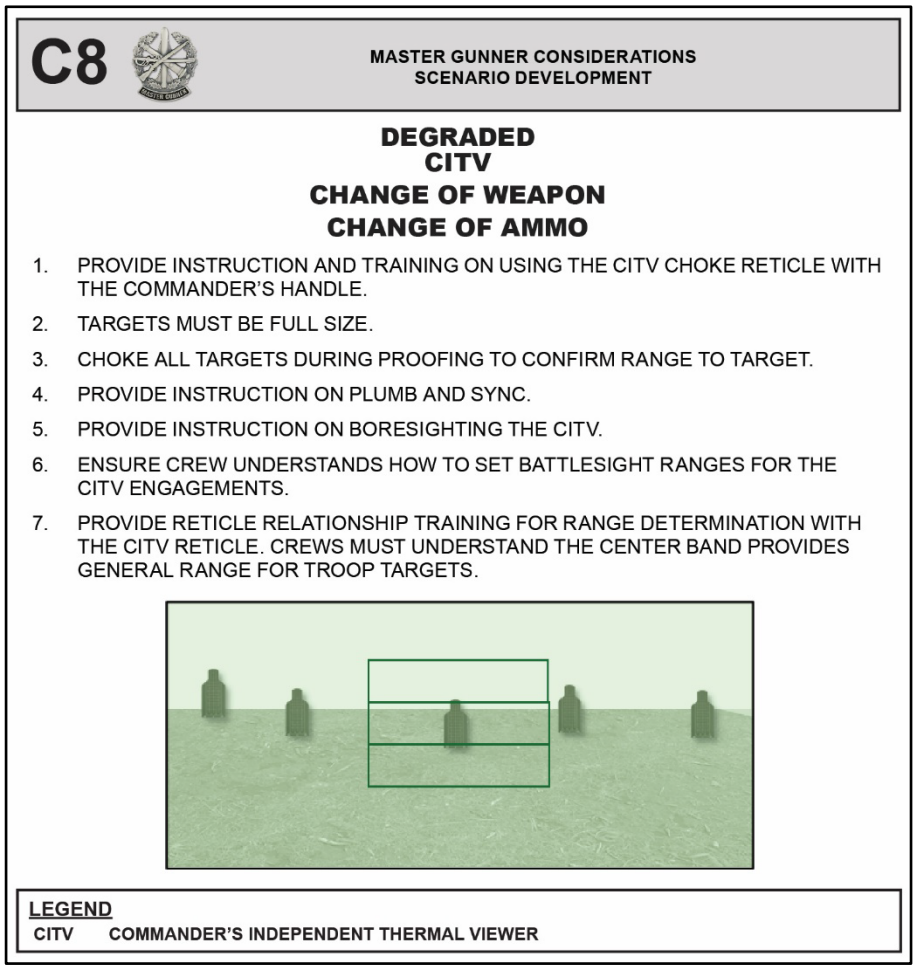


Figure E-35. Engagement C8 Master Gunner discussion

E-104. The tank commander must be extremely comfortable engaging threats with all ammunition types available using the CITV. This requires a precise boresight, understanding of mil and reticle relationships to various threats, and switchology with the commander's handle (see figure E-36).

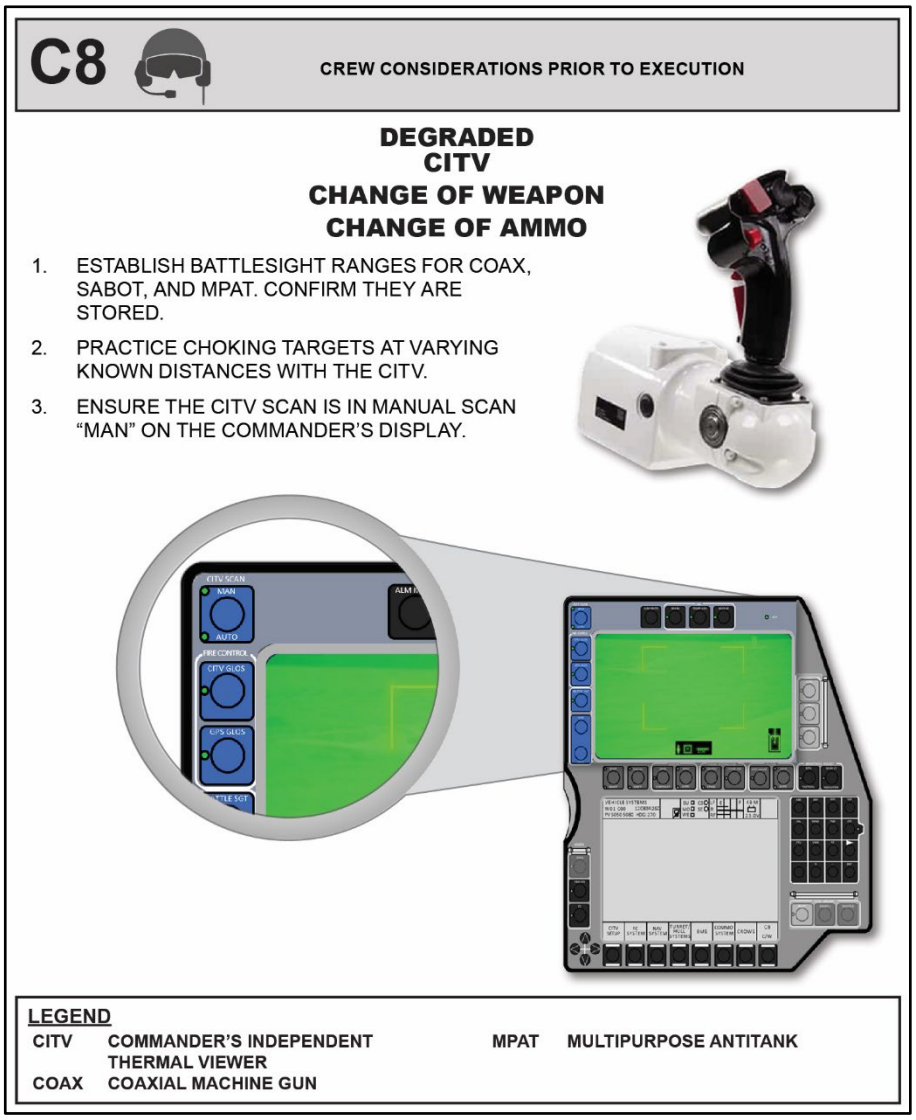


Figure E-36. Engagement C8 crew discussion

ENGAGEMENT C9

E-105. Engagement C9 requires acute attention to detail during execution. While on the offense, the crew is presented with multiple stationary and moving main gun, caliber .50, and coaxial threats. This requires use of the CROWS while on the offense with the turret traversing simultaneously with the CROWS traversing (see figure E-37).

C9 

TABLE C, COMPLEX ENGAGEMENTS

TASK TYPE:	SIMULTANEOUS	POSTURE:	OFFENSE

			DELAY:	25 SECONDS
	TARGET 1	TARGET 2	TARGET 3	TARGET 4
CONDITIONS				
FIRER	GUNNER	VC	GUNNER	GUNNER
WEAPON/AMMUNITION	MPAT	CALIBER .50	COAX	COAX
TARGET	BMP	TRUCK	TROOPS	TROOPS
TARGET TYPE	M1T-FLK	L2T-FRT	E(7)-FRT	E(7)-FRT
TARGET POSTURE	MOVING	STATIONARY	STATIONARY	STATIONARY
RANGE TO TARGET	1,800m	1,600m	600m	600m
ENGAGEMENT MODIFIER	14	15	12	12

ENGAGEMENT AMMUNITION REQUIREMENTS

KE	MPAT	CAN	7.62mm	CAL .50	HOSTILE FIRE	STEEL ON STEEL
CA69	**CA31**	**CA38**	**AB86**	**A557**	**LA54**	**LA53**
	2		100	50	2	2

LEGEND

CAL .50	CALIBER .50	KE	KINETIC ENERGY
CAN	CANISTER	m	METER
COAX	COAXIAL MACHINE GUN	mm	MILLIMETER
FLK	FLANK	MPAT	MULTIPURPOSE ANTITANK
FRT	FRONTAL	VC	VEHICLE COMMANDER

Figure E-37. Engagement C9 overview

INDUCED ENGAGEMENT COMPLEXITY—C9

E-106. This engagement requires the crew to establish no-fire zones within the CROWS to ensure firing inhibits are in place to prevent damage to the main gun, bore evacuator, CITV, or other parts of the tank.

E-107. This engagement requires exceptional use of the CROWS in the offense which will push the crew into uncomfortable territory. It forces proficiency with the set-up functions to establish the use of no-fire zones and use of the lead function.

ESTABLISHED NO-FIRE ZONES REQUIRED

No crew may execute this task without verification they have set the appropriate no-fire zones for their vehicle. Failure to verify the no-fire zones may result in injury or death to personnel or damaged equipment.

E-108. The unit's Master Gunner should leverage the Sabot Academy training materials available on these topics and discussions for the tank commander. These are available from the Sabot Academy teams site listed in the references at the end of this publication.

LOADER'S HATCH CLOSED AND SECURE

Range safety officers and the tank commander must verify the loader's hatch is closed and secure prior to executing this engagement.

E-109. The tank commander's target must be place in the center, between the gunner's targets. This enforces the conditions of the task and reinforces the use of the no-fire zones established for the CROWS system during the engagement (see figure E-38).

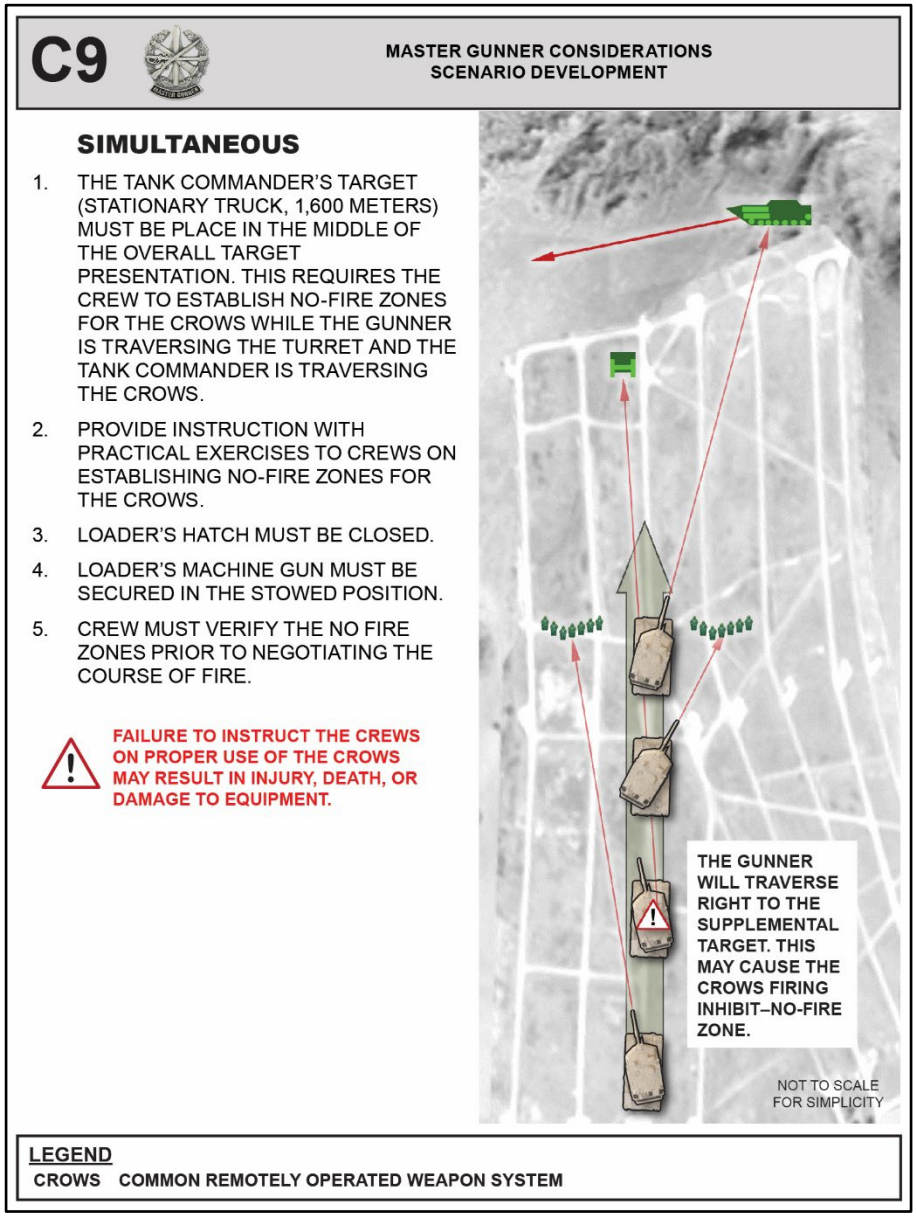


Figure E-38. Engagement C9 Master Gunner discussion

E-110. For crews, figure E-39 provides critical notes for the proper execution of this engagement. The crew must be trained on the capabilities and set-up procedures of the CROWS to ensure the safety of the crew and live-fire hazards to the tank's equipment and armament.

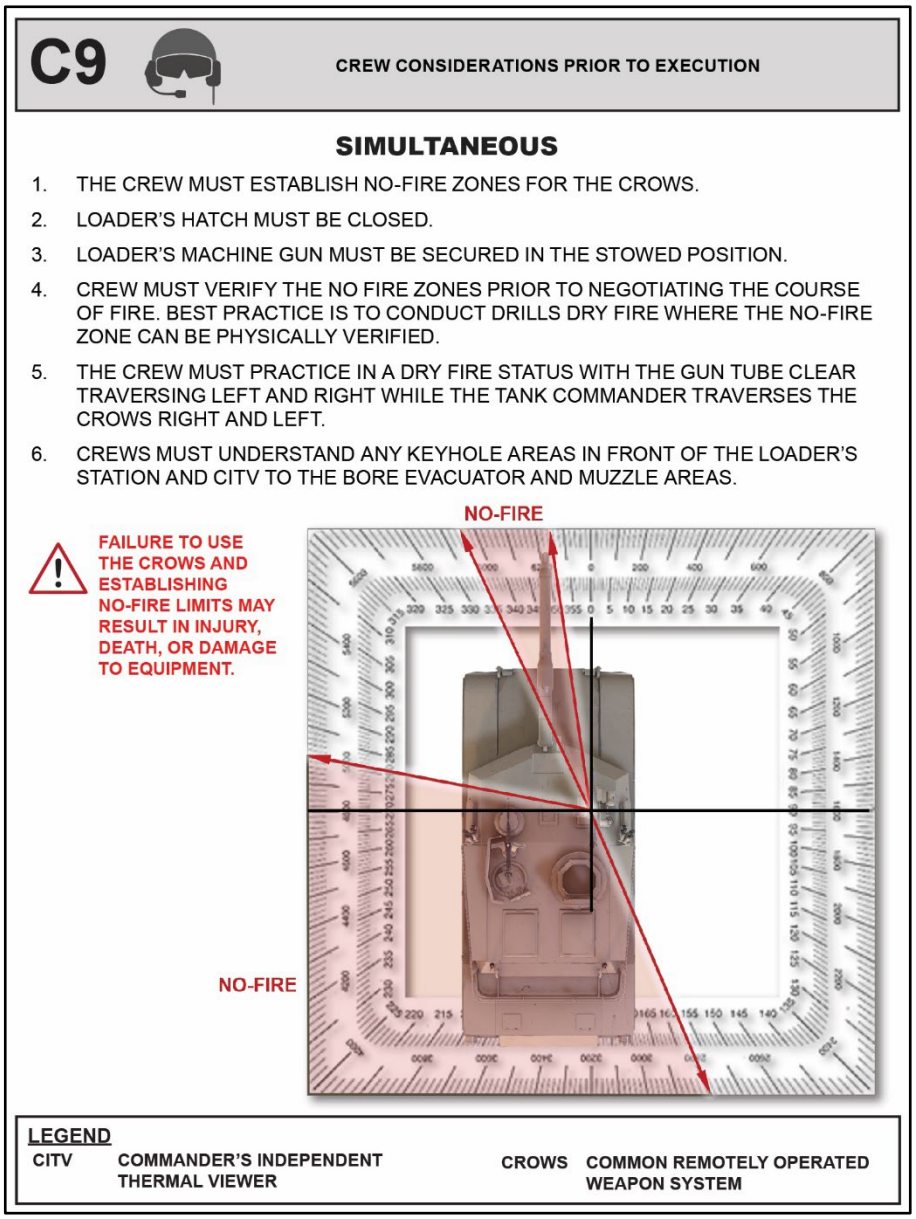


Figure E-39. Engagement C9 crew discussion

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Appendix F
Forms

This appendix is designed for trainers and units to provide clear instructions and examples on how to properly fill out all associated forms used where this publication is the proponent. Units should download the available forms from the Army Publishing Directorate website found in the reference section at the back of this manual for downloadable or printable copies of these forms.

OVERVIEW OF FORMS

F-1. This manual prescribes the use of the DA Form 8265-12 series of forms. These are used specifically to record basic crew and vehicle information and an official record of the screening process including all ballistic information required to track the performance of the tank, cannon, fire control system, and ammunition for the unit and the Army.

F-2. Units that fail to complete the forms as intended and submit them to the Maneuver Center of Excellence upon completion of screening procedures violates Army policy found in AR 350-1. The instructions for each form include methods to submit the information to the Maneuver Center of Excellence for data collection and analysis. The forms described in this appendix are listed in figure F-1.

DEPARTMENT OF THE ARMY (DA) FORMS	
DA FORM 8265-12A	CREW PLATFORM DATA RECORD
DA FORM 8265-12B	LIVE ACCURACY SCREENING TEST (LFAST)
DA FORM 8265-12C	LIVE ACCURACY SCREENING TEST (LFAST) WORKSHEET

Figure F-1. Department of the Army forms listing

DA FORM 8265-12A, CREW PLATFORM DATA RECORD

F-3. This one-page form is used to record the vehicle and crew's basic information. It includes the bumper number, vehicle name, model, noun, serial number, national stock number and fire control system software version.

F-4. It continues recording the basic crew information prior to entering a live-fire training density. This information includes the following information for each crewmember:

- Name.
- Experience level.
- Date assigned to crew.
- Paragraph and line number from the modified table of organization and equipment.
- Year and month available when known concerning a Soldier's earliest date of departure from the organization.
- Combat lifesaver training completed.
- Driver's license type.

F-5. The form continues with the tank's main armament data. This information is brought forward from the current DA Form 2408-4, for use by the crew to maintain critical information and track fire control system component or armament changes.

F-6. The tank commander is responsible for maintaining this form for their assigned vehicle. This form is an inspectable item as part of the crew packet when entering the live-fire training density. It must be completed by the tank commander and submitted to the tower prior to entering the firing order during Table IV, screening and zero.

F-7. Instructions used to complete the form to standard are found in figure F-3 on page 475 through figure F-12 on page 484, providing examples of each instruction for clarity. A sample DA Form 8265-12A is demonstrated in figure F-2 on pages 473 and 474.

CREW PLATFORM DATA RECORD

The proponent agency is TRADOC. For use of this form, see TC 3-20.31-120.

PRIVACY ACT STATEMENT

AUTHORITY: 10 USC 3013(b)(5), Secretary of the Army; Army Regulation 350-1, Army Training and Leader Development.

PRINCIPAL PURPOSE(S): The DA Form 8265-12A (Crew Platform Data Record) is used to track Abrams crew training performance, crew management, and fire control system armament accuracy over time. For additional information, see the System of Records Notice DoD 0005, Defense Training Records, https://dpcld.defense.gov/Privacy/SORNsIndex/DOD-Wide-Notices/DOD-Wide-Article-List/

ROUTINE USES: None.

DISCLOSURE: Voluntary. However, failure to provide identifying information may prevent the ability to remain in the military.

CREW INFORMATION

1. UNIT	2. BUMPER NUMBER	3. VEHICLE NAME
B/1-1 CAV	B23	BLOODHOUND

4. VEHICLE MODEL	5. VEHICLE NOUN
M1A2V2	Tank, Combat, Full-Tracked: 120mm M1A2 System Enhancement Package Version 2 (SEPv2)

6. SERIAL NUMBER	7. VEHICLE NSN	8. SYSTEM SOFTWARE VERSION
LA30250M	2350-01-328-5964	4.4.2

9a. TANK COMMANDER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
SSG VEGA, JOHN S.	EXPERIENCED	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-01	25 JUN 25	15 JUN 11	STANDARD

10a. GUNNER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
SGT FIELDS, NATHAN C.	NEW	LA30250M

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-02			STANDARD

11a. DRIVER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
PFC MILLER , WILLIAM U.	NEW	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-03			LEARNER

12a. LOADER (RANK, LAST, FIRST) *If applicable*	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
PV2 SMIT, LIAM R.	NEW	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-04			LEARNER

SAMPLE

DA FORM 8265-12A, JUL 2025

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APD AEM v1.00ES

LEGEND

DA	DEPARTMENT OF THE ARMY	TC	TRAINING CIRCULAR
NSN	NATIONAL STOCK NUMBER	YMAV	YEAR MONTH AVAILABLE
PARA	TANK COMMANDER'S PARAGRAPH		

Figure F-2. DA Form 8265-12A

CREW INFORMATION *(continued)*

13. MAIN ARMAMENT DATA

a. TUBE SN	b. RETUBINGS	c. CANNON SN
1820	2 / 4386	6002
d. EFC FIRED	**e. EFC REMAINING**	**f. AS OF DATE**
114	1386	1 DEC 23
g. RECOIL EXERCISE DATE	**h. BORESCOPE DATE, *if applicable***	**i. VERIFIED IN TULSA DATE**
2 SEP 23	2 SEP 23	1 DEC 23

14. FIRE CONTROL OR ARMAMENT CHANGES SINCE LAST GUNNERY

a. DATE	b. COMPONENT, PART, ASSEMBLY	c. REMARKS
14 AUG 23	SHIMS FOR BREECH ALIGNMENT BLOCK	ADDED 0.01 INCHES
2 SEP 23	RECOIL EXERCISE	ANNOTATED 2408-4

SAMPLE

DA FORM 8265-12A, JUL 2025

Page 2 of 2

APD AEM v1.00ES

LEGEND

DA	DEPARTMENT OF THE ARMY	SN	SERIAL NUMBER
EFC	EQUIVALENT FULL CHARGE		

Figure F-2. DA Form 8265-12A (continued)

F-8. Figure F-3 provides the basic instructions to complete the administrative section of the form. Units should have access to the vehicle's technical manual and fire control system to complete this portion of the form.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS

CREW PLATFORM DATA RECORD

The proponent agency is TRADOC. For use of this form, see TC 3-20.31-120.

1. UNIT	2. BUMPER NUMBER	3. VEHICLE NAME
B/1-1 CAV	B23	BLOODHOUND
4. VEHICLE MODEL	**5. VEHICLE NOUN**	
M1A2V2	TANK, COMBAT, FULL-TRACKED: 120MM, M1A2 SYSTEM ENHANCEMENT PACKAGE VERSION 2 (SEPV2)	
6. SERIAL NUMBER	**7. VEHICLE NSN**	**8. SYSTEM SOFTWARE VERSION**
LA30250M	2350-01-328-5964	4.4.2

SAMPLE

BLOCK	ACTION
1	UNIT–enter the crew's common unit identification i.e. B/1-1 CAV.
2	BUMPER NUMBER–enter the unit assigned vehicle bumper number.
3	VEHICLE NAME–enter the crew assigned, unit approved vehicle name. This should match the entries in the unit's historical record.
4	VEHICLE MODEL–enter the vehicle's model from the technical manual (TM).
5	VEHICLE NOUN–enter the description of the vehicle found on the equipment's technical manual.

LEGEND

DA	DEPARTMENT OF THE ARMY	NSN	NATIONAL STOCK NUMBER
mm	MILLIMETER	TC	TRAINING CIRCULAR

Figure F-3. Crew platform data record, administrative information

F-9. Figure F-4 provides the instructions to complete blocks 6, 7, and 8, respectively. An example of a common location of the vehicle's data plate containing the information for blocks 6 and 7 are also provided.

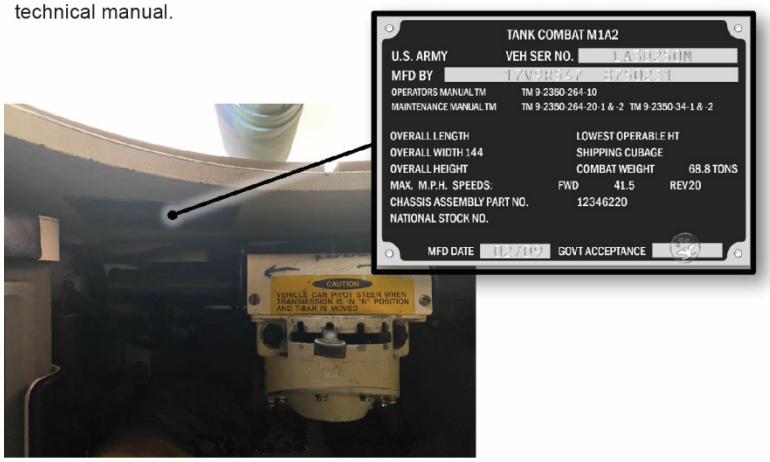
DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS

CREW PLATFORM DATA RECORD

The proponent agency is TRADOC. For use of this form, see TC 3-20.31-120.

1. UNIT	2. BUMPER NUMBER	3. VEHICLE NAME
B/1-1 CAV	B23	BLOODHOUND
4. VEHICLE MODEL	**5. VEHICLE NOUN**	
M1A2V2	TANK, COMBAT, FULL-TRACKED: 120MM, M1A2 SYSTEM ENHANCEMENT PACKAGE VERSION 2 (SEPV2)	
6. SERIAL NUMBER	**7. VEHICLE NSN**	**8. SYSTEM SOFTWARE VERSION**
LA30250M	2350-01-328-5964	4.4.2

SAMPLE

BLOCK	ACTION
6	SERIAL NUMBER–enter the vehicle serial number found on the data plate in the driver's compartment. Additional data plate locations are described in the technical manual. 
7	VEHICLE NSN–enter the national stock number (NSN) of the vehicle. Typically, the NSN is listed on the cover of the vehicle's technical manual.
8	SYSTEM SOFTWARE VERSION–enter the fire control system software version number.

LEGEND

DA	DEPARTMENT OF THE ARMY	TC	TRAINING CIRCULAR
MM	MILLIMETER		

Figure F-4. Serial number, national stock number, and software version information

F-10. Figure F-5 provides the instructions to complete the crew information for the tank commander. Units must review their table of organization and equipment, training records, and personnel status to retrieve the information.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
CREW INFORMATION
TANK COMMANDER

9a. TANK COMMANDER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
SSG VEGA, JOHN S.	EXPERIENCED	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-01	25 JUN 25	15 JUN 22	STANDARD

SAMPLE

BLOCK	ACTION
9a	TANK COMMANDER (RANK, LAST, FIRST)–enter the tank commander's rank, then last name and first name.
9b	EXPERIENCE LEVEL–enter the tank commander's experience level as EXPERIENCED, TURBULENT, or NEW (see Chapter 2 for additional information).
9c	DATE ASSIGNED–enter the date the tank commander was assigned to their position in DD MMM YY format. This information serves as historical record.
9d	PARA/LINE–enter the tank commander's paragraph and line number for the position they are filling on the Modified Table of Equipment (MTOE).
9e	YMAV–enter the YEAR MONTH AVAILABLE (YMAV) the tank commander is available for orders for a permanent change of station.
9f	COMBAT LIFESAVER–enter the DATE completing the combat lifesaver course. If not complete, leave blank.
9g	DRIVER LICENSE–enter STANDARD if fully licensed, LEARNER if a learner license is authorized, or NONE if not Army license for the vehicle is authorized or assigned.

LEGEND

DA	DEPARTMENT OF THE ARMY	MMM	MONTH
DD	DAY	YY	YEAR

Figure F-5. Crew platform data, crew information, tank commander, instructions

F-11. Figure F-6 provides the instructions to complete the crew information for the gunner. Units must review their table of organization and equipment, training records, and personnel status to retrieve the information.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
CREW INFORMATION
GUNNER

10a. GUNNER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
SGT FIELDS, NATHAN C.	NEW	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-02			STANDARD

SAMPLE

BLOCK	ACTION
10a	GUNNER (RANK, LAST, FIRST)–enter the gunner's rank, then last name and first name.
10b	EXPERIENCE LEVEL–enter the gunner's experience level as EXPERIENCED, TURBULENT, or NEW (see Chapter 2 for additional information).
10c	DATE ASSIGNED–enter the date the gunner was assigned to their position in DD MMM YY format.
10d	PARA/LINE–enter the gunner's paragraph and line number for the position they are filling on the Modified Table of Equipment (MTOE).
10e	YMAV–enter the YEAR MONTH AVAILABLE (YMAV) the gunner is available for orders for a permanent change of station.
10f	COMBAT LIFESAVER–enter the DATE completing the combat lifesaver course. If not complete, leave blank.
10g	DRIVER LICENSE-enter STANDARD if fully licensed, LEARNER if a learner license is authorized, or NONE if not Army license for the vehicle is authorized or assigned.

LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-6. Crew platform data, crew information, gunner, instructions

F-12. Figure F-7 provides the instructions to complete the crew information for the driver. Units must review their table of organization and equipment, training records, and personnel status to retrieve the information.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
CREW INFORMATION
DRIVER

11a. DRIVER (RANK, LAST, FIRST)	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
PFC MILLER , WILLIAM U.	NEW	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-03			LEARNER

SAMPLE

BLOCK	ACTION
11a	DRIVER (RANK, LAST, FIRST)–enter the driver's rank, then last name and first name.
11b	EXPERIENCE LEVEL–enter the driver's experience level as EXPERIENCED, TURBULENT, or NEW (see Chapter 2 for additional information).
11c	DATE ASSIGNED–enter the date the loader was assigned to their position in DD MMM YY format.
11d	PARA/LINE–enter the driver's paragraph and line number for the position they are filling on the Modified Table of Equipment (MTOE).
11e	YMAV–enter the YEAR MONTH AVAILABLE (YMAV) the driver is available for orders for a permanent change of station.
11f	COMBAT LIFESAVER–enter the DATE completing the combat lifesaver course. If not complete, leave blank.
11g	DRIVER LICENSE–enter STANDARD if fully licensed, LEARNER if a learner license is authorized, or NONE if not Army license for the vehicle is authorized or assigned.

LEGEND

DA	DEPARTMENT OF THE ARMY	MMM	MONTH
DD	DAY	YY	YEAR

Figure F-7. Crew platform data, crew information, driver, instructions

F-13. Figure F-8 provides the instructions to complete the crew information for the loader. Units must review their table of organization and equipment, training records, and personnel status to retrieve the information.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
CREW INFORMATION
LOADER

12a. LOADER (RANK, LAST, FIRST) *If applicable*	b. EXPERIENCE LEVEL	c. DATE ASSIGNED
PV2 SMIT, LIAM R.	NEW	25 JAN 22

d. PARA / LINE	e. YMAV	f. COMBAT LIFESAVER	g. DRIVER LICENSE
328J-04			LEARNER

SAMPLE

BLOCK	ACTION
12a	LOADER (RANK, LAST, FIRST)–enter the loader's rank, then last name and first name.
12b	EXPERIENCE LEVEL–enter the loader's experience level as EXPERIENCED, TURBULENT, or NEW (see Chapter 2 for additional information).
12c	DATE ASSIGNED–enter the date the loader was assigned to their position in DD MMM YY format.
12d	PARA/LINE–enter the loader's paragraph and line number for the position they are filling on the Modified Table of Equipment (MTOE).
12e	YMAV–enter the YEAR MONTH AVAILABLE (YMAV) the loader is available for orders for a permanent change of station.
12f	COMBAT LIFESAVER–enter the DATE completing the combat lifesaver course. If not complete, leave blank.
12g	DRIVER LICENSE–enter STANDARD if fully licensed, LEARNER if a learner license is authorized, or NONE if not Army license for the vehicle is authorized or assigned.

LEGEND

DA	DEPARTMENT OF THE ARMY	MMM	MONTH
DD	DAY	YY	YEAR

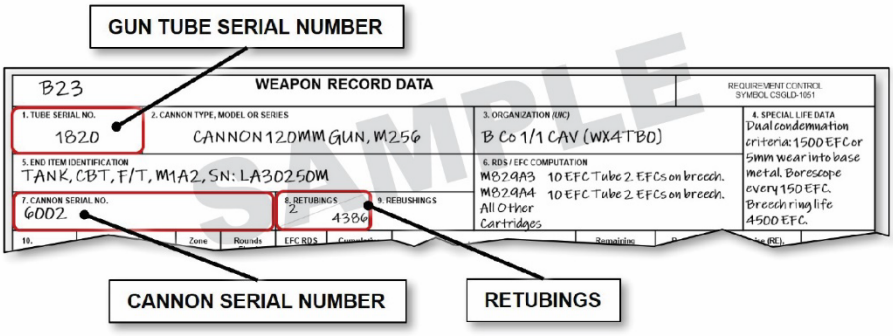
Figure F-8. Crew platform data, crew information, loader, instructions

F-14. Figure F-9 provides the instructions to complete the main armament data section for the tube serial number, retubings and breech equivalent full charge remaining, and cannon serial number. This information is derived from the vehicle's current DA Form 2408-4.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
MAIN ARMAMENT DATA

13. MAIN ARMAMENT DATA		
a. TUBE SERIAL NUMBER 1820	b. RETUBINGS 2 / 4386	c. CANNON SERIAL NUMBER 6002
d. EFC FIRED 114	e. EFC REMAINING 1386	f. AS OF DATE 1 DEC 23
g. RECOIL EXERCISE DATE 2 SEP 23	h. BORESCOPE DATE, *if applicable* 2 SEP 23	i. VERIFIED IN TULSA DATE 1 DEC 23

BLOCK	ACTION
13a	TUBE SERIAL NUMBER–enter the vehicle's tube serial number. This is located on the gun tube at the chamber area. It should match the vehicle's DA Form 2408-4, Block 1.
13b	RETUBINGS–Enter the number of retubings and breechring equivalent full charge remaining from DA Form 2408-4 block 8.
13c	CANNON SERIAL NUMBER–Enter the cannon's serial number. Verify any suffixes used on the serial number from DA Form 2408-4, block 7.



NOTE: UNITS MAY INCLUDE DA FORM 2408-4 FOR THE VEHICLE IN LIEU OF COMPLETING DA FORM 8265-12A, PAGE 2, BLOCK 13a through BLOCK 13i.

LEGEND

DA	DEPARTMENT OF THE ARMY	NO.	NUMBER
EFC	EQUIVALENT FULL CHARGE	UIC	UNIT IDENTIFICATION CODE

Figure F-9. Main armament data instructions, example

F-15. Figure F-10 provides the instructions to complete the main armament data for the total equivalent full charge rounds fired, equivalent full charge remaining, and the date the information was collected. This information is available on the vehicle's DA Form 2408-4.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
MAIN ARMAMENT DATA

13. MAIN ARMAMENT DATA

a. TUBE SERIAL NUMBER	b. RETUBINGS	c. CANNON SERIAL NUMBER
1820	2 / 4386	6002
d. EFC FIRED	**e. EFC REMAINING**	**f. AS OF DATE**
114	1386	1 DEC 23
g. RECOIL EXERCISE DATE	**h. BORESCOPE DATE, *if applicable***	**i. VERIFIED IN TULSA DATE**
2 SEP 23	2 SEP 23	1 DEC 23

SAMPLE

BLOCK	ACTION
13d	EFC FIRED–enter the equivalent full charge (EFC) fired from DA Form 2408-4, Weapon Record Data, block f, Cumulative EFC RDS.
13e	EFC REMAINING–enter the equivalent full charge (EFC) remaining from DA Form 2408-4, Weapon Record Data, block h, Remaining Life (EFC RDS).
13f	AS OF DATE–enter the date the information for blocks 13d and 13e were pulled from DA Form 2408-4, Weapon Record Data, for the vehicle.

EFC REMAINING/REMAINING LIFE

AS OF DATE | **CUMULATIVE EFC ROUNDS FIRED**

13. Date a	Projectile Type b	Zone or Charge c	Rounds Fired d	EFC RDS Fired e	Cumulative RDS Fired f	Cumulative EFC RDS g			Remaining Life (EFC RDS) h	Remarks: Recoil Exercise (RE), Gain or Velocity Reading, Safety Inspection (SI) i	Signature j
2 SEP 23	(Previous DA Form 2408-4 final entries)				77	77			1423	BORESCOPE & RECOIL: Serviceable 2 SEP 2023	Edward Doe, CPT
21SEP23	TPCSDS-T WB65		6	6	83	83			1417	CREW BASIC TABLE IV	Charlie Ninertwo SSG
21SEP23	TPMP-T W1002		3	3	86	86			1414	CREW BASIC TABLE IV	Charlie Ninertwo SSG
23SEP23	TPCSDS-T WB65		5	5	91	91			1409	CREW PRACTICE TABLE V	Charlie Ninertwo SSG
23SEP23	TPMP-T W1002		6	6	97	97			1403	CREW PRACTICE TABLE V	Charlie Ninertwo SSG
25SEP23	TPCSDS-T WB65		10	10	107	107			1393	CREW QUAL TABLE VI	Charlie Ninertwo SSG
25SEP23	TPMP-T W1002		7	7	114	114			1386	CREW QUAL TABLE VI	Charlie Ninertwo SSG
1 DEC 23						114			1386	UPLOADED/ VERIFIED IN TULSA	Charlie Ninertwo SSG
				DO NOT EXCEED 134 EFC RDS REMAINING							

CONTINUE ON REVERSE

DA FORM 2408-4, JAN 1979 EDITION OF 1 DEC 77 WILL BE USED

NOTE: UNITS MAY INCLUDE DA FORM 2408-4 FOR THE VEHICLE IN LIEU OF COMPLETING DA FORM 8265-12A, PAGE 2, BLOCK 13a through BLOCK 13i.

LEGEND
DA DEPARTMENT OF THE ARMY **RDS** ROUNDS

Figure F-10. Main armament data instructions, 13d to 13f, example

F-16. Figure F-11 provides the instructions to complete the main armament data for the most recent recoil exercise, borescope data, and verification of information in the Army's system of record. This information is available on the vehicle's DA Form 2408-4.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
MAIN ARMAMENT DATA

13. MAIN ARMAMENT DATA		
a. TUBE SERIAL NUMBER 1820	b. RETUBINGS 2 / 4386	c. CANNON SERIAL NUMBER 6002
d. EFC FIRED 114	e. EFC REMAINING 1386	f. AS OF DATE 1 DEC 23
g. RECOIL EXERCISE DATE 2 SEP 23	h. BORESCOPE DATE, *if applicable* 2 SEP 23	i. VERIFIED IN TULSA DATE 1 DEC 23

BLOCK	ACTION
13g	RECOIL EXERCISE DATE–enter the date of the last recoil exercise for the vehicle. This date should be annotated on DA Form 2408-4, Weapon Record Data, in block i, Remarks: Recoil Exercise (RE), Gage or Velocity Reading, Safety Inspection (SI).
13h	BORESCOPE DATE–enter the date the last borescope was completed on the vehicle. Information should be available on DA Form 2408-4, Weapon Record Data, in block i, Remarks: Recoil Exercise (RE), Gage or Velocity Reading, Safety Inspection (SI).
13i	VERIFIED IN TULSA DATE–enter the date the information from DA Form 2408-4, Weapon Record Data was last verified in the Tulsa online reporting system.

16. Date a	Projectile Type b	Zone or Charge c	Rounds Fired d	EFC RDS Fired e	Cumulative RDS Fired f	Cumulative EFC RDS g	Remaining Life (EFC RDS) h	Remarks: Recoil Exercise (RE), Gage or Velocity Reading, Safety Inspection (SI) i	Signature j
2 SEP 23	(Previous DA Form 2408-4 final entries)				77	77	1423	BORESCOPE & RECOIL: Serviceable 2 SEP 2023	Edward Diaz, CPT
21SEP23	TPCSDS-T M865		6	6	83	83	1417	CREW BASIC TABLE IV	Charlie Ninertwo SSG
21SEP23	TPMP-T M1002		3	3	86	86	1414	CREW BASIC TABLE IV	Charlie Ninertwo SSG
23SEP23	TPCSDS-T M865						1409	CREW PRACTICE TABLE V	Charlie Ninertwo SSG
23SEP23	TPM M1002							CREW PRACTICE	Charlie Ninertwo SSG
25SEP23	TPCSDS-T M865		10	10	107	107		TABLE VI	Charlie Ninertwo SSG
25SEP23	TPMP-T M1002		7	7	114	114	1386	CREW QUAL TABLE VI	Charlie Ninertwo SSG
1 DEC 23						114	1386	UPLOADED / VERIFIED IN TULSA	Charlie Ninertwo SSG

RECOIL AND BORESCOPE DATE

VERIFIED IN TULSA

SAMPLE

LEGEND
DA DEPARTMENT OF THE ARMY EFC EQUIVALENT FULL CHARGE

Figure F-11. Main armament data instructions, 13g to 13i, example

F-17. Figure F-12 provides the instructions to complete the fire control or armament changes to the vehicle since the last gunnery density. The tank commander should have a list of line replaceable units, fire control system components, or other parts, assemblies, or components of the overall armament that directly impact accuracy.

DA FORM 8265-12A
CREW PLATFORM DATA RECORD INSTRUCTIONS
FIRE CONTROL OR ARMAMENT CHANGES SINCE LAST GUNNERY

14. FIRE CONTROL OR ARMAMENT CHANGES SINCE LAST GUNNERY		
a. DATE	b. COMPONENT, PART, ASSEMBLY	c. REMARKS
14 AUG 23	SHIMS FOR BREECH ALIGNMENT BLOCK	ADDED 0.01 INCHES
2 SEP 23	RECOIL EXERCISE	ANNOTATED 2408-4

SAMPLE

BLOCK	ACTION
14a	DATE–enter the date of any maintenance procedure, fire control system change, or armament changes since the last gunnery. This includes any wiring harness, fire control system component change, or other procedure that can directly affect the vehicle's performance during live fire.
14b	COMPONENT, PART, ASSEMBLY–enter the short description of the component, part, or assembly requiring the maintenance or procedure.
14c	REMARKS–enter any specific comment on the maintenance procedure or process such as "replaced," "tested," "aligned," "adjusted," or "calibrated" for example.

LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-12. Fire control or armament changes since last gunnery, example

DA FORM 8265-12B, LIVE FIRE ACCURACY SCREENING TEST (LFAST)

F-18. This form is used to record the LFAST information prior to firing main gun.

F-19. This form is used to record the LFAST for all main gun ammunition types during Table IV, Basic, for maintenance after a fire control system change or gun tube or cannon replacement. A sample DA Form 8265-12B is demonstrated in figure F-13 on pages 486 and 487.

LIVE FIRE ACCURACY SCREENING TEST (LFAST)
The proponent agency is TRADOC. For use of this form, see TC 3-20.31-120.

ADMINISTRATIVE DATA

1. UNIT	2. BUMPER NUMBER		3. VEHICLE NAME
B/1-1 CAV	B23		BLOODHOUND
4. DATE	**5. PANEL TYPE**	**6. RANGE**	**7. ACCURACY STANDARD**
13 DEC 23	ST5	1,600m	1.2mils

ACTION ALPHA

LINE 1	PREPARATION TO FIRE CHECKS, PMCS, BORESIGHTING COMPLETE.
LINE 2	CURRENT AIR AND BAROMETRIC PRESSURE.
LINE 3	REQUEST CHANGE TO FIRING FREQUENCY AND MOVEMENT TO FIRING POSITION.
LINE 4	CREW REPORTS REDCON ONE TO CONDUCT SCREENING.

8. TANK COMMANDER CONFIRMATION (TANK COMMANDER RANK, LAST NAME, FIRST NAME)

SSG VEGA, JOHN S.

9. REMARKS

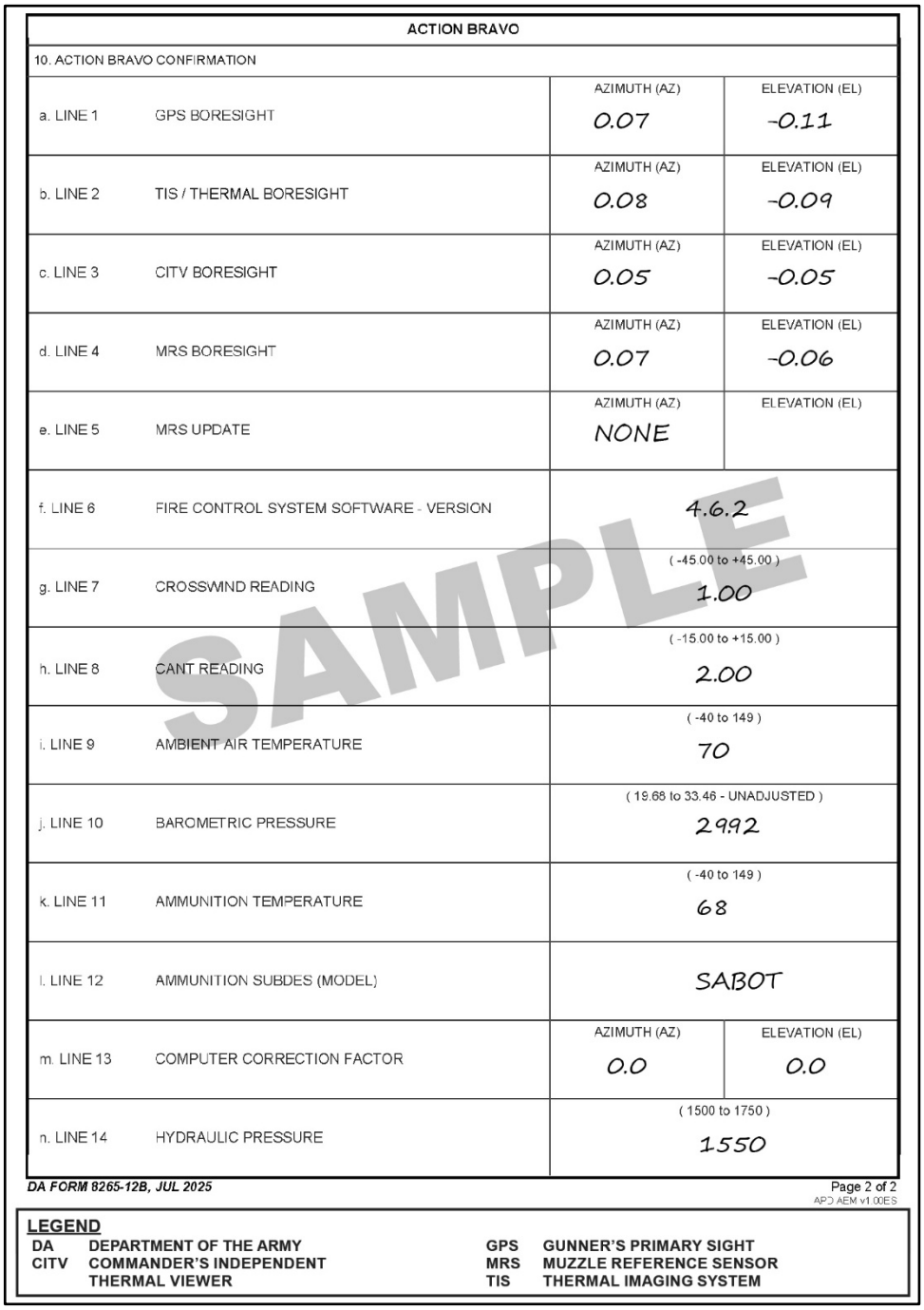
FIRING FREQUENCY RADIO CHECK COMPLETE

SAMPLE

DA FORM 8265-12B, JUL 2025 Page 1 of 2
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LEGEND
DA DEPARTMENT OF THE ARMY TC TRAINING CIRCULAR

Figure F-13. DA Form 8265-12B



ACTION BRAVO

10. ACTION BRAVO CONFIRMATION

		AZIMUTH (AZ)	ELEVATION (EL)
a. LINE 1	GPS BORESIGHT	0.07	-0.11
b. LINE 2	TIS / THERMAL BORESIGHT	0.08	-0.09
c. LINE 3	CITV BORESIGHT	0.05	-0.05
d. LINE 4	MRS BORESIGHT	0.07	-0.06
e. LINE 5	MRS UPDATE	NONE	
f. LINE 6	FIRE CONTROL SYSTEM SOFTWARE - VERSION	4.6.2	
g. LINE 7	CROSSWIND READING	(-45.00 to +45.00) 1.00	
h. LINE 8	CANT READING	(-15.00 to +15.00) 2.00	
i. LINE 9	AMBIENT AIR TEMPERATURE	(-40 to 149) 70	
j. LINE 10	BAROMETRIC PRESSURE	(19.68 to 33.46 - UNADJUSTED) 29.92	
k. LINE 11	AMMUNITION TEMPERATURE	(-40 to 149) 68	
l. LINE 12	AMMUNITION SUBDES (MODEL)	SABOT	
m. LINE 13	COMPUTER CORRECTION FACTOR	AZIMUTH (AZ) 0.0	ELEVATION (EL) 0.0
n. LINE 14	HYDRAULIC PRESSURE	(1500 to 1750) 1550	

DA FORM 8265-12B, JUL 2025

Page 2 of 2

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LEGEND

DA	DEPARTMENT OF THE ARMY	GPS	GUNNER'S PRIMARY SIGHT
CITV	COMMANDER'S INDEPENDENT THERMAL VIEWER	MRS	MUZZLE REFERENCE SENSOR
		TIS	THERMAL IMAGING SYSTEM

SAMPLE

Figure F-13. DA Form 8265-12B (continued)

F-20. Figures F-14 through F-17 on page 491 provide an example of how to properly complete DA Form 8265-12B.

DA FORM 8265-12B
LIVE FIRE ACCURACY SCREENING TEST
ADMINISTRATIVE DATA

LIVE FIRE ACCURACY SCREENING TEST
The proponent agency is TRADOC. For instructions on completing this form, see TC 3-20.31-120.

ADMINISTRATIVE DATA

1. UNIT	2. BUMPER NUMBER		3. VEHICLE NAME
B/1-1 CAV	B23		BLOODHOUND
4. DATE	**5. PANEL TYPE**	**6. RANGE**	**7. ACCURACY STANDARD**
13 DEC 23	ST5	1600m	1.2mils

SAMPLE

BLOCK	ACTION
1	UNIT–enter the crew's common unit identification i.e. B/1-1 CAV
2	BUMPER NUMBER–enter the unit assigned vehicle bumper number.
3	VEHICLE NAME–enter the crew assigned, unit approved vehicle name. This should match the entries in the unit's historical record.
4	DATE–the date the armament accuracy checks were completed in DD MMM YY format.
5	PANEL TYPE–enter the panel type used–Standard Target (ST) 1, ST-5, ST-6.
6	RANGE–enter the range to target for the firing vehicle.
7	ACCURACY STANDARD–enter the accuracy standard used to determine the vehicle is screened (1.2 mils standard, 0.8 mils experimental).

LEGEND

D	DAY	mils	MILLIRADIANS
DA	DEPARTMENT OF THE ARMY	TC	TRAINING CIRCULAR
M	MONTH	Y	YEAR

Figure F-14. LFAST administrative data, example

F-21. Figure F-15 provides instructions for completing the action alpha section of the form. This is completed by the tower personnel prior to firing.

DA FORM 8265-12B
LIVE FIRE ACCURACY SCREENING TEST
ACTION ALPHA

LINE 1	PREPARATION TO FIRE CHECKS, PMCS, BORESIGHTING COMPLETE.
LINE 2	CURRENT AIR AND BAROMETRIC PRESSURE.
LINE 3	REQUEST CHANGE TO FIRING FREQUENCY AND MOVEMENT TO FIRING POSITION
LINE 4	CREW REPORTS REDCON ONE TO CONDUCT SCREENING..

8. TANK COMMANDER CONFIRMATION (TANK COMMANDER RANK, LAST NAME, FIRST NAME)

SSG VEGA, JOHN S.

9. REMARKS

FIRING FREQUENCY RADIO CHECK COMPLETE.

SAMPLE

BLOCK	ACTION
8	TANK COMMANDER CONFIRMATION–once the tank commander has confirmed Action Alpha, Lines 1 through 4, authenticate with their initials.
9	REMARKS–annotate any notes concerning the crew's prep-to-fire, boresighting, or firing information.

LEGEND

DA	DEPARTMENT OF THE ARMY	REDCON	READINESS CONDITION
PMCS	PREVENTATIVE MAINTENANCE CHECKS AND SERVICES		

Figure F-15. Action alpha instructions

F-22. Figure F-16 provides instructions for completing the action bravo section of the form. This is completed by the tower personnel prior to firing.

DA FORM 8265-12B
LIVE FIRE ACCURACY SCREENING TEST
ACTION BRAVO

10. ACTION BRAVO CONFIRMATION

		AZIMUTH (AZ)	ELEVATION (EL)
a. LINE 1	GPS BORESIGHT	0.07	-0.11
b. LINE 2	TIS / THERMAL BORESIGHT	0.08	-0.09
c. LINE 3	CITV BORESIGHT	0.05	0.05
d. LINE 4	MRS BORESIGHT	0.07	-0.06
e. LINE 5	MRS UPDATE	NONE	
f. LINE 6	FIRE CONTROL SYSTEM SOFTWARE VERSION	4.6.2	
g. LINE 7	CROSSWIND READING (-45.00 to +45.00)	1.00	

SAMPLE

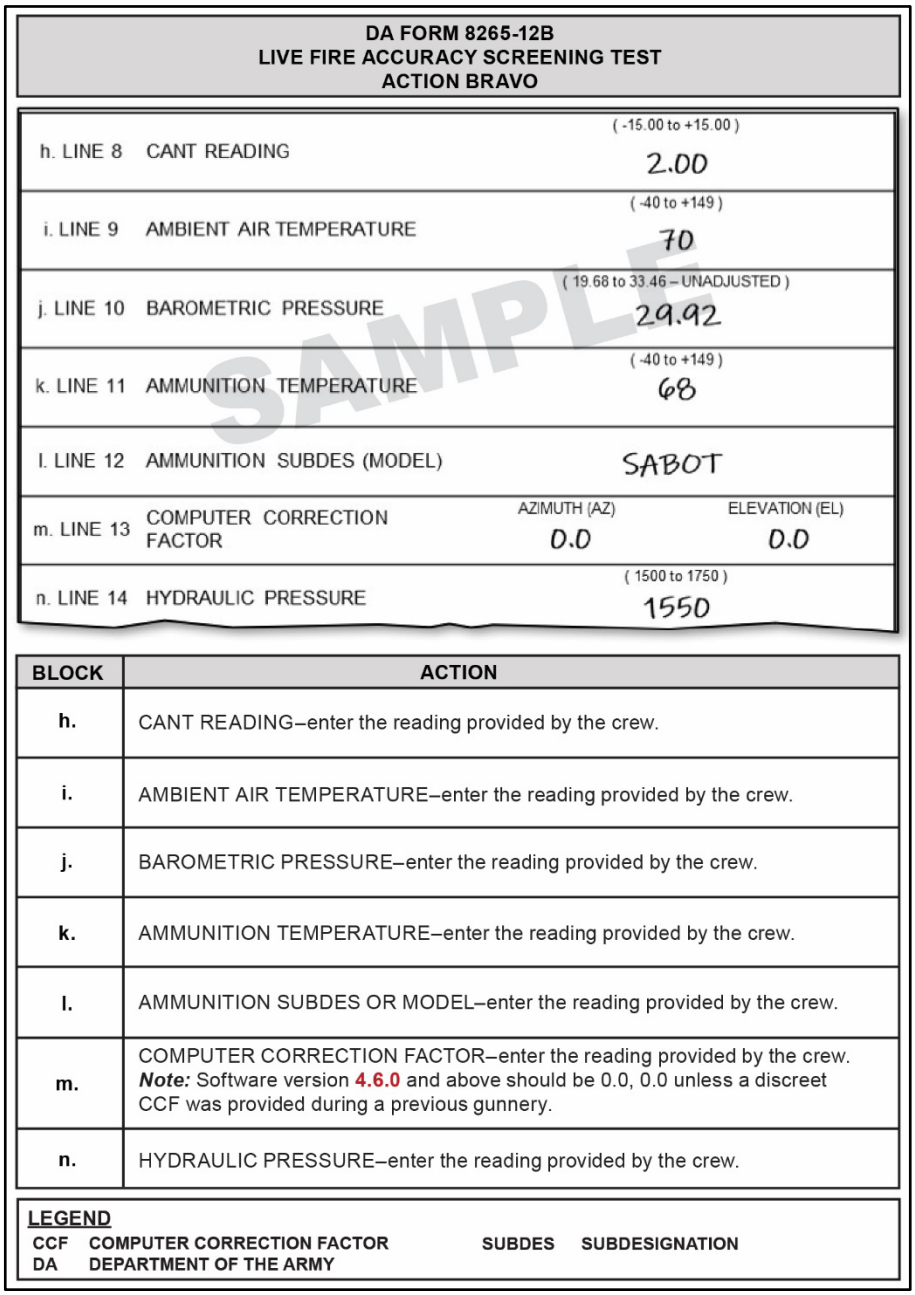
BLOCK	ACTION
a.	GPS BORESIGHT–enter the azimuth (AZ) and elevation (EL) provided by the crew.
b.	TIS/THERMAL BORESIGHT–enter the azimuth (AZ) and elevation (EL) provided by the crew.
c.	CITV BORESIGHT–enter the azimuth (AZ) and elevation (EL) provided by the crew.
d.	MRS BORESIGHT–enter the azimuth (AZ) and elevation (EL) provided by the crew.
e.	MRS UPDATE–enter the azimuth (AZ) and elevation (EL) provided by the crew. The crew should not have completed an MRS UPDATE.
f.	FIRE CONTROL SYSTEM SOFTWARE VERSION–enter the fire control software version number provided by the crew.
g.	CROSSWIND (X-WIND)–enter the crosswind reading provided by the crew.

LEGEND

DA	DEPARTMENT OF THE ARMY	GPS	GUNNER'S PRIMARY SIGHT
CITV	COMMANDER'S INDEPENDENT THERMAL VIEWER	MRS	MUZZLE REFERENCE SENSOR
		TIS	THERMAL IMAGING SYSTEM

Figure F-16. Action bravo instructions

F-23. Figure F-17 provides instructions for continuing the action bravo section of the form. This is completed by the tower personnel prior to firing.



DA FORM 8265-12B
LIVE FIRE ACCURACY SCREENING TEST
ACTION BRAVO

h. LINE 8	CANT READING	(-15.00 to +15.00) 2.00	
i. LINE 9	AMBIENT AIR TEMPERATURE	(-40 to +149) 70	
j. LINE 10	BAROMETRIC PRESSURE	(19.68 to 33.46 – UNADJUSTED) 29.92	
k. LINE 11	AMMUNITION TEMPERATURE	(-40 to +149) 68	
l. LINE 12	AMMUNITION SUBDES (MODEL)	SABOT	
m. LINE 13	COMPUTER CORRECTION FACTOR	AZIMUTH (AZ) 0.0	ELEVATION (EL) 0.0
n. LINE 14	HYDRAULIC PRESSURE	(1500 to 1750) 1550	

SAMPLE

BLOCK	ACTION
h.	CANT READING–enter the reading provided by the crew.
i.	AMBIENT AIR TEMPERATURE–enter the reading provided by the crew.
j.	BAROMETRIC PRESSURE–enter the reading provided by the crew.
k.	AMMUNITION TEMPERATURE–enter the reading provided by the crew.
l.	AMMUNITION SUBDES OR MODEL–enter the reading provided by the crew.
m.	COMPUTER CORRECTION FACTOR–enter the reading provided by the crew. ***Note:*** Software version **4.6.0** and above should be 0.0, 0.0 unless a discreet CCF was provided during a previous gunnery.
n.	HYDRAULIC PRESSURE–enter the reading provided by the crew.

LEGEND
CCF COMPUTER CORRECTION FACTOR **SUBDES SUBDESIGNATION**
DA DEPARTMENT OF THE ARMY

Figure F-17. Action bravo instructions, lines 8 to 14

DA FORM 8265-12C, LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET

F-24. This form is used to record the LFAST firing results for each type of ammunition fired. See Figure F-18 for a complete sample DA Form 8265-12C on pages 493 through 500.

F-25. This is a multi-page form that includes the following information. It is completed by the unit's Master Gunner. The DA Form 8265-12C includes—

- Vehicle and crew administrative data.
- Fire control system status prior to firing, designated as action charlie.
- Ammunition type round impact locations, designated as action delta, which includes—
  - The ability to calculate the MPI for a shot group.
  - Conversion from imperial or metric units to mils.
  - Creation of a discrete CCF.
- A worksheet that provides a graphic representation for the strike of each round fired for the first ammunition type.
- Proofing team guidance.
- Fire control system status prior to firing the second ammunition type, termed action echo.
- Second ammunition type round impact locations, termed action foxtrot. This includes—
  - The ability to calculate the MPI for a shot group.
  - Conversion from imperial or metric units to mils.
  - Creation of a discrete CCF.
- A worksheet that provides a graphic representation for the strike of each round fired for the second ammunition type.
- Results overall for each main gun ammunition type screened. The results portion—
  - Is used at the beginning of the next gunnery density or maintenance procedure.
  - Includes screening to ensure the appropriate start point fleet or discrete CCF is used.

LIVE FIRE ACCURACY SCREENING TEST (LFAST) WORKSHEET

The proponent agency is TRADOC. For use of this form, see TC 3-20.31-120.

ADMINISTRATIVE DATA

1. UNIT	2. BUMPER NUMBER		3. VEHICLE NAME
B/1-1 CAV	B23		BLOODHOUND
4. DATE	**5. PANEL TYPE**	**6. RANGE**	**7. ACCURACY STANDARD**
13 DEC 23	ST5	1,600m	1.2mils

ACTION ALPHA

8. PRE-SCREENING CONFIRMATION	
a. LINE 1 - ALL AUTO INPUTS ACTIVE (NO GCP KEYS ILLUMINATED)	AUTO ACTIVE
b. LINE 2 - FIRE CONTROL MODE TO NORMAL	NORMAL
c. LINE 3 - GPS MAGNIFICATION TO 10x	13X
d. LINE 4 - (AMMUNITION TYPE) INDEXED	SABOT
e. LINE 5 - (AMMUNITION TYPE) LOADED	SABOT
f. LINE 6 - GUN SELECT SWITCH TO MAIN	MAIN
TOWER DIRECTS *"ANNOUNCE METHOD OF ENGAGING (POWER CONTROL OR MANUAL). USING POWER CONTROLS, MAKE A 'G' PATTERN WITH THE LAST MOVEMENT IN ELEVATION TO THE CENTER POINT OF AIM ON PANEL, LASE TO THE TARGET. ANNOUNCE THE RANGE TO TARGET AND SYMBOLOGY."*	
g. METHOD OF ENGAGEMENT (MANUAL OR POWER CONTROL HANDLES)	MANUAL
h. RANGE TO TARGET AND SYMBOLOGY	1,600m

SAMPLE

DA FORM 8265-12C, JUL 2025

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LEGEND

DA DEPARTMENT OF THE ARMY
GPS GUNNER'S PRIMARY SIGHT
TC TRAINING CIRCULAR

Figure F-18. DA Form 8265-12C

ACTION DELTA			
9. METHOD OF MEASUREMENT			
10. IMPACT	AZIMUTH (AZ)	ELEVATION (EL)	REMARKS
a. ROUND 1	0.40	-0.80	NOT SCREENED, SENT TO PROOFING TEAM
b. ROUND 2	0.60	-0.60	WITHIN 1 MIL ERRATIC FIRING CHECK
c. ROUND 3	0.70	-0.90	WITHIN 1 MIL ERRATIC FIRING CHECK
11. TOTAL	1.70	-2.3	
12a. MEAN POINT OF IMPACT (MPI)	0.56	-0.76	*TOTAL DIVIDED (BLOCK 11) BY NUMBER OF ROUNDS FIRED TO DETERMINE MEAN POINT OF IMPACT (MPI).*
b. DIVIDE BY 2.54 *(convert inches to cm)*	N/A		*IF MEASURING WITH IMPERIAL UNITS.*
c. DIVIDE BY 1/10th RANGE TO TARGET *(convert cm to milliradians)*	N/A		*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*
d. X 1.02 *(mean point of impact in mils)*	0.56	-0.76	*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*
13. STARTING CCF	0.00	0.00	*IF THE PLATFORM HAD A DISCRETE CCF DURING THE LAST LFAST, THE PREVIOUS DISCRETE CCF IS ENTERED.*
14. MEAN POINT OF IMPACT IN MILS	0.56	-0.76	*BRING MPI FROM BLOCK 12d ABOVE.*
15. DISCRETE CCF	0.56	-0.76	MEAN POINT OF IMPACT MARKED AS -(m)
DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE			
16. ROUND 4 (DISCRETE ZERO)	a. AZIMUTH (AZ) 0.10	b. ELEVATION (EL) -0.20	c. REMARKS SCREENED AT 1,600m WITH DISCRETE CCF
17. ROUND 5 (CONFIRMATION AT DISTANCE)	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. CONFIRMATION DISTANCE

SAMPLE

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LEGEND

DA	DEPARTMENT OF THE ARMY	LFAST	LIVE FIRE ACCURACY SCREENING TEST
CCF	COMPUTER CORRECTION FACTOR	TC	TRAINING CIRCULAR
cm	CENTIMETER(S)		

Figure F-18. DA Form 8265-12C (continued)

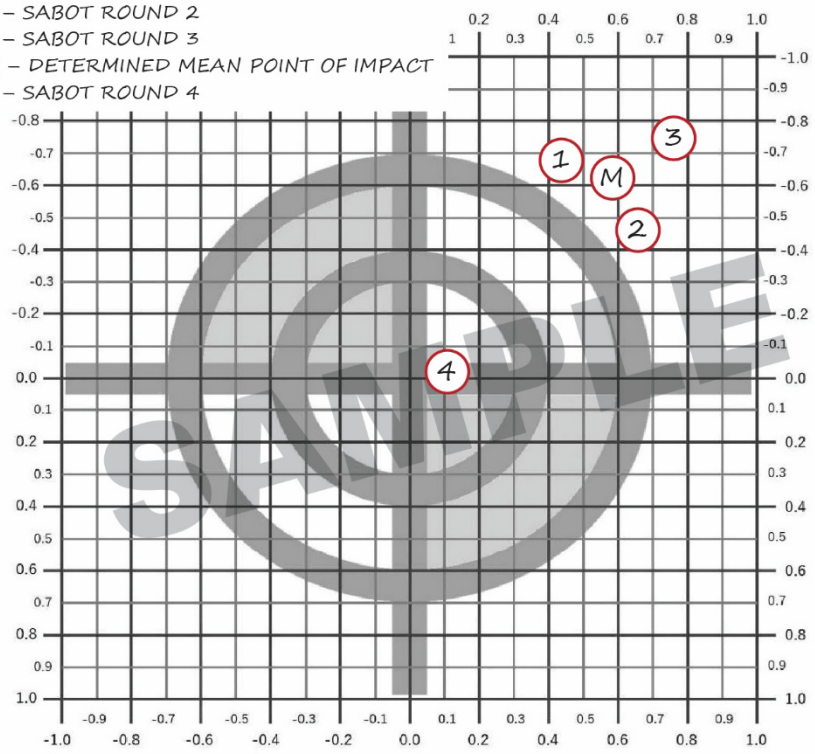
DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE *(continued)*

18. AMMUNITION AND IMPACT DATA

a. AMMO TYPE	b. MODEL / SUBDES	c. LOT NUMBER
SABOT	M865A1	MHM-17A005

d. IMPACT RECORD

1 – SABOT ROUND 1
2 – SABOT ROUND 2
3 – SABOT ROUND 3
M – DETERMINED MEAN POINT OF IMPACT
4 – SABOT ROUND 4



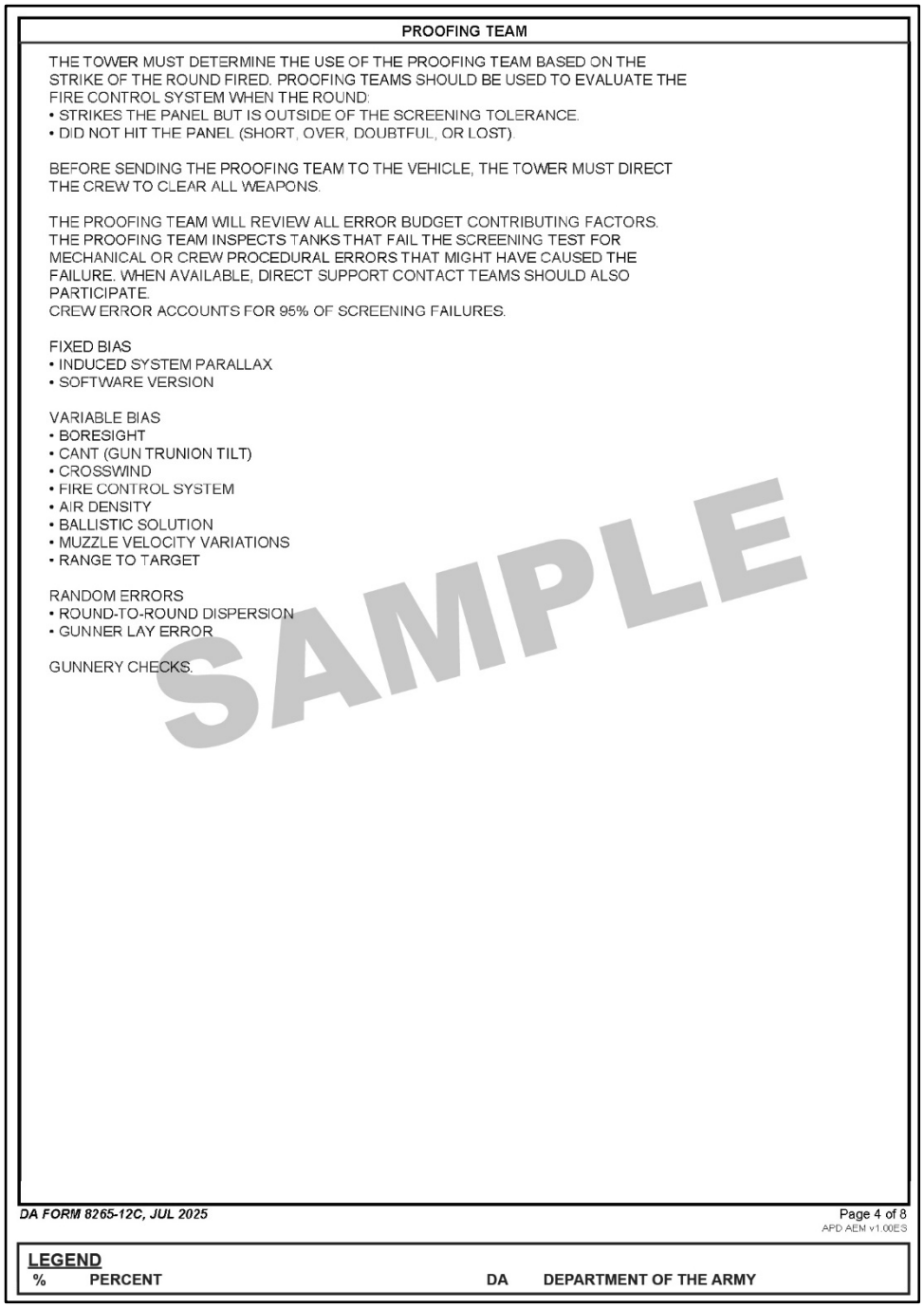
SAMPLE

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LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-18. DA Form 8265-12C (continued)



PROOFING TEAM

THE TOWER MUST DETERMINE THE USE OF THE PROOFING TEAM BASED ON THE STRIKE OF THE ROUND FIRED. PROOFING TEAMS SHOULD BE USED TO EVALUATE THE FIRE CONTROL SYSTEM WHEN THE ROUND:
- STRIKES THE PANEL BUT IS OUTSIDE OF THE SCREENING TOLERANCE.
- DID NOT HIT THE PANEL (SHORT, OVER, DOUBTFUL, OR LOST).

BEFORE SENDING THE PROOFING TEAM TO THE VEHICLE, THE TOWER MUST DIRECT THE CREW TO CLEAR ALL WEAPONS.

THE PROOFING TEAM WILL REVIEW ALL ERROR BUDGET CONTRIBUTING FACTORS. THE PROOFING TEAM INSPECTS TANKS THAT FAIL THE SCREENING TEST FOR MECHANICAL OR CREW PROCEDURAL ERRORS THAT MIGHT HAVE CAUSED THE FAILURE. WHEN AVAILABLE, DIRECT SUPPORT CONTACT TEAMS SHOULD ALSO PARTICIPATE.
CREW ERROR ACCOUNTS FOR 95% OF SCREENING FAILURES.

FIXED BIAS
- INDUCED SYSTEM PARALLAX
- SOFTWARE VERSION

VARIABLE BIAS
- BORESIGHT
- CANT (GUN TRUNION TILT)
- CROSSWIND
- FIRE CONTROL SYSTEM
- AIR DENSITY
- BALLISTIC SOLUTION
- MUZZLE VELOCITY VARIATIONS
- RANGE TO TARGET

RANDOM ERRORS
- ROUND-TO-ROUND DISPERSION
- GUNNER LAY ERROR

GUNNERY CHECKS.

SAMPLE

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LEGEND
% PERCENT DA DEPARTMENT OF THE ARMY

Figure F-18. DA Form 8265-12C (continued)

ACTION ECHO	
19. PRE-SCREENING CONFIRMATION	
a. LINE 1 - ALL AUTO INPUTS ACTIVE (NO GCP KEYS ILLUMINATED)	AUTO ACTIVE
b. LINE 2 - FIRE CONTROL MODE TO NORMAL	NORMAL
c. LINE 3 - GPS MAGNIFICATION TO 10x	13x
d. LINE 4 - (AMMUNITION TYPE) INDEXED	MPAT
e. LINE 5 - (AMMUNITION TYPE) LOADED	MPAT
f. LINE 6 - GUN SELECT SWITCH TO MAIN	MAIN
TOWER DIRECTS *"ANNOUNCE METHOD OF ENGAGING (POWER CONTROL OR MANUAL). USING POWER CONTROLS, MAKE A 'G' PATTERN WITH THE LAST MOVEMENT IN ELEVATION TO THE CENTER POINT OF AIM ON PANEL, LASE TO THE TARGET. ANNOUNCE THE RANGE TO TARGET AND SYMBOLOGY."*	
g. METHOD OF ENGAGEMENT (MANUAL OR POWER CONTROL HANDLES)	MANUAL
h. RANGE TO TARGET AND SYMBOLOGY	1,600m

SAMPLE

DA FORM 8265-12C, JUL 2025

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LEGEND

DA	DEPARTMENT OF THE ARMY	GPS	GUNNER'S PRIMARY SIGHT
GCP	GUNNER'S CONTROL PANEL	MPAT	MULTIPURPOSE ANTITANK

Figure F-18. DA Form 8265-12C (continued)

ACTION FOXTROT			
20. METHOD OF MEASUREMENT			MILS
21. IMPACT	AZIMUTH (AZ)	ELEVATION (EL)	REMARKS
a. ROUND 1	-0.2	-0.1	SCREENED
b. ROUND 2			
c. ROUND 3			
22. TOTAL			
23a. MEAN POINT OF IMPACT (MPI)			TOTAL DIVIDED (BLOCK 22) BY NUMBER OF ROUNDS FIRED TO DETERMINE MEAN POINT OF IMPACT (MPI).
b. DIVIDE BY 2.54 *(convert inches to cm)*			IF MEASURING WITH IMPERIAL UNITS.
c. DIVIDE BY 1/10th RANGE TO TARGET *(convert cm to milliradians)*			IF MEASURING WITH METRIC OR IMPERIAL UNITS.
d. X 1.02 *(mean point of impact in mils)*			IF MEASURING WITH METRIC OR IMPERIAL UNITS.
24. STARTING CCF			IF THE PLATFORM HAD A DISCRETE CCF DURING THE LAST LFAST, THE PREVIOUS DISCRETE CCF IS ENTERED.
25. MEAN POINT OF IMPACT IN MILS			BRING MPI FROM BLOCK 23a ABOVE.
26. DISCRETE CCF			
DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE			
27. ROUND 4 (DISCRETE ZERO)	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. REMARKS
28. ROUND 5 (CONFIRMATION AT DISTANCE)	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. CONFIRMATION DISTANCE

SAMPLE

DA FORM 8265-12C, JUL 2025

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APD AEM v1.00ES

LEGEND

DA	DEPARTMENT OF THE ARMY	LFAST	LIVE FIRE ACCURACY TEST
cm	CENTIMETER(S)	MILS	MILLARADIAN(S)

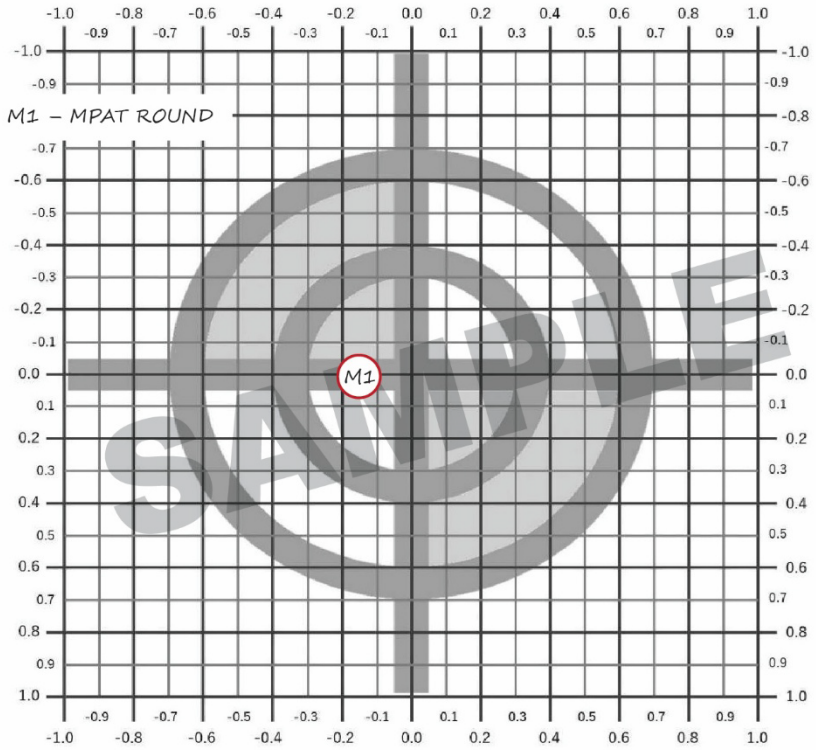
Figure F-18. DA Form 8265-12C (continued)

DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE *(continued)*

29. AMMUNITION AND IMPACT DATA

a. AMMO TYPE	b. MODEL / SUBDES	c. LOT NUMBER
MPAT	M1002 / CA31	MHM-21J006

d. IMPACT RECORD



DA FORM 8265-12C, JUL 2025

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APD AEM v1.00ES

LEGEND

DA DEPARTMENT OF THE ARMY

Figure F-18. DA Form 8265-12C (continued)

LFAST RESULTS COMPUTER CORRECTION FACTOR (CCF) DATA

30. FIRING DATA BY ROUND TYPE

a. ROUND TYPE	b. SUBDES	c. DODIC	d. DISCRETE CCF / ZERO	e. AZIMUTH (AZ)	f. ELEVATION
SABOT	M865A1	CA69	DISCRETE	0.56	-0.76
MPAT	M865A1	CA31	FLEET	0.0	0.0

31. REMARKS

SAMPLE

DA FORM 8265-12C, JUL 2025

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APD AEM v1.00ES

LEGEND

DA	DEPARTMENT OF THE ARMY	SUBDES	SUBDESIGNATION
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE		

Figure F-18. DA Form 8265-12C (continued)

F-26. This form is used to record the LFAST worksheet for all main gun ammunition types screened during Table IV, Basic, for maintenance after a fire control system change or gun tube or cannon replacement. Figures F-19 through F-34 on page 516 provide the instructions to complete the form during firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ADMINISTRATIVE DATA

LIVE FIRE ACCURACY SCREENING TEST
The proponent agency is TRADOC. For instructions on completing this form, see TC 3-20.31-120.

ADMINISTRATIVE DATA

1. UNIT	2. BUMPER NUMBER		3. VEHICLE NAME
B/1-1 CAV	B23		BLOODHOUND
4. DATE	5. PANEL TYPE	6. RANGE	7. ACCURACY STANDARD
13 DEC 23	ST5	1600m	1.2mils

SAMPLE

BLOCK	ACTION
1	UNIT–enter the crew's common unit identification i.e. B/1-1 CAV
2	BUMPER NUMBER–enter the unit assigned vehicle bumper number.
3	VEHICLE NAME–enter the crew assigned, unit approved vehicle name. This should match the entries in the unit's historical record.
4	DATE–the date the armament accuracy checks were completed in DD MMM YY format.
5	PANEL TYPE–enter the panel type used–Standard Target (ST) 1, ST-5, ST-6.
6	RANGE–enter the range to target for the firing vehicle.
7	ACCURACY STANDARD–enter the accuracy standard used to determine the vehicle is screened (1.2 mils standard, 0.8 mils experimental).

LEGEND

DD	DAY	mils	MILLIRADIANS
DA	DEPARTMENT OF THE ARMY	TC	TRAINING CIRCULAR
MMM	MONTH	YY	YEAR

Figure F-19. DA Form 8265-12C, administrative data instructions

F-27. Figure F-20 provides the instructions for action charlie, blocks 8a through 8d. The tower completes these sections prior to firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION CHARLIE

8. PRE-SCREENING CONFIRMATION	
a. LINE 1 – ALL AUTO INPUTS ACTIVE (NO GCP KEYS ILLUMINATED)	AUTO ACTIVE
b. LINE 2 – FIRE CONTROL MODE TO NORMAL	NORMAL
c. LINE 3 – GPS MAGNIFICATION TO 10x OR 13x	13X
d. LINE 4 – (AMMUNITION TYPE) INDEXED	SABOT

SAMPLE

BLOCK	ACTION
8a.	ALL AUTO INPUTS ACTIVE–as the Tank Commander confirms, annotate with the Tank Commander's initials
8b.	FIRE CONTROL MODE TO NORMAL–record the tank commander's response. Should be "NORMAL."
8c.	GPS MAGNIFICATION–annotate the magnification used by the crew.
8d.	(AMMUNITION TYPE) INDEXED–record the ammunition type indexed. This should match the ammunition type directed by the tower.

LEGEND
DA DEPARTMENT OF THE ARMY
GCP GUNNER'S CONTROL PANEL
GPS GUNNER'S PRIMARY SIGHT

Figure F-20. DA Form 8265-12C, action charlie instructions

F-28. Figure F-21 shows the instructions for completing action charlie, blocks 8e through 8h. These are completed prior to firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION CHARLIE

8. PRE-SCREENING CONFIRMATION	
e. LINE 5 – (AMMUNITION TYPE) LOADED	SABOT
f. LINE 6 – GUN SELECT SWITCH TO MAIN	MAIN
g. METHOD OF ENGAGEMENT (MANUAL OR POWER CONTROL HANDLES)	MANUAL
h. RANGE TO TARGET AND SYMBOLOGY	1600m

SAMPLE

BLOCK	ACTION
8e.	(AMMUNITION TYPE) LOADED–annotate the ammunition type loaded. Should match block 8d as directed by the tower.
8f.	GUN SELECT SWITCH TO MAIN–annotate MAIN once confirmed by the tank commander.
8g.	METHOD OF ENGAGEMENT–annotate either MANUAL or POWER, based on the tank commander confirmation. Crews should use MANUAL controls once the ballistic solution is entered into the fire control system.
8h.	RANGE TO TARGET AND SYMBOLOGY–annotate the RANGE provided by the tank commander. The tank commander should not have a multiple return bar displayed.

LEGEND
DA **DEPARTMENT OF THE ARMY**

Figure F-21. DA Form 8265-12C, action charlie instructions, 8e to 8h

F-29. Figure F-22 provides the instructions to complete action delta, blocks 9 through 11. During screening, if the first round (block 10a) round impacts within the screening tolerance, the unit will skip to block 18.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION DELTA

9. METHOD OF MEASUREMENT			MILS
10. IMPACT	AZIMUTH (AZ)	ELEVATION (EL)	REMARKS
a. ROUND 1	0.40	-0.80	NOT SCREENED. SENT PROOFING TEAM.
b. ROUND 2	0.60	-0.60	WITHIN 1 MIL ERRATIC FIRING CHECK.
c. ROUND 3	0.70	-0.90	WITHIN 1 MIL ERRATIC FIRING CHECK.
11. TOTAL	1.70	-2.3	

SAMPLE

BLOCK	ACTION
9	METHOD OF MEASUREMENT–indicate METRIC, IMPERIAL or MILS (mil) for measuring impacts on the target panel.
10a.	IMPACT, ROUND 1–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
10b.	IMPACT, ROUND 2–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
10c.	IMPACT, ROUND 3–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
11	TOTAL–add the three azimuth (AZ) measurements and the three elevation (EL) measurements, annotate under the appropriate heading.

LEGEND
DA DEPARTMENT OF THE ARMY mils MILLIRADIAN

Figure F-22. DA Form 8265-12C, action delta instructions

First Round Strike

If the first-round impact is within the screening tolerance, the unit skips to block 18 and continues.

F-30. Figure F-23 provides the instructions to convert the MPI of the first munition's shot group from imperial or metric units to standard large caliber mils.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION DELTA

12a. MEAN POINT OF IMPACT (MPI)	0.56	-0.76	*TOTAL DIVIDED (BLOCK 11) BY NUMBER OF ROUNDS FIRED TO DETERMINE MEAN POINT OF IMPACT (MPI).*
b. DIVIDE BY 2.54 *(convert inches to cm)*	N/A		*IF MEASURING WITH IMPERIAL UNITS.*
c. DIVIDE BY 1/10th RANGE TO TARGET *(convert cm to milliradians)*	N/A		*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*
d. X 1.02 *(mean point of impact in mils)*	0.56	-0.76	*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*

SAMPLE

BLOCK	ACTION
12a.	MEAN POINT OF IMPACT–divide the azimuth (AZ) total from BLOCK 11 by 3. [BLOCK 11/3] and annotate. Divide the elevation (EL) total from BLOCK 11 by 3. [BLOCK 11 elevation/3]. Annotate elevation mean reading.
12b.	DIVIDE BY 2.54–only if measuring with IMPERIAL units. If the measurements in BLOCK 12a are in inches (IMPERIAL), divide azimuth (AZ) and elevation (EL) by 2.54 to convert into METRIC. This answer is listed in centimeters (cm).
12c.	DIVIDE BY 1/10TH RANGE TO TARGET–only if using METRIC or IMPERIAL units. METRIC UNITS–If BLOCK 12a units of measurement are METRIC, divide the azimuth (AZ) and elevation (EL) readings (in centimeters) by 1/10th the RANGE TO TARGET. IMPERIAL UNITS–If 12a units of measurement are IMPERIAL, divide the azimuth (AZ) and elevation (EL) readings (in centimeters) from BLOCK 12b by 1/10th the RANGE TO TARGET. This converts the azimuth (AZ) and elevation (EL) readings into milliradians (6,280 per circle).
12d.	MULTIPLY BY 1.02–If IMPERIAL or METRIC UNITS OF MEASUREMENT are used, multiply BLOCK 12c BY 1.02. This converts the readings in BLOCK 12c from milliradians to mils (℔), of 6,400 mils per 360 degrees. If the unit of measurement in BLOCK 12a is in MILS (℔), enter readings from BLOCK 12a.

LEGEND
cm CENTIMETER
DA DEPARTMENT OF THE ARMY
mils MILLIRADIAN

Figure F-23. DA Form 8265-12C, action delta instructions, 12a to 12d

F-31. Figure F-24 provides the instructions to determine the discrete CCF from the firing data. It includes any discrete zero check round, and a possible confirmation at distance round.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION DELTA

13. STARTING CCF	0.0	0.0	*IF THE PLATFORM HAD A DISCRETE CCF DURING THE LAST LFAST, THE PREVIOUS DISCRETE CCF IS ENTERED.*
14. MEAN POINT OF IMPACT IN MILS (m)	0.56	-0.76	*BRING MPI IN MILS FROM* ***BLOCK 12d.***
15. DISCRETE CCF	0.56	-0.76	MEAN POINT OF IMPACT MARKED AS – (M)

DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE

	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. REMARKS
16. ROUND 4 (DISCRETE ZERO)	0.10	-0.20	SCREENED AT 1600m WITH DISCRETE CCF
17. ROUND 5 (CONFIRMATION AT DISTANCE)	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. CONFIRMATION DISTANCE

SAMPLE

BLOCK	ACTION
13	STARTING CCF–enter the starting computer correction factor (CCF).
14	MEAN POINT OF IMPACT IN MILS–enter the determined mean point of impact in mils. This should equal the readings from BLOCK 12d.
15	DISCRETE CCF–determine the discreet computer correction factor by adding the azimuth (AZ) readings in BLOCK 13 and BLOCK 14 for the azimuth (AZ) reading. Determine the elevation (EL) for the discreet computer correction factor by adding the elevation (EL) readings in BLOCK 13 and BLOCK 14.
16	ROUND 4 (DISCRETE ZERO)–determine the location of round 4 in mils for azimuth (AZ) and elevation). If using IMPERIAL units, follow the instructions for BLOCKS 12a through 12d. If using METRIC units, follow the instructions for BLOCKS 12a, 12c, and 12d.
17	ROUND 5–CONFIRMATION AT DISTANCE–if directed by the tower, determine the impact on the confirmation target in azimuth (AZ) and elevation (EL) in mils. (see instructions on converting from IMPERIAL and METRIC units above. Annotate the CONFIRMATION DISTANCE range to target. This must be at least 50% greater than the screening distance used.

LEGEND
% PERCENT **MILS MILLIRADIAN**
DA DEPARTMENT OF THE ARMY

Figure F-24. DA Form 8265-12C, action delta instructions, 13 to 17

F-32. Figure F-25 provides the instructions for the ammunition type fired during action delta. This information may be completed before firing (once known) or during firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION DELTA

18. AMMUNITION AND IMPACT DATA

a. AMMO TYPE	b. MODEL / SUBDES	c. LOT NUMBER
SABOT	M865A1	MHM-17A005

SAMPLE

BLOCK	ACTION
18a.	AMMUNITION TYPE–enter the ammunition type INDEXED and fired.
18b.	MODEL/SUBDES–enter the ammunition MODEL or SUB-DESIGNATION (SUBDES) entered into the fire control system.
18c.	LOT NUMBER–enter the lot number of the main gun round fired.

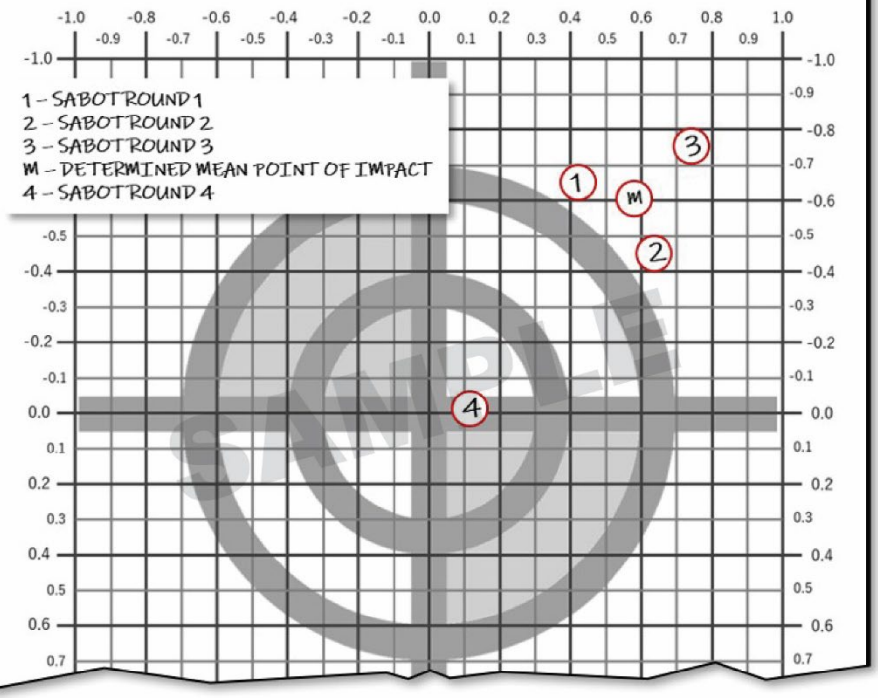
LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-25. DA Form 8265-12C, action delta instructions, 18a to 18c

F-33. Figure F-26 provides basic instructions on completing the ST-5 worksheet that shows the strike of each round fired for the ammunition type. The Master Gunner completes the worksheet during firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION DELTA

d. IMPACT RECORD



BLOCK	ACTION
18d.	IMPACT RECORD–Annotate each round's impact. Annotate any calculations for the MEAN POINT OF IMPACT as appropriate. If codes or symbols are used, make appropriate annotations.

LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-26. DA Form 8265-12C, action delta instructions, 18d

F-34. Figure F-27 provides the instructions for action echo, blocks 19a through 19d. The tower completes these blocks prior to firing the ammunition type.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION ECHO

19. PRE-SCREENING CONFIRMATION	
a. LINE 1 – ALL AUTO INPUTS ACTIVE (NO GCP KEYS ILLUMINATED)	AUTO ACTIVE
b. LINE 2 – FIRE CONTROL MODE TO NORMAL	NORMAL
c. LINE 3 – GPS MAGNIFICATION TO 10x OR 13x	13X
d. LINE 4 – (AMMUNITION TYPE) INDEXED	MPAT

SAMPLE

BLOCK	ACTION
19a.	ALL AUTO INPUTS ACTIVE–As the Tank Commander confirms, annotate with the Tank Commander's initials
19b.	FIRE CONTROL MODE TO NORMAL–record the tank commander's response. Should be "NORMAL."
19c.	GPS MAGNIFICATION–annotate the magnification used by the crew.
19d.	(AMMUNITION TYPE) INDEXED–record the ammunition type indexed. This should match the ammunition type directed by the tower.

LEGEND

DA	DEPARTMENT OF THE ARMY	GPS	GUNNER'S PRIMARY SIGHT
GCP	GUNNER'S CONTROL PANEL	MPAT	MULTIPURPOSE ANTITANK

Figure F-27. DA Form 8265-12C, action echo instructions

F-35. Figure F-28 shows the instructions for completing action echo, blocks 19e through 19h. These are completed prior to firing the munition type.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION ECHO

19. PRE-SCREENING CONFIRMATION	
e. LINE 5 – (AMMUNITION TYPE) LOADED	MPAT
f. LINE 6 – GUN SELECT SWITCH TO MAIN	MAIN
g. METHOD OF ENGAGEMENT (MANUAL OR POWER CONTROL HANDLES)	MANUAL
h. RANGE TO TARGET AND SYMBOLOGY	1600m

SAMPLE

BLOCK	ACTION
19e.	(AMMUNITION TYPE) LOADED–annotate the ammunition type loaded. Should match block 8d as directed by the tower.
19f.	GUN SELECT SWITCH TO MAIN–annotate MAIN once confirmed by the tank commander.
19g.	METHOD OF ENGAGEMENT–annotate either MANUAL or POWER, based on the tank commander confirmation. Crews should use MANUAL controls once the ballistic solution is entered into the fire control system.
19h.	RANGE TO TARGET AND SYMBOLOGY–annotate the RANGE provided by the tank commander. The tank commander should not have a multiple return bar displayed.

LEGEND
DA DEPARTMENT OF THE ARMY **MPAT MULTIPURPOSE ANTITANK**

Figure F-28. DA Form 8265-12C, action echo instructions, 19e to 19h

F-36. Figure F-29 provides the instructions to complete action foxtrot, blocks 20 through 22. During screening, if the first round (block 21a) round impacts within the screening tolerance, the unit will skip to block 29.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION FOXTROT

20. METHOD OF MEASUREMENT			MILS
21. IMPACT	AZIMUTH (AZ)	ELEVATION (EL)	REMARKS
a. ROUND 1	-0.2	-0.1	SCREENED
b. ROUND 2			
c. ROUND 3			
22. TOTAL			

SAMPLE

BLOCK	ACTION
20	METHOD OF MEASUREMENT–indicate METRIC, IMPERIAL or MILS (ṁ) for measuring impacts on the target panel.
21a.	IMPACT, ROUND 1–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
21b.	IMPACT, ROUND 2–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
21c.	IMPACT, ROUND 3–annotate the azimuth (AZ) and elevation (EL) of the strike of the round from the point of aim. Include any necessary remarks.
22	TOTAL–add the three azimuth (AZ) measurements and the three elevation (EL) measurements, annotate under the appropriate heading.

LEGEND
DA DEPARTMENT OF THE ARMY mils MILLIRADIAN

Figure F-29. DA Form 8265-12C, action foxtrot instructions

First Round Strike
If the first-round impact is within the screening tolerance, the unit skips to block 29 and continues.

F-37. Figure F-30 provides the instructions to convert the MPI of the second munition's shot group from imperial or metric units to standard large caliber mils.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION FOXTROT

23a. MEAN POINT OF IMPACT (MPI)		*TOTAL DIVIDED (BLOCK 22) BY NUMBER OF ROUNDS FIRED TO DETERMINE MEAN POINT OF IMPACT (MPI).*
b. DIVIDE BY 2.54 *(convert inches to cm)*		*IF MEASURING WITH IMPERIAL UNITS.*
c. DIVIDE BY 1/10th RANGE TO TARGET *(convert cm to milliradians)*		*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*
d. *X 1.02* *(mean point of impact in mils)*		*IF MEASURING WITH METRIC OR IMPERIAL UNITS.*

SAMPLE

BLOCK	ACTION
23a.	MEAN POINT OF IMPACT–divide the azimuth (AZ) total from BLOCK 22 by 3. [BLOCK 22/3] and annotate. Divide the elevation (EL) total from BLOCK 22 by 3. [BLOCK 22 elevation/3]. Annotate elevation mean reading.
23b.	DIVIDE BY 2.54–only if measuring with IMPERIAL units. If the measurements in BLOCK 12a are in inches (IMPERIAL), divide azimuth (AZ) and elevation (EL) by 2.54 to convert into METRIC. This answer is listed in centimeters (cm).
23c.	DIVIDE BY 1/10TH RANGE TO TARGET–only if using METRIC or IMPERIAL units. METRIC UNITS–If BLOCK 23a units of measurement are METRIC, divide the azimuth (AZ) and elevation (EL) readings (in centimeters) by 1/10th the RANGE TO TARGET. IMPERIAL UNITS–If 23a units of measurement are IMPERIAL, divide the azimuth (AZ) and elevation (EL) readings (in centimeters) from BLOCK 23b by 1/10th the RANGE TO TARGET. This converts the azimuth (AZ) and elevation (EL) readings into milliradians (6,280 per circle).
23d.	MULTIPLY BY 1.02–If IMPERIAL or METRIC UNITS OF MEASUREMENT are used, multiply BLOCK 23c BY 1.02. This converts the readings in BLOCK 23c from milliradians to mils (‰), of 6,400 mils per 360 degrees. If the unit of measurement in BLOCK 23a is in MILS (‰), enter readings from BLOCK 23a.

LEGEND
cm CENTIMETER **mils MILLIRADIANS**
DA DEPARTMENT OF THE ARMY

Figure F-30. DA Form 8265-12C, action foxtrot instructions, 23a to 23d

F-38. Figure F-31 provides the instructions to determine the discrete CCF from the firing data. It includes any discrete zero check round (round 4), and a possible confirmation at distance round (round 5).

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST
ACTION FOXTROT

24. STARTING CCF		*IF THE PLATFORM HAD A DISCRETE CCF DURING THE LAST LFAST, THE PREVIOUS DISCRETE CCF IS ENTERED.*
25. MEAN POINT OF IMPACT IN MILS (m)		*BRING MPI IN MILS FROM* ***BLOCK 12d.***
26. DISCRETE CCF		

DISCRETE COMPUTER CORRECTION FACTOR (DISCRETE CCF) AND CONFIRMATION AT DISTANCE

	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. REMARKS
27. ROUND 4 (DISCRETE ZERO)			
28. ROUND 5 (CONFIRMATION AT DISTANCE)	a. AZIMUTH (AZ)	b. ELEVATION (EL)	c. CONFIRMATION DISTANCE

SAMPLE

BLOCK	ACTION
24	STARTING CCF–enter the starting computer correction factor (CCF).
25	MEAN POINT OF IMPACT IN MILS–enter the determined mean point of impact in mils. This should equal the readings from BLOCK 23d.
26	DISCRETE CCF–determine the discreet computer correction factor by adding the azimuth (AZ) readings in BLOCK 25 and BLOCK 26 for the azimuth (AZ) reading. Determine the elevation (EL) for the discrete computer correction factor by adding the elevation (EL) readings in BLOCK 25 and BLOCK 26.
27	ROUND 4 (DISCRETE ZERO)–determine the location of round 4 in mils for azimuth (AZ) and elevation). If using IMPERIAL units, follow the instructions for BLOCKS 23a through 23d. If using METRIC units, follow the instructions for BLOCKS 23a, 23c, and 23d.
28	ROUND 5–CONFIRMATION AT DISTANCE–if directed by the tower, determine the impact on the confirmation target in azimuth (AZ) and elevation (EL) in mils. (see instructions on converting from IMPERIAL and METRIC units above. Annotate the CONFIRMATION DISTANCE range to target. This must be at least 50% greater than the screening distance used.

LEGEND

%	PERCENT	mils	MILLIRADIANS
DA	DEPARTMENT OF THE ARMY		

Figure F-31. DA Form 8265-12C, action foxtrot instructions, 24 to 28

F-39. Figure F-32 provides the instructions for the ammunition type fired during action foxtrot. This information may be completed before firing (once known) or during firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION FOXTROT

29. AMMUNITION AND IMPACT DATA

a. AMMO TYPE	b. MODEL / SUBDES	c. LOT NUMBER
MPAT	M1002 / CA31	MHM-21J006

SAMPLE

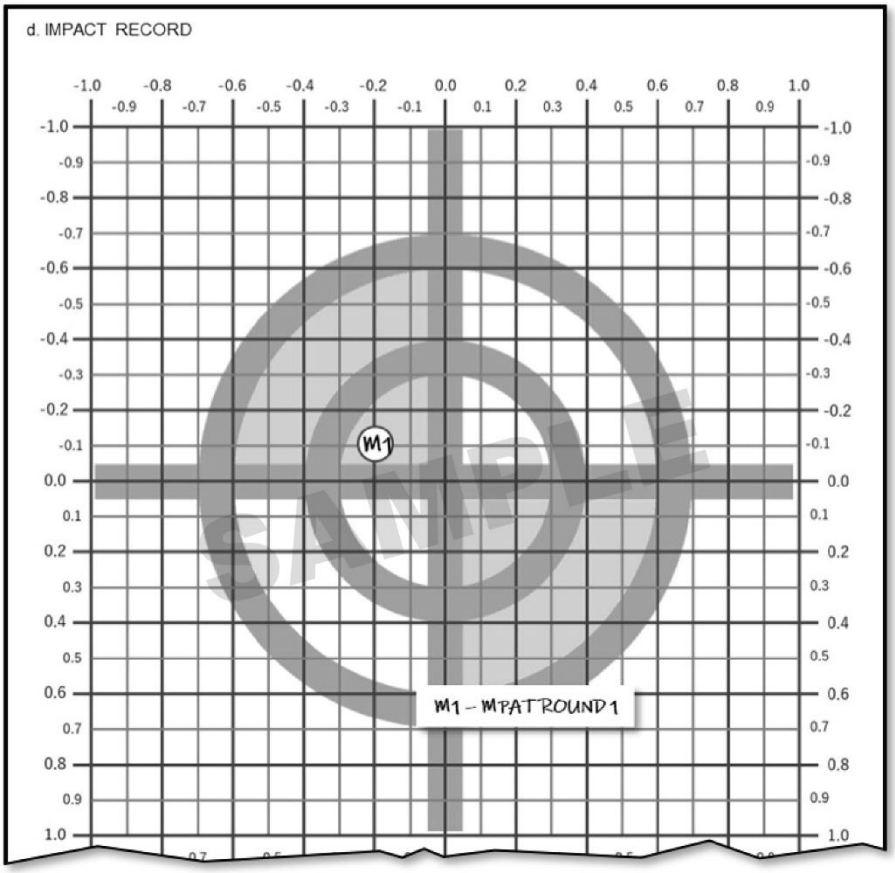
BLOCK	ACTION
29a.	AMMUNITION TYPE–enter the ammunition type INDEXED and fired.
29b.	MODEL/SUBDES–enter the ammunition MODEL or SUB-DESIGNATION (SUBDES) entered into the fire control system.
29c.	LOT NUMBER–enter the lot number of the main gun round fired.

LEGEND
DA DEPARTMENT OF THE ARMY

Figure F-32. DA Form 8265-12C, action foxtrot instructions, 29a to 29c

F-40. Figure F-33 provides basic instructions on completing the ST-5 worksheet that shows the strike of each round fired for the ammunition type. This is completed by the Master Gunner during firing.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
ACTION FOXTROT



BLOCK	ACTION
29d.	IMPACT RECORD–Annotate each round's impact. Annotate any calculations for the MEAN POINT OF IMPACT as appropriate. If codes or symbols are used, make appropriate annotations.

LEGEND
DA DEPARTMENT OF THE ARMY MPAT MULTIPURPOSE ANTITANK

Figure F-33. DA Form 8265-12C, action foxtrot instructions, 29d

F-41. Figure F-34 provides basic instructions to complete the LFAST results. This final page records the fleet or discrete CCF solutions for each ammunition type fired. It will be used during the next iteration of screening, either during a gunnery rotation or maintenance procedure to provide the most appropriate start point for screening.

DA FORM 8265-12C
LIVE FIRE ACCURACY SCREENING TEST WORKSHEET
LFAST RESULTS

LFAST RESULTS COMPUTER CORRECTION FACTOR (CCF) DATA

30. LIVE FIRE ACCURACY SCREENING TEST RESULTS

a. ROUND TYPE	b. SUBDES	c. DODIC	d. DISCRETE CCF / ZERO	e. AZIMUTH (AZ)	f. ELEVATION (EL)
SABOT	M865A1	CA69	DISCRETE	0.56	-0.76
MPAT	M1002	CA31	FLEET	0.0	0.0

SAMPLE

31. REMARKS

BLOCK	ACTION
30a.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
30b.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
30c.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
30d.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
30e.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
30f.	ROUND TYPE–enter each round type fired for the Live Fire Accuracy Screening Test (LFAST).
31	REMARKS–annotate any remarks from the live fire accuracy screening test that unit Master Gunners, maintenance, or armament personnel must be aware of.

LEGEND

DA	DEPARTMENT OF THE ARMY	MPAT	MULTIPURPOSE ANTITANK
DODIC	DEPARTMENT OF DEFENSE IDENTIFICATION CODE	SUBDES	SUBDESIGNATION

Figure F-34. DA Form 8265-12C, LFAST results instructions

Glossary

The glossary lists acronyms.

ACRONYMS AND ABBREVIATIONS

1SG	first sergeant
AAR	after action review
AFTTP	Air Force tactics, techniques, and procedures
AR	Army regulation
ATN	Army Training Network
BES	battle effects simulator
CCF	computer correction factor
CITV	commander's independent thermal viewer
CMU	crew module unit
CMUR	crew module unit recorder
CROWS	Common Remotely Operated Weapon Station
DA	Department of the Army
DA Pam	Department of the Army pamphlet
DDI	dummy, drilled, inert
DJB	digital job book
DTMS	Digital Training Management System
EM	engagement modifier
FM	field manual
FRAGORD	fragmentary order
GST	gunnery skills test
GTLF	gate to live fire
HITS	home station/Army mobile instrumentation training system
I-MILES CVTESS	instrumentable–multiple integrated laser engagement system combat vehicle tactical engagement simulation system
IAW	in accordance with
ICTL	individual critical task list
IPU	integrated player unit

LFAST	live fire accuracy screening test
MCRP	Marine Corps reference publication
MOS	military occupational specialty
mil	milliradian
mm	millimeter
MPAT	multi-purpose antitank
MPI	mean point of impact
MRS	muzzle reference sensor
NCOIC	noncommissioned officer in charge
NTTP	Navy tactics, techniques, and procedures
OPORD	operation order
SOP	standard operating procedure
ST-5	standard target number five
STX	situational training exercise
STX-V	situational training exercise-virtual
SULT	small unit leader tool
T-	training week/month minus (the number of weeks/months until execution
T-execution	training execution (commencement day)
T-week	week of training execution
TADSS	training aids, devices, simulators, simulations
TC	training circular
T&EO	training and evaluation outline
T&MB	tracking and manipulation boards
U.S.	United States
VC	vehicle commander
VCE	vehicle crew evaluator
WARNORD	warning order

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These documents must be available to intended users of this publication.

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Sabot Academy. https://dod.teams.microsoft.us/l/team20/193Adod3A76608bf409ea426d93e6ba34b117633b40thread.tacv2/conversations?groupId=d974d873-4c5c-4647-b492-dc96b238789f20&tenant20Id=fae6d70f20-954b-4811-92b6-0530d6f84c43.

PRESCRIBED FORMS

Unless otherwise indicated, DA forms are available online: https://armypubs.army.mil.

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TC 3-20.31-120

31 July 2025

By Order of the Secretary of the Army:

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