



FM 3-20.8
(FM 17-12-8)

Scout Gunnery

AUGUST 2005

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Field Manual
No. 3-20.8

Headquarters
Department of the Army
Washington, DC, 15 August 2005

Scout Gunnery

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*This publication supersedes FM 17-12-8, 16 February 1999.

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Preface

This manual provides a systematic way to train reconnaissance and cavalry weapon system proficiency. It describes reconnaissance cavalry gunnery principles, methods, and techniques and includes an application of combined gunnery skills in basic, intermediate, and collective gunnery tables. The tasks, conditions, and standards outlined in the tables should be used to evaluate individual, crew, section, and platoon gunnery proficiency. These tables present a more complete way to train reconnaissance and cavalry crews and sections in gunnery.

This manual is designed for vehicle commanders, platoon sergeants, and unit staff of reconnaissance and cavalry units to develop gunnery programs to attain and sustain combat readiness. It is a ready reference for unit commanders, vehicle commanders, and vehicle and dismount crews. Combat support and combat service support units may also use it.

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR).

The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC). Send changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward it to Commander, USAARMC, ATTN: ATZK-TDD-G, Fort Knox, KY 40121-5000.

Chapter 1

Introduction

Future battles will be mobile and violent, with emphasis on rapid-fire capability, increased speed, and maneuverability. To defeat the threat and survive on the battlefield, scout crews must be well trained and prepared to take maximum advantage of these capabilities. To defeat the threat force, scout crews must have a thorough knowledge of their functional capabilities, use of indirect fire, techniques of acquiring targets, and effective use of all crew-served weapons. Additionally, scout crews must develop and sustain tactical crew skills that will allow them to maneuver effectively and survive on the battlefield. This combination of crew gunnery and tactical skills is essential for total weapon system proficiency.

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Purpose

1-1. The gunnery tactics, techniques, and procedures in this manual are unique to cavalry and reconnaissance units. This manual describes system features, engagement techniques, preliminary gunnery training, gunnery skills tests, gunnery tables, and qualification standards. When the procedures in this manual conflict with technical manual procedures, the technical manuals should be followed.

1-2. This manual is intended to be a guide; units may modify the gunnery program to meet local training constraints, except for qualification tables. Training devices may not be used on qualification tables. Units must evaluate training to make sure it follows the building-block principles and adheres to sound training policy.

Scope

1-3. This manual outlines reconnaissance and cavalry gunnery tables designed to attain and sustain gunnery proficiency at crew through platoon levels. It consists of ten chapters and one appendix.

1-4. The first five chapters provide combat training principles, techniques, exercises, and preparatory testing for reconnaissance and cavalry crews. Reconnaissance and cavalry gunnery and tactical skills are discussed in detail to promote uniformity and maintain high standards of proficiency. Proper application of these techniques will ensure the most effective use of the weapon system in training or in combat. Descriptions include how to—

- Detect, acquire, identify, and classify targets.
- Select the correct round of ammunition to match the target.
- Use direct-fire techniques.
- Evaluate and determine that a crew has reached proficiency prior to live-fire gunnery.
- Develop a reconnaissance and cavalry gunnery training program.

1-5. The remaining chapters include the reconnaissance and cavalry gunnery tables for the light, high-mobility, multipurpose wheeled vehicle (HMMWV); medium reconnaissance (Stryker vehicle); heavy M3-variant vehicle; and the tube-launched, optically tracked, wire-guided (TOW) HMMWV. The appendix provides urban information and exercises.

1-6. The tactical tasks outlined in Chapters 10 are used with the scout section and platoon tables (collective gunnery tables). Integration of the tactical and gunnery tasks maximizes the training effectiveness of the tables. The relationship between gunnery and tactics is shown in the following table:

GUNNERY AND TACTICS	
Gunnery tasks provide— • Manipulation training. • Crew duties. • Standard fire adjustment. • Day and night firing. • Ammunition selection. • Fire commands. • Realistic target signatures.	Tactical tasks provide— • Tough acquisition problems. • Realistic targets and target signatures. • Shoot-back targets. • Evasive targets (opposing forces [OPFOR]). • Tactical maneuvering. • Potential to vary vulnerability. • Full 360-degree range.

Chapter 2

Characteristics and Capabilities of the Scout Vehicles, Weapon Systems, and Ammunition

This chapter provides the characteristics and capabilities of the scout vehicles, weapon systems, and ammunition. To continue to be effective, soldiers must continually update themselves as Army doctrine changes and their weapon systems and vehicles are upgraded and improved.

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SECTION I - VEHICLE CHARACTERISTICS AND CAPABILITIES

2-1. The scout crew will employ the cavalry fighting vehicle (CFV), the Stryker reconnaissance vehicle (RV), and the HMMWV. This section will familiarize the scout with the characteristics, capabilities, and differences of these vehicles.

Cavalry Fighting Vehicle

2-2. The CFV is the scout's heavy vehicle. It gives the cavalry scout crew firepower, armor protection, and battlefield agility. The CFV system is designed to fight as part of the combined-arms effort. Variants such as the M3A1, M3A2, M3A2 ODS (Operation Desert Storm), and M3A3, represent improvements in systems and capabilities. Table 2-1 compares CFV technical data by model.

M3A1 AND M3A2 MODELS

2-3. The original M3 was fielded in 1983. The M3A2 models offered several improvements over the M3A1 models, including 100 more horsepower in the power train, 30-mm armor protection, armored-tile protection capability, and spall liners. (See also Table 2-1, page 2-2 for technical data.)

M3A2 ODS MODELS

2-4. Lessons learned during Operation Desert Storm led to the M3A2 ODS upgrade. The following improvements were made: (See also Table 2-1, page 2-2 for technical data.)

2-5. **Bradley Eye-Safe Laser Range Finder (BELRF).** The BELRF is part of the vehicle's integrated sight unit (ISU). Using the BELRF, the crew can determine target ranges from 200 to 9,990 meters, accurate within 10 meters. The BELRF superelevates the weapon system for the determined range automatically.

2-6. **Tactical Navigation (TACNAV) System.** The TACNAV system comprises the precision lightweight gunner's primary sight (GPS) receiver (PLGR) and the digital compass system (DCS).

2-7. **Missile Countermeasure Device (MCD).** With the MCD, the CFV crew can deter first-generation thermal-guided antitank missiles. Naturally, this greatly increases the crew's survivability.

Table 2-1. Comparison of CFV Technical Data by Variant.

CHARACTERISTICS	M3, M3A2	M3A2 ODS	M3A3
Weight (combat, pounds)	49,945 (M3) 64,204 (M3A2)	64,204	66,000
Ground pressure	7.7	9.9	9.93
Fuel capacity (gallons)	175	175	175
Cruising range (mi, km)	300, 483	250, 441	250, 441
Engine	VTA-903T	VTA-903T	VTA-903T
Gross horsepower (hp)	500	600	600
Gross hp-to-weight (tons)	20.62	18.9	18.7
Transmission	500	500-3EC	500-3EC
Speed (mph, kmph) land	41, 66	38, 61	38, 61
Slope climb	60%	60%	60%
Trench crossing	8'4"	8'4"	8'4"
Vertical wall climb (inch)	36	36	30
Personnel capacity (crew members)	3	3	3
Personnel capacity (passengers)	2	2	2
Total personnel capacity (passengers + crew members)	5	5	5
TOW missile variant	*All	All	All
TOW missile ready	2	2	2
TOW missile stowed	10	10	10
25-mm ammunition ready	300	300	300
25-mm ammunition stowed	1,200	1,200	1,200
M240C 7.62-mm coax ready	800	800	800
M240C 7.62-mm ammunition stowed	3,600	3,400	3,400
M60 7.62-mm ammunition stowed	3,200	3,400	3,400
M16 5.56-mm ammunition stowed	1,680	1,680	1,680
* Firing the TOW-2, TOW-2A, and TOW-2B missiles from the basic TOW launcher is possible; however, the missile will have a reduced probability of hit.			

2-8. Improved Vehicle Stowage. The M3A2 ODS has the following stowage:

- Bench seats.
- A mounted heater to heat MREs (meals, ready-to-eat).
- An electric lift for the engine access door.
- Outside stowage for personal gear.
- Three 25-mm ammunition boxes—each box contains 50 rounds of linked ammunition. (A box of linked ammunition is called a “hot box.”)

2-9. Driver's Vision Enhancer (DVE). The DVE is an uncooled, forward-looking infrared (FLIR) night-vision device. It has two modules: a sensor module and a display module. The DVE is a real-time thermal-imaging system. It operates in the 8- to 12-micron spectral range. Detectors convert received infrared radiation into electrical signals. The DVE processes the signals and displays the resulting image onto a flat-panel LCD screen.

2-10. Force XXI Battle Command Brigade and Below (FBCB2). The FBCB2 is a digital battlefield command information system. The FBCB2 and integrated communications, command, and control (IC3) give A2 ODS and A3 crews situational awareness and real-time command and control (C2).

M3A3 MODEL

2-11. Innovations on the digitized M3A3 improve the CFV's ability to shoot, move, and communicate. Improvements were made in the following areas: (See also Table 2-1, page 2-2 for technical data.)

2-12. **Target Acquisition.** Each M3A3 model has a commander's independent viewer (CIV) and the improved Bradley acquisition subsystem (IBAS).

2-13. **Commander's Independent Viewer (CIV).** The CIV gives the M3A3 dual-sight capacity. With the CIV, the commander can acquire targets independently from the gunner. While the gunner "kills" acquired targets, the commander can search for new ones. He then designates the new targets and "hands them over" to the gunner. If for any reason the gunner cannot fire, the commander can do so from his station.

2-14. The CIV can traverse a full circle (360 degrees) in azimuth and can depress and elevate from -22 to +60 degrees. It uses second-generation FLIR technology and day-TV video. The video image from the CIV also appears on the remote biocular display (RBD). This means that the viewer can watch the image with both eyes at the same time. In certain circumstances, the gunner and squad leader can also watch this video signal.

2-15. **Improved Bradley Acquisition Subsystem.** On the M3A3, the gunner's primary sight is the target acquisition system (TAS), which is part of the IBAS. Like the CIV, the TAS employs second generation FLIR technology and day-TV video. The TAS also has direct-view optics (DVO) and the BELRF. The TAS provides limited sight travel without the disturbing turret motion experienced in the earlier CFVs. The TAS periscope's head mirror assembly provides 5 degrees of travel left or right of center and 17 degrees of travel above and below center. This extends the gunner sight's total range of elevation to between -22 and +60 degrees. This "independent" travel accommodates the automatic target tracker (ATT), which allows the gunner to track two different targets within the same field of view (FOV) simultaneously. Using the auto-point function, the gunner can slew to the closest tracked box nearest the center of the reticle. As with the CIV, both the commander and the squad leader can see the TAS video image. The TAS can also zoom from 4 to 48 power to help identify the threat.

2-16. **Situational Awareness.** Improvements to the sights and the commander's tactical display (CTD) give the M3A3 commander a level of situational awareness never before possible in a CFV. The squad leader's display (SLD), controlled by video selection buttons on the monitor, also gives the dismounted scouts situational awareness of the battlefield. It gives more information about the battlefield location of each vehicle in the company team or task force. It also gives operational graphics, and it lets the leader send and receive orders and mission updates and respond to an expanding area of operations.

2-17. **Electrical Power Control.** The M3A3 has segregated electrical power control. This means that many of its components can keep working when others fail. Connection to a data bus provides redundant communications. The M3A3 has a 400-ampere current-regulated generator. This is 100 amperes more than either M3A2 model had. The current-regulation feature is also new to the M3A3. The generator supplies power to six 24-volt hull batteries and one 24-volt emergency backup turret battery.

2-18. **Fire Control.** The M3A3's fire control system allows the crew to independently search, track, and hand-off targets to each other. Like the other CFVs, it also allows the commander to override the gunner and to abort a fired missile.

2-19. **Integrated Communications, Command, and Control.** The IC3 digital battle command information system provides situational awareness. It also offers real-time command and control information to M3A3 crews.

2-20. **Navigation.** The M3A3's positioning/navigation (POS/NAV) subsystem provides the M3A3 with accurate positioning and navigation data. It works by combining the GPS data with data obtained from an inertial navigation unit (INU) and a vehicle motion sensor (VMS). With the CTD's digital map, the crew can navigate by loading and selecting routes and overlays.

2-21. **Nuclear, Biological, and Chemical (NBC) Protection.** The M3A3's large gas-particulate filter system has additional crew stations and heaters to provide NBC protection to the entire CFV crew.

2-22. **Diagnostics.** The M3A3 is designed to maintain a higher level of combat survivability than earlier models. The M3A3's built-in-test (BIT) continually monitors the system's turret status. On the CTD screen, the BIT shows warnings and cautions about potentially dangerous faults. It recommends degraded modes of operation when needed. Pre-mission and preventive maintenance checks and services (PMCS) checklists simplify system maintenance.

Stryker Reconnaissance Vehicle

2-23. The Stryker RV is designed for use over all types of roads and cross-country terrain in either 4X8 or 8X8 mode in all weather conditions. The RV is powered by an in-line, six-cylinder, 350hp, hydraulic/electronic unit injector (HEUI), turbo-charged diesel engine. The power from the engine is transmitted through an automatic, electronically controlled, six-speed transmission and a two-speed transfer case. Mobility is further enhanced through incorporation of power steering, a central tire inflation system (CTIS), an antilock brake system (ABS), a height management system (HMS), and tires with run-flat liners. The RV is designed to accommodate a crew of seven, consisting of the vehicle commander, driver, squad leader, and four squad members. The weapon station is mounted on the RV cupola, in front of the vehicle commander.

PURPOSE OF THE VEHICLE

2-24. The Stryker RV is designed to provide an effective platform for the long-range advanced scout surveillance system (LRAS3) and to enable reconnaissance, surveillance, and target acquisition (RSTA).

PERFORMANCE

2-25. The Stryker RV has the following performance capabilities:

- The RV can easily shift from four-wheel drive for highway driving to eight-wheel drive for cross-country.
- The vehicle can maintain a speed of 63 mph (101 kmph) for a minimum of two consecutive hours on level, hard-surface roads. It has a range of approximately 330 miles (531 km), at an average speed of 40 mph (65 kmph), on hard-surface roads over rolling terrain with full fuel tanks.
- Fully loaded, the vehicle will climb road grades as steep as 60 percent and traverse a side slope of up to 30 percent. The vehicle will ford hard-bottom bodies of water to a depth of 67 in (170 cm).
- The Stryker RV has a turning diameter (curb to curb) of 58.8 ft (17.9 m) with a maximum vertical steep of 2.0 ft (.60 m) and a maximum trench crossing of 6.6 ft (2 m).

ARMAMENT

2-26. A weapon mount is located on the cupola and is capable of accepting either the M2 caliber .50 machine gun or the MK-19 40-mm machine gun with a full 360-degree traverse and -20 to +60 degree elevation. The vehicle is equipped with 12 banks of 4 tube grenade launchers.

BALLISTIC PROTECTION

2-27. The vehicle hull armor provides ballistic protection against 7.62mm M80 North Atlantic Treaty Organization (NATO) ball ammunition. Hull floor plate and fuel tanks are protected from the blast and fragment effects of an antipersonnel mine detonated beneath the vehicle.

High-Mobility Multipurpose Wheeled Vehicle

2-28. The HMMWV is the scout's light-weight vehicle. It provides the scout crew with mobility and stealth. To use the vehicle to its potential, the scout must know the characteristics, capabilities, and differences of the various HMMWV platforms.

PERFORMANCE

2-29. Fully loaded TOW and armored carriers will climb road grades as steep as 60 percent (31 degrees) and traverse a side slope of up to 40 percent (22 degrees). The vehicles ford hard-bottom water crossings up to 30 inches (76 cm) without a deep-water fording kit and 60 inches (152 cm) with the kit.

2-30. The HMMWV has an average cruising distance of 300 miles (483 km) on hard-surface roads at speeds of 30 to 40 mph (48 to 64 kmph) using bias tires (an additional 30 miles [48 km] can be expected using radial tires). Average vehicle dimensions are: length, 185 in (470 cm); height, 73 in (185 cm); and width, 85 in (216 cm). Vehicle clearances are: axle, 16 in (41 cm) and chassis, 24 in (61 cm).

SPECIAL LIMITATIONS

2-31. The TOW weapon station azimuth is limited to 300 degrees left and right of vehicle centerline when the vehicle power conditioner (VPC) cables are connected. With the launcher installed, elevation is limited to 20 degrees and depression is limited to 10 degrees.

SECTION II - WEAPON SYSTEMS CHARACTERISTICS AND CAPABILITIES

2-32. The weapon systems that the scout crew will use vary by the platform they are assigned. The weapons the CFV crew will use include the 25-mm automatic gun, M60 or M240B machine guns, M240C coaxial machine gun, TOW missile-launcher system, and two smoke grenade launchers. The weapons the Stryker RV crew will use include the M2 caliber .50 machine gun, MK-19 40-mm grenade machine gun, Javelin missile, and M240B machine gun. The HMMWV crew uses the same weapons as the Stryker RV, but also includes the TOW missile. Each weapon system has a specific capability for use in various types of missions and each member of the crew is a technical expert on every weapon system and its capabilities.

M242 25-mm Automatic Gun

2-33. The CFV's main armament is the M242 25-mm, fully automatic, externally powered machine gun (see Figure 2-1). It can destroy light-armor vehicles and aerial targets such as helicopters and slow-flying aircraft. It can also suppress enemy positions such as troops in the open, dug-in positions, and built-up areas.

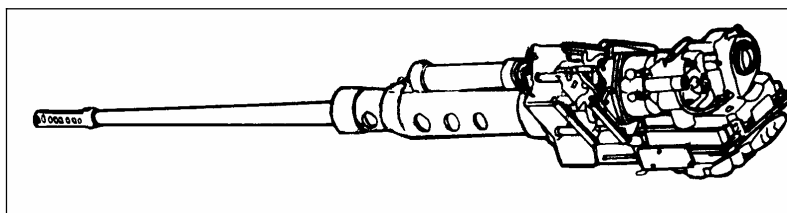


Figure 2-1. M242 25-mm Automatic Gun.

DUAL-FEED SYSTEM

2-34. The 25-mm gun has two separate feed sprockets. A system of clutches allows either sprocket to engage and feed either an armor-piercing (AP) or high-explosive (HE) cartridge. This dual-feed system controls rounds with sprockets and extractor grooves (see Figure 2-2). One storage box holds 70 rounds and the other holds 230 rounds. Each box can hold either AP or HE ammunition. A single 1.5-horsepower direct current (DC) motor externally powers the 25-mm. This lets the gunner choose from three rates of fire:

- **Single Shot.** The commander or gunner can shoot as fast as the gun can cycle when the trigger is pulled.
- **Low Rate.** The commander or gunner can shoot 100 rounds per minute, plus or minus 25 rounds.
- **High Rate.** The commander or gunner can shoot 200 rounds per minute, plus or minus 25 rounds.

DANGER

Before firing the 25-mm gun, the gunner must check the gun cover for serviceability, zip it up, and make sure the turret ventilation system is operational to prevent poisonous gas from leaking into the turret. When rounds are fired, the burning gun powder will cause this gas.

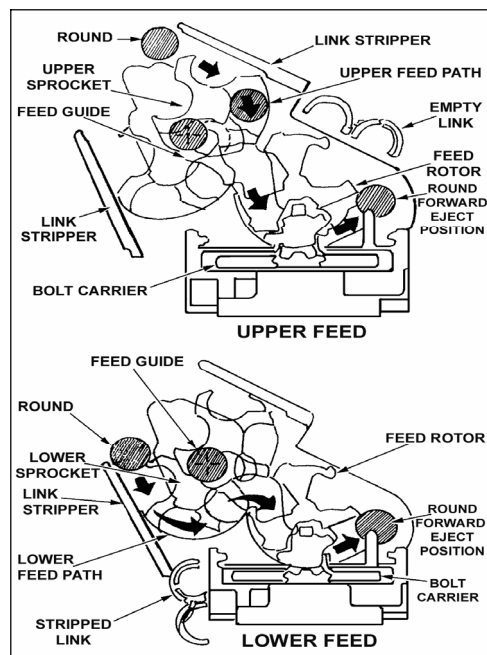


Figure 2-2. Dual-Feed System.

CYCLES OF FUNCTION

2-35. The 25-mm automatic gun has eight cycles of function that relate to the bolt position indicator (BPI) (see Figure 2-3). The BPI shows the crew where the bolt is as the gun cycles through all eight cycles of function.

2-36. **Sear or Charge Cycle.** The 25-mm bolt is forward of its rearmost position. The master link is engaged by the sear. As a safety measure, the firing pin is not cocked. The position indicator arrow points to SEAR.

2-37. **Feed Cycle.** Linked ammunition enters the 25-mm gun feeder. The feed sprockets strip the rounds from the links and move the rounds into the round positioner one at a time. The round positioner pushes the round into the ready position. During the feed cycle, the bolt moves about 25mm to the rear of the sear position. The feeder rotor rotates one third of a turn, allowing the round positioner to place a round into the rotor. The position indicator arrow points to FEED/DON'T REMOVE FEEDER. The absolute hang-fire protection is activated.

2-38. **Chamber or Ram Cycle.** The rotor stops its counterclockwise movement once the round is positioned on the bolt face. The bolt, bolt carrier, and round move forward until the round is fully seated in the chamber. The position indicator arrow points to RAM.

2-39. **Lock Cycle.** The bolt is in the full forward position and the bolt carrier is still moving forward. The cam pin moving in its channel causes the bolt to rotate counterclockwise allowing the lugs on the bolt to engage in the recesses of the breech to make a solid lock. The position indicator arrow points to the red zone before the round is fired.

2-40. **Fire Cycle.** Final rotation of the bolt pushes the firing pin tang off the firing pin pawl in the track assembly. At this time, the firing pin, pushed by the firing pin spring, drives forward. In the full forward position, the tip of the firing pin protrudes 2mm through the bolt face. The indicator arrow points to FIRE. Although the gun does not use gas in its operation, it uses about 12mm of recoil to deactivate mechanical interlock. If the breech does not recoil, the gun stops its cycle with the bolt still locked in the breech, and the position indicator arrow points to MISFIRE.

2-41. **Unlock Cycle.** Once past the misfire position, the master link and slider start to the rear. The slider pulls the bolt carrier toward the rear. The cam pin causes the bolt to rotate clockwise and unlock from the recesses in the breech. The indicator arrow points to EXTRACT as the bolt unlocks.

2-42. **Extract Cycle.** As the bolt moves to the rear, the fixed T-slot extractors remove the cartridge case from the chamber. The case remains positioned in the face of the bolt. The bolt continues to the rear until it locks in the sear position. As this happens, the position indicator arrow moves from EXTRACT to SEAR.

2-43. **Eject Cycle.** The expended case remains in the bolt face until the trigger is pulled to fire another round. Once the trigger is pulled, the bolt moves to the feed position. The rotor rotates one third of a turn to feed a round into the bolt face and sweep the expended case into the feeder ejection chute. As the bolt moves forward to chamber the round, the eject arm on the bolt carrier pushes the expended case from the receiver cartridge eject port.

Note. For more operator information, see TM 9-2350-252-10-2 or TM 9-2350-284-10-2.

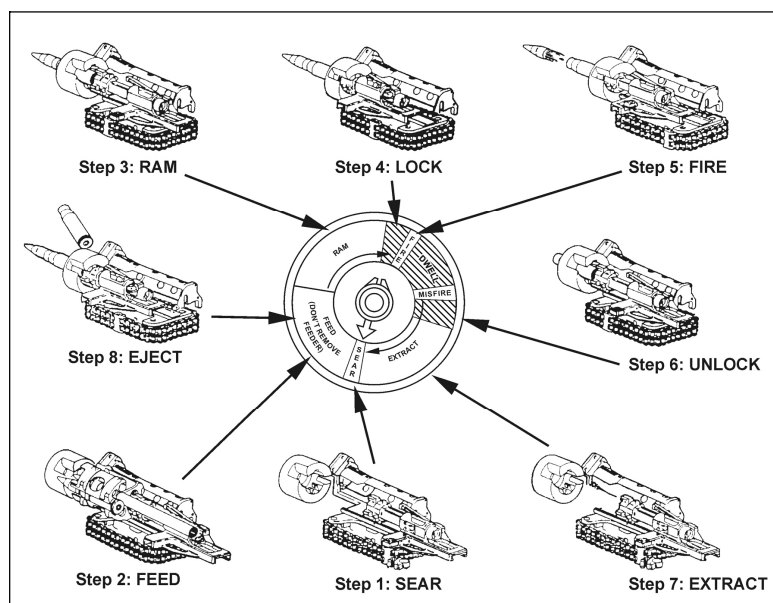


Figure 2-3. The M242 25-mm Gun's Eight Cycles of Function.

ENHANCED 25-MM GUN

2-44. The M3A3's enhanced 25-mm gun has three major components: a chrome-lined barrel, an enhanced feeder, and an enhanced receiver. The gun also has quick-detachable link covers, a larger breach assembly, a longer recoil, a triple-spring drive clutch, and a BIT for the ready-feed select solenoid and ready-gun drive motor. The ready-feed select solenoid and the ready-gun drive motor each contain a jumper wire that enables the on-vehicle BIT. For more information about the enhanced gun, see TM 9-1005-200-20&P.

M240C 7.62-mm Coaxial Machine Gun

2-45. The CFV crew uses the M240C 7.62-mm coaxial machine gun to engage enemy personnel, infantry crew-served weapons, antitank guided missile teams, and unarmored vehicles (see Figure 2-4). The coax machine gun is a belt-fed, gas-operated, fully automatic weapon with a maximum effective range of 900 meters (tracer burnout). The coax machine gun is mounted on the right side of the turret, in front of the CFV commander's position. The commander can reach the coax machine gun easily through convenient access doors. The coax machine gun has three rates of fire: cyclic, sustained, and rapid.

- **Cyclic rate.** At this rate, the gun fires 650 to 950 rounds per minute; barrel must be changed every minute.
- **Sustained rate.** At this rate, the gun fires 100 rounds per minute; 4 to 5 seconds between each burst; barrel must be changed every 10 minutes. (The gunner needs practice to achieve this rate.)

- **Rapid rate.** At this rate, the gun fires 200 rounds per minute; 2 to 3 seconds between each burst; barrel must be changed every 2 minutes. (The gunner needs practice to achieve this rate.)

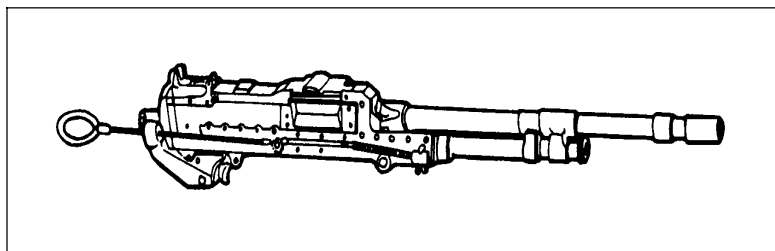


Figure 2-4. M240C 7.62-mm Coaxial Machine Gun.

DANGER

Before firing the coaxial machine gun, inspect the seals on the access doors. Check for serviceability, and make sure the access doors are closed to keep poisonous gas from leaking into the turret.

M240B 7.62-mm Machine Gun

2-46. The M240B machine gun is the latest version of the 7.62-mm machine gun. It is designed as a tripod-mounted or bipod-supported 7.62-mm machine gun for use by ground forces. The M240B is a fully automatic machine gun, fires from the open-bolt position, and is belt fed, gas operated, and air cooled with fixed headspace and timing. The M240B has a butt stock and can be ground mounted on the M122A1 tripod mount (refer to TM 9-1005-245-13&P) or integral bipod. (See Table 2-2, Machine Gun Characteristics on page 2-11.)

M60 7.62-mm Machine Gun

2-47. The M60 machine gun is used by National Guard (NG) units to engage dismounted infantry, crew-served weapons, antitank guided missile (ATGM) teams, thin-skinned vehicles, and aircraft. This fully automatic machine gun fires from the open-bolt position and is belt fed, gas operated, and air cooled with fixed headspace and timing (see Table 2-2, Machine Gun Characteristics on page 2-11).

M2 HB Caliber .50 Machine Gun

2-48. The M2 HB (heavy barrel) machine gun is used to engage dismounted infantry, crew-served weapons, antitank guided missile (ATGM) teams, light-armor vehicles, and aircraft. The M2 fires from the closed-bolt position and is belt fed, recoil operated, air cooled, and crew operated. The gun is capable of single shot and automatic fire (see Table 2-2, Machine Gun Characteristics below).

2-49. The preferred combat ammunition mix for the M2 HB machine gun is four armor-piercing incendiary (API)-M8 and one armor-piercing incendiary-tracer (API-T)-M20. Maximum effective range is 1,830 meters.

MK-19 40-mm Grenade Machine Gun

2-50. The MK-19 is used against dismounted infantry and light-armor vehicles. The MK-19 fires automatic-fire from the open-bolt position and is belt fed, blowback operated, and air cooled (see Table 2-2 below).

Table 2-2. Machine Gun Characteristics.

WEAPON	M240B/M240C	M60 (NG only)	M2 HB	MK-19
Weight (pounds)	27.6	23	84	76
Length (inches)	49	43.5	65.13	43
Maximum Range (meters)	3,725	3,725	6,767	2,212
Arming Range (meters)	NA	NA	NA	18 to 30
Minimum Safe Range (meters)	NA	NA	NA	310
RATE OF FIRE				
Cyclic (rounds per minute [rpm])	650 to 950 (firing at 950 rpm will cause damage to the weapon)	550* approximate	500	375
Rapid (rpm)	200* (2 to 3 sec between bursts) (change barrel every 2 min)	200* (6 to 9 rds per burst at 2 to 3 sec intervals)	40* (6 to 9 rds per burst at 5 to 10 sec intervals)	60
Sustained (rpm)	100* (4 to 5 sec between bursts) (change barrel every 10 min)	100* (4 to 5 sec between bursts)	40*	40
Slow (rpm)	NA	NA	<40* (6 to 9 rds per burst at 10 to 15 sec intervals)	NA
Single Shot	NA	NA	(One round every 2 to 3 seconds, as dictated by target)	NA
EFFECTIVE RANGE				
Area (meters)	1,800	1,100	1,829	2,212
Point (meters)	800	900+	1,200	1,500
Moving (meters)	NA	NA	NA	NA
AMMUNITION				
Example Load (rounds)	600	600	NA	NA
* With barrel change.				

Tube-Launched Optically Tracked Wire-Guided (TOW) Missile Launcher System

2-51. The TOW missile launcher system is a command-guided, surface-attack weapon system that can destroy tanks, other armored vehicles, and helicopters. It may also be used against fortified bunkers, gun emplacements, and other protected positions. The TOW system destroys armored vehicles at ranges from 65 to 3,750 meters, depending on the type of missile used. While in a turret-down position, the commander or gunner locates, engages, and destroys enemy targets using the TOW system. The CFV crew can reload the launcher without exposure to hostile fire.

2-52. When the firer pulls the trigger, the TOW or TOW-2 subsystem starts a 1.5-second self-balancing routine by activating a gyro, which stabilizes the missile. To avoid accidentally aborting the missile, the gunner must

remember this delay when firing the TOW. At launch, the integrated guidance system (which consists of both the original analog guidance electronics as well as the new digital command guidance electronics system) sends a signal that triggers the missile launch motor to ignite. This ignition propels the missile out of the launcher, and the flight motor takes over. When the missile enters the firer's line of sight, the ISU, day sight tracker, and/or night sight receives infrared signals from the missile. Components in the sights then signal the command guidance electronics (CGE)/digital command guidance electronics (DCGE) in the CFV and the MGS on the HMMWV to position the missile with respect to the ISU line of sight. This exchange continues until the missile impact(s) or aborts (see Table 2-3).

2-53. The last step in the firing sequence occurs when the TOW or TOW-2 subsystem automatically cuts the wire 23 seconds after launch. The subsystem also cuts the wire when—

- The commander or gunner presses the TOW ABORT switch.
- The commander or gunner selects another missile on the TOW control box.
- The missile reaches the wire's maximum range.
- The commander or gunner resets the weapons control box.
- The commander or gunner changes magnification from HIGH to LOW.

Table 2-3. TOW Missile Launch and In-Flight Sequence.

EVENTS	TIME (seconds)		RANGE (meters)		VELOCITY (feet per second [FPS])	
	TOW/ 2/ 2A	TOW2B	TOW/ 2/ 2A	TOW2B	TOW/ 2/ 2A	TOW2B
Trigger pull	-1.58 sec	-1.58 sec	—	—	—	—
Initiation of launch sequence	-1.48 sec	-1.48 sec	—	—	—	—
Activation of thermal beacon	-0.88 sec	-0.88 sec	—	—	—	—
Enabling of fire signal on launcher and firing of launch motor squibs	-0.01 sec	-0.01 sec	—	—	—	—
Missile clearance of launch tube	0.04 sec	0.04 sec	—	—	—	—
Completion of launch motor burn	0.04 sec	0.04 sec	1.12 m	1.12 m	181 fps	173 fps
Ignition of flight motor	0.16 sec	0.16 sec	7.7 m	7.4 m	—	—
Burnout of flight motor	1.50 sec to 1.60 sec	1.50 sec to 1.60 sec	239 m to 280 m	289 m to 319 m	1,025 fps to 1,060 fps	991 fps to 1,005 fps
Interception of 3,000m target	14.35 sec	15.44 sec	3,000 m	3,000 m	488 fps to 493 fps	459 fps
Interception of 3,750-m target	20.10 sec	21.40 sec	3,750 m	3,750 m	387 fps to 396 fps	367 fps

2-54. When firing a TOW, the commander or gunner must lay the crosshairs on the center mass of the target, fire the missile, and keep the crosshairs on the target during the flight of the missile. This keeps the firer from losing control of the missile. (For specific procedures, see TM 9-2350-252-10-2 or TM 9-2350-284-10-2.)

2-55. Before firing the TOW-2, the firer ensures that both ISU ballistic doors are open. (For more information, see TM 9-2350-252-10-2 or TM 9-2350-284-20-2.)

2-56. Before the commander or gunner fire the TOW, the launcher must be level or on a slope of less than 10 degrees. The wings and control surfaces extend as soon as the missile clears the launcher. To avoid damaging these surfaces, the end of the launcher needs at least 36 inches of clearance.

2-57. Between 500 and 900 meters downrange, the missile could fly below the gunner's line of sight. Therefore, the firer must allow at least 30 inches of clearance between the line of sight and any obstruction. This reduces the chance of the missile hitting the ground on its way to the target.

2-58. Some conditions limit the TOW's firing and engagement capabilities and effectiveness: firing over water, firing over electrical wires, firing in windy conditions, firing through smoke, and firing through area fires.

FIRING OVER WATER

2-59. The commander should consider the following when employing the TOW over water:

- Firing across bodies of water wider than 1,100 meters can reduce the range of the TOW. Signals traveling through the command-link wires short out when a large amount of the wire falls in the water. At ranges less than 1,100 meters, submersion of the wire does not affect missile range.
- A TOW position should be as high above and as far back from the water as the tactical situation will allow. As soon as the CFV occupies the position, the commander should analyze the sector to determine if water will affect the employment of the TOW.

FIRING OVER ELECTRICAL WIRES

DANGER

When firing over electrical wires, do not let the command-link wires come in contact with a live high-voltage power line. Failure to observe this precaution can cause injury or death or cause the firer to lose control of the missile and damage launcher electronics.

FIRING IN WINDY CONDITIONS

2-60. Gusty, flanking, or quartering winds can move the missile around during flight. As long as the crosshairs remain on the center mass of the target, the weapon system will compensate for wind effects.

FIRING THROUGH SMOKE

2-61. For the firer to maintain a proper sight picture, he must be able to see the target. If the firer is using the optical sight, smoke can obscure the line of sight and hide the target. All TOW missiles have a xenon source for day sight tracking. The TOW-2, TOW-2A, and TOW-2B missiles have the xenon plus a thermal beacon for night sight (thermal) tracking. The thermal beacon allows the gunner to track through most smoke obscuration. When a target disappears into a smoke cloud, the firer should hold a smooth tracking rate so that the missile will still be on target, or very close.

FIRING THROUGH AREA FIRES

2-62. The gunner follows the same visibility and target-tracking instructions that apply to firing through smoke. He should also avoid firing through or over fire if he thinks that the fire could touch the wires before missile impact. A fire can burn right through the command-link wire, causing the gunner to lose control of the missile. Soldiers need to take the following precautions:

DANGER

The TOW missile system has a backblast area that extends 75 meters to the rear of the vehicle in a 90-degree cone (see Figure 2-5). This area is divided into a 50-meter danger zone and a 25-meter caution zone. The CFV must be positioned so that there are no friendly personnel, unarmored vehicles, or obstructions (such as walls, embankments, or large trees) in the missile backblast area.

CAUTION

Remove all equipment and debris from the backblast area. Flying debris produced by firing a TOW missile could badly damage any equipment remaining in the backblast area.

- **Caution Zone.** In all training situations, keep all personnel and equipment clear of the caution zone (see Figure 2-5).

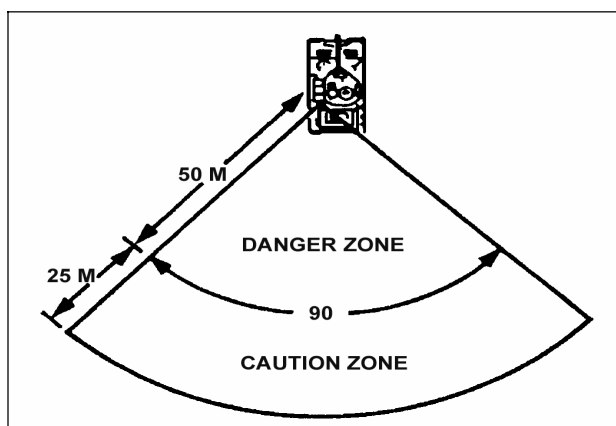


Figure 2-5. TOW Backblast Area.

WARNINGS

Do not fire a damaged encased missile such as one with large dents or cracks in the launch container. However, if the missile only has minor bending of the end rings this is not serious and you can fire the missile without danger.

Make sure the litmus in the humidity indicator is blue. If it is pink, the missile could have degraded. If this occurs in a training environment, return the missile to the supply point. If it occurs in a combative environment, you can fire the missiles.

The electrolyte in the emergency battery assembly is highly corrosive. If the battery gets damaged and the electrolyte leaks out, it can cause serious injury, especially to the eyes.

Do not move or handle duds or defective missiles, except when you remove a misfire from the launcher and place it a safe distance (200 meters) from the vehicle.

- As the command-link wires are strong, take care while moving through areas where missiles have been fired.
- In training, wait 30 minutes before removing a misfired missile from the launcher. (See TM 9-2350-252-10-2 or TM 9-2350-284-20-2 for more information.)

Javelin

2-63. The Javelin (see Figure 2-6) is a fire-and-forget, man-portable, medium-range antitank weapon. It is capable of defeating current and projected enemy armor and hovering helicopters. The Javelin has an integrated day and night sight that allows tactical operations during both daylight and limited-visibility conditions.

2-64. The Javelin consists of the M98A1 Command Launch Unit (CLU) (see Figure 2-7) and the FGM-148A or FGM-148B Surface Attack Guided Missile and Launcher, commonly called “the round” (see Section III for round characteristics).

2-65. The Javelin will replace the Dragon in selected infantry, combat engineer, and armored units. Its maximum effective range is more than double that of the Dragon.

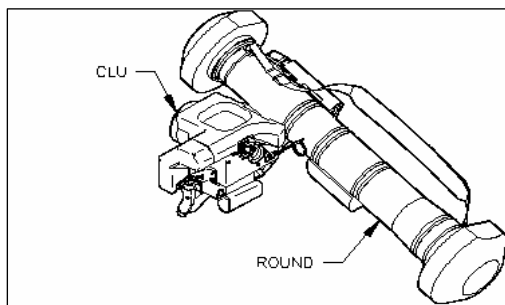


Figure 2-6. Javelin.

COMMAND LAUNCH UNIT DESCRIPTION

2-66. The CLU is the reusable component of the Javelin. It is equipped with a day sight, night-vision sight (NVS), and controls and indicators used during Javelin operation.

- The day sight is used to conduct surveillance operations during the day in clear weather.
- The NVS is used to operate during the day and under low visibility conditions.
- The controls are used to govern all Javelin operations.
- Indicators provide updates on all operational changes within the Javelin.

2-67. The CLU has built-in test capability that constantly tests its electronic circuitry during normal operations. The CLU also allows a built-in test sequence to be initiated during test mode.

2-68. The CLU is issued with a carry bag, which provides space to carry the CLU, technical manual, and a BA 5590/U lithium battery. It also comes with a lens cleaning kit for cleaning the day sight and NVS lenses.

Table 2-4. Characteristics of the CLU Portion of the Javelin.

Physical Specifications	
Length:	14.75in (37.46cm).
Width:	16.50in (41.91cm).
Height:	13.00in (33.02cm).
Weight:	11.28lb (4.48kg) (approximate without battery, carry bag, and lens cleaning kit).
CLU Sights	
Day sight:	Day FOV: Magnification: 4X, FOV: 6.4 degrees X 4.8 degrees.
Night sight:	
• Wide field-of-view (WFOV):	Magnification: 4.2X, FOV: 6.11 degrees X 4.58 degrees.
• Narrow field-of-view (NFOV):	Magnification: 9.2X, FOV: 3 degrees X 2 degrees (approximate).
CLU Battery	
Type:	
•	Lithium-sulfur-dioxide (LiSO ₂) battery, BA-5590/U. (Note. The BA-5590/U CLU battery is the same as the one used in the single-channel ground/airborne radio system [SINCGARS].)
•	Nickel metal hydride (NiMH) battery, BB-390A/U rechargeable (training use only).
Life:	
•	4 hours (night mode). (Note. When the CLU battery reaches extreme temperatures [over 120°F (49°C)], it discharges in approximately 30 minutes. Because the battery is in an enclosure with no ventilation, it will experience these temperatures in any environment during which the outside temperature is above 85°F [30°C]. When the CLU is exposed to direct sunlight, the possibility of the battery overheating is more likely.)
Reference: TM 9-1425-688-12	

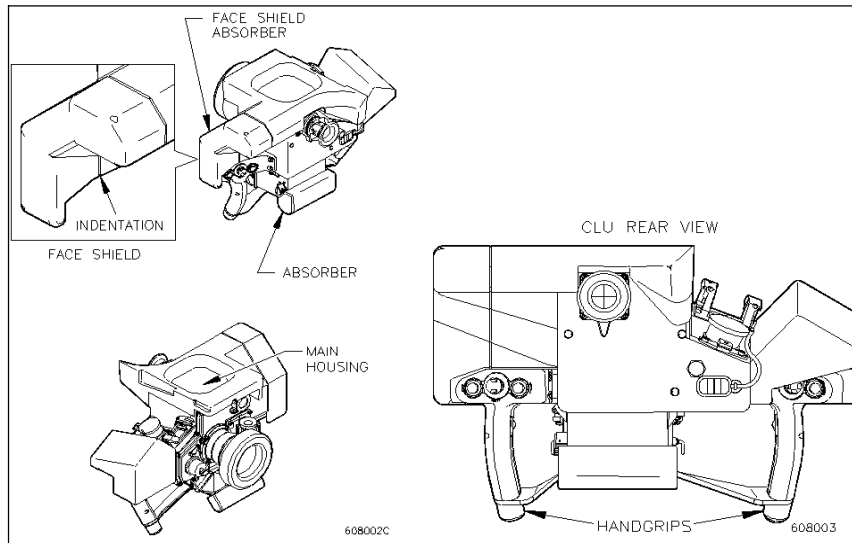


Figure 2-7. CLU Portion of the Javelin.

M257 Smoke Grenade Launcher

2-69. The CFV has two, four-tube, electrically fired grenade launchers, one on each side of the 25-mm gun (see Figure 2-8). Each of the two launchers can fire four smoke grenades. On activation, the smoke grenades create enough smoke to screen the vehicle in three seconds.

DANGER

Electrical problems could cause smoke grenades to fire prematurely, killing or injuring soldiers. Before loading any smoke grenades, make sure the turret power and grenade launcher switches are in the OFF position.

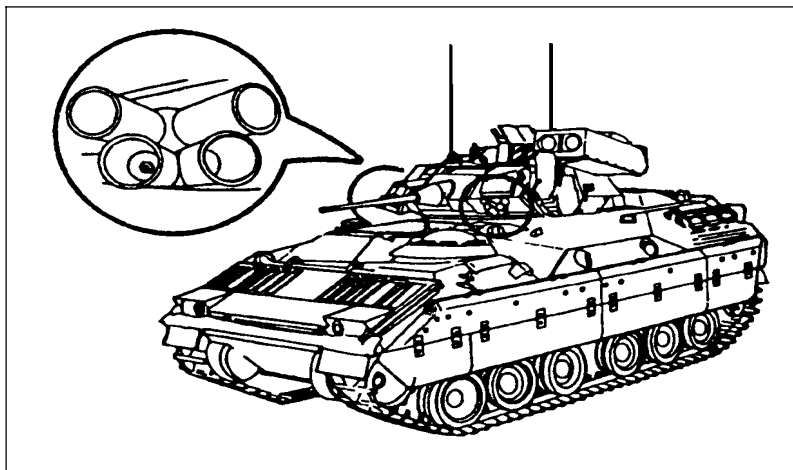


Figure 2-8. M257 Smoke Grenade Launchers.

SECTION III - AMMUNITION CAPABILITIES

2-70. The scout's organic weapon systems use ammunition designed to support his particular missions. As mission requirements and threat capabilities change, these munitions will counter the threat.

M60 and M240B/C 7.62-mm Machine Gun Ammunition

2-71. The preferred ammunition mix for the coax is four ball and one tracer. Other types of 7.62-mm ammunition are available. However, the four-and-one mix allows the commander and gunner to use the tracer-on-target (TOT) method of adjusting fire to achieve target kill or suppression. (See TM 9-1005-313-10 for more operator information.)

Table 2-5. Ammunition for the M60 and M240B/C 7.62mm Machine Gun and Its Use.

Ammunition	Use
M61 Armor-piercing	Against light-armor targets.
M62 Tracer	For observation of fire, incendiary effects, signaling, and training.
M80 Ball	Against light, materiel targets and personnel and for range training.
M172 Dummy	During mechanical training.
M82 Blank	During training when simulated live fire is desired. (A blank firing attachment must be used to fire this ammunition.)

M2 HB Caliber .50 Machine Gun Ammunition

2-72. The preferred combat ammunition mix for the M2 HB machine gun is four (API-M8) and one (API-T-M20). Maximum effective range is 1,830 meters.

Table 2-6. Ammunition for the M2 HB Machine Gun and Its Use.

Ammunition	Use
M2 Ball	In marksmanship training against personnel and light, materiel targets.
M1 Tracer	To aid in observing fire. Secondary purposes are for incendiary effect and signaling.
M2 Armor-piercing	Against armored aircraft, light-armor vehicles, concrete shelters, and other bullet-resisting targets.
M1 Incendiary	Incendiary effect, especially against aircraft.
M8 Armor-piercing	Combined armor-piercing and incendiary effect.
M20 Armor-piercing	Combined armor-piercing and incendiary effect, with the additional tracer feature.
M903 SLAP	Saboted, light-armor penetrating.
M962 SLAP-T	Saboted, light-armor penetrating, with tracer.
M1 Blank	For simulated fire (contains no bullet).
M2 Dummy	For training (completely inert).

MK-19 40-mm Grenade Machine Gun Ammunition

2-73. The MK-19 fires the following cartridges: M430/M430A1 high-explosive, dual-purpose grenades, M383 high-explosive grenade, M385/M918 training practice, and M922/M922A1 dummy rounds (see Table 2-7 for a description of the characteristics of these cartridges).

Table 2-7. MK-19 40-mm Grenade Machine Gun Cartridge Characteristics.

Ammunition	Characteristics
M430/M430A1 High-Explosive Dual-Purpose Grenades	The M430 and M430A1 are designed to penetrate armor and inflict personnel casualties. • Identification: Olive drab with yellow-olive and yellow markings. • Fuse: PIBD (point initiating, base detonating) M549. • Filler: Composition B. • Arming distance: 18 to 30 meters. • Kill radius: Approximately 7 meters. • Wound radius: Approximately 15 meters. • Maximum range: 2,200 meters. • Maximum effective range: 1,200 meters.
M383 High-Explosive Grenade	The M383 is designed to inflict personnel casualties. It is packed in linked, 48-round belts. • Fuse: PD (primer detonating) M533. • Filler: Composition A5. • Arming distance: 18 to 36 meters. • Blast radius: 15 meters. • Maximum range: 2,200 meters.
M385/M918 Training Practice	The M385 is an inert round with a propellant charge. The M918 is a flash-bang round with a propellant charge. • Propellant: M2. • Maximum range: 2,200 meters. • Maximum effective range: 1,500 meters.
M922/M922A1 Dummy Rounds	The M922/M922A1 rounds are totally inert. They are used to check gun functioning and train gun crews. They are issued only to armorers.

M242 25-mm Automatic Gun Ammunition (Standard)

2-74. For more realistic training, the training ammunition for the 25-mm gun replicates service ammunition. The six basic rounds used with the 25-mm gun include the M791, M792, M793, M910, M910A1, and M919. Table 2-8 provides a quick reference for comparing the six types of 25-mm ammunition.

Table 2-8. Comparison of Ammunition for 25-mm Gun.

	M791 APDS-T	M919 APFSDS-T	M792 HEI-T	M910 TPDS-T	M910A1* TPDS-T	M793 TP-T
Muzzle velocity (meters per sec)	1,345	1,385	1,100	1,515	1,515	1,100
Time of flight (sec)						
1,000 meters	0.8	0.8	1.2	0.7	0.7 *	1.2
1,500 meters	1.2	1.2	2.2	1.2	1.2 *	2.2
2,000 meters	1.7	1.6	3.6	1.8	1.7 *	3.5
2,500 meters	2.2	2.1	5.3	2.5	2.4 *	5.2
Cartridge weight (grams)	458	454	501	420	420*	501
Projectile weight (grams)	134	96	185	95	95.0 *	182
Tracer burn time (seconds)	>1.4	Classified	>3.5	>1.8	>2.4	>3.5
Bursting radius/ aiming distance maximum range	NA	NA	5 meters/ 10 to 200 meters	NA	NA	NA
Maximum effective range (meters)	2,000	Classified	3,000	2,000	2,000*	1,600
Tracer burn range (meters)	>2,000	Classified	>2,000	>2,000	>2,500	>2,000
*These specifications are estimated, pending final testing.						

M791 ARMOR-PIERCING DISCARDING SABOT WITH TRACER (APDS-T)

2-75. The APDS-T round (see Figure 2-9) penetrates light-armor vehicles, self-propelled artillery, and aerial targets such as helicopters and slow-moving, fixed-wing aircraft.

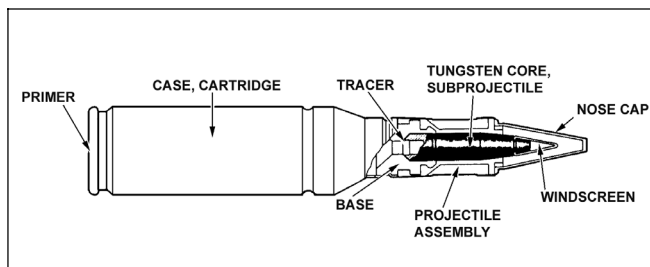
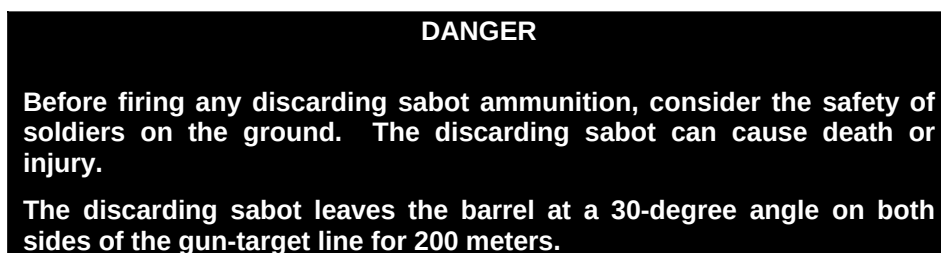


Figure 2-9. M791 APDS-T Round.

2-76. The APDS-T round is a fixed-type, percussion, primed round. It consists of a sabot-encapsulated projectile body crimped to a steel cartridge case. The projectile body consists of a solid tungsten alloy penetrator, pressed-on aluminum windscreen, pressed-in tracer pellets, molded discarding-type nylon sabot, staked aluminum base, and welded or pressed-on nylon nose-cap. The projectile sabot and nose-cap are black with white markings.

2-77. Gases produced by the burning propellant will send the projectile from the gun at 1,345 meters per second (plus or minus 20 meters per second) and ignite the tracer. Setback, centrifugal, and aerodynamic forces cause

both the sabot and nose-cap to discard as soon as the round leaves the barrel. The discarding sabot leaves the barrel at a 30-degree angle on both sides of the gun-target line for 200 meters. The tungsten penetrator (core) is spin-stabilized and penetrates the target solely by kinetic energy.

2-78. The 25-mm gun's maximum effective range is 2,000 meters due to tracer burnout. Although tracers burn out at 2,000 meters, APDS-T ammunition is accurate out to 2,200 meters. As the range increases, the APDS-T round penetration decreases, especially when target vehicles have appliqué armor (an added layer of armor).

M919 ARMOR-PIERCING FIN-STABILIZED DISCARDING SABOT WITH TRACER (APFSDS-T)

2-79. The APFSDS-T round (see Figure 2-10) penetrates lightly armored vehicles, self-propelled artillery, and aerial targets, which includes helicopters and slow-moving, fixed-wing aircraft.

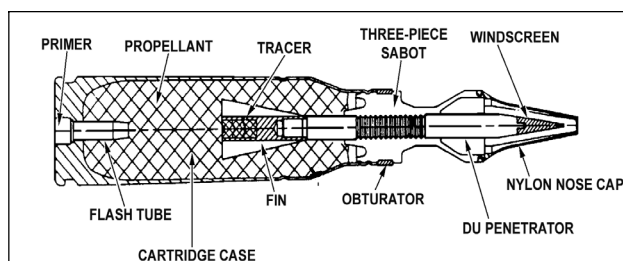
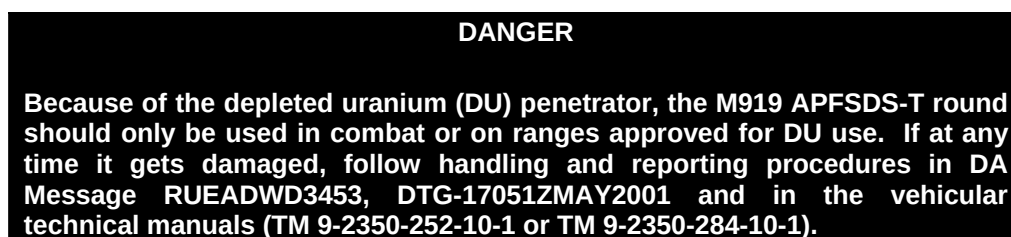


Figure 2-10. M919 APFSDS-T Round.

2-80. The APFSDS-T round is a fixed-type, percussion-primed round that consists of a sabot-encapsulated projectile crimped into a steel cartridge case. The projectile is made of slate gray, corrosion-protected, depleted uranium. It has a screw-on steel fin with pressed-in trace pellets; a three-piece, segmented aluminum sabot; and a snap-on plastic protective cap. The projectile sabot and protective nose-cap are black, and the slip-band nylon obturator is white. The round has a green rubber sealant between the sabot segments, the sabot and penetrator, and the sabot and the plastic cap.

2-81. This kinetic energy round is the same as the APDS-T (M791) round, but with a velocity of 1,385 meters per second (plus or minus 20). It also has greater effective range, penetration capabilities, and tracer burn time.

M792 HIGH-EXPLOSIVE INCENDIARY WITH TRACER (HEI-T)

2-82. The HEI-T round (see Figure 2-11) can destroy unarmed vehicles and helicopters and suppress ATGM positions and enemy squads beyond coax range (900 meters) and out to a maximum effective range of 3,000 meters.

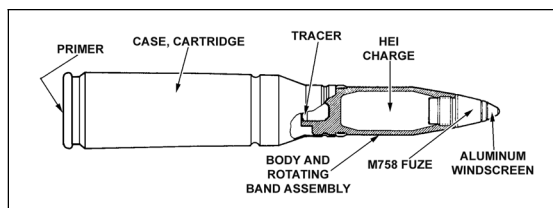


Figure 2-11. M792 HEI-T Round.

2-83. The HEI-T cartridge is a fixed-type, percussion-primed round. The one-piece projectile body is filled with HEI and crimped to a steel cartridge case. The hollowed steel projectile has an M758 mechanical fuze, 32 grams of an HEI mix, and a pressed-in tracer. The projectile is yellow with a red band, black markings, and a gold tip. On some rounds, the projectile's yellow color is slightly orange near the red band.

2-84. Gases produced by the burning propellant sends the projectile out of the gun at 1,100 meters per second (plus or minus 20 meters per second). On impact, the M758 fuze (see Figure 2-12) ignites and the HEI filler detonates. This projects steel fragments from the body, rotating band assembly, and incendiary filler over a 5-meter radius.

2-85. The maximum effective range for HEI-T rounds is 3,000 meters. This is based on—

- A mechanical fuze (the M758 fuze) detonates the round at about 3,000 meters.
- Tracers burn out at 2,000 meters, but the gunner can observe the impact of the round beyond this range, up to 3,000 meters.
- Though accuracy decreases beyond 1,600 meters, the 5-meter bursting radius and rate-of-fire allow the firer to engage both point and area targets out to 3,000 meters.

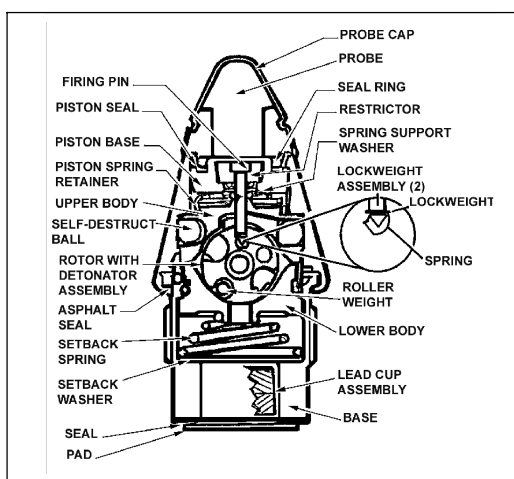


Figure 2-12. M758 HEI-T Fuze.

2-86. The M792 HEI-T projectile can detonate in any of three ways: direct impact, grazing impact, and self-destruct (see Figure 2-13).

- **Direct Impact.** Striking the target crushes the projectile's probe cap. This pushes the probe rearward, which thrusts the firing pin into the detonator, which detonates the HEI mixture.
- **Grazing Impact.** Sometimes, due to spin decay (loss of forward velocity), the projectile strikes the target with insufficient force. Spin decay triggers the set-back spring to overcome centrifugal force, push the body assembly forward, and thrust the detonator into the firing pin.
- **Self-Destruct.** If it does not hit a target, the projectile self-destructs at 3,000 meters. However, depending on their severity, head winds and tail winds can reduce the distance at which the round self-destructs.

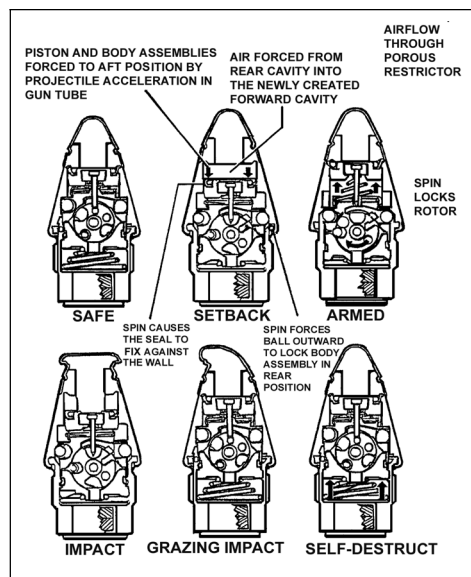


Figure 2-13. M758 Operational Sequence.

M910 TARGET PRACTICE DISCARDING SABOT WITH TRACER (TPDS-T)

2-87. The TPDS-T round replicates the flight pattern of the M791 APDS-T round. The TPDS-T round (see Figure 2-14) allows units to practice sabot engagements on limited-distance ranges. The maximum range of the TPDS-T round is 6,404 meters.

2-88. The TPDS-T cartridge is a fixed type, percussion-primed round. It consists of a sabot projectile assembly crimped to a steel cartridge case. The projectile assembly includes a discardable aluminum pusher base. It also includes a sub-projectile encapsulated with a discarding nylon sabot and polyethylene protective cap. The sub-projectile has a steel core with an aluminum or steel windscreen and pressed-in tracer pellets. The projectile is blue with white markings.

2-89. The TPDS-T cartridge trajectory is ballistically matched to ± 1 mil of the APDS-T to a range of 2,000 meters. The tracer burns out at 2,000 meters.

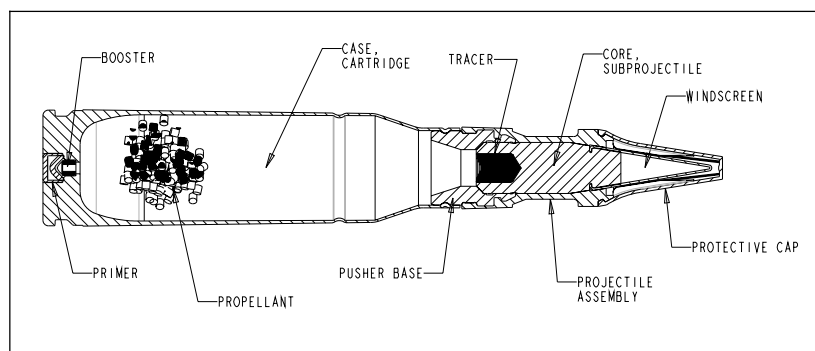


Figure 2-14. M910 TPDS-T Round.

M910A1 TARGET PRACTICE DISCARDING SABOT WITH TRACER

2-90. The TPDS-T round simulates the M919 APFSDS-T round (see Figure 2-15). This round enables units to practice sabot engagements on limited distance ranges. The TPDS-T round's maximum range is less than 8,000 meters.

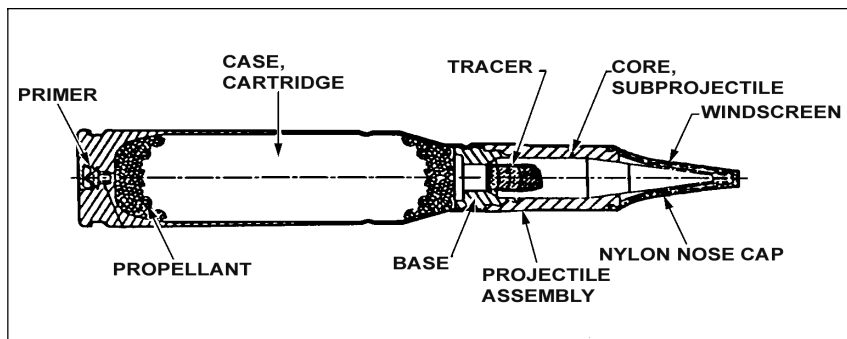


Figure 2-15. M910A1 TPDS-T Round.

2-91. The TPDS-T cartridge is a fixed-type, percussion-primed round. It consists of a sabot projectile assembly crimped to a steel cartridge case. The projectile assembly includes a discardable aluminum pusher base and a sub-projectile encapsulated with a discarding sabot and a protective cap. The sub-projectile consists of a steel core with a grooved tungsten sleeve, aluminum windscreen, and pressed-in tracer pellets. The projectile is blue with white markings.

2-92. The TPDS-T cartridge trajectory is ballistically matched to within 1 mil of the APFSDS-T round, to a range of 2,500 meters. Tracers burn out beyond 2,500 meters.

M793 TARGET PRACTICE WITH TRACER (TP-T)

2-93. The TP-T cartridge (see Figure 2-16) is a fixed-type, percussion-primed training round that is ballistically matched to the HEI-T round. The projectile consists of a hollow steel body with blue with white markings. The TP-T round's maximum effective range is 1,600 meters, and the tracer is visible out to 2,000 meters. However, accuracy is greatly reduced beyond 1,600 meters.

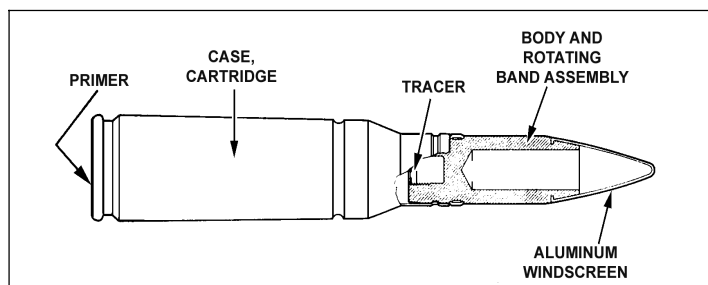


Figure 2-16. M793 TP-T Round.

TOW Ammunition

2-94. The developments and improvements to the TOW missile family follow the developments and improvements of tank armor. The five missiles that followed the basic TOW each improved upon the previous missile. Table 2-9 compares the characteristics of TOW missiles. Areas of improvement included penetration, maximum range, usefulness during adverse firing conditions, resistance to jamming, and attack profiles.

Table 2-9. TOW Missile Characteristics.

	MISSILES				
	TOW (BGM-71A/A1)	ITOW (BGM-71C)	TOW-2 (BGM-71D)	TOW-2A (BGM-7E)	TOW-2B (BGM-71F)
Weight:					
Out of tube	40.7 lb.	41.9 lb.	47.2 lb.	49.9 lb.	49.8 lb.
In tube	54.8 lb.	56.0 lb.	61.3 lb.	64.0 lb.	63.9 lb.
Length (out of tube)	45.8 in.	45.6 in.	46.2 in.	46.1 in.	46.2 in.
Tube Diameter	8.6 in.				
Maximum ranges (meters)	3,000/3,750	3,750	3,750	3,750	3,750
Warhead Size	5-inch HE	5-inch HE	6-inch HE	6-inch HE	Two 5-inch explosively formed penetrators
Arming distances:					
Minimum	30 meters	30 meters	30 meters	30 meters	110 meters
Best	NA	NA	NA	NA	150 meters
Maximum	65 meters	65 meters	65 meters	65 meters	200 meters
Reliability	95.4 percent				
Operating Temperature	-25° to +125° F				
Vehicle Compatibility	All				

2-95. With the increased number of TOW missile types and wide variations in their capabilities (especially armor penetration), TOW crews and range safeties must be able to quickly and accurately identify the specific type of missile they have.

2-96. The configuration of the missile can be readily identified by the various identification decals, tapes, and stencils on the missile case (see Figure 2-17 and Table 2-10). (Refer to TM 9-1410-470-34 for current information on TOW missiles.)

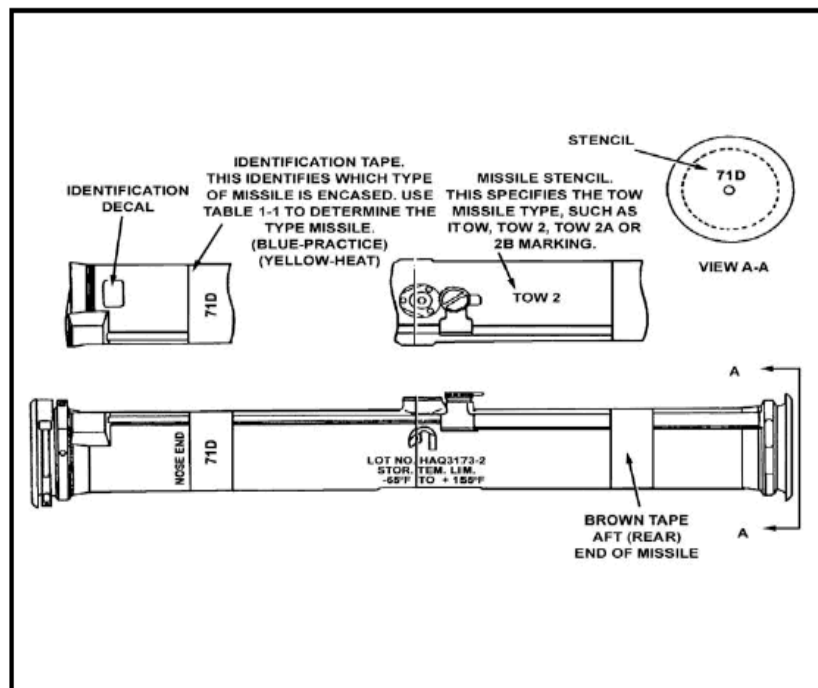
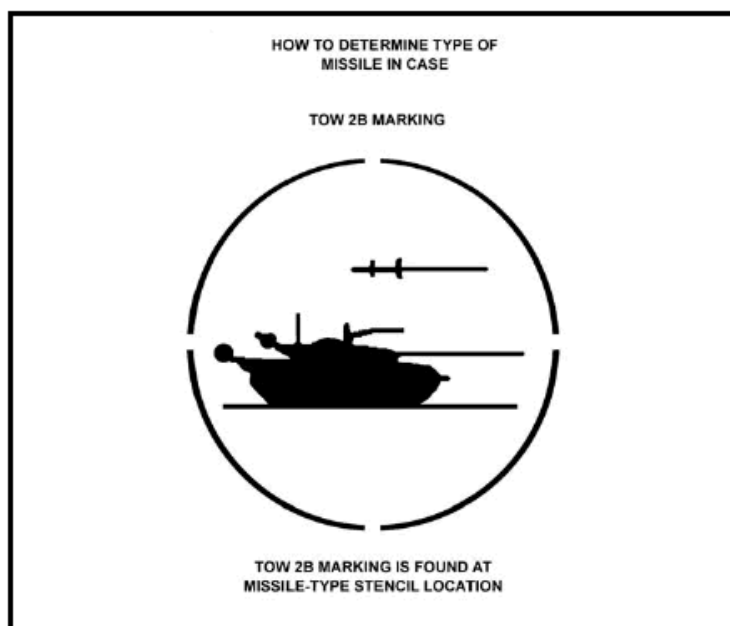


Figure 2-17. TOW Missile Case Markings.

Table 2-10. TOW Missile Identification.

Type of Missile	Decal Plate Data
Improved TOW Practice	Guided Missile Practice, STD, BTM-71A1
Improved TOW HE	Guided Missile Surface Attack, ITOW-BGM-71C
TOW 2 Practice	Guided Missile Practice, TOW 2, BTM-71D-1B
TOW 2 HE	Guided Missile Surface Attack, TOW 2, BGM-71D-3B
TOW 2A Practice	Guided Missile Practice, TOW 2A, BGM-71E-3B
TOW 2B Practice	Guided Missile Practice, TOW 2B, BGM-71E-2B
TOW 2B HE	Guided Missile Surface Attack, TOW 2B, BGM-71F
Decals are located on the nose end of the launcher tube. They describe the type of round and model. BLUE—indicates practice round. YELLOW—indicates HE round. WHITE—indicates HE or practice round. BROWN—indicates low explosive (live rocket motor).	

2-97. The TOW 2B missile is unique because it is a fire-over, shoot-down (FOSD) missile. It is marked with a decal as shown in Figure 2-18.

**Figure 2-18. TOW 2B Marking.****BASIC TOW (BGM-71A)**

2-98. The basic TOW has a 5-inch-high explosive, shaped-charge warhead and a maximum effective range of 3,000 meters (see Figure 2-19).

BASIC TOW (BGM-71A1)

2-99. This is the basic TOW, except with an improved maximum effective range of 3,750 meters (see Figure 2-19).

IMPROVED TOW (ITOW) (B71C)

2-110. The ITOW's improved 5-inch warhead, with extensible probe, allows for detonation at a greater standoff distance from the target. It also gives the warhead greater penetration capability. The ITOW's maximum effective range is 3,750 meters (see Figure 2-19).

Note. The basic CFV's TOW system will fire the TOW-2 and later models of the TOW missile, but with a reduced probability of hit; therefore, when using the TOW on a basic CFV, earlier missiles than the TOW-2 are more likely to hit the target than are the TOW-2 and later models.

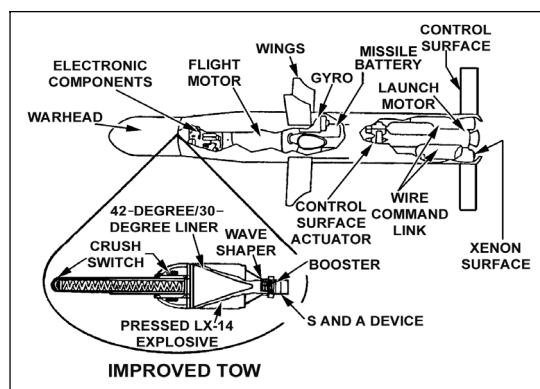


Figure 2-19. Basic and ITOW Missiles.

TOW-2 (BGM-71D)

2-101. The TOW-2 has a 6-inch full-caliber warhead with an extensible probe. The TOW-2 has a xenon beacon like the basic and ITOW missiles, but it also has a thermal beacon. The thermal beacon improves missile performance through battlefield smoke and obscurants, and against missile countermeasure devices (jammers). The thermal beacon will link tracking to the electro-optical infrared night sight, which is part of the TOW-2 subsystem. The TOW-2's flight motor is also more powerful than the one in previous models. The TOW-2's maximum effective range is 3,750 meters (see Figure 2-20).

TOW-2A (BGM-71E)

2-102. The only difference between the TOW-2A and the TOW-2 is the addition of a precursor charge on the extensible probe. The precursor charge will discharge reactive armor before the main charge impacts (see Figure 2-20).

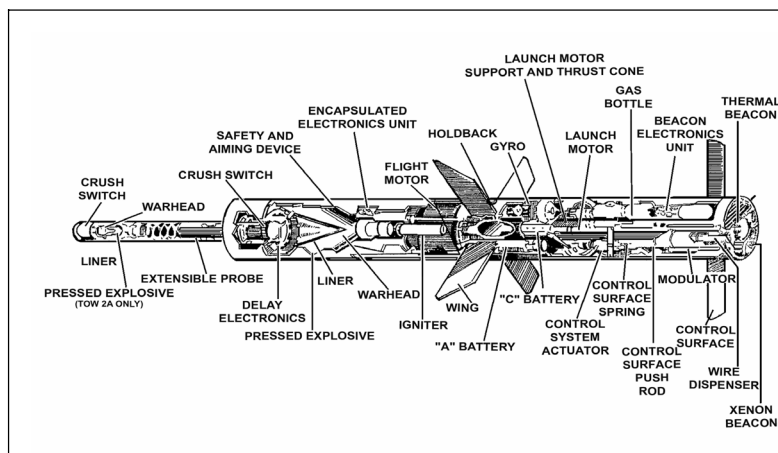


Figure 2-20. TOW-2 and TOW-2A Missiles.

TOW-2B (BGM-71F)

2-103. The TOW-2B is a top-attack missile (see Figure 2-21). The missile is programmed to fly about 2.25 meters above the gunner's line of sight, but the gunner aims center mass of the target. The missile detects the target by magnetic signature and optical (laser) profile. The missile's sensors cannot distinguish between friendly and enemy, or between destroyed and not destroyed. To prevent premature detonation of the TOW-2B warheads, crews must make sure their line of sight is clear of friendly and destroyed vehicles. The TOW-2B has two 5-inch warheads that, when detonated, explosively form two high-density tantalum penetrators.

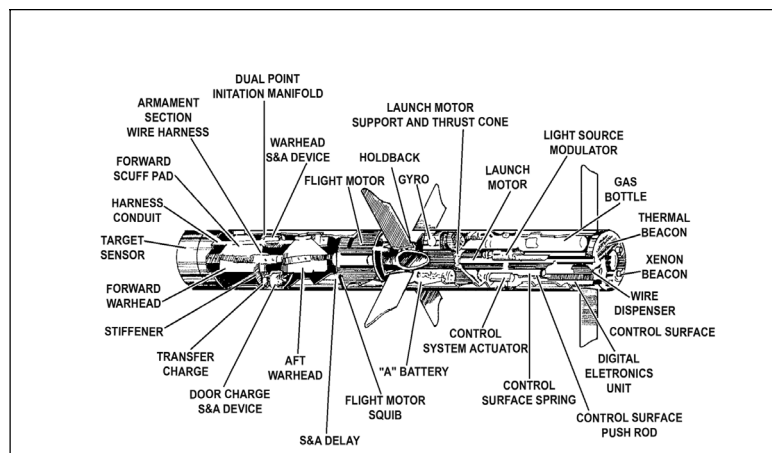


Figure 2-21. TOW-2B Missile.

Note. Firing the TOW-2, TOW-2A, and TOW-2B missiles from the basic TOW launcher is possible; however, the missile will have a reduced probability of hit (P_H).

Javelin

2-104. The Javelin consists of the M98A1 Command Launch Unit (see page 2-14 thru 2-16 for additional information) and the FGM-148A or FGM-148B Surface Attack Guided Missile and Launcher, commonly called "the round."

2-105. The Javelin will replace the Dragon in selected infantry, combat engineer, and armored units. Its maximum effective range is more than double that of the Dragon.

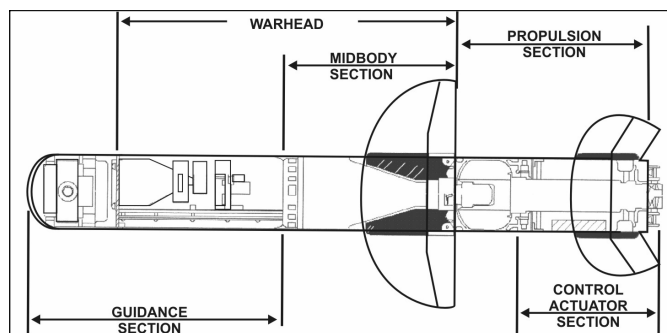


Figure 2-22. Javelin.

Table 2-11. Javelin Characteristics.

Characteristics		
Round (LTA with missile—BCU installed)	Length	47.60 in (120.90 cm)
	Diameter	Across endcaps: 11.75 in (29.85 cm) Across LTA: 5.515 in (14cm)
	Weight	34.16 lb (15.49 kg)
Missile (only)	Length	42.626 in (108.27 cm)
	Diameter	5.000 in (12.70 cm)
	Weight	22/328 lb (10.126 kg)
	Seeker	Seeker FOV: <u>Magnification</u> : 9X, <u>FOV</u> : 1 degree X 1 degree
	Effective range	Top attack mode: <u>Minimum</u> : 150 m, <u>Maximum</u> : 2,000 m. Direct attack mode: <u>Minimum</u> : 65 m, <u>Maximum</u> : 2,000 m.
Battery Coolant Unit	Length	8.160 in (20.726 cm)
	Width	4.627 in (11.752 cm)
	Weight	2.91 lb (1.32 kg)
	Battery section	Type: Lithium Iron Disulfide (LiFeS ₂ O) Life: 4 minutes minimum
	Gas section	Type: Argon

M257 Smoke Grenade Launcher Ammunition

2-106. The M257 smoke grenade launcher fires the L8A1/A3 red phosphorous smoke grenade and the M76 infrared screening grenade.

L8A1/A3 RED PHOSPHORUS SMOKE GRENADE

2-107. The red phosphorus smoke grenades contain a mixture of red phosphorus and butyl rubber (see Figure 2-23). The smoke bursts in the direction the turret is pointed. The bursting radius is a 105-degree fan, 10 meters high and 20 to 50 meters to the front. The smoke cloud lasts from one to three minutes, depending on wind speed and weather conditions. (See TM 9-2350-252-10-2 or TM 9-2350-284-10-2 for more operator information.)

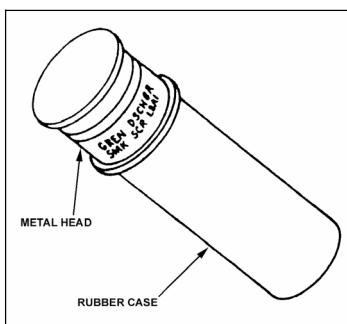


Figure 2-23. L8A1/A3 Red Phosphorus Smoke Grenade.

M76 INFRARED SCREENING GRENADE

2-108. The M76 infrared screening grenade is 9.5 inches long by 2.5 inches in diameter. It weighs about 4.5 pounds (see Figure 2-24). The launched grenade travels about 30 meters from the vehicle and explodes at a height of 2.5 meters. The grenade uses a central burster to disseminate 3 pounds of brass power, explosively. The smoke cloud obscures the long-wave IR viewer for about 30 to 60 seconds, depending on wind speed and other weather conditions.

CAUTION

The M76 grenade obscures the CFV's day and thermal visibility as long as the smoke cloud lasts.

DANGER

Each soldier is responsible for situational awareness. If he or someone else is about to load smoke grenades, he must make sure that—

- Before the grenades are loaded, both the turret power and smoke grenade launcher switches are in the OFF position.
- Before the grenades are loaded, all soldiers are clear of the firing lines.
- Before and while the grenades are loaded, the loader remains well back of the smoke grenade launchers.
- If a misfire occurs, the vehicle on which the grenades were loaded moves at least 125 meters away from any other vehicle, building, personnel, or equipment.
- After the misfired smoke grenades are removed, they are then moved to a well-marked spot at least 200 meters from any vehicle, building, personnel, or equipment (refer TM 9-2350-252-10-2 and TM 9-2350-284-10-2 for additional information).

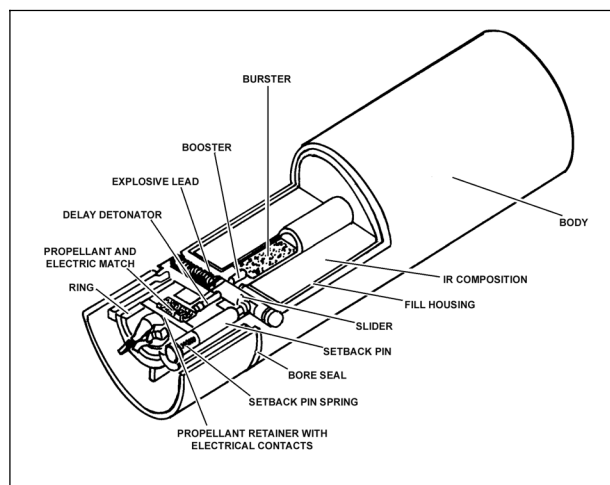


Figure 2-24. M76 Infrared Screening Grenade.

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Chapter 3

Engagement Process

On future battlefields, CFV, RV, and HMMWV crews must be able to engage multiple targets rapidly while operating within irregular battle lines. Depending on the tactical situation and the area of operations, enemy targets may be intermingled with friendly coalition and neutral vehicles. Survival will depend on the crew's ability to detect, locate, identify and, if necessary, engage and destroy the enemy rapidly.

Fire commands are the language used to organize and execute the engagement process to kill the enemy and continue the mission. CFV, RV, and HMMWV crews must be proficient in the techniques and procedures of the acquisition process, engagement decision, engagement execution, and fire commands to engage the enemy successfully. This chapter discusses the steps in the engagement process and their relationship to each other (see Figure 3-1).

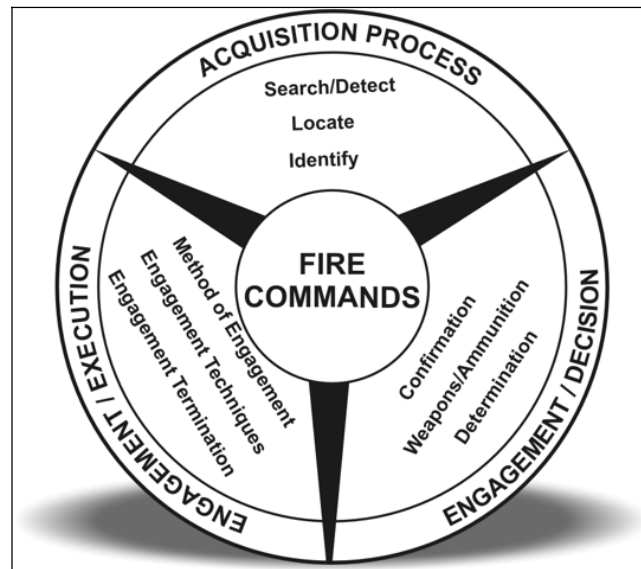


Figure 3-1. The Engagement Process.

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SECTION I - ACQUISITION PROCESS

3-1. The acquisition process is a series of progressive and interdependent steps (or actions): target search, detection, location, and identification. Effective target acquisition for a CFV, RV, and HMMWV crew requires a constant combined effort from each crew member.

Target Search

3-2. Target search (observation) is the act of carefully watching designated areas. Sectors of observation are assigned by the vehicle commander to each crew member for target acquisition. If the vehicle is in a hide position, the vehicle commander positions an observer (or two) forward of the vehicle IAW FM 3-20.98 (Figure 3-2).



Figure 3-2. Dismounted Observer.

SEARCH TECHNIQUES

3-3. **Ground Search Techniques.** Crew members scan their sectors at all times to detect targets or possible target locations. They can quickly locate targets by using ground search techniques: rapid scan, slow (50-meter) scan, detailed search, and the off-center vision method. Crew members use the naked eye, binoculars, PVS-7Bs, or vehicle optics for ground searches during both good and limited visibility conditions.

3-4. The M3A3 commander can use the CIV for additional search capability. The M3A3 gunner can use all systems of the IBAS (DVO, Day TV, and FLIR) to perform target search techniques. The dismounted squad can use the SLD in the M3A3 for the acquisition process to aid the crew in the target detection and for situational awareness (prior to dismounted squad ground operations).

3-5. The LRAS3 is used on both the HMMWV and the Stryker RV. The gunner on both vehicles can use this sight in day or night to provide excellent target detection. The only shortfall is that the sight is not slaved to a weapon system, requiring the gunner to reacquire a target with the mounted weapon sight.

3-6. **Rapid scan.** The rapid-scan method is used to quickly detect obvious signs of enemy activity (Figure 3-3). It is usually the first method used, whether moving or stationary.

- The crew member starts scanning in the center of the sector and rapidly scans from the nearest to the farthest point.
- He then orients left or right and conducts a rapid scan, near to far. This sweep must overlap the center of the previously scanned sector.
- Once one side of center is completed, he scans the remaining side in the same manner.
- If more than one crew member is scanning, the gunner should always scan from near to far while the other crew member scans from far to near.
- The crew places weapons systems on the nearest target first.

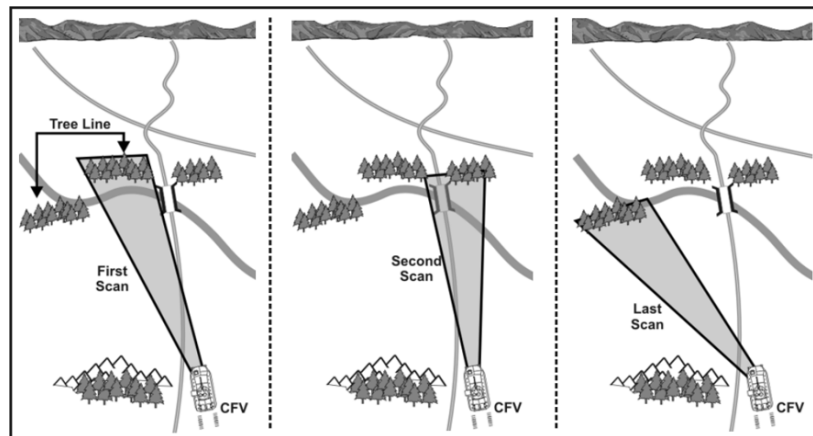


Figure 3-3. Rapid Scans.

3-7. Slow (50-meter) scan. If no targets are detected in the rapid scan, crew members conduct a more deliberate scan of the terrain by using vehicle optics (day or thermal mode) or hand-held vision enhancers (Figure 3-4). The slow scan is best used by the vehicle commander or gunner when in a defensive position or from a short halt.

- The gunner pauses at short intervals to give his eyes time to focus, searches a strip of the target area 50 meters deep from right to left.
- The gunner then searches a strip farther out from left to right, overlapping the first area scanned.
- If another crew member is also scanning, he uses the same technique starting from the opposite side. They continue this method until the entire assigned sector has been searched.
- When a suspicious area or possible target signature is detected, he stops and searches the immediate area thoroughly, using the detailed search method.

Note. The M3A3 IBAS and the LRAS3 can be electronically zoomed for an intensive observation of potential targets.



Figure 3-4. Slow (50-Meter) Scan.

3-8. Detailed search. If no targets are detected using the rapid or slow scanning methods, crews should use the vehicle optics (day and night) to make a careful, deliberate search, either while stationary or moving (Figure 3-5). This method is also used to search small areas or suspected avenues of approach in detail.

- The crew concentrates on one specific area or location and studies that area intensely.
- They look for direct or indirect target signatures in a clockwise manner around the focal point area. When using more than one optic (such as IBAS and CIV), one crew member scans clockwise and the other scans counterclockwise.

- Sample target signatures:
 - Dust created by vehicle movement.
 - Tracks or tire marks.
 - Reflections from glass or metal.
 - Angular objects that do not conform to the surrounding area.
 - Vegetation that appears out of place.
 - Flash or smoke from a weapon or missile.
 - Entrenchments or earthworks.
- Apply zoom as needed to cover detailed search areas.

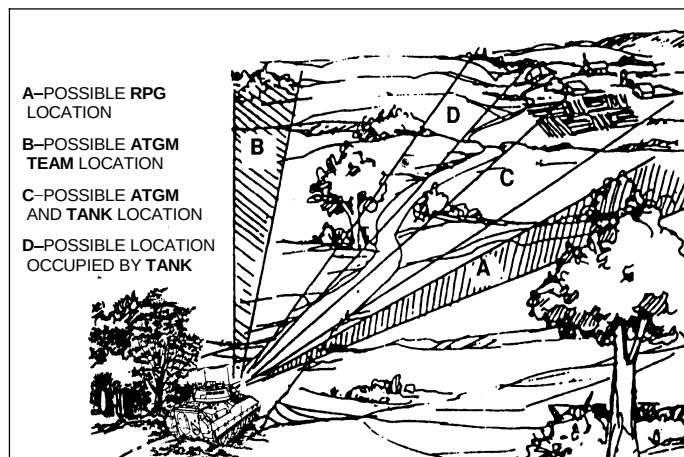


Figure 3-5. Detailed Search.

3-9. **Off-center vision method.** Crew members use the off-center vision method at night without optics. At each likely target area, they pause a few seconds to detect a target or any movement. If they detect an object, they use off-center vision to observe it. To prevent object fade-out, they move their eyes frequently in short, abrupt, irregular movements. They cup their hands around their eyes to increase night vision.

3-10. **Air Search Techniques.** Flat terrain scan and hilly terrain scan methods are used to detect aerial targets quickly. Both of these methods are based on the slow (50-meter) scanning method. While using a ground search technique, crew members should always search near to far for possible targets. When using an air search technique, crew members should always search far to near.

- Flat terrain scans (air search). In flat terrain, crew members search the horizon by moving their eyes in short movements from object to object (Figure 3-6). They can see more detail this way than with a continuous scan of the horizon.
- Hilly terrain scans (air search). In hilly terrain, crew members search the sky beginning just below the horizon and move upward (Figure 3-6). They use prominent terrain features as points of reference to ensure overlapping the areas of the search.

3-11. When using the air search techniques, crew members concentrate their search just below the tops of trees or vegetation to detect helicopters in hide positions. Air search at night is similar to searching for ground targets at night. Ground and air search techniques may be combined. This allows crew members to scan for targets in the air and on the ground at the same time. Combinations used depend on the area of operations and mission, enemy, terrain (and weather), troops (and support available), time available, and civil considerations (METT-TC).

Note. Enemy aircraft operate in pairs. If a pair of aircraft is acquired, a second set of aircraft should be expected. There may be one to four pairs of aircraft conducting an attack mission.

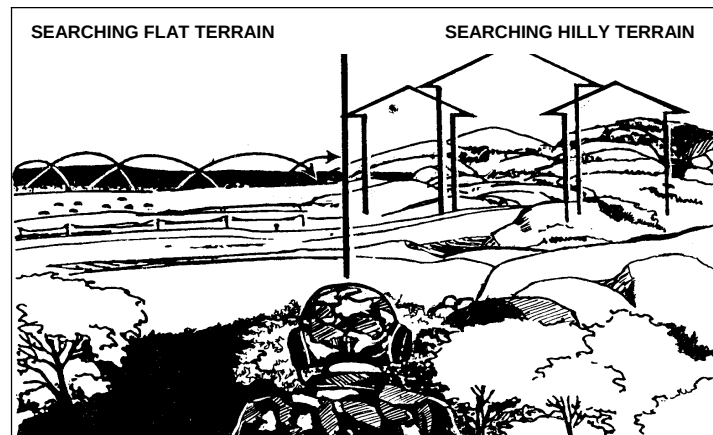


Figure 3-6. Searching Terrain.

3-12. **Ground and Air Search Tips.** All of the optical devices on the CFV, RV, and HMMWV can be used to acquire targets.

- Initial scanning can be done without optics. The crew members should scan different locations.
- Target search is continuous. Any possible target(s) missed on the first or second scan may be seen on the third or fourth scan.
- The crew members must look for targets and target locations using proper scanning methods within their assigned sectors.
- While on the move, the crew should use the rapid scan method, constantly scanning their entire sector.
- On sights with an adjustable reticle, the gunner should adjust the reticle brightness until the reticle is barely visible. The vehicle dome lights should be off or in the filtered position, and the panel light dimmer knob on the CFV should be adjusted to dim.
- On the CFV, the commander's sight extension (CSE) should be covered when not utilized. It enhances the gunner's sight picture by reducing the amount of ambient light being reflected through the ISU optics from the CSE.
- Operations during NBC conditions limit the crew members' abilities to acquire and locate targets. The CFV crew and dismounted squad's fields of view are greatly narrowed while wearing protective masks.
- The crew members must search in areas where targets are more likely to appear, such as avenues of approach, wood lines, and reverse-slope firing positions.
- The crew should not use zoom when using rapid scans to detect targets with the IBAS/CIV, LRAS3, or thermal weapon sight (TWS).
- When the sight is unstowed and turned on and the CTD is on the map screen, the dismounts can use the SLD to help the M3A3 crew in the detection process by monitoring one of four videos (DVE, IBAS, CTD, or CIV).

Note. Ground and air search techniques are used in conjunction with sector search techniques.

3-13. **Sector Search Techniques.** The following techniques are used when more than one crewman is available for searching:

- **Sector Overlapping.** Crews must make sure the sectors they scan overlap those that have already been scanned or overlap those of other crew members that are also scanning (Figure 3-7).

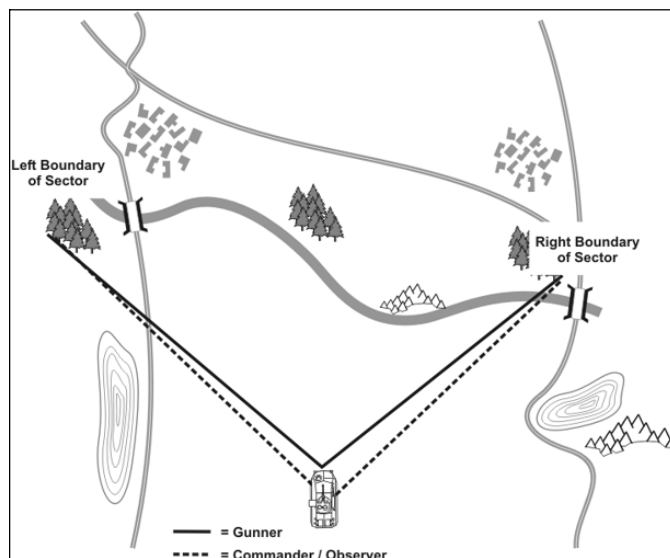


Figure 3-7. Sector Overlapping.

- **Sector Divided.** The vehicle crews divide the sector between them. One crew member scans one half of the sector, and another scans the other half, ensuring the entire sector area is overlapped at the center of the sector (Figure 3-8).

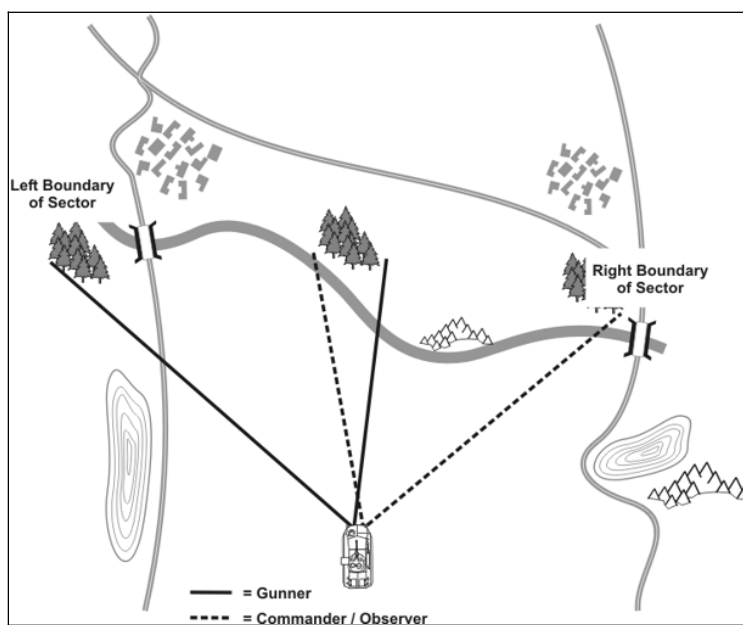


Figure 3-8. Sector Divided.

- **Near-to-Far Sector Search.** The commander searches far using CIV, binoculars, or PVS-7s, and the gunner searches near using LRAS3, ISU, or other optics to detect enemy target for the same sector.

Target Detection

3-14. Target detection is the discovery of any target such as personnel, vehicles, equipment, or objects of potential military significance on the battlefield. Target detection occurs during target search as a direct result of observation. Reconnaissance forces must also be well trained in identifying the potential threats (such as surface- or subsurface-laid mines, obstacles, booby traps, and unexploded ordnances [UXO] and improvised

explosive devices [IED]). This requires complete attention to detail, identifying threats beyond the obvious or known enemy systems.

TARGET SIGNATURES

3-15. Target signatures are indicators or clues that aid an observer in detecting potential targets. Most weapons and vehicles have identifiable signatures. These signatures may be the result of the design or the environment in which the equipment is operating; for example, firing a vehicle's main weapon system could produce blast, flash, noise, smoke, and dust. The movement of vehicles through a built-up area causes more noise than the movement of the same vehicle in an open field. Different types of aircraft have different signatures; for example, the signature of a hovering helicopter is not the same as that of a fixed-wing aircraft. Factors that affect target signatures are visibility, temperature, and weather conditions.

3-16. Wheeled or tracked vehicle signatures are most likely to be detected in open areas and rolling terrain. Threat antitank positions visually cover primary avenues of approach where tanks and armored personnel carriers (APC) are likely to be used (IAW FM 3-20.98). Helicopters are most likely on the backside of wood lines, ridgelines, and significant folds in the terrain. Sight, hearing, and smell can all assist in detecting signatures that will lead to target location and identification. Examples of target signatures are—

- Soldier signatures.
 - Foxholes.
 - Broken vegetation.
 - Footprints (weather conditions permitting).
 - New and old fires.
 - Trash.
 - Small-arms weapons noise and flash.
 - Sounds (voices, equipment noises).
 - Dismounted movement (visual or audible).
- Tracked vehicle signatures.
 - Vehicle tracks on the ground (weather conditions permitting).
 - Hot spots from road wheels, engine compartments, tracks, or weapon barrels (if using thermal sights).
 - Engine noise.
 - Exhaust plume and smoke.
 - Dust clouds from movement.
 - Disturbed areas of vegetation.
 - Weapon's firings report and smoke from weapon.
 - A bright flash at night.
 - Open hatch silhouettes.
- Antitank signatures.
 - Sharp crack of the ATGM being fired.
 - Missile launch "swish" sound.
 - Fast traveling hot spot with a vapor trail (during thermal operations).
 - Long, thin wires from fired ATGMs.
 - Destroyed armored vehicles.
- Artillery signatures.
 - Loud, dull sound.
 - Grayish-white smoke cloud.
 - Bright orange flash and black smoke from airbursts.
 - Rushing noise several seconds before round impacts.

- Self-propelled artillery has the same thermal infrared signatures as tracked vehicles.
- Towed artillery signatures vary according to the towing vehicle.
- Aircraft signatures.
 - Glare of the sun reflecting off aircraft canopies, wings, fuselages of fixed-wing aircraft, windows, and rotor blades of helicopters.
 - Aircraft engine noise.
 - Vapor trails from engine exhaust and fired missiles.
 - Dust and movement of foliage from hovering helicopters.
- Obstacles and mine signatures.
 - Loose or disturbed dirt in a regular pattern.
 - A destroyed or disabled vehicle that appears to have struck a mine.

DETECTION CHALLENGES

3-17. Some targets are more difficult to detect than others. Soldiers must be well trained to detect and locate targets. Some examples of these more difficult targets and challenges are—

- Peripheral targets (targets on the edge of the field of view).
- Targets that are camouflaged or in shadows.
- Targets that can be heard but not seen.
- Targets under less than ideal indirect fire illumination. If the illumination is in front of the target, the resulting shadow will be darker than the target. If the illumination is behind the target (and not in position to “wash out” the crew’s optics), the target should stand out distinctly from the background. Soldiers should always keep one eye closed during illumination search, and never look directly into the illumination source.
- Mirage effects caused by high temperatures and heat waves near the ground.
- Small single targets such as lone rifle infantry ATGM or rocket-propelled grenade (RPG) positions.
- Natural and manmade obstacles.
- Behavioral or physical deficiencies of the observer (fatigue and eye reaction to gun flashes).

3-18. **Thermal Sight.** The enemy usually makes the most of darkness to move their forces, dig in, or continue the attack. During the day, the enemy uses every means possible to cover their intentions. Some camouflaged targets are difficult to acquire with the day optics, but can be detected with a thermal sight. The crew can use the thermal sight, when so equipped, to acquire targets during limited and good visibility. Thermal sights operate on the principle of sensing heat radiation or temperature differences. This heat is displayed as an electronic image.

3-19. The following thermal signatures can be detected using the thermal sight:

- **Solar Heat.** Objects absorb heat from the sun at different rates depending on the material. The amount of heat absorbed by an object determines the duration the object can be seen using the thermal sight. Target signatures vary if heated only by solar heat. As the sun begins to set, the gunner must notice how the object forms changes.
- **Fuel Combustion.** Heat is created by the burning of fuel. Most vehicles create one or more images. Vehicles have a plume of heat from the exhaust and another around the engine compartment. Location of the engine and the direction of the exhaust differ between vehicles. The strength of the signature produced from the engine being used varies with the duration of use and engine location.
- **Friction.** Moving parts of a vehicle cause friction, and friction creates heat. The areas that appear as images in the sight include tracks, road wheels, drive sprockets, and support rollers. Vehicles being driven through mud or snow do not create as sharp an image. Vehicle track shrouding materials can hide the signature of the road wheels and the track shoes. The longer a vehicle is operated, the more intense the image is of the heated area. A vehicle looks much different after a 12-km road march than it does in a defensive position.
- **Thermal Reflections.** Glossy, smooth surfaces, such as the windshield of a vehicle, can reflect radiated heat.

- **Body Heat.** Microorganisms in the human body produce heat, making humans warm-blooded. This heat is visible by thermals.

3-20. **Thermal Advantage.** Use of thermal imaging systems provides Cavalry forces with a definite advantage over the enemy to conduct night operations. Night operations can be an advantage if crews can maneuver and engage targets using a thermal sighting system. During day operations, crews may use thermal sights to increase their ability to detect targets behind foliage or in shadows.

Target Location

3-21. Target location is the determination of where a target is on the battlefield. Locating a target occurs as a result of observation and detection during crew search.

TARGET DIRECTION TECHNIQUE

3-22. Once a target is located, the target location must be communicated to all personnel. Methods used to announce a located target depend on the individual's specific position, unit SOP, and time available. The six most common target location methods are: clock, sector, traverse, reference point, grid, and target designate (M3A3 crews only).

3-23. **Clock Method.** The clock method is commonly used to locate the target for the vehicle commander or gunner. Twelve o'clock is based on the direction of vehicle movement while traveling or hull orientation (front of vehicle) when stationary (example: "BMP, NINE O'CLOCK"). On the CFV, the vehicle commander or gunner can use the turret position indicator to assist in accurately announcing target location.

3-24. **Sector Method.** The sector method is similar to the clock method; it is quick and easy to use. It is best used to indicate a direction from the direction of movement (moving) or hull orientation (stationary) using the terms center, left, right, and rear. Center sector is always to the front (example: "THREE TANKS, LEFT REAR.").

3-25. **Traverse Method.** The traverse method is also a relatively quick method, primarily used by another observer to locate the target for the gunner. It can be used on the CFV when the vehicle commander's handstation is inoperable to guide the gunner on target (example: "TRAVERSE LEFT, STEADY, ON.").

3-26. **Reference-Point Method.** The reference-point method is used mainly by the CFV in conjunction with the vehicle optics. The vehicle commander uses his binoculars to determine the mil value from a terrain feature, known position, or target reference point (TRP). He then announces the mil value to the gunner. The gunner uses the mil reticle relationship to traverse onto the target. The key to this location method is the vehicle commander's and gunner's knowledge of the mil sight relationship.

- The quick target reference point method is used by all personnel to identify targets near a TRP (example: "TWO PCs, TRP ONE FOUR.")
- The precise reference point method is used to locate targets accurately in relation to a known TRP (example: "ATGM, TRP ONE FOUR, RIGHT FIVE MILS.")

3-27. **Grid Method.** The grid method is the least desired technique because of the length of times it takes to guide the gunner on target. The vehicle commander receives the location of a target by map grid (usually from an observation post). The vehicle commander then uses his map to orient the turret to the target area for the gunner.

3-28. **Target-Designate Method.** The M3A3 commander uses the target-designate capability to lay the gunner on a target. When a target is located with the CIV, the commander squeezes the palm switch and presses the TARGET DESIGNATE button to move the gunner's IBAS line of sight within less than 1 degree of the target.

RANGE ESTIMATION

3-29. At times, because of the tactical situation, the vehicle commander or gunner must estimate range (Table 3-1). There are two methods that may be used to estimate range: the 100-meter unit-of-measure method and the flash-to-bang method. These methods are used to estimate range only. Proficiency in both methods requires constant practice.

3-30. **100-Meter Unit-of-Measure Method.** To use this method, the vehicle commander or gunner must be able to visualize a distance of 100 meters on the ground. For ranges up to 500 meters, he estimates the number of 100-meter increments between the two objects he wishes to measure. Beyond 500 meters, the vehicle commander or gunner must select a point halfway to the object(s), determine the number of 100-meter increments to the halfway point, and then double it to find the range to the object(s).

3-31. **Flash-to-Bang Method.** To use this method to determine range to an explosion or enemy fire, the vehicle commander or gunner begins to count when he sees the flash. He counts the seconds until he hears the weapon fire. This time interval may be measured with a stopwatch or by using a steady count (such as one-thousand-one, one-thousand-two...) for a three-second estimated count. If he must count higher than 10 seconds, he starts over with one. He multiplies the number of seconds by 350 meters to get the approximate range.

Table 3-1. Factors of Range Estimation.

FACTORS AFFECTING RANGE ESTIMATION	FACTORS CAUSING UNDERESTIMATION OF RANGE	FACTORS CAUSING OVERESTIMATION OF RANGE
The clearness of outline and details of the object.	When most of the object is visible and offers a clear outline.	When only a small part of the object can be seen or the object is small in relation to its surroundings.
Nature of terrain or position of the observer.	When looking across a depression that is mostly hidden from view. When looking downward from high ground. When looking down a straight, open road or along a railroad. When looking over uniform surfaces like water, snow, desert, or grain fields. In bright light or when the sun is shining from behind the observer.	When looking across a depression that is totally visible. When vision is confined, as in streets, draws, or forest trails. When looking from low ground toward high ground. In poor light, such as dawn and dusk; in rain, snow, fog; or when the sun is in the observer's eyes.
Light and atmosphere.	When the object is in sharp contrast with the background or is silhouetted because of its size, shape, or color. When seen in the clear air of high altitudes.	When object blends into the background or terrain.

RANGE DETERMINATION

3-32. Range determination significantly affects target engagement. Errors in range determination cause more first round misses than errors in deflection. Range errors that cause the first round to go over the target are particularly serious because observing and adjusting from that round is difficult.

3-33. The crew has the following methods, which can be used separately or in combination, available to them for range determination:

- Binoculars (using mil-relation formula).
- Reference materials (maps, digital maps [FBCB2], and range cards).
- ISU and ISU horizontal ranging stadia and reticle lead lines.
- Laser rangefinder (LRF) (AN/GVS-5) (if available).
- Eye-safe laser rangefinder (ELRF) (M3A2 ODS and M3A3 models).
- IBAS/CIV reticle and horizontal ranging stadia.
- CFV backup sight (auxiliary sight)
- LRAS3.

3-34. **Binoculars (Using Mil-Relation Formula).** To use this method, the crew member must know the width, height, and length of the target. He determines the known width, height, or length with the binoculars' mil scale, substitutes the mil relation, and computes the range (see Table 3-2). When measuring the frontal width, he measures only the vehicle's front slope (from left front corner to right front corner). When measuring flank

width, he measures the entire vehicle (Figure 3-9). Accuracy of this method depends on knowing the target dimensions and the vehicle commander's ability to make precise measurements with the binoculars.

Table 3-2. Mil Relation for Various Targets.

GROUP 1 (BMP, M TANK, BTR, ZSU, OT, MT-LB, and TAB)									
Target Width (mils)	5	4.5	4	3.5	3	2.5	2	1.5	1
Flank 6.75 meters	1400	1500	1700	1900	2300	2700	3400	4500	6800
Front 3.0 meters	600	700	800	900	1000	1200	1500	2000	3000
GROUP 2 (BMD and BRDM)									
Target Width (mils)	5	4.5	4	3.5	3	2.5	2	1.5	1
Flank 5.5 meters	1100	1200	1400	1600	1800	2200	2800	3700	5500
Front 2.35 meters	500	500	600	700	800	1000	1200	1600	2400
GROUP 3 (HIND-D HELICOPTER)									
Target Width (mils)	22.5	20	17.5	15	12.5	10	7.5	5	2.5
Flank 17.25 meters	800	900	1000	1200	1400	1700	2300	3500	6900
GROUP 4 (UNKNOWN TARGET)									
Target Width (mils)	5	4.5	4	3.5	3	2.5	2	1.5	1
Front 6.9 meters	1400	1500	1700	2000	2300	2800	3500	4600	6900
Note. This table is a quick reference for determining the range of threat vehicles at various ranges. The vehicles have been grouped and the sizes of the vehicles have been averaged. The ranges have been rounded-off to the nearest hundredth.									

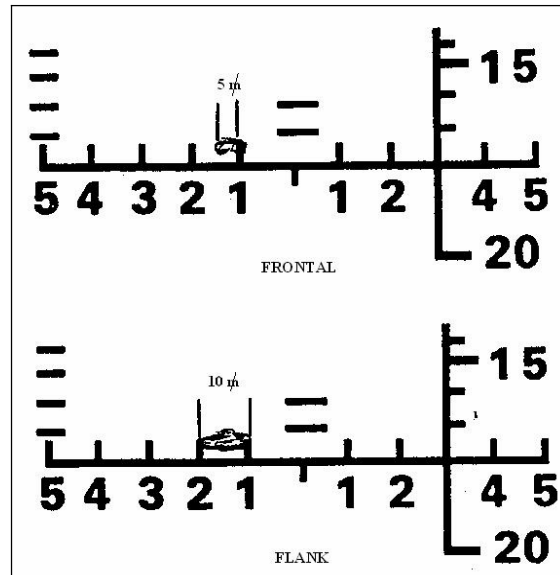


Figure 3-9. Target Measurement Using Binocular Reticle.

3-35. The mil is a unit of angular measurement equal to 1/6,400 of a circle. There are about 18 mils in 1 degree.

- One mil equals the width, height, or length of 1 meter at a range of 1,000 meters.
- This relationship remains constant as the angle or range changes. Standard Army measurements are completed and expressed in the metric system. Other units of measurement (yards, feet, or inches) may be

substituted to express the target size or range; however, all information must be expressed in the same unit of measure.

3-36. Since the relationship of the target width in mils (m) and meters (W) is constant at varying distances, accurate range determination is possible (Figure 3-10).

Example: The BMP is 6.75 meters long (W). Using binoculars, the commander determines that the BMP measures 5 mils in length.

$$\frac{W}{\text{m}} = R$$

Substitute the two known values for W and m :

$$\frac{W}{\text{m}} = \frac{6.75}{5} = 1.35$$

Since R is expressed in thousands of meters, multiply by 1,000; and round off to the nearest tenth, for example: $.35 = .4$; $.31 = .30$. $1.40 \times 1,000 = 1,400$ meters, the range to the BMP.

- The mil relation holds true whether the W factor is width, height, or length. Therefore, the range can be determined provided the target dimensions are known. Target height may be the most consistent measurement, because length and width are changing as targets move on the battlefield.
- To determine the range, the mil and W measurements must be known. This comes from reading the target measurement on the mil scale in the binoculars.
- The known target measurement (W) is then divided by the mil measurement. This equals the range factor (R). Multiply R by 1,000 to determine the target range.

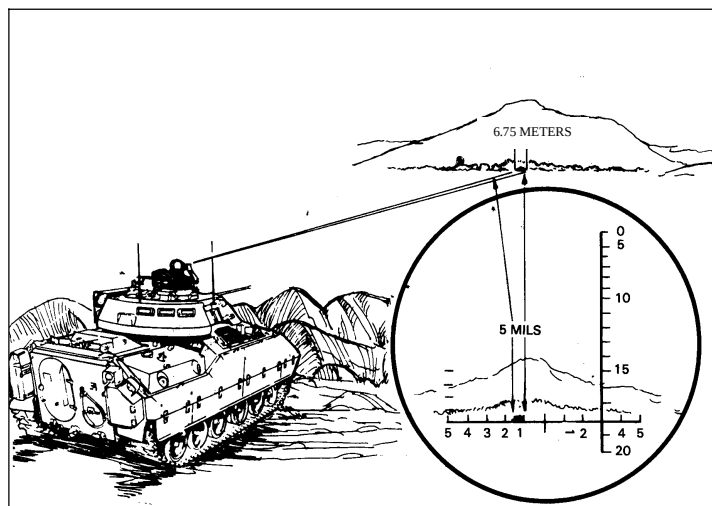


Figure 3-10. Range Determination Using Binoculars.

Note. The distance between tick marks on the horizontal scale is 10 mils.

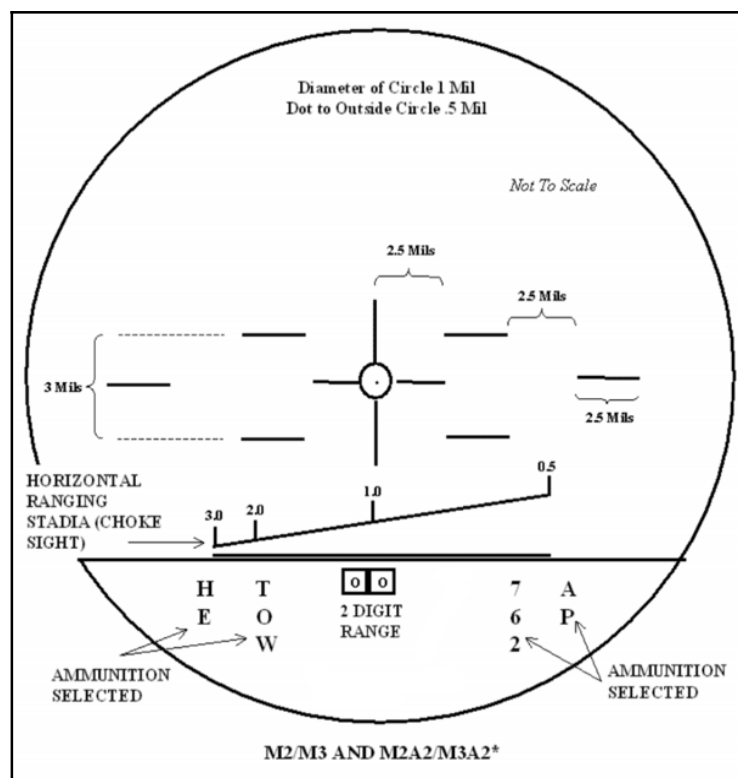
3-37. **Maps/Digital Maps.** The vehicle crew must have a map to navigate. They must constantly know where they are and where they are going. (The PLGR will not eliminate the need for maps.) The vehicle crew can also use the map to determine range. Besides computing distances on a traditional map, special features on the FBCB2 allow the crew to plot points on the digital map and find the distance between them. A map also allows them to determine the best battlecarry setting for the terrain and enemy situation and to adjust the battlecarry when the situation changes.

- Both in offense and defense, the vehicle crew must continually assess likely enemy locations, engagement areas, and engagement ranges. This information gives the vehicle crew the capability to determine range rapidly when contact is made.
- TRPs are used as both direct and indirect fire control measures. These are entered in the sector sketch for the vehicle commander to control his fires and ensure that his reports of enemy sightings are accurate. Since the range to each TRP is known, this will assist in range determination.

3-38. **Range Cards.** The primary use of the range card is to assist the crew in engaging targets during limited visibility. The vehicle commander may also use the range card to assist in determining range, since range data is recorded on the range card.

3-39. **Laser Rangefinder (LRF), AN/GVS-5.** Using the LRF, the crew member can quickly and accurately determine the range for the gunner. The AN/GVS-5 is organic to the scout platoon.

3-40. **Eye-Safe Laser Rangefinder (M3A2 ODS and M3A3).** The ELRF allows the commander or gunner to rapidly and accurately determine the target range. The four-digit range display is in 5-meter increments.



*Reticles do not show the air defense reticle (ADR) for M2A2/M3A2.

Figure 3-11. 25-mm Sight Reticle.

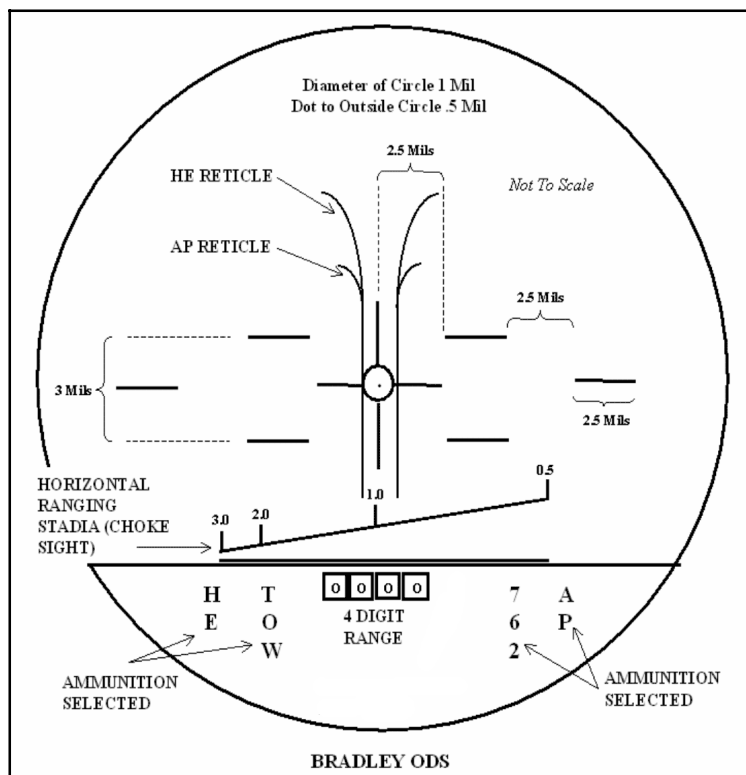


Figure 3-11 (cont).

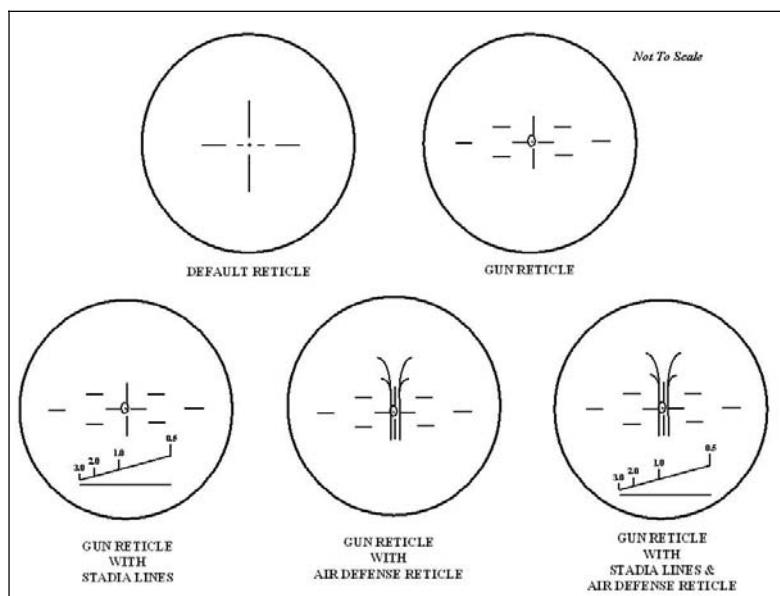


Figure 3-12. M3A3 Reticle Selection.

3-41. **ISU Horizontal Ranging Stadia (Choke Sight).** This range determination method should be used only when firing from a defensive position.

- The reticle within the ISU has a choke sight used to estimate the range to BMP-type targets. The choke sight is used for a 1.8-meter-high target. Since the hull of a BMP is a standard hull that is used on various vehicles

throughout the world, the ranging stadia can be used for accurately ranging to these different vehicles (Figure 3-13).

- To use the choke sight, the gunner moves the turret until the ranging stadia line appear to touch the vehicle in the following manner:
 - Align the horizontal line to the bottom (track) of the target vehicle.
 - Move the turret horizontally along the target until the top of the hull appears to touch the stadia line. The range is read from the stadia line at the point where the top of the hull touches. If this point is between the tick marks, estimation must be made, and the range is then indexed into the ISU. Then, the gunner or commander should relay the reticle on the target.
- The choke sight can be used to range to targets in turret-down positions. A technique in ranging to a hull down target is to choke the target. The gunner aligns the bottom horizontal line to the bottom of the target and aligns the stadia line until the top of the target appears to touch the lines (Figure 3-14). The gunner reads this range and divides that number in half. This technique is less accurate than ranging a fully exposed target.

Note. Choke only the hull, not the whole vehicle. Do not choke weapons or lights mounted on top of the turret.

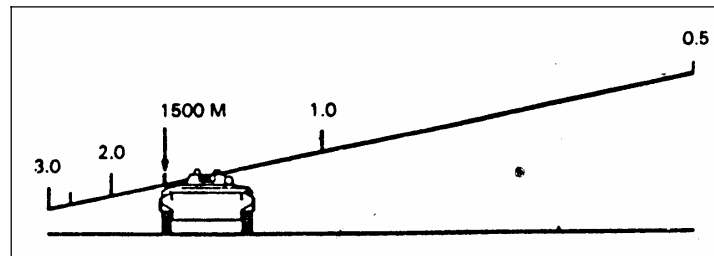


Figure 3-13. Choke the Hull.

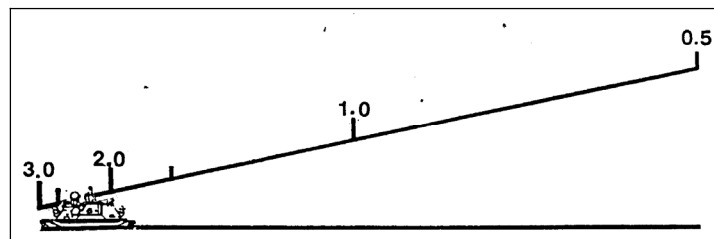


Figure 3-14. Choking a Hull-Down Vehicle.

3-42. ISU Reticle Lead Line and Mil Relation. Lead lines of the reticle can be used to determine the range to a target, since each lead line is 2.5 mils from the center of the reticle. The width of the vehicle, either the front or flank, is used to determine the range. Use of this technique requires the target to be classified as either a frontal or a flank view (Figure 3-15). This is accomplished by comparing the appearance of the front and side of the vehicle. Figure 3-16 illustrates the relative amount of front and side that can be seen as a BMP rotates from a full front view (0 degrees) to a full flank view (90 degrees).

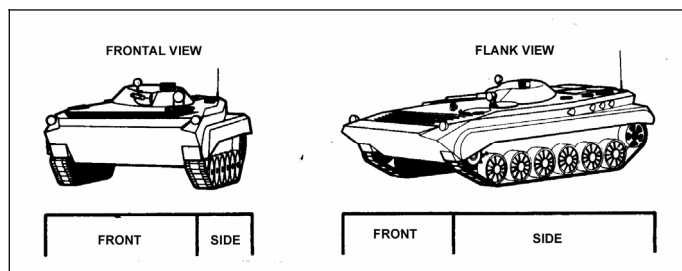


Figure 3-15. Frontal and Flank Views of a BMP.

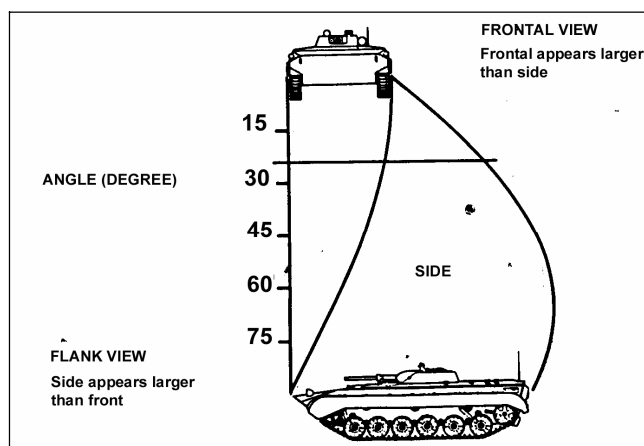


Figure 3-16. Full Frontal and Full Flank Views of a BMP.

- Accurate measurement of vehicle width in mils is required when determining range with the 25-mm gun reticle. The CFV reticle provides greater magnification and smaller graduated markings on the reticle. The gunner can use the 25-mm gun reticle for range determination by using the reference markings, which measure 2, 2.5, 3, and 5 mils. (**Note.** No zoom applies for the M2A3 gun reticle.)
- Determining the critical target range is based on the size of the target. Size of the target is estimated using the mil-relation formula (see page 3-12 for a discussion of how to determine the mil relation).
- When firing APDS-T, 1,400 meters is the maximum range for an index setting of 12.
- The recommended maximum engagement range for APDS-T is 2,000 meters.
- Maximum engagement range determination for the TOW is critical. Another vehicle can provide the range or the 25-mm or coax reticle can be used. Using the 25-mm reticle, the sight picture for TOW when the target is at the maximum engagement range (3,750 meters) is as shown in Figure 3-17.

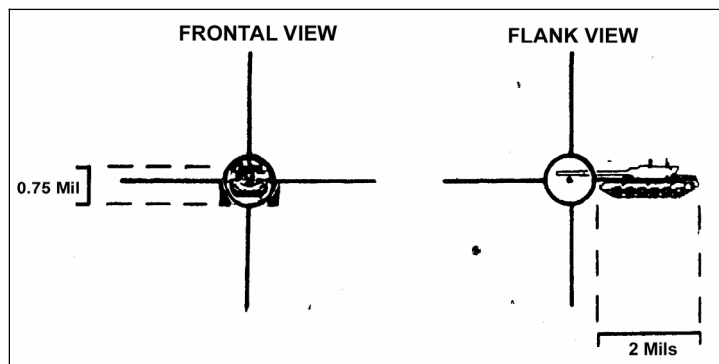


Figure 3-17. Determine TOW Maximum Engagement Range.

Note. On ODS vehicles, the ELRF cannot be used with the TOW selected. If the ELRF must be used to determine range to the TOW target, the crew uses the ELRF with 25-mm or 7.62-mm selected. After determining the range, the crew selects the TOW.

3-43. M3A3 IBAS/CIV Reticle and Horizontal Ranging Stadia. The M3A3 IBAS reticle and CIV reticle have the capability to select the default reticle, gun reticle, air defense reticle, and horizontal ranging stadia through the CTD (see Figure 3-12, page 3-14).

- To estimate the range to a BMP-type target with the M3A3 horizontal ranging stadia, refer to horizontal ranging stadia on page 3-15.
- To estimate the range to a BMP-type target with the aid of the M3A3 gun reticle, refer to reticle lead line and mil relation on page 3-15.

Note. The gun reticle, air defense reticle, and horizontal ranging stadia only display in high magnification of the Day TV and FLIR for both IBAS and CIV. The DVO sight will display the selected reticle in both high and low magnification (IBAS only).

- The M3A3 default reticle lead lines can be used to determine the range to a target by using the same technique discussed on page 3-15. The gunner or commander can use the default reticle for range determination by using the reference markings (see Figure 3-18). These reference marks measure 1.2, 1.3, 2.5, and 5 mils (see Figure 3-19). Reference marks 13.72 and 12.38 are not used for this technique.

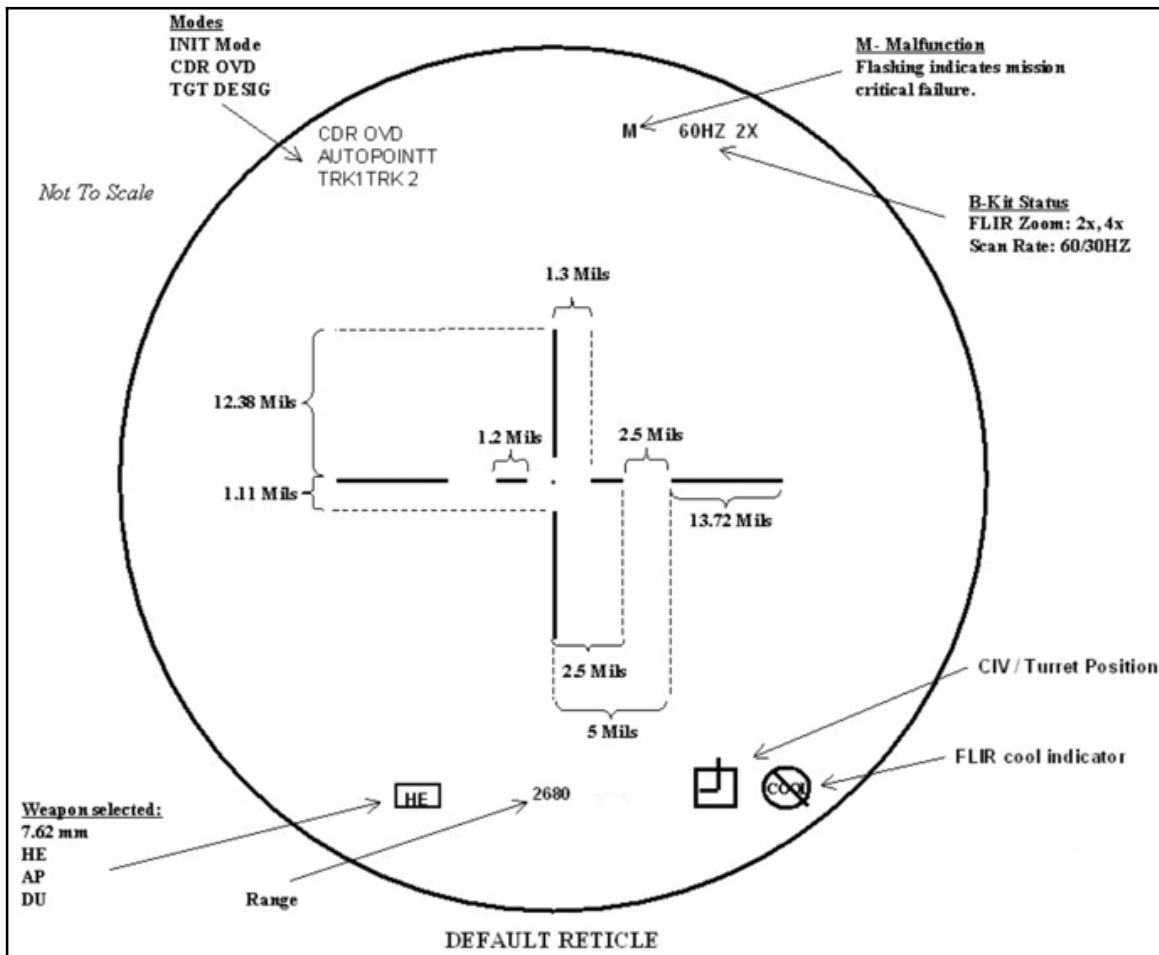


Figure 3-18. M3A3 Default Reticle Lead Line and Mil Relation.

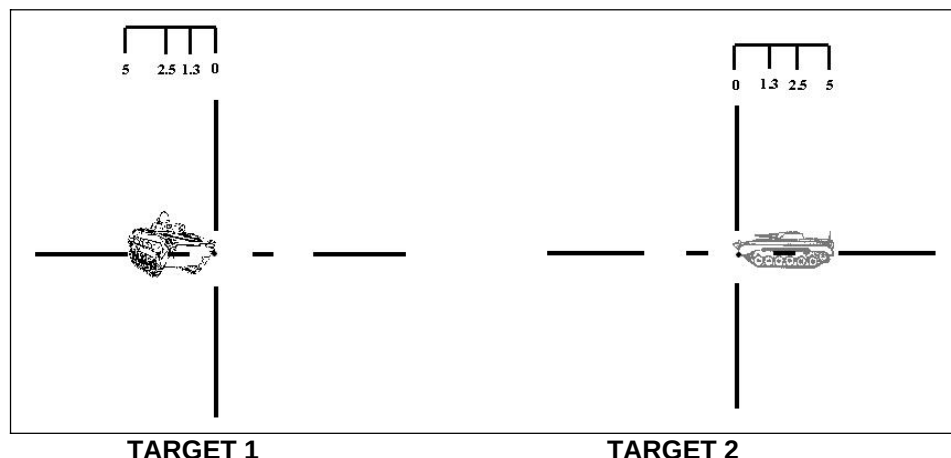


Figure 3-19. Determine Ranges for a BMP at Target 1 (1,400 meters) and Target 2 (1,800 meters).

Note. For a quick reference to determine range of threat vehicles, refer to Table 3-2 (mil relation for various targets) on page 3-11.

- To determine maximum engagement range for the TOW using the M3A3 gun reticle, refer to Figure 3-17, page 3-16. Using the M3A3 default reticle, the sight picture for TOW when the target is at the maximum engagement range (3,750 meters) is shown in Figure 3-20.

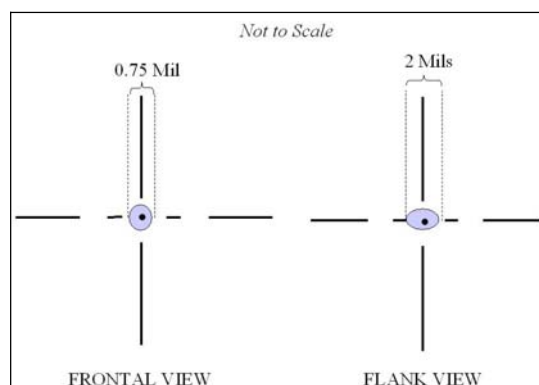


Figure 3-20. Determine TOW Maximum Engagement Range for an M3A3 Default Reticle.

Note. On M3A3 vehicles, the ELRF can be used with the TOW selected.

3-44. Backup Sight (Auxiliary Sight). The backup sight, known as the auxiliary (or aux) sight, is used when the ISU/IBAS is not operational or turret power has failed. The auxiliary sight has stadia lines for range determination and application of the correct superelevation based on range. There are stadia lines for APDS-T and HEI-T ammunition. This system is used to determine the range and to engage the frontal or flank view of a BMP.

- The auxiliary sight has two range scales. The HE scale is on the left side of the reticle and is represented by broken lines that extend to 3,200 meters. The AP scale is on the right side represented by a solid line that extends to 3,400 meters (see Figures 3-21 and 3-22). The numbers 4 and 6 represent 400 meters and 600 meters, respectively. The HE range scale continues to 32 (not shown in figure).

- The range to a flank target is determined by elevating the gun until both the front and rear of the target appears to be touching the AP stadia lines, as shown in Figure 3-21. The range to a flank HE target is choked in the same manner, using the HE lines.
- To determine the range to a frontal target, the gunner uses the half stadia method of aligning the center vertical ranging lines with one side of the target and aligns the appropriate ammunition stadia line on either side of the target (see Figure 3-22). When using the coax, the gunner uses the HE stadia lines.

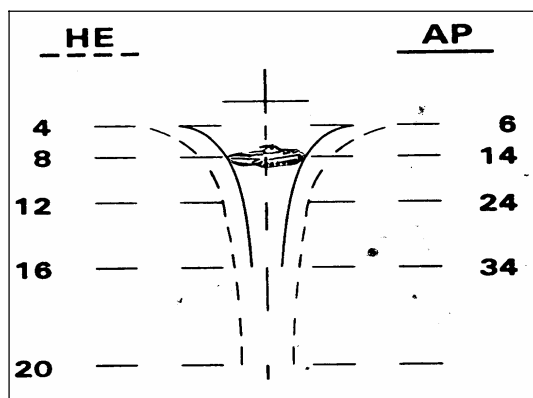


Figure 3-21. Determine Range to a Flank View of a BMP, 1,400 Meters.

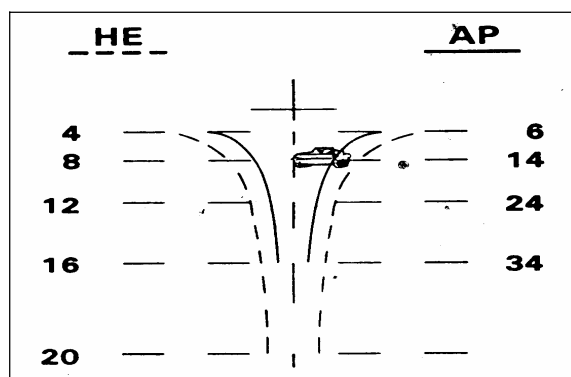


Figure 3-22. Determine Range to a Frontal View of a BMP, 1,400 Meters.

3-45. **LRAS3.** As with the CFV's reticle lead lines, the LRAS3 can use its NFOV reticle to determine ranges to targets using the mil-relation formula (page 3-11). Remember, the target's dimensions must be known to estimate the range (Table 3-2, page 3-11).

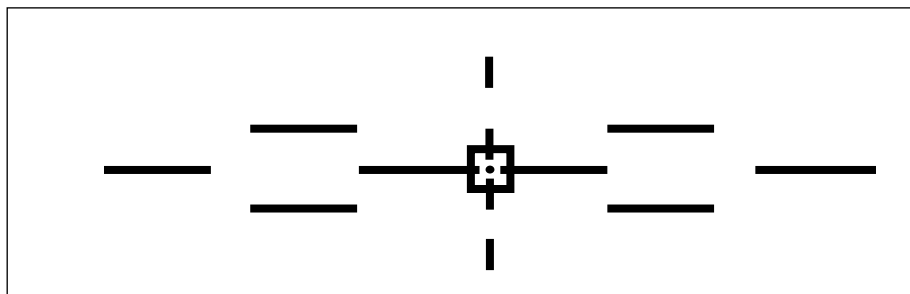


Figure 3-23. LRAS3 NFOV Reticle.

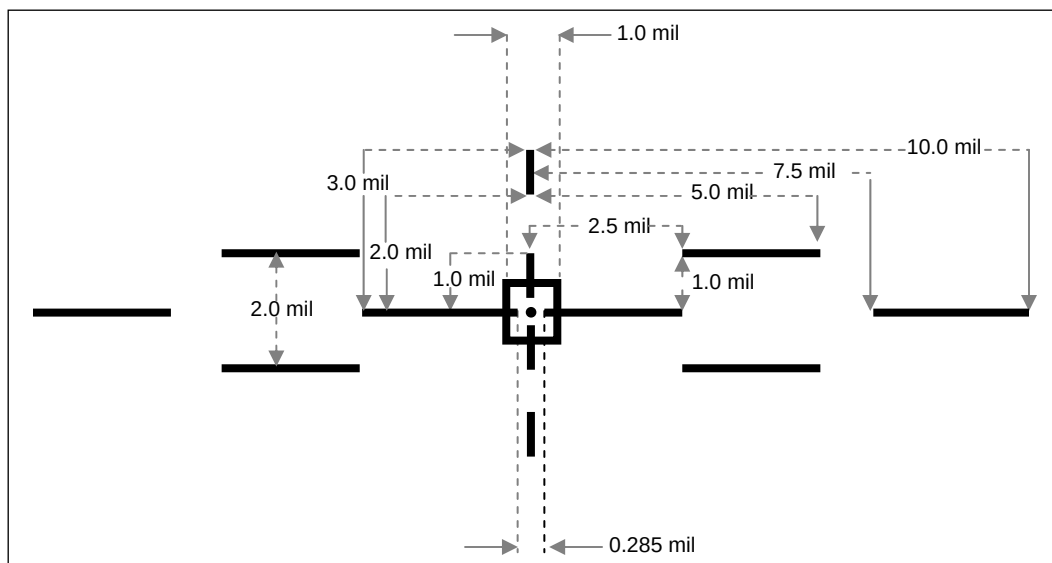


Figure 3-24. LRAS3 WFOV Reticle Indicators.

Target Identification

3-46. Target identification is the process of classifying a potential target by type, identifying it by nomenclature, and discriminating it as friend or foe.

CLASSIFICATION

3-47. Classification is the first step toward identification. It is the process of categorizing targets by types (truck, tank, and APC). Soldiers can quickly scan the target's key recognition features and then categorize it accordingly.

IDENTIFICATION

3-48. Once a target has been classified, it must be identified. Identification is the positive determination of a target by nomenclature or series (such as T-80, Scorpion series). Once the target has been classified, the crew observes key recognition features to positively identify the target. For example, the gunner classifies a target as a tank because of the low silhouette, large gun tube, and tracks. He then looks at the target from top down and notes that the turret is smooth and rounded, the gun tube's evacuator is at the end of the tube, and the suspension system has no support rollers. From his observations, he identifies the target as a T-55 tank. Thermal identification can be achieved through imagery.

Note. Situational awareness with METT-TC will support proper identification of friendly or threat targets.

DISCRIMINATION

3-49. Discrimination is the determination that a target is either friend or foe. Although Russian equipment has been sold in large numbers worldwide, soldiers could find themselves facing British, French, and American-made equipment. The following techniques are provided to assist crews in target discrimination.

3-50. **Combat Identification Panel (CIP).** CIPs (battle boards) allow a soldier looking through a thermal sight to identify a friendly vehicle up to 4,000 meters away. CIPs are bolted onto combat vehicles and provide a "cold" image on a "hot" background.

3-51. **Unit Markings.** Unit markings are set in the unit SOP. Only imagination and resources limit unit markings. They must distinctly identify a vehicle as friendly, and soldiers must be well trained to identify those markings. There are several items that units can use to mark vehicles.

- VS-17 panels provide a bright recognition feature that allows crews to identify friendly vehicles through the daylight.
- Chemical lights provide a means of marking vehicles at night. However, chemical lights are not visible through a thermal sight.
- Unit symbols may also be used to mark friendly vehicles. An inverted V, for example, painted on the flanks, rear, and fronts of a vehicle, aid in identifying a target as friendly.

ACQUISITION REPORTS

3-52. Targets acquired by a crew or dismount team member are immediately reported to the vehicle commander by an acquisition report. This target handover technique must take place before the determination step of the engagement decision. An acquisition report consists of three elements: alert (optional), description, and location (for example: "DRIVER REPORT, TWO MOVING PCs, LEFT FLANK.>"). The acquisition report is given between soldiers in the rear, who can identify each other by voice. Also, the description element of the report usually serves as the alert element (example: "TWO MOVING PCs, ELEVEN O'CLOCK.>").

Note. The word "TARGET" is not used as the description element.

SECTION II - ENGAGEMENT DECISION

3-53. Once the target has been identified, the decision is made to engage. The engagement decision process is a series of progressive and interdependent steps (or actions): determining threat levels, selecting weapon systems or ammunition, and making confirmation. The vehicle commander is ultimately responsible for the actions of his crew; however, when the commander is unavailable, cannot see the target, or when speed is needed, the responsibility of target identification and engagement is relinquished to the gunner.

Target Determination

3-54. There are three target threat levels to defeat multiple targets on the battlefield; the *most dangerous* targets must be engaged first. Commanders determine target threat levels based on threat analysis of the mission area. All soldiers must know the engagement priorities of their unit; however, the vehicle commander is responsible for determining the immediate target threat level based on the threat posture when time is available. When time is not available, however, the responsibility falls on the gunner.

TARGET THREAT LEVELS

3-55. The threat levels are *most dangerous*, *dangerous*, and *least dangerous*.

3-56. **Most Dangerous.** When the crew observes an enemy target with armor-defeating capabilities that appears to be preparing to engage them, the target threat level is most dangerous. This type of target is the greatest threat and must be engaged immediately.

3-57. **Dangerous.** When the crew observes an armor-defeating target that is not preparing to engage them, the target threat level is dangerous. This type of target must be engaged after all most dangerous targets have been destroyed.

3-58. **Least Dangerous.** When the crew observes a target that does not have an armor-defeating weapon system, the target threat level is least dangerous. This type of target is engaged after all most dangerous and dangerous targets have been destroyed, unless it has a high priority of engagement (command and control vehicles).

DETERMINING FACTORS

3-59. When multiple targets of the same threat level are encountered, the targets must be prioritized according to the threat they represent. The determining factors used to prioritize these targets are:

- Engage close-range targets before engaging long-range targets.
- Engage stationary targets before engaging moving targets.
- Engage frontal targets before engaging flank or rear targets.

Weapon/Ammunition Selection

Note. Weapon/ammunition selection is only applicable on the CFV and for the RV dismount teams. When operating on the HMMWV or RV, there is only one weapon system.

3-60. Weapon/ammunition selection is the logical selection of a weapon or ammunition that is appropriate for a given target. In selecting weapon and ammunition type to utilize against targets, the crew must determine the threat type and range (see Table 3-3.).

Table 3-3. Weapon for Threat.

THREAT TYPE (for CFV and dismount crew weapons)	CFV WEAPONS	RANGE (METERS)	DISMOUNT CREW WEAPONS	RANGE (METERS)
Armored vehicle	Basic TOW All other TOWs	65 to 3,000 ¹ 65 to 3,750	AT4 Javelin	10 to 300 65 to 2,000
Light-armored vehicle	AP Basic TOW All other TOWs	² 0 to 2,000 65 to 3,000 ¹ 65 to 3,750	AT4 Javelin	10 to 300 65 to 2,000
Unarmored vehicle	Coax HE	0 to 900 300 to 3,000	M240B AT4 M203 (Point Target) M16A2 (Point Target) M18A1 Mine	0 to 900 0 to 300 31 to 150 0 to 550 0 to 150
Reinforced position	HE Basic TOW All other TOWs Coax AP	300 to 3,000 65 to 3,000 ¹ 65 to 3,750 0 to 900 0 to 1,800	AT4 Javelin M203 (Point Target) M240B (Point Target) M16A2 (Point Target) Hand Grenade	10 to 300 65 to 2,000 31 to 150 0 to 600 0 to 550 0 to 10
Troops	Coax HE	0 to 900 300 to 3,000	M240B (Point Target) M240B (Point Target) M16A2 (Moving Man) M16A2 (Stationary Man) M203 (Point Target) M203 (Area Target) M18A1 Mine Hand Grenade	0 to 600 0 to 600 0 to 200 0 to 200 0 to 150 31 to 350 0 to 100 5 to 35
Aerial	AP HE Basic TOW All other TOWs	1,200 to 2,000 0 to 1,200 2,000 to 3,000 2,000 to 3,750	M240B M16A2 (Burst)	SAAD SAAD

¹ The minimum arming distance for the TOW 2B is 110 meters; maximum is 200 meters.
² Planning effective range for APDS-T is 2,000 meters. APFSDS-T ranges are greater.

Target Confirmation

3-61. Target confirmation is the rapid verification of the initial identification and discrimination of the target. Confirmation takes place after the fire command, but before the execution element and simultaneously as the gunner is completing his initial lay. Gunners also go through a confirmation step. As the gunner makes his final, precise lay, he ensures that the target is hostile before announcing “IDENTIFIED.”

3-62. The vehicle commander and/or gunner completes his evaluation on the nature of the target based on the target’s identification and the tactical situation.

3-63. If the gunner confirms that the target is hostile, he completes his final lay and engages the target on order. If the gunner determines that the target is friendly or neutral, he announces his confirmation to the vehicle commander (“FRIENDLY” or “NEUTRAL”). If he cannot determine the nature of the target, he announces “UNKNOWN.” The vehicle commander then determines whether to continue or terminate the engagement.

3-64. The vehicle commander must be informed of the tactical situation to assist in target confirmation (through battlefield situation awareness from subordinates and higher elements). The M3A2 ODS Applique’s, M3A3’s, and Stryker RV’s SLD provide battlefield awareness for the crew.

SECTION III - ENGAGEMENT EXECUTION

3-65. The weapons systems on the CFV, RV, and HMMWV are used to engage and destroy targets using direct precision and area fire. In order for crews to take advantage of the various vehicles’ weapons systems to quickly lay, engage, and destroy threat targets, crews must be proficient in the methods and techniques of engagement execution.

Methods of Engagement

3-66. Once a target is acquired and discriminated, the vehicle commander must determine which method to use to engage the target. There are two methods of engagement for 25mm and coax—battlesight and precision gunnery. Each method has its own fire command (see Section IV). M3A2, M3A2 ODS, and M3A3 crews use the ELRF to determine range and give a precision fire command. The commander selects the method of engagement based on his estimation of the situation.

Note. Because range selection and ammunition choices for the CFV TOW system and the HMMWV- or RV-mounted crews are not required, battlesight and precision methods of engagement do not apply.

BATTLESIGHT METHOD

3-67. For the CFV crew without an ELRF or with an ELRF failure, the battlesight method is the fastest method of engaging a target because it uses preselected ammunition and range settings. This pre-indexed information is the battlecarry and allows the gunner or commander to aim and shoot to kill targets. Normally, the battlesight method is used during offensive operations.

3-68. **Battlecarry Selection.** During fire planning, several factors must be considered in selecting battlecarry. Ammunition is selected for the most frequently expected enemy target. Next, expected engagement distances are determined and a range setting is selected for engagements at those ranges.

3-69. **Battlecarry Options.** The commander has two options for selecting a battlecarry: ballistic and extended. All are based on target height, ammunition characteristics, capabilities available, and expected engagement range bands.

3-70. **Ballistic battlecarry.** The ballistic battlecarry option is based on the ballistic capabilities of each type of ammunition on the CFV. The commander uses the ballistic firing tables (FT 25-A-2) to obtain the necessary ammunition information. As stated, the anticipated target is selected. This gives the commander the exact height of the target. The gunner aims at half the height of the target, regardless of the target’s motion. The

commander must choose a range that will prevent the highest path of the selected ammunition from passing over the target.

Example: The expected target is a BMP 2, so the desired ammunition is M791. The height of the target is 2.45 meters; dividing the target in half equals 1.225 meters. The commander locates the maximum ordinate column in the firing table (FT 25-A-2). (Maximum ordinate is the highest measurement the round will travel above the line of sight.) Checking the maximum ordinate column, the commander sees that 1.1 is the largest number without exceeding 1.2. Reading right, or left, to the range column, he sees 1,200 is the corresponding range for a maximum ordinate of 1.1. The commander instructs the gunner to index 1,200 and select AP for the battlecarry. When the target is engaged between 0 and 1,400 meters, there is a high probability of a first round hit (Table 3-4).

3-71. **Extended battlecarry.** This technique is used when expected targets must be engaged at or near the maximum effective range (tracer burnout) of the selected ammunition. (See Table 3-4 below and Chapter 2, Table 2-8, page 2-18.)

Table 3-4. Ballistic and Extended Battlecarry.

Ammo	SUPERELEVATION (meters)							
	600	800	1,000	1,200	1,400	1,600	1,800	2,000
M919				0 to 1,400	1,062 to 1,613	1,340 to 1,787	1,589 to 1,965	1,820 to 1,146
M791				0 to 1,400	1,118 to 1,602	1,354 to 1,771	1,620 to 1,948	1,868 to 2,141
M792		0 to 945	842 to 1,101	1,102 to 1,277	1,344 to 1,450	1,554 to 1,648	1,766 to 1,831	1,978 to 2,021
Coax	0 to 900							
	BALLISTIC BATTLESIGHT					EXTENDED BATTLESIGHT		

Note. CFVs with an ELRF should keep a battlecarry selected during ELRF engagements.

PRECISION METHOD

3-72. Precision gunnery is the most accurate method of engagement. The precision method requires both ammunition selection and range determination at the time of engagement. The commander uses the precision method when—

- Time is available to determine precise range (defense).
- Range to the target is already known.
- The target appears to be outside the battlesight range band for the type of ammunition needed to destroy it.
- The engagement requires a change in selected ammunition or range.

3-73. The precision method is the usual method of engagement for HEI-T and coax, due to the limited ballistic battlecarry range of HEI-T and the high trajectory of coax.

3-74. Range determination is the key to the precision method. Though the techniques for determining range vary widely in their preciseness, the precision method is defined by the decision to determine and index range, not by the accuracy of the determination. The techniques for range determination are discussed in Section I.

MULTIPLE TARGETS

3-75. When engaging multiple targets in different range bands, the commander may choose the precision or battlesight method of engagement, adjusting the method to match battlesight in the offense and precision in the defense. The commander balances the speed and accuracy requirements when selecting the engagement method.

Engagement Techniques (Weapon/Ammunition)

3-76. The cavalry crew's goal is to engage and destroy or suppress targets as fast as possible. This section discusses the various techniques and terms used for direct fire and effective adjustments of fire. It discusses techniques for 25-mm point- and area-target engagements, coax machine gun engagements, TOW missile engagements (both CFV- and HMMWV-mounted), M2 caliber .50 engagements, MK-19 engagements, and smoke employment. Basic engagement procedures used for all engagements are—

- On the CFV, the commander may be required to lay the gun for direction if the gunner's scan is away from the target. The commander will release control to the gunner (target handoff) and issue the fire command. For the M3A3 crew, the commander can use the target designate capability to lay the gunner on the target.
- Once the target is acquired, the gunner discriminates the target (friendly, neutral, or unknown) (see OBSERVATIONS paragraph below). He announces "IDENTIFIED," centers the target in his field of view, and switches to high magnification (if available). Depending on the situation (range, visibility, and experience), the gunner may have to switch to high magnification before discriminating the target and announcing "IDENTIFIED."

Note. Range the target with the ELRF before announcing "IDENTIFIED" or "ON THE WAY" (M3A2 ODS and M3A3). This ensures that the gunner has lased the target or has the ability to announce the range readout from the ELRF.

- The vehicle commander then confirms the target, gives the execution command, observes the target, and provides corrections to the gunner or searches for other targets. (**Note.** On the HMMWV and RV platforms, the gunner can confirm the target and give the execution command.)
- If applicable, the gunner completes his switch checks by—
 - Lasing or manually selecting the announced range (if other than the battlecarry) (no range selected if using the auxiliary sight, HMMWV weapons, or RV weapons).
 - Selecting the ammunition/weapon (CFV only).
 - Arming the system or weapon.
 - Establishing the correct sight picture (depending on target type, ammunition, target, or vehicle motion).
 - Announcing "ON THE WAY" and firing.

OBSERVATIONS

3-77. An observation is an oral notation, made by the gunner or another observer, of where the round strikes in relation to the target. If the first round fails to hit the target, observations enable the firer to adjust subsequent rounds.

3-78. TARGET, LOST, OVER, SHORT, and DOUBTFUL are all observations announced by the commander or gunner (see Figure 3-25).

- **TARGET.** Any portion of the target is hit by direct fire.
- **LOST.** Neither the round nor its effects are observed in relation to the target.
- **OVER.** The round, tracer, or effects are observed above the target.
- **SHORT.** The round, tracer, or effects are between the firing vehicle and the target.
- **DOUBTFUL.** The round or its effects are seen to the left or right of the target, but appear to be at the correct range. With the observation of "DOUBTFUL," range correction may not be required, but a deflection shift is necessary. When "DOUBTFUL" is used, it is announced as "DOUBTFUL LEFT" or "DOUBTFUL RIGHT."

3-79. The gunner is responsible for observations and adjustments. He should announce every observation and adjustment as he makes it, a skill requiring constant practice to obtain and maintain. This tells the vehicle commander that the gunner has control of the engagement and does not require a subsequent fire command. The vehicle commander is then free to acquire additional targets, control the driver, navigate, or communicate

with other leaders. If the gunner fails to observe the strike of the sensing round (reports a lost or doubtful observation), then any crew member who observed the rounds should report to the gunner.

Note. In accordance with the SOP (gunner), the gunner may announce both observation and adjustments or simply announce adjustments.

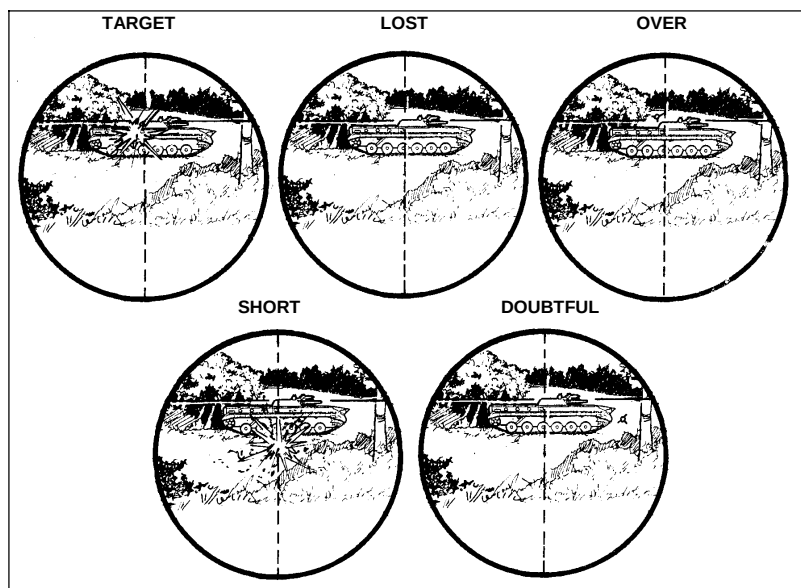


Figure 3-25. Target Observations.

3-80. **Target Lead—CFV-Specific.** When engaging a moving target, the gunner must lead (aim in front of) the target to compensate for the movement. The amount of lead depends on the velocity of the ammunition, target speed, and target angle, but a standard lead is used to begin the engagement.

3-81. When using AP ammunition, the gunner uses a 5-mil lead from the center mass of the target. This is called the “gap lead” because the target is centered in the gap of the gun reticle. Figure 3-26 shows a BMP given a gap lead (note that the lead lines are 2.5 mils in length with exception to the lead lines around the 1 mil circle, those are 2 mils in length).

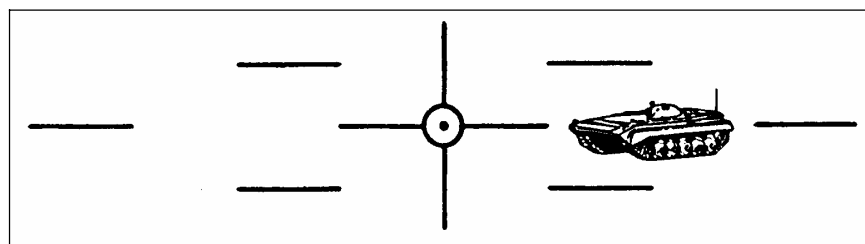


Figure 3-26. Gap Lead Applied to a Moving BMP.

3-82. When using HEI-T and 7.62-mm ammunition, the gunner uses far lead, because the farthest lead line of the ISU is centered on the target. Figure 3-27 depicts a far lead-truck engagement.

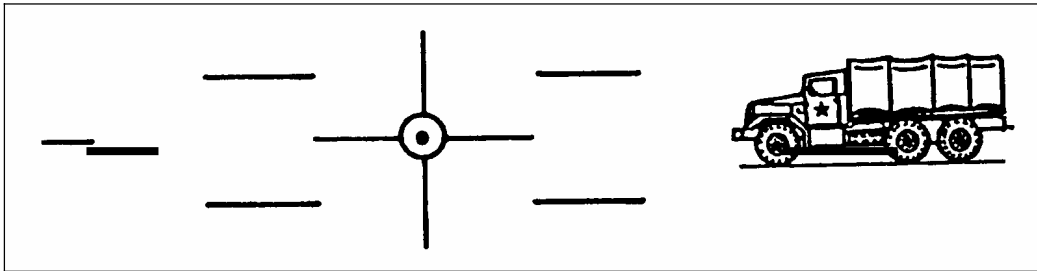


Figure 3-27. Far Lead Applied to a Moving Truck.

3-83. When engaging targets moving toward or away from the position, the gunner may need to make small vertical adjustments (see Figure 3-28). When the target is approaching, he aims at the center base of mass. When the target is moving away, he aims at the top center mass. This aim point must be carefully adjusted as the range changes.

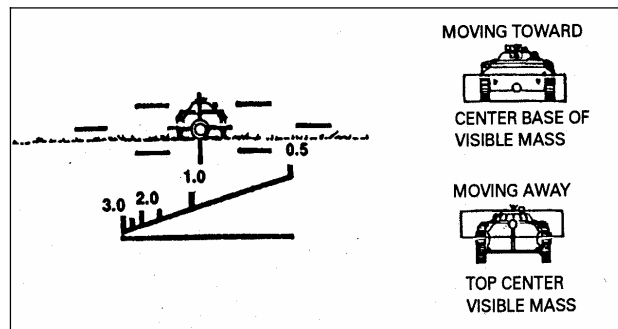


Figure 3-28. Target Moving Toward or Away From CFV Position.

3-84. When a moving CFV is firing over its flank (side) at a stationary target, the standard lead rule applies. The gunner leads the target in the *opposite* direction the CFV is traveling (see Figure 3-29).

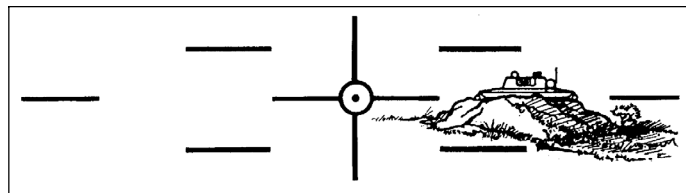


Figure 3-29. Gap Lead Applied to a Stationary BMP When a Moving CFV Fires Over Its Left Flank.

3-85. If the CFV and target are parallel and moving at the same speed and in the same direction, no lead is required. The lateral motion of both vehicles eliminates any lead requirement.

3-86. If the CFV and target are parallel but moving in the opposite direction, the initial lead must be doubled. (see Figure 3-30). This lead with HE ammunition may cause the gunner to run out of lead lines and require changing to AP ammunition for that specific situation.

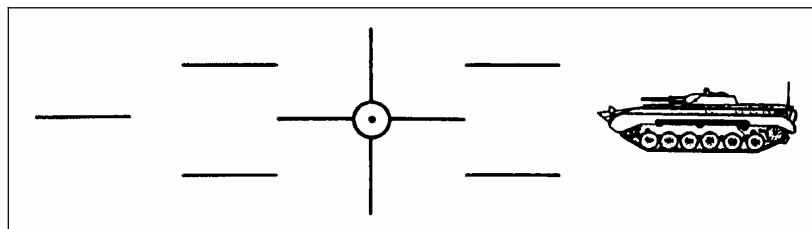


Figure 3-30. Far Lead Applied When a Target and a CFV are Parallel and Moving in Opposite Directions.

3-87. **Target Lead—RV- and HMMWV-Specific.** Engage moving targets using the burst on target (BOT) method of adjustment. The gunner fires the sensing burst, continuing to track the target and maintain the point of aim until he senses the rounds impacting. Once he has observed the strike of the sensing round, he makes his adjustment and fires a killing burst, maintaining his adjusted point of aim until the round impacts. He then continues to adjust and track the target until the target is destroyed.

3-88. When engaging a target that is moving in a lateral direction of the gun, the gunnery must lead (aim in front of) the target to compensate for the movement. The amount of lead depends on the velocity of the ammunition, target speed, and target angle. Applying the proper lead to a moving target will dramatically increase the chance of getting target effects with the first burst (see Figure 3-31).

- M2 HB and M60/M240B.
 - Lead slow or fast moving targets at less than 700 meters by one target form.
 - Lead fast moving targets at 700 meters or greater by two target forms.
- MK-19.
 - Lead slow moving targets less than 600 meters by one target form.
 - Lead slow moving targets at 600 meters or greater by two target forms.



Figure 3-31. Leading Moving Targets.

3-89. When engaging targets moving toward or away from the position, the gunner may need to make a small vertical adjustment. If the target is approaching, the gunner aims at the center base of visible mass. If the target is fleeing, the gunner aims at the top center of visible mass.

3-90. When a moving RV/HMMWV is firing over its flank (side) at a stationary target, lateral motion affects the projectiles as they leave the muzzle. This lateral motion must be compensated for, and the gunner must apply lead. When firing over the left side of the vehicle, the gunner must aim to the left of the target's center of mass. When firing over the right side of the vehicle, the gunner must aim to the right of the target's center of mass.

3-91. If the RV/HMMWV and the target are parallel and moving in the same direction, no lead is required. The lateral motion of the projectiles compensates for any lead requirements. If the RV/HMMWV and the target are parallel but moving in opposite directions, then target lead is required.

DIRECT-FIRE ADJUSTMENT

3-92. There are multiple techniques of direct-fire adjustment: burst on target, tracer on target, and techniques using measurements.

3-93. **Burst on Target.** Burst on target (the fastest adjustment method) moves the strike of the round impacting on the ground onto the target.

3-94. After the gunner has made his initial reticle lay on the target and fired, to apply BOT, he must—

- Concentrate on the target, noting the point on the sight or reticle where the round appears as it hits or misses the target.
- Announce his observation and BOT.
- Immediately adjust the reticle aiming point, based on his observation, to bring the next round or burst on target. He must adjust quickly and accurately. This makes additional adjustments or subsequent fire commands unnecessary.
- Announce “ON THE WAY,” and fire a burst.

3-95. The gunner continues to fire, adjusting each burst onto the center of mass until the target is destroyed or the vehicle commander orders “CEASE FIRE.”

3-96. When the gunner applies BOT, the vehicle commander or other crew member acts as an observer, observing the first round fired and subsequent burst of fire for deflection and range.

3-97. Accuracy of the BOT method of adjustment depends on the ability of the gunner to maintain correct sight pictures and make precise observations. To engage moving targets accurately using BOT, the gunner must track continuously—before, during, and after the engagement.

3-98. **Tracer on Target.** TOT is similar to BOT. As the name implies, the gunner or vehicle commander firing the weapon adjusts the strike of the rounds onto the target area based on the tracers.

3-99. **Adjustment Techniques.** The gunner and vehicle commander announce adjustments using the target form, mil change, or meter adjustment techniques.

- Target form is the simplest method of adjustment. One form is the visible height or width of the target. Range adjustments (up or down) refer to the height of the target; azimuth adjustments refer to the target’s width. Target form adjustment can be used with all weapon systems. The word “form” may be added after the announced change, or the change may stand alone if target form is the standard adjustment technique in the unit’s SOP. Form changes are always given in full- or half-form increments.
- The mil change technique is simple and accurate at all ranges in the CFV, but it requires the gunner to know the mil measurements of his reticle. Mil changes are given when using a nonballistic reticle in the ISU.
- The meter adjustment technique is used primarily with the CFV auxiliary sight, because the sight is marked in meters. The gunner must know how to read the ballistic reticles, AP and HE, in his sight. This technique can be used with the ISU, but converting meters to mils may cause confusion.

25-MM POINT TARGET ENGAGEMENTS

3-100. The 25-mm gun is primarily an offensive weapon. Types of point targets likely to be encountered on the battlefield are unarmored vehicles, lightly armored vehicles, bunkers, RPG teams, and helicopters. When firing 25-mm point-target engagements, the gunner fires a sensing round (two if the ammunition has changed). He announces his observation and adjusts rounds by BOT (see Figure 3-32). The gunner then fires a killing burst on the target. He continues firing bursts until the target is destroyed or the vehicle commander commands “CEASE FIRE.” **(Note. The M3A3 gunner does not fire a sensing round.)**

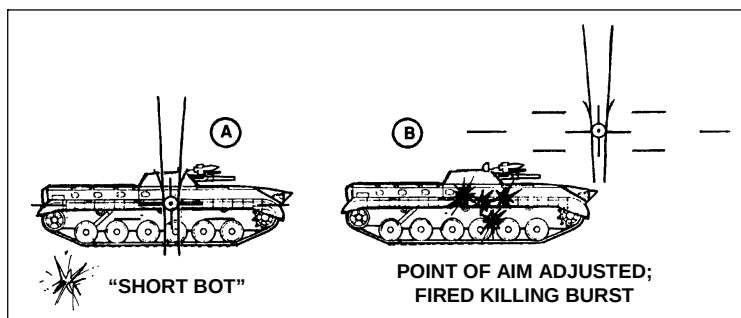


Figure 3-32. Burst on Target Against Point Target.

3-101. **25-mm Point-Target Engagement with M3A3 Fire Control System (FCS) and ELRF.** The crew will fire a three-round burst until the target is destroyed (no sensing rounds), unless using the auxiliary sight, or if the ELRF is not operational.

3-102. When the M3A3 is in degraded mode, such as during an ELRF failure, the crew must manually select the range and apply BOT and target lead. The gunner fires a sensing round with a three- to five-round burst on the target. When the system is degraded, the crew should select the gun reticle with more lead line for the BOT.

3-103. The FCS controls the weapons system of the M3A3. The FCS takes the target range from the LRF; wind speed, air pressure, and temperature data from the environmental parameters screen; and ammunition and gun type from the system control box (SCB) and computes the correct angles needed to hit the target. The fire control software (FCSW) provides the primary interface between the system and the CIV, IBAS, ballistic solution software (BSS), and turret drive system (TDS). It provides the crew with the ability to independently search, track, and hand-off targets for engagement. It provides for the crew to automatically track targets along with the ability to let the commander override the gunner.

3-104. **Kinematic Lead.** Based on the range and speed of the target, the M3A3 system will offset the line of fire relative to the IBAS line of sight, allowing the gunner to keep his reticle center of mass of the target (see Figure 3-33). Kinematic lead is not available when the 7.62-mm gun is selected.

3-105. No lead is required for the M3A3 crew when kinematic lead is used. To activate kinematic lead, the gunner—

- Determines the range to the target using the ELRF and applies the rate command using the gunner's handstation (GHS) or the commander's handstation (CHS).
- or
- Induces manual range with a palm switch depressed and applies the rate command using the GHS or the CHS.

Note. See TM 9-2350-294-10-2-1/-2 for information on kinematic lead.

3-106. For all 25-mm engagements, the crew must keep the reticle at center of mass of the target. BOT techniques apply if a target hit is not achieved. The gunner must release his palm switches to return to normal operation.

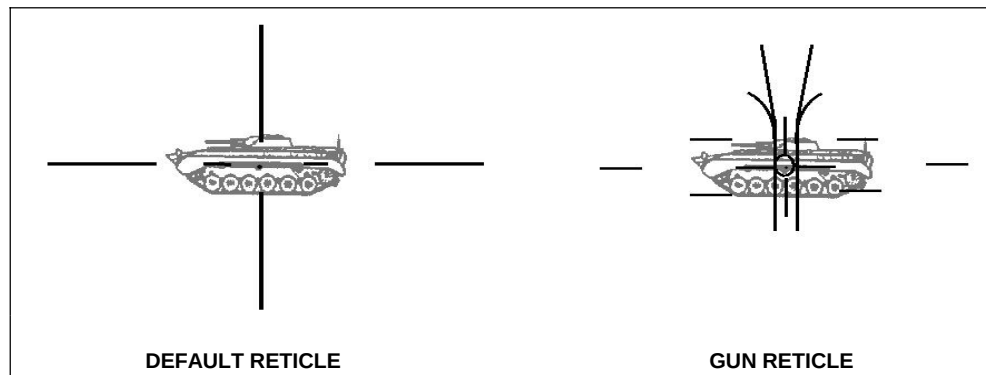


Figure 3-33. M3A3 Kinematic Lead.

25-MM AREA-TARGET ENGAGEMENTS

3-107. One of the scout's primary missions is suppression of enemy positions to enhance the unit's freedom of maneuver. The HEI-T ammunition, with its 5-meter bursting radius, supports this capability beyond coax range (900 meters), out to 3,000 meters.

3-108. Suppressive fire is direct fire used on known or likely target locations to degrade one or more of the enemy's basic combat functions of moving, shooting, observing, or communicating. Success is based on suppression (denying the enemy the terrain or observation) and the opportunity to engage. Suppressive fire is repeated as often as needed to keep the enemy from establishing a strong base of fire, or until the area is cleared of activity. Sustained suppression may require a section to alternate suppressive fire. This prevents one vehicle from using all its ammunition. Area targets may be terrain features, manmade objects, deployed soldiers, or a location defined by enemy fire. The specific enemy units and weapon systems may or may not be identifiable. Area targets include targets too large for a point-target engagement or targets that have considerable width and depth, requiring extensive traversing of the turret (for example, enemy positions in a tree line or troops on a hilltop dispersed over an area greater than 10 meters).

3-109. Accurate range estimation ensures the effectiveness of area fire. Beyond 2,000 meters (tracer burnout), the round's slow flight and high angle of fire require the gunner to check his sight picture by firing a sensing round. The gunner fires two rounds if the ammunition has changed, and he does not move the reticle until the round impacts. This verifies the correct range and aiming point for the specific engagement.

3-110. To engage an area target with HEI-T, use a suppression technique, such as the Z pattern (see Figure 3-34). Correct the range by indexing a different range or adjusting the reticle. The gunner lays the reticle on one edge of the target area and commences firing sweeping across the target area. Once he reaches the opposite edge, he fires a second burst diagonally across the target area to the other corner of the area. Finally, he fires a burst across the far depth of the target, covering the entire width. The number of rounds in a burst depends on the size of the target and degree of success (one round for every 10 to 25 meters). Developing and maintaining the ability to engage targets at extended ranges (1,800 to 3,000 meters) requires practice.

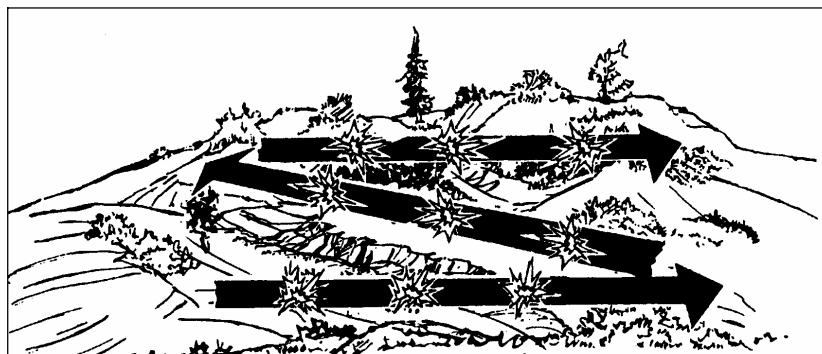


Figure 3-34. HE Against Area Target.

3-111. Additionally, the 25-mm using HEI-T can be used like the coax for designating area or point targets, for causing incendiary fires, or for reconnaissance by fire at ranges from 900 to 3,000 meters.

Note. The gunner must drop his palm control to cancel kinematic lead after lasing and before engaging the target.

COAX MACHINE GUN ENGAGEMENTS

3-112. The coax machine gun is primarily an offensive weapon. It should be used to destroy unarmored point targets, suppress area targets and troops, and conduct reconnaissance by fire. The technique for using coax suppressive fire is similar to that used with the 25-mm weapon system.

3-113. **Suppressive Fire.** When possible, CFV suppressive fire is accomplished using the coax machine gun at ranges under 900 meters to conserve 25-mm ammunition. Machine gun suppressive fire is usually effective in bursts of 10 to 15 rounds.

3-114. **Engagement Techniques.** Engagement techniques include point- and area-target engagement techniques.

3-115. **Point target engagement technique.** Targets such as jeeps, trucks, RPG teams, troops, and ATGMs may be engaged from either a moving or stationary vehicle. For personnel consolidated in a small area (1 to 10 meters), the point-target engagement technique is used.

3-116. To engage a point target, the gunner indexes the range/lazes the target, conducts a precise lay on the target, and fires an initial burst of 10 to 15 rounds (see Figure 3-35). An initial burst should hit as much of the target as possible. The gunner fires additional bursts until the target is destroyed and the vehicle commander commands "CEASE FIRE."

3-117. If the initial burst is short or over the target, the gunner adjusts the tracers onto the target. Once on target, the gunner continues to fire bursts until he is commanded to "CEASE FIRE."

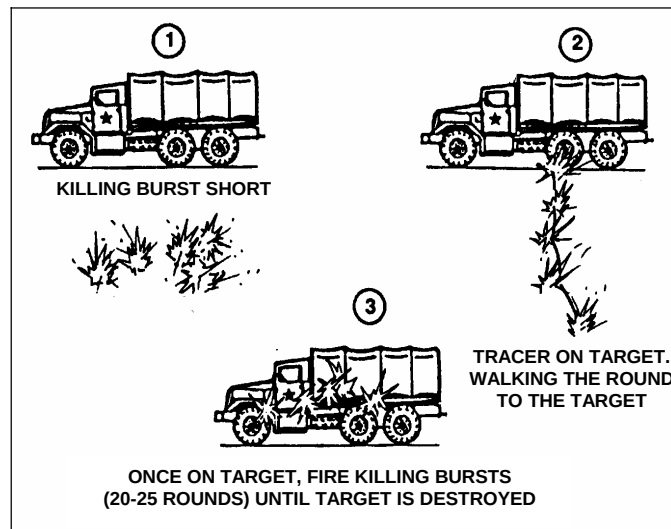


Figure 3-35. Point Target Technique.

3-118. **Area target engagement technique.** The area-target engagement technique is used against personnel dispersed over a large area (over 10 meters) (see Figure 3-36). Area targets can be engaged from a moving or stationary vehicle.

3-119. To engage an area target, the gunner should cover the length and width of the target area, achieving approximately 75-percent coverage of the area. The Z-pattern, an effective method for area target engagement, should be executed when the gunner lays the reticle on center mass of the target area and commences firing with an initial burst. Once the range to the target has been confirmed, a second burst is fired horizontally across the front of the target area. The third burst is fired diagonally across the target area. The fourth burst is fired horizontally across the rear of the target area. Upon suppression, the commander will command “CEASE FIRE.”

Note. During the entire firing sequence, the gunner should be firing 10- to 15-round bursts.

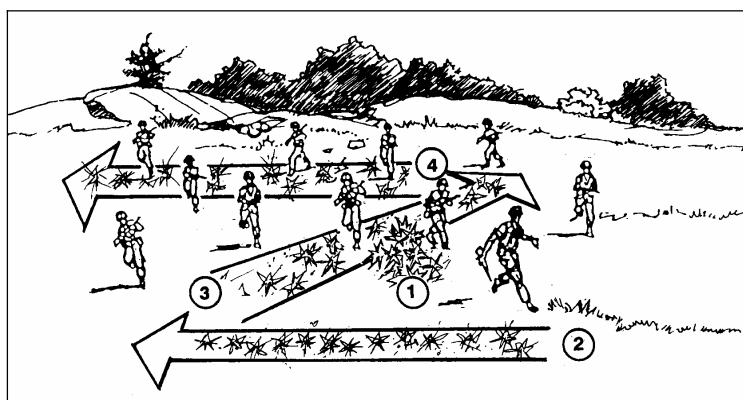


Figure 3-36. Area-Target Engagement Technique.

3-120. Movement of the turret and vehicle carries the burst through the target when a narrow frontal area target is presented (see Figure 3-37). Round dispersion also helps cover the target width. From a stationary vehicle, the gunner must traverse the turret to form the suppression pattern.

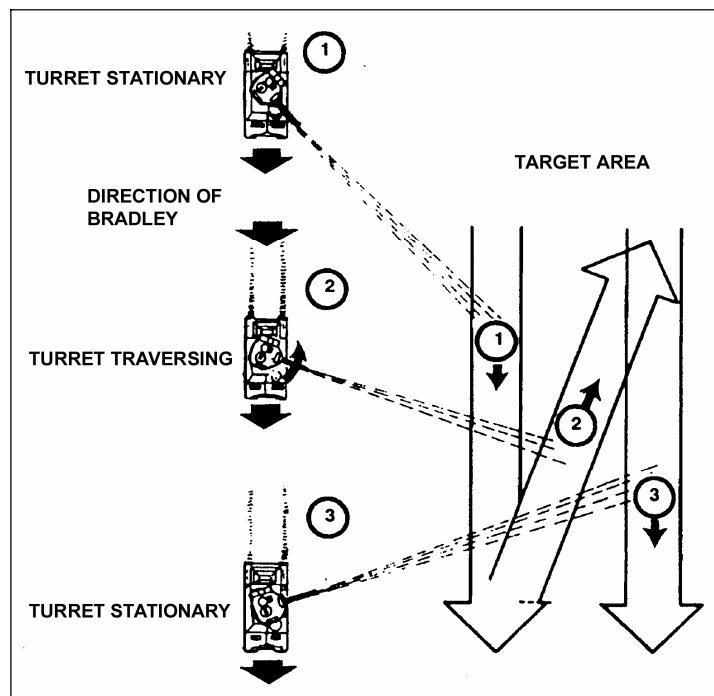


Figure 3-37. Z Pattern From a Moving CFV.

3-121. **M3A3 Coax Machine Gun Engagement Techniques.** When the M3A3 crew selects coax on the SCB, kinematic lead is disengaged, but superelevation is still given. The coax machine gun point and area engagements techniques apply.

Note. Engage coax area targets 500 meters and below in low magnification—this allows the crew to see the entire target area (see Figure 3-38).

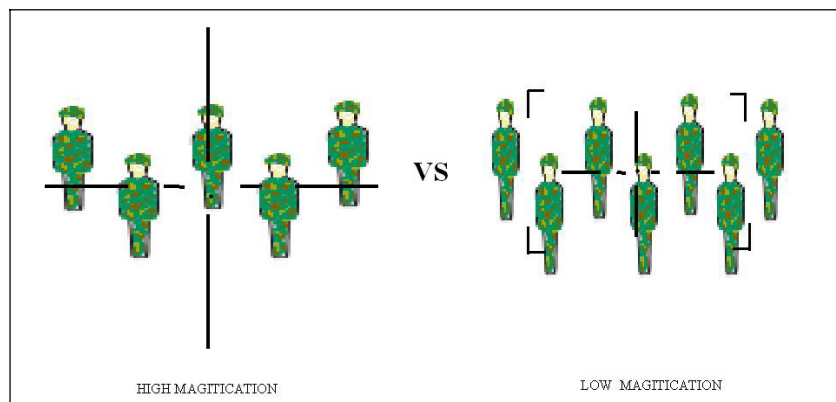


Figure 3-38. M3A3 Coax Area-Target Engagement Technique.

MK-19/CALIBER .50 ENGAGEMENT TECHNIQUES

3-122. The MK-19 and the caliber .50 are used much in the same manner as the 25-mm coax. The MK-19 engagement techniques should be similar to that of the HE 25mm for point and area targets. The caliber .50 techniques would be comparable to that of the coax. Other methods that can be used are the searching, traversing, and suppressing techniques.

3-123. The method of engagement chosen (searching, traversing, or suppressing) depends on the terrain, target presentation, type of target, and tactical situation. To be effective, fire must be distributed over an entire target. Improper distribution results in gaps between beaten zones and allows some of the enemy to escape or use guns without effective opposition.

3-124. **Searching Method.** The searching method of engagement is used to engage targets arrayed in depth. The gunner moves the beaten area through the target area by increasing and decreasing the range. The searching method is used to engage area targets moving toward or away from the firer.

3-125. **Traversing Method.** The traversing method of engagement is used to engage area targets along their front or length. The gunner moves the beaten area across the length of the target. The traversing method is also used to engage area targets moving across the sector of fire (see Figure 3-39).

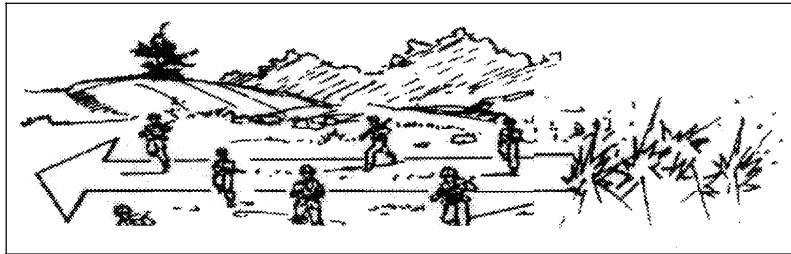


Figure 3-39. Traversing Method of Engagement.

3-126. **Suppressing Method.** The suppressing method of engagement is preferred for dismounted troops. Use both the searching and traversing engagement techniques to cover large or dispersed area targets (see Figure 3-40). This method should cover the length and width of the target area, achieving approximately 75-percent coverage of the area.



Figure 3-40. Suppressing Method of Engagement (Z-Pattern is Illustrated).

3-127. **Special Uses of Machine Gun Fire.** The machine gun can also be used for other purposes: reconnaissance by fire, firing through concealment, and incendiary fire.

3-128. **Reconnaissance by fire.** Reconnaissance by fire is used to cause a hidden enemy to react. The gunner fires a single burst while constantly observing for possible enemy movement or return fire (see Figure 3-41).

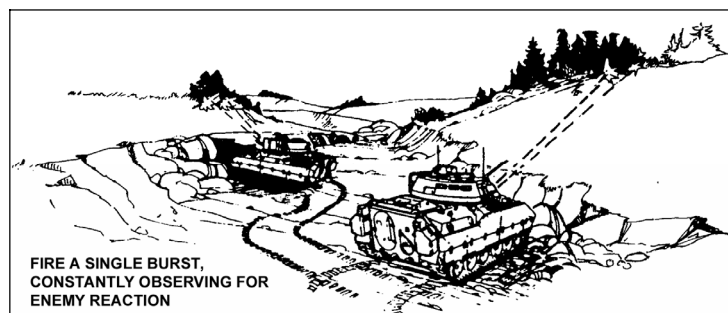


Figure 3-41. Reconnaissance by Fire.

3-129. **Firing through concealment.** The machine gun can be used to penetrate most concealment used by infantry rifle personnel (such as, trees, hasty barricades, or lightly constructed buildings). Treat such concealment as a point target (see Figure 3-42).

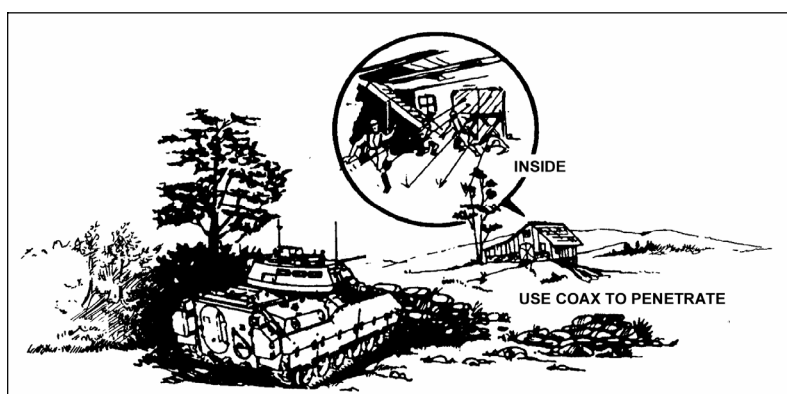


Figure 3-42. Firing Through Concealment.

3-130. **Incendiary fire.** Machine gun tracer ammunition, particularly armor-piercing incendiary tracer, can set fire to any readily combustible material, such as dry grass, grain, dried brush, or wood. Fire denies a particular area to the enemy, and smoke from a burning field can be used to screen movements (see Figure 3-43).

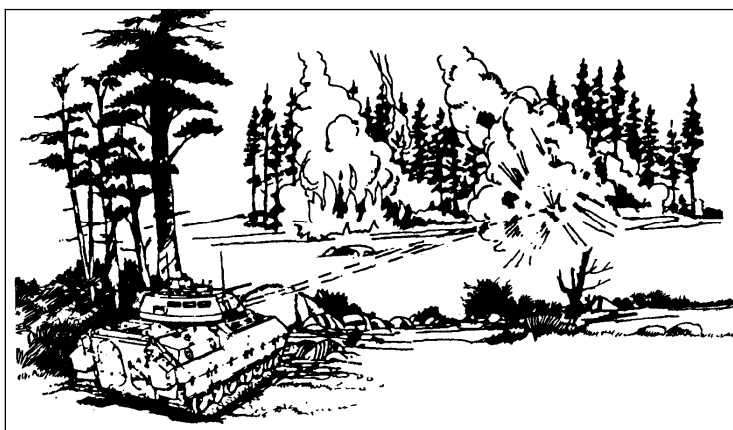


Figure 3-43. Incendiary Fire.

TOW ENGAGEMENTS

3-131. The TOW is used against armored and lightly armored vehicles beyond 25-mm capability, at ranges up to 3,000 meters for the basic and 3,750 meters for all other TOW missiles. The CFV must be stationary when engaging targets with the TOW. The driver and cargo hatches must be closed. The crew must check the vehicle slope indicators to be sure that the vehicle does not exceed the 10-degree slope warning. The gunner must make sure both ballistic doors of the ISU/IBAS are open.

3-132. Before firing the TOW, the gunner must determine if there are any obstacles between the vehicle and the target that might interfere with the missile. If the target is moving, the gunner must determine if the target will be in sight long enough for the missile to reach it. The gunner uses the sight to determine if the target should be engaged (see Figure 3-44). He places the crosshairs on the center of target mass. On high magnification, if the area between the vertical cross hair and the edge of the sight in the direction of travel is clear of obstructions, the target can be engaged.

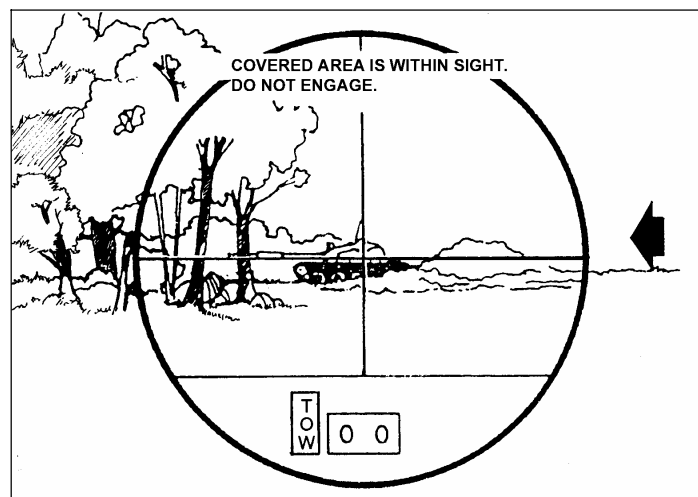


Figure 3-44. Obscured Target.

3-133. When engaging with the TOW, the gunner's sight picture is as shown in Figure 3-45. The word "TOW" is displayed on the status indicator at the bottom of the FOV.

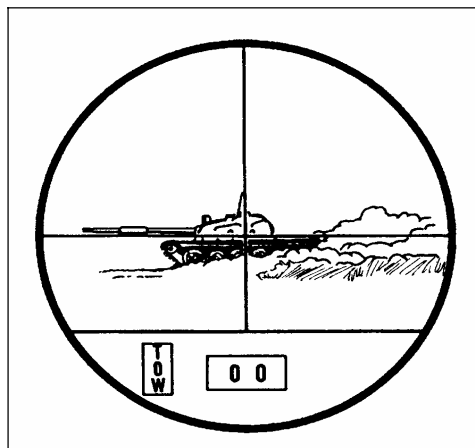


Figure 3-45. TOW Sight Picture.

3-134. When engaging a moving target with a TOW, the gunner must continuously track the target, keeping the reticle crosshairs on the center of mass. (**Note.** Do not attempt to *guide* the missile when it enters the sight picture—the TOW-2B flies above the target.) Gunners must not change the center-of-mass aim point to guide the missile to the target. A depiction of the missile-tracking concept is shown in Figure 3-46.

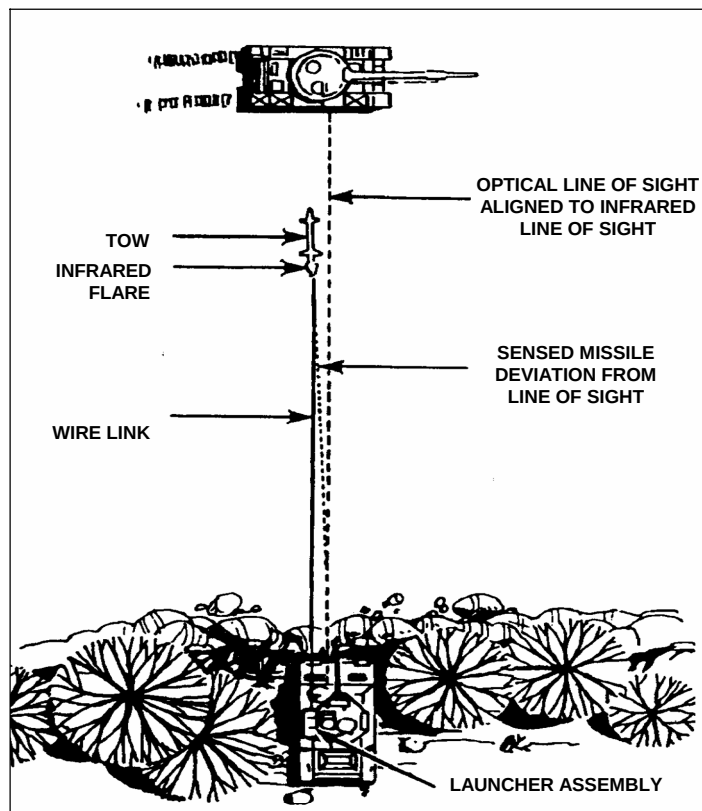


Figure 3-46. Missile Tracking Concept.

3-135. Night engagements require a coordinated crew effort and more detailed planning than day engagements.

3-136. When firing over water, the commander should analyze the sector as soon as the position is occupied to determine if the water will affect the employment of the TOW. The various types of TOWs may be fired over water to a maximum range as shown in Figure 3-47 and a minimum range as shown in Figure 3-48 (TOW launcher and target are at water surface level). The commander uses Figures 2-49A and B to determine the extended range of the missiles when firing over water (when the TOW launcher or target is above the surface level of the water). To determine the maximum range the missile can travel without getting too close to the water, the commander—

- Determines the type of missile being used.
- Determines the height above the water surface of the TOW launcher and places a tick mark at the corresponding height in the left-hand column of the table.
- Determines the height above the water surface of the target and places a tick mark at the corresponding height in the right-hand column of the table.
- Connects the two tick marks with a straight line. The point where the lines intersect the center column is the maximum range the missile can travel without getting too close to the water.

Note. If the lead wire on the TOW missile touches the water surface, the signal to the missile will be interrupted.

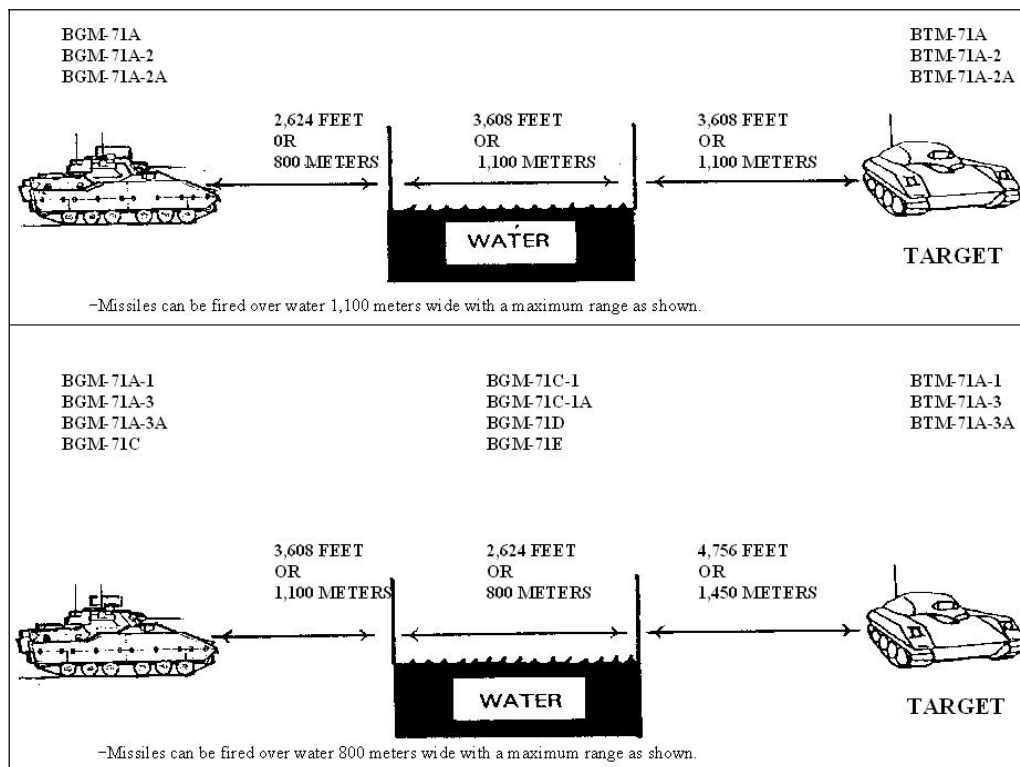


Figure 3-47. Maximum TOW Missile Range.

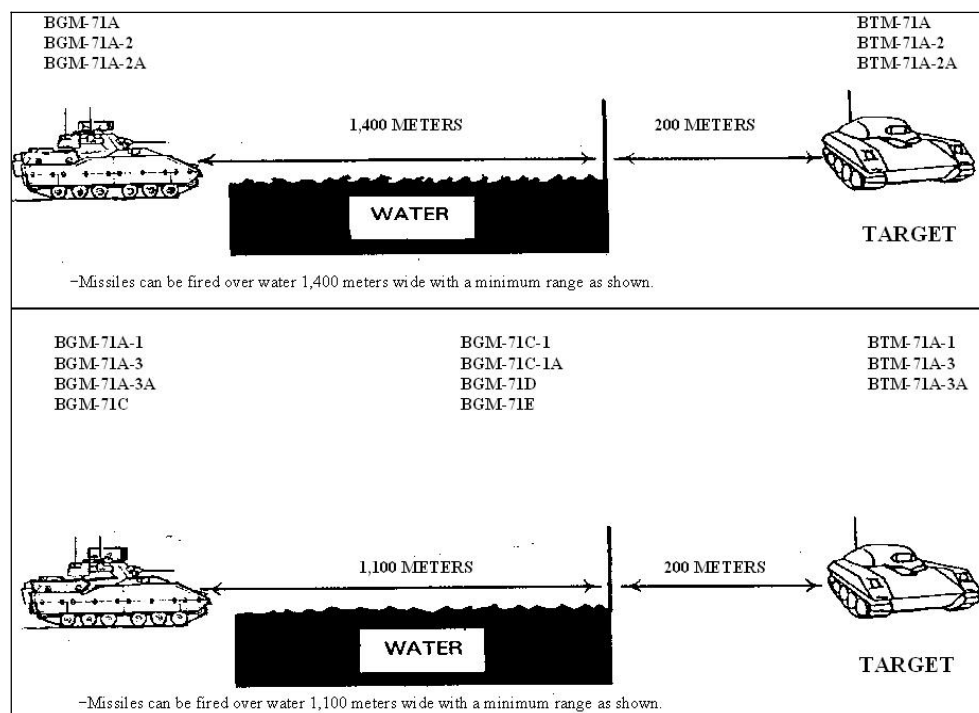


Figure 3-48. Minimum TOW Missile Range.

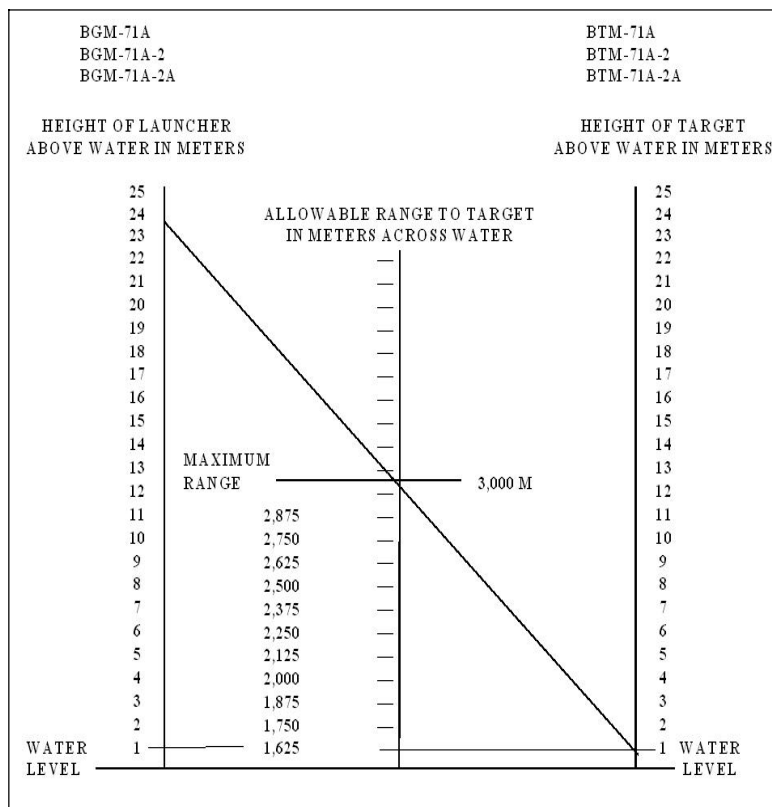


Figure 3-49A. Extended Range Over Water.

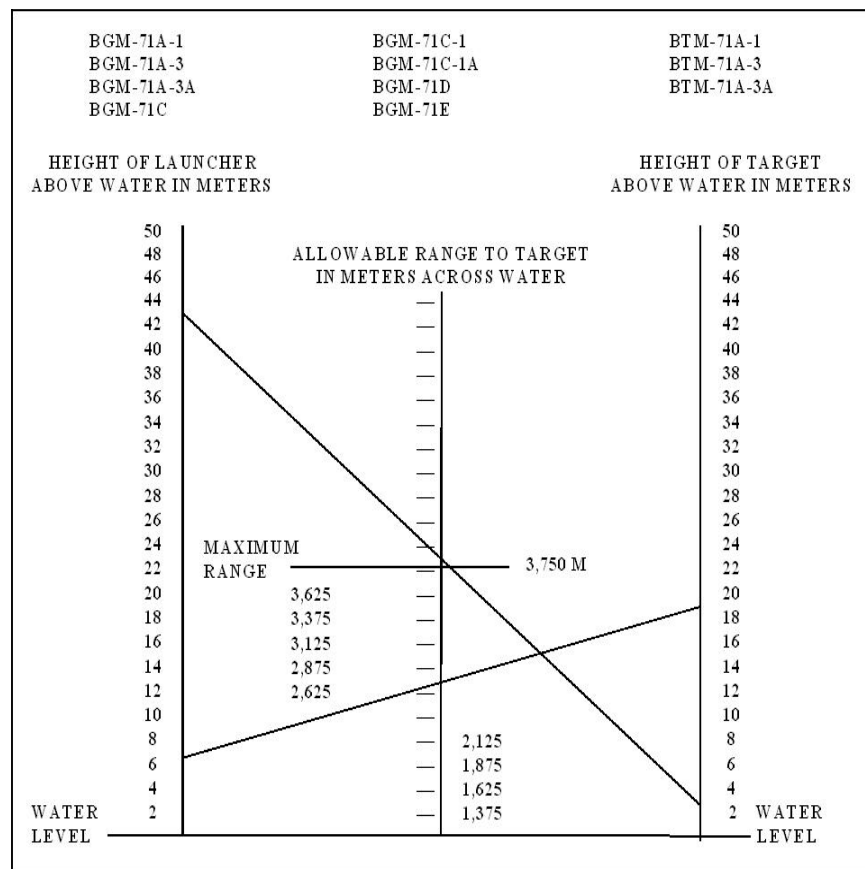


Figure 3-49B. Extended Range Over Water.

M257 SMOKE GRENADE LAUNCHER ENGAGEMENTS

3-137. The following crew duties and fire commands are used when firing the M257 smoke grenade launcher:

- While traversing the turret toward the area where the smoke screen is desired, the commander commands “GRENADE LAUNCHER,” to alert the crew that the grenade launcher is to be used.
- After laying the turret, the commander verifies that all hatches and the combat door are closed.
- The commander or gunner moves the grenade launcher ON-OFF switch to the ON position. The commander commands either “FIRE” or “FROM MY POSITION” and fires the grenades. After the grenades have been fired, he announces “GRENADES LAUNCHED.” He then issues driving commands appropriate to the tactical situation. The commander can then return to the open-hatch position to resume target acquisition.
- The crew should reload the grenade launchers when they can safely do so. The CFV should be in an area where no enemy contact is likely when reloading launchers.

AERIAL ENGAGEMENTS

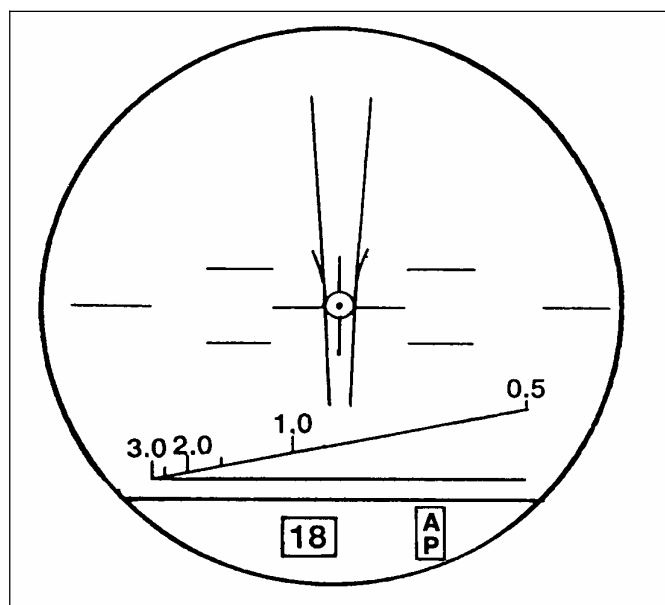
3-138. Proper weapon and ammunition selection for the range and target is the key to success. Table 3-5 shows the ammunition that is employed against specific aerial targets.

Table 3-5. Ammunition Employed Against Aerial Targets.

AMMUNITION	FIXED WING		HELICOPTER		PARATROOPER
	SLOW	FAST	ARMORED	UNARMORED	
COAX	YES	YES	NO	YES	YES
HEI-T	YES	YES*	YES	YES	YES
APDS-T	YES	YES*	YES	YES	NO
APFSDS-T	YES	YES*	YES	YES	NO
TOW	YES	NO	YES	YES	NO

*Secondary source if coax is not available or if out of coax range.

3-139. 25-mm Gun. The 25-mm gun is effective against slow-moving, fixed-wing aircraft and helicopters up to 2,000 meters (see Figures 3-50 and 3-51). The 25-mm gun should not be used on targets beyond 2,000 meters, as it uses too much ammunition per kill. When using the air defense reticle (ADR) sight, the gunner indexes 1,800 meters and the ammunition (APDS-T, APFSDS-T, or HEI-T ammunition can be used). The APDS-T and APFSDS-T have a higher probability of hit than HEI-T; however, HEI-T has a higher probability of kill. APDS-T is more effective at ranges beyond 1,200 meters; HEI-T is more effective at ranges less than 1,200 meters. A continuous burst of 20 to 25 rounds (high rate), using TOT to adjust rounds on target, will sustain the volume of fire and kill the target.

**Figure 3-50. Air Defense Reticle (ADR).**

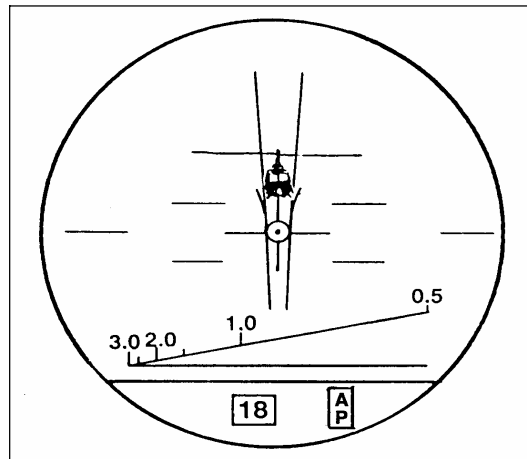


Figure 3-51. Choking a Helicopter with the ADR.

3-140. **Machine Gun.** The coaxial and caliber .50 machine guns are used against fixed-wing aircraft, unarmored helicopters, and airborne troops. The coax is ineffective against heavily armored helicopters, such as the Hind-D; however, the caliber .50 can be used successfully. A continuous burst at the aiming point is required, and TOT is used to bring rounds on target. As in ground engagements, the coax is effective out to 900 meters and the caliber .50 is effective out to 1,830 meters.

Note. The MK-19 should be used against only stationary helicopters.

3-141. **TOW Weapon System.** The TOW weapon system is used against stationary and slow-moving (up to 80 kmph) aerial targets beyond 1,700 meters. The TOW should be used against helicopters only when necessary.

3-142. **Engaging Aerial Targets using the Football-Field Technique.** (**Note.** This technique is not used with the MK-19.) The best technique for engaging high-speed aircraft is a controlled burst of machine gun (coax or caliber .50) fires at a designated point. This can be done by the platoon leader or platoon sergeant with a predetermined command or by the leader initiating fire so that other elements can fire on his tracers. The platoon leader or platoon sergeant can use the football-field technique by applying a 200-meter lead on the approaching aircraft so that the aircraft flies through the platoon's cone of fire (see Figure 3-52). (**Note.** Do not try to track the aircraft; it flies too fast.) If the aircraft is flying directly toward the vehicle, the gunner uses a long, controlled burst. He selects an aiming point slightly above the nose of the aircraft. Thus, the aircraft flies into the cone of fire.

Note. Fixed-wing aircraft operate in pairs or groups of three. Rotary-wing aircraft operate in platoon-sized elements.

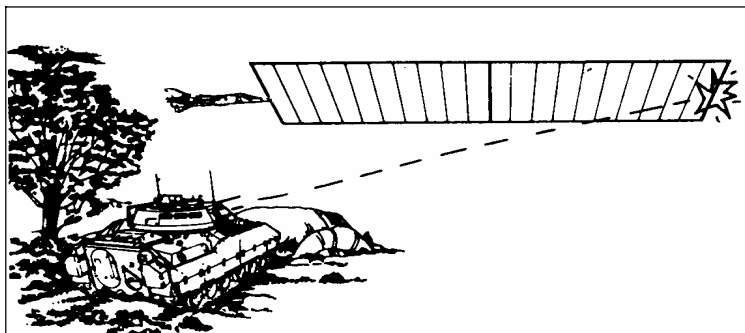


Figure 3-52. Football-Field Technique.

3-143. **Engaging Aerial Targets using the Reference-Point Technique.** Another technique to engage high-speed aircraft is to pick a reference point or a series of reference points (see Figure 3-53). For example, the platoon leader alerts the platoon, and as the aircraft nears a reference point, he announces “ENEMY AIR, REFERENCE POINT TWO, FIRE.” All weapons are fired at a 45-degree angle above the reference point.

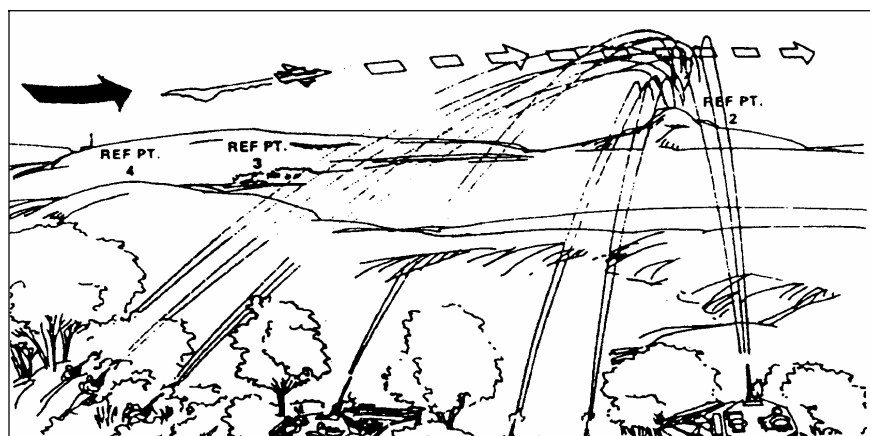


Figure 3-53. Reference-Point Technique.

3-144. **Engaging Paratroopers.** The rapid rate of fall of paratroopers makes them hard to engage. To engage the paratrooper, gunners—

- Use the ISU as the primary sight on the CFV.
- For the CFV, use the coax machine gun at ranges under 900 meters. Use the 25-mm (HEI-T) at ranges beyond 900 meters. Use the caliber .50 for all ranges out to maximum effective.
- Fire a burst with a lead of two body lengths beneath the feet of the dropping paratrooper (see Figures 3-54 and 3-55).
- If a troop-carrying helicopter is sighted, the helicopter should be engaged first.

Notes. The Geneva Convention of 1949 and the Rules of War prohibit engaging crewmen parachuting from disabled aircraft.

MK-19 should not be used against paratroopers because of time of flight of rounds.

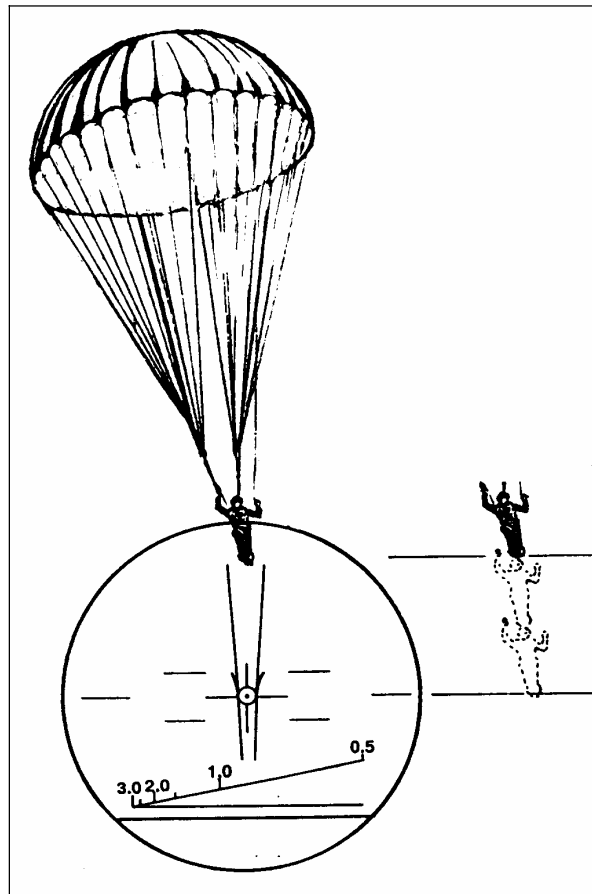


Figure 3-54. Engaging Paratroopers (CFV).

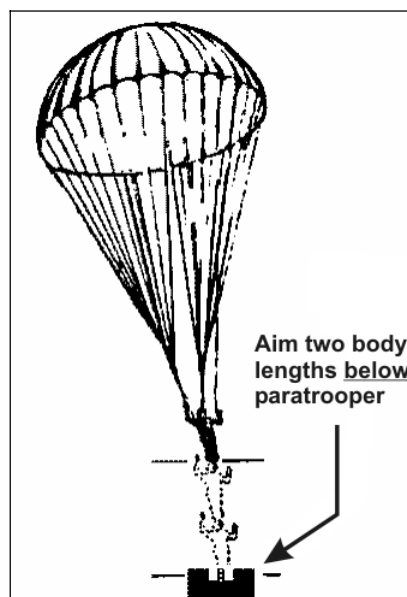


Figure 3-55. Engaging Paratroopers (MK-19/Caliber .50).

3-145. **Engaging Aerial Targets using the M3A3 ADR.** The M3A3 crew has the ability to select ADR using the CTD. In normal mode, the gunner should keep the IBAS reticle on the center mass of the target. Kinematic lead still applies for aerial engagements (see Figure 3-56).

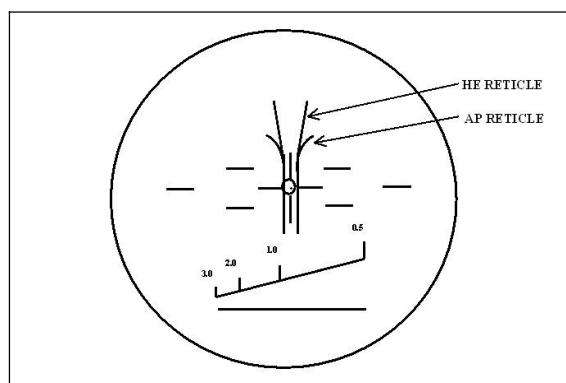


Figure 3-56. M3A3 Air Defense Reticle.

ENGAGEMENT PROBLEM AREAS

3-146. When a crew misses a target, commanders and gunners should consider the following if it applies to the weapon system used:

- Had boresight and zero been conducted correctly or had the boresight knobs been moved (basic CFV and A2 models)?
- Did the crew get confused trying to engage or during the engagement?
- Was the ammunition dispersion erratic?
- What range did the gunner index?
- On target engagements requiring lead, was it too much or not enough lead?
- Did the gunner and commander know how to use BOT and engagement techniques?
- Was the thermal display adequate or did it look insufficient for normal operation?
- Did the gunner range the target using the ELRF (M3A2 ODS and M3A3 only)?
- Were the IBAS and CIV sights adjusted properly (M3A3 only)?
- Did the commander confuse the IBAS with the CIV sight display (M3A3 only)?
- Did the commander release his palm switch after designating a target (M3A3 only)?
- Was IBAS alignment and system null performed before the engagement (M3A3 only)?
- Was environmental parameter data (EPD) entered correctly (M3A3 only)?

M3A3 AIDED TARGET TRACKER MODE

3-147. The ATT in the IBAS allows tracking of up to two targets simultaneously. The ATT can only track targets that are imbedded in the video signal of the IBAS's thermal image (from FLIR sensor). Control of the ATT functions is accomplished through controls that are located at the gunner's and commander's crew station. The ATT also generates symbology (such as blinking/solid track boxes that are overlaid onto the IBAS image and indicate ATT status). Although the ATT tracks targets only on the FLIR image, selection of the AUTOTRACK/AUTOPOINT capability is possible when the DAY TV image is selected for display since the DAY TV sensor and the FLIR sensor view the same scene. ATT symbology is overlaid onto the video image when Day TV is selected (see Figure 3-57). The AUTOPOINT functions are used only when the 25-mm gun is selected.

Notes. Both IBAS ballistic covers must be open to use track boxes with DAY TV.

Gate sizing can be accomplished in 2X and 4X zoom for targets beyond 3,000 meters.

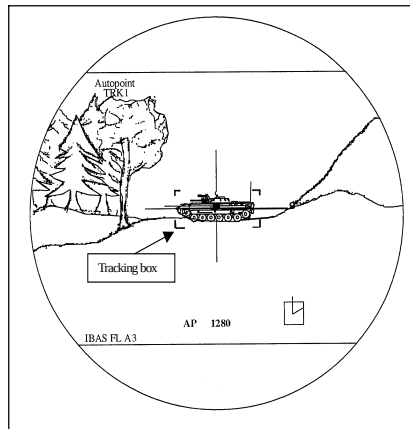


Figure 3-57. M3A3 Aided Target Tracker.

Engagement Termination

3-148. The commander must determine when to cease fire against a target, when to shift fire against multiple targets, and when to shift from one firing position to another. Target effect may not always be clear, requiring the commander to make that decision based on indicators of target effects.

KILL STANDARDS

3-149. Kill standards are classified as mobility, firepower, mobility and firepower, and catastrophic.

- A mobility kill degrades a vehicle's ability to move under its own power.
- A firepower kill prevents a vehicle's ability to use its weapon systems.
- A combined mobility and firepower kill will make the vehicle noncombat effective.
- A *catastrophic* kill is a total loss of weapons systems, vehicle mobility, and all onboard equipment.

ARMORED VEHICLES

3-150. **Kill Standard.** Based on the ammunition and time required to achieve destruction, the minimum standard is to achieve a mobility or firepower kill.

3-151. **Kill Indicators.** During an engagement, the gunner or commander may cease or shift fire to a different target for the following reasons:

- The vehicle stops moving.
- The vehicle stops firing.
- The vehicle is smoking from what appears to be internal damage.
- The vehicle explodes with immense smoke and flames.
- The crew abandons the vehicle.

Note. When a 25-mm round (AP or HE) or TOW missile hits an armored vehicle, an observable explosion with flash occurs. This is the effect of the round impacting on the target, not necessarily an indication of damage to the target.

UNARMORED VEHICLES

3-152. **Kill Standard.** Threat unarmored vehicles are multiwheeled, which allows them to continue operating with one or more tires punctured. The goal against an unarmored vehicle is to cause a mobility kill or cause the driver and crew to abandon the vehicle.

3-153. **Kill Indicators.** One or more of the following indicators may cause the gunner or commander to cease fire or shift to a different target.

- The vehicle stops moving.
- The vehicle is smoking.
- The vehicle explodes.
- The crew abandons the vehicle.

DISMOUNTED TROOPS AND ANTIARMOR SYSTEMS

3-154. **Kill Standard.** Destruction of dismounted troop point and area targets is difficult to measure. The goal is to neutralize the dismounted troops and antiarmor firepower capability of the target through destruction, damage, or suppression.

3-155. **Kill Indicators.** When engaging point or area dismounted troops or antiarmor targets, the following indicators may lead the commander to cease or shift fire:

- The dismounted troop threat stops maneuvering.
- The dismounted troop threat's antiarmor fire ceases or becomes noticeably ineffective.
- The rounds hit the dismounted troop and antiarmor systems.
- Dismounted troop casualties are observed.

Note. When suppressing an area target, the duration of required suppression is based on the METT-TC requirements of the situation. Suppression should be maintained as long as the unit gains a tactical advantage by doing so, or until another element can close with the target and destroy it.

SECTION IV - FIRE COMMANDS

3-156. Fire commands are the language of gunnery. When any language is incorrectly used, confusion and misunderstanding result. All direct-fire engagements begin with a fire command. Fire commands alert the crew to initiate actions. Subsequent fire commands direct the fires of the selected weapon and sustain and control the engagement until the target is destroyed or termination is directed. All variations are derived from the basic seven fire command elements. Fire commands will vary in form, but must include those elements necessary to **alert** the crew; select the **weapon/ammunition**; determine the target **description**, **direction**, and **range**; **execute**; and **terminate**.

Note. During the preliminary and intermediate CFV tables, no fire commands will be initiated until target presentation.

Fire Command Elements

3-157. Standard terminology and logical sequence are used to achieve effectiveness and speed of engagement. The following discusses each element of a fire command and gives examples of the elements as they are used in a fire command.

7 Elements of a Fire Command
Alert
Weapon/Ammunition
Description
Direction
Range
Execution
Termination

ALERT

3-158. The first element of the fire command alerts the crew of an immediate engagement and who will conduct the engagement. The term “GUNNER” is used for vehicle-mounted weapons and “SQUAD” is used for dismounted elements.

WEAPON/AMMUNITION

3-159. The second element informs the crew of the weapon and ammunition that will be used. This portion of the fire command is omitted when only one weapon system is available. Use the following terms to select the various weapons and ammunition:

WEAPON/AMMUNITION	ANNOUNCED AS
25-mm HEI-T and TP-T	“HE”
25-mm APDS-T, APFSDS-T, and TPDS-T	“SABOT” (pronounced SAY-BO)
M240C Coax	“COAX”
TOW	“MISSILE”
M240B	“MACHINE GUN”

DESCRIPTION

3-160. The third element describes the target to the crew. If there are multiple targets, the commander tells the crew which target to engage first. Use the following terms to designate most targets.

TYPE OF TARGET	ANNOUNCED AS
Tank or tank-like target	“TANK”
Infantry fighting vehicle or armored personnel carrier	“PC*”
Unarmored vehicle	“TRUCK”
Helicopter	“CHOPPER”
Fixed-wing aircraft	“PLANE,” “JET,” “UAV” (ADA)
Personnel	“TROOPS”
Machine gun	“MACHINE GUN”
Antitank gun or missile	“ANTITANK”
Any other target	(Use briefest term possible)
*The term “PC” may be used for most light-armor targets, such as self-propelled artillery, self-propelled anti-aircraft systems, command and control vehicles, and self-propelled ATGMs. Note. Combining terms can identify combination targets; for example, a truck-mounted ATGM system is identified as “ANTITANK TRUCK.” The commander may announce “MOVING” as part of the description element.	

DIRECTION

3-161. The fourth element is given to guide the gunner when the commander cannot lay the weapon for direction or elevation. Use the direction terms to guide the gunner’s aim into the target area: traverse, shift, reference point and deflection, clock, sector, and range card data.

3-162. **Traverse.** The traverse method is used on a CFV when targets are outside the gunner’s field of view and the commander cannot, or chooses not to, lay the gun for direction. The commander announces “TRAVERSE RIGHT” (or LEFT). The gunner traverses rapidly in the direction indicated. As the gunner nears the target, the commander commands “STEADY,” and the gunner slows his traverse. When the gunner is laid on the target, the commander announces “ON.” The gunner stops traversing because the target should be in his field of view. If the target is not in the field of view, the gunner searches the target area until he can identify the target or the commander issues a subsequent direction correction.

3-163. **Shift.** The term “SHIFT” is used when two or more targets are being engaged consecutively. The vehicle commander commands “SHIFT LEFT (or RIGHT), PC.” The gunner immediately shifts to the next target in the subsequent command and engages.

3-164. **Reference Point and Deflection.** The gunner must easily recognize the reference point. The vehicle commander uses his binoculars to measure the deflection from the reference point to the target and announces the necessary shift. For example, the command might be “REFERENCE POINT, BRIDGE, RIGHT, THREE ZERO.” The gunner lays the reticle of the sight, or the weapon itself, on the reference point, estimates 30 mils, traverses right 30 mils, and tries to identify the target.

3-165. **Clock Method.** The clock method is based on which way the vehicle is facing, the front of the vehicle being twelve o’clock (example: “ONE O’CLOCK.”).

3-166. **Sector Method.** The sector method is best used to indicate a direction from the direction of movement or vehicle orientation using the terms CENTER, LEFT, RIGHT, and REAR. Center sector is always the direct front (example: “RIGHT FRONT.”).

3-167. **Range Card Data.** During limited visibility conditions when the commander cannot see the target, he uses range card data to give the gunner the deflection, elevation, and range. The commander uses the deflection from the range card and announces “DEFLECTION.” The gunner lays the turret for direction using the turret azimuth ring and repeats the deflection reading to the commander. The commander then uses the elevation from the range card and announces “ELEVATION.” Using the gun elevation indicator and pointer, the gunner lays the weapon for elevation and repeats the elevation reading to the commander. Then, the commander uses the range setting from the range card and announces “RANGE.” The gunner indexes the range and repeats it to the commander.

RANGE

3-168. The fifth element of the fire command tells the crew and gunner what range to set on the weapon site. Machine gun crews should use this element if the gunner cannot accurately determine the range to the target. This element is not used with the TOW. On the CFV, range is announced in 200-meter increments, corresponding to the settings on the range select knob. If the range is an odd number, it is rounded off to the lower 100-meter range. Rounds that fall short of a target are easier to identify. Examples of announced range include:

RANGE	ANNOUNCED AS
800 meters	“EIGHT HUNDRED” or “EIGHT”
1,200 meters	“ONE TWO HUNDRED,” “TWELVE,” or “TWELVE HUNDRED”
3,040 meters	“THREE THOUSAND” or “THIRTY”

Notes. As long as the crew understands the terminology, any of these examples can be used.

On M3A2 ODS and M3A3 vehicles, if the gunner determines the range using ELRF, it is not necessary for the commander to announce the range unless the ELRF reports an error.

EXECUTION

3-169. Once the crew responds to the first five elements, the commander reconfirms the target as hostile and gives the execution element. There are three terms used to execute the fire command:

- **FIRE.** The command “FIRE” tells the gunner to fire the weapon when he has completed his crew duties and has the correct sight picture.
- **AT MY COMMAND.** If the vehicle commander wishes to delay firing, he announces “AT MY COMMAND.” This term is used when a target must be killed at a specific location, or more than one vehicle must shoot at the same time. Examples are: when a commander’s METT-TC determines that a BMP killed on a bridge will halt an enemy column, or the platoon leader wants to surprise the enemy with cross, depth, or frontal fire. The vehicle commander announces “FIRE” when he wants the engagement to begin.

- **FROM MY POSITION (used only on the CFV).** The gunner normally engages all main gun targets. If the gunner is unable to identify or engage the desired target, the commander will engage the target. He announces "FROM MY POSITION," makes the final gun lay, announces "ON THE WAY," and fires. When the gunner is able to resume his duties, the commander should return control to him. Once the hand-off is complete, the commander gives the gunner the command "FIRE."
- **ON THE WAY.** When the gunner initiates the fire command and is preparing to fire, he makes the final gun lay, announces "ON THE WAY," and fires.

TERMINATION

3-170. Every engagement must be terminated; the seventh element informs the gunner when to stop firing or shift to another target in a multiple engagement. The vehicle commander announces "CEASE FIRE" to terminate an engagement or "CEASE TRACKING" to terminate a missile engagement.

Fire Command Terms

3-171. In addition to the primary seven elements discussed above, other elements of a fire command may include terms used to respond to, add to, repeat, or correct a fire command. The following discusses these other elements.

RESPONSE TERMS

3-172. Additional response terms that must be used in fire commands are:

- **IDENTIFIED.** The gunner uses this term to inform the vehicle commander that he has located the target(s) stated in the fire command. "IDENTIFIED" stated by itself indicates to the vehicle commander that the gunner has confirmed the target is as stated in the description. If not, the gunner will announce "IDENTIFIED," followed by "FRIENDLY," "NEUTRAL," or "UNKNOWN."
- **CANNOT IDENTIFY.** This term informs the vehicle commander that the gunner cannot find the target. The vehicle commander must redirect the gunner onto the target, or re-lay the weapon if on the CFV, or engage the target.
- **CANNOT ENGAGE.** This term informs the vehicle commander that the gunner can identify the target but is unable to conduct the engagement. On the CFV, this term is used to let the commander know that he should attempt to engage.
- **ON THE WAY.** This term informs all crew members that a weapon is being fired, alerting them to observe the round. The gunner, or whoever is firing, must announce this prior to firing.
- **DESIGNATE (M3A3 only).** This term informs the gunner that the commander will hand a target off to him. This term can be used before or during a fire command.
- **TARGET DESTROYED.** This term informs the commander that the target has been destroyed. The commander will confirm that all targets have been destroyed before giving the command "CEASE FIRE." This term is used when the commander is using the designate capability on the CIV.

OTHER COMMON TERMS

3-173. The following common terms are used to provide instruction to crew members not directly involved with the engagement or to lessen confusion during the engagement:

- **BACKBLAST AREA CLEAR.** To ensure that the backblast area is clear prior to giving the execution command, any crew member announces "BACKBLAST AREA CLEAR."
- **MISCELLANEOUS ENGAGEMENT TECHNIQUES.** If the vehicle commander wants the gunner to use a specific method of engagement, he announces "TRAVERSE," "SEARCH," "Z," or "Z-PATTERN" prior to the execution command.
- **MISCELLANEOUS COMMANDS TO THE DRIVER.** Other commands to the driver, used to facilitate vehicle movement before, during, and after an engagement, include:
 - "DRIVER MOVE UP."
 - "DRIVER BACK."

- “DRIVER STOP.”
- “DRIVER SEEK HULL DOWN.”
- “DRIVER MOVE OUT.”

REPEAT TERMS

3-174. When a crew member fails to hear or understand a part of the fire command, he announces the element in question (for example, if the gunner says “AMMO,” the vehicle commander repeats only the element in question).

CORRECTION TERMS

3-175. To correct an error in a fire command, the commander commands “CORRECTION” and corrects only the element in error (for example, “GUNNER, HE, TRUCK, ONE SIX HUNDRED, CORRECTION, ONE EIGHT HUNDRED, FIRE.”).

Crew Duties in Response to a Fire Command

3-176. The vehicle commander, gunner, and driver have specific crew duties to perform in response to each element of a fire command. Once the vehicle commander has given the fire command, his primary focus must be on retaining control while giving subsequent commands to shift targets, organizing other targets, and planning the vehicle’s next activity. The gunner should take over the engagement and destroy or suppress, as necessary, and observe the sector. If the engagement is fired while on the move, the driver must maintain a steady platform and move as quickly as possible to a covered and concealed position.

CFV Fire Commands

3-177. Precision and battlesight are the two basic types of fire commands. The precision fire command is the most accurate method to engage a target. The battlesight fire command is the fastest method to engage a target.

PRECISION FIRE COMMAND

3-178. Precision fire commands should be used in defensive engagements when the CFV has the advantage of time. Time is used to lay the turret weapons on target, determine range, issue a fire command (except the execution and termination elements), and adjust the FCS. On M3A2 CFVs, the commander determines the range and announces it to the gunner, who indexes the announced range. (See below for sample.) On the ODS and M3A3 CFVs, the gunner, rather than the commander, determines the range using the ELRF.

MULTIPLE TARGET ENGAGEMENT

3-179. In combat, CFV crews must engage multiple targets. These engagements require speed and accuracy to suppress or destroy all targets. The commander must prioritize the targets by threat levels, and the gunner must identify all targets before the engagement begins.

Notes. (Refer to Tables 3-6 and 3-7.) For the multiple target engagement, the weapon/ammunition, description, range, execution, and termination is necessary for continuing the engagement.

When engaging a three-target scenario, a multiple fire command is given for the initial presentation and a subsequent fire command for the delayed target (see sample below). If both initially presented targets are destroyed prior to the third target being presented, a complete single fire command must be used for the delayed target (see Tables 3-6 and 3-7).

**Table 3-6. Sample Precision Fire Command for the M3A2 and Below—
Single and Multiple Target Engagements.**

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition	"SABOT"		Weapon and Ammunition	"COAX"	
Description	"PC"		Description	"TROOPS AND PC, TROOPS"	
Direction (Optional)	"TRAVERSE RIGHT"		Direction (Optional)		
Range	"ONE TWO HUNDRED"	"IDENTIFIED"	Range	"SIX HUNDRED"	"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
		*"TARGET DESTROYED"			"TARGET DESTROYED"
Termination	"CEASE FIRE"		Transition	"CEASE FIRE"	
			Direction	"SHIFT RIGHT"	
			Weapon and Ammunition	"SABOT"	
			Description	"PC"	
			Range	"ONE SIX HUNDRED"	
			Execution	"FIRE"	
					"ON THE WAY"
					*"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

* Optional.

3-180. M3A2 ODS and M3A3 vehicle commanders transfer the range determination duty to their gunners.

**Table 3-7. Sample Precision Fire Command for the M3A2 ODS and M3A3—
Single and Multiple Target Engagements.**

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition	"SABOT"		Weapon and Ammunition	"HE"	
Description	"PC"		Description	"TRUCK AND PC, TRUCK FIRST"	
Direction (Optional)			Direction (Optional)		
Range (Optional)		"IDENTIFIED"	Range (Optional)		"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
Termination	"CEASE FIRE"				**"TARGET DESTROYED"
			Transition	"CEASE FIRE"	
			Direction	"SHIFT" or "DESIGNATE"	
			Weapon and Ammunition	"SABOT"	
			Description	"PC"	
			Range (Optional)		"IDENTIFIED"
			Execution	"FIRE"	
					"ON THE WAY"
					**"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

*Optional

3-181. If the M3A2 ODS or M3A3 vehicle commander wants the gunner to determine the range, he announces "RANGE." Once he has detected the target, the gunner immediately initiates range determination procedures. When the gunner has determined the range, he announces "IDENTIFIED," and the range. The commander announces "FIRE." The gunner indexes the range and announces "ON THE WAY."

**Table 3-8. Sample Precision Fire Command for M3A2 ODS and M3A3—
Gunner Determines Range.**

ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"	
Weapon/Ammunition	"SABOT"	
Description	"PC"	
Direction (optional)		
Range	"RANGE"	"RANGE: ONE TWO HUNDRED" "IDENTIFIED"
Execution	"FIRE"	
		"ON THE WAY"
		"TARGET DESTROYED"
Termination	"CEASE FIRE"	

Note. If the ELRF returns an error code or receives a multiple return, the gunner tries to lase on the target again. If this does not eliminate the problem, the gunner announces "RANGE." This requires either the commander or gunner to apply range determination procedures, and the gunner to index the range manually into the FCS.

**Table 3-9. Sample Precision Fire Command for M3A2 ODS and M3A3—
Commander Determines Range.**

ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"	
Weapon/Ammunition	"SABOT"	
Description	"PC"	
Direction (optional)		
Range	"ONE TWO HUNDRED"	"RANGE" "IDENTIFIED"
Execution	"FIRE"	
		"ON THE WAY"
		"TARGET DESTROYED"
Termination	"CEASE FIRE"	

BATTLESIGHT FIRE COMMAND

3-182. Battlesight fire commands are used during offensive operations, where speed and accuracy are required. In the fire command, the word "battlesight" replaces the weapon/ammunition and range elements. The target description identifies which battlecarry ammunition and range is used; for example, PC = sabot, 1,200 meters; or troops = coax, 600 meters. When the auxiliary sight is used, the range line aiming point is the same as the battlecarry range in the ISU.

3-183. As with precision engagements, multiple targets must be prioritized by threat level prior to engaging (see Tables 3-10 and 3-11).

**Table 3-10. Sample Battlesight Fire Command for M3A2 and Below—
Single and Multiple Target Engagements.**

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition	"BATTLESIGHT"		Weapon and Ammunition	"BATTLESIGHT"	
Description	"PC"		Description	"TROOPS AND PC, TROOPS"	
Direction (Optional)	"TRAVERSE RIGHT"		Direction (Optional)		
Range		"IDENTIFIED"	Range		"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
		"TARGET DESTROYED"		"TARGET DESTROYED"	
Termination	"CEASE FIRE"		Transition	"CEASE FIRE"	
			Direction		
			Weapon and Ammunition		
			Description	"RIGHT PC"	
			Range		"IDENTIFIED"
			Execution	"FIRE"	
					"ON THE WAY"
					"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

Note. Only the description, execution, and termination were needed to complete the engagement.

**Table 3-11. Sample Battlesight Fire Command for M3A2 ODS and M3A3—
Single and Multiple Target Engagements.**

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition	"BATTLESIGHT"		Weapon and Ammunition	"BATTLESIGHT"	
Description	"PC"		Description	"TWO PCs, LEFT PC"	
Direction (Optional)			Direction (Optional)		
Range (Optional)		"IDENTIFIED"	Range (Optional)		"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
Termination	"CEASE FIRE"				"TARGET DESTROYED"
			Transition	"CEASE FIRE"	
			Direction	"SHIFT" or **"DESIGNATE"	
			Weapon and Ammunition		
			Description	"RIGHT PC"	
			Range (Optional)		"IDENTIFIED"
			Execution	"FIRE"	
					"ON THE WAY"
					"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

*M3A3 Only

SUBSEQUENT FIRE COMMAND

3-184. The commander uses his observations to formulate subsequent fire commands to adjust the gunner's firing. The alert and execution are required. Range or deflection elements are announced as necessary to direct the gunner.

- **Alert.** The commander announces his range observation as the alert (for example, "SHORT"). This also notifies the gunner that a subsequent fire command follows.
- **Range correction.** If the round goes over the target, the commander subtracts range; if short, he adds range. A correction more than 200 meters may require the gunner to index a different range in the ISU or the auxiliary sight. Range errors that are less than 20 meters are best adjusted by target form.
- **Deflection correction.** The deflection correction is based on the commander's deflection observation. If the round goes to the left of the target, his correction is to the right. Deflection corrections may be given in mils or target forms.
- **Execution.** The commander completes the subsequent fire command with the execution command "FIRE."

CFV TOW FIRE COMMAND

3-185. The TOW fire command is used to engage enemy tanks and other targets beyond the range of the 25-mm gun. Normally, the CFV remains protected and fires from the turret-down position. The word "MISSILE" is always announced for the ammunition element, and no range element is needed.

Note. The only term that may change is the description term. Other terms such as “PC,” “CHOPPER,” or “BUNKER” may be used.

Table 3-12. Sample TOW Fire Command—All CFV Variants.

ELEMENT	COMMANDER	GUNNER
Alert	“GUNNER”	
Weapon	“MISSILE”	
Description	“TANK”	
Direction (optional)		
Range		“IDENTIFIED”
Execution	“FIRE”	
		“ON THE WAY”
		“TARGET DESTROYED”
Termination	“CEASE TRACKING”	

HMMWV and Stryker RV Fire Commands

3-186. The fire commands for the HMMWV and the Stryker RV are not that dissimilar from those of the CFV. There are still seven elements to a fire command; however, the required elements differ. The weapon/ammunition element is optional due to the fact that the HMMWV and the Stryker RV mount only one weapon that fires only one type of ammunition during an engagement. The TOW HMMWV is an exception; it mounts both the TOW and the M240B on the same turret ring. The HMMWV and the Stryker RV have two types of fire commands: the precision fire command and the reduced fire command.

PRECISION FIRE COMMAND

3-187. The precision fire command is given by the commander and used when the vehicle is in a defensive position and the commander has positive identification of the target(s). The precision fire command must include the alert, description, direction, execution, and termination elements of the fire command.

Table 3-13. Sample Precision Fire Command for the HMMWV and Stryker RV.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition (Optional)			Weapon and Ammunition (Optional)		
Description	"TRUCK"		Description	"TRUCK AND TROOPS, TROOPS FIRST"	
Direction	"ONE O'CLOCK"		Direction	"TRP 1"	
Range (Optional)		"IDENTIFIED"	Range (Optional)		"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
Termination	"CEASE FIRE"		Transition	"CEASE FIRE"	
			Description	"SHIFT RIGHT, TRUCK"	
			Weapon and Ammunition		
			Direction	"TRP 3"	
			Range (Optional)		"IDENTIFIED"
			Execution	"FIRE"	
					"ON THE WAY"
					"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

REDUCED FIRE COMMAND

3-188. The reduced fire command is given by the gunner and is used when the commander has not identified the target(s) or the vehicle is on the move. This fire command is also given when the vehicle commander is not able to assist the gunner in target acquisition, such as when the commander is off the vehicle or, as with the RV, the commander is in the troop compartment of the vehicle and has only the FBCB2 for situational awareness. This fire command allows the gunner to give the complete fire command, to include the execution, which is announced "ON THE WAY."

Table 3-14. Sample Reduced Fire Command for the HMMWV and Stryker RV.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert		"CONTACT"	Alert		"CONTACT"
Weapon and Ammunition (Optional)			Weapon and Ammunition (Optional)		
Description		"TRUCK"	Description		"TRUCK AND TROOPS, TROOPS FIRST"
Direction		"ONE O'CLOCK"	Direction		"TRP 1"
Range (Optional)			Range (Optional)		
Execution		"ON THE WAY"	Execution		"ON THE WAY"
Termination		"CEASE FIRE"	Transition		"CEASE FIRE"
			Description		"TRUCK"
			Weapon and Ammunition		
			Direction		"TRP 3"
			Range (Optional)		
			Execution		"ON THE WAY"
			Termination		"CEASE FIRE"

Fire Commands for the Stryker RV and Dismounted Crew

3-189. The Stryker RV commander must control the fires of both the vehicle and the dismounted crews.

PRECISION FIRE COMMAND (Use Primarily in the Defense)

3-190. Once the commander has alerted the crew by announcing "CONTACT," he will then give a target description. The next command designates who will engage what target and where the target is located. The vehicle gunner is announced as "GUNNER," while the dismounted crew is announced as "SQUAD." Both crews will respond with "IDENTIFIED." The command of execution may vary based on the commander's intent. The commander may announce "FIRE" or "GUNNER—FIRE." If the command of "FIRE" is given, the squad will immediately engage their designated targets while the vehicle pulls into the hull-down position, and the gunner will announce "ON THE WAY" and engage his designated targets. Once the vehicle begins firing, the dismounted crew will immediately engage their targets. The commander terminates the engagement by announcing "CEASE FIRE."

Table 3-15. Sample Precision Fire Command for the Stryker RV with Dismounted Crew.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"CONTACT"		Alert	"CONTACT"	
Weapon and Ammunition (Optional)			Weapon and Ammunition (Optional)		
Description	"TROOPS"		Description	"TROOPS AND TRUCK"	
Direction	"ELEVEN O'CLOCK"		Direction	"GUNNER—TRUCK—TRP 1"	
		"IDENTIFIED"		"SQUAD—TROOPS—TRP 2"	
Range (Optional)			Range (Optional)		"IDENTIFIED"
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
		"TARGET DESTROYED"		"TARGET DESTROYED"	
Termination	"CEASE FIRE"		Termination	"CEASE FIRE"	

REDUCED FIRE COMMAND (Used Primarily in Moving Engagements)

3-191. The reduced fire command is the same as that for HMMWV and Stryker RV without dismounted crew. An alert, description, direction, execution, and termination must be given; however, the commander **must give the command of execution**. Target direction is given in the same order that the target description was given. If the description is "TROOPS AND TRUCK" and the direction is "TRP 1 AND TRP 2," then the troop target is at TRP 1 and the truck target is at TRP 2.

Table 3-16. Sample Reduced Fire Command for the Stryker RV with Dismounted Crew.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert		"CONTACT"	Alert		"CONTACT"
Weapon and Ammunition (Optional)			Weapon and Ammunition (Optional)		
Description		"TROOPS"	Description		"TROOPS AND TRUCK"
Direction		"ELEVEN O'CLOCK"	Direction		"ELEVEN O'CLOCK AND TWO O'CLOCK"
Range (Optional)			Range (Optional)		
Execution	"FIRE"		Execution	"FIRE"	
		"ON THE WAY"			"ON THE WAY"
		"TARGET DESTROYED"		"TARGET DESTROYED"	
Termination	"CEASE FIRE"		Termination	"CEASE FIRE"	

TOW FIRE COMMANDS

3-192. The TOW HMMWV precision fire command differs from the HMMWV and the Stryker RV fire command in that the commander must specify which weapon to use when giving the weapon/ammunition element of the fire command. The reduced fire command for the TOW HMMWV is identical to the reduced fire command of the non-TOW vehicle in that the commander must give the alert, description, direction, execution, and termination elements. The commander or other crew member must clear the backblast area for the gunner, because of the gunner's responsibility of acquiring and tracking targets.

CAUTION

The TOW missile should not be fired over the side of the HMMWV.

Table 3-17. Sample Precision Fire Command for the TOW HMMWV.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert	"GUNNER"		Alert	"GUNNER"	
Weapon and Ammunition (Optional)	"MACHINE GUN"		Weapon and Ammunition (Optional)	"MISSILE"	
Description	"TRUCK"		Description	"TANK AND TRUCK, TANK FIRST"	
Direction	"ONE O'CLOCK"		Direction	"TRP 1"	
Range (Optional)		"IDENTIFIED"	Range (Optional)		"IDENTIFIED"
Execution	"FIRE"		Execution	"BACKBLAST AREA CLEAR"	
		"ON THE WAY"		"FIRE"	
Termination	"CEASE FIRE"				"ON THE WAY"
			Transition	"CEASE TRACKING, SHIFT RIGHT"	
			Weapon and Ammunition	"MACHINE GUN"	
			Description	"TRUCK"	
			Direction	"TRP 3"	
			Range		"IDENTIFIED"
			Execution	"FIRE"	
					"ON THE WAY"
					"TARGET DESTROYED"
			Termination	"CEASE FIRE"	

Table 3-18. Sample Reduced Fire Command for the TOW HMMWV.

Single Target			Multiple Target		
ELEMENT	COMMANDER	GUNNER	ELEMENT	COMMANDER	GUNNER
Alert		"CONTACT"	Alert		"CONTACT"
Weapon and Ammunition (Optional)			Weapon and Ammunition (Optional)		
Description		"TANK"	Description		"TANK AND TRUCK, TANK FIRST"
Direction		"ONE O'CLOCK"	Direction		"TRP 1"
Range (Optional)			Range (Optional)		
Execution	"BACKBLAST AREA CLEAR"		Execution	"BACKBLAST AREA CLEAR"	
		"ON THE WAY"			"ON THE WAY"
Termination		"CEASE TRACKING"	Transition		"CEASE TRACKING"
			Description		"TRUCK"
			Weapon and Ammunition		
			Direction		"TRP 3"
			Range (Optional)		
			Execution		"ON THE WAY"
			Termination		"CEASE FIRE"

CORRECTIONS

3-193. If the vehicle commander makes a mistake, he announces "CORRECTION," corrects the mistaken element, then repeats all elements after the corrected element (example: "GUNNER—TROOPS—ONE O'CLOCK— CORRECTION—TRUCK—ONE O'CLOCK.").

REPEAT

3-194. If a crew member does not hear or understand an element of a fire command, he repeats the element in question; the vehicle commander will repeat the element in question. Example: Gunner: "RANGE." Vehicle commander: "FOUR HUNDRED."

SUBSEQUENT FIRE COMMANDS

3-195. A subsequent fire command is used to make adjustments in direction and elevation, or change the rate of fire after an engagement is in progress. It can be given by the vehicle commander or gunner and includes the alert, correction, and execution commands.

3-196. **Alert.** The alert portion of a subsequent fire command is nothing more than the vehicle commander or gunner announcing his sensing (the strike of the round in relation to the target).

3-197. **Correction.** Corrections in direction are made first, then range. The gunner may omit this element if he can sense the strike of the round and make his own corrections. These corrections can be made using the following methods:

- **Mil method.** The mil method is usually used to make corrections in direction. The commander or gunner announces the number of mils to move the gun left or right to make the rounds strike the target. To use this method, the gunner must be able to convert the correction in mils to clicks on the traverse and elevation (T&E) mechanism.

- **Target form.** The target form method is the simplest to use. One form is the visible height or width of the target. The visible height is used to adjust the elevation, and the visible width is used to adjust the azimuth. Corrections are announced in numbers of target forms left, right, up, or down.
- **Meter method.** The commander or gunner announces the correction in meters left, right, add, or drop. To make this correction, the gunner adjusts his sight picture to reflect the requested correction.
- **T&E adjustments.** The commander or gunner announces the correction in number of clicks left, right, up, or down. The gunner moves the deflection and elevation wheel on the T&E mechanism. The vehicle commander must understand the T&E mechanism and be able to convert corrections in direction and range into clicks in deflection and elevation.

3-198. **Execution.** If the gunner is making the correction, he announces “ON THE WAY,” and continues to engage until the target is destroyed or he receives the command to cease fire. If the commander is making the correction he announces “FIRE.”

3-199. Examples of subsequent fire commands:

- The vehicle commander gives the correction: “SHORT—RIGHT ONE-HALF TARGET FORM—ADD TWO TARGET FORMS—FIRE.”
- The gunner gives the correction: “SHORT—ON THE WAY.”

Platoon and Section Fire Commands

3-200. The platoon or section leader uses platoon or section fire commands to control the platoon’s or section’s fires. He decides how to control fires based on the situation and the time available to plan and prepare. Thus, in a meeting engagement or in a movement to contact when time to plan and prepare is limited, the platoon or section leader initiates fires with a fire command. During the fight, fires are controlled by fire patterns as specified in the platoon SOP, orally (or digitally) transmitted unless otherwise specified. In a prepared defense, with several days to plan and prepare, the platoon or section leader initiates the fight with a fire command or an event (enemy crossing a trigger line). He relies on detailed planning and preparation to distribute fires during the fight. The object of the planning phase is to anticipate events and coordinate fires before the fight starts. A well-planned defense requires minimum platoon radio net traffic during execution because termination, trigger points, priority engagements, and targets are established in advance.

Note. Use of fire commands is based on knowledge of the enemy and time available to plan, prepare, and rehearse.

3-201. Standardized platoon and section fire commands must be established by unit SOP and practiced by platoon and section leaders for proficiency. Using a standard format for a platoon/section fire command ensures that all essential information and control measures are given in minimum time. Even during adverse conditions, a standard format causes positive reaction by the unit. Brevity and clarity are essential. Abbreviated methods for identifying target locations are encouraged; however, everyone must know the meaning of the abbreviations.

3-202. The platoon/section leader may give coordinating instructions or additional information to individual vehicle commanders; this information is not part of the platoon/section fire command. When a vehicle commander sends a contact or spot report and believes all other vehicle commanders in the platoon/section received the report, the platoon/section leader issues only the elements needed to complete a fire command. In all cases, a crew has the freedom to engage a target without a section fire command if it is under immediate threat.

3-203. A standard platoon/section fire command may include as many as eight elements in the following order: alert, weapon/ammunition, description, location, range, control, execution, and termination. The battlefield situation or platoon SOP dictates the number of elements used in a fire command.

ALERT	"RED, THIS IS RED SIX"
WEAPON/AMMUNITION (OPTIONAL)	"TOW/SABOT"
DESCRIPTION	"FOUR TANKS AND THREE BMPs"
LOCATION (OPTIONAL)	"EAST OF TRP ZERO ZERO FOUR"
RANGE (OPTIONAL)	"TWO FOUR HUNDRED"
CONTROL (OPTIONAL)	"DEPTH" "AT MY COMMAND"
EXECUTION	"FIRE"
TERMINATION	"CEASE FIRE"

3-204. Below is an example of a spot report given to the platoon leader by his wingman and the platoon leader's response, which gives only those elements necessary to complete the fire command:

"RED ONE, THIS IS RED TWO, IDENTIFIED TWO PCs EAST OF TRP ZERO ZERO FOUR, ONE TWO HUNDRED METERS, OVER."

"RED TWO, THIS IS RED ONE, FIRE."

SECTION V - FIRE CONTROL AND DISTRIBUTION

3-205. The cavalry and reconnaissance platoons must be able to conduct reconnaissance, security, and economy-of-force missions. Scout crews must be able to provide direct-fire support for maneuvering scout vehicles and dismounted patrols. Effective fire control measures are required to avoid fratricide and allow the platoon to retain its freedom of maneuver.

3-206. In all situations, fire control and distribution must be accomplished by individual vehicles, sections, and platoons. On many occasions, particularly in defensive operations, the platoon leader will be in a position to direct the fires of the entire platoon. On other occasions, particularly in offensive operations, fire control and distribution may begin at section level. As the situation develops, the platoon leader controls the platoon fires and distributes them effectively.

3-207. This section discusses a standardized way of controlling and directing fires within the scout platoon section platoon. It includes the procedures used from the time targets are acquired, through the placement of fires on those targets.

Principles of Fire Control and Distribution

3-208. To maximize an element's ability to engage the enemy, leaders must synchronize the fires of all direct-fire weapons and direct-fire assets. The scout platoon achieves fire control and distribution through fire plans and fire commands. When developing, refining, and executing fire plans, leaders must apply the following principles:

- Destroy the most dangerous target(s) first. Targets should be engaged in relation to the danger they present. If two or more targets are equal threats, the closest one should be engaged first.
- Avoid target overkill. Engage targets one-on-one and for one-shot kills with the TOW. Avoid continuous engagement of disabled or destroyed vehicles.
- Concentrate on the entire sector. Try to acquire targets as far out as possible, but do not become fixated on distant areas. Scan the close-in areas as well to confirm that nothing has penetrated close. If possible, use dismounted elements to complement the vehicle along more restrictive approaches when fields of fire are limited, allowing the gunner manning the vehicle-mounted weapons to acquire targets at greater distances.
- Control fires to achieve the best shots and expose only those vehicles needed for the engagement. Use only those vehicles or weapon systems that have the best chance of destroying the enemy. All other vehicles/weapon systems should remain hidden until additional targets are within the engagement area, the

firing vehicle needs additional help in destroying the enemy, or they are needed to assist in the withdrawal of the engaged element.

- Use the appropriate weapon for the target. Each weapon system has its own capabilities and limitations. The fire plan should use the weapon systems to complement each other.
- Conserve ammunition, when possible. Continuously monitor the ammunition supply. Reload and cross-level immediately after each engagement. Do not wait until the ammunition is depleted to request resupply.
- Avoid fratricide. When possible, avoid engagements that are close to friendly elements. Control movement and fires using easily identifiable control measures, and rehearse actions for all phases of the operation.

Standing Operating Procedures

3-209. Platoons must establish fire control and distribution SOPs. Squad leaders must remain aware of the tactical situation, maintain contact with dismounted elements at all times, and coordinate with adjacent elements.

3-210. A well-rehearsed platoon SOP ensures quick reaction times. The SOP should include area coverage responsibilities and weapons-ready postures for different situations (such as road marches, halts, and various battle drills). Battalion, squadron, or troop SOPs should prescribe the combat load of ammunition, by type and amount. The section leader should prescribe the weapons-ready posture (battlecarry) that makes the best use of available firepower in the present situation.

3-211. The following lists situations for which the section leader should plan when forming his section SOPs (see ARTEP 17-57-10-MTP):

- Actions on contact.
- Reaction to ambush.
- Reaction to air attack.
- Deliberate ambush.
- Reaction to artillery strike.

3-212. The section should be prepared to engage PCs, suppress ATGMs with machine guns, and engage tanks with TOWs. (TOWs can also be used on BMPs at long ranges.) TOWs are fired from covered and concealed positions. The weapons-ready posture may have to be adjusted, or ammunition redistributed, after an engagement to make sure that vehicles have the ammunition or missiles needed.

Fire Control Measures

3-213. Fire control measures are used to coordinate and mass direct and indirect fires in the most efficient manner possible. These measures include: sectors of fire, engagement areas, terrain reference points, phase lines, and engagement priorities. Their use must be routine, with no need for detailed or lengthy instruction.

SECTORS OF FIRE

3-214. Sectors of fire are areas that are covered by observation and fire, starting at the weapon system and extending to its maximum effective range. Sectors of fire must overlap with adjacent element's sectors of fire. Plans must be made to cover dead space within and between sectors to maintain coverage.

- The *primary sector of fire* is the main area on which the leader wishes the weapon system to concentrate its firepower, usually overlooking a main engagement area. The primary sector of fire is covered by the primary and alternate fighting positions.
- The *secondary sector of fire* is assigned to engage a secondary avenue of approach or cover another vehicle's sector, if it is required. The secondary sector of fire is covered by the supplementary fighting position.

ENGAGEMENT AREAS

3-215. Engagement areas are enclosed areas that are located away from the weapon system. They are specifically designed to mass fires from several different weapon systems simultaneously. The area should be

supported by direct and indirect fires. Obstacles should be used to channel the enemy into the areas of engagement and trap him there.

TARGET REFERENCE POINTS

3-216. A TRP is an easily recognizable point on the ground (natural or man-made) used for identifying enemy targets or controlling direct fires. TRPs are used to designate targets of opportunity, shift fire, or assign sectors of fire.

3-217. In the defense, TRPs are assigned for vehicles along mounted avenues of approach. In the offense, TRPs are assigned on likely enemy locations or on prominent terrain features. To avoid confusion, the number of TRPs should be limited to the number required to distribute and control fire.

3-218. When using a TRP to hand off targets, compass directions (north, east, south, and west) are used rather than right or left, because each vehicle may be viewing the TRP from a different direction.

3-219. TRPs are indirect-fire targets. The FIST will assign each TRP a target identification number. The target identification number consists of two letters and four numbers (for example, AB5010). These identification numbers are recorded on range cards in the data section for easy reference and control. To simplify fire commands, TRPs may be referred to by the last three digits (for example, TRP AB5010 may be referred to as TRP 010).

PHASE LINES

3-220. A phase line is a simple and effective linear control measure normally used to control movement; it can also be used to control and distribute the fire of several widely separated vehicles. The section leader uses phase lines to indicate to his crews when to fire and when to displace to an alternate position. Any prominent (natural or man-made) linear terrain feature (ridgeline, river or stream, road, or railroad track) can be used as a phase line.

3-221. In either offensive or defensive operations, phase lines can be used to start or stop firing simultaneously, shift fire to another sector, or indicate when vehicles are to move to alternate or supplementary positions.

ENGAGEMENT PRIORITIES

3-222. Engagement priorities are high-value targets that, if destroyed, could break an attacking enemy's momentum or destroy the enemy's cohesion in the defense.

Fire Distribution

3-223. Fire distribution is a combination of fire patterns and control methods used to effectively distribute direct fire from multiple weapon systems on several targets.

FIRE PATTERNS

3-224. There are three basic fire patterns that can be used to distribute fire when engaging multiple targets: frontal fire, cross fire, and depth fire.

- Frontal fire is used to engage targets arrayed laterally in front of the platoon or section. The left most vehicle fires on the left most target; the right most vehicle fires on the right most target. As targets are destroyed, fires are shifted toward the center of the enemy formation.
- Cross fire is used when targets are positioned laterally and obstructions prevent vehicles from firing to their front. The left-most vehicle engages the right-most target; and the right-most vehicle engages the left-most target. As targets are destroyed, fires are shifted toward the center of the enemy formation and from far to near.
- Depth fire is used when targets are arrayed perpendicular to the platoon or section in depth. A designated vehicle engages the farthest target; and another vehicle engages the closest target. As targets are destroyed, fires are shifted to the center of the enemy formation.

CONTROLLING PLATOON OR SECTION FIRES

3-225. There are four basic methods that may be used to control fires: simultaneous fire, massed fires, observed fire, and alternating fires.

- Simultaneous fire occurs when all vehicles of a platoon or section are firing into their assigned sectors at the same time. The simultaneous-fire method is used when moving while unprotected or when surprised by many enemy vehicles, requiring immediate massed return fires.
- Massed fires occur when all vehicles and dismounted weapons are concentrated on a specific target or a selected area. The massed-fires method is used to produce a high volume of fire.
- Observed fire occurs when the firing vehicle engages targets while his wingman observes the effects of the fire and helps to spot and call fire corrections. The wingman provides local security while the firing vehicle concentrates on the engagement area. The observed-fire method is normally used when TOW vehicles are engaging long-range targets, or when engaging dismounted elements at long range.
- Alternating fires allow one vehicle to shift firing positions while the other engages targets. The alternating-fires method provides constant fire into the engagement area, while hindering the enemy's attempts to acquire and suppress firing vehicles. This method can be conducted within section and by section.

Platoon Fire Planning

3-226. Platoon fire planning begins when the platoon leader receives his mission. Fire planning is a continuous process; it does not stop until the platoon's mission is accomplished. Fire planning prescribes fire control and distribution for all available weapons to support the scheme of maneuver. Fire planning must also include planning for indirect fires.

DEFENSIVE FIRE PLANNING

3-227. Defensive fire planning is normally deliberate and detailed because time is available. To develop a defensive fire plan, the platoon leader—

- Determines where the enemy most likely will attack, based on enemy doctrine and terrain.
- Designates control measures to initiate, shift, mass, and cease fires.
- Assigns primary, alternate, and supplementary fighting positions for each vehicle.
- Receives information from subordinate leaders (sector sketches from each vehicle).
- Completes the platoon fire plan and gives a copy of the sector sketch to the troop/company commander and all vehicle commanders.

OFFENSIVE FIRE PLANNING

3-228. It will not be possible to develop fire plans for offensive operations in the same degree of detail as for defensive operations. Extensive use of map and leader reconnaissance, TRPs, platoon targets, and platoon SOPs will assist the platoon leader in developing his plan. When developing offensive fires, the platoon leader must consider many aspects of the operation, such as:

- Mission to be accomplished.
- Enemy strengths and weaknesses.
- Likely or known enemy locations.
- Indirect fire support and smoke employment.
- Control measures (phase lines, checkpoints, limits of advance, and TRPs).
- Route of movement.
- Movement techniques.
- Sectors of responsibility (platoon and section).
- Operational readiness status of equipment.
- Friendly forces' situation.
- Movement information.

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Chapter 4

Gunnery Skills Test (GST)

The GST evaluates the crew member's ability to perform gunnery-related skills. It does not replace tasks in the 19D soldier's manuals. The tasks used in this chapter provide the commander a means to evaluate and determine that a crew has reached proficiency prior to live-fire gunnery. The GST should also be used as a diagnostic tool to determine the level and effectiveness of cross-training throughout the unit.

The unit commander and master gunner must enforce the training of the GST tasks. The tasks conducted by a scout will be determined by the platform(s) with which his platoon will qualify for that gunnery. Every soldier will conduct all tasks required for any platform or weapon in the platoon, regardless of whether he will use that specific platform or weapon (for example, an M2 caliber .50 gunner will also conduct the tasks for the MK-19 machine gun in a HMMWV scout platoon). The following is a generic breakdown of task requirements and may be changed using the above guidance:

- CFV-pure platoon: Tasks 1 through 21.
- Stryker RV-pure platoon: Tasks 18 through 25.
- HMMWV-pure platoon with TOW launcher: Tasks 18 through 29.
- HMMWV-pure platoon without TOW launcher: Tasks 18 through 25.
- CFV/HMMWV-mix platoon: Tasks 1 through 25.

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SECTION I - ADMINISTRATIVE PROCEDURES

4-1. The GST is administered using tasks, conditions, and standards, as well as administrative guidelines and performance checklists for each type of weapon system. Battalion commanders may add tasks to the GST for a more comprehensive evaluation, but at no time will any tasks be deleted from the GST. Once basic proficiency has been attained, commanders should include NBC conditions in GST training.

Requirements

4-2. As a minimum, soldiers must take the GST twice a year, when they (crew members) change positions, and before gunnery qualification, unless the soldier just qualified within the past three months (four months for RC) in his current vehicle position.

4-3. The crew member must complete all actions outlined in the performance checklist within a specified time limit to achieve a GO for the task. To achieve an *overall* GO on the GST, the crew member must receive a GO on all tasks.

4-4. Preliminary gunnery training should be conducted before administering the GST.

Evaluation Procedures

ADMINISTRATIVE PROCESS

4-5. Stations are set up whereby crew members will conduct one or more GST tasks. At the station, the evaluator logs crew member's information on a roster. He provides the crew member with all materials and equipment and displays them in the manner outlined in this guide. The evaluator must use the criterion performance checklist for each task. He informs the crew member of his performance on the task, annotates the crew member's Scout Gunnery Skills Test Checksheet, DA Form 7559-R (see Figure 4-1), and directs him either to the next station or to further training. Only one crew member at a time can be tested, unless otherwise specified in the test administrative guide.

ADMINISTRATIVE PROCEDURES FOR PERSONNEL RECEIVING A NO-GO

4-6. If the crew member does not achieve the standard indicated on the checklist, he receives a NO-GO. When a crew member receives a NO-GO, he must be critiqued, to include an explanation of his mistakes and what he must do to correct them. The crew member will be retested in accordance with the local SOP.

Evaluators

4-7. Either internal or external evaluators may evaluate GST; however, external evaluation is recommended. All evaluators must have been GST qualified within one year of testing. Evaluators must have achieved a GO on the task they are to evaluate within 30 days of testing.

Evaluation Criteria

4-8. The unit's evaluation criteria cover sheet must include the date, crew member's name, grade, unit, duty position, bumper number, evaluator's name, overall rating (GO/NO-GO), and remarks (vehicle type) for each task performed. Personnel receive either a GO or a NO-GO on each task. A soldier receives a score of NO-GO when he—

- Fails to complete the task.
- Incorrectly performs a task or step.
- Fails to meet the time standards.

4-9. At the conclusion of each task, any crew member failing to meet the prescribed standards will be critiqued, to include an explanation of mistakes and what to do to correct them. Retesting will be in accordance with the local SOP.

Personnel, Equipment, and Material Required

4-10. The personnel, equipment, and material listed below are required for all stations. Additional items, if required, are listed in the test administrative guide for each particular task.

- Qualified 19D, Sergeant or above.
- FM 3-20.8.
- Stopwatch.
- Clipboard with pen.
- One helper, qualified 19D, Sergeant or below.

SECTION II - TEST STATIONS

4-11. Each station consists of a test administration guide and recommended performance checklist for each station. The performance checklists for all stations must be cross-referenced with the latest TMs. In all instances, the TM procedures take precedence for scoring criteria. Additionally, an attempt to further cross-reference with the applicable soldier's manuals should be made to ensure standardization in training and testing.

SCOUT GUNNERY SKILLS TEST CHECKSHEET			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
1. NAME	2. RANK	3. UNIT	4. TEST DATE (YYYYMMDD)
5. DUTY POSITION	6. BUMPER #	7. EVALUATOR'S NAME	8. OVERALL RATING ☐ GO ☐ NO-GO
9. REMARKS			
Note: Evaluators will initial in the appropriate box to indicate the outcome of each task (GO or NO-GO) and annotate the number of			
10. TASK TITLE		GO	NO-GO
			NUMBER OF RETESTS
Task 1	Remove...an M242 25-mm Gun.		
Task 2	Load a 25-mm Gun Feeder.		
Task 3	Unload and Clear an M242 25-mm Gun Feeder.		
Task 4	Load and Unload the 25-mm AP Ready Box.		
Task 5	Load and Unload the 25-mm HE Ready Box.		
Task 6	Apply Immediate Action on an M242 25-mm Gun.		
Task 7	Disassemble...an M240C Coaxial Machine Gun.		
Task 8/8A	Install an M240C Coaxial Machine Gun.		
Task 9/9A	Remove an M240C Coaxial Machine Gun.		
Task 10/10A	Load...an M240C Coaxial Machine Gun.		
Task 11/11A	Clear M240C and Unload 7.62-mm Ammunition.		
Task 12	Raise...the TOW Launcher in the Power Mode.		
Task 13	Raise and Lower the TOW Launcher in the Manual Mode.		
Task 14	Load the CFV TOW Launcher.		
Task 15	Fire and Apply Immediate Action for a TOW Misfire.		
Task 16	Remove a Misfired TOW Missile from the TOW Launcher.		
Task 17/17A	Boresight the Turret Weapon Systems.		
Task 18	Prepare a Range Card.		
Task 19	Identify Combat Vehicles.		
Task 20/20A	Clear...an M240B/M60 Machine Gun.		
Task 21/21A	Mount...the Unit-Issued Night-Vision Sight.		
Task 22	Clear...an M2 HB Machine Gun.		
Task 23	Clear...an MK-19 40-mm Machine Gun.		
Task 24	Mount...the Unit-Issued Night-Vision Sight on M2 HB Machine Gun.		
Task 25	Mount...Unit-Issued Night-Vision Sight on the MK-19 40-mm Machine Gun.		
Task 26	Load, Arm, and Unload an Encased TOW Missile.		
Task 27	Perform...for a Hangfire or Misfire on an M220-A2 TOW Missile Launcher on an M966 HMMWV.		
Task 28	Stow an M220-A1 TOW Launcher System in an M966 HMMWV and Place an M966 HMMWV in the Ready-to-Fire Configuration.		
Task 29	Assemble the M220-A2 TOW Launcher System.		

DA FORM 7559-R, APR 2005

APD V1.00

Figure 4-1. Scout Gunnery Skills Test Checksheet, DA Form 7559-R.

Task 1

Remove, Disassemble, Assemble, and Install an M242 25-mm Gun

TEST ADMINISTRATIVE GUIDE

TASK: Remove, disassemble, assemble, and install an M242 25-mm gun.

CONDITIONS: Given a CFV with an installed 25-mm gun.

STANDARDS: The crew member will—

- Within 10 minutes, remove and disassemble the M242 25-mm gun.
- Within 10 minutes, assemble and install the M242 25-mm gun so that it functions properly.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV with basic issue items (BII).

PRETEST PREPARATION:

- Move the trim vane to the workstand position (M2/M3 only).
- Remove the 25-mm gun and make sure all parts are present.
- Replace all unserviceable or missing parts.
- Install the M242 25-mm gun.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Move the gun elevation to zero elevation.
- Make sure the master and turret power switches are in the OFF position.
- Make sure the turret is in MANUAL mode.
- Make sure the gun guard and gas bag are removed.
- If the weapon is not properly installed after each test, the weapon must be removed, checked, and properly installed before another crewman can be tested.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 20 minutes

Total time: 25 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task tests you on your ability to remove, disassemble, assemble, and install the M242 25-mm gun. Before the helper will assist you in removing the gun barrel, you must unlock and begin the removal of the barrel. During reassembly, the helper will assist you by lifting the gun barrel, but you are responsible for guiding and locking the barrel in place. You will have 10 minutes to remove and disassemble the gun and 10 minutes to assemble and install the gun. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed each task after the appropriate time, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 1 **Remove, Disassemble, Assemble, and Install an M242 25-mm Gun**

GO NO-GO

1. Removed and disassembled the M242 25-mm gun.
 - a. Removed the feeder.

Note. Steps (1) through (10) must be completed in sequence.

(1) Checked to make sure the bolt and bolt position indicator were in the SEAR position.	_____	_____
(2) Made sure the manual safety handle was in the SAFE position.	_____	_____
(3) Raised the feeder handle.	_____	_____
(4) Removed the power cable.	_____	_____
(5) Lowered the feeder handle.	_____	_____
(6) Removed the link eject chutes.	_____	_____
(7) Removed the feed chutes.	_____	_____
(8) Pulled out the straight drive shaft handle.	_____	_____
(9) Raised the feeder handle.	_____	_____
(10) Removed the feeder.	_____	_____
(11) Removed the feeder from the turret to the crew area.	_____	_____
(12) Removed any ammunition from the gun rotor.	_____	_____
(13) Cleared the feeder by cycling twice in HE and once in AP.	_____	_____
(14) Lowered the feeder handle and placed the feeder on a clean, flat surface.	_____	_____
(15) Pushed in the straight drive shaft handle on the receiver.	_____	_____
(16) Made sure the breach, ejection port, and bolt surface were cleared of all spent casings or live ammunition.	_____	_____
b. Removed the barrel.		
(1) Unlocked the gun barrel.	_____	_____
(2) Removed the gun barrel.	_____	_____
c. Removed the receiver.		
(1) Unlocked the 25-mm gun receiver.	_____	_____
(2) Removed the receiver from the trunnion.	_____	_____
(3) Removed the receiver from the turret to the crew area.	_____	_____
d. Removed the bolt and track.		
(1) Pulled out the straight drive shaft handle.	_____	_____
(2) Cycled the bolt out of the SEAR position.	_____	_____
(3) Removed the track and bolt assembly.	_____	_____
(4) Inserted the straight drive shaft handle.	_____	_____

	GO	NO-GO
e. Disassembled the bolt and track assembly.		
(1) Removed the bolt carrier from the track assembly.	_____	_____
(2) Unlocked the bolt from the forward locking position.	_____	_____
(3) Removed the firing pin sleeve keeper.	_____	_____
(4) Removed the firing pin sleeve and firing pin from the bolt and separated the pin and sleeve.	_____	_____
(5) Removed the cam pin.	_____	_____
(6) Removed the bolt from the bolt carrier.	_____	_____
f. Completed the performance measures within 10 minutes.	_____	_____
2. Assembled and installed the 25-mm gun.		
a. Assembled the track and bolt assembly.		
(1) Slid the bolt into the bolt carrier.	_____	_____
(2) Inserted the cam pin.	_____	_____
(3) Inserted the firing pin and sleeve into the bolt.	_____	_____
(4) Inserted the firing pin sleeve keeper.	_____	_____
(5) Locked the bolt in the forward position.	_____	_____
(6) Placed the bolt and carrier on the track assembly.	_____	_____
b. Installed the bolt and track assembly.		
(1) Pulled out the straight drive shaft handle.	_____	_____
(2) Inserted the bolt and track assembly into the receiver.	_____	_____
(3) Locked the track latch handle.	_____	_____
(4) Moved the bolt to the SEAR position.	_____	_____
(5) Pushed in the straight drive shaft handle.	_____	_____
c. Installed the receiver.		
(1) Pulled the anti-rotation latch handle out.	_____	_____
(2) Installed the receiver into the trunnion.	_____	_____
(3) Locked the receiver in place.	_____	_____
d. Installed the barrel.		
(1) Installed the barrel into the barrel support.	_____	_____
(2) Locked the barrel into place.	_____	_____
e. Installed the feeder.		
(1) Verified the feeder timing.	_____	_____
(2) Pulled out the drive shaft handle.	_____	_____
(3) Made sure the 25-mm gun bolt was in the SEAR position.	_____	_____
(4) Raised the feeder handle.	_____	_____
(5) Positioned the feeder on the receiver.	_____	_____
(6) Lowered the feeder handle.	_____	_____
(7) Inserted and locked the straight drive shaft handle.	_____	_____
(8) Installed the feed chutes.	_____	_____
(9) Installed the link eject chutes.	_____	_____

	GO	NO-GO
(10) Raised the feeder handle.	_____	_____
(11) Installed the power cable.	_____	_____
(12) Lowered the feeder handle.	_____	_____
f. Completed the performance measures within 10 minutes.	_____	_____

Task 2

Load a 25-mm Gun Feeder

TEST ADMINISTRATIVE GUIDE

TASK: Load a 25-mm gun feeder.

CONDITIONS: Given a CFV with 25-mm ammunition loaded in the AP and HE ready boxes.

STANDARDS: Within 5 minutes, the crew member will load the 25-mm gun so that it is ready to fire.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.

PRETEST PREPARATION:

- Make sure all power is off.
- Inspect and load 45 rounds of dummy ammunition in both the AP and HE ready boxes.
- Clear the 25-mm gun.
- Make sure the HE and AP feed chutes are present and undamaged.
- Set the travel lock.
- Make sure the ammunition is in the AP/HE forwarder.
- Make sure the bolt and bolt position indicators are in the SEAR position.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure all turret power is off.
- Make sure the travel lock is set.
- Make sure the 14-mm loading wrench is in the STOWAGE position.
- Make sure the bolt and bolt position indicators are in the SEAR position.

TEST PLANNING TIME:

Administration time	5 minutes
Test time:	<u>5</u> minutes
Total time:	10 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to load the M242 25-mm gun feeder. You will have 5 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 5 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 2

Load a 25-mm Gun Feeder

	GO	NO-GO
1. Loaded the 25-mm gun feeder.		
a. Made sure the bolt and bolt position indicators were in the SEAR position.	_____	_____
b. Made sure the manual safe handle was in the SAFE position.	_____	_____
c. Pulled out the feed select solenoid to the HE position.	_____	_____
d. Forwarded the HE ammunition to the 25-mm gun feeder.	_____	_____
e. Loaded the 25-mm gun feeder with two rounds of HE ammunition.	_____	_____
f. Released the tension off the HE ammunition.	_____	_____
g. Pushed the feed select solenoid to the AP position.	_____	_____
h. Forwarded the AP ammunition to the 25-mm gun feeder.	_____	_____
i. Loaded the 25-mm gun feeder with one round of AP ammunition.	_____	_____
j. Released the tension off the AP ammunition.	_____	_____
2. Completed the performance measures within 5 minutes.	_____	_____

Task 3

Unload and Clear an M242 25-mm Gun Feeder

TEST ADMINISTRATIVE GUIDE

TASK: Unload and clear an M242 25-mm gun feeder.

CONDITIONS: Given a CFV with BII and a 25-mm gun installed and loaded with dummy ammunition (M794).

STANDARDS: Within 10 minutes, the crew member will unload and clear the 25-mm gun feeder.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.

PRETEST PREPARATION:

- Make sure the turret power is on.
- Make sure both ready boxes are loaded with 45 rounds of dummy ammunition.
- Make sure the feeder is loaded with one AP round and two HE rounds.
- Set the turret travel lock.
- Set the ARM-SAFE-RESET switch to the ARM position, and select the ammunition.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the master power is on.
- Make sure the turret tools are in the proper stowage position.
- Make sure the feeder is loaded with ammunition.
- Make sure the ARM-SAFE-RESET switch is in the ARM position and the ammunition is selected.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 10 minutes

Total time: 15 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to unload and clear the M242 25-mm gun feeder. You will have 10 minutes to complete this task. Do you understand these instructions?” (Answer questions.) “You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 3

Unload and Clear an M242 25-mm Gun Feeder

	GO	NO-GO
1. Unloaded the 25-mm gun feeder.		
a. Moved the ARM-SAFE-RESET switch to the RESET position, then to the SAFE position.	_____	_____
b. Checked to make sure the bolt and bolt position indicator were in the SEAR position.	_____	_____
c. Turned the turret power off.	_____	_____
d. Moved the manual safe lever to the SAFE position.	_____	_____
e. Raised the feeder handle.	_____	_____
f. Removed the power cable.	_____	_____
g. Lowered the feeder handle.	_____	_____
h. Disconnected the link eject chutes and removed the links.	_____	_____
i. Unloaded the HE ammunition.	_____	_____
j. Unloaded the AP ammunition.	_____	_____
k. Removed the feed chutes.	_____	_____
l. Pulled out the straight drive shaft handle.	_____	_____
m. Raised the feeder handle.	_____	_____
n. Removed the feeder.	_____	_____
o. Removed any ammunition from the gun rotor.	_____	_____
p. Cleared the feeder by cycling once in HE and once in AP.	_____	_____
q. Removed any rounds or expended casings from the receiver and ejection port.	_____	_____
2. Completed the performance measures within 10 minutes.	_____	_____

Task 4

Load and Unload the 25-mm AP Ready Box

TEST ADMINISTRATIVE GUIDE

- TASK:** Load and unload the 25-mm AP ready box.
- CONDITIONS:** Given a CFV with the turret positioned at AP LOAD and 45 M794 dummy rounds.
- STANDARDS:** The crewman will—
- Within 6 minutes, load 45 rounds in the AP ready box.
 - Within 6 minutes, unload 45 rounds from the AP ready box and separate the ammunition into three 15-round belts.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.
- TM 9-2350-284-10-2, TM 9-2350-252-10-2, or TM 9-2350-294-10-2-1.
- 45 rounds of M794 dummy ammunition.

PRETEST PREPARATION:

- Position the turret at the AP LOAD position with the travel lock engaged.
- Place three 15-round belts of M794 ammunition on the floor of the hull to the rear of the turret shield door.
- Inspect the AP ready box door for serviceability; replace all unserviceable or missing parts.

PRETEST CONDITIONS FOR EACH CREWMAN:

- The turret is in the AP LOAD position.
- The master power and turret power is off.
- The AP ready can door is secured.
- The ammunition selector lever is in the M919 position.
- The turret shield door is closed.
- The ammunition is in three belts of 15 round each.

TEST PLANNING TIME:

Administrative time:	6 minutes
Test time:	<u>12</u> minutes
Total time:	18 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to load and unload the AP ready box. You will have 6 minutes to load the AP ready box, and 6 minutes to unload the AP ready box and separate the ammunition into three 15-round belts. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed each task after the appropriate time, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 4

Load and Unload the 25-mm AP Ready Box

	GO	NO-GO
1. Loaded the 25-mm AP ready box.		
a. Inspected the belts for misaligned rounds.	_____	_____
b. Belted the three 15-round belts together.	_____	_____
c. Knocked on the turret shield door and announce "LOADING AP."	_____	_____
d. Opened the turret shield door.	_____	_____
e. Removed the AP ready box door.	_____	_____
f. Hung the first round, double-link end first.	_____	_____
g. Hung the 25th and 26th rounds.	_____	_____
h. Inserted the single-link end of the belt and forwarded the ammunition above the forwarder enough that the rounds stayed up above the forwarder.	_____	_____
i. Replaced the AP ready box door.	_____	_____
j. Made sure the ammunition selector lever was in the AP position.	_____	_____
k. Closed the turret shield door and announced "AP LOADED."	_____	_____
l. Completed the performance measures within 6 minutes.	_____	_____
2. Unloaded the AP ready box.		
a. Knocked on the turret shield door and announced "UNLOADING AP."	_____	_____
b. Opened the turret shield door.	_____	_____
c. Removed the AP ready box door.	_____	_____
d. Removed the ammunition.	_____	_____
e. Replaced the AP ready box door.	_____	_____
f. Closed the turret shield door and announced "AP UNLOADED."	_____	_____
g. Separated the ammunition into three 15-round belts.	_____	_____
3. Completed the performance measures within 6 minutes.	_____	_____

Task 5

Load and Unload the 25-mm HE Ready Box

TEST ADMINISTRATIVE GUIDE

TASK: Load and unload the 25-mm HE ready box.

CONDITIONS: Given a CFV with the turret positioned at HE LOAD and 75 M794 dummy rounds.

STANDARDS: The crewman will—

- Within 6 minutes, load 75 rounds in the HE ready box.
- Within 6 minutes, unload 75 rounds from the HE ready box and separate the ammunition into five 15-round belts.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.
- TM 9-2350-284-10-2, TM 9-2350-252-10-2, or TM 9-2350-294-10-2-1.
- 75 rounds of 25-mm dummy ammunition.

PRETEST PREPARATION:

- Position the turret at the HE LOAD position with the travel lock engaged.
- Place five 15-round belts of M794 ammunition on the floor of the hull to the rear of the turret shield door.
- Inspect the HE ready box door for serviceability; replace all unserviceable or missing parts.

PRETEST CONDITIONS FOR EACH CREWMAN:

- The turret position is in the HE load position.
- The master power and turret power are off.
- The HE ready can door is secured.
- The ammunition selector lever is in the AP position.
- The turret shield door is closed.
- The ammunition is in five belts of 15 rounds each.

TEST PLANNING TIME:

Administrative time: 6 minutes

Test time: 12 minutes

Total time: 18 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to load and unload the 25-mm HE ready box. You will have 6 minutes to load the HE ready box and 6 minutes to unload the HE ready box and separate the ammunition into five 15-round belts. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed each task after the appropriate time, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 5

Load and Unload the 25-mm HE Ready Box

	GO	NO-GO
1. Loaded the 25-mm HE ready box.		
a. Inspected the belts for misaligned rounds.	_____	_____
b. Belted the five 15-round belts together.	_____	_____
c. Knocked on the turret shield door and announced "LOADING HE."	_____	_____
d. Opened the turret shield door.	_____	_____
e. Removed the HE ready box door.	_____	_____
f. Hung the first five rounds, double-link end first.	_____	_____
g. Hung the 19th, 24th, and 25th rounds.	_____	_____
h. Counted out 25 rounds, hung the 24th and 25th rounds, and continued the process until the rounds were loaded.	_____	_____
i. Replaced the HE ready box door.	_____	_____
j. Made sure the ammunition selector lever was in the HE position.	_____	_____
k. Closed the turret shield door and announced "HE LOADED."	_____	_____
l. Completed the performance measures within 6 minutes.	_____	_____
2. Unloaded the 25-mm HE ready box.		
a. Knocked on the turret shield door and announced "UNLOADING HE."	_____	_____
b. Opened the turret shield door.	_____	_____
c. Removed the HE ready box door.	_____	_____
d. Removed the ammunition.	_____	_____
e. Replaced the HE ready box door.	_____	_____
f. Closed the turret shield door and announced "HE UNLOADED."	_____	_____
g. Separated the ammunition into five 15-round belts.	_____	_____
3. Completed performance measures within 6 minutes.	_____	_____

Task 6

Apply Immediate Action on an M242 25-mm Gun

TEST ADMINISTRATIVE GUIDE

TASK: Apply immediate action on an M242 25-mm gun.

CONDITIONS: Given a CFV with 25-mm ammunition loaded, BII, and an M242 25-mm gun that fails to fire.

STANDARDS: Within 1 minute, the crew member will apply immediate action so that the 25-mm gun will fire.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.
- TM 9-2350-284-10-2, TM 9-2350-252-10-2, or TM 9-2350-294-10-2-1.

PRETEST PREPARATION:

- Make sure the master power is on.
- Turn the turret power and turret drive on.
- Make sure the turret tools are present and stowed properly.
- Make sure the 25-mm feeder is loaded.

Note. The turret power and turret drive will not be turned on until the crewman has entered the turret.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure all power is on (see note above).
- Make sure the bolt and bolt position indicators are in the SEAR position.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 1 minute

Total time: 6 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to apply immediate action on the 25-mm gun. You will have 1 minute to complete this task. Do you understand these instructions? (Answer questions.) Time will begin when you squeeze the trigger.” (Start time when the crewman squeezes the trigger.)

If the crewman has not completed the task after 1 minute, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 6
Apply Immediate Action on an M242 25-mm Gun

	GO	NO-GO
1. Performed misfire procedures on the 25-mm gun.		
a. Made sure the ARM-SAFE-RESET switch was in the ARM position.	_____	_____
b. Announced "25-MM MISFIRE" to the crew.	_____	_____
c. Released the trigger switches, and waited 5 seconds.	_____	_____
d. Pressed SS of the ammunition selected. (M2A3 only: Moved rate switch on system control box to SS.)	_____	_____
e. Pressed the misfire button.	_____	_____
f. Squeezed the trigger switches.	_____	_____
g. Made sure the SEAR indicator light was illuminated.	_____	_____
2. Completed the performance measures within 1 minute.	_____	_____

Task 7

Disassemble (Field Strip) and Assemble an M240C Coaxial Machine Gun TEST ADMINISTRATIVE GUIDE

- TASK:** Disassemble (field strip) and assemble an M240C coaxial machine gun.
- CONDITIONS:** Given an M240C coaxial machine gun placed on a flat surface and cleared of ammunition.
- STANDARDS:** The crewman will—
- Within 2 minutes, disassemble the M240C coaxial machine gun.
 - Within 2 minutes, assemble the M240C coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, M3A2 ODS, or M3A3 with BII.
- TM 9-2350-284-10-2, TM 9-2350-252-10-2, or TM 9-2350-294-10-2-1.
- M240C coaxial machine gun.

PRETEST PREPARATION:

- Make sure the equipment is operational.
- Make sure the weapon is removed from the vehicle.
- Make sure the weapon is cleared.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the weapon is placed on a flat surface.
- Make sure the weapon is cleared of ammunition.

TEST PLANNING TIME:

Administrative time: 5 minutes
Test time: 4 minutes
Total time: 9 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to disassemble and assemble the M240C coaxial machine gun. The weapon has been cleared. You will have 4 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 4 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 7

Disassemble (Field Strip) and Assemble an M240C Coaxial Machine Gun

	GO	NO-GO
1. Disassembled (field strip) the M240C coaxial machine gun.		
a. Depressed and held the barrel locking latch.	_____	_____
b. Turned the barrel release to the upright position.	_____	_____
c. Removed the barrel.	_____	_____
d. Depressed the trigger pin spring and removed the pin.	_____	_____
e. Pulled the trigger-housing assembly down and back.	_____	_____
f. Pulled the charger handle through the cable guide.	_____	_____
g. Pulled the back plate latch and lift buffer straight up.	_____	_____
h. Pressed the driving spring in, then up, and pulled it out.	_____	_____
i. Depressed the cover latches and raised the cover assembly.	_____	_____
j. Pulled the charger handle back, and pulled out the bolt and operating rod assembly.	_____	_____
k. Closed the cover, and pushed the spring pin out and removed it.	_____	_____
l. Pressed the latches, and removed the cover assembly and feed tray.	_____	_____
2. Reassembled the M240C coaxial machine gun.		
a. Positioned the feed tray and cover assembly, pushed the cover assembly forward, closed the cover, and inserted the spring pin.	_____	_____
b. Inserted the spring pin from the right side.	_____	_____
c. Opened the cover assembly.	_____	_____
d. Set the bolt operating rod assembly on top of the rails (receiver).	_____	_____
e. Extended the bolt to the unlocked position and pushed the assembly all the way in.	_____	_____
f. Closed and locked the cover.	_____	_____
g. Inserted the driving spring in the operating rod, pushed in fully, and lowered it to seat the stud in the hole of the receiver.	_____	_____
h. Installed and latched the buffer.	_____	_____
i. Slid the charger handle through cable guide and positioned the trigger housing assembly in place.	_____	_____
j. Inserted the pin.	_____	_____
k. Inserted the barrel fully into the socket, pushed the barrel release to the right as far as it would go (no less than two and no more than seven clicks).	_____	_____
l. Conducted the function check of the M240C coaxial machine gun.	_____	_____
3. Completed the performance measures within 4 minutes.	_____	_____

Task 8

Install an M240C Coaxial Machine Gun

TEST ADMINISTRATIVE GUIDE

TASK: Install an M240C coaxial machine gun.

CONDITIONS: Given a CFV with BII and a cleared M240C coaxial machine gun.

STANDARDS: Within 2 minutes, the crew member will install the M240C coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, or M3A2 ODS with BII.
- TM 9-2350-284-10-2 or TM 9-2350-252-10-2.
- An operational M240C coaxial machine gun.

PRETEST PREPARATION:

- Make sure the front and rear mounting brackets are present and operational.
- Make sure the M240C coaxial machine gun mounts properly.
- Place the turret in manual mode.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the mounting brackets are not damaged.
- Make sure the M240C coaxial machine gun is not damaged.
- Make sure the turret power and drive is off.
- Make sure the machine gun access doors are closed.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 2 minutes

Total time: 7 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to install the M240C coaxial machine gun. You will have 2 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 2 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 8

Install an M240C Coaxial Machine Gun

	GO	NO-GO
1. Elevated the gun to 300 mils (200 mils for old mount).	_____	_____
2. Installed the M240C coaxial machine gun.		
a. Opened the machine gun access doors.	_____	_____
b. Mounted the machine gun.		
(1) Old mount (M2 and M3):		
(a) Placed the machine gun in the plenum onto the mount.	_____	_____
(b) Aligned the alignment lugs with the cradle mount.	_____	_____
(c) Pushed the machine gun all the way in.	_____	_____
(d) Made sure the machine gun was fully seated.	_____	_____
(2) New mount (M2A2, M2A2 ODS, M3A2, and M3A2 ODS):		
(a) Pulled the retaining pins out.	_____	_____
(b) Placed the machine gun in the plenum.	_____	_____
(c) Pushed the machine gun all the way in.	_____	_____
(d) Made sure the machine gun was fully seated.	_____	_____
(e) Pushed in the retaining pins fully.	_____	_____
(f) Made sure the retaining pins were locked in position by pulling on the rear of the machine gun.	_____	_____
c. Joined and secured the rear mount to the machine gun (old mount).	_____	_____
d. Installed the solenoid cable plug on the plenum jack (old mount).	_____	_____
e. Closed the machine gun access doors.	_____	_____
3. Completed the performance measures within 2 minutes.	_____	_____

Task 8A**Install an M240C Coaxial Machine Gun (M3A2 ODS Applique and M3A3 Only)****TEST ADMINISTRATIVE GUIDE**

TASK: Install an M240C coaxial machine gun (M3A2 ODS Applique and M3A3 only)

CONDITIONS: Given a CFV with BII and a cleared M240C coaxial machine gun.

STANDARDS: Within 2 minutes, the crew member will install the M240C coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3A2 ODS Applique or M3A3 with BII.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.
- An operational M240C coaxial machine gun.

PRETEST PREPARATION:

- Make sure the front and rear mounting brackets are present and operational.
- Make sure the M240C coaxial machine gun mounts properly.
- Place the turret in manual mode.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the mounting brackets are not damaged.
- Make sure the M240C coaxial machine gun is not damaged.
- Make sure the turret power and drive is off.
- Make sure the machine gun access doors are closed.
- Make sure the CTD bracket is latched.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 2 minutes

Total time: 7 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to install the M240C coaxial machine gun. You will have 2 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 2 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 8A
Install an M240C Coaxial Machine Gun (M3A2 ODS Applique and M3A3 Only)

	GO	NO-GO
1. Elevated the gun to 300 mils.	_____	_____
2. Opened the machine gun access doors.		
a. Unlatched the CTD from its bracket.	_____	_____
b. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
c. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
d. Pushed in the right machine gun access door.	_____	_____
3. Mounted the machine gun.		
a. Placed the machine gun on the gun mount with the gun barrel pointing forward and the trigger pointing down.	_____	_____
b. Aligned the mounting holes on the gun with the retaining pins on the gun mount.	_____	_____
c. Pushed the retaining pins fully into the gun.	_____	_____
d. Flipped in the handles on the retaining pins to lock.	_____	_____
e. Checked that the machine gun barrel's locking latch was locked and that the gun barrel did not turn.	_____	_____
4. Closed the machine gun access doors.		
a. Pulled in the right machine gun access door.	_____	_____
b. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
c. Latched the handle on the right machine gun access door.	_____	_____
d. Latched the CTD on the bracket.	_____	_____
5. Completed the performance measures within 2 minutes.	_____	_____

Task 9

Remove an M240C Coaxial Machine Gun (M3, M3A2, and M3A2 ODS)

TEST ADMINISTRATIVE GUIDE

TASK: Remove an M240C coaxial machine gun (M3, M3A2, and M3A2 ODS).
CONDITIONS: Given a CFV with BII and a cleared M240C coaxial machine gun.
STANDARDS: Within 2 minutes, the crewman will remove the M240C coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, or M3A2 ODS with BII.
- TM 9-2350-284-10-2 or TM 9-2350-252-10-2.
- M240C coaxial machine gun (installed).

PRETEST PREPARATION:

- Make sure the master power is off.
- Make sure the turret drive system is in the MANUAL mode.
- Make sure the turret drive system is off.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the weapon is cleared.
- Make sure the turret power is off.
- Make sure the turret drive is off.

TEST PLANNING TIME:

Administrative time: 5 minutes
Test time: 2 minutes
Total time: 7minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to remove the M240C coaxial machine gun. You will have 2 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 2 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 9
Remove an M240C Coaxial Machine Gun (M3, M3A2, and M3A2 ODS)

	GO	NO-GO
1. Removed the M240C coaxial machine gun.		
a. Opened the machine gun access doors.	_____	_____
b. Removed the solenoid cable plug from the plenum jack (old mount).	_____	_____
c. Disconnected the rear mount pin handle from the mount pinhole.	_____	_____
d. Removed the machine gun from the plenum.	_____	_____
e. Closed the machine gun access doors.	_____	_____
2. Completed the performance measures within 2 minutes.	_____	_____

Task 9A**Remove an M240C Coaxial Machine Gun (M3A2 ODS Applique and M3A3 Only)****TEST ADMINISTRATIVE GUIDE**

TASK: Remove an M240C coaxial machine gun (M3A2 ODS Applique and M3A3 Only).

CONDITIONS: Given a CFV with BII and a cleared M240C coaxial machine gun.

STANDARDS: Within 2 minutes, the crewman will remove the coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3A2 ODS Applique or M3A3 with BII.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.
- M240C coaxial machine gun (installed).

PRETEST PREPARATION:

- Make sure the master power is off.
- Make sure the turret drive system is in the MANUAL mode.
- Make sure the turret drive system is off.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the weapon is cleared.
- Make sure the turret power is off.
- Make sure the turret drive is off.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 2 minutes

Total time: 7 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to remove the M240C coaxial machine gun. You will have 2 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 2 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 9A
Remove an M240C Coaxial Machine Gun (M3A2 ODS Applique and M3A3 Only)

	GO	NO-GO
1. Removed the M240C coaxial machine gun.		
a. Unlatched the CTD from its bracket.	_____	_____
b. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
c. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
d. Pushed in the right machine gun access door.	_____	_____
e. Disconnected the rear mount pin handle from the mount pinhole.	_____	_____
f. Removed the machine gun from the plenum.	_____	_____
g. Pulled in the right machine gun access door.	_____	_____
h. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
i. Latched the handle on the right machine gun access door.	_____	_____
j. Latched the CTD on the bracket.	_____	_____
2. Completed the performance measures within 2 minutes.	_____	_____

Task 10**Load, Fire, and Apply Immediate Action on an M240C Coaxial Machine Gun
(M3, M3A2, and M3A2 ODS)****TEST ADMINISTRATIVE GUIDE**

- TASK:** Load, fire, and apply immediate action on an M240C coaxial machine gun (M3, M3A2, and M3A2 ODS)
- CONDITIONS:** Given a CFV with BII, an M240C coaxial machine gun installed, and 300 rounds of dummy 7.62-mm ammunition loaded into the ready box.
- STANDARDS:** Within 6 minutes, the crewman will—
- Load the coaxial machine gun.
 - Fire the coaxial machine gun.
 - Apply immediate action to the coaxial machine gun.

Personnel, Equipment, and Material Required.

- Items listed on page 4-2.
- An operational M3, M3A2, or M3A2 ODS with BII.
- TM 9-1005-313-10, TM 9-2350-252-10-2, or TM 9-2350-284-10-2.
- M240C coaxial machine gun.
- 300 rounds of 7.62-mm dummy ammunition.

PRETEST PREPARATION:

- Clear the weapon.
- Disassemble and assemble the weapon to ensure that all parts are present and serviceable.
- Make sure the rounds do not bind in the feed chute.
- Remove the rounds from the feed chute.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure all power is off.
- Make sure the M240C coaxial machine gun bolt has been pushed forward.
- Make sure the manual safe lever is in the FIRE position.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 6 minutes

Total time: 11 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to load, fire, and apply immediate action to the M240C coaxial machine gun. You will have 6 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 6 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 10
Load, Fire, and Apply Immediate Action on an M240C Coaxial Machine Gun
(M3, M3A2, and M3A2 ODS)

	GO	NO-GO
1. Loaded the M240C coaxial machine gun.		
a. Opened the forwarder access door (M3 only).	_____	_____
b. Opened the machine gun access doors.	_____	_____
c. Charged the machine gun.	_____	_____
d. Moved the manual safety lever on the machine gun to the SAFE position.	_____	_____
e. Opened the cover assembly and feed tray.	_____	_____
f. Inspected the chamber for rounds.	_____	_____
g. Placed the ammunition in the forwarder.	_____	_____
h. Closed the forwarder access door (M3 only).	_____	_____
i. Forwarded the ammunition to the feed tray.	_____	_____
j. Closed the feed tray.	_____	_____
k. Installed the ammunition belt on the feed tray.	_____	_____
l. Closed the cover assembly.	_____	_____
m. Closed the machine gun access doors.	_____	_____
2. Fired the machine gun.		
a. Made sure the turret drive system switch was in the OFF position.	_____	_____
b. Opened the machine gun access doors.	_____	_____
c. Moved the manual safety to the firing position.	_____	_____
d. Closed the machine gun access doors.	_____	_____
e. Moved the turret power switch to the ON position.	_____	_____
f. Moved the turret drive switch to the ON position.	_____	_____
g. Pressed the 7.62-mm ammunition button.	_____	_____
h. Moved the ARM-SAFE-RESET switch to the ARM position.	_____	_____
i. Fired the machine gun.	_____	_____
3. Applied immediate action procedures to the M240C coaxial machine gun.		
a. Moved the ARM-SAFE-RESET switch to the SAFE position.	_____	_____
b. Announced "COAXIAL MISFIRE" to the crew.	_____	_____
c. Moved the turret drive system switch to the OFF position.	_____	_____
d. Opened the machine gun access doors.	_____	_____
e. Pulled the charger handle back until the bolt locked to the rear.	_____	_____
f. Closed the machine gun access doors.	_____	_____
g. Moved the turret drive system switch to the ON position.	_____	_____
h. Moved the ARM-SAFE-RESET switch to the ARM position.	_____	_____
i. Squeezed the palm switch and trigger switch on the commander's control handle.	_____	_____
4. Completed the performance measures within 6 minutes.	_____	_____

Task 10A
Load, Fire, and Apply Immediate Action on an M240C Coaxial Machine Gun
(M3A2 ODS Applique and M3A3 Only)

TEST ADMINISTRATIVE GUIDE

TASK: Load, fire, and apply immediate action on an M240C coaxial machine gun (M3A2 ODS Applique and M3A3 only).

CONDITIONS: Given a CFV with BII, an M240C coaxial machine gun installed, and 300 rounds of dummy 7.62-mm ammunition loaded into the ready box.

STANDARDS: Within 6 minutes, the crewman will—

- Load the coaxial machine gun.
- Fire the coaxial machine gun.
- Apply immediate action to the coaxial machine gun.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3A2 ODS Applique or M3A3 with BII.
- TM 9-1005-313-10, TM 9-2350-284-10-2, or TM 9-2350-294-10-2-1.
- M240C coaxial machine gun.
- 300 rounds of 7.62-mm dummy ammunition.

PRETEST PREPARATION:

- Clear the weapon.
- Disassemble and assemble the weapon to ensure that all parts are present and serviceable.
- Make sure the rounds do not bind in the feed chute.
- Remove the rounds from the feed chute.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure all power is off.
- Make sure the M240C coaxial machine gun bolt is pushed forward.
- Make sure the manual safe is in the FIRE position.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 6 minutes

Total time: 11 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to load, fire, and apply immediate action to the M240C coaxial machine gun. You will have 6 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 6 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 10A
Load, Fire, and Apply Immediate Action on an M240C Coaxial Machine Gun
(M3A2 ODS Applique and M3A3 Only)

	GO	NO-GO
1. Loaded the M240C coaxial machine gun.		
a. Unlatched the CTD from its bracket.	_____	_____
b. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
c. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
d. Pushed in the right machine gun access door.	_____	_____
e. Charged the machine gun.	_____	_____
f. Moved the manual safety on the machine gun to the SAFE position.	_____	_____
g. Opened the cover assembly and feed tray.	_____	_____
h. Inspected the chamber for rounds.	_____	_____
i. Placed the ammunition in the forwarder.	_____	_____
j. Forwarded the ammunition to the feed tray.	_____	_____
k. Closed the feed tray.	_____	_____
l. Installed the ammunition belt on the feed tray.	_____	_____
m. Closed the cover assembly.	_____	_____
n. Pulled in the right machine gun access door.	_____	_____
o. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
p. Latched the handle on the right machine gun access door.	_____	_____
q. Latched the CTD on the bracket.	_____	_____
2. Fired the M240C coaxial machine gun.		
a. Made sure the turret drive system switch was in the OFF position.	_____	_____
b. Unlatched the CTD from the bracket.	_____	_____
c. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
d. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
e. Pushed in the right machine gun access door.	_____	_____
f. Moved the manual safety lever to the FIRE position.	_____	_____
g. Pulled in the right machine gun access door.	_____	_____
h. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
i. Latched the handle on the right machine gun access door.	_____	_____
j. Latched the CTD on the bracket.	_____	_____
k. Moved the turret power switch to the ON position.	_____	_____
l. Moved the turret drive switch to the ON position.	_____	_____
m. Pressed the 7.62-mm ammunition button.	_____	_____
n. Moved the ARM-SAFE-RESET switch to the ARM position.	_____	_____
o. Fired the machine gun.	_____	_____
3. Applied immediate action procedures to the M240C coaxial machine gun.		
a. Moved the ARM-SAFE-RESET switch to the SAFE position.	_____	_____
b. Announced "COAXIAL MISFIRE" to the crew.	_____	_____

	GO	NO-GO
c. Moved the turret drive system switch to the OFF position.	_____	_____
d. Unlatched the CTD from its bracket.	_____	_____
e. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
f. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
g. Pushed in the right machine gun access door.	_____	_____
h. Pulled the charger handle back until the bolt locked to the rear.	_____	_____
i. Pulled in the right machine gun access door.	_____	_____
j. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
k. Latched the handle on the right machine gun access door.	_____	_____
l. Latched the CTD on the bracket.	_____	_____
m. Moved the turret drive system switch to the ON position.	_____	_____
n. Moved the ARM-SAFE-RESET switch to the ARM position.	_____	_____
o. Squeezed the palm switch and trigger switch on the commander's control handle.	_____	_____
4. Completed the performance measures within 6 minutes.	_____	_____

Task 11

Clear an M240C Coaxial Machine Gun and Unload the 7.62-mm Ammunition (M3, M3A2, and M3A2 ODS)

TEST ADMINISTRATIVE GUIDE

- TASK:** Clear an M240C coaxial machine gun and unload the 7.62-mm ammunition (M3, M3A2, and M3A2 ODS).
- CONDITIONS:** Given a CFV with BII and M240C coaxial machine gun loaded with 300 rounds of 7.62-mm dummy ammunition.
- STANDARDS:** Within 4 minutes, the crewman will—
- Clear the M240C coaxial machine gun.
 - Unload the ammunition from the forwarder and stow it in the ammunition can.

Personnel, Equipment, and Material Required:

- Items listed on page 4-2.
- An operational M3, M3A2, or M3A2 ODS with BII.
- TM 9-1005-313-10, TM 9-2350-252-10-2, or TM 9-2350-284-10-2.
- An operational M240C coaxial machine gun (installed).
- 300 rounds of 7.62-mm dummy ammunition.

PRETEST PREPARATION:

- Clear the weapon.
- Disassemble and assemble the weapon to ensure that all parts are present and operational.
- Install the M240C coaxial machine gun.
- Load the M240C coaxial machine gun with 7.62-mm dummy ammunition.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Turn on the master power.
- Turn on the turret power and turret drive.
- Select and arm the M240C coaxial machine gun.

TEST PLANNING TIME:

Administrative time:	5 minutes
Test time:	<u>4</u> minutes
Total time:	9 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to clear the M240C coaxial machine gun and unload the 7.62-mm ammunition. This task will be scored in sequence. You will have 4 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 4 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 11
Clear an M240C Coaxial Machine Gun and Unload the 7.62-mm Ammunition
(M3, M3A2, and M3A2 ODS)

	GO	NO-GO
1. Cleared the M240C coaxial machine gun.		
a. Moved the ARM-SAFE-RESET switch to the SAFE position.	_____	_____
b. Moved the turret drive switch to the OFF position.	_____	_____
c. Opened the machine gun access doors.	_____	_____
d. Pulled the charger handle back firmly.	_____	_____
e. Moved the manual safety to the SAFE position.	_____	_____
f. Opened the cover assembly.	_____	_____
g. Removed the ammunition belt from the feed tray.	_____	_____
h. Opened the feed tray.	_____	_____
i. Checked to see if the chamber is clear of ammunition.	_____	_____
j. Closed the feed tray.	_____	_____
k. Closed the cover assembly.	_____	_____
l. Moved the manual safety to the FIRE position.	_____	_____
m. Dry fired the machine gun by riding the bolt forward.	_____	_____
n. Pulled the charger handle back firmly.	_____	_____
o. Dry fired the machine gun by riding the bolt forward.	_____	_____
p. Closed the machine gun access doors.	_____	_____
2. Unloaded the 7.62-mm ammunition.		
a. Opened the forwarder access door (M3 only).	_____	_____
b. Removed the ammunition from the feed chute and forwarder (M3 only).	_____	_____
c. Removed the ammunition from the feed chute.	_____	_____
d. Closed the forwarder access door (M3 only).	_____	_____
3. Completed the performance measures within 4 minutes.	_____	_____

Task 11A

Clear an M240C Coaxial Machine Gun and Unload the 7.62-mm Ammunition (M3A2 ODS Applique and M3A3 Only)

TEST ADMINISTRATIVE GUIDE

- TASK:** Clear an M240C coaxial machine gun and unload the 7.62-mm ammunition (M3A2 ODS Applique and M3A3 only).
- CONDITIONS:** Given a CFV with BII and M240C coaxial machine gun loaded with 300 rounds of 7.62-mm dummy ammunition.
- STANDARDS:** Within 4 minutes, the crewman will—
- Clear the M240C coaxial machine gun.
 - Unload the ammunition from the forwarder and stow the ammunition in the ammunition can.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3A2 ODS Applique or M3A3 with BII.
- TM 9-1005-313-10, TM 9-2350-284-10-2, or TM 9-2350-294-10-2-1.
- An operational M240C coaxial machine gun (installed).
- 300 rounds of 7.62-mm dummy ammunition.

PRETEST PREPARATION:

- Clear the weapon.
- Disassemble and assemble the weapon to ensure that all parts are present and operational.
- Install the M240C coaxial machine gun.
- Load the M240C coaxial machine gun with dummy 7.62-mm ammunition.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Turn on the master power.
- Turn on the turret power and turret drive.
- Select and arm the M240C coaxial machine gun.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 4 minutes

Total time: 9 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to clear the M240C coaxial machine gun and unload the 7.62-mm dummy ammunition. This task will be scored in sequence. You will have 4 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 4 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 11A
Clear an M240C Coaxial Machine Gun and Unload the 7.62-mm Ammunition
(M3A2 ODS Applique and M3A3 Only)

	GO	NO-GO
1. Cleared the M240C coaxial machine gun.		
a. Moved the ARM-SAFE-RESET switch to the SAFE position.	_____	_____
b. Turned the turret drive switch to the OFF position.	_____	_____
c. Unlatched the CTD from its bracket.	_____	_____
d. Released the handle on the right machine gun access door to unlatch the door.	_____	_____
e. Pulled out on the left side of the CTD to open the left machine gun access door.	_____	_____
f. Pushed in the right machine gun access door.	_____	_____
g. Pulled the charger handle back firmly.	_____	_____
h. Moved the manual safety lever to the SAFE position.	_____	_____
i. Opened the cover assembly.	_____	_____
j. Removed the ammunition belt from the feed tray.	_____	_____
k. Opened the feed tray.	_____	_____
l. Checked to see if the chamber was clear of ammunition.	_____	_____
m. Closed the feed tray.	_____	_____
n. Closed the cover assembly.	_____	_____
o. Moved the manual safety lever to the FIRE position.	_____	_____
p. Dry fired the machine gun by riding the bolt forward.	_____	_____
q. Pulled the charger handle back firmly.	_____	_____
r. Dry fired the machine gun by riding the bolt forward.	_____	_____
s. Pulled in the right machine gun access door.	_____	_____
t. Pushed in on the left side of the CTD to close the left machine gun access door.	_____	_____
u. Latched the handle on the right machine gun access door.	_____	_____
v. Latched the CTD on the bracket.	_____	_____
2. Unloaded the 7.62-mm dummy ammunition.		
a. Removed the ammunition from the feed chute.	_____	_____
b. Removed the ammunition from the ammunition box.	_____	_____
c. Placed the unloaded ammunition in empty 7.62-mm ammunition cans.	_____	_____
3. Completed the performance measures within 4 minutes.	_____	_____

Task 12

Raise, Prepare for Loading, and Lower the TOW Launcher in the Power Mode TEST ADMINISTRATIVE GUIDE

TASK: Raise, prepare for loading, and lower the TOW launcher in the power mode.

CONDITIONS: Given an operational CFV with the TOW launcher stowed.

STANDARDS: Within 4 minutes, the crewman will—

- Raise the TOW launcher.
- Prepare the TOW for loading.
- Lower the TOW launcher.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV with the TOW launcher stowed.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.

PRETEST PREPARATION:

- Make sure the path of the turret and gun barrel is not blocked or obstructed.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Turn on the master power.
- Move all power select levers, except the TOW launcher elevation lever, to the POWER mode.
- Move the TOW launcher elevation lever to the MANUAL mode.
- Make sure the launcher is stowed properly.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 4 minutes

Total time: 9 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to raise, prepare for loading, and stow the TOW launcher in the power mode. This task will be scored in sequence. You will have 4 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 4 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 12

Raise, Prepare for Loading, and Lower the TOW Launcher in the Power Mode

	GO	NO-GO
1. Raised the TOW launcher.		
a. Moved the turret power switch to the POWER position.	_____	_____
b. Moved the turret drive switch to the POWER position.	_____	_____
c. Turned the LAUNCHER UP-DN switch to the UP position.	_____	_____
d. Squeezed the palm switches until the launcher stopped moving and the LAUNCHER UP indicator light illuminated.	_____	_____
e. Selected TOW by pressing the TOW button.	_____	_____
f. Waited for the TOW test to complete.	_____	_____
2. Prepared to load the TOW launcher.		
a. Released the turret travel lock.	_____	_____
b. Traversed to the TOW LOAD position (5,950 mils).	_____	_____
c. Elevated the launcher to 500 mils.	_____	_____
d. Released the palm switches.	_____	_____
e. Moved the ARM-SAFE-RESET switch to the RESET position, and then to the SAFE position.	_____	_____
f. Set the turret travel lock.	_____	_____
g. Moved the turret drive switch to the OFF position.	_____	_____
h. Announced "TOW LOAD."	_____	_____
3. Returned the turret to the normal operating status.		
a. Moved the turret drive switch to the ON position.	_____	_____
b. Released the turret travel lock.	_____	_____
c. Used the power control handles to traverse the turret back to 6,400 mils.	_____	_____
d. Lowered the gun to "0" mils.	_____	_____
4. Lowered the TOW launcher.		
a. Moved the LAUNCHER UP-DN switch to the DN position.	_____	_____
b. Squeezed the palm switches until the LAUNCHER UP indicator light turned off and the launcher stowed against the turret.	_____	_____
c. Released the palm switches.	_____	_____
d. Turned off the turret drive and turret power.	_____	_____
e. Set the turret travel lock.	_____	_____
5. Completed the performance measures within 4 minutes.	_____	_____

Task 13

Raise and Lower the TOW Launcher in the Manual Mode

TEST ADMINISTRATIVE GUIDE

TASK: Raise and lower the TOW launcher in the manual mode.

CONDITIONS: Given an operational CFV with BIL.

STANDARDS: Within 10 minutes, the crewman will manually raise the TOW launcher.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV with the TOW launcher stowed.
- A 14-mm ratchet.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.

PRETEST PREPARATION:

Note. Pretest will be completed with the actual equipment used for testing.

- Make sure a 14-mm ratchet is available and operational.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Clear the TOW launcher of debris.
- Turn off the master power.
- Turn off the turret power and turret drive.
- Make sure the 14-mm ratchet is properly stowed.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 10 minutes

Total time: 15 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to raise and lower the TOW launcher in the manual mode. You will have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 13
Raise the TOW Launcher in the Manual Mode

	GO	NO-GO
1. Raised the CFV TOW launcher manually.		
a. Moved the TOW elevation drive select lever to the MANUAL position.	_____	_____
b. Made sure the gun elevation drive select lever was in the POWER position.	_____	_____
c. Manually depressed the TOW launcher to clear the stow pin from the saddle.	_____	_____
d. Placed the 14-mm ratchet on the TOW manual lift drive shaft and turned clockwise until the launcher was fully raised.	_____	_____
2. Lowered the CFV TOW launcher manually.		
a. Made sure the TOW elevation drive select lever was in the MANUAL position.	_____	_____
b. Made sure the gun elevation drive select lever was in the POWER position.	_____	_____
c. Depressed the TOW launcher to approximately -100 mils to make sure the stow pin would clear the saddle when the launcher was lowered.	_____	_____
d. Pulled the TOW manual lift release handle out until the launcher was fully lowered.	_____	_____
e. Elevated the TOW launcher until the hand wheel would not turn anymore.	_____	_____
f. Made sure the stow pin seated in the saddle.	_____	_____
3. Completed the performance measures within 10 minutes.	_____	_____

Task 14

Load the CFV TOW Launcher

TEST ADMINISTRATIVE GUIDE

- TASK:** Load the CFV TOW launcher.
- CONDITIONS:** Given an operational CFV with the TOW launcher prepared for loading and dummy TOW rounds mounted in the vertical racks.
- STANDARDS:** Within 4 minutes, the crewman will load the TOW launcher.
- PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:**
- Items listed on page 4-2.
 - An operational CFV with an operational cargo hatch.
 - TM 9-2350-252-10-2, TM 9-2350-284-10-2, or TM 9-2350-294-10-2-1.

PRETEST PREPARATION:

Note. Pretest will be completed with the actual equipment used for testing.

- Clear the TOW launcher of debris.
- Make sure the two dummy TOW rounds are serviceable.
- Make sure the turret is in the TOW LOAD position.
- Turn off the master power.
- Turn off the turret power and turret drive.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the dummy TOW rounds are strapped in the TOW storage rack.
- Close the cargo hatch.
- Clear the crew compartment of any debris.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 4 minutes

Total time: 9 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to load the CFV TOW launcher. This task will be scored in sequence. You will have 4 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 4 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 14
Load the CFV TOW Launcher

	GO	NO-GO
1. Loader announced "LOADING TOW."	_____	_____
2. Opened the cargo hatch cover to the second position.	_____	_____
3. Removed the dust cover from the launcher.	_____	_____
4. Pushed and held the lock handles to the left; pulled down the loading handles.	_____	_____
5. Removed any obstruction from the tubes.	_____	_____
6. Made sure the umbilical connectors did not extend down into the launch tubes.	_____	_____
7. Unstowed the TOW missiles from vertical stowage.	_____	_____
8. Removed the forward handling ring from the nose end of the missile.	_____	_____
9. Removed the electrical connector cover.	_____	_____
10. Inspected the front and rear diaphragms for damage and humidity indicator color.	_____	_____
11. Loaded two TOW missiles into the launcher.	_____	_____
12. Ensured that the loading handles were locked.	_____	_____
13. Closed the cargo hatch and told the gunner that loading was complete.	_____	_____
14. Announced "TOW UPLOADED."	_____	_____
15. Completed the performance measures within 4 minutes.	_____	_____

Task 15

Fire and Apply Immediate Action for a TOW Misfire

TEST ADMINISTRATIVE GUIDE

- TASK:** Fire and apply immediate action for a TOW misfire.
- CONDITIONS:** Given an operational CFV with the TOW launcher erect.
- STANDARDS:** Within 2 minutes, the crewman will—
- Prepare the TOW launcher for firing.
 - Fire the TOW launcher.
 - Apply immediate action for a TOW misfire.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV with the TOW launcher erect.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the vehicle is stopped.
- Clear the TOW launcher of debris.
- Turn on the master power.
- Move all power select levers, except the TOW launcher elevation lever, to the POWER mode.
- Close the driver's hatch and cargo hatch.
- Raise the ramp.
- Close the gunner's hatch.

TEST PLANNING TIME:

Administrative time:	5 minutes
Test time:	2 minutes
Total time:	7 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to fire and apply immediate action for a TOW misfire. This task will be scored in sequence. You will have 2 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 2 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 15

Fire and Apply Immediate Action for a TOW Misfire

	GO	NO-GO
1. Prepared the TOW launcher system for firing.		
a. Turned on the turret power and turret drive.	_____	_____
b. Turned on the night sight.	_____	_____
c. Moved the magnification switch to the HIGH MAG position.	_____	_____
d. Checked the slope indicator to ensure it was within a 10-degree tolerance.	_____	_____
e. Pressed the TOW button.	_____	_____
f. Checked the TOW and TOW test indicator lights.	_____	_____
g. Checked to make sure the lights on the annunciator box and on the TOW control box were off.	_____	_____
2. Fired a TOW missile.		
a. Squeezed the trigger and palm switches.	_____	_____
b. Released the trigger and held the palm switches for five seconds.	_____	_____
Note. Evaluator announced “YOUR MISSILE HAS FAILED TO FIRE.”		
3. Applied immediate action on the TOW system.		
a. Announced “MISFIRE TOW MISSILE—ATTEMPTING TO FIRE.”	_____	_____
b. Squeezed the trigger and palm switches again, and then released the trigger and held the palm switches for 5 seconds.	_____	_____
Note. If misfire still existed, continued with misfire procedures.		
c. Moved ARM-SAFE-RESET switch to the RESET position and then to the SAFE position.	_____	_____
d. Reselected TOW by pressing the TOW button.	_____	_____
e. Checked the TOW and missile indicators.	_____	_____
f. Reselected the misfired TOW missile.	_____	_____
g. Checked that the annunciator lights on the annunciator box and the TOW control box were off.	_____	_____
h. Moved the ARM-SAFE-RESET switch to the ARM position.	_____	_____
i. Refired the misfired TOW missile.	_____	_____
4. Completed the performance measures within 2 minutes.	_____	_____

Task 16

Remove a Misfired TOW Missile from the TOW Launcher

TEST ADMINISTRATIVE GUIDE

- TASK:** Remove a misfired missile from a TOW launcher.
- CONDITIONS:** Given an operational CFV with the TOW launcher erect, a dummy TOW round inserted into Tube No. 1, and a yellow flag.
- STANDARDS:** Within 10 minutes, the crew will—
- Prepare the vehicle.
 - Remove the misfired missile.
 - Follow all safety procedures.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV with the TOW launcher erect.
- TM 9-2350-284-10-2 or TM 9-2350-294-10-2-1.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Turn on the master power.
- Turn on the turret power and turret drive.
- Select and arm the TOW launcher.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 10 minutes

Total time: 15 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to remove a misfired missile from a TOW launcher. This task will be scored in sequence. You will have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 16

Remove a Misfired TOW Missile from the TOW Launcher

	GO	NO-GO
1. Prepared the vehicle.		
a. Moved the ARM-SAFE-RESET switch to the RESET position, and then to the SAFE position.	_____	_____
b. Made sure the ramp was raised and the hatches were closed.	_____	_____
c. Pivoted the hull to 1,600 or 4,800 mils while the turret stabilization was on.	_____	_____
d. Elevated the TOW launcher to the maximum elevation.	_____	_____
e. Moved the turret power switch to the OFF position.	_____	_____
f. Exited the vehicle through the ramp access door.	_____	_____
g. Climbed on top of the hull.	_____	_____
h. Unlocked the TOW launcher.	_____	_____
2. Removed the misfired missile from the TOW launcher.		
a. Held the TOW missile by the rear flange.	_____	_____
b. Carefully pulled the TOW missile straight out of the launcher.	_____	_____
c. Handed the TOW missile to the helper (driver).	_____	_____
3. Followed the safety procedures.		
a. Directed the helper to move the misfired TOW missile to a safe place 200 meters away.	_____	_____
b. Marked the position with a stake and yellow flag.	_____	_____
c. Notified the chain of command of the location of the missile.	_____	_____
4. Completed the performance measures within 10 minutes.	_____	_____

Task 17

Boresight the Turret Weapon Systems (M3, M3A2, and M3A2 ODS)

TEST ADMINISTRATIVE GUIDE

- TASK:** Boresight the turret weapon systems (M3, M3A2, and M3A2 ODS).
- CONDITIONS:** Given an operational CFV with BII and an M240C coaxial machine gun installed, operational boresight kit with 25-mm gun adapter, and TM 9-2350-252-10-2 or TM 9-2350-284-10-2. This task requires the use of the TM.
- STANDARDS:** Within 25 minutes (30 minutes for the M3A2 ODS), the crewman will boresight the following:
- The M242 25-mm gun (day and night).
 - The auxiliary sight.
 - The M240C coaxial machine gun.
 - The TOW missile launcher.
 - The laser range finder (M3A2 ODS only).

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational M3, M3A2, and M3A2 ODS with BII.
- TM 9-2350-252-10-2 or TM 9-2350-284-10-2.
- A boresight kit.
- A boresight panel (1,200 meters distant).

Note. It is recommended that this task be conducted with three crewmen; however, no more than three crewmen can be tested at one time.

PRETEST PREPARATION:

- Make sure the boresight telescope is operational.
- Make sure the engine is off.
- Make sure the master power is on.
- Make sure all drive select levers are in the power mode.
- Make sure the turret power and turret drive is off.
- Make sure the vehicle is parked on level ground.
- Make sure the ballistic sight covers are closed.
- Make sure the driver and cargo hatches are closed.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the ARM-SAFE-RESET switch is in the SAFE position.
- Make sure the thermal sight is off.
- Make sure the magnification is set at low.
- Make sure the range index is at 12.
- Make sure the reticle brightness is off.
- Offset the day and night 25-mm boresight knobs.
- Offset the coaxial mount azimuth elevation knobs.
- Offset the TOW boresight screen.
- Move the turret out of the target area.
- Make sure the travel lock is engaged.
- Make sure the turret shield door is closed.

TEST PLANNING TIME FOR THE M3 AND M3A2:

Administrative time: 5 minutes
Test time: 25 minutes
Total time: 30 minutes

TEST PLANNING TIME FOR THE M3A2 ODS:

Administrative time: 5 minutes
Test time: 30 minutes
Total time: 35 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to boresight the M242 25-mm automatic gun, the M240C coaxial machine gun, the auxiliary sight, and the TOW missile launcher. For the M2A2 ODS and M3A2 ODS models, you must also boresight the laser range finder. You will have 25 minutes (30 minutes for M2A2 ODS and M3A2 ODS models) to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 25 minutes (30 minutes for M2A2 ODS and M3A2 ODS), announce “STOP” loud enough for the crewman to hear.

-
- Notes.** 1. If it appears that the crewman or helper is going to damage the equipment or injure himself, announce “STOP.”
2. Any time the helper installs the boresight telescope, the red streamer must be attached.
-

PERFORMANCE CHECKLIST FOR TASK 17

Boresight the Turret Weapon Systems (M3, M3A2, and M3A2 ODS)

	GO	NO-GO
1. Boresighted the turret weapon systems.		
a. Turned on the turret power.	_____	_____
b. Moved the night-vision power switch to the ON position.	_____	_____
c. Opened the ballistic sight cover doors.	_____	_____
d. Moved the range control knob to 0.	_____	_____
e. Moved the magnification switch to HIGH.	_____	_____
f. Moved the sensor select to CLEAR or NEUTRAL.	_____	_____
g. Boresighted the M242 25-mm automatic gun.		
(1) Pressed the AP SS button.	_____	_____
(2) Made sure AP appeared on the status indicator.	_____	_____
(3) Adjusted the reticle brightness knob.	_____	_____
(4) Moved the turret traverse drive select lever to the MANUAL position.	_____	_____
(5) Moved the gun elevation drive select lever to the MANUAL position.	_____	_____
(6) Moved the TOW elevation drive select lever to the POWER position.	_____	_____
(7) Centered the gun reticle on the aiming point of the target.	_____	_____
(8) The helper installed the 25-mm boresight adapter and boresight telescope with red streamer on the muzzle end of the 25-mm barrel.	_____	_____
(9) The helper focused the boresight telescope on the target.	_____	_____
(10) The helper aligned the elevation crosshair in the boresight reticle on the aiming point of the target.	_____	_____
(11) The helper checked the accuracy of the boresight telescope.	_____	_____
(12) Aligned the gun reticle on the aiming point of the target.	_____	_____
(13) The helper and gunner switched positions and verified the alignment.	_____	_____
(14) Removed the boresight telescope and boresight adapter from the 25-mm gun barrel.	_____	_____
h. Boresighted the laser range finder (M3A2 ODS only).		
(1) Moved the magnification switch to HIGH.	_____	_____
(2) Moved the laser switch to ON.	_____	_____
(3) Engaged and fully locked the boresight prism.	_____	_____
(4) Located the laser reticle.	_____	_____
(5) Aligned the laser reticle in the center of the gun reticle circle.	_____	_____
(6) Disengaged and locked the boresight prism.	_____	_____
(7) Moved the laser switch to the OFF position.	_____	_____
i. Boresighted the auxiliary sight.		
(1) Moved the auxiliary sight to the commander's position.	_____	_____
(2) Focused the auxiliary sight.	_____	_____
(3) Looked at the aiming point image in the auxiliary sight reticle.	_____	_____
(4) Performed the elevation linkage adjustment.	_____	_____
(5) Loosened the horizontal adjustment lock screw.	_____	_____

	GO	NO-GO
(6) Centered the aiming point image.	_____	_____
(7) Locked the horizontal adjustment lock screw.	_____	_____
(8) Checked the aiming point image.	_____	_____
j. Boresighted the M240C coaxial machine gun.		
(1) Pressed the 7.62-mm AMMO button on the weapons control box.	_____	_____
(2) Made sure 7.62 appeared in the status indicator.	_____	_____
(3) Made sure the gun reticle was aligned on the aiming point of the target.	_____	_____
(4) Moved to the commander's seat.	_____	_____
(5) The helper installed the boresight adapter and boresight telescope with red streamer in the muzzle end of the M240C coaxial machine gun.	_____	_____
(6) The helper focused the boresight telescope on the boresight panel.	_____	_____
(7) The helper aligned the azimuth crosshair reticle on the aiming point of the target.	_____	_____
(8) The helper removed the boresight telescope and boresight adapter.	_____	_____
(9) The helper and gunner switched positions to verify the alignment.	_____	_____
k. Aligned the night sight.		
(1) Moved the sensor select switch to the NIGHT position.	_____	_____
(2) Aligned the elevation crosshair and azimuth crosshair on the gun reticle onto the aiming point of the target.	_____	_____
(3) Moved the sensor select switch to the CLEAR or NEUTRAL position.	_____	_____
(4) Made sure the gun reticle was aligned on the aiming point of the target.	_____	_____
l. Prepared the turret for power operation.		
(1) Moved the gun elevation drive select lever to the POWER position.	_____	_____
(2) Moved the turret traverse drive select lever to the POWER position.	_____	_____
m. Boresighted the TOW missile launcher system.		
(1) Turned on the turret drive and raised the TOW missile launcher.	_____	_____
(2) Turned off the turret drive.	_____	_____
(3) Hung the red streamer on the turret drive system switch.	_____	_____
(4) Pressed the TOW button.	_____	_____
(5) Made sure TOW appeared on the status indicator.	_____	_____
(6) Moved the TOW elevation drive select lever to the MANUAL position.	_____	_____
(7) Moved the gun elevation drive select lever to the POWER position.	_____	_____
(8) Moved the turret traverse drive select lever to the MANUAL position.	_____	_____
(9) The helper installed the boresight telescope and hung the red streamer on the boresight telescope.	_____	_____
(10) Aligned the azimuth crosshair of the TOW reticle on the aiming point of the target.	_____	_____
(11) Adjusted the TOW launcher for azimuth, if necessary.	_____	_____
(12) The helper aligned the elevation crosshair of the boresight telescope reticle on the aiming point of the target.	_____	_____
(13) Aligned the elevation crosshair of the TOW reticle on the aiming point of the target.	_____	_____

	GO	NO-GO
(14) The helper removed the boresight telescope and red streamer from the TOW launcher. The gunner made a visual inspection.	_____	_____
(15) Removed the red streamer from the turret drive system switch.	_____	_____
(16) Moved the TOW elevation drive select lever to the POWER position.	_____	_____
(17) Moved the turret traverse drive select lever to the POWER position.	_____	_____
(18) Moved the turret drive switch to the ON position.	_____	_____
(19) Lowered the TOW launcher.	_____	_____
(20) Moved the turret drive system switch to the OFF position.	_____	_____
2. Completed the performance measures within 25 minutes (30 minutes for M2A2 ODS and M3A2 ODS models).	_____	_____

Task 17A
Boresight the Turret Weapon Systems (M3A3 Only)
TEST ADMINISTRATIVE GUIDE

- TASK:** Boresight the turret weapon systems (M3A3 only).
- CONDITIONS:** Given an operational CFV with BII and M240C coaxial machine gun installed, operational boresight kit with 25-mm gun adapter, and TM 9-2350-294-10-2. This task requires the use of the TM.
- STANDARDS:** Within 25 minutes the crewman will—
- Boresight the TAS/backup sight for the 25-mm gun.
 - Boresight the CIV for the 25-mm gun.
 - Boresight the TAS/backup sight for the M240C coaxial machine gun.
 - Boresight the TAS for the TOW missile launcher.
 - Align the TAS TV NFOV to the ATT.
 - Align the TAS TV WFOV to the ATT.
 - Align the CIV FLIR to the TV.
- PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:**
- Items listed on page 4-2.
 - An operational M3A3 with BII and M240C coaxial machine gun installed.
 - TM 9-2350-294-10-2.
 - Boresight kit with 25-mm gun adapter.
 - Boresight panel (1,200 meters distant).

Note. It is recommended that this task be conducted with three crewmen; however, no more than three crewmen can be tested at one time.

PRETEST PREPARATION:

- Make sure the boresight telescope is operational.
- Make sure the engine is off.
- Make sure the master power is on.
- Make sure all drive select levers are in the POWER mode.
- Make sure the turret power is on.
- Make sure the turret drive is off.
- Make sure the vehicle is parked on level ground.
- Make sure the ballistic sight covers are closed.
- Make sure the driver and cargo hatches are closed.
- Log onto the FBCB2.
- Return to the A3 tactical screen.

PRETEST CONDITIONS FOR EACH CREWMAN:

- Make sure the ARM-SAFE-RESET switch is at SAFE position.
- Make sure the range index is at 12.
- Move the turret out of the target area.
- Make sure the travel lock is engaged.
- Make sure the turret shield door is closed.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 25 minutes

Total time: 30 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to boresight the TAS/backup sight for the 25-mm gun, the CIV for the 25-mm gun, the TAS/backup sight for the M240C coaxial machine gun, and the TAS for the TOW missile launcher and align the TAS TV NFOV to the ATT, the TAS TV WFOV to the ATT, and the CIV FLIR to the TV. You will have 25 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 25 minutes, announce “STOP” loud enough for the crewman to hear.

-
- Notes.**
1. If it appears that the crewman or helper is going to damage the equipment or injure himself, announce “STOP.”
 2. Any time the helper installs the boresight telescope, the red streamer must be attached.
-

PERFORMANCE CHECKLIST FOR TASK 17A

Boresight the Turret Weapon Systems (M3A3 Only)

	GO	NO-GO
1. Boresighted the turret weapon systems.		
a. Made sure the turret power was turned on.	_____	_____
b. Made sure the turret drive was turned off.	_____	_____
c. Moved the gun elevation and traverse select levers to the MANUAL position and the TOW select lever to the POWER position.	_____	_____
d. Opened the ballistic sight doors.	_____	_____
e. Adjusted the focus, reticle, and symbology brightness and image contrast and brightness on both the TAS and CIV sights.	_____	_____
f. If using FLIR, adjusted the gain, level, polarity, and zoom, as needed.	_____	_____
g. Inserted the boresight telescope into the 25mm adapter.		
(1) Inserted the tapered shaft of the telescope snugly into the tapered hole of the adapter with the red index mark on the adapter in the 12 o'clock position. This positioned the telescope's eyepiece in the 3 o'clock position.	_____	_____
(2) Removed the objective eyepiece lens cap from the telescope.	_____	_____
(3) Unfolded, and attached the red warning flag to the telescope's objective lens barrel.	_____	_____
h. Inserted the boresight telescope assembly into the 25mm gun barrel.		
(1) Inserted the boresight telescope assembly into the 25-mm gun barrel with the red index mark on the adapter in the 12 o'clock position.	_____	_____
(2) Made sure the red mark on the 25-mm adapter aligned with the red index mark on the telescope's body. This positioned the telescope's eyepiece in the 3 o'clock position.	_____	_____
Note. Regardless of which end you look in, the rifling spins to the right.		
(3) Made sure the tapered muzzle cone of the boresight telescope assembly seated firmly on the muzzle brake of the 25-mm gun barrel.	_____	_____
i. Positioned the boresight telescope assembly crosshairs on the top left-hand corner of the boresight panel.		
Note. Made sure range was indexed to 12.		
(1) Asked the helper to direct the gunner to position the telescope crosshair on the top left-hand corner of the boresight panel using the manual traverse and elevation handwheels.	_____	_____
(2) Turned the boresight telescope assembly clockwise using the knurled section of the 25-mm adapter only. Turned the adapter within the gun barrel.	_____	_____
j. Collimated the boresight telescope assembly.		
(1) While gripping the knurled section of the 25-mm adapter, rotated the index mark (the red dot) to the 6 o'clock position. This should have put the eyepiece at the 9 o'clock position.	_____	_____
(2) Made sure the tapered muzzle cone of the adapter seated against the muzzle brake of the 25-mm gun barrel.	_____	_____

	GO	NO-GO
(3) Viewed the boresight panel. If the aim point had moved from its original position, adjusted the reticle (Step k). If no adjustment was needed, went to Step l below.	_____	_____
k. Adjusted the crosshairs in the boresight telescope reticle.		
(1) Rotated the adjustment protective shroud on the boresight telescope to expose the adjustment knobs.	_____	_____
(2) Using the reticle adjustment knobs on the telescope, moved the reticle one-half of the difference between the previous point and the new position, in both azimuth and elevation.	_____	_____
(3) Directed the gunner to use the manual elevation and traverse handwheels to move the turret to put the telescope crosshairs back on top of the left corner of the boresight panel.	_____	_____
(4) While gripping the knurled section of the 25-mm adapter, rotated the index mark (the red dot) clockwise to the right to the 12 o'clock position, which put the telescope eyepiece at the 3 o'clock position.	_____	_____
(5) Looked through the boresighted telescope. If the crosshair in the telescope failed to align with the top left-hand corner of the boresight panel, then using the reticle-adjustment knobs on the telescope, continued to move the reticle one-half of the difference from the previous point to the top left corner of the boresight panel.	_____	_____
(6) Repeated Steps k(1) through k(6) until the reticle did not move from one position to the next (this normally takes three to five cycles).	_____	_____
(7) Once crewman was able to rotate the 25-mm adapter without the telescope crosshairs moving from the initial aiming point (top left-hand corner) of the boresight panel, the telescope was collimated.	_____	_____
(8) Directed the gunner and helper to swap positions to check the optical alignment through the IBAS and boresight telescope.	_____	_____
l. Operated the commander's tactical display.		
(1) Selected MAIN from the CTD.	_____	_____
(2) Selected SETUP from the TACTICAL screen.	_____	_____
(3) Selected FIRE CONTROL from the SETUP screen.	_____	_____
(4) Selected MANUAL boresight from the FIRE CONTROL screen.	_____	_____
m. Performed preboresighting tasks.		
(1) Made sure Tasks 1 and 2 on the preboresighted tasks screen had been performed.	_____	_____
(2) Performed system null.	_____	_____
(3) If the TOW was to be boresighted, raised the TOW launcher and placed the red streamer on the turret drive system switch.	_____	_____
(4) Opened the sight shield doors.	_____	_____
(5) Moved the TDS to the MANUAL position.	_____	_____
(6) When ready, pressed CONTINUE.	_____	_____
n. Boresighted the TAS and backed up the sight to the 25-mm gun.		
(1) Selected BORESIGHT TAS, BACK UP SIGHT TO 25-MM GUN.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____

	GO	NO-GO
(3) Read and performed all ten tasks on the BORESIGHT TAS, BACK UP SIGHT TO 25-MM GUN screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
o. Boresighted the CIV to the 25-mm gun.		
(1) Selected BORESIGHT CIV TO 25-MM GUN.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____
(3) Read and performed all ten tasks on the BORESIGHT CIV TO 25-MM GUN screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
Note. When boresighting the coax or TOW, do not collimate.		
p. Boresighted the TAS, and backed up the sight to the coax.		
(1) Selected BORESIGHT TAS, BACK UP SIGHT TO COAX.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____
(3) Read and performed all 13 tasks on the BORESIGHT TAS, BACK UP SIGHT TO COAX screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
q. Boresighted the TAS to the TOW launcher.		
(1) Selected BORESIGHT TAS TO TOW LAUNCHER.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____
(3) Read and performed all eight tasks on the BORESIGHT TAS TO TOW LAUNCHER screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
r. Aligned the TAS TV NFOV to the ATT.		
(1) Selected ALIGN TAS TV NFOV TO ATT.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____
(3) Read and performed all four tasks on the screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
s. Aligned the TAS TV WFOV to the ATT.		
(1) Selected ALIGN TAS TV WFOV TO ATT.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____
(3) Read and performed all four tasks on the screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
t. Aligned the CIV FLIR to the TV.		
(1) Selected ALIGN CIV FLIR TO TV.	_____	_____
(2) When ready, selected CONTINUE from the TOOLS, EQUIPMENT, CONDITIONS, PERSONNEL REQUIRED screen.	_____	_____

	GO	NO-GO
(3) Read and performed all seven tasks on the screen.	_____	_____
(4) Selected CONTINUE.	_____	_____
u. From the ZERO 25-MM GUN screen, selected EXIT, and returned to the main screen.	_____	_____
v. Removed the red streamer from the turret drive system switch.	_____	_____
w. Moved the TOW elevation drive-selected lever to the POWER position.	_____	_____
x. Moved the turret traverse drive-selected lever to the POWER position.	_____	_____
y. Moved the turret drive switch to the ON position.	_____	_____
z. Lowered the TOW launcher.	_____	_____
aa. Moved the TDS switch to the OFF position.	_____	_____
2. Completed the performance measures within 25 minutes.	_____	_____

Task 18

Prepare a Range Card

TEST ADMINISTRATIVE GUIDE

- TASK:** Prepare a range card.
- CONDITIONS:** Given a fully operational vehicle with a weapon system, sector of fire, compass, paper, pencil, map (1:50,000), three marking stakes, and Standard Range Cards (LRA) (DA Form 5517-R).
- STANDARDS:** Within 15 minutes, the crewman will prepare a range card that depicts the target area, to include the following:
- Weapon symbol.
 - Circle value.
 - Sectors of fire.
 - Target reference points/reference points (RP).
 - Dead space.
 - Weapon reference point (WRP).
 - Magnetic north.
 - Identification data.
 - Target/sector data.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An operational CFV, HMMWV, or Stryker RV with BII.
- Three stakes per vehicle.

PRETEST PREPARATION:

- Make sure the equipment is operational.
- Make sure the turret is positioned at 6,400 mils (CFV).
- Make sure the travel lock is engaged (CFV).

PRETEST CONDITIONS FOR EACH CREWMAN:

- A blank range card is issued.
- A pencil and compass are issued.
- The turret power and turret drives are turned on (CFV).
- The left and right limits and reference point are pointed out.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 15 minutes

Total time: 20 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to prepare a range card. You will have 15 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed each task after 15 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 18

Prepare a Range Card

	GO	NO-GO
1. Prepared a range card.		
a. Indicated the identification data.		
(1) Indicated the unit identification	_____	_____
(2) Indicated the magnetic north.	_____	_____
b. Filled in the sketch portion.		
(1) Indicated the weapon position by the proper symbol.	_____	_____
(2) Indicated the left and right limits.	_____	_____
(3) Indicated the circle value.	_____	_____
(4) Indicated the TRPs/RPs.	_____	_____
(5) Indicated the dead space.	_____	_____
(6) Indicated the maximum engagement lines.	_____	_____
(7) Indicated the WRPs.	_____	_____
c. Filled in the data section.		
(1) Indicated the position identification.	_____	_____
(2) Indicated the vehicle type/bumper number.	_____	_____
(3) Indicated the circle value in meters.	_____	_____
(4) Indicated the target information.		
(a) Indicated the left and right limits.	_____	_____
(b) Indicated the TRPs.	_____	_____
(c) Indicated the RPs.	_____	_____
(d) Indicated the WRPs.	_____	_____
(5) Indicated the date and time.	_____	_____
2. Completed the performance measures within 15 minutes.	_____	_____

Task 19

Identify Combat Vehicles

TEST ADMINISTRATIVE GUIDE

- TASK:** Identify combat vehicles.
- CONDITIONS:** Given a classroom with pictures/images of combat vehicle exposures, stopwatch, chair, desk or clipboard, and pencil.
- STANDARDS:** The crewman will identify 36 of the 40 vehicles by nomenclature. Of the 40 vehicle pictures/images, 15 will be tanks; 17 will be a mix of infantry fighting vehicles (IFV), APCs, reconnaissance vehicles, and ATGM vehicles; and 8 will be a mix of trucks and self-propelled (SP) artillery, ADA, and engineer vehicles. No more than 12 of the 40 vehicles will be U.S. or allied.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Forty pictures/images of combat vehicles selected from the combat vehicle list in Table 4-1.
- Classroom.
- Performance checklist (one for each soldier).
- Chair, desk, or clipboard (one for each soldier).
- Pencil (one for each soldier).

PRETEST PREPARATION:

- Select forty pictures/images from the prescribed list in Table 4-1.
- Make sure the pictures/images can be recognized from all locations in the classroom.
- Make sure the pictures/images are ready to be viewed but are exposed until the test begins.

TEST PLANNING TIME:

Administrative time: 5 minutes
Test time: 20 minutes
Total time: 25 minutes

OTHER INFORMATION:

- This task requires the soldier to identify combat vehicles from the front, side, oblique, or rear using day and thermal vehicle exposures.
- Crewmen will be trained on all of the vehicles listed in Table 4-1. The 40 pictures/images selected for testing do not have to be 40 different vehicles; the same vehicle may be used more than once in a test, however, a different angle exposure of the vehicle must be used. The same vehicles, regardless of angle, cannot be shown more than three times.
- The number of crewmen to be tested at one time depends on the classroom seating without compromising test procedures.
- If the crewman does not achieve the standard indicated on the checklist, he receives a NO-GO. When a crewman receives a NO-GO, he must be critiqued, to include an explanation of vehicles that were incorrectly identified and retested with a second set of pictures/images showing the same vehicles in a different view or different order.

INSTRUCTIONS TO THE CREWMAN:

“At this station, you will be tested on your ability to identify combat vehicles. You must correctly identify 36 of 40 vehicles by nomenclature. You will have 20 seconds to view each picture/image and 10 seconds between each picture/image to write your answer on the performance checklist provided. Make sure you do not get out of sequence or your answers will be incorrect. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after the appropriate time, announce “STOP” loud enough for the crewman to hear.

Table 4-1. Combat Vehicle List.

AMX40	ZSU23-4	T72M1	BRDM2	
Challenger	2S1	T80	BTR60PB	
Leopard 2	LAV-25	BMP1	M113	
M1 Abrams	T62	BMP2	Marder	
Merkava	T72	M2A2	Warrior	
T64	T64K	Type 62	Type 80	
T64A	T72 M84	Type 69	Type 90	
T64B	Type 59	Type 79		
AMX13	Centurion RE	M60A1	T34 Medium	
AMX30	Chieftain	M60A3	T54	
AMX30 SA	Leopard 1	PT76	T55	
Centurion	M48A5	PT76 Type 60	T55K	
Centurion 155	M551 Sheridan	T80U		
Antitank Systems				
ASU57	AT5 Spandrel	MT12	Type 52 75-mm	
ASU85	AT6 Spiral	RPG2	Recoilless Rifle	
AT1 Snapper	B10	RPG7	Type 56 RPG-2	
AT2 Swatter	PANHARD VCR HOT	SPG9	Type 70-1 62-mm	
AT3 Sagger	ITV M901	SS11 Harpoon ATGM	Rocket Launcher	
AT4 Spigot	Milan ATGM	Swingfire ATGM	Type 86	
Artillery (Self-Propelled/Towed)				
2S3	CGT F1	M109A6	M1985 MRL 240-mm (SP)	
2S4	Dana 152-mm (SP)	M110A2	M1989 170-mm	
2S5	G-5 155-mm (towed)	M1972 122-mm	Majnoon 155-mm (SP)	
2S7	G-6 155-mm (SP)	M1973 152-mm	MKF3	
2S9	GCT 155-mm (SP)	M1974 152-mm (SP)	MLRS	
AL FAO 210-mm	GHN-45 155-mm (towed)	M1975 130-mm (SP)	Type 54-1 122-mm	
Astros (MRL) 127-mm	M107	M1977 122-mm (SP)	Type 59 130-mm	
Astros (MRL) 180-mm	M109A1	M1978 170-mm (SP)	Type 85 122-mm	
Astros (MRL) 300-mm	M109A2	M1981 122-mm (SP)		
BM21	M109A3	M1985 MRL 122-mm (SP)		
Antiaircraft				
AMX DCA 30-2	M163A1 Vulcan	ZPU4	ZU23	
Chaparral	Roland	2S6		
Gepard	S60	ZSU57-2		
Self-Propelled Mortar				
M106 107-mm	T54 160-mm	Type 85 120-mm	YW381 120-mm	
M125 81-mm	Type 85 82-mm	YW304 82-mm		
Miscellaneous				
Artillery Command and Reconnaissance Vehicle	AVLB Fox, NBC Reconnaissance	M728 CEV M88A1 M9 ACE	PRP-3	
Light Armor (APC/IFV/Reconnaissance)				
AML	M3A2	BTR70	Jaquar 2	Rooikat
AMX10	BRDM1	BTR80	Luchs	Saxon
AMX10P	BRDM2	BTRD	M113A3	Scimitar
AMX10RC	AT3BRDM2 AT5	Charrua	M3 APC (Fr)	Scorpion
BMD1	BRDM2 RKH	Condor	MCT (S)	Striker
BMD 1979/3	BRDM2 SA9	Cougar EE-9	Ferret MK1	VAB
BMD2	BRDM2 U	Cascavel	Ferret MK2	WZ523
BMP1K	BRM	EE-11	MTLB	WZ551
BMP1KSH	BRM 1	FOX	NFV-1NVH-1	YW531
M2	BTR152	FV432	OT64	YW534
M2A1	BTR152K	IPR	OT65	
M3	BTR50PK	IRM	PSZH-IV	
M3A1	BTR60PA Cmd	Jaquar 1	Ratel	

PERFORMANCE CHECKLIST FOR TASK 19
Identify Combat Vehicles

	GO	NO-GO
1. Identified combat vehicle pictures/images 1 through 40.	_____	_____
2. Completed the performance measures within 20 minutes.	_____	_____

TASK 20

Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on an M240B Machine Gun

TEST ADMINISTRATIVE GUIDE

- TASK:** Clear, disassemble (field strip), assemble, perform a function check, load, and perform immediate action on an M240B machine gun.
- CONDITIONS:** Given a loaded M240B machine gun, placed on a flat surface.
- STANDARDS:** Within 7 minutes, the crewman will—
- Clear (in sequence) and disassemble the M240B machine gun.
 - Assemble the M240B machine gun.
 - Perform a function check (in sequence) on the M240B machine gun.
 - Load (in sequence) the M240B machine gun.
 - Perform immediate action (in sequence) on the M240B machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M240B machine gun.
- Dummy, linked, 7.62-mm ammunition (five rounds per machine gun).
- Table (one per M240B).
- FM 3-22.68.
- TM 9-1005-313-10.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is removed from the vehicle.

TEST PLANNING TIME:

Administrative: 5 minutes

Test: 7 minutes

Total: 12 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you your ability to clear, disassemble (field strip), assemble, perform a function check, load, and perform immediate action on an M240B machine gun. You must clear, perform a function check, load, and perform immediate action in sequence on the M240B machine gun. The weapon is not clear. You have 7 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 7 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 20
Clear, Disassemble (Field Strip), Assemble, and Perform a Function Check,
Load, and Perform Immediate Action on an M240B Machine Gun

	GO	NO-GO
1. Cleared (in sequence) the M240B machine gun.		
a. Moved the safety switch to the F (fire) position.	_____	_____
b. Pulled back on the cocking handle and locked the bolt to the rear.	_____	_____
c. Moved the safety switch to the S (safe) position.	_____	_____
d. Returned the cocking handle to its forward position.	_____	_____
e. Opened the cover.	_____	_____
f. Removed the source of ammunition.	_____	_____
g. Raised the feed tray.	_____	_____
h. Looked into the chamber for ammunition.	_____	_____
i. Lowered the feed tray.	_____	_____
j. Moved the safety switch to the F (fire) position.	_____	_____
k. Pulled back on the cocking handle and held it there.	_____	_____
l. Pulled the trigger and allowed the cocking handle to move forward to the close and lock position.	_____	_____
m. Closed the cover.	_____	_____
2. Disassembled the M240B machine gun.		
a. Cleared the weapon (if not previously cleared).	_____	_____
b. Removed the barrel assembly.	_____	_____
c. Removed the heat shield.	_____	_____
d. Removed the trigger housing assembly.	_____	_____
e. Removed the buttstock and buffer assembly.	_____	_____
f. Removed the drive spring rod assembly.	_____	_____
g. Removed the bolt and operating rod assembly.	_____	_____
h. Removed the cover assembly.	_____	_____
i. Removed the feed tray.	_____	_____
3. Assembled the M240B machine gun.		
a. Installed the feed tray.	_____	_____
b. Installed the cover assembly.	_____	_____
c. Installed the bolt and operating rod assembly.	_____	_____
d. Installed the buttstock and buffer assembly.	_____	_____
e. Installed the trigger housing assembly.	_____	_____
f. Installed the heat shield on the barrel assembly.	_____	_____
g. Installed the barrel assembly.	_____	_____
h. Installed the drive spring rod assembly.	_____	_____
4. Performed a function check (in sequence) on the M240B machine gun.		
a. Moved the safety switch to the F (fire) position.	_____	_____
b. Pulled back on the cocking handle and locked the bolt to the rear.	_____	_____

	GO	NO-GO
c. Moved the cocking handle to the forward (locked) position.	_____	_____
d. Moved the safety switch to the S (safe) position and pulled the trigger.	_____	_____
e. Checked to make sure the weapon would not fire.	_____	_____
f. Pulled back on the cocking handle.	_____	_____
g. Moved the safety switch to the F (fire) position and pulled the trigger.	_____	_____
h. Allowed the bolt to ease forward to the close and lock position.	_____	_____
5. Loaded (in sequence) the M240B machine gun.		
a. Moved the safety switch to the F (fire) position.	_____	_____
b. Charged the machine gun.	_____	_____
c. Moved the safety switch to the S (safe) position.	_____	_____
d. Returned the cocking handle to the forward position.	_____	_____
e. Opened the cover.	_____	_____
f. Removed the source of ammunition, if present.	_____	_____
g. Raised the feed tray.	_____	_____
h. Looked into the chamber for ammunition.	_____	_____
i. Lowered the feed tray.	_____	_____
j. Moved the safety switch to the F (fire) position, pulled back on the cocking handle, and pulled the trigger.	_____	_____
k. Allowed the bolt to ease forward to the close and lock position.	_____	_____
l. Placed the link belt in the feed tray over the belt holding paws, open link down.	_____	_____
m. Closed the cover.	_____	_____
6. Performed immediate action (in sequence) on the M240B machine gun (cold gun).		
a. Announced "STOPPAGE" or "MISFIRE."	_____	_____
b. Charged the M240B machine gun.	_____	_____
c. Attempted to fire.	_____	_____
d. If the gun did not fire, cleared the weapon.	_____	_____
7. Performed immediate action (in sequence) on the M240B machine gun (hot gun).		
a. Announced "STOPPAGE" or "MISFIRE."	_____	_____
b. Charged the M240B machine gun.	_____	_____
c. Attempted to fire.	_____	_____
d. Waited 15 minutes, and cleared the weapon.	_____	_____
8. Completed all performance measures within 7 minutes.	_____	_____

Note. Clearing and function checks are performed in sequence IAW FM 3-22.68.

Task 20A
Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load,
and Perform Immediate Action on an M60 Machine Gun
TEST ADMINISTRATIVE GUIDE

- TASK:** Clear, disassemble (field strip), assemble, perform a function check, load, and perform immediate action on an M60 machine gun.
- CONDITIONS:** Given a loaded M60 machine gun placed on a flat surface.
- STANDARDS:** Within 8 minutes, the crewman will—
- Clear (in sequence) and disassemble the M60 machine gun.
 - Assemble the M60 machine gun.
 - Perform a function check (in sequence) on the M60 machine gun.
 - Load (in sequence) the M60 machine gun.
 - Perform immediate action (in sequence) on the M60 machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M60 machine gun.
- Dummy, linked, 7.62-mm ammunition (five rounds per machine gun).
- Table (one per M60).
- FM 3-22.68.
- TM 9-1005-224-10.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is removed from the vehicle.

TEST PLANNING TIME:

Administrative: 5 minutes
Test: 8 minutes
Total: 13 minutes

INSTRUCTIONS TO THE CREWMAN:

“This task will test you on your ability to clear, disassemble (field strip), assemble, perform a function check, load, and perform immediate action on an M60 machine gun. You must clear, perform a function check, load, and perform immediate action in sequence on the M60 machine gun. The weapon is not clear. You have 8 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 8 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 20A
Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load,
and Perform Immediate Action on an M60 Machine Gun

	GO	NO-GO
1. Cleared (in sequence) the M60 machine gun.		
a. Moved the safety switch to the FIRE position.	_____	_____
b. Pulled back on the charging handle and locked the bolt to the rear.	_____	_____
c. Moved the charging handle to the forward position.	_____	_____
d. Moved the safety switch to the SAFE position.	_____	_____
e. Opened the cover and removed the ammunition and link belt.	_____	_____
f. Raised the feed tray and inspected the chamber.	_____	_____
g. Closed the feed tray.	_____	_____
h. Closed the cover.	_____	_____
i. Moved the safety switch to the FIRE position.	_____	_____
j. Pulled back on the charging handle and held it there.	_____	_____
k. Pulled the trigger and allowed the charging handle to move forward.	_____	_____
2. Disassembled the M60 machine gun.		
a. Removed the stock.	_____	_____
b. Removed the buffer, drive spring, and guide.	_____	_____
c. Removed the operating rod and bolt assemblies.	_____	_____
d. Separated the bolt assembly from the operating rod assembly.	_____	_____
e. Removed the forearm assembly.	_____	_____
f. Removed the barrel group.	_____	_____
g. Removed the trigger mechanism group.	_____	_____
h. Removed the cover, feed tray, and hanger group.	_____	_____
3. Assembled the M60 machine gun.		
a. Replaced the forearm assembly.	_____	_____
b. Replaced the trigger mechanism group.	_____	_____
c. Replaced the barrel group.	_____	_____
d. Replaced the cover, feed tray, and hanger group.	_____	_____
e. Joined the bolt to the operating rod.	_____	_____
f. Replaced the bolt and operating rod group.	_____	_____
g. Replaced the buffer assembly.	_____	_____
h. Replaced the stock.	_____	_____
4. Performed a function check (in sequence) on the M60 machine gun.		
a. Moved the safety switch to the FIRE position.	_____	_____
b. Pulled back on the charging handle and locked the bolt to the rear.	_____	_____
c. Moved the charging handle to the forward position.	_____	_____
d. Closed the feed tray and cover.	_____	_____
e. Moved the safety switch to the SAFE position and pulled the trigger.	_____	_____
f. Checked to make sure the weapon would not fire.	_____	_____

	GO	NO-GO
g. Pulled back on the charging handle.	_____	_____
h. Moved the safety switch to the FIRE position and pulled the trigger.	_____	_____
i. Allowed the bolt to ease forward.	_____	_____
5. Loaded (in sequence) the M60 machine gun.		
a. Placed the ammunition on the feed tray.	_____	_____
b. Closed the feed tray.	_____	_____
c. Moved the safety switch to the FIRE position.	_____	_____
6. Performed immediate action (in sequence) on an M60 machine gun.		
Note. Have crewman attempt to fire the M60 machine gun.		
a. Pulled back on the charging handle.	_____	_____
b. Checked the ejection port for the ejected cartridge.	_____	_____
c. Moved the charging handle forward, and attempted to fire again.	_____	_____
7. Completed all performance measures within 8 minutes.	_____	_____
Note. Clearing and function checks are performed in sequence IAW FM 3-22.68.		

Task 21

Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight (Using the M240B Machine Gun)

TEST ADMINISTRATIVE GUIDE

- TASK:** Mount, place into operation, and dismount the unit issued night-vision sight (using the M240B machine gun).
- CONDITIONS:** Given an M240B machine gun, a night-vision sight, and applicable TM.
- STANDARDS:** Within 10 minutes, the crewman will—
- Mount the night-vision sight on the M240B machine gun.
 - Place the night-vision sight into operation.
 - Take the night-vision sight out of operation.
 - Dismount the night-vision sight from the M240B machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M240B machine gun.
- Complete night-vision sight.
- Applicable night-vision sight TM.
- FM 3-22.68.
- Required batteries for the night sight.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is cleared.

TEST PLANNING TIME:

Administrative: 5 minutes

Test: 10 minutes

Total: 15 minutes

Note. Use the time listed in the applicable night-vision sight TM. If no time is listed in the TM, then use the above times.

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to mount the night-vision sight on the M240B machine gun, place the night-vision sight into operation, take the night-vision sight out of operation, and dismount the night-vision sight from the M240B machine gun. The weapon is clear. You have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP,” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 21
Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the M240B Machine Gun)

	GO	NO-GO
Note. Unit master gunners are encouraged to develop a performance checklist for each night-vision sight the unit has available. Use the template below.		
1. Mounted the night-vision sight on the M240B machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
2. Placed the night-vision sight into operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
3. Took the night-vision sight out of operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
4. Dismounted the night-vision sight from an M240B machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
5. Completed all performance measures within 10 minutes.	_____	_____

Task 21A

Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight (Using the M60 Machine Gun)

TEST ADMINISTRATIVE GUIDE

- TASK:** Mount, place into operation, and dismount the unit issued night-vision sight (using the M60 machine gun).
- CONDITIONS:** Given an M60 machine gun, a night-vision sight, and applicable TM.
- STANDARDS:** Within 10 minutes, the crewman will—
- Mount the night-vision sight on the M60 machine gun.
 - Place the night-vision sight into operation.
 - Take the night-vision sight out of operation.
 - Dismount the night-vision sight from the M60 machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M60 machine gun.
- Complete night-vision sight.
- Applicable night-vision sight TM.
- FM 3-22.68.
- Required batteries for the night-vision sight.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is cleared.

TEST PLANNING TIME:

Administrative: 5 minutes

Test: 10 minutes

Total: 15 minutes

Note. Use the time listed in the applicable night-vision sight TM. If no time is listed in the TM, then use the above times.

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to mount the night-vision sight on the M60 machine gun, place the night-vision sight into operation, take the night-vision sight out of operation, and dismount the night-vision sight from the M60 machine gun. The weapon is clear. You have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 21A
Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the M60 Machine Gun)

	GO	NO-GO
Note. Unit master gunners are encouraged to develop a performance checklist for each night-vision sight the unit has available. Use the template below.		
1. Mounted the night-vision sight on the M60 machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
2. Placed the night-vision sight into operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
3. Took the night-vision sight out of operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
4. Dismounted the night-vision sight from an M60 machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
5. Completed all performance measures within 10 minutes.	_____	_____

Task 22

Clear, Disassemble (Field Strip), Assemble, Set Headspace and Timing, Perform a Function Check, Load, and Perform Immediate Action on an M2 HB Machine Gun

TEST ADMINISTRATIVE GUIDE

- TASK:** Clear, disassemble, assemble, set headspace and timing, perform a function check, load, and perform immediate action on an M2 HB machine gun.
- CONDITIONS:** Given an M2 HB machine gun, placed on a flat surface, and loaded with dummy ammunition and a headspace and timing gauge.
- STANDARDS:** Within 16 minutes, the crewman will—
- Clear (in sequence) the M2 HB machine gun.
 - Disassemble and assemble the M2 HB machine gun.
 - Set headspace and timing (in sequence) on the M2 HB machine gun.
 - Perform a function check (in sequence) on the M2 HB machine gun.
 - Load (in sequence) the M2 HB machine gun.
 - Perform immediate action (in sequence) on the M2 HB machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M2 HB machine gun.
- Dummy, linked, caliber .50 ammunition (five rounds per machine gun).
- Table (one per M2 HB machine gun).
- TM 9-1005-213-10.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is removed from the vehicle, placed on a flat surface, loaded, and has a headspace and timing gauge.

TEST PLANNING TIME:

Administrative: 5 minutes

Test: 16 minutes

Total: 21 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to clear, disassemble, assemble, set headspace and timing, perform a function check, load, and perform immediate action on an M2 HB machine gun. You must clear, set the headspace and timing, perform the function check, load, and perform immediate action in sequence. You have 16 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 16 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 22
Clear, Disassemble (Field Strip), Assemble, Set Headspace and Timing,
Perform a Function Check, Load, and Perform Immediate Action
on the M2 HB Machine Gun

	GO	NO-GO
1. Cleared (in sequence) the M2 HB machine gun.		
a. Moved the bolt latch release lock to the unlocked position (single-shot mode).	_____	_____
b. Opened the cover.	_____	_____
c. Lifted the extractor and removed the ammunition belt from the feedway.	_____	_____
d. Lowered the extractor, and closed the cover.	_____	_____
e. Pulled back on the retractor slide handle, and locked the bolt to the rear.	_____	_____
f. Opened the cover.	_____	_____
g. Looked into both the chamber and T-slot for ammunition.	_____	_____
h. Maintained pressure on the retractor slide handle, and eased the bolt forward.	_____	_____
i. Closed the cover.	_____	_____
j. Pressed the trigger, and attempted to fire the weapon.	_____	_____
k. Did not close the cover with the bolt locked to the rear.	_____	_____
2. Disassembled the M2 HB machine gun.		
a. Cleared the weapon (if not previously cleared).	_____	_____
b. Removed the barrel.	_____	_____
c. Removed the backplate.	_____	_____
d. Removed the driving spring and rod.	_____	_____
e. Removed the bolt stud.	_____	_____
f. Removed the barrel buffer body, barrel extension, and bolt.	_____	_____
g. Disassembled to three pieces: barrel buffer body, barrel extension, and bolt.	_____	_____
h. Disassembled the barrel buffer.	_____	_____
3. Assembled the M2 HB machine gun.		
a. Reassembled the barrel buffer.	_____	_____
b. Reinstalled the barrel buffer, barrel extension, and bolt.	_____	_____
c. Installed the bolt stud.	_____	_____
d. Installed the driving spring and rod.	_____	_____
e. Installed the backplate.	_____	_____
f. Installed the barrel.	_____	_____
4. Adjusted the headspace (in sequence) on the M2 HB machine gun.		
a. Opened the cover.	_____	_____
b. Retracted the bolt until the locking lug on the barrel locking spring was centered in the hole of the right side plate of the receiver.	_____	_____
c. Held the bolt in position (as in 4b) and unscrewed the barrel two notches (clicks).	_____	_____
d. Allowed the recoiling parts to move forward.	_____	_____

	GO	NO-GO
Note. Disregard steps 4a-d if the barrel was backed off two notches (clicks) during assembly.		
e. Charged the machine gun.	_____	_____
f. Allowed the bolt to move forward.	_____	_____
g. Opened the cover, and ensured the firing pin was retracted.	_____	_____
h. Retracted the recoiling parts approximately 1/16 inch.	_____	_____
i. Raised the extractor.	_____	_____
j. Inserted the GO end of the gauge into the T-slot between the face of the bolt and the barrel.	_____	_____
k. If the GO end did not enter the T-slot—		
(1) Retracted the bolt.	_____	_____
(2) Unscrewed the barrel one notch (click).	_____	_____
(3) Allowed the recoiling parts to move forward.	_____	_____
(4) Checked the headspace IAW step 4h through 4j.	_____	_____
l. If the GO end entered the T-slot, attempted to place the NO-GO end of the gauge into the T-slot.	_____	_____
m. If the NO-GO end did not enter the T-slot, went to step 5.	_____	_____
n. If the NO-GO end entered the T-slot—		
(1) Retracted the bolt.	_____	_____
(2) Screwed the barrel in one notch (click).	_____	_____
(3) Allowed the recoiling parts to move forward.	_____	_____
(4) Checked the headspace IAW step 4h and m.	_____	_____
5. Set the timing (in sequence after adjusting headspace; charged weapon if necessary) on the M2 HB machine gun.		
a. Pulled the retractor slide handle to retract the recoiling parts about 1/4 inch.	_____	_____
b. Raised the extractor.	_____	_____
c. Inserted the NO-FIRE gauge between the barrel extension and the trunnion lock.	_____	_____
d. Made sure the NO-FIRE gauge beveled edge rested against the barrel notches.	_____	_____
e. Slowly released the recoiling parts, allowing them to move forward.	_____	_____
f. Depressed the trigger.	_____	_____
g. If the firing pin did not release, went to step 5i.	_____	_____
h. If the firing pin released—		
(1) Retracted the recoiling parts, and removed the NO-FIRE gauge.	_____	_____
(2) Retracted the bolt and recharged the machine gun.	_____	_____
(3) Inserted the FIRE gauge.	_____	_____
(4) Removed the backplate.	_____	_____
(5) Screwed the timing adjustment nut to the left until it rested on the trigger bar.	_____	_____
(6) Pushed up on the trigger bar and attempted to fire.	_____	_____
(7) Rotated the timing adjustment nut to the right one notch and attempted to fire.	_____	_____

	GO	NO-GO
(8) Repeated step 5h(7) and attempted to fire after each click, until the weapon fired.	_____	_____
(9) Turned the timing adjustment nut two additional notches (clicks) to the right.	_____	_____
(10) Placed the backplate on the back of the receiver, halfway, to cover the drive spring and rod.	_____	_____
(11) Retracted the bolt to remove the gauge.	_____	_____
(12) Installed the backplate.	_____	_____
(13) Charged the weapon.	_____	_____
(14) Checked the timing (twice) to make sure it was correct, then went to step 6 (timing complete).	_____	_____
i. Replaced the NO-FIRE gauge with the FIRE gauge.	_____	_____
j. Depressed the trigger.	_____	_____
k. If the firing pin released, went to step 6 (timing complete).	_____	_____
l. If the firing pin did not release, went to step 5h(4) (removed the backplate).	_____	_____
6. Performed a function check (in sequence) on the M2 HB machine gun.		
a. Moved the bolt latch release lock to the unlocked position (single-shot mode).	_____	_____
b. Pulled back on the retractor slide handle and locked the bolt to the rear (the bolt should lock to the rear).	_____	_____
c. Held the retractor handle, pressed the bolt latch release, and allowed the bolt to move forward.	_____	_____
d. Pressed the trigger (the weapon should have fired).	_____	_____
e. Moved the bolt latch release lock to the locked position (automatic-fire mode).	_____	_____
f. Pulled the retractor slide handle to the rear and held it (the bolt should not have locked to the rear).	_____	_____
g. Released the pressure on the retractor slide handle and eased the bolt forward.	_____	_____
h. Pressed the trigger and released the firing pin.	_____	_____
7. Loaded (in sequence) the M2 HB machine gun.		
a. Moved the bolt latch release lock to the unlocked position (single-shot mode).	_____	_____
b. Opened the machine gun cover.	_____	_____
c. Lifted the extractor and removed the ammunition belt (if present) from the feedway.	_____	_____
d. Lowered the extractor, and closed the cover.	_____	_____
e. Pulled back on the retractor slide handle, and locked the bolt to the rear.	_____	_____
f. Opened the cover.	_____	_____
g. Looked into both the chamber and T-slot for ammunition.	_____	_____
h. Maintained pressure on the retractor slide handle and depressed the bolt latch release, allowing the bolt to move forward.	_____	_____
i. Placed the bolt latch release lock in the locked position (automatic-fire mode).	_____	_____
j. Lifted the extractor.	_____	_____
k. Inserted the double loop of the ammunition under the extractor and pushed the extractor down between the first and second rounds.	_____	_____

	GO	NO-GO
1. Closed the cover.	_____	_____
WARNING If the caliber .50 has fired 150 rounds or more within 2 minutes, it is considered a <i>hot gun</i>. Immediate action must be applied within 10 seconds of a stoppage.		
8. Performed immediate action (in sequence) on the M2 HB machine gun (cold gun).		
a. Announced "STOPPAGE" or "MISFIRE."	_____	_____
b. Charged the machine gun and observed the feeding and ejection.	_____	_____
c. Attempted to fire.	_____	_____
d. If the gun did not fire, announced "STOPPAGE" or "MISFIRE," and cleared the weapon.	_____	_____
9. Performed immediate action (in sequence) on the M2 HB machine gun (hot gun).		
a. Announced "STOPPAGE" or "MISFIRE."	_____	_____
b. Charged the machine gun and observed the feeding and ejection.	_____	_____
c. Attempted to fire.	_____	_____
d. If the gun did not fire, announced "STOPPAGE" or "MISFIRE," and kept the gun pointed down range.	_____	_____
d. Waited 5 minutes, and cleared the weapon.	_____	_____
10. Completed all performance measures within 16 minutes.	_____	_____

Task 23**Clear, Disassemble (Field Strip), Assemble, and Perform a Function Check, Load, and Perform Immediate Action on a MK-19 40-mm Machine Gun****TEST ADMINISTRATIVE GUIDE**

- TASK:** Clear, disassemble (field strip), assemble, and perform a function check, load, and perform immediate action on a MK-19 40-mm machine gun.
- CONDITIONS:** Given a MK-19 machine gun, mounted on an M3 tripod, and ten rounds of linked, dummy, 40-mm ammunition.
- STANDARDS:** Within 8 minutes, the crewman will—
- Clear (in sequence) the MK-19 machine gun.
 - Disassemble the MK-19 machine gun.
 - Assemble the MK-19 machine gun.
 - Perform a function check (in sequence) on the MK-19 machine gun.
 - Load (in sequence) the MK-19 machine gun.
 - Perform immediate action (in sequence) on the MK-19 machine gun.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items from list on page 4-2.
- MK-19 machine gun.
- Ten rounds of linked, dummy, 40-mm ammunition.
- TM 9-1010-230-10.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is removed from the vehicle and cleared.

TEST PLANNING TIME:

Administrative: 5 minutes
Test: 8 minutes
Total: 13 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to clear, disassemble (field strip), assemble, perform a function check, load, and perform immediate action on a MK-19 40-mm machine gun. You must clear, perform a function check, load, and perform immediate action in sequence. You have 8 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 8 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 23
Clear, Disassemble (Field Strip), Assemble, and Perform a Function Check,
Load, and Perform Immediate Action on a MK-19 40-mm Machine Gun

	GO	NO-GO
1. Cleared (in sequence) the MK-19 machine gun.		
a. Moved the safety switch to the S (safe) position.	_____	_____
b. Charged the weapon.	_____	_____
c. Left the charging handles to the rear and down.	_____	_____
d. Used the cleaning rod to force the live round/empty casing off the face of the bolt, catching the live round.	_____	_____
e. Opened the top cover.	_____	_____
f. Removed the rounds from the feed tray.	_____	_____
g. Inspected the chamber and bolt face.	_____	_____
h. Moved the safety switch to the F (fire) position.	_____	_____
i. Pressed the triggers and allowed the bolt to move forward.	_____	_____
j. Moved the safety switch to the S (safe) position.	_____	_____
k. Moved the feed slide assembly to the left.	_____	_____
l. Closed the top cover.	_____	_____
2. Disassembled the MK-19 machine gun.		
a. Removed the bolt and backplate assembly.	_____	_____
b. Removed the secondary drive lever.	_____	_____
c. Removed the feed slide assembly.	_____	_____
d. Removed the top cover assembly.	_____	_____
e. Removed the feed tray.	_____	_____
f. Removed the primary drive lever and vertical cam.	_____	_____
g. Removed the alignment guide assembly.	_____	_____
h. Removed the ogive plunger.	_____	_____
i. Removed the round-positioning block.	_____	_____
j. Removed the left and right hand charger assemblies.	_____	_____
k. Removed the sear housing assembly.	_____	_____
3. Reassembled the MK-19 machine gun.		
a. Assembled the sear housing assembly.	_____	_____
b. Assembled the left and right hand charger assemblies.	_____	_____
c. Assembled the round positioning block.	_____	_____
d. Inserted the ogive-plunger assembly.	_____	_____
e. Inserted the alignment guide assembly.	_____	_____
f. Attached the vertical cam.	_____	_____
g. Attached the primary drive lever.	_____	_____
h. Attached the feed tray.	_____	_____
i. Attached the feed slide assembly.	_____	_____
j. Attached the top cover assembly.	_____	_____

	GO	NO-GO
k. Attached and engaged the secondary drive lever.	_____	_____
l. Inserted the bolt and backplate assembly.	_____	_____
4. Performed a function check (in sequence) on the MK-19 machine gun.		
a. Closed the top cover.	_____	_____
b. Moved the safety switch to the S (safe) position.	_____	_____
c. Charged the weapon.	_____	_____
d. Locked the charging handles forward.	_____	_____
e. Pressed the trigger (the bolt did not move forward).	_____	_____
f. Moved the safety switch to the F (fire) position.	_____	_____
g. Pressed the trigger (the bolt should spring forward).	_____	_____
h. Moved the safety switch to the S (safe) position.	_____	_____
i. Opened the top cover.	_____	_____
j. Made sure the firing pin was exposed.	_____	_____
k. Moved the feed slide to the left.	_____	_____
l. Closed the top cover.	_____	_____
m. Pulled the bolt to the rear and opened the cover.	_____	_____
n. Moved the safety switch to the F (fire) position.	_____	_____
o. Rode the bolt forward.	_____	_____
p. Moved the safety switch to the S (safe) position.	_____	_____
q. Closed the cover.	_____	_____
5. Loaded (in sequence) the MK-19 machine gun.		
a. Moved the safety switch to the S (safe) position.	_____	_____
b. Opened the top cover.	_____	_____
c. Made sure the bolt was forward.	_____	_____
d. Inserted the rounds, female link first, through the feed throat.	_____	_____
e. Inserted the first round into the feeder and across the first pawl.	_____	_____
f. Moved the feed slide assembly to the left.	_____	_____
g. Closed the top cover.	_____	_____
h. Charged the weapon.	_____	_____
i. Locked the charging handles forward.	_____	_____
j. Moved the safety switch to the F (fire) position.	_____	_____
k. Pressed the triggers (the bolt should spring forward).	_____	_____
l. Charged the weapon.	_____	_____
m. Locked the charging handles forward.	_____	_____
n. Moved the safety switch to the S (safe) position.	_____	_____
6. Performed immediate action (in sequence) on the MK-19 machine gun.		
Note. Have crewman attempt to fire the MK-19.		
a. Announced "MISFIRE."	_____	_____
b. Waited 10 seconds.	_____	_____
c. Pulled the bolt to the rear, catching the live round as it was ejected.	_____	_____

	GO	NO-GO
d. Locked the charging handles forward.	_____	_____
e. Pressed the trigger (the bolt should spring forward). If the weapon failed to fire—		
(1) Moved the safety switch to the S (safe) position.	_____	_____
(2) Waited ten seconds.	_____	_____
(3) Pulled the bolt to the rear, catching the live round as it was ejected.	_____	_____
(4) Opened the cover and cleared the weapon.	_____	_____
7. Completed all performance measures within 8 minutes.	_____	_____

Task 24**Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the M2 HB Machine Gun)****TEST ADMINISTRATIVE GUIDE**

- TASK:** Mount, place into operation, and dismount the unit issued night-vision sight (using the M2 HB machine gun).
- CONDITIONS:** Given an M2 HB machine gun mounted on the MK-64 weapon systems mount and the M3 tripod, a night-vision sight, and applicable TM.
- STANDARDS:** Within 10 minutes, the crewman will—
- Mount the night-vision sight on the M2 HB.
 - Place the night-vision sight into operation.
 - Take the night-vision sight out of operation.
 - Dismount the night-vision sight from the M2 HB.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- M2 HB machine gun.
- MK-64 mount.
- M3 tripod.
- Complete night-vision sight.
- Applicable night-vision sight TM.
- A 9/16-inch open-end wrench or 8-inch crescent wrench.
- Required batteries for the night-vision sight.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is cleared and securely mounted on the tripod.

TEST PLANNING TIME:

Administrative: 5 minutes
Test: 10 minutes
Total: 15 minutes

Note. Use the time listed in the applicable night-vision sight TM. If no time is listed in the TM, then use the above times.

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to mount the night-vision sight on the M2 HB machine gun, place the night-vision sight into operation, take the night-vision sight out of operation, and dismount the night-vision sight from the M2 HB machine gun. The weapon is clear. You have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 24
Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the M2 HB Machine Gun)

	GO	NO-GO
Note. Unit master gunners are encouraged to develop a performance checklist for each night-vision sight the unit has available. Use the template below.		
1. Mounted the night-vision sight on the M2 HB machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
2. Placed the night-vision sight into operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
3. Took the night-vision sight out of operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
4. Dismounted the night-vision sight from an M2 HB machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
5. Completed all performance measures within 10 minutes.	_____	_____

Task 25
Mount, Place into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the MK-19 40-mm Machine Gun)

TEST ADMINISTRATIVE GUIDE

- TASK:** Mount, place into operation, and dismount the unit issued night-vision sight (using the MK-19 40-mm machine gun).
- CONDITIONS:** Given a MK-19 machine gun mounted on the MK-64 weapon systems mount and the M3 tripod, a night-vision sight, and applicable TM.
- STANDARDS:** Within 10 minutes, the crewman will—
- Mount the night-vision sight on the MK-19.
 - Place the night-vision sight into operation.
 - Take the night-vision sight out of operation.
 - Dismount the night-vision sight from the MK-19.

PERSONNEL, EQUIPMENT AND MATERIAL:

- Items listed on page 4-2.
- MK-19 machine gun.
- MK-64 weapon systems mount.
- M3 tripod.
- Complete night-vision sight.
- Applicable night-vision sight TM.
- A 9/16-inch open-end wrench or an 8-inch crescent wrench.
- Required batteries for the night-vision sight.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the weapon is cleared and mounted on the tripod securely.

TEST PLANNING TIME:

Administrative: 5 minutes
Test: 10 minutes
Total: 15 minutes

Note. Use the time listed in the applicable night-vision sight TM. If no time is listed in the TM, then use the above times.

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to mount, place into operation, take out of operation, and dismount the night-vision sight on the MK-19 40-mm machine gun. The weapon is clear. You have 10 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed the task after 10 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 25
Mount, Place Into Operation, and Dismount the Unit Issued Night-Vision Sight
(Using the MK-19 40-mm Machine Gun)

	GO	NO-GO
Note. Unit master gunners are encouraged to develop a performance checklist for each night-vision sight the unit has available. Use the template below.		
1. Mounted the night-vision sight on the MK-19 40-mm machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
2. Placed the night-vision sight into operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
3. Took the night-vision sight out of operation.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
4. Dismounted the night-vision sight from an MK-19 40-mm machine gun.		
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
etc.		
5. Completed all performance measures within 10 minutes.	_____	_____

Task 26
Load, Arm, and Unload an Encased TOW Missile on a HMMWV
TEST ADMINISTRATIVE GUIDE

- TASK:** Load, arm, and unload an encased TOW missile on a HMMWV.
- CONDITIONS:** Given a HMMWV, an assembled, vehicle-mounted TOW launcher, an encased missile (forward handling ring and electrical connector dust cover in place), and a sector of fire.
- STANDARDS:** Within 5 minutes, the crewman will—
- Load an encased TOW missile.
 - Arm the TOW launcher.
 - Unload the TOW missile.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- A HMMWV.
- Complete TOW system (vehicle-mounted).
- Encased TOW missile simulation round.
- TM 9-1425-450-12.
- FM 23-34.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the complete vehicle-mounted system is assembled.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 5 minutes

Total time: 10 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to load, arm, and unload an encased TOW missile on a HMMWV. You will have 5 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed this task after 5 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 26

Load, Arm, and Unload an Encased TOW Missile on a HMMWV

	GO	NO-GO
1. Loaded an encased TOW missile on a HMMWV.		
a. Inspected the missile.	_____	_____
b. Picked up the missile properly.	_____	_____
c. Removed the forward handling ring and clamp.	_____	_____
d. Placed the missile into the TOW launcher correctly.	_____	_____
e. Lowered and locked the bridge clamp.	_____	_____
2. Armed an encased TOW missile.		
a. Made sure the backblast area was clear.	_____	_____
b. Raised the arming lever.	_____	_____
c. Announced "UP."	_____	_____
3. Unloaded an encased TOW missile.		
a. Followed the correct procedures for unloading a fired TOW missile.		
(1) Raised the locking handle.	_____	_____
(2) Raised the arming lever.	_____	_____
(3) Removed the launcher container.	_____	_____
(4) Made sure the launch tube was clear of foreign matter.	_____	_____
b. Followed the correct procedures for unloading an unfired TOW missile.		
(1) Lowered the arming lever.	_____	_____
(2) Raised the locking handle.	_____	_____
(3) Opened the bridge clamp.	_____	_____
(4) Removed the missile.	_____	_____
(5) Replaced the forward handling ring and clamp.	_____	_____
(6) Tagged the missile (included the date, unit, and name).	_____	_____
4. Completed the performance measures within 5 minutes.	_____	_____

Task 27**Perform Immediate Action Procedures for a Hangfire or Misfire of an M220-A2 TOW Missile Launcher (Mounted on an M966 HMMWV)****TEST ADMINISTRATIVE GUIDE**

- TASK:** Perform immediate action procedures for a hangfire or misfire of an M220-A2 TOW missile launcher (mounted on an M966 HMMWV).
- CONDITIONS:** Given an M220-A2 TOW launcher (loaded and ready to fire) mounted on an M966 HMMWV, an additional encased missile, one crew member to assist, and a sector of fire.
- STANDARDS:** Within 5 minutes, the crewman will perform immediate action procedures for a hangfire or misfire.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An M966 HMMWV with BII.
- Complete TOW system.
- Two encased TOW missile simulation rounds.
- TM 9-1425-450-12.
- FM 23-34.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the complete TOW system is installed.

TEST PLANNING TIME:

Administrative time: 5 minutes
Test time: 5 minutes
Total time: 10 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to perform immediate action procedures for a hangfire or misfire of an M220-A2 (mounted on an M966). You will have 5 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed this task after 5 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 27
Perform Immediate Action Procedures for a Hangfire or Misfire of an
M220-A2 TOW Missile Launcher (Mounted on an M966 HMMWV)

	GO	NO-GO
Note. Direct the crewman to attempt to fire the weapon.		
1. Continued to track the target for one minute.	_____	_____
2. Pressed the trigger a second time.	_____	_____
3. Announced "MISFIRE" ("HANGFIRE").	_____	_____
4. Checked the battery in the MGS.	_____	_____
5. Checked the MGS coil cable connection.	_____	_____
6. Checked the bridge clamp.	_____	_____
7. Made sure the missile was armed.	_____	_____
8. Pressed the trigger.	_____	_____
9. Continued to track the target for one minute.	_____	_____
10. Lowered the trigger protective cover.	_____	_____
11. Lowered the arming lever.	_____	_____
12. Locked the elevation (eight degrees down) and azimuth.	_____	_____
13. Removed the missile and placed it the correct distance away (200m).	_____	_____
14. Reloaded the launcher.	_____	_____
15. Completed the performance measures within 5 minutes.	_____	_____

Task 28

Stow an M220-A2 TOW Launcher System in an M966 HMMWV and Place an M966 HMMWV in the Ready-to-Fire Configuration

TEST ADMINISTRATIVE GUIDE

- TASK:** Stow an M220-A2 TOW launcher system in an M966 HMMWV and place an M966 HMMWV in the ready-to-fire configuration.
- CONDITIONS:** Given an M966 HMMWV, a complete M220-A2 TOW launcher system installed on the M966 that has passed the system check-out, an encased missile simulation round, and a TOW crew.
- STANDARDS:** The crew will have 5 minutes to complete each task:
- Within 5 minutes, the crew will install and secure (with available straps) an M220-A2 TOW launcher system in an M966 HMMWV.
 - Within 5 minutes, the crew will prepare the M966 HMMWV and the M220-A2 TOW launcher system for firing.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- An M966 HMMWV with BII.
- Complete M220-A2 TOW launcher system installed that has passed the system check-out.
- An encased TOW missile simulation round.
- TM 9-1425-450-12.
- Three-man crew.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the complete TOW system is installed, and all equipment is removed from the M966 HMMWV.

TEST PLANNING TIME:

Administrative time:	5 minutes
Test time:	<u>10</u> minutes
Total time:	15 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to stow an M220-A2 TOW launcher system in an M966 HMMWV and place an M966 HMMWV in the ready-to-fire configuration. You will have 5 minutes to install and secure (with available straps) an M220-A2 TOW launcher system in an M966 HMMWV and 5 minutes to prepare the M966 HMMWV and the M220-A2 TOW launcher system for firing. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed this task after 5 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 28
Stow an M220-A2 TOW Launcher System in an M966 HMMWV and Place an
M966 HMMWV in the Ready-to-Fire Configuration

	GO	NO-GO
1. Stowed an M220-A2 TOW launcher system in an M966 HMMWV.		
a. Installed the missile guidance system (MGS) (with the TOW vehicle power cable or battery assembly).	_____	_____
b. Installed the battery or batteries.	_____	_____
c. Stowed the collimator on the right shelf.	_____	_____
d. Loaded the missile and secured all latches and straps.	_____	_____
e. Stowed the night sight tracker.	_____	_____
f. Stowed the traversing unit.	_____	_____
g. Stowed the launch tube.	_____	_____
h. Stowed the optical sight.	_____	_____
i. Stowed the battery power conditioner.	_____	_____
j. Stowed the AN/RAS-4 battery case or spare battery pack.	_____	_____
k. Stowed the tripod.	_____	_____
2. Completed the performance measures within 5 minutes.	_____	_____
3. Placed an M966 HMMWV in the ready-to-fire configuration.		
a. Released the hatch cover latches.	_____	_____
b. Removed the MGS from the stowed position (removed the MGS cover).	_____	_____
c. Positioned the weapon station.	_____	_____
d. Installed the MGS on the tray.	_____	_____
e. Installed the traversing unit.	_____	_____
f. Installed the launch tube.	_____	_____
g. Connected the coil cable to the MGS.	_____	_____
h. Installed the optical sight.	_____	_____
i. Installed the night sight.	_____	_____
j. Connected all cables.	_____	_____
k. Announced or described how to collimate and test the MGS.	_____	_____
4. Completed the performance measures within 5 minutes.	_____	_____

Task 29
Assemble the M220-A2 TOW Launcher System
TEST ADMINISTRATIVE GUIDE

TASK: Assemble the M220-A2 TOW launcher system.

CONDITIONS: Given a disassembled M220-A2 TOW launcher system with all components.

STANDARDS: Within 5 minutes, the crewman will assemble the M220-A2 TOW launcher system so it is safe to fire.

PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED:

- Items listed on page 4-2.
- Complete M220-A2 TOW launcher system.
- TM 9-1425-450-12.
- FM 23-34.

PRETEST PREPARATION:

- Make sure the equipment is operational and that the ground is solid and slopes less than 30 degrees.

TEST PLANNING TIME:

Administrative time: 5 minutes

Test time: 5 minutes

Total time: 10 minutes

INSTRUCTIONS TO CREWMAN:

“This task will test you on your ability to assemble the M220-A2 TOW launcher system. The weapon has been cleared. You will have 5 minutes to complete this task. Do you understand these instructions? (Answer questions.) You may begin.” (Start the time.)

If the crewman has not completed this task after 5 minutes, announce “STOP” loud enough for the crewman to hear.

Note. If it appears that the crewman is going to damage the equipment or injure himself, announce “STOP.”

PERFORMANCE CHECKLIST FOR TASK 29
Assemble the M220-A2 TOW Launcher System

	GO	NO-GO
1. Set up the tripod.	_____	_____
2. Installed the traversing unit.	_____	_____
3. Installed the launch tube.	_____	_____
4. Mounted the day sight tracker.	_____	_____
5. Mounted the night sight tracker.	_____	_____
6. Installed the battery in the MGS.	_____	_____
7. Connected the coil to the MGS.	_____	_____
8. Connected the battery power conditioner to the night sight.	_____	_____
9. Completed the performance measures within 5 minutes.	_____	_____

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Chapter 5

Gunnery Training Program

This chapter provides guidelines for the development of a gunnery training program that is designed to make crew members more proficient by training them to work together as a team. Further, it covers setting up training ranges and using training devices, simulators, and aids.

The success or lack of success of any training program will be the direct result of the amount of time, effort, and emphasis placed into the development of the program. This chapter gives commanders and trainers a guide by which to base a training program, but it does not limit the ability to create innovative variations built upon this framework.

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SECTION I - THE TRAINING PLAN

5-1. Once the commander has developed his mission-essential task list (METL) and made a thorough assessment of training proficiency, he begins the detailed process of developing a training plan. When planning the gunnery aspect of the training plan, the master gunner is the most valuable asset to aid the commander.

5-2. This section identifies the master gunner's responsibilities in aiding the commander, as well as the commander's responsibilities in managing crew turbulence and conducting long-range, short-range, and near-term planning.

Master Gunner

5-3. The primary mission of the master gunner is to aid and assist commanders at all echelons in the planning, development, execution, and evaluation of all crew-served weapons related training (individual, crew, and collective).

5-4. The master gunner's specific duties are directed by the commander. Examples of his duties are:

- Develop or conduct training and certification of crew evaluators.
- Assist all elements within the unit concerning gunnery training.
- Forecast all ammunition for training.
- Manage gunnery records, GST records, and turbulence rosters.
- Coordinate and control training devices.
- Train crews on multiple integrated laser engagement system (MILES) gunnery peculiarities (zeroing and maintenance).
- Execute gunnery training. Supervise live-fire ranges to ensure all standards are followed; specifically—
 - Confirm zero techniques.

- Coordinate target arrays, exposure times for all targets, and maneuver box verification. Set up all ranges to make sure they meet the standards set forth in this manual.
- Set up and conduct GST training, and evaluate the results.
- Advise the commander of the tactical capabilities of the CFV, MK-19, M2 HB, and TOW weapon systems against threat systems, in coordination with the S2.

5-5. The master gunner's main responsibilities are listed above, but may change in scope, depending on the level that he is assigned. The master gunner should not be assigned additional duties other than those listed here. Unit gunnery training programs need a great deal of attention to be effective. The specific duties of the regimental, squadron, troop/company, and platoon master gunner are:

MASTER GUNNER DUTIES	
Regimental Master Gunner	• Works closely with master gunners at lower echelons to ensure standards are uniform throughout the training programs. • Develops the crew evaluator certification program. • Provides any new information on ways to improve training. • Helps develop and upgrade range facilities.
Squadron Master Gunner	• Ensures continual education of the master gunners in the squadron. • Helps the squadron commander and command sergeant major select master gunner school candidates. • Develops new training techniques to improve crew training. • Coordinates with the regiment for training assets. • Certifies crew evaluators IAW Vehicle Crew Evaluator Exportable Packet (VCEEP). • Certifies GST evaluators in accordance with this manual. • Certifies range safety personnel.
Troop/Company Master Gunner	• Coordinates with squadron S3 to secure troop/company gunnery training assets. • Trains crew evaluators IAW VCEEP training program. • Assists in troubleshooting and maintenance of weapons.
Platoon Master Gunner	• Is primarily responsible for the platoon's weapon maintenance program. • Updates the troop/company master gunner on the platoon's crew training. • Assists the troop/company master gunner in unit training.

Crew Stability Management

5-6. The greatest problem a commander faces when developing a training plan is the cause and effect of crew turbulence (personnel changes). Commanders must develop a plan to reduce and control crew turbulence before developing and executing his training plan. Crew turbulence is unavoidable, but may be reduced by planning ahead. Some possible solutions for reducing crew turbulence are:

- Short-term solutions:
 - Change personnel as a crew not as a single crewman (for example, when a staff sergeant vehicle commander is promoted to platoon sergeant, his entire crew moves with him). This causes only one crew change, instead of two.
 - Train alternates for each position.
- Long-term solutions:
 - Continually cross-train personnel for replacements. Experienced soldiers are easier to train than new soldiers.
 - Form complete crews as personnel come into the unit. Match the loss dates (ETS and PCS) within the same crew.

Long-Range Planning

5-7. Long-range planning is resource-oriented—commanders identify training needs from the METL task proficiency assessment. Goals are established, and resources are forecasted and allocated to reach these goals. (See FM 7-1 for additional information on long-range planning.)

5-8. Commanders must consider the following when conducting long-range planning:

- What is the current platoon proficiency level? This is based on—
 - Crew turbulence.
 - Performance during previous gunnery, maneuver exercises, and squad and platoon situational training exercises (STX) and field training exercises (FTX).
- What are the performance goals for the platoons? What proficiency level must crews reach to accomplish METL tasks?
- What resources are necessary, and where is the command emphasis?
- What schools are necessary to certify and train trainers?

Short-Range Planning

5-9. Resources identified during long-range planning are allocated and prioritized during short-range planning. Command training guidance is published to provide trainers with detailed information on the training objective.

- Short-range gunnery scheduling considerations are:
 - Vehicle services.
 - Mandatory training events prescribed from higher.
 - Nontraining events, such as holidays, leaves, and installation support.
- Short-range guidance considerations are:
 - Crew and dismounted training priorities, and expected outcome.
 - Leader, individual, and collective tasks associated with the training event.
 - Steps required to prepare trainers and evaluators.
- Gunnery resource considerations are:
 - Ammunition.
 - Fuel and repair parts.
 - Range and maneuver area.
 - Availability of training devices.

AMMUNITION

5-10. Commanders and master gunners must carefully manage ammunition allocations, especially when dealing with 40-mm TP resources. Once the yearly ammunition authorization is known, ammunition should be allocated in specific priority.

- Mounted crew training.
 - First: crew qualification.
 - Second: crew practice.
 - Third: qualification refires and additional training.
- Dismounted training.
 - First: weapons qualification.
 - Second: squad and platoon live-fire exercise (LFX).
 - Third: LFX refires and additional training.
- Platoon training.
 - First: platoon qualification.
 - Second: platoon practice.

5-11. Ammunition is forecasted no later than 120 days before the training event. There are many reasons why the ammunition authorization may fall short of the forecasted training requirement. When this happens, commanders must develop a strategy to train with less ammunition. Several considerations are:

- Reduce the number of crew practice tasks for crews who are stabilized and have qualified previously; give their ammunition to the new crews.
- Reduce rounds per engagement on training and practice exercises.
- Increase device-based training.
- Use MILES in crew practice scenarios. MILES is not suitable for moving target engagements because the gunner does not have to physically lead to engage the target. BOT and TOT cannot be trained with MILES.

Near-Term Training Plan

5-12. Near-term planning is conducted primarily at squadron, company, and platoon level. Its primary purpose is to conduct final coordination and provide specific guidance to the units.

5-13. Training meetings should be held at squadron, company, and platoon level so that all key personnel understand the detailed information.

5-14. Squadron meetings focus on training management. Considerations include—

- Final coordination of ranges, training areas, and ammunition.
- Coordination between units for maintenance, medical, logistical, and personnel requirements.
- Locking in and publishing unit-training schedules.

5-15. Company and platoon meetings provide the details of executing the training event; specifically—

- When the training will be conducted, to include movement times to the training area.
- Personnel involved in the training event (highlight key individuals responsible to conduct training).
- Training location, uniform, and special equipment required for conduct of training.
- Specific personnel performance measures to be evaluated.

Note. See Section II, this chapter for additional information on range set-up, execution, and key individual responsibilities.

5-16. The formal training plan culminates with the training schedule; however, commanders, key leaders, and all trainers must continue to informally plan and coordinate training with a series of pre-execution checks. Additionally, trainers, soldiers, and support personnel must thoroughly prepare for training.

5-17. Pre-execution checks systematically prepare soldiers, trainers, and resources to ensure training starts properly. These checks are developed, and responsibility is fixed during short-range planning.

5-18. Commanders prepare trainers to conduct performance-oriented training by providing time, guidance, resources, and references. These trainers rehearse their preparations and review the tasks and subtasks to be conducted. This preparation gives the trainer confidence in his ability to perform the task and teach soldiers the correct skills.

SECTION II - RANGE OPERATIONS

5-19. A complete training program includes the use of ranges and training sites. It provides an opportunity to acquire targets in a realistic environment and to use the weapon systems to engage targets.

5-20. A plan must be developed for conducting gunnery training. This plan will vary with the tables to be trained. The plan should include the use of assets, requirements for opening the range and occupying the training site, duties and responsibilities during the exercise and while closing the range, and training tips for the OIC.

Environmental Note: Whenever possible, choose gunnery training sites that minimize damage to vegetation and waterways.

The Use of Assets

5-21. Training can be conducted by the squadron or by the troop/company.

SQUADRON

5-22. The squadron signs for, administers, and clears the range or training site. The training troop/company assists in range police and administrative duties. This allows the administering troop/company to concentrate on gunnery, tactics, and maintenance. Advanced gunnery tables require support from outside the squadron because of the magnitude of the target array and number of personnel needed to control the range. The tactical tables should not require assets from sources other than the squadron.

TROOP/COMPANY

5-23. The troop/company signs for, administers, and clears the range or training area. The squadron provides the necessary support in details, safety officers, range guards, and administrative personnel.

Opening the Range or Occupying the Training Site (Sequence of Events)

5-24. The range is opened and occupied according to local range and squadron SOPs. The following personnel are responsible for the sequence of events used to open the range and occupy the training site:

- The OIC—
 - Arrives at the range or training site before the unit.
 - Checks communications and, for live-fire exercises, ensures that backup communications are available.
 - Briefs the safety officer, the evaluators, and the units that will be trained.
 - Ensures that range equipment is present and operational.
- The NCOIC—
 - Sets up additional training areas.
 - Supervises ammunition, targets, and administrative details.
- Environmental: Ensure that absorbent materials are available for spills.
- The safety officer or NCO—
 - Ensures that barriers are closed or range guards are posted and briefed on their duties.
 - Ensures that no live ammunition is present on a nonfiring range.
 - Supervises placing vehicles in the correct firing order for firing or training.
 - Inspects storage, handling, and lot numbers for restricted or suspended ammunition.
 - Inspects medics and vehicles.
 - Inspects DA Form 2408-4 (Weapon Record Data) for each weapon that requires it.
 - Gives a safety briefing before all live-fire exercises.
- The master gunner—
 - Gives a final briefing to vehicle crew evaluators (VCE).
 - Ensures that the concurrent training is set up.
 - Arrives at the range or training site before the firing unit.

During the Exercise

5-25. The following personnel are responsible for certain events during the conduct of the exercise:

- The OIC—
 - Controls the firing of live-firing exercises.
 - Maintains efficient throughput within units and between units going through the course.
 - Maintains all required communications.

- The NCOIC—
 - Supervises all details.
 - Controls the movement of personnel from the firing positions to additional training and other administrative areas.
- The safety officer or NCO—
 - Ensures that misfires are handled in accordance with the safety regulations.
 - Watches for any safety violation.
 - Clears each vehicle or firer upon completion of the exercise.
- The master gunner—
 - Ensures that range firing is conducted in accordance with the appropriate gunnery table.
 - Ensures zeroing is accomplished correctly.
 - Conducts remedial training on site, as needed.
 - Supervises the VCEs.
 - If required, assists safety personnel in clearing weapons.
 - If required, assists maintenance personnel in troubleshooting weapon malfunctions.
 - Assists the commander in determining or verifying alibi conditions.

Closing the Range

5-26. The following personnel are responsible for certain events while closing the range:

- The OIC—
 - Notifies range control that firing has terminated.
 - Debriefs unit personnel.
 - Ensures that the range or training area is cleared in accordance with local regulations and SOPs.
- The NCOIC—
 - Supervises ammunition and target details.
 - Ensures that range facilities have been policed.
 - Environmental: Ensure that petroleum, oils, and lubricant (POL) spills are cleaned up either by the using unit, or a supporting unit, and reported to post authorities, depending on the size of the spill.
- The ammunition NCO—
 - Ensures that no munitions are removed from the range by anyone other than authorized personnel.
 - Prepares residue certificates required by the ammunition supply point.

Training Tips

5-27. The following tips will aid the OIC in conducting training on the range:

- *Brief key personnel.*
 - Before moving to the training site, brief key personnel in setting up the site and in reacting to unusual circumstances. This will keep down time to a minimum.
 - Brief bunker personnel on safety regulations and requirements. Bunker personnel must be given definite control measures, such as entering and exiting the bunker and bunker area. Bunker personnel must have two means of communication with the tower.
 - Brief OPFOR personnel on the role they will play in tactical training. Make sure they know what to do and when to do it. Stress that their actions must be the same for each unit going through the course.
- *Start on time.* Have the training site ready and communications set up early so that crews can begin firing on time. Plan operations so that training is not interrupted for maintenance of the course until a prearranged time or normal shut down time (posted in the daily range bulletin). Make sure there are enough targets to complete all training before the scheduled break.

- *Plan illumination.* Register weapons providing indirect illumination before dark. For ease of control and reduction of support requirements (ammunition pads, OIC, safety officers, transportation, and communications), locate indirect-fire weapons on the same range with firing vehicles.
- *Use range marker lights (live fire).* Do not fire at night without a light (and thermal range marker on TOW ranges) on the range safety markers. If the range marker lights fail, all the ranges that use the same impact area must be closed. To prevent this, consider placing two lights together on each range safety marker, making sure that a backup light is available. Lights in good operating condition and fresh batteries will add an additional measure of confidence.
- *Keep a log.* Maintain an accurate log to help keep better informed of dry- and live-firing times and other important events. As a minimum, the log should contain:
 - When the unit occupied the range or training site.
 - For live fire, when permission to fire was received from range control.
 - Who gave permission to fire.
 - When the range was in a cease-fire status.
 - Compass azimuth to any stray impact points and time of impact.
 - When the unit cleared and departed the range.
- *Brief guards.* Have a plan to check and change guards frequently. Also, make sure the guards are briefed on their job and its importance, and that they understand their instructions.
- *Check safety markers.* Make sure range safety markers are present before any live firing begins.
- *Make sure the ammunition is correct.* Coordinate closely with the support elements responsible for supplying live ammunition or pyrotechnics to ensure you have the correct type of ammunition in the correct amounts at the right time and place. Make sure that the ammunition to be fired has been checked against TB 9-1300-385 for restricted or suspended ammunition lot numbers.
- *Position recovery vehicle.* Quickly remove disabled vehicles from the course to prevent loss of training time. A manned recovery vehicle must be in position to support the unit.
- *Prepare for fires.* During dry seasons, there is always a danger of tracer illumination causing grass and forest fires. Be prepared to control the situation quickly. It may be necessary to reduce the number of tracer rounds in linked ammunition if fires persist.
- *Police the area.* A clean training site reduces the chance of injury, especially at night. Police as you go to avoid spending valuable time cleaning up after firing.
- *Brief visitors.* Have a plan for briefing visitors, and designate a briefing NCO or officer. Brief visitors before escorting them to the primary training site.
- *Conduct other training.* Stress those areas in which the unit needs additional training, such as—
 - Target acquisition.
 - Range determination.
 - Movement techniques.
 - Crew tasks.
 - Section tasks.
 - Fire commands.
 - Methods of adjustment.
 - Prepare-to-fire checks.
 - Misfire procedures.
 - Target identification.
 - Maintenance of vehicles and weapons.

Range and Training Area Reconnaissance

5-28. The OIC, master gunner, and NCOIC should personally conduct a reconnaissance and coordinate with range control before their unit occupies a range or training area. The reconnaissance should provide answers to the following questions:

- What route to the range or training area will be used?
- How many stationary or moving vehicles can fire on the course simultaneously?
- Are hull-down and turret-down positions available?
- What control facilities (tower) are available? What is their condition?
- What communication hookups are available to operate the range? Is there communication from existing bunkers to the range towers? Is the range tower equipped with FM communication equipment?
- Are range limit markers visible during the day, during reduced visibility conditions, and during night firing?
- Which barriers and guard posts need to be closed or manned?
- Who furnishes the targets, target supplies, or training devices used on the range?
- What requirements are necessary for target operators or target details? Where are targets stored? Are the targets the correct type, size, shape, and color? What is the condition of target mechanisms?
- What ammunition can be used on the range?
- Has the range or training area been cleared of duds?
- Where are the following areas?
 - Ammunition pad.
 - Firing line and maneuver areas.
 - Barriers and guard posts.
 - Range limit markers.
 - Helipad.
 - Aid station.
 - Parking areas.
 - Maintenance area.
 - Latrine.
 - Briefing and debriefing areas.
 - Tower.

Range and Training Area Personnel, Equipment, and Layout

5-29. Good planning and execution of range or tactical training allows progressive training and evaluation of the unit. Administrative requirements are in AR 385-63, local training regulations, and unit SOPs. A range book containing all applicable regulations and reference materials (such as, range schedules, firing tables, gunnery tables, maps, range logs, range certification list) aids the OIC in operating the range efficiently.

REQUIRED PERSONNEL

5-30. The OIC is responsible for the entire range or training site. This includes planning, preparing, coordinating, and executing the training exercise. AR 385-63, Chapter 4 lists an overview of the duties to be completed or supervised by the OIC. The OIC also designates assistants to be responsible for specific areas of operation. All personnel involved in conducting the training exercise report to the OIC regarding their respective duties.

5-31. The following personnel are required for conducting range training and must be certified on operation of a range by the local range control office.

5-32. **Range Safety Officer (RSO).** The RSO is a commissioned officer, warrant officer, or NCO (staff sergeant or higher) who is weapon systems qualified. He is a direct representative of the officer in charge of firing. The RSO will—

- Conduct a safety briefing before all live-fire exercises.
- Enforce all safety regulations.
- Make sure all ammunition is handled correctly.
- Enforce smoking restrictions near the vehicles, ammunition, and POL.
- Make sure misfires are handled as stated in AR 385-63 and the appropriate operator's manual.
- Investigate and report accidents in accordance with all regulations.
- Make sure weapons on live-fire ranges are pointed toward the impact area at all times.
- Make sure personnel are clear of the danger area (except as authorized in AR 385-63).
- Check all ammunition for suspended or restricted lots, using TB 9-1300-385.
- Make sure barriers and guards are in place before the exercise begins.
- Check for identification and qualification of medical personnel, and make sure they have transportation, if required.
- Inspect and clear all weapons once firing is complete.

5-33. **Master Gunner.** The master gunner is the commander's gunnery technical advisor. He helps the commander and staff plan, develop, and conduct the gunnery training. The master gunner will—

- Prepare a surface danger area diagram and range overlay.
- Prepare scaled ranges, if required.
- Organize range firing exercises.
- Set up range firing exercises.
- Make sure range firing exercises are properly conducted.
- Supervise the crews to ensure the proper zeroing procedures are used.
- Coordinate target arrays and layout for range firing and qualification.
- Conduct remedial training on site, as needed.
- Make sure a standard VCE program is implemented.

5-34. **NCOIC.** The NCOIC coordinates and supervises details and assists the OIC and RSO in operating the range or training area.

5-35. **Ammunition NCO.** The ammunition NCO will—

- Make sure all ammunition is accounted for by type and lot, IAW applicable SOPs.
- Make sure the correct type of ammunition is available for the scheduled firing.
- Make sure the ammunition is properly stored and secured on the ammunition pad at the training area.
- Check any ammunition resupply to make sure it is not restricted or suspended (checks with RSO and TB 9-1300-385).
- Issue the correct type and number of rounds, as instructed by the OIC.
- Keep a running inventory to cross-check daily expenditures turned in to the OIC by vehicle commanders.
- Make sure the ammunition pad is continually policed of links, brass, and packaging materials.

5-36. **Target NCO.** Target NCOs are not needed on many of the automated ranges. Target NCOs, when required, will—

- Make sure the targets are the type, color, and scale (if applicable) required by the OIC.
- Make sure the targets are in the proper location on the range.
- Make sure the target detail is properly trained to operate and troubleshoot the target mechanisms used.

- Make sure the target detail has the required equipment and supplies.
- Make sure pre-positioned targets are available when needed.
- Make sure there are enough spare targets, target mechanisms, batteries, patches, and other related equipment available to support training.
- Report to the OIC if any mechanical malfunctions require prompt replacement to continue firing.

5-37. **Crew Evaluator.** The truck crew evaluator will—

- Enforce the required safety precautions.
- Act as an instructor during practice.
- Conduct an AAR after completion of firing.
- Debrief crews after completion of firing.
- Discuss scoring discrepancies with the OIC.

5-38. **Fire Fighting Detail.** A fire-fighting detail is required at some range facilities during dry seasons. The following should be considered when a fire-fighting detail is required:

- Availability of fire fighting equipment.
- Designated vehicles for soldiers and equipment.
- Access routes to the impact or target areas.

5-39. **Radiotelephone Operators.** RTOs maintain communications during an exercise.

5-40. **MEDIC.** The medic must—

- Know how to get to the nearest aid station or hospital.
- Know radiotelephone operating procedures for use during an air evacuation.
- Have an identification card (medical) or a memorandum from his commander stating that he is a qualified medic.
- Be equipped for the mission.

RANGE EQUIPMENT

5-41. The OIC and NCOIC should make sure that the following equipment is on hand.

- For gunnery and tactical exercises:
 - Current gunnery standards for the table being conducted.
 - Targets and target operating and control mechanisms.
 - Target repair equipment.
 - Range regulations.
 - Flashlights for scorers.
 - Batteries for lights and radios.
 - Vehicle recovery assets.
 - Evaluator communications.
 - Briefing tent.
 - Scoresheets.
 - Stopwatches.
 - Binoculars.
 - Night-vision devices with enough batteries.
 - Field telephones, as required.
 - Vehicles for target and scoring detail, fire-fighting detail, backup aid vehicle, and safety officers (moving range).
 - Generators to power lights.
 - Equipment for concurrent training.

- Table of organization and equipment (TOE) and expendable supplies.
- All required regulations, SOPs, maps, and overlays.
- FM radio sets and antenna GRC-292.
- For gunnery exercises:
 - Range flag.
 - Range lights or lantern.
 - Flag sets for vehicles and tower.
 - Compass for marking rounds out of impact area.
 - Ballistic firing tables.
- For tactical exercises:
 - MILES equipment.
 - OPFOR equipment.
 - OPFOR personnel.

RANGE AND TRAINING AREA LAYOUT FOR GUNNERY EXERCISES

5-42. A well-organized gunnery range provides maximum firing time. If ranges are planned and organized in advance and all items are gathered before moving to the range, firing can start on time and finish in time to allow an orderly move off the range.

5-43. A good squadron-level range operation SOP saves time and energy for the firing unit. The SOP should include guidelines for occupying the range and describe actions to be taken for specific tasks:

- Coordinating with maintenance contact teams.
- Operating moving targets.
- Replacing targets.
- Repairing target mechanisms.
- Fighting range fires.
- Conducting range scenario.
- Firing orders.
- Policing the range.
- Departing the range.
- Breaking down ammunition.
- Moving vehicles to the ammunition point and ready line.

5-44. **Stationary Ranges.** Stationary ranges usually use moving and stationary targets. Crews engage targets from a defensive position or berm. OICs and RSOs coordinate with local range control for assistance in planning these exercises.

5-45. **Moving Ranges.** Moving ranges have a maneuver box. If course roads exist, they should be used for movement. The vehicle commander should use available terrain for masking the vehicle's position. Maneuver boxes are used to allow the vehicle crew to acquire, range, and destroy targets arranged in a realistic array as outlined on appropriate gunnery tables. Maneuver boxes must be clearly defined and adhered to (start and stop points). The maneuver box will not extend or surpass the exposure and engagement times.

RANGE AND TRAINING AREA LAYOUT FOR TACTICAL TRAINING

5-46. Tactical training is conducted on ranges or in training areas, whichever is available. Most of the preparation that goes into a gunnery exercise also applies in tactical training.

5-47. The configuration of the course depends on the local terrain. Each task must be adjusted to fit a specific piece of terrain, so tasks probably will not be encountered in the order in which they appear in a particular table.

5-48. As in the gunnery tables, tactical tables need a range operation SOP that will save time and energy for the firing unit. The SOP should include guidelines for setting up the tactical range or training area, and should describe actions to be taken for specific tasks:

- Coordinating with maintenance contact team (MILES devices).
- Testing MILES equipment.
- Briefing OPFOR and controller personnel of duties for each engagement.
- Test firing weapons (machine guns with blank adapters).
- Moving vehicles to the start point and issuing fragmentary orders to initiate movement down the course.
- Conducting after-action reports after each engagement, and assembling crews (resetting MILES equipment).
- Controlling movement on the course to prevent congestion.
- Policing the range or training area.
- Departing the range or training area.

TARGETS

5-49. Full-scale targets should be the same shape, size, and color as the threat targets they represent. TC 25-8 describes targets, target mechanisms, and target control in detail. A visual cue must be used to indicate target kills (for example, target drops, indicator lights, and red and black smoke).

FLAGS

5-50. On all ranges, vehicles display flags to show the vehicles' weapon status. The following list explains each flag's use:

- Red. The vehicle is engaged in firing. Weapons are loaded, pointed at the target area, and off SAFE.
- Green. All weapons are cleared, elevated, and on SAFE. All ammunition on board the vehicle is either in the ready or stowed.
- Yellow (and red or green). There is a malfunction on the vehicle. The yellow flag is used in conjunction with a red or green flag:
 - Yellow and red. The vehicle has a malfunction or misfire; weapons are pointed at the target area and are not clear. (Weapon is on SAFE, if possible; if not, range safety personnel are notified.)
 - Yellow and green. The vehicle has a malfunction, all weapons are clear, and weapons are on SAFE.
- Red and green. The vehicle is preparing to fire or the crew is conducting a nonfiring exercise. The weapon may be loaded, but is on SAFE.

Note. At night, a red and green light will replace the red and green flags.

RANGE CONTROL

5-51. The range control officer is responsible for the coordination and safe conduct of range activity for all units. Normally, unit leaders are required to receive a range briefing from the range control officer before occupying a range. Schedule this briefing promptly to prevent any delay in training. Range control should also provide a set of local range regulations and policies.

RANGE COMMUNICATIONS

5-52. The installation range officer controls all ranges by wire and radio communication to obtain clearance to fire, report, coordinate, and call cease fires. The OIC controls all training activities, including firing, by the best means available. Wire is the preferred means of communication for target operators and personnel in the impact area or with the OPFOR (for tactical training). In all cases, the OIC plans for a backup communication system.

Scaled Ranges

5-53. The preparation and use of scaled ranges require only minor changes from procedures used to conduct live fire. Scaled-range firing helps prepare crews and sections for live fire and qualification, and allows units to

train themselves in range operation during home-station training. Unit leaders, gunners, and local range control officers may assist OICs in planning, executing, and evaluating scaled ranges.

5-54. The rising cost of ammunition, fuel, and spare parts makes it difficult to produce and maintain skilled light cavalry crews and sections. To overcome these training limitations, more gunnery training must be done at the home station using simulators, training devices, and innovative training techniques.

RANGE USE

5-55. The commander chooses the range scale that best suits his training needs and facilities. Scaled ranges allow units to realistically simulate day and night firing by single vehicles and sections against single, multiple, stationary, and moving targets. Targets representing friendly equipment can be placed in the target area to give the crew practice in distinguishing friend from foe. Overseas units can set up terrain and target arrays to resemble anticipated threat targets and actual terrain in front of prepared battle positions.

5-56. The crew, moving down the course, engages a series of machine gun targets. Although all targets are within battlesight range, crews should practice precision and battlesight gunnery techniques on the half-scale range. The crew also runs the course at night using available illumination (flare, infrared, or white light) or thermal sights.

TYPES OF SCALED RANGES

5-57. There are two types of scaled ranges:

- Small scale, moving vehicle.
- Half-scale, stationary or moving vehicle.

5-58. **Small-Scale (1/10), Moving Vehicle.** A moving vehicle range requires a larger area than a stationary vehicle range. The 1/30-scale range can be used; however, the scale is so small that terrain changes too swiftly for a moving vehicle to use proper adjustment techniques. For example, in a course run simulating 1,200 meters on a 1/30-scale range, a moving vehicle traverses only 113 feet. A vehicle moving at three miles per hour travels this distance in 27 seconds. The suggested scale, therefore, is 1/10. The exact configuration of the 1/10-scale range varies, depending on local area assets and type of terrain.

5-59. The 1/10-scale range can easily be constructed on an existing small-arms or machine gun range. The direction of vehicle movement can be parallel to the firing line or through the impact area, depending on the size and shape of the area available. To retain the desired scaled target range when firing, emplace simulated machine gun impact targets or laser targets with appropriate target mechanisms within distance constraints of the scaled ranges.

5-60. Vehicles moving along a designated route engage a series of activated machine gun targets from marked firing locations. The vehicles keep moving during engagements; however, their speed is considerably slower than normal because of the short distances between targets. Crews should practice crew duties for battlesight and precision engagements. Night firing and battlefield obscuration can be accomplished, as in the stationary, scaled course.

5-61. **Half Scale.** Half-scale ranges are used for stationary or moving vehicle exercises. Training is more realistic on half-scale ranges. Additionally, ranging on the target can be practiced.

5-62. The length of the range depends on the area available (for example, for the 7.62-mm coax, the impact area must be at least 4,800 meters).

Note. If berms are added, the impact areas may be waived to a lesser distance. The local range control can grant approval for this.

TARGETS

5-63. The scaled-impact target is available in scales of 1/60, 1/30, and 1/10. The target is mounted on a stationary, scaled, pop-up target mechanism. The target is a two-dimensional silhouette made from plastic and is easily replaced when destroyed. Targets are available in an assortment of threat vehicle silhouettes, as well as some friendly equipment silhouettes for target identification practice.

TARGET MECHANISMS

5-64. The following types of mechanisms are used with small-scale targets:

TARGET MECHANISMS	
Small-Scale, Moving Targets and Scaled, Molded-Rubber Targets	• Used on the 1/10-scale ranges. • Made locally. • Targets for use with this mechanism can be obtained locally.
Small-Scale, Stationary Targets	• Wire-operated target mechanism for popping 1/10-scale impact or laser targets. • Powered by any 24-volt electrical source. • When an impact weapon strikes the target, the target falls. • Comes with wire attached to the control box. The wire and the target mechanism are buried in sand or in the ground to protect them from projectile impacts. • When not in use, the mechanism should be removed or covered to protect it from the weather. Quick-connect plugs are used for easy removal.
M31A1 Target-Holding Mechanism for Small-Scale, Stationary Targets	• Used for popping up impact targets of 1/20 scale. • Normally operated on 110-volt AC.

SECTION III - TRAINING DEVICES, SIMULATORS, AND AIDS

5-65. Because of the high cost of ammunition and overcrowding of training areas, the use of training devices, simulators, and aids at home station is becoming increasingly more important. This section identifies resources that enhance a unit's ability to train, sustain, and evaluate gunnery and tactical training. Table 5-1, page 5-25, is a quick reference for determining which devices, simulators, and aids relate to specific training events. Devices discussed in this chapter are the thru-sight video (TSV), MILES, the precision-gunnery system (PGS), and the captive flight trainer (CFT). Simulators include the conduct-of-fire trainer (COFT), specifically the unit conduct-of-fire trainer (U-COFT) and the mobile conduct-of-fire trainer (M-COFT); the Bradley advanced training system (BATS); the videodisc integrated gunnery simulator (VIGS); the simulations network (SIMNET); and the close combat tactical trainer (CCTT). Training aids include the tracking board, laser target interface device (LTID), scaled models, and dummy rounds.

Devices

5-66. Devices are three-dimensional products used to conduct training. They mount on the actual equipment and can be activated either mechanically or electrically.

THRU-SIGHT VIDEO

5-67. The TSV (Figure 5-1) is a vehicle-appended system that provides a video and audio recording of gunnery or tactical engagement exercises. It is used for vehicle gunnery training to provide an evaluation and critique of actual engagement sequences. The TSV system is transparent to the crew. It provides an immediate playback capability through the use of an onboard monitor. The system also contains an after-action review subsystem that allows evaluators to play back, freeze, and zoom on individual engagements. These features provide an AAR enhancement that gives crews a view of their performance. The system is interchangeable with the M1 Abrams and the M2/M3 CFV family. (TD 9-6920-708-10 provides more descriptive information.) The system components are—

- Audio video recorder.
 - Environmental enclosure unit.
 - Camera control junction unit.
 - Optical unit.
 - Cable assembly.
- After-action review.

Note. All CFV training devices are required to operate in temperatures ranging from 50 to 120 degrees F ambient temperature with a peak of 125 degrees. Through-sight video operating temperature is 32 to 104 degrees F with humidity between 35 and 80 percent. Units using this operating system in areas where temperatures exceed 104 degrees F should be aware of this warning.

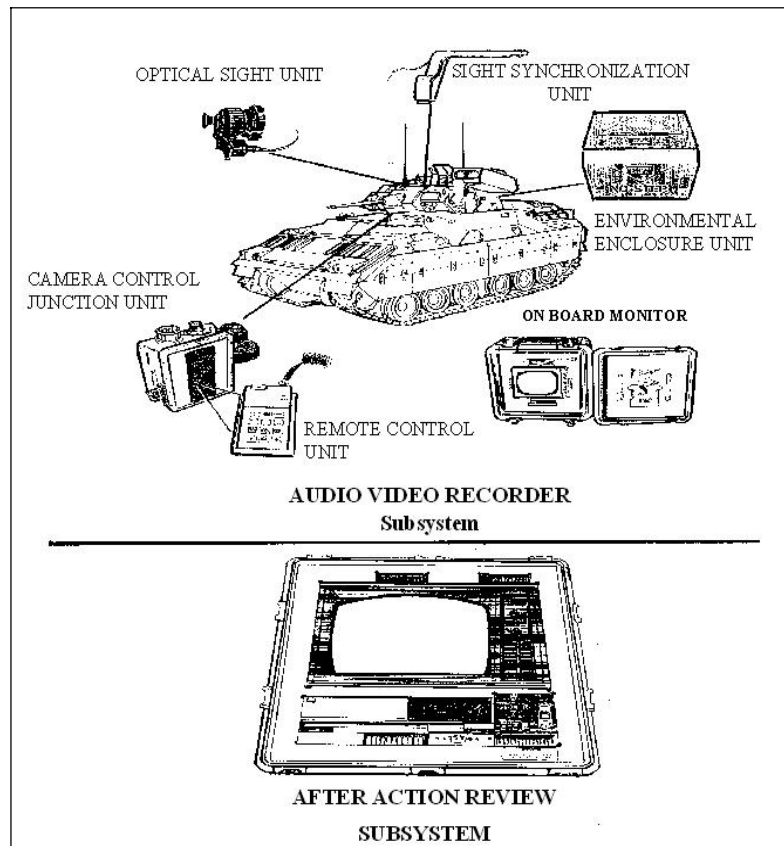


Figure 5-1. Thru-Sight Video.

Note. The after action review (AAR) subsystem is in the AAR briefing area.

MULTIPLE-INTEGRATED LASER ENGAGEMENT SYSTEM

5-68. MILES (Figure 5-2) is an integrated family of low-power, eye-safe, laser-based devices. It simulates the casualty-producing effects of direct-fire weapons using semiconductor laser beams. When fired, an invisible laser beam is sent out from a transmitter attached to the 25-mm gun and to the TOW launcher. The laser beam transmits coded messages (based on the weapon and ammunition selected) to the detector belt sensors on other MILES-equipped vehicles. The MILES for the M2/M3 CFV enables the crew to use the vehicle in realistic combat training exercises (force-on-force). It also provides the commander an economical way to train and evaluate his crew's proficiency in teamwork and crew coordination during gunnery training exercises. MILES is not suitable for training moving target engagements, however, because the gunner cannot apply lead to engage the target. Also, BOT and TOT cannot be trained using MILES because the crew cannot see hit signatures or tracers. (TM 9-1265-375-10 provides more descriptive information.) The system components are—

- Main gun/coax machine gun transmitter.
- Coax machine gun microphone.
- TOW transmitter.
- TOW simulator tube.
- 7.62-mm blank firing attachment.
- Combat vehicle kill indicator.
- TOW training box.

- Superelevation training box (M2A2 ODS only).
- Flash weapons effects systems simulator.
- Detector belt system.
- Antitank weapons effects signature simulator.
- Control console.
- Battery box.

Note. The TOW training box can be used for all variations of the CFV with the exception of the A3.

5-69. The TOW training box is used to integrate a training mode bypass feature for MILES-equipped vehicles. This feature—

- Synchronizes the ISU sight picture with the aimpoint of the MILES TOW laser transmitter.
- Eliminates drive system lag by commanding the gun as the master axis in the TOW mode.

5-70. The bypass feature for the MILES TOW laser must meet the following:

- Have a training/tactical mode that is easily operable by the vehicle crew and is transparent to the crew.
- Force the ISU mirror to track gun resolver input instead of TOW resolver input when TOW is selected.

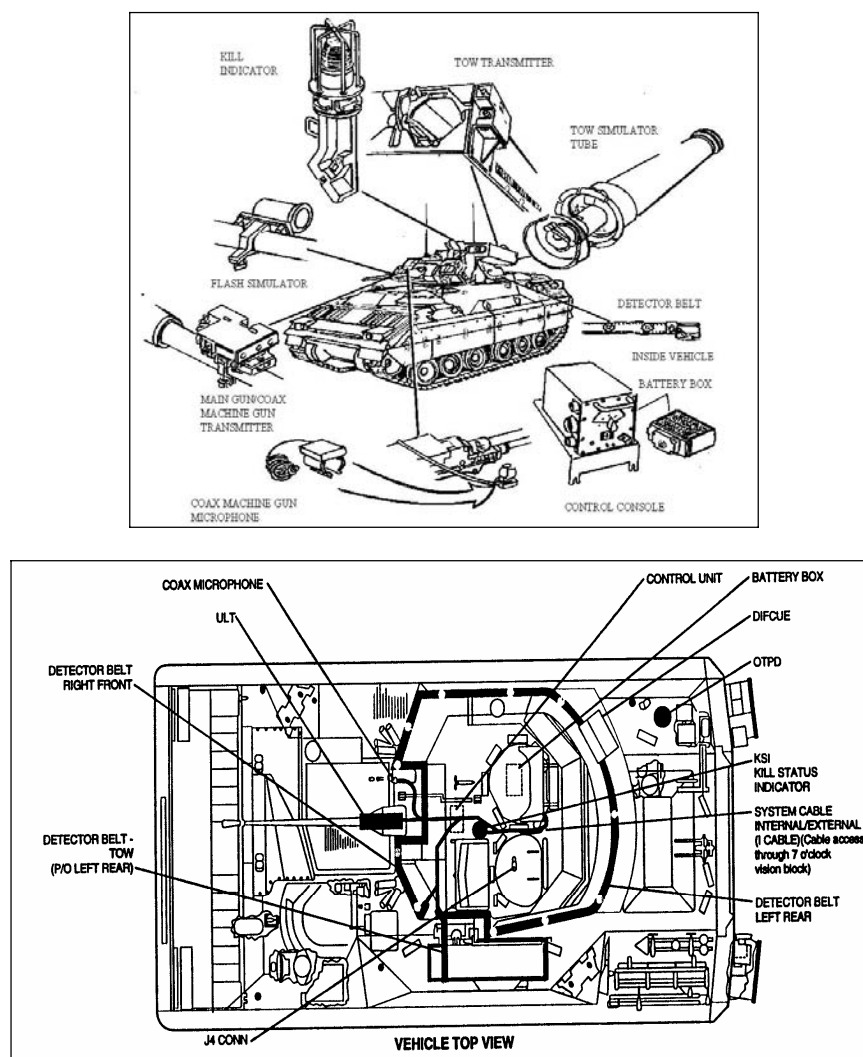


Figure 5-2. MILES (Location MILES 2000).

PRECISION GUNNERY SYSTEM

5-71. The PGS (Figure 5-3) is an eye-safe laser simulation device that provides normal- and degraded-mode gunnery on unit vehicles. The system allows crews to develop and sustain gunnery skills while training using their own vehicles. All weapons and ammunition are duplicated in simulation by replicating tracer and missile signatures in the commander and gunner's sights. This allows crews to apply lead, BOT, and TOT procedures during engagements. The PGS is fully compatible on MILES-equipped ranges, vehicles, and targets on the MILES battlefield. The system can send and receive hit, kill, and miss signals from other PGSs, tank weapons gunnery simulation systems (TWGSS), or MILES-equipped vehicles. A mounting reconfiguration allows the TOW to be fired in "simulation" while the 25-mm and coax are fired "live." The PGS provides VCEs the ability to review engagements during the AAR process. It displays ballistic information for each round fired. This information identifies placement of each simulated round in relation to the target, in mils, both in azimuth and elevation. (TM 9-6920-711-12&P and TM 9-6920-710-12&P provide additional information.) The system components are—

- Laser transceiver unit.
- Hull detectors.
- Tracer burst obscuration system (TBOS).
- Vehicle interface unit.
- Controller unit.
- TBOS video mixer unit (A3 only).
- Vehicle interface assembly bracket (A3 only).
- Control panel (CP), TBOS, and driver unit dual (DUD) bracket (A3 only).
- Training data retrieval system.

5-72. **M3A3 PGS.** The M3A3 PGS is a vehicle-mounted training device that assists the CFV crew in gaining and improving proficiency in gunnery skills without the expenditure of live ammunition. Gunnery and tactical training can be conducted wherever an eye-safe laser is permitted. The A3 PGS provides the crew with the visual and sound effects that simulate real-world firing conditions. The M3A3 PGS provides full fire control interface by interfacing system controls into the vehicle's training device interface panel (TDIP).

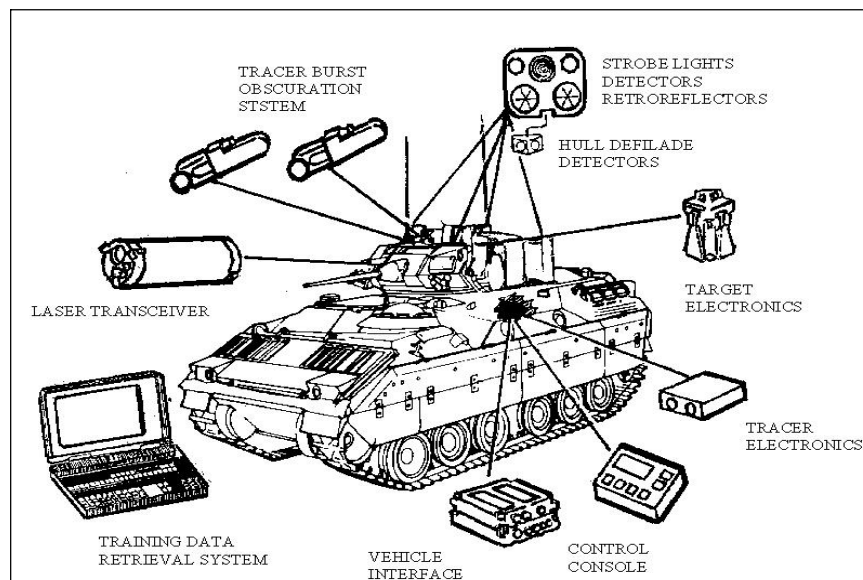


Figure 5-3. Precision Gunnery System.

Simulators

5-73. Simulators provide high-fidelity training without the use of the actual equipment. They are stand-alone trainers that emulate the functions of equipment or systems. Simulators use electronic or mechanical means to reproduce conditions necessary for an individual or crew to practice operational tasks in accordance with training objectives. They represent the equipment physically and functionally to varying degrees and follow the mathematical equations that describe performance.

CONDUCT-OF-FIRE TRAINER

5-74. The COFT is the primary simulator for training crew gunnery skills without using ranges, ammunition, or vehicles. The COFT allows training without regard to time of day or climatic conditions. The two COFT configurations are the U-COFT and M-COFT.

5-75. The U-COFT (Figure 5-4) consists of three interconnecting shelters:

- The trainer shelter.
- The computer shelter.
- The integrated shelter.

Note. For operating instructions, see TM 9-6920-737-10.

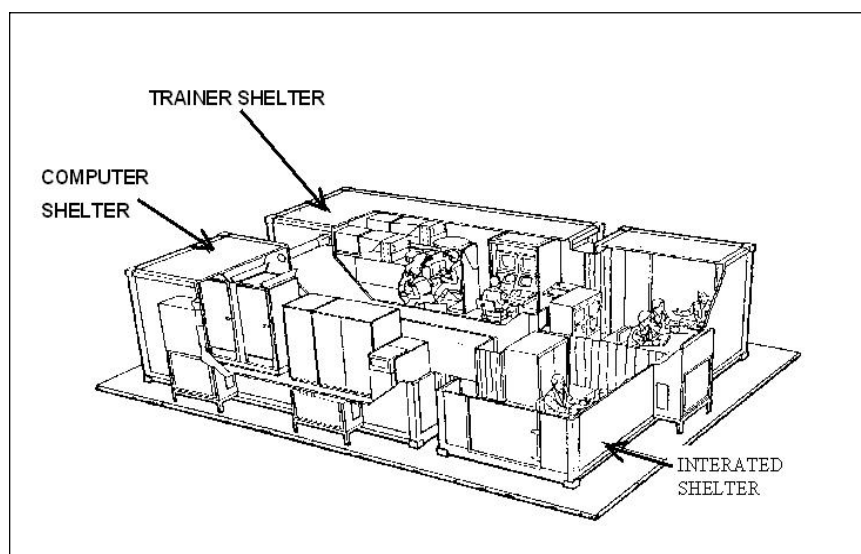


Figure 5-4. Unit Conduct-of-Fire Trainer.

5-76. The M-COFT (Figure 5-5) consists of a training shelter and a computer shelter mounted on a trailer to allow movement between various unit locations. This M-COFT is primarily for Army Reserve and National Guard.

Note. For operating instructions, see TM 9-6920-759-10.

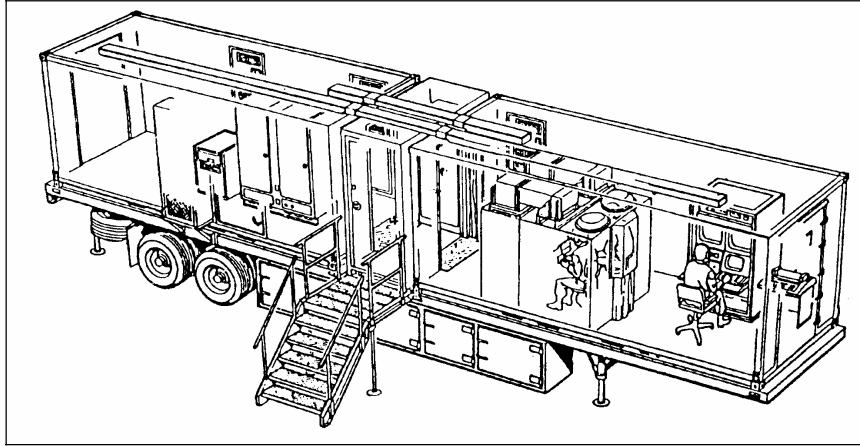


Figure 5-5. Mobile Conduct-of-Fire Trainer.

BRADLEY ADVANCED TRAINING SYSTEM

5-77. The BATS (Figure 5-6) is the gunnery trainer for the M2/M3A3. The purpose of the BATS is to train and sustain a crew's ability to perform fundamental gunnery techniques in simulated gunnery and combat scenarios. The BATS is the COFT for the M2/M3A3.

5-78. The BATS consists of the following components:

- A crew station that replicates the function of A3 turret controls, indicators, sights, and weapons.
- An instructor/operator (IO) station with which IOs initialize the BATS and conduct training/briefings and senior IOs manage training.
- A remote monitor station that facilitates briefings and concurrent training.
- A special-purpose computer (SPC) which provides images for the sights.

5-79. The BATS provides sustainment and cross-training programs to train crews in a simulated gunnery or combat mode. The BATS provides battle-focused training in the gunnery mode through the use of panel targets (IAW TC 25-8), range markers, ammunition allocation, and evaluation standards (IAW this manual). The BATS provides realistic training in the combat mode by presenting realistic target models. The crew's basic ammunition load is based on DA Pam 350-38 and this manual. Target destruction is accomplished by realistic probability of hit (P_H)/probability of kill (P_K), based on range and type. Engagement parameters are input to support a specific unit's threat template and METL.

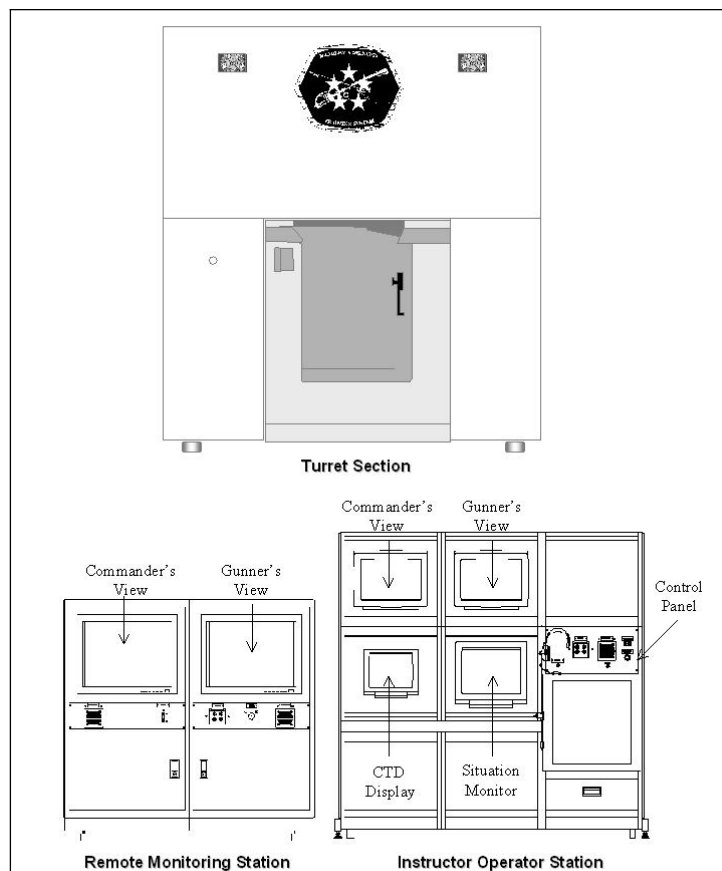


Figure 5-6. Bradley Advanced Training System (BATS).

SIMULATIONS NETWORK

5-80. The SIMNET (Figure 5-7) is a system of combat vehicle simulators linked to each other over a local area network. They simulate the M1 tank and the M2/M3 CFV. The configurations can vary from tank or infantry platoon up to a battalion task force. A company commander may train one platoon at a time using a subset of a company- or battalion-size configuration. When used as a company- or battalion-level trainer, a complete functional tactical operation center and combat trains command post are available to act as the administration logistics operations center that would normally be present during combat operations. Computer-generated imagery is used to create the illusion of riding in tanks and CFVs, fighting force-on-force battles. The training benefits from SIMNET depend on two important factors: training know-how and leadership. The system and its computers are simple to use. With few exceptions, four hours of practice will support STX training on mounted tasks. As in any training, the leader must plan and prepare his objectives in advance and must ensure that the entire chain of command knows and supports the training objectives. The system components are—

- Simulator.
- Emulator.
- Semiautomatic forces station.
- Tactical operations center.
- Combat trains command post.
- Site control command post.
- Plan view display.
- Data logger.
- Infantry squad work station.

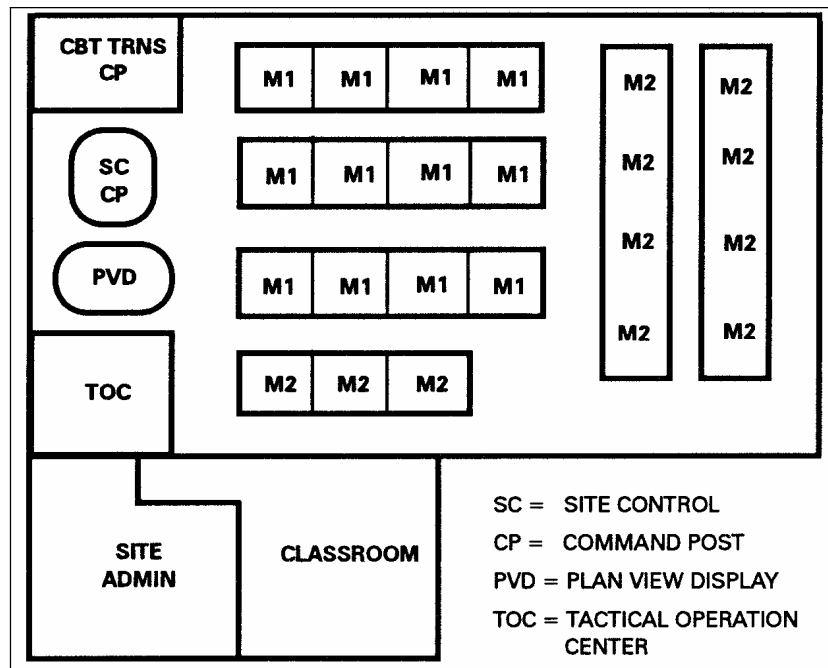


Figure 5-7. Simulations Network.

CLOSE COMBAT TACTICAL TRAINER

5-81. The CCTT (Figure 5-8) is a system of computer-driven combat vehicle simulators connected by local area network. Simulators include the M1 Abrams tank, the M2/M3 CFV, the HMMWV, and the fire support team vehicle. The emulators work interactively to control other vehicle models and functions similar to the vehicles and functions they simulate. The system's computers create a simulated battlefield that, when viewed by soldiers who are using the system, creates the illusion of moving and fighting over actual terrain while operating or riding inside the actual vehicles and employing the actual weapons systems mounted in or on the vehicles. The trainer trains mounted crews through battalion task force soldiers in selected collective tasks. An important feature of the trainer is the computer-generated force (CGF) capability, which can simulate both friendly and opposing forces with only limited human intervention from squad and crews up through regiment. It is a mounted task trainer; however, it includes the actions of infantry rifle squads and scouts, and mounted and rifle squad opposing forces, whose actions are controlled interactively by squad leaders and platoon leaders, and a CGF that operates infantry rifle squad workstations within an infantry's squad module or from a CGF workstation.

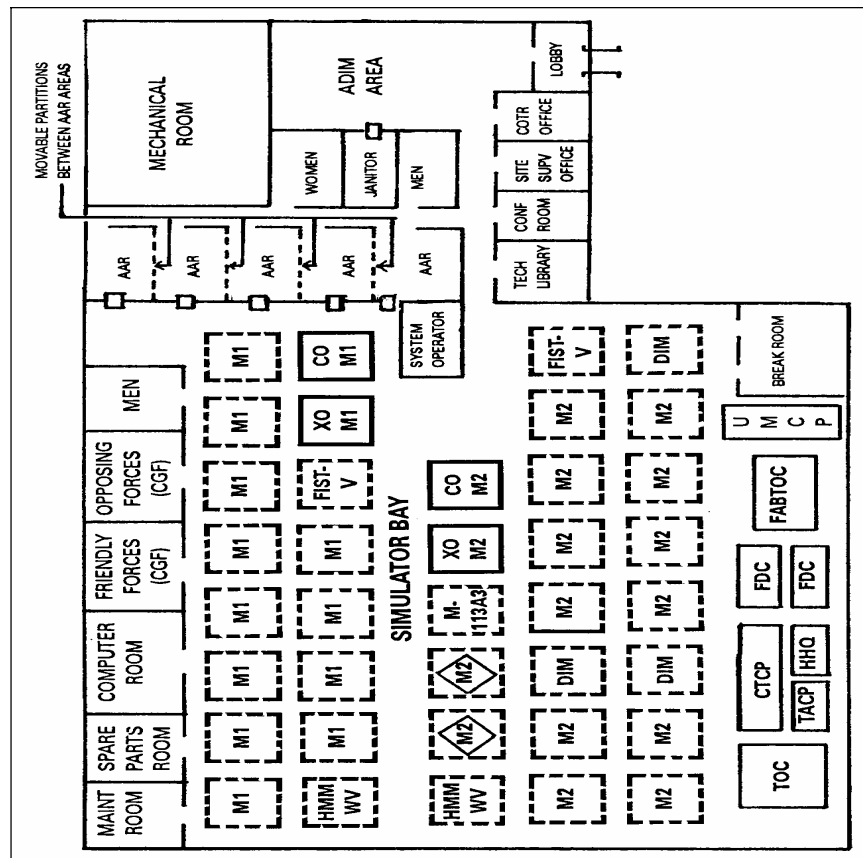


Figure 5-8. Close Combat Tactical Trainer.

Training Aids

5-82. Training aids are tools that provide assistance in conducting training.

TRACKING BOARD

5-83. The tracking board gives the CFV commander and gunner practice in traversing and elevating the sight reticles as if they were tracking a vehicle moving cross-country. Tracking board exercises are practiced with the primary sight, the auxiliary sight, and the TOW reticle, both day and night. An advanced tracking board is provided to make training more challenging to crews.

LASER TARGET INTERFACE DEVICE

5-84. The LTID (Figure 5-9) aids in gunnery training with MILES/PGS. The LTID receives a coded MILES message and converts it into electrical pulses. These pulses activate the shock generator mechanism that activates a hit sensor, simulating a projectile striking the target. LTID can be used on full-scale, half-scale, or one-tenth-scale (on M31A1 lifters). Targets with LTIDs enhance training on Gunnery Table I through IV and device-based Gunnery Table XI. (See TM 9-1265-376-10.) The system components are—

- Detection assembly.
- Electronic assembly.
- Shock generator mechanism.

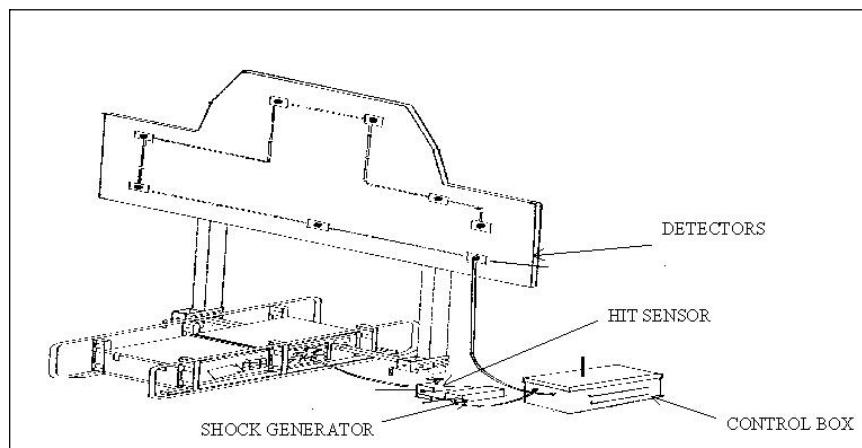


Figure 5-9. Laser Target Interface Device.

SCALED MODELS

5-85. Armored vehicle scaled models can be used to train crews in target acquisition, range determination, and vehicle identification. These models are three-dimensional and are made of a hard plastic. Scaled models enhance preliminary gunnery training such as range determination, gun lay, and combat vehicle identification. Scaled models are available in 1:10, 1:30, 1:35, and 1:60 scale at the local training support center (TSC) (Figure 5-10).

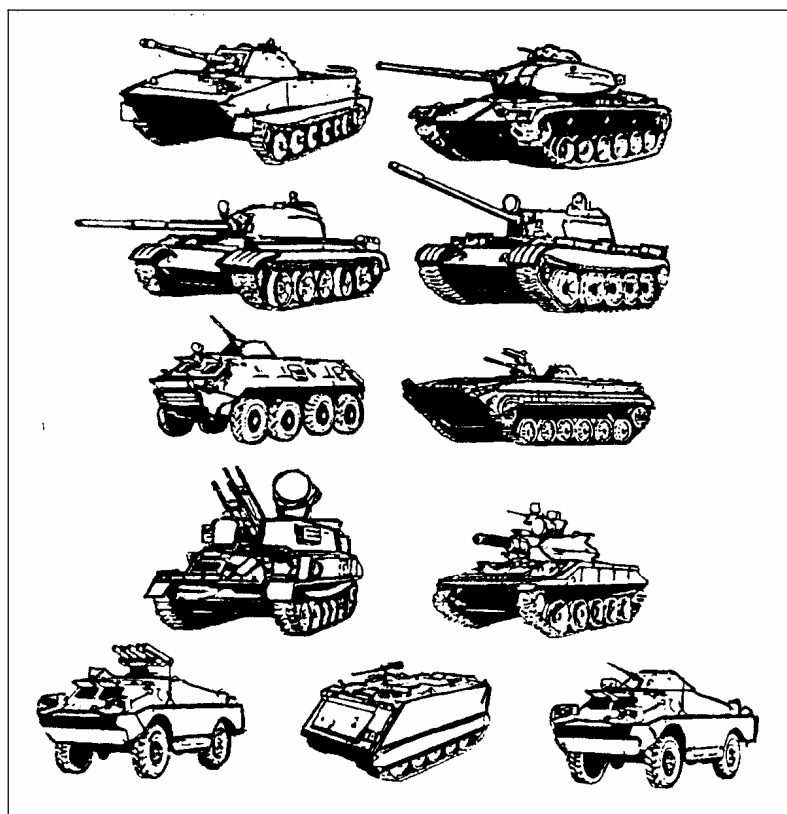


Figure 5-10. Armored Vehicle Scaled Models.

DUMMY ROUNDS

5-86. Various dummy rounds are available to conduct training with the M240C coax machine gun, the M242 25-mm automatic gun, and the TOW system.

5-87. **M172 Dummy Round (7.62-mm).** The M172 is a 7.62-mm cartridge minus the gunpowder and primer. It is used for nonfire training with the M240C coax machine gun. It is made of brass with a metal tip. It is recommended for use over the plastic-tipped version. (The plastic tips can become bent and get jammed either in the weapon or the feed chute.) The M172 dummy round can be used to train four of the tasks that are part of the GST:

- Load the M240C coax machine gun.
- Fire the M240C coax machine gun.
- Apply immediate action.
- Unload and clear an M240C coax machine gun.

5-88. The M172 round is a Class V item that can be requisitioned using DA Form 581 (Request for Issue and Turn-In of Ammunition). (Table 5-2 contains information required for requisitioning this round.)

CAUTION

Because the M172 dummy round is made of brass and can be damaged during training, the rounds should be inspected periodically and replaced as needed. Continued use of damaged rounds or links can damage the feed chute or the weapon. The links should be changed as often as possible.

5-89. **M794 Dummy Round (25-mm).** The M794 dummy round is a nonfire training round used to conduct training on various 25-mm tasks. The M794 dummy round is a cast metal round that is noncorrosive and weighs about the same as the M792 and M793 rounds. Previous dummy rounds were made from fired casings and had plastic or wooden tips. Because the casing of a fired round is slightly expanded, such rounds could get stuck in the breech of the 25-mm gun. The use of such rounds should be discontinued and the cast metal rounds requisitioned. The M794 dummy round can be used to train crews in the following tasks:

- Load and unload the HE and AP ready boxes.
- Load the 25-mm feeder.
- Apply immediate action on the 25-mm.
- Unload and clear the 25-mm gun

5-90. The conditions and standards for these tasks are in this FM, Chapter 4. The links can become damaged or rusty and should be changed as often as possible. The M794 dummy round is a Class V item and can be requisitioned with DA Form 581. (Table 5-2 contains information required for requisitioning the M794 dummy round.)

5-91. **Missile Simulation Round (MSR).** The MSR is used to train crews in all nonfire TOW-related tasks. It is a dummy TOW round casing. It comes in a crate the same as an actual round. The MSR simulates the actual weight of a real TOW missile. Although the MSR does not have a diaphragm or humidity indicator, it does have a front cover and a forward handling ring. It is a nonexpendable major end item that can be requisitioned through the supply system. It should not be discarded if it is damaged. It can be used to practice uploading the CFV, uploading the TOW launcher, applying immediate action on the TOW subsystem, removing a misfired TOW, and unloading and stowing a TOW to its storage configuration. If the guide lugs or the electrical connector on the MSR are damaged, the round should not be used. Continued use of a damaged round will cause damage to the launcher.

Table 5-1. Devices, Simulators, and Aids.

	DEVICES			SIMULATORS				AIDS		
	TSV	MILES	PGS	VIGS	COFT	BATS	SIMNET CCTT	Tracking Board	LTID	Scaled Models
PARTICIPANTS										
Gunner only				X						
Gunner/commander	X	X	X		X			X	X	X
Gunner/commander/driver						X	X			
Infantry riflemen		X							X	
Platoon		X				X	X		X	
FEATURES										
Uses CFV	X	X	X					X		X
Simulates CFV				X	X	X	X			
Live-fire capability	X	X								
Force-on-force	+	X	+			X	X			
Limited visibility	X	X	X	X	X	X	X		X	
NBC capability	X	X	X	X	X	X	X	X	X	X
Permanent location					X	X	X			
Portable	X	X	X	X		X		X	X	X
Variable difficulty				X	X	X	X	X		X
FEEDBACK										
Audio	X			X	X	X	X			
Visual	X	X	X	X	X	X	X	X	X	
Written			X		X	X	X			
TRAINING EVENTS										
Preliminary gunnery	X	X	X	X	X	X		X	+	X
Drill training	+	X	X						+	
Device gunnery	+	X	X			+	+		X	
Crew gunnery	X		+							
Platoon gunnery	+		X			X				
Special	+	+	+				X		X	
X = Designated use.										
+ = Alternate use.										

Table 5-2. Requisition Information.

NOMENCLATURE	DODIC
Cartridge, 7.62-mm Dummy M172	1305-A159
Cartridge, 7.62-mm Dummy M172 (Carton Packed)	1305-A162
Cartridge, 25-mm Dummy M794 (Carton Packed)	1305-A966
Cartridge, 25-mm Dummy M794 (Linked)	1303-A967

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Chapter 6

HMMWV Gunnery

Gunnery tables are designed to develop and test the proficiency of HMMWV individual, crew, section, and platoon gunnery techniques. The series of engagements on each table is intended to duplicate (within the safety and resource constraints of live-fire ranges) typical battlefield tasks under realistic firing conditions against likely target arrays. This chapter discusses the HMMWV gunnery tables, qualification requirements for crews, sections, and platoons; scoring procedures and standards; and allowable variations. It also addresses the commander's considerations for ammunition allocation and firing during adverse weather.

Note. Reserve component (RC) scout units equipped with M113 APCs will fire these tables for qualification.

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SECTION I - METHODOLOGY

6-1. The objectives of this gunnery program are to attain and sustain crew through section/platoon gunnery proficiency, and to evaluate the use of the fire control system and proper engagement techniques.

6-2. A comprehensive gunnery program must address six basic features of engagements:

- Type of target/weapon fired (heavy armor, light armor, troops, machine gun, etc.).
- Firing vehicle posture (moving, stationary, NBC).
- Target posture (moving, stationary, fully exposed, turret down).
- Machine gun engagement technique (precision, battle sight, or reduced).
- Visibility (day/night or obscuration).

6-3. Scout crews must be trained to defend against or defeat a specific enemy. Specifics for determining how to train include—

- Enemy doctrine on the employment of their weapon systems.
- The time-to-fire P_H , and lethality of enemy weapons as a function of range and time.
- Enemy vulnerability to our P_H as a function of range.

6-4. Time standards (70-point time) for each task are based on the amount of time available before an average enemy system will be able to destroy you. The 100-point time is based on the time available before the top 25 percent of enemy systems is able to destroy you.

SECTION II - EVALUATION TABLE CONSIDERATIONS

6-5. The following tables comprise the gunnery proficiency part of the combat tables:

- Table I—Virtual Training.
- Table II—Individual Weapons Qualification.
- Table III—Advanced Individual Weapons Qualification.
- Table IV—Basic Crew Proficiency Course (BCPC).
- Table V—Stationary Mounted Gunnery.
- Table VI—Maneuver Mounted Gunnery.
- Table VII—Crew Practice.
- Table VIII—Crew Qualification.
- Table IX—Section Practice (see Chapter 10).
- Table X—Section Qualification (see Chapter 10).
- Table XI—Platoon Practice (see Chapter 10).
- Table XII—Platoon Qualification (see Chapter 10).

6-6. The gunnery tables are designed to train crews progressively in basic, intermediate, and collective gunnery.

- Basic gunnery techniques and engagements are trained in simulation and dry-fire mode on Table I and tested on Table IV.
- Intermediate engagements are trained on Tables V through VII and tested on Table VIII.
- Collective gunnery engagements are trained on Tables IX and XI and tested on Tables X and XII (see Chapter 10).

6-7. Table I is designed to train vehicle commanders and gunner teams on basic gunnery skills (including target acquisition, target designation, gun laying, manipulation, and direct-fire adjustment) in a virtual environment. Table IV is designed to evaluate vehicle commanders and gunner teams on the same basic gunnery skills as Table I, but with full-crew interaction from a stationary and moving vehicle. These tasks develop coordination skills and provide the crew an opportunity to identify individual strengths and weaknesses. Table I should be conducted with a vehicle commander and gunner from the same crew. Table IV **must** be fired until the crew is proficient and is required before to live-fire gunnery.

6-8. These tables should be conducted as new gunners are selected and previous gunners become vehicle commanders. Since these tables are the foundation of gunnery skills, they should be scheduled as part of a unit's routine training plan to maintain individual and crew proficiency. For optimum training benefit, manipulation drills should be integrated into the virtual training systems.

6-9. Tables IV, VIII, and X or XII are qualification tables and must be fired successfully before advancing to the next higher level of gunnery. All other tables (I, II, III, V, VI, VII, IX, and XI) are recommended for training in sequence (see also Chapter 10 for Collective Gunnery [Tables IX through XII] information).

6-10. Two phases and two variations of the tables can be used in a well-rounded gunnery program:

- Day firing phase (A tables) trains and tests the crew in rapid engagement and destruction of targets during daylight hours.
- Night firing phase (B tables) trains and tests the crew in rapid engagement and destruction of targets at night and during periods of reduced visibility.
- Device-based firing trains gunnery procedures and crew and section/platoon duties without expenditure of main gun ammunition. (The commander determines when to fire subcaliber tables to sustain skills when live firing is restricted.)
- Dry firing is used to develop teamwork before live firing and to sustain skills when live firing is restricted.

6-11. Day firing (A tables) should precede night firing (B tables) whenever possible; however, this is not a requirement. All tables except Tables VIII (Mounted Qualification), X (Section Qualification), and XII

(Platoon Qualification) may be fired either dry, device-based, or both, if availability of ammunition is a problem (see also Chapter 10 for Collective Gunnery [Tables IX through XII] information).

Note. Table IV will not be considered qualified if it is fired using virtual trainers.

SECTION III - VEHICLE CREW EVALUATORS

6-12. The VCE is critical to the quality of the training and AAR of the firing unit. They not only evaluate the crews during the training event, but they also lead them (during the AAR) to an understanding of their actions in each engagement scenario. To ensure a quality AAR, the same VCE who observed the firing crew will conduct the AAR. Other range evaluation personnel and the unit's chain of command may assist the VCE. VCEs must have training to make sure they are proficient at the needed skills to properly evaluate the firing crew, and must continually practice their AAR techniques to make sure they are effective.

Note. **Squadron external evaluators will be used on Table VIII.** It is highly recommended that qualified personnel from outside the firing unit be used for all tables, if possible. This will ensure that there are no distractions for personnel having to fire or perform other missions who are organic to the firing unit.

Basic and Intermediate Tables

6-13. The firing unit's commander is the primary evaluator of his unit's performance; however, for basic and intermediate tables, he has designated representatives to evaluate each crew. The commander (assisted by the troop master gunner), selects evaluators based on the unit's assets, mission, and prior training of personnel available. Basic guidelines for selecting VCEs are:

- Sergeant and above.
- Qualified on the table being evaluated within the preceding 12 months.
- Extensive knowledge of scoring criteria and procedures.

6-14. The VCE must have communications with the firing vehicle so that he can monitor the intercom system for Tables IV, V, VI, VII, and VIII and maintain visual contact with the vehicle at all times.

Notes. The VCE must have received training and passed the Vehicle Crew Evaluator Exportable Packet (VCEEP) evaluation, and be certified as VCE qualified by the unit commander.

Where circumstances do not permit live-fire qualification, such as service with a training support brigade (TSB), the battalion commander/TSB commander can waive the live-fire qualification requirement provided the VCE has previously qualified and is fully knowledgeable of applicable gunnery manuals as substantiated by passing the VCEEP.

SECTION IV. AFTER-ACTION REVIEWS

6-15. The purpose of an AAR is to help the crew understand their actions and interactions during a training event. An AAR must include a discussion of crew cuts and an analysis of combat actions (critique of tactical proficiency) executed during the conduct of the table.

6-16. During the AAR, the VCE emphasizes the training objectives and evaluation points. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Quality AARs are the key to successful training.

6-17. The AAR is organized in the following standard format:

- **Introduction and rules.** During the introduction, the VCE must establish the objectives for the AAR. The VCE identifies himself and each of the participants. Normally, the participants are arranged in an organized manner. If possible, the VCE should use the actual terrain on which the tasks were conducted. Most range complexes have debriefing areas with a terrain model or map that depicts the range layout. The VCE may use this established area for the AAR.

- **Review of objectives and intent.** The VCE should state the training objective for the specific task(s) being evaluated.
- **Summary of firing events.** The VCE presents each engagement in chronological order, stating the training objectives for each task. Training aids should be used to show the target arrays, firing points, and other significant overall points, but should avoid detailed examination of the firing events. (The next part of the AAR [discussion of key issues] examines the firing events in detail.)
- **Discussion of key issues.** The VCE restates each engagement scenario (including the task, conditions, and standards), and then asks leading questions to facilitate crew discussion of what actually happened during each engagement. A taped replay (video or audio) of actual crew fire commands and crew duties presented during the AAR is an excellent way to reinforce strengths, eliminate weaknesses, and reinforce training objectives. When possible, the VCE should have an evaluation of digital communication from each scenario and incorporate digital traffic as a portion of the AAR for digital-equipped units. To achieve a quality AAR, the VCE must guide the discussion in a way that ensures all crew members contribute to the discussion. (Avoid lecturing as it prevents crew contribution to the discussion.) Finally, the VCE discusses the strengths and weaknesses of each engagement; when possible, the VCE allows the crew to discover its own strengths and weaknesses.
- **Discussion of optional issues.** The VCE must ask thought-provoking questions focusing on the training objectives. These questions must explore alternate courses of action that might have been more effective and help the crew members understand how their own actions influenced the result of each engagement. As the crew learns how to correct the mistakes they made, they improve their gunnery proficiency. The VCE should explore training aids and techniques that may be used to sustain and improve training.
- **Discussion of force protection (safety).** The VCE should emphasize safety strengths and weaknesses.
- **Closing comments.** The VCE reviews the training objectives and summarizes key learning points. He must make sure the crew understands what was good, average, or bad about their performance. After covering the objectives, learning points, and specific crew performance, the VCE should leave the area so the crew can discuss their performance in private.

SECTION V - GUNNERY QUALIFICATION REQUIREMENTS

6-18. Each crew member is an integral part of his crew and should be recognized for his contribution to the success of that crew. Commanders should award the appropriate qualification badges, in accordance with AR 600-8-22, to all crews meeting the qualification standards. If optional awards are desired, commanders will use the same standards.

Prerequisites

6-19. Each crew member must have passed the GST, as outlined in Chapter 4. Prerequisites for the qualification courses are as follows:

- Table IV, *Basic Crew Proficiency Course (BCPC)*. Each crew member must pass the GST within 3 months (6 months for Reserve Component units) before negotiating Table IV. The crew must qualify on Table IV before negotiating the crew qualification course (Table VIII).
- Before live-fire. Crews must have conducted live-fire preparatory training in accordance with Chapter 5 before live firing.
- Table VIII, *Crew Qualification*. Each crew member must have qualified on Table IV within 3 months (to include Reserve Component units) before negotiating the crew qualification course. The crew must successfully complete Table VIII before negotiating Tables X or XII.
- Table X, *Section Qualification* **or** Table XII, *Platoon Qualification*. Each crew member must have qualified on Table VIII within 3 months (6 months for Reserve Component units) before negotiating Tables X or XII. (See also Chapter 10 for Collective Gunnery [Tables IX through XII] information.).
- Dismounted HMMWV scouts must qualify SRM (FM 3-22.9, Rifle Marksmanship) within 6 weeks of executing Tables VII, VIII, X, and XII (RC dismounted HMMWV scouts within 2 months.) The ammunition for SRM qualification is taken from the LFX ammunition allocation within STRAC.

Qualification

TABLE IV, BASIC CREW PROFICIENCY COURSE

6-20. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points (90 percent or more) on Table IV (day and night), and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IV (day and night), and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IV (day and night), and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IV (day and night), or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

TABLE VIII, CREW QUALIFICATION COURSE

6-21. Crews must live-fire Table VIII for qualification. They will be rated by the following standards:

- **Distinguished.** The crew obtains a combined score of at least 900 points (90 percent or more) on Tables VIIIA and B with 70 or more points on 9 of the 10 tasks. The crew must pass two night engagements.
- **Superior.** The crew obtains a combined score of 800-899 points (80-89 percent) on Tables VIIIA and VIIIB with 70 or more points on 8 of the 10 tasks. The crew must pass two night engagements.
- **Qualified.** The crew obtains a combined score of 700-799 points (70-79 percent) on Tables VIIIA and VIIIB with 70 or more points on 7 out of 10 tasks. The crew must pass two night engagements.
- **Unqualified.** The crew obtains a combined score of 699 or fewer points (69 percent or less) on Tables VIIIA and VIIIB, or 69 or fewer points on 4 or more of the 10 tasks, or the crew fails to pass two night engagements.

TABLE X, SECTION QUALIFICATION COURSE AND TABLE XII, PLATOON QUALIFICATION

6-22. Sections and platoons will be rated by the following standards (see also Chapter 10, *Collective Gunnery*):

- **Distinguished.** The crew obtains a combined score of at least 900 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Superior.** The crew obtains a combined score of at least 800-899 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Qualified.** The crew obtains a combined score of at least 700-799 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Unqualified.** The crew obtains a combined score of 699 or fewer points, or section fails to achieve 420 tactical points (70 percent) and 280 gunnery points (70 percent).

SECTION VI - EVALUATION PROCEDURES AND STANDARDS

6-23. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Alternate tasks are for contingencies (such as lack of resources, weather conditions, or range constraints) that preclude execution of the original engagements.

Tables IV through VIII

6-24. Each task on Tables IV through VIII will be scored using the appropriate gunnery scoresheet (DA Form 7553-3-R [Gunnery Scoresheet, One-Target Task], DA Form 7553-4-R [Gunnery Scoresheet, Two-Target Task], or 7553-5-R [Gunnery Scoresheet, Three-Target Task]) (see scoring procedures on pages 6-11 through 6-14). Once all tasks have been completed and scored, the VCE will complete the Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R, and attach it to the front of the scoresheets for each table (see Figure 6-1).

6-25. The VCE will rate crew duties for each engagement and subtract crew-duty penalty points from the total engagement points earned. Crews must qualify a minimum of 70 percent of the total tasks presented and receive a minimum point value required for each table to be qualified on Tables IV through VIII. At no time, will a crew dry-fire Table VIII prior to their qualification run. Crews who do not qualify on the first run of a table may renegotiate the course. Crews firing reruns should execute only the tasks on which they failed to

qualify during the first run. In no case will a crew who failed to qualify during their first run receive a rating higher than qualified after a subsequent run. Re-fires or subsequent run scores will be added to the score only after all the tasks have been negotiated once. After a crew meets the minimum qualification standard during their subsequent run, the local commander may elect, due to resource or time constraints, to stop that crew's further negotiation of the course. The local commander and master gunner will decide how many times a crew should be rerun. Their decision should be based on the possibility of the crew meeting the minimum requirements, and time and resources available.

SCOUT GUNNERY TABLE ROLL-UP SHEET					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
1. VEHICLE (Check one) ☐ CFV ☐ HMMWV ☐ RV ☐ TOW				2. TABLE	
3. BUMPER #	4. UNIT		5. RANGE	6. SCORE AND RATING	
7a. CREWMAN RANK, NAME, POSITION		7b. CREWMAN RANK, NAME, POSITION		7c. CREWMAN RANK, NAME, POSITION	
7d. CREWMAN RANK, NAME, POSITION		7e. CREWMAN RANK, NAME, POSITION		7f. CREWMAN RANK, NAME, POSITION	
8. DAY RUN DTG	9. EVALUATOR'S UNIT		10. DAY EVALUATOR NAME		11. EVALUATOR SIGNATURE
12. DAY SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
13. NIGHT RUN DTG	14. EVALUATOR'S UNIT		15. NIGHT EVALUATOR NAME		16. EVALUATOR SIGNATURE
17. NIGHT SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
18a. VEHICLE COMMANDER'S NAME			18b. VEHICLE COMMANDER'S SIGNATURE		
19a. HEAD EVALUATOR'S NAME			19b. HEAD EVALUATOR'S SIGNATURE		

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Figure 6-1. Sample Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R.

TARGETS

6-26. All stationary targets should be mounted on pop-up mechanisms (see FM 17-12-7 [scheduled for rewrite in 2005 as FM 3-20.7]) to facilitate target acquisition and scoring. Moving targets should be presented at speeds between 24 and 32 kmph (15 to 20 mph). HMMWV gunnery tables incorporate various targets. These targets are defined as PCs (BMP, BTR, BRDM), trucks, RPG teams, bunkers, and troops. Master gunners and range-operation personnel must make sure targets are constructed to the correct dimensions.

Target Type	Standard Target
Frontal BMP	M-1
Flank BMP	M-2
Frontal BRDM	M-5
Flank BRDM	M-6
Frontal BTR	M-11
Frontal truck	L-1
Flank truck	L-2
Troops	L-6, L-7, L-9

6-27. When target-lift mechanisms are used, a target that is hit may fail to fall. The control officer or VCE should observe every round fired. **To avoid wasting ammunition, if the target is killed and does not fall, the control officer or VCE will announce a sensing of “KILL, KILL, KILL” over the control net.** This is the only situation in which a sensing will be announced by anyone other than the firing crew. Targets should be repaired as quickly as possible if they fail to drop after being hit. When feasible, targets should be physically scored and patched.

6-28. If a target malfunctions, the crew will be alerted after the engagement during which the target malfunctioned. Based on the availability of targets, the crew may be re-presented the target either at that time or from another location (the target type and conditions for that target must be met). Alternate engagements are provided and should be used if a moving target fails.

Target Types

6-29. **Point targets.** An RPG team consists of three stationary infantry targets (SIT) (troop targets) in the open with full and half silhouettes displayed in a tactical array using both width and depth. A vehicle target will be either a flank or frontal silhouette. Stationary point targets should be mounted on separate target-lift mechanisms set on KNOCKDOWN mode of operation.

6-30. **Area targets.** Area targets will be shown as 5 to 10 SITs in the open with full and half silhouettes displayed in a tactical array using both width and depth. The silhouettes will be placed no more than 5 meters apart or 10 meters in depth. The target area is defined as one target form up, down, left, or right of any target in the array.

6-31. **Civilians on the battlefield (COB)/friendly targets.**

- The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented on the specific tasks identified in the table description and in the specific scoresheet.
- Noncombatant targets may consist of any number of silhouettes dispersed in a small group. Noncombatant targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cutouts. All noncombatant/friendly targets will be placed within the range fans and the capabilities of the weapon systems. Friendly forces will be marked in accordance with the firing unit's SOP. Identification methods include, but are not limited to, VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

TARGET SIGNATURE DEVICES

6-32. The commander may use target signature devices (such as the Hoffman device, LA06, or LA07); however, no more than one device will be used for target signature purposes. When used, at least 5 seconds of target exposure time must elapse before the device is detonated or activated. Target signature device failure is not a valid alibi. The LA06 and LA07 should be used on targets that would mount a larger weapon type, such

as tanks, PCs, trucks, and bunkers. The allocation of the LA06 and LA07 in STRAC should match the amount of targets mentioned; however, this may not always be the case. When this discrepancy occurs, the commander and master gunner will decide which targets will receive the devices.

- The LA06 is a flash/bang device used to simulate a large caliber weapon being fired (replacing the Hoffman device).
- The LA07 is a star cluster-type device used to show target hits; however, this manual uses the LA07 as a target destruction signature device. The star cluster signature can be seen in both day and thermal sights, thus allowing the gunner to see when the prescribed amount of hits has been achieved.

CREW PROTECTION STATUS

6-33. All crew members should be in mission-oriented protective posture (MOPP) 4 when conducting NBC engagements. The commander will decide if MOPP 4 is warranted due to environmental conditions; at a minimum, the mask and gloves will be worn.

TARGET KILL STANDARDS

6-34. Scouts will use the M2 caliber .50 and the MK-19 to supply suppressive fire and/or destroy targets. The crew receives full credit when the target has been suppressed or destroyed. Target kills will be assessed as follows:

- Caliber .50: All targets will be engaged with direct fire using intermittent bursts of 10 to 15 rounds. Kill standards are as follows:
 - Area troops: Hit 1 troop SIT with 1 round caliber .50, **and** suppress troops.
 - Snipers and RPG teams: Hit target with 1 round caliber .50.
 - Trucks: Hit target with 3 rounds caliber .50.
 - PCs and bunkers: Hit target with 5 rounds caliber .50.
- MK-19: All targets will be engaged with direct fire using intermittent bursts of 3 to 5 rounds. Kill standards are as follows:
 - Troops: Hit with 1 round 40mm within 5 meters of an SIT, **and** suppress troops.
 - Snipers: Hit with 1 round 40mm within 5 meters of SIT.
 - RPG teams: Hit with 1 round 40mm within 5 meters of an SIT.
 - Trucks: Hit with 1 round 40mm within 5 meters of target.
 - Bunkers: Hit with 2 rounds 40mm.
 - PCs: Hit with 2 rounds 40mm.
- The call-for-fire engagement is based on STP 6-13F14-SM-TG, Task 061-283-1014, *Conduct an Immediate Suppression Mission*. The complete call for fire must take place within 25 seconds of identification. The initial grid must be within 150 meters of the target.

TIMING PROCEDURES

6-35. The intent of scoring and timing is to cause crews to train as they would fight. Crews should be trained and rewarded for engaging targets rapidly, but not penalized when artificial maneuver constraints prevent them from continuing to engage the target.

6-36. The VCE's judgment is critical in implementing this policy. Knowledge of the vehicle's capabilities and observation of firing conditions must be applied in order to maintain standards without penalizing the firing crew. VCEs must be in a position to observe the firing vehicle at all times. The commander or master gunner will determine implementing procedures for these basic policies on any gunnery range.

6-37. Three types of time are used to evaluate gunnery engagements on Tables IV through VIII: target exposure time, vehicle exposure time, and target kill time.

6-38. **Target Exposure Time.** Exposure time limits the time the target is exposed yet allows for situation-dependent contingencies beyond crew control.

6-39. Target exposure time is listed for each target for Tables IV through VIII. Tasks are designed so—

- All stationary targets are exposed for 50 seconds while in a stationary position (defense), starting from the time the target is in the fully locked (up) position.
- All stationary targets are exposed for 30 seconds while on the move (offense). This time starts when the target is in the fully locked (up) position.
- Exposure time for all moving targets is 50 seconds. (Range constraints limit target exposure for targets moving 20 miles per hour or more.)
- Each target in a target array has its own exposure time.

6-40. **Vehicle Exposure Time.** Vehicle exposure time is based on the amount of time a vehicle may be exposed to a target before that target can engage the vehicle. Each target maintains its own threat to the exposed vehicle, thus a vehicle may be exposed to more than one target at the same time.

6-41. In the defense, the vehicle exposure time starts when the vehicle moves from the turret-down position to a hull-down position **and** stops or when the first round is fired, whichever comes first. For moving engagements, the vehicle exposure time starts when the target(s) is locked in the full upright position or when the first round is fired, whichever comes first. Multiple targets will have a 15-second delay for the second target. In a multiple target engagement, the vehicle exposure time starts for each target when the target is locked in the upright position.

6-42. When in the defense, the vehicle exposure time stops when the target that the vehicle is engaging is destroyed or when the vehicle starts to move back into a turret-down position. In the offense, the exposure time will stop when the target is destroyed. In multiple target engagements, the vehicle is exposed to more than one target. Once a target is destroyed, the exposure time for that target stops; however, the exposure time to the other target will continue until the target is destroyed, for moving and defensive engagements, or until the vehicle pulls back into a turret-down position in the defense.

6-43. Once a vehicle moves back into a turret-down position, the vehicle exposure time will reset. The vehicle exposure time is reset because now a target must reacquire, re-engage and reengage the vehicle. It is also implied that a vehicle that has pulled back into a turret-down position will maneuver and engage from another position.

6-44. **Target Kill Time.** Target kill time is the time that it took the crew to engage and/or suppress the target. Target kill time will not exceed the maximum vehicle exposure time in order to receive a minimum passing score of 70 points.

6-45. **Timing Devices.** To score Tables IV through VIII engagements, you will need a minimum of two stopwatches to time a two-target engagement. The only time that needs to be tracked is the vehicle exposure time; the tower or target control personnel will track the target exposure time automatically. The best device for this is one timing device that has multiple stopwatches with one common start button and an independent stop button for each watch.

ALIBIS

6-46. Although commanders have the ultimate authority regarding alibis, they should be limited to two occurrences: target/range malfunction and weapon malfunction that are not the fault of the crew and not correctable through immediate action. Commanders should ensure that gunnery is as combat realistic as possible. This means that crews should train to fight *through* problems.

REMEDIAL TRAINING

6-47. Unit commanders and master gunners must make sure crews that fail tables or habitually fail specific tasks receive remedial training. Virtual trainers, or dry runs as a last resort, are the recommended techniques for remedial training. Once remedial training has been completed and the crews have been cleared by the master gunner to continue training, the failed engagements should be fired, if ammunition and time if available.

ALL-WEATHER FIRING

6-48. As in combat, firing should continue under all weather conditions. The commander decides what constitutes effective training, based on many factors including mission and range availability. If the training

can still be effective during reduced visibility, it should be consistent with the unit's mission requirement. Commanders should consider the following:

- Training effectiveness.
- Operational mission.
- Preparation and planning.
- Safety restrictions.

6-49. Safety, combined with the other considerations, will determine when all-weather firing can be continued and when it must be stopped.

EVALUATING CREW-DUTY PENALTIES

6-50. During the conduct of gunnery tables, VCEs monitor crew duties. There is no limit to the number of crew-duty penalty points that can be assessed for a task; however, crew-duty penalties may not be carried over from one task to another. After each phase, the crew will receive an AAR. During this AAR, the VCE will brief the crew on crew duties such as fire commands, crew coordination, sectors of fire, target acquisition, method of engagements, and tactical reporting.

6-51. Crew-duty penalties are implemented to ensure crews practice safe firing procedures. There are five categories of crew-duty penalties:

- Immediate disqualification—extremely hazardous conduct.
- Automatic zero point—blatant disregard for announced task, conditions, and standards.
- Failure to employ correct safety techniques (30 points).
- Failure to adhere to basic doctrinal and safety precepts (10 points).
- Failure to employ correct engagement techniques or respond properly to fire commands (5 points).

Note. The following list of crew-duty penalties is not all-inclusive.

Immediate Disqualification—Extremely Hazardous Conduct

6-52. Any crew found firing outside the range fan will receive an immediate disqualification for the table that they are firing. Commanders will make decisions concerning what other violations constitute extremely hazardous conduct and what actions should be taken for crews caught cheating.

Automatic Zero-Point Penalty—Blatant Disregard for Announced Task, Conditions, and Standards

6-53. Any crew found guilty of the following will receive 0 points for the engagement they are firing:

- Not masked during an NBC engagement.
- Engaging friendly targets (if applicable).

30-Point Penalty

6-54. Failure to employ correct safety techniques and exceeding vehicle exposure:

- Leaving the gun armed or the gun select switch in the FIRE position during loading or between engagements (points will be deducted from previous engagement).
- Firing into the berm (crews not ensuring that the weapon was clear of the berm).
- Target killed beyond maximum vehicle exposure time (only on multiple engagements and can be given only once per engagement).

10-Point Penalty

6-55. Failure to adhere to basic doctrinal and safety precepts:

- Failure to follow the instructions of the VCE, control or safety officer, or troop/squadron commander while negotiating the course.
- Firing before receiving the command "FIRE" or announcing "ON THE WAY."

- Improper engagement technique (firing at the least dangerous target first during a multiple-target engagement, improper suppressive fire techniques, or not coming to a halt prior to firing during a moving engagement).
- Improper fire command.
- Failure to return to a turret-down position after completing a defensive engagement or between targets on a multiple-target engagement.

Note. If a safety violation or combination of safety violations indicates it may be unsafe for a crew to continue the course, the safety officer will disqualify the crew and remove them from the range. Any unsafe act may be assessed a 10-point safety penalty. Crews should be informed of safety crew cuts; this may prevent accident or injury.

5-Point Penalty

6-56. Failure to employ correct engagement techniques or respond properly to fire commands:

- Incorrect response to a fire command or subsequent fire command.
- Improper reporting (not sending a SALT [size, activity, location, and time] and battle damage assessment [BDA] report after the engagement). (**Note.** When conducting stationary engagements, digital-equipped units **must** use digital communications to report.)
- Incorrect driving techniques (driver not maintaining speed or steady platform [such as, jerky starts and stops, too fast for maneuver box, goes off the course or road]).

SCORING PROCEDURES

6-57. Each task has its own specific gunnery scoresheet; you must use the scoresheet for that specific task. The various gunnery scoresheets (DA Form 7553-3-R and DA Form 7553-4-R) will be used to collect similar scoring information, but the task, ammunition, conditions, targets, exposure times, standards, points information, and whether the engagement is a one-target or two-target task on each scoresheet will vary according to the table and task that will be tested. The time/points column on the scoresheet for each task is based on the expected results of engagements between the vehicle, selected enemy targets, and the performance of the crew. The instructions below explain how to use the scoresheet for one-target and two-target tasks. Page 6-12, Figure 6-2 shows an example of a completed scoresheet for a one-target task. Page 6-13, Figure 6-3 shows an example of a completed scoresheet for a two-target task.

Note. If the engagement raw score has a decimal in it, the score will be rounded using normal mathematical rounding (.5 and above is rounded up and .4 and below is rounded down).

Scoring Instructions for One-Target Tasks

- | |
|--|
| <ol style="list-style-type: none"> 1. Once the target kill time has been received, circle the time in the Time/Points column. Annotate the points that correspond to that time on line (a) in the bottom right-hand box of the scoresheet. 2. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (b) in the bottom right-hand box of the scoresheet. 3. Subtract the total number of crew-duty penalty points from the target points ($a - b = c$). Annotate this total on line (c) in the bottom right-hand box of the scoresheet. The result is the engagement score. |
|--|

6-58. **Example one-target task:** Table VIII, Task 1B (Swing) (Stationary) (see Figure 6-2). The crew engaged and destroyed the truck in 6 seconds but did not return to the turret-down position immediately following the engagement.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMVV TABLE VIII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER <u>4-15</u>		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds	1-4 100 5 93 <u>6</u> 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target.
CONDITIONS Total Targets: 1 Target 1: Stationary truck, 200 to 400 meters. Civilians on the battlefield (COB).		30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm.
EXPOSURE TIME Target 1: 50 seconds		10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command.
STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.		Did not return to turret-down position. X
		5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques.
		Total Crew-Duty Penalty Points <u>10</u>
Remarks: _____ _____ _____ _____		Target 1 Points (a) <u>85</u> Total Crew-Duty Penalty Points (b) <u>-10</u> Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) <u>75</u>

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Figure 6-2. Sample Completed Scoresheet—One-Target Task, DA Form 7553-3-R.

Scoring Instructions for Two-Target Tasks

- Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a) and (b)] in the bottom right-hand box of the scoresheet.
 - Add the points for all targets ($a + b = c$). Annotate the total on line (c).
 - Divide the total by the number of targets presented ($c \div 2 = d$). Annotate the result on line (d), which is the Engagement Raw Score.
 - Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (e) in the bottom right-hand box of the scoresheet.
- Note.** Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.
- Subtract the total number of crew-duty penalty points from the raw score ($d - e = f$). Annotate this total on line (f) in the bottom right-hand box of the scoresheet. The result is the engagement score.

6-59. **Example two-target task:** Table VIII, Task 2B (Moving) (see Figure 6-3). The crew engaged and destroyed Target 1 in 6 seconds and engaged and destroyed Target 2 within 8 seconds of presentation. The gunner did not announce "ON THE WAY," and the commander gave an improper subsequent fire command.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE VIII, TASK 2B (MOVING), UNIT/BUMPER NUMBER <u>H-14</u>				
TASK	Target 1 RPG Team Time/Points	Target 2 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a moving vehicle.	1-5 100 <u>6</u> 94	<u>1-6</u> 100 7 95	Automatic Zero	
AMMUNITION	7 88	8 90	Not masked during an NBC engagement.	
Caliber .50: 100 rounds	8 82	9 85	Engaged friendly target.	
or	9 76	10 80	30-Point Penalty	
40mm: 16 rounds	<u>10</u> <u>70</u>	11 75	Weapon not on SAFE between engagements.	
CONDITIONS	11 64	<u>12</u> <u>70</u>	Fired into the berm.	
Total Targets: 2	12 58	13 65	Killed target beyond maximum vehicle exposure time.	
Target 1: RPG team, 200 to 400 meters.	13 52	14 60	10-Point Penalty	
Target 2: Dismounted troops, 600 to 800 meters (15-second delay).	14 46	15 55	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME	15 40	16 50	Fired before "FIRE" or "ON THE WAY."	X
Target 1: 30 seconds	16 34	17 45	Improper engagement technique.	
Target 2: 30 seconds	17 28	18 40	Improper fire command.	
STANDARDS	18 22	19 35	Did not return to turret-down position.	
Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters.	19 16	20 30	5-Point Penalty	
Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.	20 10	21 25	Improper response to the fire command.	X
	21 4	22 20	Improper reporting.	
	22/+ 0	23 15	Improper driving technique.	
		24 10	Total Crew-Duty Penalty Points	15
		25 5		
		26/+ 0		
Remarks:			Target 1 Points (a)	94
			Target 2 Points (b)	100
			Total (a + b = c)	194
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d)	97
			Total Crew-Duty Penalty Points (e)	-15
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f)	82

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Figure 6-3. Sample Completed Scoresheet—Two-Target Task, DA Form 7553-4-R.

Tables IX through XII

6-60. Sections/platoons will be evaluated on both tactical and gunnery proficiency. One section/platoon evaluator must evaluate the section/platoon during the entire time they are on the range. Live-fire scoring of the table is conducted from the tower. The section/platoon leader must be allowed time to conduct troop-leading procedures. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

6-61. Each section/platoon will be critiqued at an AAR held after each firing run. Crew duties are not formally rated on these tables; however, unsatisfactory performance of individual vehicle crews within the section/platoon may be informally evaluated during the AAR.

SECTION VII - CONDUCT OF THE GUNNERY TABLES

Table I (Virtual Training)

6-62. Table I introduces the crew to rapid target destruction from stationary and moving vehicle-mounted weapon systems.

CONCEPT

6-63. Table I is designed to develop the engagement skills of the gunner in a simulated environment. The crew should fire the scenarios that are applicable to scout HMMWV gunnery if that system has them. When utilizing the EST, the crew must use the scenario builder to create a table that best replicates the tables from this manual.

CONDUCT OF THE TASKS

6-64. Table I develops the skills of the gunner and commander in various positions while engaging targets in a virtual environment.

EXECUTION

6-65. Crew members will be briefed on the enemy situation and weapons capabilities prior to conducting this table.

6-66. Vehicle commanders should practice fire commands and overall crew coordination during this exercise. It is recommended that all crew members are present to become familiar with procedures that will be used throughout all gunnery tables.

SCORING

6-67. Table I will be evaluated by section-/platoon- or troop-level evaluators. Gunners should fire the table as often as necessary to become proficient prior to firing Table II.

Table II (Individual Weapons Qualification) and Table III (Advanced Individual Weapons Qualification)

CONCEPT

6-68. These tables are essential to the ease of completion for the entire gunnery density. These time periods should be used to complete any qualification required for both individual and crew-served weapons. These tables are also intended for the firing of close-quarter marksmanship and reflexive fires.

Table IV (Basic Crew Proficiency Course)

6-69. Table IV evaluates the crew's basic level of proficiency. It tests the crew's ability to rapidly destroy stationary and moving targets from a stationary and moving vehicle. Crews will use MILES when available.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

6-70. Table IV is designed to train crews on stationary and moving vehicles to engage stationary, moving, single, and multiple targets deployed in a realistic array. The crews will fire the whole table during the day, and then at night. One engagement will be fired in an NBC environment (appropriate MOPP level).

CONDUCT OF THE TASKS

6-71. Table IV allows the driver to integrate into the crew's coordination by moving the vehicle in and out of the firing positions and moving from one firing position to another. Engagements are designed to integrate battlefield conditions and targets arrayed in a realistic manner. Table IV is conducted on a full-scale range using half-scale targets.

EXECUTION

6-72. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements will begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements will be fired from a short halt.

SCORING

6-73. The VCE will rate crew duties for each engagement. If the crewman commits more than one crew-duty error during a task, he will be rated UNSAT in crew duties. Crew duties will be critiqued by the VCE during the AAR; however, they will not affect the overall GO/NO-GO rating for the task.

6-74. Tasks will be scored using the criteria in the standards column for each task in Table 6-1. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to pages 6-11 through 6-13 for scoresheet scoring instructions and Figures 6-2 and 6-3, pages 6-12 and 6-13 for sample completed scoresheets. Refer to Figure 6-1, page 6-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

6-75. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points (90 percent or more) on Table IV (day and night), and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IV (day and night), and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IV (day and night), and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IV (day and night), or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

Table 6-1. HMMWV Table IV.

HMMWV TABLE IV, A and B			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1. Stationary	1 bunker, 200 to 400 meters. Civilians on the battlefield (COB).	Simulator	Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
2. Moving	1 moving truck, 600 to 800 meters.	Simulator	Hit truck with 2 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3. Stationary NBC	1 frontal PC, 600 to 800 meters. 1 set of troops, 200 to 400 meters (15-second delay).	Simulator	Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
4. Moving	1 RPG team, 50 to 200 meters. 1 moving truck, 400 to 600 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay).	Simulator	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
5. Stationary	1 stationary tank, >1,200 meters.	Simulator	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE IV, TASK 1 (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION None required—dry-fire/Simulator. CONDITIONS Total Targets: 1 Target 1: Bunker, 200 to 400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: Bunker Time/Points 1-6 100 7 94 8 88 9 82 10 76 11 70 12 64 13 58 14 52 15 46 16 40 17 34 18 28 19 22 20 16 21 10 22 4 23/+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-4. Sample Scoresheet—HMMWV Table IV, Task 1.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE IV, TASK 2 (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a moving vehicle. AMMUNITION None required—dry-fire/Simulator. CONDITIONS Total Targets: 1 Target 1: Moving truck, 600 to 800 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 2 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-12 100	Automatic Zero
	13 98	
	14 95	Not masked during NBC engagement.
	15 93	
	16 90	Engaged friendly target.
	17 88	
	18 85	30-Point Penalty
	19 83	
	20 80	Weapon not on SAFE between engagements.
	21 78	
	22 75	Fired into the berm.
	23 73	
	24 70	10-Point Penalty
	25 68	
	26 65	Failed to follow instructions from authorized personnel.
	27 63	
	28 60	Fired before "FIRE" or "ON THE WAY."
	29 58	
	30 55	Improper engagement technique.
	31 53	
	32 50	Improper fire command.
	33 48	
	34 45	Did not return to turret-down position.
	35 43	
	36 40	5-Point Penalty
	37 38	
	38 35	Improper response to fire command.
	39 33	
	40 30	Improper reporting.
41 38		
42 35	Improper driving techniques.	
43 33		
44 30	Total Crew-Duty Penalty Points	
45 28		
46 25		
47 23		
48 20		
49 18		
50+ 0		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-5. Sample Scoresheet—HMMWV Table IV, Task 2.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE IV, TASK 3 (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 PC Time/Points	Target 2 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a stationary vehicle.	1-8 100	1-5 100	Automatic Zero	
	9 96	6 94	Not masked during an NBC engagement.	
AMMUNITION	10 92	7 88	Engaged friendly target.	
None required—dry-fire/Simulator.	11 88	8 82		
	12 83	9 76	30-Point Penalty	
	13 79	10 70	Weapon not on SAFE between engagements.	
CONDITIONS	14 74	11 64	Fired into the berm.	
NBC.	15 70	12 58	Killed target beyond maximum vehicle exposure time.	
Total Targets: 2	16 66	13 52	10-Point Penalty	
Target 1: Stationary PC, 600 to 800 meters.	17 61	14 46	Failed to follow instructions from authorized personnel.	
Target 2: Dismounted troops, 200 to 400 meters (15-second delay).	18 57	15 40	Fired before "FIRE" or "ON THE WAY."	
	19 53	16 34	Improper engagement technique.	
	20 49	17 28	Improper fire command.	
EXPOSURE TIME	21 44	18 22	Did not return to turret-down position.	
Target 1: 50 seconds	22 40	19 16	5-Point Penalty	
Target 2: 50 seconds	23 36	20 10	Improper response to the fire command.	
	24 31	21 4	Improper reporting.	
	25 27	22/+ 0	Improper driving technique.	
STANDARDS	26 23		Total Crew-Duty Penalty Points	
Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	27 19			
Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	28 14			
	29 10			
	30 6			
	31 2			
	32/+ 0			
Remarks:			Target 1 Points	(a) _____
			Target 2 Points	(b) _____
			Total (a + b = c)	(c) _____
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score	(d) _____
			Total Crew-Duty Penalty Points	(e) _____
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score	(f) _____

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Figure 6-6. Sample Scoresheet—HMMWV Table IV, Task 3.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE IV, TASK 4 (MOVING), UNIT/BUMPER NUMBER				
TASK	Target 1 RPG Team Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a moving vehicle.	1-5 100	1-11 100	Automatic Zero	
	6 93	12 97		
	7 85	13 95	Not masked during an NBC engagement.	
AMMUNITION	8 78	14 92		
None required—dry-fire/Simulator.	9 70	15 89	Engaged friendly target.	
	10 63	16 86		
	11 55	17 84	30-Point Penalty	
CONDITIONS	12 48	18 81		
Total Targets: 2	13 40	19 78	Weapon not on SAFE between engagements.	
Target 1: RPG team, 50 to 200 meters.	14 33	20 76		
	15 25	21 73	Fired into the berm.	
Target 2: Moving truck, 400 to 600 meters (15-second delay).	16 18	22 70	Killed target beyond maximum vehicle exposure time.	
	17 10	23 67		
Civilians on the battlefield (COB) (15-second delay).	18 3	24 65	10-Point Penalty	
	19+ 0	25 62		
		26 59	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME		27 57		
Target 1: 30 seconds		28 54	Fired before "FIRE" or "ON THE WAY."	
		29 51		
Target 2: 30 seconds		30 48	Improper engagement technique.	
		31 46		
STANDARDS		32 43	Improper fire command.	
Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.		33 40	Did not return to turret-down position.	
		34 37	5-Point Penalty	
Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.		35 35		
		36 32	Improper response to the fire command.	
		37 29		
		38 27	Improper reporting.	
		39 24		
		40 21	Improper driving technique.	
		41 18		
		42 16	Total Crew-Duty Penalty Points	
		43 13		
		44 10		
		45 8		
		46 5		
		47 2		
		48+ 0		
Remarks:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 6-7. Sample Scoresheet—HMMWV Table IV, Task 4.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE IV, TASK 5 (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION None required—dry-fire/Simulator. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS	
	1-13 100	Automatic Zero	
	14 98		
	15 95		
	16 93	Not masked during NBC engagement.	
	17 90	Engaged friendly target.	
	18 88	30-Point Penalty	
	19 85		
	20 83		
	21 80	Weapon not on SAFE between engagements.	
	22 78	Fired into the berm.	
	23 75	10-Point Penalty	
	24 73		
	25 70		
	26 68	Failed to follow instructions from authorized personnel.	
	27 65	Fired before "FIRE" or "ON THE WAY."	
	28 63	Improper engagement technique.	
	29 60	Improper fire command.	
	30 58	Did not return to turret-down position.	
	31 55	5-Point Penalty	
	32 53		
	33 50		
	34 48	Improper response to fire command.	
	35 45	Improper reporting.	
	36 43	Improper driving techniques.	
	37 40	Total Crew-Duty Penalty Points	
	38 38		
	39 35		
	40 33		
	41 30		
42 28			
43 25			
44 23			
45 20			
46 18			
47 15			
48 12			
49 10			
50+ 0			
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____		

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Figure 6-8. Sample Scoresheet—HMMWV Table IV, Task 5.

Table V (Stationary Mounted Gunnery)

6-76. Table V introduces crews to a mounted live-fire gunnery environment. Crews will fire the assigned weapon system from the vehicle-mounted position.

CONCEPT

6-77. Table V is designed to train crews to proficiency using the assigned weapon system on a stationary vehicle against stationary single targets deployed in a realistic array. The crews will fire four day and three night engagements. One day engagement will be fired in an NBC environment (appropriate MOPP level).

CONDUCT OF THE TASKS

6-78. The crew develops teamwork while engaging stationary and moving targets from a stationary vehicle. Table V is conducted on a full-scale range using half-scale targets.

EXECUTION

6-79. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

6-80. Tasks will be scored using the criteria in the standards column for each task in Table 6-2. Use the appropriate gunnery scoresheet (DA Form 7553-3-R) and time/points column for each task. Refer to pages 6-11 through 6-13 for scoresheet scoring instructions and Figures 6-2 and 6-3, pages 6-12 and 6-13 for sample completed scoresheets. Refer to Figure 6-1, page 6-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

6-81. Crew ratings for Table V are as follows:

- **Distinguished:** Combined score of 630 points on Tables VA and B, and achieve at least 70 points on 6 out of 7 tasks. The crew must pass one night engagement.
- **Superior:** Combined score of 560-629 points on Tables VA and B, and achieve at least 70 points on 5 out of 7 tasks. The crew must pass one night engagement.
- **Qualified:** Combined score of 490-559 points on Tables VA and B, and achieve at least 70 points on 4 out of 7 tasks. The crew must pass one night engagement.
- **Unqualified:** Combined score of 489 or fewer points on Tables VA and B, or achieve 69 or fewer points on 3 out of 7 tasks, or the crew fails to pass one night engagement.

AMMUNITION REQUIREMENTS

6-82. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition and target requirements for Tables V are as follows:

Table VA	Table VB	Total Rounds
150 rounds caliber .50	150 rounds caliber .50	300 rounds caliber .50
24 rounds 40-mm	24 rounds 40-mm	48 rounds 40-mm
2 LA06s	1 LA06	3 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 6-2. HMMWV Table V, A and B.

HMMWV TABLE VA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	Sniper in window, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters of SIT.
2A Stationary NBC	1 bunker, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
3A Stationary	1 frontal PC, 600 to 800 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
4A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
HMMWV TABLE VB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 set of troops, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
2B Stationary	1 stationary truck, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3B Stationary	1 RPG team, 50 to 200 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE V, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 200 to 400 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50 or 1 round 40mm within 5 meters of SIT.	Target 1: Sniper Time/Points 1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18+ 0	CREW-DUTY PENALTY POINTS
		Automatic Zero
		Not masked during NBC engagement.
		Engaged friendly target.
		30-Point Penalty
		Weapon not on SAFE between engagements.
		Fired into the berm.
		10-Point Penalty
		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
		Improper engagement technique.
		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-9. Sample Scoresheet—HMMWV Table V, Task 1A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE V, TASK 2A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS NBC. Total Targets: 1 Target 1: Bunker, 200 to 400 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: Bunker Time/Points	CREW-DUTY PENALTY POINTS	
	1-6 100 7 94 8 88 9 82 10 76 11 70 12 64 13 58 14 52 15 46 16 40 17 34 18 28 19 22 20 16 21 10 22 4 23/+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points	
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-10. Sample Scoresheet—HMMWV Table V, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE V, TASK 3A (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Frontal PC, 600 to 800 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS	
	1-7 100	Automatic Zero	
	8 96	Not masked during NBC engagement.	
	9 92	Engaged friendly target.	
	10 87	30-Point Penalty	
	11 83	Weapon not on SAFE between engagements.	
	12 79	Fired into the berm.	
	13 74	10-Point Penalty	
	14 70	Failed to follow instructions from authorized personnel.	
	15 66	Fired before "FIRE" or "ON THE WAY."	
	16 61	Improper engagement technique.	
	17 57	Improper fire command.	
	18 53	Did not return to turret-down position.	
	19 48	5-Point Penalty	
	20 44	Improper response to fire command.	
	21 40	Improper reporting.	
	22 36	Improper driving techniques.	
	23 31	Total Crew-Duty Penalty Points	
	24 27		
	25 23		
	26 18		
	27 14		
	28 10		
	29 6		
	30 2		
	31/+ 0		
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-11. Sample Scoresheet—HMMWV Table V, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE V, TASK 4A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION None.	1-13 100 14 98 15 95 16 93 17 90 18 88 19 85 20 83 21 80 22 78 23 75 24 73 25 70 26 68 27 65 28 63 29 60 30 58 31 55 32 53 33 50 34 48 35 45 36 43 37 40 38 38 39 35 40 33 41 30 42 38 43 35 44 33 45 30 46 28 47 25 48 23 49 20 50+ 0	Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters.		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-12. Sample Scoresheet—HMMWV Table V, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE V, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 400 to 600 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	Target 1: Troops Time/Points 1-5 100 6 93 7 85 8 78 9 70 10 63 11 55 12 48 13 40 14 33 15 25 16 18 17 10 18 3 19+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Weapon not on SAFE between engagements.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
		Total Crew-Duty Penalty Points	
		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	
		Remarks: _____ _____ _____ _____ _____	

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Figure 6-13. Sample Scoresheet—HMMWV Table V, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE V, TASK 2B (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points 1-9 100 10 96 11 93 12 89 13 85 14 81 15 78 16 74 17 70 18 66 19 63 20 59 21 55 22 51 23 48 24 44 25 40 26 36 27 33 28 29 29 25 30 21 31 18 32 14 33 10 34 6 35 3 36+ 0	CREW-DUTY PENALTY POINTS		
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐		
		Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-14. Sample Scoresheet—HMMWV Table V, Task 2B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
HMMWV TABLE V, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: RPG team, 50 to 200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters.	Target 1: RPG Team Time/Points 1-4 100 5 90 6 80 7 70 8 60 9 50 10 40 11 30 12 20 13 10 14+ 0	CREW-DUTY PENALTY POINTS			
		Automatic Zero			
		Not masked during NBC engagement.			
		Engaged friendly target.			
		30-Point Penalty			
		Weapon not on SAFE between engagements.			
		Fired into the berm.			
		10-Point Penalty			
		Failed to follow instructions from authorized personnel.			
		Fired before "FIRE" or "ON THE WAY."			
		Improper engagement technique.			
		Improper fire command.			
		Did not return to turret-down position.			
		5-Point Penalty			
		Improper response to fire command.			
		Improper reporting.			
		Improper driving techniques.			
		Total Crew-Duty Penalty Points			
		Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-15. Sample Scoresheet—HMMWV Table V, Task 3B.

Conduct of Table VI (Maneuver Mounted Gunnery)

6-83. Table VI is the first table that requires the crew to fire the assigned weapon system while moving. The table uses combat ranges to teach the vehicle crew engagement techniques against stationary and moving targets in both stationary and moving scenarios.

CONCEPT

6-84. Table VI is designed to train the crew to employ direct fire to destroy threat targets from a stationary or moving vehicle. The crews will engage stationary area and point targets during day, night, and NBC environments (directed MOPP level), using the primary and auxiliary sights. Crews will fire four day and four night engagements with one task used as a swing task. One day engagement will be fired in an NBC environment.

6-85. Table VI is a building block toward Table VII. The training unit commander can modify Table VI to train weak gunnery areas.

CONDUCT OF THE TASKS

6-86. Crews will employ direct fire to engage stationary and moving targets from a stationary or moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

6-87. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements must begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On ranges where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

6-88. Tasks will be scored using the criteria in the standards column for each task in Table 6-3. Use the appropriate gunnery scoresheet (DA Form 7553-3-R) and time/points column for each task. Refer to pages 6-11 through 6-13 for scoresheet scoring instructions and Figures 6-2 and 6-3, pages 6-12 and 6-13 for sample completed scoresheets. Refer to Figure 6-1, page 6-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

6-89. Crew ratings for Table VI are as follows:

- **Distinguished:** Combined score of 720-800 points on Table VIA and B. The crew must pass two night engagements.
- **Superior:** Combined score of 640-719 points on Table VIA and B. The crew must pass two night engagements.
- **Qualified:** Combined score of 560-639 points on Table VIA and B. The crew must pass two night engagements.
- **Unqualified:** Combined score of 559 or fewer points on Table VIA and B, or crew fails to qualify on two night engagements.

AMMUNITION REQUIREMENTS

6-90. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table VI are as follows:

Table VIA	Table VIB	Total Rounds
150 rounds caliber .50	200 rounds caliber .50	350 rounds caliber .50
24 rounds 40-mm	32 rounds 40-mm	56 rounds 40-mm
2 LA06s	2 LA06s	4 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 6-3. HMMWV Table VI, A and B.

HMMWV TABLE VIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	Sniper in window, 200 to 400 meters. Civilians on the battlefield (COB).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters of SIT.
2A Moving	1 bunker, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
3A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
4A Moving NBC	1 set of troops, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
HMMWV TABLE VIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 stationary truck, 600 to 800 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2B Moving	1 RPG team, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3B Moving	1 stationary truck, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
4B Stationary	1 set of troops, 400 to 600 meters. COBs.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VI, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 200 to 400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters of SIT.	Target 1: Sniper Time/Points 1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18+ 0	CREW-DUTY PENALTY POINTS Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐
	Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-16. Sample Scoresheet—HMMWV Table VI, Task 1A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VI, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Bunker, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: Bunker Time/Points	CREW-DUTY PENALTY POINTS
	1-7 100	Automatic Zero
	8 95	Not masked during NBC engagement.
	9 90	Engaged friendly target.
	10 85	30-Point Penalty
	11 80	Weapon not on SAFE between engagements.
	12 75	Fired into the berm.
	13 70	10-Point Penalty
	14 65	Failed to follow instructions from authorized personnel.
	15 60	Fired before "FIRE" or "ON THE WAY."
	16 55	Improper engagement technique.
	17 50	Improper fire command.
	18 45	Did not return to turret-down position.
	19 40	5-Point Penalty
	20 35	Improper response to fire command.
	21 30	Improper reporting.
	22 25	Improper driving techniques.
	23 20	Total Crew-Duty Penalty Points
	24 15	
	25 10	
26 5		
27/+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-17. Sample Scoresheet—HMMWV Table VI, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VI, TASK 3A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify and report a stationary point target from a stationary vehicle. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	Not masked during NBC engagement.
	15 95	Engaged friendly target.
	16 93	
	17 90	30-Point Penalty
	18 88	Weapon not on SAFE between engagements.
	19 85	Fired into the berm.
	20 83	
	21 80	10-Point Penalty
	22 78	Failed to follow instructions from authorized personnel.
	23 75	Fired before "FIRE" or "ON THE WAY."
	24 73	Improper engagement technique.
	25 70	Improper fire command.
	26 68	Did not return to turret-down position.
	27 65	
	28 63	5-Point Penalty
	29 60	Improper response to fire command.
	30 58	Improper reporting.
	31 55	Improper driving techniques.
	32 53	
	33 50	Total Crew-Duty Penalty Points
	34 48	
	35 45	
	36 43	
	37 40	
	38 38	
	39 35	
	40 33	
	41 30	
42 28		
43 25		
44 23		
45 20		
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-18. Sample Scoresheet—HMMWV Table VI, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VI, TASK 4A (NBC) (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS NBC. Total Targets: 1 Target 1: Dismounted troops, 200 to 400 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	Target 1: Troops Time/Points	CREW-DUTY PENALTY POINTS	
	1-7 100 8 95 9 90 10 85 11 80 12 75 13 70 14 65 15 60 16 55 17 50 18 45 19 40 20 35 21 30 22 25 23 20 24 15 25 10 26 5 27/+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points	
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-19. Sample Scoresheet—HMMWV Table VI, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VI, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 600 to 800 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points 1-10 100 11 97 12 93 13 90 14 87 15 83 16 80 17 77 18 73 19 70 20 67 21 63 22 60 23 57 24 53 25 50 26 47 27 43 28 40 29 37 30 33 31 30 32 27 33 23 34 20 35 17 36 13 37 10 38 7 39 3 40+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-20. Sample Scoresheet—HMMWV Table VI, Task 1BS.

GUNNERY SCORESHEET, ONE-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE VI, TASK 2B (MOVING), UNIT/BUMPER NUMBER _____				
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: RPG team, 200 to 400 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: RPG Team Time/Points 1-5 100 6 94 7 88 8 82 9 76 10 70 11 64 12 58 13 52 14 46 15 40 16 34 17 28 18 22 19 16 20 10 21 4 22/+ 0	CREW-DUTY PENALTY POINTS		
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points		
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-21. Sample Scoresheet—HMMWV Table VI, Task 2B.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VI, TASK 3B (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points 1-9 100 10 97 11 93 12 90 13 87 14 83 15 80 16 77 17 73 18 70 19 67 20 63 21 60 22 57 23 53 24 50 25 47 26 43 27 40 28 37 29 33 30 30 31 27 32 23 33 20 34 17 35 13 36 10 37 7 38 3 39+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Weapon not on SAFE between engagements.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
		Total Crew-Duty Penalty Points	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-22. Sample Scoresheet—HMMWV Table VI, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE VI, TASK 4B (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK Engage a stationary area target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 400 to 600 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	Target 1: Troops Time/Points 1-5 100 6 93 7 85 8 78 9 70 10 63 11 55 12 48 13 40 14 33 15 25 16 18 17 10 18 3 19+ 0	CREW-DUTY PENALTY POINTS		
		Automatic Zero		
		Not masked during NBC engagement.		
		Engaged friendly target.		
		30-Point Penalty		
		Weapon not on SAFE between engagements.		
		Fired into the berm.		
		10-Point Penalty		
		Failed to follow instructions from authorized personnel.		
		Fired before "FIRE" or "ON THE WAY."		
		Improper engagement technique.		
		Improper fire command.		
		Did not return to turret-down position.		
		5-Point Penalty		
		Improper response to fire command.		
		Improper reporting.		
		Improper driving techniques.		
		Total Crew-Duty Penalty Points		
		Remarks:		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-23. Sample Scoresheet—HMMWV Table VI, Task 4B.

Conduct of Table VII (Crew Practice)

6-91. Table VII requires the vehicle crew to conduct offensive and defensive engagements with full-caliber ammunition on combat ranges.

CONCEPT

6-92. Table VII is designed to train the vehicle crew to engage stationary and moving targets during day, night, and NBC environments (directed MOPP level) from a stationary and moving vehicle. The crews will fire five day and four night engagements. One engagement will be fired in an NBC environment.

6-93. Table VII is a building block toward Table VIII; the training unit commander can modify it to train weak gunnery areas.

6-94. This table consists of two swing tasks (1AS and 1BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

6-95. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

6-96. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

6-97. Tasks will be scored using the criteria in the standards column for each task in Table 6-4. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to pages 6-11 through 6-13 for scoresheet scoring instructions and Figures 6-2 and 6-3, pages 6-12 and 6-13 for sample completed scoresheets. Refer to Figure 6-1, page 6-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

6-98. Crew ratings for Table VII are as follows:

- **Distinguished:** Combined score of 720-800 points on Table VIIA and B. The crew must pass two night engagements.
- **Superior:** Combined score of 640-719 points on Table VIIA and B. The crew must pass two night engagements.
- **Qualified:** Combined score of 560-639 points on Table VIIA and B. The crew must pass two night engagements.
- **Unqualified:** Combined score of 559 or fewer points on Table VIIA and B, or crew fails to qualify on two night engagements.

AMMUNITION REQUIREMENTS

6-99. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table VII are as follows:

Table VIIA	Table VIIB	Total Rounds
300 rounds caliber .50	250 rounds caliber .50	550 rounds caliber .50
48 rounds 40-mm	40 rounds 40-mm	88 rounds 40-mm
4 LA06s	3 LA06s	7 LA06s
3 LA07s	3 LA07s	6 LA07s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman. The LA07 will be used to simulate target destruction based on target hit standards.		

Table 6-4. HMMWV Table VII, A and B.

HMMWV TABLE VIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	1 set of troops, 600 to 800 meters. Civilians on the battlefield (COB).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
2A Moving	1 sniper in window, 200 to 400 meters. 1 moving truck, 400 to 600 meters (15-second delay). COB (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters of SIT. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3A Moving	1 bunker, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
4A Stationary NBC	1 set of troops, 400 to 600 meters. 1 moving truck, 800 to 1,000 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
5A Stationary	1 stationary tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
HMMWV TABLE VIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 stationary truck, 600 to 800 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2B Moving	1 RPG team, 50 to 200 meters. 1 moving truck, 400 to 600 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3B Stationary	1 stationary PC, 600 to 800 meters. COBs.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
4B Moving	1 set of troops, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VII, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary area target from a stationary vehicle.	Target 1: Troops Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds	1-5 100 6 94 7 88 8 82 9 76 10 70	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 600 to 800 meters. Civilians on the battlefield (COB) (15-second delay).	11 64 12 58 13 52 14 46 15 40 16 34 17 28 18 22 19 16 20 10 21 4 22/+ 0	Not masked during NBC engagement.
EXPOSURE TIME Target 1: 50 seconds		Engaged friendly target.
STANDARDS Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.		30-Point Penalty
		Weapon not on SAFE between engagements.
		Fired into the berm.
		10-Point Penalty
		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
		Improper engagement technique.
		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 6-24. Sample Scoresheet—HMMWV Table VII, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
HMMWV TABLE VII, TASK 2A (MOVING), UNIT/BUMPER NUMBER					
TASK	Target 1 Sniper Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a moving vehicle.	1-5	100	1-11	100	Automatic Zero
	6	94	12	97	
AMMUNITION	7	88	13	95	Not masked during an NBC engagement.
Caliber .50: 100 rounds	8	82	14	92	
or	9	76	15	89	Engaged friendly target.
40mm: 16 rounds	10	70	16	86	
	11	64	17	84	30-Point Penalty
	12	58	18	81	
CONDITIONS	13	52	19	78	Weapon not on SAFE between engagements.
Total Targets: 2	14	46	20	76	
Target 1: Sniper in window, 200 to 400 meters.	15	40	21	73	Fired into the berm.
	16	34	22	70	
Target 2: Moving truck, 400 to 600 meters (15-second delay).	17	28	23	67	Killed target beyond maximum vehicle exposure time.
	18	22	24	65	
Civilians on the battlefield (COB) (15-second delay).	19	16	25	62	10-Point Penalty
	20	10	26	59	
	21	4	27	57	Failed to follow instructions from authorized personnel.
	22/+	0	28	54	
EXPOSURE TIME			29	51	Fired before "FIRE" or "ON THE WAY."
Target 1: 30 seconds			30	48	
Target 2: 30 seconds			31	46	Improper engagement technique.
			32	43	
STANDARDS			33	40	Improper fire command.
Hit sniper with 1 round caliber .50 or 1 round 40mm within 5 meters.			34	37	
Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.			35	35	Did not return to turret-down position.
			36	32	
			37	29	5-Point Penalty
			38	27	
			39	24	Improper response to the fire command.
			40	21	
			41	18	Improper reporting.
			42	16	
			43	13	Improper driving technique.
			44	10	
			45	8	Total Crew-Duty Penalty Points
			46	5	
			47	2	
			48+	0	
Remarks:			Target 1 Points (a) _____		
			Target 2 Points (b) _____		
			Total (a + b = c) (c) _____		
			Divide by 2 (# of targets) (c ÷ 2 = d)		
			Engagement Raw Score (d) _____		
			Total Crew-Duty Penalty Points (e) _____		
			Subtract crew-duty penalty points from raw score (d - e = f).		
			Engagement Score (f) _____		

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Figure 6-25. Sample Scoresheet—HMMWV Table VII, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VII, TASK 3A (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Bunker, 200 to 400 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: Bunker Time/Points	CREW-DUTY PENALTY POINTS	
	1-6 100 7 94 8 88 9 82 10 76 11 70 12 64 13 58 14 52 15 46 16 40 17 34 18 28 19 22 20 16 21 10 22 4 23/+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points	
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-26. Sample Scoresheet—HMMWV Table VII, Task 3A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
HMMWV TABLE VII, TASK 4A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Troops Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point and area targets from a stationary vehicle.	1-6	100	1-13	100	Automatic Zero
	7	94	14	98	
AMMUNITION	8	88	15	95	Not masked during an NBC engagement.
	9	82	16	93	
Caliber .50: 100 rounds	10	76	17	91	Engaged friendly target.
or	11	70	18	89	
40mm: 16 rounds	12	64	19	86	30-Point Penalty
	13	58	20	84	
CONDITIONS	14	52	21	82	Weapon not on SAFE between engagements.
NBC.	15	46	22	79	
Total Targets: 2	16	40	23	77	Fired into the berm.
	17	34	24	75	
Target 1: Dismounted troops, 400 to 600 meters.	18	28	25	72	Killed target beyond maximum vehicle exposure time.
	19	22	26	70	
Target 2: Moving truck, 800 to 1,000 meters (15-second delay).	20	16	27	68	10-Point Penalty
	21	10	28	66	
EXPOSURE TIME	22	4	29	63	Failed to follow instructions from authorized personnel.
Target 1: 50 seconds	23/+	0	30	61	
Target 2: 50 seconds			31	59	Fired before "FIRE" or "ON THE WAY."
			32	56	
STANDARDS			33	54	Improper engagement technique.
Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.			34	52	
Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.			35	49	Improper fire command.
			36	47	
			37	45	Did not return to turret-down position.
			38	43	
			39	40	5-Point Penalty
			40	38	
			41	36	Improper response to the fire command.
			42	33	
			43	31	Improper reporting.
			44	29	
			45	26	Improper driving technique.
			46	24	
			47	22	Total Crew-Duty Penalty Points
			48	20	
			49	17	
			50+	0	
Remarks:			Target 1 Points (a) _____		
			Target 2 Points (b) _____		
			Total (a + b = c) (c) _____		
			Divide by 2 (# of targets) (c ÷ 2 = d)		
			Engagement Raw Score (d) _____		
			Total Crew-Duty Penalty Points (e) _____		
			Subtract crew-duty penalty points from raw score (d - e = f).		
			Engagement Score (f) _____		

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Figure 6-27. Sample Scoresheet—HMMWV Table VII, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VII, TASK 5A (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS	
	1-13 100	Automatic Zero	
	14 98		
	15 95		
	16 93	Not masked during NBC engagement.	
	17 90	Engaged friendly target.	
	18 88	30-Point Penalty	
	19 85		
	20 83		
	21 80	Weapon not on SAFE between engagements.	
	22 78	Fired into the berm.	
	23 75	10-Point Penalty	
	24 73		
	25 70		
	26 68	Failed to follow instructions from authorized personnel.	
	27 65	Fired before "FIRE" or "ON THE WAY."	
	28 63	Improper engagement technique.	
	29 60	Improper fire command.	
	30 58	Did not return to turret-down position.	
	31 55	5-Point Penalty	
	32 53		
	33 50		
	34 48	Improper response to fire command.	
	35 45	Improper reporting.	
	36 43	Improper driving techniques.	
	37 40	Total Crew-Duty Penalty Points	
	38 38		
	39 35		
	40 33		
	41 30		
42 38			
43 35			
44 33			
45 30			
46 28			
47 25			
48 23			
49 20			
50+ 0			
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-28. Sample Scoresheet—HMMWV Table VII, Task 5A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 600 to 800 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-10 100 11 97 12 93 13 90 14 87 15 83 16 80 17 77 18 73 19 70 20 67 21 63 22 60 23 57 24 53 25 50 26 47 27 43 28 40 29 37 30 33 31 30 32 27 33 23 34 20 35 17 36 13 37 10 38 7 39 3 40+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-29. Sample Scoresheet—HMMWV Table VII, Task 1BS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
HMMWV TABLE VII, TASK 2B (MOVING), UNIT/BUMPER NUMBER _____					
TASK Engage stationary and moving point targets from a moving vehicle. AMMUNITION Caliber .50: 100 rounds or 40mm: 16 rounds CONDITIONS Total Targets: 2 Target 1: RPG team, 50 to 200 meters. Target 2: Moving truck, 400 to 600 meters (15-second delay). EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	Target 1 RPG Team Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
	1-5	100	1-11	100	Automatic Zero
	6	93	12	97	Not masked during an NBC engagement.
	7	85	13	95	Engaged friendly target.
	8	78	14	92	30-Point Penalty
	9	70	15	89	Weapon not on SAFE between engagements.
	10	63	16	86	Fired into the berm.
	11	55	17	84	Killed target beyond maximum vehicle exposure time.
	12	48	18	81	10-Point Penalty
	13	40	19	78	Failed to follow instructions from authorized personnel.
	14	33	20	76	Fired before "FIRE" or "ON THE WAY."
	15	25	21	73	Improper engagement technique.
	16	18	22	70	Improper fire command.
	17	10	23	67	Did not return to turret-down position.
	18	3	24	65	5-Point Penalty
	19+	0	25	62	Improper response to the fire command.
			26	59	Improper reporting.
			27	57	Improper driving technique.
			28	54	Total Crew-Duty Penalty Points
			29	51	
			30	48	
			31	46	
			32	43	
			33	40	
			34	37	
			35	35	
			36	32	
			37	29	
		38	27		
		39	24		
		40	21		
		41	18		
		42	16		
		43	13		
		44	10		
		45	8		
		46	5		
		47	2		
		48+	0		
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 6-30. Sample Scoresheet—HMMWV Table VII, Task 2B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VII, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds	1-7 100 8 96 9 92 10 87 11 83 12 79 13 74 14 70 15 66 16 61 17 57 18 53 19 48 20 44 21 40 22 36 23 31 24 27 25 23 26 18 27 14 28 10 29 6 30 2 31/+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Stationary PC, 600 to 800 meters. Civilians on the battlefield (COB).		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-31. Sample Scoresheet—HMMWV Table VII, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VII, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary area target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 200 to 400 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.	Target 1: Troops Time/Points	CREW-DUTY PENALTY POINTS
	1-5 100	Automatic Zero
	6 94	Not masked during NBC engagement.
	7 88	Engaged friendly target.
	8 82	30-Point Penalty
	9 76	Weapon not on SAFE between engagements.
	10 70	Fired into the berm.
	11 64	10-Point Penalty
	12 58	Failed to follow instructions from authorized personnel.
	13 52	Fired before "FIRE" or "ON THE WAY."
	14 46	Improper engagement technique.
	15 40	Improper fire command.
	16 34	Did not return to turret-down position.
	17 28	5-Point Penalty
	18 22	Improper response to fire command.
	19 16	Improper reporting.
	20 10	Improper driving techniques.
	21 4	Total Crew-Duty Penalty Points
	22/+ 0	
	Remarks: _____ _____ _____ _____ _____	

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Figure 6-32. Sample Scoresheet—HMMWV Table VII, Task 4B.

Conduct of Table VIII (Crew Qualification)

6-100. Table VIII evaluates the vehicle crew's ability to acquire and engage targets during various firing conditions at combat ranges. Crews must successfully pass this table before proceeding to Table X.

CONCEPT

6-101. Table VIII is a single-vehicle qualification table. The crew must fire Table VIIIA and B for qualification. Normal combat-oriented procedures, such as reporting, should be used. The crew uses proper engagement techniques against targets from a stationary and moving vehicle during normal and NBC conditions (directed MOPP level). The day firing phase should precede the night firing phase.

6-102. This table consists of five day and five night tasks. Four tasks are swing tasks (1AS, 1BS, 3AS, and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day could be as few as three with up to seven tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASK

6-103. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

6-104. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. Offensive engagements may be fired from a short halt.

SCORING

6-105. Tasks will be scored using the criteria in the standards column for each task in Table 6-5. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to pages 6-11 through 6-13 for scoresheet scoring instructions and Figures 6-2 and 6-3, pages 6-12 and 6-13 for sample completed scoresheets. Refer to Figure 6-1, page 6-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

6-106. Crew ratings for Table VIII are as follows:

- **Distinguished:** Combined score of at least 900 points (90 percent or more) on Table VIIIA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table VIIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table VIIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table VIIIA and B, or 4 out of 10 tasks have 69 or fewer points or crew fails to pass two night engagements.

AMMUNITION REQUIREMENTS

6-107. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table VIII are as follows:

Table VIIIA	Table VIIIB	Total Rounds
350 rounds caliber .50	250 rounds caliber .50	600 rounds caliber .50
56 rounds 40-mm	40 rounds 40-mm	96 rounds 40-mm
4 LA06s	2 LA06s	6 LA06s
4 LA07s	2 LA07s	6 LA07s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman. The LA07 will be used to simulate target destruction based on target hit standards.		

Table 6-5. HMMWV Table VIII, A and B.

HMMWV TABLE VIIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	1 set of troops, 400 to 600 meters. 1 stationary truck, 800 to 1,000 meters (15-second delay).	100 rounds caliber .50 or 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress. Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.
2A Moving	1 sniper in window, 200 to 400 meters. Civilians on the battlefield (COB).	50 rounds caliber .50 or 8 rounds 40mm	Hit sniper with 1 round caliber .50 or 1 round 40mm within 5 meters of SIT.
3A (Swing) Moving	1 moving truck, 400 to 600 meters.	50 rounds caliber .50 or 8 rounds 40mm	Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.
4A Moving	1 bunker, 400 to 600 meters.	50 rounds caliber .50 or 8 rounds 40mm	Hit bunker with 5 rounds caliber .50 or 2 rounds 40mm.
5A Stationary NBC	1 set of troops, 200 to 400 meters. 1 stationary PC, 600 to 800 meters (15-second delay).	100 rounds caliber .50 or 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress. Hit PC with 5 rounds caliber .50 or 2 rounds 40mm.
HMMWV TABLE VIIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 stationary truck, 200 to 400 meters. Civilians on the battlefield (COB).	50 rounds caliber .50 or 8 rounds 40mm	Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.
2B Moving	1 RPG team, 200 to 400 meters. 1 set troops, 600 to 800 meters (15-second delay).	100 rounds caliber .50 or 16 rounds 40mm	Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5m, and suppress.
3B Stationary	1 stationary truck, 600 to 800 meters. Civilians on the battlefield (COB).	50 rounds caliber .50 or 8 rounds 40mm	Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.
4B Moving	1 set of troops, 50 to 200 meters.	50 rounds caliber .50 or 8 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5m, and suppress.
5B (Swing) Stationary	1 stationary tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE VIII, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a stationary vehicle.	1-5 100	1-10 100	Automatic Zero	
	6 93	11 97	Not masked during an NBC engagement.	
	7 85	12 94	Engaged friendly target.	
AMMUNITION	8 78	13 91		
Caliber .50: 100 rounds	9 70	14 88	30-Point Penalty	
or	10 63	15 85	Weapon not on SAFE between engagements.	
40mm: 16 rounds	11 55	16 82		
	12 48	17 79	Fired into the berm.	
CONDITIONS	13 40	18 76	Killed target beyond maximum vehicle exposure time.	
Total Targets: 2	14 33	19 73		
Target 1: Dismounted troops, 400 to 600 meters.	15 25	20 70	10-Point Penalty	
	16 18	21 67	Failed to follow instructions from authorized personnel.	
Target 2: Stationary truck, 800 to 1,000 meters (15-second delay).	17 10	22 64	Fired before "FIRE" or "ON THE WAY."	
	18 3	23 61	Improper engagement technique.	
	19+ 0	24 58	Improper fire command.	
EXPOSURE TIME		25 55	Did not return to the turret-down position.	
Target 1: 50 seconds		26 52		
Target 2: 50 seconds		27 49	5-Point Penalty	
		28 46	Improper response to the fire command.	
STANDARDS		29 43	Improper reporting.	
Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.		30 40	Improper driving technique.	
Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.		31 37		
		32 34	Total Crew-Duty Penalty Points	
		33 31		
		34 28		
		35 25		
		36 22		
		37 19		
		38 16		
		39 13		
		40 10		
		41 7		
		42 4		
		43 1		
		44+ 0		
Remarks:	Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____			

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Figure 6-33. Sample Scoresheet—HMMWV Table VIII, Task 1AS.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VIII, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 200 to 400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-5 100 6 94 7 88 8 82 9 76 10 70 11 64 12 58 13 52 14 46 15 40 16 34 17 28 18 22 19 16 20 10 21 4 22/+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-34. Sample Scoresheet—HMMWV Table VIII, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VIII, TASK 3A (SWING) (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Moving truck, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-11 100	Automatic Zero
	12 97	
	13 95	Not masked during NBC engagement.
	14 92	
	15 89	Engaged friendly target.
	16 86	
	17 84	30-Point Penalty
	18 81	
	19 78	Weapon not on SAFE between engagements.
	20 76	
	21 73	Fired into the berm.
	22 70	
	23 67	10-Point Penalty
	24 65	
	25 62	Failed to follow instructions from authorized personnel.
	26 59	
	27 57	Fired before "FIRE" or "ON THE WAY."
	28 54	
	29 51	Improper engagement technique.
	30 48	
	31 46	Improper fire command.
	32 43	
	33 40	Did not return to turret-down position.
	34 37	
	35 35	5-Point Penalty
	36 32	
	37 29	Improper response to fire command.
	38 27	
	39 24	Improper reporting.
40 21		
41 18	Improper driving techniques.	
42 16		
43 13	Total Crew-Duty Penalty Points	
44 10		
45 8		
46 5		
47 2		
48+ 0		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-35. Sample Scoresheet—HMMWV Table VIII, Task 3AS.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
HMMWV TABLE VIII, TASK 4A (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Bunker, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1: Bunker Time/Points 1-7 100 8 95 9 90 10 85 11 80 12 75 13 70 14 65 15 60 16 55 17 50 18 45 19 40 20 35 21 30 22 25 23 20 24 15 25 10 26 5 27/+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Weapon not on SAFE between engagements.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
		Total Crew-Duty Penalty Points	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-36. Sample Scoresheet—HMMWV Table VIII, Task 4A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
HMMWV TABLE VIII, TASK 5A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Troops Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point and area targets from a stationary vehicle.	1-5	100	1-8	100	Automatic Zero
	6	94	9	96	Not masked during an NBC engagement.
AMMUNITION	7	88	10	92	Engaged friendly target.
Caliber .50: 100 rounds	8	82	11	88	30-Point Penalty
or	9	76	12	83	Weapon not on SAFE between engagements.
40mm: 16 rounds	10	70	13	79	Fired into the berm.
	11	64	14	74	Killed target beyond maximum vehicle exposure time.
CONDITIONS	12	58	15	70	10-Point Penalty
NBC.	13	52	16	66	Failed to follow instructions from authorized personnel.
Total Targets: 2	14	46	17	61	Fired before "FIRE" or "ON THE WAY."
Target 1: Dismounted troops, 200 to 400 meters.	15	40	18	57	Improper engagement technique.
Target 2: Stationary PC, 600 to 800 meters (15-second delay).	16	34	19	53	Improper fire command.
	17	28	20	49	Did not return to turret-down position.
	18	22	21	44	5-Point Penalty
	19	16	22	40	Improper response to the fire command.
EXPOSURE TIME	20	10	23	36	Improper reporting.
Target 1: 50 seconds	21	4	24	31	Improper driving technique.
Target 2: 50 seconds	22/+	0	25	27	Total Crew-Duty Penalty Points
			26	23	
			27	19	
			28	14	
			29	10	
			30	6	
			31	2	
			32/+	0	
STANDARDS					
Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.					
Remarks:					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 6-37. Sample Scoresheet—HMMWV Table VIII, Task 5A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VIII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 200 to 400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-4 100	Automatic Zero
	5 93	Not masked during NBC engagement.
	6 85	Engaged friendly target.
	7 78	
	8 70	30-Point Penalty
	9 63	Weapon not on SAFE between engagements.
	10 55	Fired into the berm.
	11 48	
	12 40	10-Point Penalty
	13 33	Failed to follow instructions from authorized personnel.
	14 25	Fired before "FIRE" or "ON THE WAY."
	15 18	Improper engagement technique.
	16 10	Improper fire command.
	17 3	Did not return to turret-down position.
	18+ 0	
	5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques.	
	Total Crew-Duty Penalty Points	
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-38. Sample Scoresheet—HMMWV Table VIII, Task 1BS.

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GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VIII, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds	1-10 100 11 97 12 93 13 90 14 87 15 83 16 80 17 77 18 73 19 70 20 67 21 63 22 60 23 57 24 53 25 50 26 47 27 43 28 40 29 37 30 33 31 30 32 27 33 23 34 20 35 17 36 13 37 10 38 7 39 3 40+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Stationary truck, 600 to 800 meters. Civilians on the battlefield (COB).		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 6-40. Sample Scoresheet—HMMWV Table VIII, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
HMMWV TABLE VIII, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____				
TASK Engage a stationary area target from a moving vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm: 8 rounds CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 50 to 200 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	Target 1: Troops Time/Points 1-5 100 6 93 7 85 8 78 9 70 10 63 11 55 12 48 13 40 14 33 15 25 16 18 17 10 18 3 19+ 0	CREW-DUTY PENALTY POINTS		
		Automatic Zero		
		Not masked during NBC engagement.		
		Engaged friendly target.		
		30-Point Penalty		
		Weapon not on SAFE between engagements.		
		Fired into the berm.		
		10-Point Penalty		
		Failed to follow instructions from authorized personnel.		
		Fired before "FIRE" or "ON THE WAY."		
		Improper engagement technique.		
		Improper fire command.		
		Did not return to turret-down position.		
		5-Point Penalty		
		Improper response to fire command.		
		Improper reporting.		
		Improper driving techniques.		
		Total Crew-Duty Penalty Points		
		Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-41. Sample Scoresheet—HMMWV Table VIII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
HMMWV TABLE VIII, TASK 5B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
42 28		
43 25	Improper driving techniques.	
44 23		
45 20	Total Crew-Duty Penalty Points	
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 6-42. Sample Scoresheet—HMMWV Table VIII, Task 5BS.

Chapter 7

RV Gunnery

Gunnery tables are designed to develop and test the proficiency of RV individual, crew, and section/platoon gunnery techniques. The series of engagements on each table is intended to duplicate (within the safety and resource constraints of live-fire ranges) typical battlefield tasks under realistic firing conditions against likely target arrays. This chapter discusses the RV gunnery tables, qualification requirements for crews and sections/platoons, scoring procedures and standards, and allowable variations. It also addresses the commander's considerations for ammunition allocation and firing during adverse weather.

The mission of the RSTA squadron is such that the crew consists of not only the vehicle and its weapons, but also the dismounts that are attached to that vehicle and the HUMINT elements. The vehicle consists of only the driver and the VC/gunner. Integration of the crew into qualification tables will better train the unit for its mission.

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SECTION I - METHODOLOGY

7-1. The objectives of this gunnery program are to attain and sustain crew through section/platoon gunnery proficiency, and to evaluate the use of the fire control system and proper engagement techniques including both vehicle and dismounted crew.

7-2. A comprehensive gunnery program must address six basic features of engagements:

- Type of target/weapon fired (heavy armor, light armor, troops, main gun, crew-served, individual weapons, etc.).
- Firing vehicle posture (moving, stationary, NBC).
- Target posture (moving, stationary, fully exposed, turret down).
- Engagement technique (precision or battle sight).
- Visibility (day/night or obscuration).

7-3. Scout crews must be trained to defend against or defeat a specific enemy. Specifics for determining how to train include—

- Enemy doctrine and the employment of their weapon systems.
- The time-to-fire P_H , and lethality of enemy weapons as a function of range and time.
- Enemy vulnerability to our P_H as a function of range.

7-4. Time standards (70-point time) for each task are based on the amount of time available before an average (50 percent) enemy system will be able to destroy you. The 100-point time is based on the amount of time available before the top 25 percent of enemy systems is able to destroy you.

SECTION II - EVALUATION TABLE CONSIDERATIONS

7-5. The following tables comprise the gunnery proficiency part of the combat tables for the vehicle crew and the dismounted crew:

- Table I—Virtual Training.
- Table I for the Dismounted Crew—Virtual Training.
- Table II—Basic Ground Firing.
- Table II for the Dismounted Crew—Individual Weapon Qualification.
- Table III—Vehicle Practice.
- Table III for the Dismounted Crew—Advanced Individual Weapon Qualification.
- Table IV—Vehicle Qualification.
- Table IV for the Dismounted Crew—Short-Range Marksmanship (SRM) Qualification.
- Table V—Crew Integrated Proficiency Course (CIPC) (Dry).
- Table VI—Crew Integrated Proficiency Course (CIPC) (Blank).
- Table VII—*Crew Practice.
- Table VIII—*Crew Qualification.
- Table IX—Section Practice (see Chapter 10).
- Table X—*Section Qualification (see Chapter 10).
- Table XI—Platoon Practice (see Chapter 10).
- Table XII—*Platoon Qualification (see Chapter 10)

* Dismounts conducting Tables VII, VIII, X, and XII must have qualified on SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC (Standards in Training Commission).

7-6. The gunnery tables are designed to train crews progressively in basic, intermediate, and advanced gunnery.

- Basic gunnery techniques and engagements are trained in a virtual environment on Table I and live on Table II.
- Intermediate vehicle engagements are trained on Table III and tested on Table IV.
- Intermediate crew engagements are trained on Tables V through VII and tested on Table VIII.
- Collective gunnery engagements are trained on Tables IX and XI and tested on Tables X and XII (see Chapter 10).

7-7. Table I is designed to train the crew on basic gunnery skills (including target acquisition, target designation, gun laying, manipulation, and direct-fire adjustment) from a simulated stationary vehicle in a virtual environment. Table V is designed to evaluate vehicle crews on the same basic gunnery skills as Table I, but with full-crew interaction from a stationary and moving vehicle. These tasks develop coordination skills and provide the crew an opportunity to identify individual strengths and weaknesses. Table I should be conducted with the entire crew (the driver should practice on all weapons systems, even though he has a nonfiring roll in gunnery). Table V **must** be fired until the crew is proficient and is required before live-fire gunnery.

Note. Table V will not be considered qualified if it is fired using virtual trainers.

7-8. These tables should be conducted as new gunners are selected and previous gunners become vehicle commanders. Since these tables are the foundation of gunnery skills, they should be scheduled as part of a unit's routine training plan to maintain individual and crew proficiency. For optimum training benefit, manipulation drills should be integrated into the virtual training systems.

7-9. Table II is basic ground firing table and must be fired prior to live-fire vehicle gunnery. Tables IV, V, VIII, X, and XII are qualification tables and must be fired successfully before advancing to the next higher level of gunnery. All other tables (I, III, VI, VII, IX, and XI) are recommended for training in sequence. (See also Chapter 10 for Collective Gunnery [Tables IX through XII] information.)

7-10. Two phases and two variations of the tables can be used in a well-rounded gunnery program:

- Day firing phase (A tables) trains and tests the crew in rapid engagement and destruction of targets during daylight hours.
- Night firing phase (B tables) trains and tests the crew in rapid engagement and destruction of targets at night and during periods of reduced visibility.
- Device-based firing trains gunnery procedures and crew and section/platoon duties without expenditure of live ammunition. (The commander determines when to fire subcaliber tables to sustain skills when live firing is restricted.)
- Dry firing is used to develop teamwork before live firing and to sustain skills when live firing is restricted.

7-11. Day firing (A tables) should precede night firing (B tables) whenever possible; however, this is not a requirement. All tables except Tables VI (Vehicle Qualification), VIII (Crew Qualification), X (Section Qualification), and XII (Platoon Qualification) may be fired either dry, device-based, or both, if availability of ammunition is a problem. (See also Chapter 10 for Collective Gunnery [Tables IX through XII] information.)

SECTION III - VEHICLE CREW EVALUATORS

7-12. The VCE is critical to the quality of the training and AAR of the firing unit. They not only evaluate the crews during the training event, but they also lead them (during the AAR) to an understanding of their actions in each engagement scenario. To ensure a quality AAR, the same VCE who observed the firing crew will conduct the AAR. Other range evaluation personnel and the unit's chain of command may assist the VCE. VCEs must have training to make sure they are proficient at the needed skills to properly evaluate the firing crew, and must continually practice their AAR techniques to make sure they are effective.

Note. **Squadron external evaluators will be used on Table VIII.** It is highly recommended that qualified personnel from outside the firing unit be used for all tables, if possible. This will ensure that there are no distractions for personnel having to fire or perform other missions who are organic to the firing unit.

Basic and Intermediate Tables

7-13. The firing unit's commander is the primary evaluator of his unit's performance; however, for basic and intermediate tables, he has designated representatives to evaluate each crew. The commander (assisted by the troop master gunner) selects evaluators based on the unit's assets, mission, and prior training of personnel available. Basic guidelines for selecting VCEs are:

- Sergeant and above.
- Qualified on the table being evaluated within the preceding 12 months.
- Extensive knowledge of scoring criteria and procedures.

7-14. The VCE must have communications with the firing vehicle so that he can monitor the intercom system for Tables III, IV, V, VI, VII, and VIII and maintain visual contact with the vehicle at all times.

Notes. The VCE must have received training and passed the Vehicle Crew Evaluator Exportable Packet (VCEEP) evaluation, and be certified as VCE qualified by the unit commander.

Where circumstances do not permit live-fire qualification, such as service with a training support brigade (TSB), the battalion commander/TSB commander can waive the live-fire qualification

requirements, if the VCE has previously qualified and is fully knowledgeable of applicable gunnery manuals as substantiated by passing the VCEEP.

There must be a safety/evaluator with the vehicle and the dismount squad.

SECTION IV - AFTER-ACTION REVIEWS

7-15. The purpose of an AAR is to help the crew understand their actions and interactions during a training event. An AAR must include a discussion of crew cuts and an analysis of combat actions (critique of tactical proficiency) executed during the conduct of the table.

7-16. During the AAR, the VCE emphasizes the training objectives and evaluation points. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Quality AARs are the key to successful training.

7-17. The AAR is organized in the following standard format:

- **Introduction and rules.** During the introduction, the VCE must establish the objectives for the AAR. The VCE identifies himself and each of the participants. Normally, the participants are arranged in an organized manner. If possible, the VCE should use the actual terrain on which the tasks were conducted. Most range complexes have debriefing areas with a terrain model or map that depicts the range layout. The VCE may use this established area for the AAR.
- **Review of objectives and intent.** The VCE should state the training objective for the specific task(s) being evaluated.
- **Summary of firing events.** The VCE presents each engagement in chronological order, stating the training objectives for each task. Training aids should be used to show the target arrays, firing points, and other significant overall points, but should avoid detailed examination of the firing events. (The next part of the AAR [discussion of key issues] examines the firing events in detail.)
- **Discussion of key issues (analysis of fire commands and crew duties).** The VCE restates each engagement scenario (including the task, conditions, and standards), and then asks leading questions to facilitate crew discussion of what actually happened during each engagement. A taped replay (video or audio) of actual crew fire commands and crew duties presented during the AAR is an excellent way to reinforce strengths, eliminate weaknesses, and reinforce training objectives. When possible, the VCE should have an evaluation of digital communication from each scenario and incorporate digital traffic as a portion of the AAR for digital-equipped units. To achieve a quality AAR, the VCE must guide the discussion in a way that ensures all crew members contribute to the discussion. (Avoid lecturing as it prevents crew contribution to the discussion.) Finally, the VCE discusses the strengths and weaknesses of each engagement; when possible, the VCE allows the crew to discover its own strengths and weaknesses.
- **Discussion of optional issues.** The VCE must ask thought-provoking questions focusing on the training objectives. These questions must explore alternate courses of action that might have been more effective and help the crew members understand how their own actions influenced the result of each engagement. As the crew learns how to correct the mistakes they made, they improve their gunnery proficiency. The VCE should explore training aids and techniques that may be used to sustain and improve training.
- **Discussion of force protection.** The VCE should emphasize safety strengths or weaknesses.
- **Closing comments.** The VCE reviews the training objectives and summarizes key learning points. He must make sure the crew understands what was good, average, or bad about their performance. After covering the objectives, learning points, and specific crew performance, the VCE should leave the area so the crew can discuss their performance in private.

SECTION V - GUNNERY QUALIFICATION REQUIREMENTS

7-18. Each crew member is an integral part of his crew and should be recognized for his contribution to the success of that crew. Commanders should award the appropriate qualification badges, in accordance with AR 600-8-22, to all crews meeting the qualification standards. If optional awards are desired, commanders will use the same standards.

Prerequisites

7-19. Each crew member must have passed the GST, as outlined in Chapter 4. Prerequisites for the qualification courses are as follows:

- Table IV, *Vehicle Qualification*. Each vehicle crew member must have passed the GST within 3 months (4 months for Reserve Component units) before negotiating the vehicle qualification course. The vehicle crew must successfully complete Table IV before negotiating Table V, *Crew Integrated Proficiency Course (CIPC)*.
- Table V, *Crew Integrated Proficiency Course (CIPC)*. Each crew member must have qualified on Table IV within 3 months (4 months for Reserve Component units) before progressing to Table VIII. The crew must qualify on Table V before negotiating Tables VII or VIII.
- Before live-fire. See Note below.
- Table VIII, *Crew Qualification*. Each crew member must have qualified on Table V within 3 months (4 months for Reserve Component units), before negotiating the crew qualification course. The crew must successfully complete Table VIII before negotiating Tables X or XII.
- Table X, *Section Qualification* **or** Table XII, *Platoon Qualification*. Each crew member must have qualified on Table VIII within 3 months before negotiating Tables X or XII. (See also Chapter 10 for Collective Gunnery [Tables IX through XII] information.)

Note. Before executing Tables VII, VIII, X, and XII which combines the vehicle and dismounted crews, the dismounts must have qualified on the SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC.

Qualification

TABLE IV, VEHICLE QUALIFICATION

7-20. Crews must live-fire Table IV for qualification. They will be rated by the following standards:

- **Distinguished.** The crew obtains a combined score of at least 900 points (90 percent or more) on Tables IVA and IVB with 70 or more points on 9 of the 10 tasks. The crew must pass two night engagements.
- **Superior.** The crew obtains a combined score of 800-899 points (80-89 percent) on Tables IVA and IVB with 70 or more points on 8 of the 10 tasks. The crew must pass two night engagements.
- **Qualified.** The crew obtains a combined score of 700-799 points (70-79 percent) on Tables IVA and IVB with 70 or more points on 7 out of 10 tasks. The crew must pass two night engagements.
- **Unqualified.** The crew obtains a combined score of 699 or fewer points (69 percent or less) on Tables IVA and IVB, or 69 or fewer points on 4 or more of the 10 tasks or crew fails to pass two night engagements.

TABLE V, CREW INTEGRATED PROFICIENCY COURSE (CIPC) (DRY) **OR** TABLE VI, CREW INTEGRATED PROFICIENCY COURSE (CIPC) (BLANK)

7-21. Crews must successfully negotiate Table V (device-based, dry-fire table) or Table VI (device-based, conducted with blanks). Crew ratings for Tables V and VI are as follows:

- **Distinguished:** Combined score of at least 900 points on Table IVA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IVA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IVA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IVA and B, or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

TABLE VIII, CREW QUALIFICATION

7-22. Crews must live-fire Table VIII for qualification. They will be rated by the following standards:

- **Distinguished.** The crew obtains a combined score of at least 900 points (90 percent or more) on Tables VIIIA and VIIIB with 70 or more points on 9 of the 10 tasks. The crew must pass two night engagements.
- **Superior.** The crew obtains a combined score of 800-899 points (80-89 percent) on Tables VIIIA and VIIIB with 70 or more points on 8 of the 10 tasks. The crew must pass two night engagements.
- **Qualified.** The crew obtains a combined score of 700-799 points (70-79 percent) on Tables VIIIA and VIIIB with 70 or more points on 7 out of 10 tasks. The crew must pass two night engagements.
- **Unqualified.** The crew obtains a combined score of 699 or fewer points (69 percent or less) on Tables VIIIA and VIIIB, or 69 or fewer points on 4 or more of the 10 tasks or crew fails to pass two night engagements.

Note. Before executing Tables VII, VIII, and X, which combines the vehicle and dismounted crews, the dismounts must have qualified on the SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC.

TABLE X, SECTION QUALIFICATION AND TABLE XII, PLATOON QUALIFICATION

7-23. Sections and platoons will be rated by the following standards (see also Chapter 10, *Collective Gunnery*):

- **Distinguished** - Combined score of 900 points or higher that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Superior** - Combined score of 800-899 points that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Qualified** - Combined score of 700-799 points that must include a minimum 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Unqualified** - Combined score of 699 or fewer points, or section/platoon fails to achieve 420 tactical points (70 percent) or 280 gunnery points (70 percent).

Note. Before executing Tables VII, VIII, X, and XII which combines the vehicle and dismounted crews, the dismounts must have qualified on the SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC.

SECTION VI - EVALUATION PROCEDURES AND STANDARDS

7-24. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Alternate tasks are provided for contingencies (such as lack of resources, weather conditions, or range constraints) that preclude execution of the original engagements.

Tables III through VIII

7-25. Each task on Tables III through VIII will be scored using the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) (see scoring procedures on pages 7-12 and 7-13). Once all tasks have been completed and scored, the VCE will complete the Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R, and attach it to the front of the scoresheets for each table (see Figure 7-1).

7-26. The VCE will rate crew duties for each engagement and subtract crew-duty penalty points from the total engagement points earned. Crews must qualify a minimum of 70 percent of the total tasks presented and receive a minimum point value required for each table to be qualified on Tables III through VIII. At no time, will a crew dry-fire Table IV or VIII prior to their qualification run. Crews who do not qualify on the first run of a table may renegotiate the course. Crews firing reruns should execute only the tasks on which they failed to qualify during the first run. In no case will a crew who failed to qualify during their first run receive a rating higher than qualified after a subsequent run. Re-fires or subsequent run scores will be added to the score only

after all the tasks have been negotiated once. After a crew meets the minimum qualification standard during their subsequent run, the local commander may elect, due to resource or time constraints, to stop that crew's further negotiation of the course. The local commander and master gunner will decide how many times a crew should be rerun. Their decision should be based on the possibility of the crew meeting the minimum requirements, and time and resources available.

SCOUT GUNNERY TABLE ROLL-UP SHEET					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
1. VEHICLE (Check one) ☐ CFV ☐ HIMMVV ☐ RV ☐ TOW				2. TABLE	
3. BUMPER #	4. UNIT		5. RANGE	6. SCORE AND RATING	
7a. CREWMAN RANK, NAME, POSITION		7b. CREWMAN RANK, NAME, POSITION		7c. CREWMAN RANK, NAME, POSITION	
7d. CREWMAN RANK, NAME, POSITION		7e. CREWMAN RANK, NAME, POSITION		7f. CREWMAN RANK, NAME, POSITION	
8. DAY RUN DTG	9. EVALUATOR'S UNIT		10. DAY EVALUATOR NAME		11. EVALUATOR SIGNATURE
12. DAY SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
13. NIGHT RUN DTG	14. EVALUATOR'S UNIT		15. NIGHT EVALUATOR NAME		16. EVALUATOR SIGNATURE
17. NIGHT SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
18a. VEHICLE COMMANDER'S NAME			18b. VEHICLE COMMANDER'S SIGNATURE		
19a. HEAD EVALUATOR'S NAME			19b. HEAD EVALUATOR'S SIGNATURE		

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Figure 7-1. Sample Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R.

TARGETS

7-27. All stationary targets should be mounted on pop-up mechanisms (see FM 17-12-7 [scheduled for rewrite in 2005 as FM 3-20.7]) to facilitate target acquisition and scoring. Moving targets should be presented at speeds between 24 and 32 kmph (15 to 20 mph). RV gunnery tables incorporate various targets. These targets are defined as PCs (PC, BTR, BRDM), trucks, RPG teams, bunkers, and troops. Master gunners and range-operation personnel must make sure targets are constructed to the correct dimensions.

7-28. Civilians on the battlefield (COB) are (at the time of publication) now standard targets. Their description and dimensions are left up to the unit as long as they are discernable from other targets. COBs also include friendly and neutral targets.

Target Type	Standard Target
Frontal PC	M-1
Flank PC	M-2
Frontal BRDM	M-5
Flank BRDM	M-6
Frontal BTR	M-11
Frontal truck	L-1
Flank truck	L-2
Troops	L-6, L-7, L-9

7-29. When target-lift mechanisms are used, a target that is hit may fail to fall. The control officer or VCE should observe every round fired. **To avoid wasting ammunition, if the target is killed and does not fall, the control officer or VCE will announce a sensing of “KILL, KILL, KILL” over the control net.** This is the only situation in which a sensing will be announced by anyone other than the firing crew. Targets should be repaired as quickly as possible if they fail to drop after being hit. When feasible, targets should be physically scored and patched.

7-30. If a target malfunctions, the crew will be alerted after the engagement during which the target malfunctioned. Based on the availability of targets, the crew may be re-presented the target either at that time or from another location (the target type and conditions for that target must be met). Alternate engagements are provided and should be used if a moving target fails.

Target Types

7-31. **Point targets.** An RPG team will consist of three SITs (stationary infantry targets) in the open with full and half silhouettes displayed in a tactical array using both width and depth. A sniper consists of one SIT, preferably in an urban setting, such as a window frame. A vehicle target will be either a flank or frontal silhouette. Bunker targets consist of a 3 foot by 8 foot panel with firing ports. Stationary point targets should be mounted on separate target-lift mechanisms set on KNOCKDOWN mode of operation.

7-32. **Area targets.** Area targets will be shown as 5 to 10 SITs in the open with full and half silhouettes displayed in a tactical array using both width and depth. The silhouettes will be placed no more than 5 meters apart or 10 meters in depth. The target area is defined as one target form up, down, left, or right of any target in the array.

7-33. **Civilians on the battlefield (COB)/friendly targets.**

- The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented on the specific tasks identified in the table description and in the specific scoresheet.
- Noncombatant targets may consist of any number of silhouettes dispersed in a small group. Noncombatant targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cutouts. All noncombatant/friendly targets will be placed within the range fans and the capabilities of the weapon systems. Friendly forces will be marked in accordance with the firing unit's SOP. Identification methods include, but are not limited to, VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

TARGET SIGNATURE DEVICES

7-34. The commander may use target signature devices (such as the Hoffman device, LA06, or LA07); however, no more than one device will be used for target signature purposes. When used, at least 5 seconds of target exposure time must elapse before the device is detonated or activated. Target signature device failure is not a valid alibi. The LA06 and LA07 should be used on targets that would mount a larger weapon type, such as tanks, PCs, trucks, and bunkers. The allocation of the LA06 and LA07 in STRAC should match the amount of targets mentioned; however, this may not always be the case. When this discrepancy occurs, the commander and master gunner will decide which targets will receive the devices.

- The LA06 is a flash/bang device used to simulate a large caliber weapon being fired (replacing the Hoffman device).
- The LA07 is a star cluster-type device used to show target hits; however, this manual uses the LA07 as a target destruction signature device. The star cluster signature can be seen in both day and thermal sights, thus allowing the gunner to see when the prescribed amount of hits has been achieved.

CREW PROTECTION STATUS

7-35. All crew members will be in at least mask and gloves when conducting NBC engagements. The unit commander may elect to place the crews in whatever MOPP level he wishes, but he must take into account environmental condition and risk assessment prior to doing so.

TARGET KILL STANDARDS

7-36. Scouts will use a variety of weapons to supply suppressive and point fires. Target kills will be assessed as follows:

- M2 Caliber .50:
 - Troops: Hit 1 troop SIT with 1 round caliber .50, **and** suppress.
 - Snipers and RPG teams: Hit target with 1 round caliber .50.
 - Trucks and technical vehicles: Hit target with 3 rounds caliber .50.
 - Bunkers and PCs: Hit target with 5 rounds caliber .50.
- MK-19/M203 40-mm grenade:
 - Troops: Hit within 5 meters of an SIT, **and** suppress.
 - Snipers and RPG teams: Hit within 5 meters of an SIT.
 - Trucks and technical vehicles: Hit within 5 meters of target.
 - Bunkers and PCs: Hit target with 2 rounds.
- M240B 7.62mm:
 - Troops: Hit 1 troop SIT with 1 round 7.62mm, **and** suppress.
 - Snipers and RPG teams: Hit target with 1 round 7.62mm.
 - Trucks and technical vehicles: Hit target with 5 rounds 7.62mm.
 - Bunkers and PCs: Hit target with 2 rounds.
- M16/M4 5.56mm:
 - Troops: Hit 1 troop SIT with 1 round 5.56mm, **and** suppress.
 - Snipers and RPG teams: Hit target with 1 round 5.56mm.

TIMING PROCEDURES

7-37. The intent of scoring and timing is to cause crews to train as they would fight. Crews should be trained and rewarded for hitting targets rapidly, but not penalized when artificial maneuver constraints prevent them from continuing to engage the target.

7-38. The VCE's judgment is critical in implementing this policy. Knowledge of the vehicle's capabilities and observation of firing conditions must be applied in order to maintain standards without penalizing the firing crew. VCEs must be in a position to observe the firing vehicle at all times. The commander or master gunner will determine implementing procedures for these basic policies on any gunnery range.

7-39. Three types of time are used to evaluate gunnery engagements: target exposure time, vehicle exposure time, and target kill time.

7-40. **Target Exposure Time.** Exposure time limits the time the target is exposed yet allows for situation-dependent contingencies beyond crew control.

7-41. Target exposure time for each target is listed on the scoresheets. Tasks are designed so—

- Targets are exposed for 50 seconds in the defense, starting from the time the target is in the fully locked (up) position.
- Targets are exposed for 30 seconds in the offense. This time starts when the target is in the fully locked (up) position.
- Each target in a target array has its own exposure time.
- Exposure time for all moving targets is 50 seconds. (Range constraints limit target exposure for targets moving 20 miles per hour or more.)

7-42. **Vehicle ONLY Exposure Time.** Vehicle exposure time is based on the amount of time a vehicle may be exposed to a target before that target can engage the vehicle. Each target maintains its own threat to the exposed vehicle, thus a vehicle may be exposed to more than one target at the same time.

7-43. In the defense, vehicle exposure time starts when the vehicle moves from the turret-down position to a hull-down position **and** stops or when the first round is fired, whichever comes first. During moving engagements, vehicle exposure time starts when the target(s) is locked in the full upright position or when the first round is fired, whichever comes first. For dual target engagements, there will be a 15-second delay for the second target. Time will start for each target separately using the previously described criteria, based on whether the vehicle is moving.

7-44. When in the defense, the vehicle exposure time stops when the target that the vehicle is engaging is destroyed or when the vehicle starts to move back into a turret-down position. In the offense, the exposure time will stop when the target is destroyed. In multiple target engagements, the vehicle can be exposed to more than one target. Once a target is destroyed, the exposure time for that target stops; however, the exposure time to the other target(s) will continue until the target(s) is destroyed in the offense or until the vehicle pulls back into a turret-down position in the defense.

7-45. Once a vehicle moves back into a turret-down position, the vehicle exposure time will reset. The vehicle exposure time is reset because we want to limit the exposure of our light armored vehicles to hostile enemy fire. It is also implied that a vehicle that has pulled back into a turret-down position will maneuver and engage from another position, causing the target to reacquire, re-lay, and reengage our vehicle.

7-46. **Vehicle and Dismounted Crew Exposure Time.** In engagements that involve the dismounted crew in conjunction with the firing vehicle, the exposure times are altered.

7-47. During defensive engagements, the exposure time will start when the vehicle moves from the turret-down position to a hull-down position **and** stops or when the first round is **fired by either the vehicle or the dismounted crew**, whichever comes first. During moving engagements, vehicle exposure time starts when the target(s) is locked in the full upright position or when the first round is **fired by either the vehicle or the dismounted crew**, whichever comes first.

7-48. In dual target engagements, there will be a 15-second delay for the second target. Time will start for each target separately using the previously described criteria, based on whether the vehicle is moving or not. For three target engagements, there will be a 15-second delay for the third target. The first two targets will be presented and timed simultaneously. The third target will be timed separately from the first two because of the delay in presentation.

7-49. Engagements with troop targets have a special exposure time. Once the engagement has been initiated, the time to kill the troop target(s) will continue to run until either the troop target(s) is destroyed or cease fire is given. **There is no resetting of exposure time for troop targets when the dismounted crew is a participant in the engagement.** All other targets will have the standard stopping of exposure time, to include resetting of the exposure time based on the movement of the vehicle.

7-50. **Missile Target Exposure Time.** Engagements that utilize the Javelin or Javelin FTT also have altered exposure time. The target exposure time starts when the target is locked in the full upright position or when the missile is fired, whichever comes first. The time stops when the target is destroyed. **There is no exposure time reset for missile targets.**

7-51. **Target Kill Time.** Target kill time is the time that it took the crew to destroy/suppress the target. Target kill time will not exceed the maximum vehicle exposure time in order to receive a minimum passing score of 70 points.

7-52. **Timing Devices.** To score Tables IV through VIII engagements, you will need a minimum of two stopwatches to time a two-target engagement. The only time that needs to be tracked is the vehicle exposure time; the tower or target control personnel will track the target exposure time automatically. The best device for this is one timing device that has multiple stopwatches with one common start button and an independent stop button for each watch.

ALIBIS

7-53. Although commanders have the ultimate authority regarding alibis, they should be limited to two occurrences: target malfunction and weapon malfunction that are not the fault of the crew and not correctable through immediate action. Commanders should ensure that gunnery is as combat realistic as possible. This means that crews should train to fight *through* problems.

REMEDIAL TRAINING

7-54. Unit commanders and master gunners must make sure crews that fail tables or habitually fail specific tasks receive remedial training. Virtual trainers, or dry runs as a last resort, are the recommended techniques for remedial training. Once remedial training has been completed and the crews have been cleared by the master gunner to continue training, the failed engagements should be fired, if ammunition and time if available.

ALL-WEATHER FIRING

7-55. As in combat, firing should continue under all weather conditions. The commander decides what constitutes effective training, based on many factors including mission and range availability. If the training can still be effective during reduced visibility, it should be consistent with the unit's mission requirement. Commanders should consider the following:

- Training effectiveness.
- Operational mission.
- Preparation and planning.
- Safety restrictions.

7-56. Safety, combined with the other considerations, will determine when all-weather firing can be continued and when it must be stopped.

EVALUATING CREW-DUTY PENALTIES

7-57. During the conduct of gunnery tables, VCEs monitor crew duties. There is no limit to the number of crew-duty penalty points that can be assessed for a task; however, crew-duty penalties may not be carried over from one task to another. After each phase, the crew will receive an AAR. During this AAR, the VCE will brief the crew on crew duties such as fire commands, crew coordination, sectors of fire, target acquisition, method of engagements, and tactical reporting.

7-58. Crew-duty penalties are implemented to ensure crews practice safe firing procedures. There are five categories of crew-duty penalties:

- Immediate disqualification—extremely hazardous conduct.
- Automatic zero point—blatant disregard for announced task, conditions, and standards.
- Failure to employ doctrinally correct engagement techniques (30 points).
- Failure to adhere to basic safety precepts (10 points).
- Failure to employ correct engagement techniques or respond properly to fire commands (5 points).

Note. The following list of crew-duty penalties is not all-inclusive.

Immediate Disqualification—Extremely Hazardous Conduct

7-59. Any crew found firing outside the range fan will receive an immediate disqualification for the table that they are firing. Commanders will decide what other violations constitute extremely hazardous conduct and what actions should be taken for crews caught cheating.

Automatic Zero-Point Penalty—Blatant Disregard for Announced Task, Conditions, and Standards

7-60. Any crew found guilty of the following policies will receive 0 points for the engagement they are firing:

- Not wearing mask or gloves during an NBC engagement.
- Engaging COBs (if applicable).

30-Point Penalty

7-61. Failure to employ doctrinally correct engagement techniques and exceeding vehicle exposure:

- Leaving the gun armed or the gun select switch in the FIRE position during loading or between engagements (points will be deducted from previous engagement).
- Firing into the berm (crews not ensuring that the weapon was clear of the berm).
- Target killed beyond maximum vehicle exposure time (only on multiple engagements and can be given only once per engagement).

10-Point Penalty

7-62. Failure to adhere to basic safety precepts:

- Failure to follow the instructions of the VCE, control or safety officer, or troop/squadron commander while negotiating the course.
- Firing before receiving the command “FIRE” or announcing “ON THE WAY.”
- Improper engagement technique (firing at the least dangerous target first during a multiple-target engagement, improper suppressive fire techniques, or not coming to a halt prior to firing during a moving engagement).
- Improper fire command.
- Failure to return to a turret-down position after completing a defensive engagement or between targets on a multiple-target engagement.

Note. If a safety violation or combination of safety violations indicates it may be unsafe for a crew to continue the course, the safety officer will disqualify the crew and remove them from the range. Any unsafe act may be assessed a 10-point safety penalty. Crews should be informed of safety crew cuts; this may prevent accident or injury.

5-Point Penalty

7-63. Failure to employ correct engagement techniques or respond properly to fire commands:

- Incorrect response to a fire command or subsequent fire command.
- Incorrect driving techniques (driver not maintaining speed or steady platform [such as, jerky starts and stops, too fast for maneuver box, goes off the course or road]).
- Improper reporting (not sending a SALT and BDA report after the engagement). (**Note.** When conducting stationary engagements, digital-equipped units **must** use digital communications to report.)

SCORING PROCEDURES

7-64. Each task has its own specific gunnery scoresheet; you must use the scoresheet for that specific task. The various gunnery scoresheets (DA Form 7553-3-R, DA Form 7553-4-R, and DA Form 7553-5-R) will be used to collect similar scoring information; however, the task, ammunition, conditions, targets, exposure times, standards, and points information, and whether the engagement is a one-target, two-target, or three-target task on each scoresheet will vary according to the table and task that will be tested. The time/points column on the scoresheet for each task is based on the expected results of engagements between the vehicle, selected enemy targets, and the performance of the vehicle and dismounted crews. The instructions below explain how to use the scoresheet for one-target, two-target, and three-target tasks. Page 7-14, Figure 7-2 shows an example of a

completed scoresheet for a one-target task. Page 7-15, Figure 7-3 shows an example of a completed scoresheet for a two-target task. Page 7-16, Figure 7-4 shows an example of a completed scoresheet for a three-target task.

Note. If the engagement raw score has a decimal in it, the score will be rounded using normal mathematical rounding (.5 and above is rounded up and .4 and below is rounded down).

Scoring Instructions for One-Target Tasks

1. Once the target kill time has been received, circle the time in the Time/Points column. Annotate the points that correspond to that time on line (a) in the bottom right-hand box of the scoresheet.
2. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (b) in the bottom right-hand box of the scoresheet.
3. Subtract the total number of crew-duty penalty points from the target points ($a - b = c$). Annotate this total on line (c) in the bottom right-hand box of the scoresheet. The result is the engagement score.

7-65. **Example one-target task.** Table VIII, Task 1BS (Stationary) (see Figure 7-2, page 7-14). The dismounted crew engaged and destroyed the tank in 19 seconds.

Scoring Instructions for Two-Target Tasks

1. Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a) and (b)] in the bottom right-hand box of the scoresheet.
2. Add the points for all targets ($a + b = c$). Annotate the total on line (c).
3. Divide the total by the number of targets presented ($c \div 2 = d$). Annotate the result on line (d), which is the Engagement Raw Score.
4. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (e) in the bottom right-hand box of the scoresheet.

Note. Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.

5. Subtract the total number of crew-duty penalty points from the raw score ($d - e = f$). Annotate this total on line (f) in the bottom right-hand box of the scoresheet. The result is the engagement score.

7-66. **Example two-target task.** Table VIII, Task 3A (Moving) (see Figure 7-3, page 7-15). The vehicle crew engages and destroys Target 1 in 4 seconds. The dismounted crew engaged and destroyed Target 2 within 12 seconds of presentation. The gunner did not announce "ON THE WAY," and the commander gave an improper fire command.

Scoring Instructions for Three-Target Tasks

1. Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a), (b), and (c)] in the bottom right-hand box of the scoresheet.
2. Add the points for all targets ($a + b + c = d$). Annotate the total on line (d).
3. Divide the total by the number of targets presented ($d \div 3 = e$). Annotate the result on line (e), which is the Engagement Raw Score.
4. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (f) in the bottom right-hand box of the scoresheet.

Note. Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.

5. Subtract the total number of crew-duty penalty points from the raw score ($e - f = g$). Annotate this total on line (g) in the bottom right-hand box of the scoresheet. The result is the Engagement Score.

7-67. **Example three-target task.** Table VIII, Task 4A (Stationary) (see Figure 7-4, page 7-16). The vehicle crew engaged and destroyed Target 1 in 5 seconds and Target 3 in 6 seconds. The dismounted crew destroyed Target 2 in 7 seconds. There was no report sent at the end of the engagement.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE VIII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER <u>A-14</u>		
TASK	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
Identify enemy vehicle and properly perform call for immediate suppression.	1-13 100	Automatic Zero
	14 98	
	15 95	
AMMUNITION	16 93	Not masked during NBC engagement.
None.	17 90	Engaged friendly target.
	18 88	
CONDITIONS	19 85	30-Point Penalty
	20 83	
	21 80	
Total Targets: 1	22 78	Weapon not on SAFE between engagements.
Target 1: Stationary tank, >1,200 meters.	23 75	Fired into the berm.
	24 73	
	25 70	
EXPOSURE TIME	26 68	10-Point Penalty
	27 65	
	28 63	
STANDARDS	29 60	Failed to follow instructions from authorized personnel.
Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	30 58	Fired before "FIRE" or "ON THE WAY."
	31 55	Improper engagement technique.
	32 53	Improper fire command.
	33 50	Did not return to turret-down position.
	34 48	
	35 45	5-Point Penalty
	36 43	
	37 40	
	38 38	Improper response to fire command.
	39 35	Improper reporting.
	40 33	Improper driving techniques.
	41 30	
	42 28	
	43 25	
	44 23	
	45 20	
	46 18	
	47 15	
	48 12	
	49 10	
	50+ 0	
Remarks:		Target 1 Points (a) <u>85</u> Total Crew-Duty Penalty Points (b) <u>0</u> Subtract crew-duty penalty points from score ($a - b = c$). Engagement Score (c) <u>85</u>

DA FORM 7553-3-R, APR 2005

Figure 7-2. Sample Completed Scoresheet—One-Target Task.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VIII, TASK 3A (MOVING), UNIT/BUMPER NUMBER <u>A-14</u>				
TASK	Target 1 RPG Team Time/Points	Target 2 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a moving position.	1-5 100	1-5 100	Automatic Zero	
	6 93	6 94		
	7 85	7 88	Not masked during an NBC engagement.	
AMMUNITION	8 78	8 82		
Caliber .50: 100 rounds	9 70	9 76	Engaged friendly target.	
or	10 63	10 70		
40mm (MK-19): 16 rounds	11 55	11 64	30-Point Penalty	
7.62mm: 50 rounds	12 48	12 58		
5.56mm: 30 rounds	13 40	13 52	Weapon not on SAFE between engagements.	
	14 33	14 46		
CONDITIONS	15 25	15 40	Fired into the berm.	
Total Targets: 2	16 18	16 34		
Target 1: RPG team, 50 to 200 meters.	17 10	17 28	Killed target beyond maximum vehicle exposure time.	
	18 3	18 22		
Target 2: Set of troops, 200 to 400 meters (15-second delay).	19/+ 0	19 16	10-Point Penalty	
		20 10		
		21 4	Failed to follow instructions from authorized personnel.	
		22/+ 0		
EXPOSURE TIME			Fired before "FIRE" or "ON THE WAY."	X
Target 1: 30 seconds			Improper engagement technique.	
Target 2: 30 seconds			Improper fire command.	X
			Did not return to turret-down position.	
STANDARDS			5-Point Penalty	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.			Improper response to the fire command.	
Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.			Improper reporting.	
			Improper driving technique.	
			Total Crew-Duty Penalty Points	20
Remarks:				
<u>Gunner did not announce "ON THE WAY."</u>			Target 1 Points (a) <u>100</u>	
<u>Commander gave improper fire command.</u>			Target 2 Points (b) <u>82</u>	
			Total (a + b = c) (c) <u>182</u>	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) <u>91</u>	
			Total Crew-Duty Penalty Points (e) <u>-20</u>	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) <u>71</u>	

DA FORM 7553-4-R, APR 2005

Figure 7-3. Sample Completed Scoresheet—Two-Target Task.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VIII, TASK 4A (STATIONARY), UNIT/BUMPER NUMBER <u>A-15</u>					
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	Target 3 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving targets from a stationary position.	1-4 100	1-5 100	1-9 100	Automatic Zero	
AMMUNITION	5 90	6 94	10 97		
Caliber .50: 100 rounds	6 80	7 88	11 93	Not masked during an NBC engagement.	
or	7 70	8 82	12 90	Engaged friendly target.	
40mm (MK-19): 16 rounds	8 60	9 76	13 87		
7.62mm: 50 rounds	9 50	10 70	14 83	30-Point Penalty	
5.56mm: 30 rounds	10 40	11 64	15 80		
CONDITIONS	11 30	12 58	16 77	Weapon not on SAFE between engagements.	
Total Targets: 3	12 20	13 52	17 73	Fired into the berm.	
Target 1: RPG team, 50 to 200 meters.	13 10	14 46	18 70	Killed target beyond maximum vehicle exposure time.	
Target 2: Bunker, 200 to 400 meters.	14+ 0	15 40	19 67	10-Point Penalty	
Target 3: Moving truck, 400 to 600 meters (15-second delay).		16 34	20 63		
Civilians on the battlefield (COB) (15-second delay).		17 28	21 60	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME		18 22	22 57	Fired before "FIRE" or "ON THE WAY."	
Target 1: 50 seconds		19 16	23 53	Improper engagement technique.	
Target 2: 50 seconds		20 10	24 50	Improper fire command.	
Target 3: 50 seconds		21 4	25 47	Did not return to turret-down position.	
STANDARDS		22/+ 0	26 43	Target 1 Target 2 Target 3	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.			27 40	5-Point Penalty	
Hit bunker with 5 rounds caliber .50 or 2 rounds 40mm.			28 37	Improper response to the fire command.	
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.			29 33	Improper reporting. X	
			30 30	Improper driving techniques.	
			31 27	Total Crew-Duty Penalty Points 5	
			32 23		
			33 20		
			34 17		
			35 13		
			36 10		
			37 7		
			38 3		
			39+ 0		
REMARKS:				Target 1 Points (a) <u>90</u> Target 2 Points (b) <u>88</u> Target 3 Points (c) <u>100</u> Total (a + b + c = d) (d) <u>278</u> Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) <u>93</u> Total Crew-Duty Penalty Points (f) <u>-5</u> Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) <u>88</u>	
There was no report at the end of the engagement.					

DA FORM 7553-5-R, APR 2005

Figure 7-4. Sample Completed Scoresheet—Three-Target Task.

Tables IX through XII

7-68. Sections/platoons will be evaluated on both tactical and gunnery proficiency. One section/platoon evaluator must evaluate the section/platoon during the entire time they are on the range. Live-fire scoring of the table is conducted from the tower. The section/platoon leader must be allowed time to conduct troop-leading procedures. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

7-69. Each section/platoon will be critiqued at an AAR held after each firing run. Crew duties are not formally rated on these tables; however, unsatisfactory performance of individual vehicle crews within the section/platoon may be informally evaluated during the AAR.

SECTION VII - CONDUCT OF THE GUNNERY TABLES

Table I (Virtual Training)

7-70. Table I trains basic gunnery techniques and engagements. It introduces crews to rapid target destruction using virtual trainers.

CONCEPT

7-71. Table I is designed to develop the engagement skills of the gunner and dismounted crew in a simulated environment. The crew should fire the scenarios that are applicable to mounted caliber .50 and MK-19 firing, if that system has them. When utilizing the EST, the crew must use the scenario builder to create a table that best replicates the tables from this manual.

CONDUCT OF THE TASKS

7-72. Table I develops the skills of the gunner, commander, and dismounted crew while engaging targets in a virtual environment.

EXECUTION

7-73. Crew members will be briefed on the enemy situation and weapons capabilities prior to conducting this table. Vehicle commanders should practice fire commands and overall crew coordination during this exercise. It is recommended that all crew members are present to become familiar with procedures that will be used throughout all gunnery tables. Further integration of the dismounts into virtual trainers is encouraged. This will give the unit the practice necessary to conduct safe live-fire gunnery.

SCORING

7-74. Table I will be evaluated by section-/platoon- or troop-level evaluators. Gunners should fire the table as often as necessary to become proficient prior to firing Table IV.

Table II (Basic Ground Firing)

7-75. Table II is the basic ground firing tables for each weapon system that allows the crew to advance to vehicular firing.

CONDUCT OF THE TASKS

7-76. These tables will be conducted IAW listed manuals and fired prior to conducting vehicular gunnery.

- FM 23-65, Table I (10-Meter Zero/Practice/Record Fire) for the M2 HB machine gun.
- FM 3-22.27, Table I (Instructional Fire Exercise) for the MK-19 grenade launcher machine gun.

EXECUTION

7-77. IAW FM 3-22.27 and FM 23-65.

SCORING

7-78. The gunners should pass these tables IAW FM 3-22.27 and FM 23-65 prior to conducting Table V.

AMMUNITION REQUIREMENTS

7-79. Ammunition and target requirements for Table II are found in the appropriate manual.

Table III (Vehicle Practice)

7-80. Table III introduces crews to a mounted live-fire gunnery environment. Crews will fire the assigned weapon from the vehicle-mounted position.

CONCEPT

7-81. Table III is designed to train vehicle crews to proficiency using the assigned weapons system on a stationary and moving vehicle against stationary and moving, single and multiple targets deployed in a realistic array. The vehicles will fire four day and three night engagements with three tasks used as a swing task. Table III is a building block toward Table IV; the training unit commander can modify it to train weak gunnery areas.

7-82. Three tasks are swing tasks (2AS, 3AS, and 3BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day could be as few as three with up to five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

7-83. Crews will employ direct and indirect fires while engaging stationary and moving targets from a stationary and moving vehicle. Table III is conducted on a full-scale range using half-scale, three-quarter, or full scale targets.

EXECUTION

7-84. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All stationary engagements must begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On ranges where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements should be fired from a short halt.

SCORING

7-85. Tasks will be scored using the criteria in the standards column for each task in Table 7-1. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4) and time/points column for each task. Refer to pages 7-12 through 7-16 for scoresheet scoring instructions and Figures 7-2 through 7-4, pages 7-14 through 7-16 for sample completed scoresheets. Refer to Figure 7-1, page 7-7 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

7-86. Crew ratings for Table III are as follows:

- **Distinguished:** Combined score of at least 630 points on Table IIIA and B, and 6 out of 7 tasks must have at least 70 points. The crew must pass one night engagement.
- **Superior:** Combined score of 560-629 points on Table IIIA and B, and 5 out of 7 tasks must have at least 70 points. The crew must pass one night engagement.
- **Qualified:** Combined score of 490-559 points on Table IIIA and B, and 4 out of 7 tasks must have at least 70 points. The crew must pass one night engagement.
- **Unqualified:** Combined score of 489 or fewer points on Table IIIA and B, or 3 out of 7 tasks have 69 or fewer points, or crew fails to pass one night engagement.

AMMUNITION REQUIREMENTS

7-87. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition and target requirements for Tables III are as follows:

Table IIIA	Table IIIB	Total Rounds
300 rounds caliber .50	150 rounds caliber .50	450 rounds caliber .50
48 rounds 40-mm	24 rounds 40-mm	72 rounds 40-mm
3 LA06s	3 LA06s	6 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 7-1. RV Table IIIA and B.

RV TABLE IIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	1 sniper in window, 400 to 600 meters. Civilians on battlefield (COB).	8 rounds 40mm 50 rounds caliber .50	Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2A (Swing) Moving	1 RPG team, 200 to 400 meters. 1 bunker, 400 to 600 meters (15-second delay).	16 rounds 40mm 100 rounds caliber .50	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
3A (Swing) Stationary NBC	1 set of troops, 200 to 400 meters. 1 stationary PC, 600 to 800 meters (15-second delay).	16 rounds 40mm 100 rounds caliber .50	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters <u>and</u> suppress. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
4A Moving	1 stationary frontal truck, 600 to 800 meters. COBs.	8 rounds 40mm 50 rounds caliber .50	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
RV TABLE IIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 stationary frontal truck, 200 to 400 meters. 1 moving flank truck, 400 to 600 meters (15-second delay).	16 rounds 40mm 100 rounds caliber .50	Hit each truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2B Moving	1 stationary frontal truck, 600 to 800 meters. COBs.	8 rounds 40-mm 50 rounds caliber .50	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3B (Swing) Stationary	1 stationary frontal tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE III, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 400 to 600 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-5 100 6 93 7 85 8 78 9 70 10 63 11 55 12 48 13 40 14 33 15 25 16 18 17 10 18 3 19/+ 0	CREW-DUTY PENALTY POINTS Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐
	Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-5. Sample scoresheet—RV Table III, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK																																										
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.																																										
RV TABLE III, TASK 2A (SWING) (MOVING), UNIT/BUMPER NUMBER _____																																										
TASK Engage stationary point targets from a moving position. AMMUNITION Caliber .50: 100 rounds or 40mm (MK-19): 16 rounds CONDITIONS Total Targets: 2 Target 1: RPG team, 200 to 400 meters. Target 2: Bunker, 400 to 600 meters (15-second delay). EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.	Target 1 RPG Team Time/Points		Target 2 Bunker Time/Points																																							
	1-5 100		1-7 100																																							
	6 94		8 95																																							
	7 88		9 90																																							
	8 82		10 85																																							
	9 76		11 80																																							
	10 70		12 75																																							
	11 64		13 70																																							
	12 58		14 65																																							
	13 52		15 60																																							
	14 46		16 55																																							
	15 40		17 50																																							
	16 34		18 45																																							
	17 28		19 40																																							
	18 22		20 35																																							
	19 16		21 30																																							
	20 10		22 25																																							
	21 4		23 20																																							
	22+ 0		24 15																																							
			25 10																																							
			26 5																																							
			27+ 0																																							
<table border="1"> <thead> <tr> <th colspan="2">CREW-DUTY PENALTY POINTS</th> </tr> </thead> <tbody> <tr> <td>Automatic Zero</td> <td></td> </tr> <tr> <td>Not masked during an NBC engagement.</td> <td></td> </tr> <tr> <td>Engaged friendly target.</td> <td></td> </tr> <tr> <td>30-Point Penalty</td> <td></td> </tr> <tr> <td>Weapon not on SAFE between engagements.</td> <td></td> </tr> <tr> <td>Fired into the berm.</td> <td></td> </tr> <tr> <td>Killed target beyond maximum vehicle exposure time.</td> <td></td> </tr> <tr> <td>10-Point Penalty</td> <td></td> </tr> <tr> <td>Failed to follow instructions from authorized personnel.</td> <td></td> </tr> <tr> <td>Fired before "FIRE" or "ON THE WAY."</td> <td></td> </tr> <tr> <td>Improper engagement technique.</td> <td></td> </tr> <tr> <td>Improper fire command.</td> <td></td> </tr> <tr> <td>Did not return to turret-down position.</td> <td></td> </tr> <tr> <td>5-Point Penalty</td> <td></td> </tr> <tr> <td>Improper response to the fire command.</td> <td></td> </tr> <tr> <td>Improper reporting.</td> <td></td> </tr> <tr> <td>Improper driving technique.</td> <td></td> </tr> <tr> <td>Total Crew-Duty Penalty Points</td> <td></td> </tr> </tbody> </table>					CREW-DUTY PENALTY POINTS		Automatic Zero		Not masked during an NBC engagement.		Engaged friendly target.		30-Point Penalty		Weapon not on SAFE between engagements.		Fired into the berm.		Killed target beyond maximum vehicle exposure time.		10-Point Penalty		Failed to follow instructions from authorized personnel.		Fired before "FIRE" or "ON THE WAY."		Improper engagement technique.		Improper fire command.		Did not return to turret-down position.		5-Point Penalty		Improper response to the fire command.		Improper reporting.		Improper driving technique.		Total Crew-Duty Penalty Points	
CREW-DUTY PENALTY POINTS																																										
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Total Crew-Duty Penalty Points																																										
Remarks:		Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____																																								

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Figure 7-6. Sample scoresheet—RV Table III, Task 2AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE III, TASK 3A (SWING) (STATIONARY), UNIT/BUMPER NUMBER					
TASK	Target 1 Troops Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point and area targets from a stationary position.	1-5	100	1-8	100	Automatic Zero
	6	94	9	96	
AMMUNITION	7	88	10	91	Not masked during an NBC engagement.
Caliber .50: 100 rounds	8	82	11	87	
or	9	76	12	83	Engaged friendly target.
	10	70	13	77	
40mm (MK-19): 16 rounds	11	64	14	74	30-Point Penalty
	12	58	15	70	
CONDITIONS	13	52	16	66	Weapon not on SAFE between engagements.
NBC.	14	46	17	62	
	15	40	18	57	Fired into the berm.
Total Targets: 2	16	34	19	53	
Target 1: Set of troops, 200 to 400 meters.	17	28	20	49	Killed target beyond maximum vehicle exposure time.
	18	22	21	44	
Target 2: Stationary PC, 600 to 800 meters (15-second delay).	19	16	22	40	10-Point Penalty
	20	10	23	36	
	21	4	24	32	Failed to follow instructions from authorized personnel.
	22+	0	25	27	
			26	23	Fired before "FIRE" or "ON THE WAY."
EXPOSURE TIME			27	19	
Target 1: 50 seconds			28	14	Improper engagement technique.
Target 2: 50 seconds			29	10	
			30	6	Improper fire command.
			31	2	Did not return to turret-down position.
STANDARDS			32	0	
Hit 1 troop SIT with 1 round caliber .50, or 1 round 40mm within 5 meters, and suppress.					5-Point Penalty
Hit PC with 5 rounds caliber .50 or 2 rounds 40mm.					
					Improper response to the fire command.
					Improper reporting.
					Improper driving technique.
					Total Crew-Duty Penalty Points
Remarks:					
					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 7-7. Sample scoresheet—RV Table III, Task 3AS.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE III, TASK 4A (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving position.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds	1-10 100 11 97 12 94 13 91 14 88 15 85 16 82 17 79 18 76 19 73 20 70 21 67 22 64 23 61 24 58 25 55 26 52 27 49 28 46 29 43 30 40 31 37 32 34 33 31 34 28 35 25 36 22 37 19 38 16 39 13 40 10 41 7 42 4 43 1 44+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target.
CONDITIONS Total Targets: 1 Target 1: Stationary truck, 600 to 800 meters. Civilians on the battlefield (COB).		30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm.
EXPOSURE TIME Target 1: 30 seconds		10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY."
STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.		Improper engagement technique. Improper fire command. Did not return to turret-down position.
		5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-8. Sample scoresheet—RV Table III, Task 4A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE III, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Truck Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a stationary position.	1-8	100	1-9	100	Automatic Zero
	9	96	10	97	
AMMUNITION	10	91	11	93	Not masked during an NBC engagement.
Caliber .50: 100 rounds	11	87	12	90	
or	12	83	13	87	Engaged friendly target.
40mm (MK-19): 16 rounds	13	77	14	83	
	14	74	15	80	30-Point Penalty
	15	70	16	77	
CONDITIONS	16	66	17	73	Weapon not on SAFE between engagements.
Total Targets: 2	17	62	18	70	
Target 1: Stationary truck, 200 to 400 meters.	18	57	19	67	Fired into the berm.
	19	53	20	63	
Target 2: Moving truck, 400 to 600 meters (15-second delay).	20	49	21	60	Killed target beyond maximum vehicle exposure time.
	21	44	22	57	
	22	40	23	53	10-Point Penalty
	23	36	24	50	
	24	32	25	47	Failed to follow instructions from authorized personnel.
EXPOSURE TIME	25	27	26	43	
Target 1: 50 seconds	26	23	27	40	Fired before "FIRE" or "ON THE WAY."
Target 2: 50 seconds	27	19	28	37	
	28	14	29	33	Improper engagement technique.
	29	10	30	30	
	30	6	31	27	Improper fire command.
STANDARDS	31	2	32	23	Did not return to turret-down position.
Hit trucks with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	32	0	33	20	
			34	17	5-Point Penalty
			35	13	
			36	10	Improper response to the fire command.
			37	7	
			38	3	Improper reporting.
			39+	0	Improper driving technique.
					Total Crew-Duty Penalty Points
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____		

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Figure 7-9. Sample scoresheet—RV Table III, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
RV TABLE III, TASK 2B (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds CONDITIONS Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS	
	1-9 100	Automatic Zero	
	10 97	Not masked during NBC engagement.	
	11 93	Engaged friendly target.	
	12 90	30-Point Penalty	
	13 87	Weapon not on SAFE between engagements.	
	14 83	Fired into the berm.	
	15 80	10-Point Penalty	
	16 77	Failed to follow instructions from authorized personnel.	
	17 73	Fired before "FIRE" or "ON THE WAY."	
	18 70	Improper engagement technique.	
	19 67	Improper fire command.	
	20 63	Did not return to turret-down position.	
	21 60	5-Point Penalty	
	22 57	Improper response to fire command.	
	23 53	Improper reporting.	
	24 50	Improper driving techniques.	
	25 47	Total Crew-Duty Penalty Points	
	26 43		
	27 40		
	28 37		
	29 33		
	30 30		
	31 27		
	32 23		
	33 20		
	34 17		
	35 13		
	36 10		
	37 7		
	38 3		
	39+ 0		
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-10. Sample scoresheet—RV Table III, Task 2B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE III, TASK 3B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify enemy vehicle and properly perform call for immediate suppression. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
42 28		
43 25	Improper driving techniques.	
44 23		
45 20		
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-11. Sample scoresheet—RV Table III, Task 3BS.

Conduct of Table IV (Vehicle Qualification)

7-88. Table IV evaluates the vehicle crew's ability to acquire and engage targets during various firing conditions on combat ranges.

CONCEPT

7-89. Table IV is a single-vehicle qualification table. Normal combat-oriented procedures, such as reporting, will be used. The crew uses proper engagement techniques against targets from a stationary and moving vehicle during normal and NBC conditions (directed MOPP level). The day firing phase should precede the night firing phase.

7-90. This table consists of five day and five night tasks. Four tasks are swing tasks (1AS, 1BS, 5AS, and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day could be as few as three with up to seven tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

7-91. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary or moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

7-92. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All stationary engagements must begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On ranges where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements should be fired from a short halt.

SCORING

7-93. The crew must fire Table IVA and B for qualification. As a minimum, the crew must achieve 700 points, and 7 out of 10 tasks must have at least 70 points to achieve a qualified rating (2 of the tasks must be night engagements).

7-94. Tasks will be scored using the criteria in the standards column for each task in Table 7-2. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to pages 7-12 through 7-16 for scoresheet scoring instructions and Figures 7-2 through 7-4, pages 7-14 through 7-16 for sample completed scoresheets. Refer to Figure 7-1, page 7-7 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

7-95. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points on Table IVA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IVA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IVA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IVA and B, or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

AMMUNITION REQUIREMENTS

7-96. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table IV are as follows:

Table IVA	Table IVB	Total Rounds
350 rounds caliber .50	350 rounds caliber .50	700 rounds caliber .50
56 rounds 40-mm	56 rounds 40-mm	112 rounds 40-mm
5 LA06s	5 LA06s	10 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 7-2. RV Table IV A and B.

RV TABLE IVA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	1 sniper in window, 200 to 400 meters.	50 rounds caliber 50 <u>or</u> 8 rounds 40mm	Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2A Moving	1 bunker, 200 to 400 meters. 1 stationary truck, 400 to 600 meters (15-second delay).	100 rounds caliber 50 <u>or</u> 16 rounds 40mm	Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3A Moving	1 stationary frontal truck, 600 to 800 meters. Civilians on the battlefield (COB).	50 rounds caliber 50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
4A Stationary NBC	1 set of troops, 200 to 400 meters. 1 stationary truck, 600 to 800 meters (15-second delay).	100 rounds caliber 50 <u>or</u> 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
5A (Swing) Stationary	1 moving truck, 600 to 800 meters. COBs.	8 rounds 40mm 50 rounds caliber .50	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
RV TABLE IVB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 RPG team, 50 to 200 meters. 1 moving truck, 200 to 400 meters (15-second delay).	100 rounds caliber 50 <u>or</u> 16 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
2B Moving	1 set troops, 400 to 600 meters. 1 moving truck, 400 to 600 meters (15-second delay).	100 rounds caliber 50 <u>or</u> 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
3B Stationary	1 RPG team, 200 to 400 meters. 1 stationary PC, 200 to 400 meters (15-second delay).	100 rounds caliber 50 <u>or</u> 16 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
4B Moving	1 stationary truck, 400 to 600 meters. COBs.	50 rounds caliber 50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
5B (Swing) Stationary	1 stationary frontal tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE IV, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 200 to 400 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18/+ 0	CREW-DUTY PENALTY POINTS
		Automatic Zero
		Not masked during NBC engagement.
		Engaged friendly target.
		30-Point Penalty
		Weapon not on SAFE between engagements.
		Fired into the berm.
		10-Point Penalty
		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
		Improper engagement technique.
		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-12. Sample scoresheet—RV Table IV, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE IV, TASK 2A (MOVING), UNIT/BUMPER NUMBER				
TASK	Target 1 Bunker Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a moving position.	1-6 100	1-9 100	Automatic Zero	
	7 94	10 97	Not masked during an NBC engagement.	
AMMUNITION	8 88	11 93	Engaged friendly target.	
Caliber .50: 100 rounds	9 82	12 90	30-Point Penalty	
or	10 76	13 87	Weapon not on SAFE between engagements.	
40mm (MK-19): 16 rounds	11 70	14 83	Fired into the berm.	
	12 64	15 80	Killed target beyond maximum vehicle exposure time.	
CONDITIONS	13 58	16 77	10-Point Penalty	
Total Targets: 2	14 52	17 73	Failed to follow instructions from authorized personnel.	
Target 1: Bunker, 200 to 400 meters.	15 46	18 70	Fired before "FIRE" or "ON THE WAY."	
Target 2: Stationary truck, 400 to 600 meters (15-second delay).	16 40	19 67	Improper engagement technique.	
	17 34	20 63	Improper fire command.	
	18 28	21 60	Did not return to turret-down position.	
	19 22	22 57	5-Point Penalty	
EXPOSURE TIME	20 16	23 53	Improper response to the fire command.	
Target 1: 30 seconds	21 10	24 50	Improper reporting.	
Target 2: 30 seconds	22 4	25 47	Improper driving technique.	
	23+ 0	26 43	Total Crew-Duty Penalty Points	
		27 40		
STANDARDS		28 37		
Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.		29 33		
Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.		30 30		
		31 27		
		32 23		
		33 20		
		34 17		
		35 13		
		36 10		
		37 7		
		38 3		
		39+ 0		
Remarks:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 7-13. Sample scoresheet—RV Table IV, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE IV, TASK 3A (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving position.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds	1-10 100 11 97 12 94 13 91 14 88 15 85 16 82 17 79 18 76 19 73 20 70 21 67 22 64 23 61 24 58 25 55 26 52 27 49 28 46 29 43 30 40 31 37 32 34 33 31 34 28 35 25 36 22 37 19 38 16 39 13 40 10 41 7 42 4 43 1 44+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Stationary truck, 600 to 800 meters. Civilians on the battlefield (COB).		
EXPOSURE TIME Target 1: 30 seconds		
STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-14. Sample scoresheet—RV Table IV, Task 3A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE IV, TASK 4A (NBC) (STATIONARY), UNIT/BUMPER NUMBER				
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary position.	1-5 100	1-10 100	Automatic Zero	
	6 94	11 97	Not masked during an NBC engagement.	
AMMUNITION	7 88	12 94	Engaged friendly target.	
Caliber .50: 100 rounds	8 82	13 91	30-Point Penalty	
or	9 76	14 88	Weapon not on SAFE between engagements.	
40mm (MK-19): 16 rounds	10 70	15 85	Fired into the berm.	
	11 64	16 82	Killed target beyond maximum vehicle exposure time.	
CONDITIONS	12 58	17 79	10-Point Penalty	
NBC.	13 52	18 76	Failed to follow instructions from authorized personnel.	
	14 46	20 70	Fired before "FIRE" or "ON THE WAY."	
Total Targets: 2	15 40	21 67	Improper engagement technique.	
Target 1: Set of troops, 200 to 400 meters.	16 34	22 64	Improper fire command.	
	17 28	23 61	Did not return to turret-down position.	
Target 2: Stationary truck, 600 to 800 meters (15-second delay).	18 22	24 58	5-Point Penalty	
	19 16	25 55	Improper response to the fire command.	
	20 10	26 52	Improper reporting.	
	21 4	27 49	Improper driving technique.	
	22/+ 0	28 46	Total Crew-Duty Penalty Points	
		29 43		
		30 40		
		31 37		
		32 34		
		33 31		
		34 28		
		35 25		
		36 22		
		37 19		
		38 16		
		39 13		
		40 10		
		41 7		
		42 4		
		43 1		
		44+ 0		
REMARKS:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 7-15. Sample scoresheet—RV Table IV, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
RV TABLE IV, TASK 5A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds CONDITIONS Total Targets: 1 Target 1: Moving truck, 600 to 800 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS	
	1-10 100 11 97 12 94 13 91 14 88 15 85 16 82 17 79 18 76 19 73 20 70 21 67 22 64 23 61 24 58 25 55 26 52 27 49 28 46 29 43 30 40 31 37 32 34 33 31 34 28 35 25 36 22 37 19 38 16 39 13 40 10 41 7 42 4 43 1 44+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points	
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-16. Sample scoresheet—RV Table IV, Task 5AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE IV, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a stationary position.	1-4	100	1-8	100	Automatic Zero
	5	90	9	96	
AMMUNITION	6	80	10	93	Not masked during an NBC engagement.
Caliber .50: 100 rounds	7	70	11	89	Engaged friendly target.
or	8	60	12	85	
40mm (MK-19): 16 rounds	9	50	13	81	30-Point Penalty
	10	40	14	78	
CONDITIONS	11	30	15	74	Weapon not on SAFE between engagements.
Total Targets: 2	12	20	16	70	
Target 1: RPG team, 50 to 200 meters.	13	10	17	66	Fired into the berm.
Target 2: Moving truck, 200 to 400 meters (15-second delay).	14+	0	18	63	
			19	59	Killed target beyond maximum vehicle exposure time.
EXPOSURE TIME			20	55	
Target 1: 50 seconds			21	51	10-Point Penalty
Target 2: 50 seconds			22	48	
			23	44	Failed to follow instructions from authorized personnel.
STANDARDS			24	40	
Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters.			25	36	Fired before "FIRE" or "ON THE WAY."
			26	33	
Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.			27	29	Improper engagement technique.
			28	25	
			29	21	Improper fire command.
			30	18	
			31	14	Did not return to turret-down position.
			32	10	
			33	6	5-Point Penalty
			34	3	Improper response to the fire command.
			35+	0	
					Improper reporting.
					Improper driving technique.
					Total Crew-Duty Penalty Points
Remarks:					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 7-17. Sample scoresheet—RV Table IV, Task 1BS.

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GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE IV, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary position.	1-4 100	1-5 100	Automatic Zero	
AMMUNITION	5 93	6 94	Not masked during an NBC engagement.	
Caliber .50: 100 rounds	6 85	7 88	Engaged friendly target.	
or	7 78	8 82	30-Point Penalty	
40mm (MK-19): 16 rounds	8 70	9 76	Weapon not on SAFE between engagements.	
CONDITIONS	9 63	10 70	Fired into the berm.	
Total Targets: 2	10 55	11 64	Killed target beyond maximum vehicle exposure time.	
Target 1: RPG team, 200 to 400 meters.	11 48	12 58	10-Point Penalty	
Target 2: Stationary PC, 200 to 400 meters (15-second delay).	12 40	13 52	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME	13 33	14 46	Fired before "FIRE" or "ON THE WAY."	
Target 1: 50 seconds	14 25	15 40	Improper engagement technique.	
Target 2: 50 seconds	15 18	16 34	Improper fire command.	
STANDARDS	16 10	17 28	Did not return to turret-down position.	
Hit RPG team with 1 round caliber .50 or 1 round 40mm within 5 meters.	17 3	18 22	5-Point Penalty	
Hit PC with 5 rounds caliber .50 or 2 rounds 40mm.	18/+ 0	19 16	Improper response to the fire command.	
		20 10	Improper reporting.	
		21 4	Improper driving technique.	
		22/+ 0	Total Crew-Duty Penalty Points	
Remarks:			Target 1 Points	(a) _____
			Target 2 Points	(b) _____
			Total (a + b = c)	(c) _____
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score	(d) _____
			Total Crew-Duty Penalty Points	(e) _____
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score	(f) _____

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Figure 7-19. Sample scoresheet—RV Table IV, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE IV, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving position.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds	1-9 100 10 97 11 93 12 90 13 87 14 83 15 80 16 77 17 73 18 70 19 67 20 63 21 60 22 57 23 53 24 50 25 47 26 43 27 40 28 37 29 33 30 30 31 27 32 23 33 20 34 17 35 13 36 10 37 7 38 3 39+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. Civilians on the battlefield (COB).		
EXPOSURE TIME Target 1: 30 seconds		
STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-20. Sample scoresheet—RV Table IV, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE IV, TASK 5B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify enemy vehicle and properly perform call for immediate suppression.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary frontal tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	1-13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	
	22 78	
	23 75	Weapon not on SAFE between engagements.
	24 73	Fired into the berm.
	25 70	10-Point Penalty
	26 68	
	27 65	
	28 63	
	29 60	Failed to follow instructions from authorized personnel.
	30 58	Fired before "FIRE" or "ON THE WAY."
	31 55	Improper engagement technique.
	32 53	Improper fire command.
	33 50	Did not return to turret-down position.
	34 48	5-Point Penalty
	35 45	
	36 43	
	37 40	
38 38	Improper response to fire command.	
39 35	Improper reporting.	
40 33	Improper driving techniques.	
41 30	Total Crew-Duty Penalty Points	
42 38		
43 35		
44 33		
45 30		
46 28		
47 25		
48 23		
49 20		
50+ 0		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-21. Sample scoresheet—RV Table IV, Task 5BS.

Table V (Crew Integration Proficiency Course [CIPC] [Dry]) and Table VI (Crew Integration Proficiency Course [CIPC] [Blank])

7-97. Tables V and VI integrate the mounted and dismounted elements of the crew while conducting squad collective tasks. They are used to evaluate the crew's basic level of proficiency. They test the vehicle and dismounted crew's ability to rapidly destroy stationary and moving targets from a stationary and moving position. Table V is a dry-fire table; crews will use MILES when available. Table VI is conducted with blanks.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

7-98. Tables V and VI are designed to train crews on a stationary and moving vehicle to engage stationary, moving, single, and multiple targets deployed in a realistic array (see Table 7-3). A minimum of one engagement will be fired in an NBC environment (appropriate MOPP level).

Note. Tables V and VI will replicate Table VIII. The targets presented will be the same type and distance and in the same scenario; however, the target positioning will be different than those presented on Table VIII. This prevents the crews from memorizing target positions for the qualification table.

CONDUCT OF THE TASKS

7-99. Tables V and VI allow the driver to integrate into the crew's coordination by moving the vehicle in and out of the firing positions and moving from one firing position to another, while maintaining awareness of the dismounted crew's position. Engagements are designed to integrate battlefield conditions and targets arrayed in a realistic manner. Command and control of dismounted elements will be trained and close troop targets will be included for dismounted engagements.

7-100. Tables V and VI are conducted on a full-scale range using half-scale targets.

EXECUTION

7-101. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting these tables. All defensive engagements will begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements should be fired from a short halt.

SCORING

7-102. The VCE will rate crew duties for each engagement. If the crewman commits more than one crew-duty error during a task, he will be rated UNSAT for crew duties only and an annotation will be made in the Remarks section of the scoresheet. Crew duties will be critiqued by the VCE during the AAR; however, they will not affect the overall GO/NO-GO rating for the task.

7-103. Tasks will be scored using the criteria in the standards column for each task in Table 7-3. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 7-12 through 7-16 for scoresheet scoring instructions and Figures 7-2 through 7-4, pages 7-14 through 7-16 for sample completed scoresheets. Refer to Figure 7-1, page 7-7 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

7-104. Crew ratings for Tables V and VI are as follows:

- **Distinguished:** Combined score of at least 900 points on Table IVA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IVA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IVA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IVA and B, or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

Table 7-3. RV Tables V and VI, A and B.

RV TABLES VA AND VIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	Sniper in window, 50 to 200 meters.	Table V: Dry Table VI: 50 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank)	Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.
2A Stationary	1 troop in room (SRM). Civilians on the battlefield (COBs) (15-second delay). 1 set of troops, 200 to 400 meters (15-second delay).	Table V: Dry Table VI: 50 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank)	Hit SRM target with 2 rounds 5.56mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
3A Moving	1 RPG team, 50 to 200 meters. 1 set of troops, 200 to 400 meters (15-second delay).	Table V: Dry Table VI: 100 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank)	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
4A Stationary	1 RPG team, 50 to 200 meters. 1 bunker, 200 to 400 meters. COBs (15-second delay). 1 moving truck, 400 to 600 meters (15-second delay).	Table V: Dry Table VI: 100 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank)	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
5A (Swing) Stationary	1 stationary tank, 1,700 to 1,800 meters. 1 moving PC, 400 to 600 meters (15-second delay). 1 set of troops, 200 to 400 meters (15-second delay).	Table V: Dry Table VI: 50 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank) 1 rd FTT	Hit tank with Javelin <u>or</u> FTT. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
RV TABLES VB AND VIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 stationary tank, >1,200 meters.	Table V: Dry Table VI: None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
2B Stationary	1 RPG team, 50 to 200 meters. COBs. 1 moving truck, 400 to 600 meters (15-second delay).	Table V: Dry Table VI: 50 rds caliber .50 (blank) <u>or</u> 50 rds 7.62mm (blank)	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
3B Moving	1 set of troops, 200 to 400 meters. 1 stationary truck, 600 to 800 meters (15-second delay).	Table V: Dry Table VI: 100 rds caliber .50 (blank)	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
4B Moving	1 set of troops, 200 to 400 meters. 1 set of troops, 400 to 600 meters (15-second delay).	Table V: Dry Table VI: 100 rds caliber .50 (blank)	For each target, hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
5B (Swing) Stationary NBC	1 stationary truck, 400 to 600 meters.	Table V: Dry Table VI: 50 rds caliber .50 (blank)	Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLES V AND VI, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary position. AMMUNITION Table V: Dry. Table VI: Caliber .50: 50 rounds (blank) or 7.62mm: 50 rounds (blank) CONDITIONS Total Targets: 1 Target 1: Sniper in window, 50 to 200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-4 100 5 90 6 80 7 70 8 60 9 50 10 40 11 30 12 20 13 10 14+ 0	CREW-DUTY PENALTY POINTS
		Automatic Zero
		Not masked during NBC engagement.
		Engaged friendly target.
		30-Point Penalty
		Weapon not on SAFE between engagements.
		Fired into the berm.
		10-Point Penalty
		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
		Improper engagement technique.
		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-22. Sample scoresheet—RV Tables V and VI, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLES V AND VI, TASK 3A (MOVING), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point and area targets from a moving position.	Target 1 RPG Team Time/Points		Target 2 Troops Time/Points		CREW-DUTY PENALTY POINTS
	1-5	100	1-5	100	
AMMUNITION Table V: Dry. Table VI: Caliber .50: 100 rounds (blank) or 7.62mm: 50 rounds (blank) CONDITIONS Total Targets: 2 Target 1: RPG team, 50 to 200 meters. Target 2: Set of troops, 200 to 400 meters (15-second delay). EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters, and suppress.	6	93	6	94	Automatic Zero
	7	85	7	88	Not masked during an NBC engagement.
	8	78	8	82	Engaged friendly target.
	9	70	9	76	30-Point Penalty
	10	63	10	70	Weapon not on SAFE between engagements.
	11	55	11	64	Fired into the berm.
	12	48	12	58	Killed target beyond maximum vehicle exposure time.
	13	40	13	52	10-Point Penalty
	14	33	14	46	Failed to follow instructions from authorized personnel.
	15	25	15	40	Fired before "FIRE" or "ON THE WAY."
	16	18	16	34	Improper engagement technique.
	17	10	17	28	Improper fire command.
	18	3	18	22	Did not return to turret-down position.
	19/+	0	19	16	5-Point Penalty
			20	10	Improper response to the fire command.
			21	4	Improper reporting.
			22/+	0	Improper driving technique.
					Total Crew-Duty Penalty Points
	Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____
Target 2 Points (b) _____					
Total (a + b = c) (c) _____					
Divide by 2 (# of targets) (c ÷ 2 = d)					
Engagement Raw Score (d) _____					
Total Crew-Duty Penalty Points (e) _____					
Subtract crew-duty penalty points from raw score (d - e = f).					
				Engagement Score (f) _____	

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Figure 7-24. Sample scoresheet—RV Tables V and VI, Task 3A.

GUNNERY SCORESHEET, THREE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLES V AND VI, TASK 4A (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	Target 3 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving targets from a stationary position.	1-4 100	1-5 100	1-9 100	Automatic Zero	
AMMUNITION	5 90	6 94	10 97	Not masked during an NBC engagement.	
Table V: Dry.	6 80	7 88	11 93	Engaged friendly target.	
Table VI:	7 70	8 82	12 90	30-Point Penalty	
Caliber .50: 100 rounds (blank)	8 60	9 76	13 87	Weapon not on SAFE between engagements.	
or	9 50	10 70	14 83	Fired into the berm.	
7.62mm: 50 rounds (blank)	10 40	11 64	15 80	Killed target beyond maximum vehicle exposure time.	
CONDITIONS	11 30	12 58	16 77	10-Point Penalty	
Total Targets: 3	12 20	13 52	17 73	Failed to follow instructions from authorized personnel.	
Target 1: RPG team, 50 to 200 meters.	13 10	14 46	18 70	Fired before "FIRE" or "ON THE WAY."	
Target 2: Bunker, 200 to 400 meters.	14+ 0	15 40	19 67	Improper engagement technique.	
Target 3: Moving truck, 400 to 600 meters (15-second delay).		16 34	20 63	Improper fire command.	
Civilians on the battlefield (COB) (15-second delay).		17 28	21 60	Did not return to turret-down position.	
EXPOSURE TIME		18 22	22 57	Target 1 Target 2 Target 3	
Target 1: 50 seconds		19 16	23 53	5-Point Penalty	
Target 2: 50 seconds		20 10	24 50	Improper response to the fire command.	
Target 3: 50 seconds		21 4	25 47	Improper reporting.	
STANDARDS		22/+ 0	26 43	Improper driving techniques.	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.			27 40	Total Crew-Duty Penalty Points	
Hit bunker with 5 rounds caliber .50 or 2 rounds 40mm.			28 37		
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.			29 33		
			30 30		
			31 27		
			32 23		
			33 20		
			34 17		
			35 13		
			36 10		
			37 7		
			38 3		
			39+ 0		
REMARKS:				Target 1 Points (a) _____	
				Target 2 Points (b) _____	
				Target 3 Points (c) _____	
				Total (a + b + c = d) (d) _____	
				Divide by 3 (# of targets) (d ÷ 3 = e)	
				Engagement Raw Score (e) _____	
				Total Crew-Duty Penalty Points (f) _____	
				Subtract crew-duty penalty points from raw score (e - f = g)	
				Engagement Score (g) _____	

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Figure 7-25. Sample scoresheet—RV Tables V and VI, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLES V AND VI, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify enemy vehicle and properly perform call for immediate suppression. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
42 28		
43 25	Improper driving techniques.	
44 23		
45 20		
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-27. Sample scoresheet—RV Tables V and VI, Task 1BS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLES V AND VI, TASK 2B (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a stationary position.	1-4 100	1-9 100	Automatic Zero	
AMMUNITION	5 90	10 97	Not masked during an NBC engagement.	
Table V: Dry.	6 80	11 93	Engaged friendly target.	
Table VI:	7 70	12 90	30-Point Penalty	
Caliber .50: 50 rounds (blank)	8 60	13 87	Weapon not on SAFE between engagements.	
or	9 50	14 83	Fired into the berm.	
7.62mm: 50 rounds (blank)	10 40	15 80	Killed target beyond maximum vehicle exposure time.	
CONDITIONS	11 30	16 77	10-Point Penalty	
Total Targets: 2	12 20	17 73	Failed to follow instructions from authorized personnel.	
Target 1: RPG team, 50 to 200 meters.	13 10	18 70	Fired before "FIRE" or "ON THE WAY."	
Target 2: Moving truck, 400 to 600 meters (15-second delay).	14+ 0	19 67	Improper engagement technique.	
Civilians on the battlefield (COB).		20 63	Improper fire command.	
EXPOSURE TIME		21 60	Did not return to turret-down position.	
Target 1: 50 seconds		22 57	5-Point Penalty	
Target 2: 50 seconds		23 53	Improper response to the fire command.	
STANDARDS		24 50	Improper reporting.	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.		25 47	Improper driving technique.	
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.		26 43	Total Crew-Duty Penalty Points	
		27 40		
		28 37		
		29 33		
		30 30		
		31 27		
		32 23		
		33 20		
		34 17		
		35 13		
		36 10		
		37 7		
		38 3		
		39+ 0		
Remarks:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 7-28. Sample scoresheet—RV Tables V and VI, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLES V AND VI, TASK 3B (MOVING), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a moving position.	1-5 100	1-10 100	Automatic Zero	
	6 94	11 97		
	7 88	12 94		
AMMUNITION	8 82	13 91	Not masked during an NBC engagement.	
Table V: Dry.	9 76	14 88		
Table VI:	10 70	15 85	Engaged friendly target.	
Caliber .50: 100 rounds (blank)	11 64	16 82		
	12 58	17 79	30-Point Penalty	
	13 52	18 76		
CONDITIONS	14 46	19 73	Weapon not on SAFE between engagements.	
Total Targets: 2	15 40	20 70		
Target 1: Set of troops, 200 to 400 meters.	16 34	21 67	Fired into the berm.	
	17 28	22 64		
Target 2: Stationary truck, 600 to 800 meters (15-second delay).	18 22	23 61	Killed target beyond maximum vehicle exposure time.	
	19 16	24 58		
	20 10	25 55	10-Point Penalty	
	21 4	26 52		
	22/+ 0	27 49	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME		28 46		
Target 1: 30 seconds		29 43	Fired before "FIRE" or "ON THE WAY."	
Target 2: 30 seconds		30 40		
		31 37	Improper engagement technique.	
		32 34		
STANDARDS		33 31	Improper fire command.	
Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.		34 28	Did not return to turret-down position.	
		35 25		
Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.		36 22	5-Point Penalty	
		37 19		
		38 16	Improper response to the fire command.	
		39 13		
		40 10	Improper reporting.	
		41 7		
		42 4	Improper driving technique.	
		43 1		
		44+ 0		
			Total Crew-Duty Penalty Points	
Remarks:				
_____			Target 1 Points (a) _____	
_____			Target 2 Points (b) _____	
_____			Total (a + b = c) (c) _____	
_____			Divide by 2 (# of targets) (c ÷ 2 = d)	
_____			Engagement Raw Score (d) _____	
_____			Total Crew-Duty Penalty Points (e) _____	
_____			Subtract crew-duty penalty points from raw score (d - e = f).	
_____			Engagement Score (f) _____	

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Figure 7-29. Sample scoresheet—RV Tables V and VI, Task 3B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLES V AND VI, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Troops Time/Points		Target 2 Troops Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary area targets from a moving position.	1-5	100	1-6	100	Automatic Zero
	6	94	7	94	Not masked during an NBC engagement.
AMMUNITION	7	88	8	88	Engaged friendly target.
Table V: Dry.	8	82	9	82	
Table VI:	9	76	10	76	
Caliber .50: 100 rounds (blank)	10	70	11	70	30-Point Penalty
	11	64	12	64	Weapon not on SAFE between engagements.
CONDITIONS	12	58	13	58	Fired into the berm.
Total Targets: 2	13	52	14	52	Killed target beyond maximum vehicle exposure time.
Target 1: Set of troops, 200 to 400 meters.	14	46	15	46	
	15	40	16	40	10-Point Penalty
Target 2: Set of troops, 400 to 600 meters.	16	34	17	34	Failed to follow instructions from authorized personnel.
	17	28	18	28	Fired before "FIRE" or "ON THE WAY."
EXPOSURE TIME	18	22	19	22	Improper engagement technique.
Target 1: 30 seconds	19	16	20	16	Improper fire command.
Target 2: 30 seconds	20	10	21	10	Did not return to turret-down position.
	21	4	22	4	5-Point Penalty
	22/+	0	23/+	0	Improper response to the fire command.
					Improper reporting.
STANDARDS					Improper driving technique.
For each target, hit 1 troop SIT with 1 round caliber .50 <u>or</u> with 1 round 40mm within 5 meters, <u>and</u> suppress.					Total Crew-Duty Penalty Points
Remarks:					
					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 7-30. Sample scoresheet—RV Tables V and VI, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLES V AND VI, TASK 5B (SWING) (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Table V: Dry. Table VI: Caliber .50: 50 rounds (blank) CONDITIONS NBC. Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-9 100	Automatic Zero
	10 97	Not masked during NBC engagement.
	11 93	Engaged friendly target.
	12 90	30-Point Penalty
	13 87	Weapon not on SAFE between engagements.
	14 83	Fired into the berm.
	15 80	10-Point Penalty
	16 77	Failed to follow instructions from authorized personnel.
	17 73	Fired before "FIRE" or "ON THE WAY."
	18 70	Improper engagement technique.
	19 67	Improper fire command.
	20 63	Did not return to turret-down position.
	21 60	5-Point Penalty
	22 57	Improper response to fire command.
	23 53	Improper reporting.
	24 50	Improper driving techniques.
	25 47	Total Crew-Duty Penalty Points
	26 43	
	27 40	
	28 37	
	29 33	
	30 30	
	31 27	
	32 23	
	33 20	
	34 17	
	35 13	
	36 10	
	37 7	
38 3		
39+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-31. Sample scoresheet—RV Tables V and VI, Task 5BS.

Conduct of Table VII (Crew Practice)

7-105. Table VII requires the vehicle crew and dismounted crew to conduct offensive and defensive engagements with full-caliber ammunition on combat ranges.

Note. Before executing Tables VII, VIII, and X, which combines the vehicle and dismounted crews, the dismounts must have qualified on the SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC.

CONCEPT

7-106. Table VII is a single-vehicle training table. Normal combat-oriented procedures, such as reporting, should be used. Both crews use proper engagement techniques against targets from a stationary and moving vehicle and dismounted positions during normal and NBC conditions (directed MOPP level). The day firing phase should precede the night firing phase. Table VII is a building block toward Table VIII; the training unit commander can modify it to train weak gunnery areas.

7-107. This table consists of five day and five night tasks and one Javelin task. (**Note.** For Task 5AS, if the Javelin is not used, score this task as a two-target engagement.) Four tasks are swing tasks (1AS, 1BS, 5AS, and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day could be as few as three with up to seven tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

7-108. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

7-109. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All stationary engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements should be fired from a short halt.

SCORING

7-110. Tasks will be scored using the criteria in the standards column for each task in Table 7-4. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 7-12 through 7-16 for scoresheet scoring instructions and Figures 7-2 through 7-4, pages 7-14 through 7-16 for sample completed scoresheets. Refer to Figure 7-1, page 7-7 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

7-111. The crew must have qualified on two night engagements. Crew ratings for Table VII are as follows:

- **Distinguished:** Combined score of at least 900 points on Table VIIA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table VIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table VIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table VIIA and B, or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

AMMUNITION REQUIREMENTS

7-112. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table VII are as follows:

Table VIIA	Table VIIB	Total Rounds
300 rounds caliber .50	350 rounds caliber .50	650 rounds caliber .50
48 rounds 40-mm	56 rounds 40-mm	104 rounds 40-mm
150 rounds 7.62mm	100 rounds 7.62mm	250 rounds 7.62mm
3 LA06s	6 LA06s	9 LA06s
1 Javelin Trainer		1 Javelin Trainer
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 7-4. RV Table VII A and B.

RV TABLE VIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	1 sniper in window, 200 to 400 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm 3 rounds 40mm (M203)	Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.
2A Moving	1 RPG team, 50 to 200 meters. 1 bunker, 200 to 400 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
3A Stationary	1 troop in room (SRM). COB (15-second delay). 1 set of troops, 200 to 400 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm 3 rounds 40mm (M203)	Hit SRM with 2 rounds 5.56mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
4A Moving NBC	1 stationary PC, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.
5A (Swing) Stationary	1 stationary tank, 1,600 to 1,800 meters. 1 set of troops, 200 to 400 meters (15-second delay). 1 stationary frontal truck, 600 to 800 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm 1 Javelin or FTT	Hit truck with Javelin <u>or</u> FTT. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
Note. For Task 5AS, if the Javelin is not used, score this task as a two-target engagement.			
CONTINUED ON NEXT PAGE			

Table 7-4 (cont).

RV TABLE VIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 RPG team, 50 to 200 meters. COBs (15-second delay). 1 moving truck, 400 to 600 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
2B Stationary	1 RPG team, 50 to 200 meters. 1 stationary PC, 400 to 600 meters. 1 stationary truck, 600 to 800 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
3B Moving	1 stationary truck, 400 to 600 meters. 1 moving truck, 200 to 400 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit stationary truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit moving truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
4B Moving	1 stationary frontal truck, 400 to 600 meters. 1 set of troops, 200 to 400 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
5B (Swing) Stationary	1 stationary tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
RV TABLE VII, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds and 7.62mm: 50 rounds 5.56mm: 30 rounds 40mm (M203): 3 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 200 to 400 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18/+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-32. Sample scoresheet—RV Table VII, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VII, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a moving position.	1-5 100	1-6 100	Automatic Zero	
	6 93	7 94		
AMMUNITION	7 85	8 88	Not masked during an NBC engagement.	
Caliber .50: 100 rounds	8 78	9 82		
or	9 70	10 76	Engaged friendly target.	
40mm (MK-19): 16 rounds	10 63	11 70		
	11 55	12 64	30-Point Penalty	
	12 48	13 58		
CONDITIONS	13 40	14 52	Weapon not on SAFE between engagements.	
Total Targets: 2	14 33	15 46		
Target 1: RPG team, 50 to 200 meters.	15 25	16 40	Fired into the berm.	
	16 18	17 34		
Target 2: Bunker, 200 to 400 meters (15-second delay).	17 10	18 28	Killed target beyond maximum vehicle exposure time.	
	18 3	19 22		
Civilians on the battlefield (COB) (15-second delay).	19/+ 0	20 16	10-Point Penalty	
		21 10		
		22 4	Failed to follow instructions from authorized personnel.	
		23+ 0	Fired before "FIRE" or "ON THE WAY."	
EXPOSURE TIME			Improper engagement technique.	
Target 1: 30 seconds			Improper fire command.	
Target 2: 30 seconds			Did not return to turret-down position.	
STANDARDS			5-Point Penalty	
Hit RPG team with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters.			Improper response to the fire command.	
Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm.			Improper reporting.	
			Improper driving technique.	
			Total Crew-Duty Penalty Points	
Remarks:			Target 1 Points (a) _____	
_____			Target 2 Points (b) _____	
_____			Total (a + b = c) (c) _____	
_____			Divide by 2 (# of targets) (c ÷ 2 = d)	
_____			Engagement Raw Score (d) _____	
_____			Total Crew-Duty Penalty Points (e) _____	
_____			Subtract crew-duty penalty points from raw score (d - e = f).	
_____			Engagement Score (f) _____	

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Figure 7-33. Sample scoresheet—RV Table VII, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VII, TASK 3A (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK Engage an SRM and a stationary area target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds and 7.62mm: 50 rounds 5.56mm: 30 rounds 40mm (M203): 3 rounds CONDITIONS Total Targets: 2 Target 1: Troop in a room (SRM). Target 2: Set of troops, 200 to 400 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). EXPOSURE TIME Target 1: 10 seconds Target 2: 50 seconds STANDARDS Hit SRM target with 2 rounds 5.56mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters, and suppress.	Target 1 SRM Time/Points		Target 2 Troops Time/Points		
	1-2 100 3 85 4 70 5 55 6 40 7 25 8 10 9/+ 0		1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18/+ 0		
				CREW-DUTY PENALTY POINTS	
				Automatic Zero	
				Not masked during an NBC engagement.	
				Engaged friendly target.	
				30-Point Penalty	
				Weapon not on SAFE between engagements.	
				Fired into the berm.	
				Killed target beyond maximum vehicle exposure time.	
				10-Point Penalty	
				Failed to follow instructions from authorized personnel.	
				Fired before "FIRE" or "ON THE WAY."	
				Improper engagement technique.	
				Improper fire command.	
				Did not return to turret-down position.	
				5-Point Penalty	
				Improper response to the fire command.	
				Improper reporting.	
				Improper driving technique.	
			Total Crew-Duty Penalty Points		
Remarks: 			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____		

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Figure 7-34. Sample scoresheet—RV Table VII, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE VII, TASK 4A (NBC) (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving position.	Target 1: PC	CREW-DUTY PENALTY POINTS
	Time/Points	
	1-9 100	Automatic Zero
AMMUNITION	10 96	
Caliber .50: 50 rounds	11 93	Not masked during NBC engagement.
or	12 89	Engaged friendly target.
40mm (MK-19): 8 rounds	13 85	
	14 81	30-Point Penalty
CONDITIONS	15 78	
NBC.	16 74	Weapon not on SAFE between engagements.
	17 70	Fired into the berm.
Total Targets: 1	18 66	
Target 1: Stationary PC, 400 to 600 meters.	19 63	10-Point Penalty
	20 59	
EXPOSURE TIME	21 55	Failed to follow instructions from authorized personnel.
Target 1: 50 seconds	22 51	Fired before "FIRE" or "ON THE WAY."
	23 48	Improper engagement technique.
STANDARDS	24 44	Improper fire command.
Hit PC with 5 rounds caliber .50 <u>or</u>	25 40	Did not return to turret-down position.
2 rounds 40mm.	26 36	
	27 33	5-Point Penalty
	28 29	Improper response to fire command.
	29 25	Improper reporting.
	30 21	Improper driving techniques.
	31 18	
	32 14	Total Crew-Duty Penalty Points
	33 10	
	34 6	
	35 3	
	36+ 0	
Remarks:		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 7-35. Sample scoresheet—RV Table VII, Task 4A.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VII, TASK 5A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Tank	Target 2 Troops	Target 3 Truck	CREW-DUTY PENALTY POINTS	
Engage stationary targets from a stationary position.	Time/Points	Time/Points	Time/Points		
AMMUNITION	1-15 100	1-4 100	1-10 100	Automatic Zero	
Caliber .50: 50 rounds	16 98	5 93	11 97	Not masked during an NBC engagement.	
or	17 96	6 85	12 93	Engaged friendly target.	
40mm (MK-19): 8 rounds	18 94	7 78	13 90	30-Point Penalty	
7.62mm: 50 rounds	19 91	8 70	14 87	Weapon not on SAFE between engagements.	
5.56mm: 30 rounds	20 89	9 63	15 83	Fired into the berm.	
Javelin or FTT: 1 round	21 87	10 55	16 80	Killed target beyond maximum vehicle exposure time.	
Note. If the Javelin is not used, score as a two-target engagement.	22 85	11 48	17 77	10-Point Penalty	
	23 83	12 40	18 73	Failed to follow instructions from authorized personnel.	
	24 81	13 33	19 70	Fired before "FIRE" or "ON THE WAY."	
	25 79	14 25	20 67	Improper engagement technique.	
	26 77	15 18	21 63	Improper fire command.	
CONDITIONS	27 74	16 10	22 60	Did not return to turret-down position.	
Total Targets: 3	28 72	17 3	23 57	Target 1 Target 2 Target 3	
Target 1: Stationary tank, 1,600 to 1,800 meters.	29 70	18/+ 0	24 53	5-Point Penalty	
Target 2: Set of troops, 200 to 400 meters (15-second delay).	30 68		25 50	Improper response to the fire command.	
Target 3: Stationary frontal truck, 600 to 800 meters (15-second delay).	31 66		26 47	Improper reporting.	
	32 64		27 43	Improper driving techniques.	
	33 62		28 40	Total Crew-Duty Penalty Points	
	34 59		29 37		
	35 57		30 33		
EXPOSURE TIME	36 55		31 30		
Target 1: 50 seconds	37 53		32 27		
Target 2: 50 seconds	38 51		33 23		
Target 3: 50 seconds	39 49		34 20		
	40 47		35 17		
	41 44		36 13		
	42 42		37 10		
STANDARDS	43 40		38 7		
Hit tank with Javelin <u>or</u> FTT.	44 38		39 3		
	45 36		40+ 0		
Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.	46 34				
	47 32				
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.	48 29				
	49 27				
	50+ 0				
REMARKS:				Target 1 Points	(a) _____
				Target 2 Points	(b) _____
				Target 3 Points	(c) _____
				Total (a + b + c = d)	(d) _____
				Divide by 3 (# of targets)	
				(d ÷ 3 = e)	
				Engagement Raw Score	(e) _____
				Total Crew-Duty Penalty Points	(f) _____
				Subtract crew-duty penalty points from raw score	
				(e - f = g)	
				Engagement Score	(g) _____

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Figure 7-36. Sample scoresheet—RV Table VII, Task 5AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a stationary position.	1-4 100	1-9 100	Automatic Zero	
AMMUNITION	5 90	10 96	Not masked during an NBC engagement.	
Caliber .50: 50 rounds	6 80	11 93	Engaged friendly target.	
or	7 70	12 89	30-Point Penalty	
40mm (MK-19): 8 rounds	8 60	13 85	Weapon not on SAFE between engagements.	
and	9 50	14 81	Fired into the berm.	
7.62mm: 50 rounds	10 40	15 78	Killed target beyond maximum vehicle exposure time.	
5.56mm: 30 rounds	11 30	16 74	10-Point Penalty	
CONDITIONS	12 20	17 70	Failed to follow instructions from authorized personnel.	
Total Targets: 2	13 10	18 66	Fired before "FIRE" or "ON THE WAY."	
Target 1: RPG team, 50 to 200 meters.	14+ 0	19 63	Improper engagement technique.	
Target 2: Moving truck, 400 to 600 meters (15-second delay).		20 59	Improper fire command.	
Civilians on the battlefield (COB) (15-second delay).		21 55	Did not return to turret-down position.	
EXPOSURE TIME		22 51	5-Point Penalty	
Target 1: 10 seconds		23 48	Improper response to the fire command.	
Target 2: 50 seconds		24 44	Improper reporting.	
STANDARDS		25 40	Improper driving technique.	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.		26 36	Total Crew-Duty Penalty Points	
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.		27 33		
		28 29		
		29 25		
		30 21		
		31 18		
		32 14		
		33 10		
		34 6		
		35 3		
		36+ 0		
Remarks:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 7-37. Sample scoresheet—RV Table VII, Task 1BS.

GUNNERY SCORESHEET, THREE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VII, TASK 2B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	Target 3 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary position.	1-4 100	1-6 100	1-10 100		
AMMUNITION	5 90	7 95	11 97	Automatic Zero	
Caliber .50: 100 rounds	6 80	8 90	12 93	Not masked during an NBC engagement.	
or	7 70	9 85	13 90	Engaged friendly target.	
40mm (MK-19): 16 rounds	8 60	10 80	14 87		
and	9 50	11 75	15 83	30-Point Penalty	
7.62mm: 50 rounds	10 40	12 70	16 80	Weapon not on SAFE between engagements.	
5.56mm: 30 rounds	11 30	13 65	17 77	Fired into the berm.	
CONDITIONS	12 20	14 60	18 73	Killed target beyond maximum vehicle exposure time.	
Total Targets: 3	13 10	15 55	19 70	10-Point Penalty	
Target 1: RPG team, 50 to 200 meters.	14+ 0	16 50	20 67	Failed to follow instructions from authorized personnel.	
Target 2: Stationary PC, 400 to 600 meters.		17 45	21 63	Fired before "FIRE" or "ON THE WAY."	
Target 3: Stationary truck, 600 to 800 meters (15-second delay).		18 40	22 60	Improper engagement technique.	
EXPOSURE TIME		19 35	23 57	Improper fire command.	
Target 1: 50 seconds		20 30	24 53	Did not return to turret-down position.	
Target 2: 50 seconds		21 25	25 50	Target 1 Target 2 Target 3	
Target 3: 50 seconds		22 20	26 47	5-Point Penalty	
STANDARDS		23 15	27 43	Improper response to the fire command.	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.		24 10	28 40	Improper reporting.	
Hit PC with 5 rounds caliber .50 or 2 rounds 40mm.		25 5	29 37	Improper driving techniques.	
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.		26/+ 0	30 33	Total Crew-Duty Penalty Points	
			31 30		
			32 27		
			33 23		
			34 20		
			35 17		
			36 13		
			37 10		
			38 7		
			39 3		
			40+ 0		
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 7-38. Sample scoresheet—RV Table VII, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VII, TASK 3B (MOVING), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Truck Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a moving position.	1-9	100	1-8	100	Automatic Zero
	10	97	9	96	
AMMUNITION	11	93	10	93	Not masked during an NBC engagement.
Caliber .50: 100 rounds	12	90	11	89	
or	13	87	12	85	Engaged friendly target.
40mm (MK-19): 16 rounds	14	83	13	81	
	15	80	14	78	30-Point Penalty
	16	77	15	74	
	17	73	16	70	Weapon not on SAFE between engagements.
CONDITIONS	18	70	17	66	
Total Targets: 2	19	67	18	63	Fired into the berm.
Target 1: Stationary truck, 400 to 600 meters.	20	63	19	59	
	21	60	20	55	Killed target beyond maximum vehicle exposure time.
Target 2: Moving truck, 200 to 400 meters (15-second delay).	22	57	21	51	
	23	53	22	48	10-Point Penalty
	24	50	23	44	
	25	47	24	40	Failed to follow instructions from authorized personnel.
EXPOSURE TIME	26	43	25	36	
Target 1: 30 seconds	27	40	26	33	Fired before "FIRE" or "ON THE WAY."
Target 2: 30 seconds	28	37	27	29	
	29	33	28	25	Improper engagement technique.
	30	30	29	21	
	31	27	30	18	Improper fire command.
	32	23	31	14	Did not return to turret-down position.
	33	20	32	10	
STANDARDS	34	17	33	6	5-Point Penalty
Hit stationary truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	35	13	34	3	
	36	10	35+	0	Improper response to the fire command.
	37	7			Improper reporting.
	38	3			Improper driving technique.
Hit moving truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters.	39+	0			Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 7-39. Sample scoresheet—RV Table VII, Task 3B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VII, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a moving position.	Target 1 Truck		Target 2 Troops		CREW-DUTY PENALTY POINTS
	Time/Points		Time/Points		
AMMUNITION Caliber .50: 100 rounds or 40mm (MK-19): 16 rounds	1-9	100	1-5	100	Automatic Zero
	10	97	6	94	
CONDITIONS Total Targets: 2 Target 1: Stationary frontal truck, 400 to 600 meters. Target 2: Set of troops, 200 to 400 meters (15-second delay).	11	93	7	88	Not masked during an NBC engagement.
	12	90	8	82	
EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds	13	87	9	76	Engaged friendly target.
	14	83	10	70	
STANDARDS Hit truck with 3 rounds caliber .50 or 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50 or 1 round 40mm within 5 meters, and suppress.	15	80	11	64	30-Point Penalty
	16	77	12	58	
Remarks:	17	73	13	52	Weapon not on SAFE between engagements.
	18	70	14	46	
	19	67	15	40	Fired into the berm.
	20	63	16	34	
	21	60	17	28	Killed target beyond maximum vehicle exposure time.
	22	57	18	22	
	23	53	19	16	10-Point Penalty
	24	50	20	10	
	25	47	21	4	Failed to follow instructions from authorized personnel.
	26	43	22/+	0	
	27	40			Fired before "FIRE" or "ON THE WAY."
	28	37			
	29	33			Improper engagement technique.
	30	30			
	31	27			Improper fire command.
	32	23			
	33	20			Did not return to turret-down position.
	34	17			
	35	13			5-Point Penalty
	36	10			
	37	7			Improper response to the fire command.
	38	3			
	39+	0			Improper reporting.
					Improper driving technique.
					Total Crew-Duty Penalty Points
					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 7-40. Sample scoresheet—RV Table VII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE VII, TASK 5B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify enemy vehicle and properly perform call for immediate suppression.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
AMMUNITION None.	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
CONDITIONS Total Targets: 1	20 83	
Target 1: Stationary tank, >1,200 meters.	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
EXPOSURE TIME Target 1: 50 seconds	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
	42 38	
	43 35	Improper driving techniques.
	44 33	
	45 30	
	46 28	
	47 25	Total Crew-Duty Penalty Points
	48 23	
	49 20	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-41. Sample scoresheet—RV Table VII, Task 5BS.

Conduct of Table VIII (Crew Qualification)

7-113. Table VIII evaluates the vehicle and dismounted crews' ability to acquire and engage targets during various firing conditions on combat ranges.

Note. Before executing Tables VII, VIII, and X, which combines the vehicle and dismounted crews, the dismounts must have qualified on the SRM from the advanced rifle marksmanship portion of FM 3-22.9, *Rifle Marksmanship* within 6 weeks (2 months for Reserve Component units). To conduct this, units must use ammunition from an M16/M4 live-fire exercise in STRAC.

CONCEPT

7-114. Table VIII is a single-vehicle qualification table. Normal combat-oriented procedures, such as reporting, should be used. Both crews use proper engagement techniques against targets from a stationary and moving vehicle and dismounted positions during normal and NBC conditions (directed MOPP level). The day firing phase should precede the night firing phase.

7-115. This table consists of five day and five night tasks and one Javelin task. (**Note.** For Task 5AS, if the Javelin is not used, score this task as a two-target engagement.) Four tasks are swing tasks (1AS, 1BS, 5AS, and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day could be as few as three with up to seven tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASK

7-116. Crews will employ direct fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

7-117. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All stationary engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements should be fired from a short halt.

SCORING

7-118. The crew must fire Table VIIIA and B for qualification. As a minimum, the crew must achieve 700 points, and 7 out of 10 tasks must have at least 70 points to achieve a qualified rating (2 of the tasks must be night engagements).

7-119. Tasks will be scored using the criteria in the standards column for each task in Table 7-5. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 7-12 through 7-16 for scoresheet scoring instructions and Figures 7-2 through 7-4, pages 7-14 through 7-16 for sample completed scoresheets. Refer to Figure 7-1, page 7-7 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

7-120. Crew ratings for Table VIII are as follows:

- **Distinguished:** Combined score of at least 900 points on Table VIIIA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table VIIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table VIIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table VIIIA and B, or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

AMMUNITION REQUIREMENTS

7-121. Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition. Ammunition requirements for Table VIII are as follows:

Table VIIIA	Table VIIIB	Total Rounds
350 rounds caliber .50	300 rounds caliber .50	650 rounds caliber .50
56 rounds 40-mm	48 rounds 40-mm	104 rounds 40-mm
250 rounds 7.62mm	50 rounds 7.62mm	300 rounds 7.62mm
4 LA06s	3 LA06s	7 LA06s
1 Javelin Trainer		1 Javelin Trainer
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 7-5. RV Table VIII A and B.

RV TABLE VIIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Stationary	Sniper in window, 50 to 200 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm 3 rounds 40mm (M203)	Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.
2A Stationary	1 troop in room (SRM). Civilians on the battlefield (COBs) (15-second delay). 1 set of troops, 200 to 400 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm 3 rounds 40mm (M203)	Hit SRM target with 2 rounds 5.56mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
3A Moving	1 RPG team, 50 to 200 meters. 1 set of troops, 200 to 400 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
4A Stationary	1 RPG team, 50 to 200 meters. 1 bunker, 200 to 400 meters. COBs (15-second delay). 1 moving truck, 400 to 600 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit bunker with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
5A (Swing) Stationary	1 stationary tank, 1,700 to 1,800 meters. 1 moving PC, 400 to 600 meters (15-second delay). 1 set of troops, 200 to 400 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 1 Javelin or FTT	Hit tank with Javelin <u>or</u> FTT. Hit PC with 5 rounds caliber .50 <u>or</u> 2 rounds 40mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
Note. For Task 5AS, if the Javelin is not used, score this task as a two-target engagement.			
continued on next page			

Table 7-5 (cont).

RV TABLE VIIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
2B Stationary	1 RPG team, 50 to 200 meters. COBs. 1 moving truck, 400 to 600 meters (15-second delay).	50 rounds caliber .50 <u>or</u> 8 rounds 40mm <u>and</u> 50 rounds 7.62mm 30 rounds 5.56mm	Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.
3B Moving	1 set of troops, 200 to 400 meters. 1 stationary truck, 600 to 800 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress. Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.
4B Moving	1 set of troops, 200 to 400 meters. 1 set of troops, 400 to 600 meters (15-second delay).	100 rounds caliber .50 <u>or</u> 16 rounds 40mm	Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.
5B (Swing) Stationary NBC	1 stationary truck, 400 to 600 meters.	50 rounds caliber .50 <u>or</u> 8 rounds 40mm	Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
RV TABLE VIII, TASK 1A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds 7.62mm: 50 rounds 5.56mm: 30 rounds 40mm (M203): 3 rounds CONDITIONS Total Targets: 1 Target 1: Sniper in window, 50 to 200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.	Target 1: Sniper Time/Points 1-4 100 5 90 6 80 7 70 8 60 9 50 10 40 11 30 12 20 13 10 14+ 0	CREW-DUTY PENALTY POINTS Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points ☐	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 7-42. Sample scoresheet—RV Table VIII, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VIII, TASK 2A (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK Engage an SRM and a stationary area target from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds 7.62mm: 50 rounds 5.56mm: 30 rounds 40mm (M203): 3 rounds CONDITIONS Total Targets: 2 Target 1: Troop in room (SRM). Target 2: Set of troops, 200 to 400 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). EXPOSURE TIME Target 1: 10 seconds Target 2: 50 seconds STANDARDS Hit SRM target with 2 rounds 5.56mm. Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters, and suppress.	Target 1 SRM Time/Points		Target 2 Troops Time/Points	
	1-2 100 3 85 4 70 5 55 6 40 7 25 8 10 9/+ 0	1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18/+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero		
		Not masked during an NBC engagement.		
		Engaged friendly target.		
		30-Point Penalty		
		Weapon not on SAFE between engagements.		
		Fired into the berm.		
		Killed target beyond maximum vehicle exposure time.		
		10-Point Penalty		
		Failed to follow instructions from authorized personnel.		
		Fired before "FIRE" or "ON THE WAY."		
		Improper engagement technique.		
		Improper fire command.		
		Did not return to turret-down position.		
		5-Point Penalty		
		Improper response to the fire command.		
		Improper reporting.		
		Improper driving technique.		
		Total Crew-Duty Penalty Points		
Remarks: 		Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____		

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Figure 7-43. Sample scoresheet—RV Table VIII, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VIII, TASK 3A (MOVING), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a moving position.	1-5 100	1-5 100	Automatic Zero	
	6 93	6 94		
	7 85	7 88		
AMMUNITION	8 78	8 82	Not masked during an NBC engagement.	
Caliber .50: 100 rounds	9 70	9 76	Engaged friendly target.	
or	10 63	10 70		
40mm (MK-19): 16 rounds	11 55	11 64	30-Point Penalty	
7.62mm: 50 rounds	12 48	12 58		
5.56mm: 30 rounds	13 40	13 52	Weapon not on SAFE between engagements.	
	14 33	14 46		
CONDITIONS	15 25	15 40	Fired into the berm.	
Total Targets: 2	16 18	16 34		
Target 1: RPG team, 50 to 200 meters.	17 10	17 28	Killed target beyond maximum vehicle exposure time.	
	18 3	18 22		
Target 2: Set of troops, 200 to 400 meters (15-second delay).	19/+ 0	19 16	10-Point Penalty	
		20 10		
		21 4	Failed to follow instructions from authorized personnel.	
		22/+ 0	Fired before "FIRE" or "ON THE WAY."	
EXPOSURE TIME			Improper engagement technique.	
Target 1: 30 seconds			Improper fire command.	
Target 2: 30 seconds			Did not return to turret-down position.	
STANDARDS			5-Point Penalty	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters.			Improper response to the fire command.	
Hit 1 troop SIT with 1 round caliber .50, 7.62mm, 5.56mm, <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.			Improper reporting.	
			Improper driving technique.	
			Total Crew-Duty Penalty Points	
Remarks:			Target 1 Points (a) _____	
_____			Target 2 Points (b) _____	
_____			Total (a + b = c) (c) _____	
_____			Divide by 2 (# of targets) (c ÷ 2 = d)	
_____			Engagement Raw Score (d) _____	
_____			Total Crew-Duty Penalty Points (e) _____	
_____			Subtract crew-duty penalty points from raw score (d - e = f).	
_____			Engagement Score (f) _____	

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Figure 7-44. Sample scoresheet—RV Table VIII, Task 3A.

GUNNERY SCORESHEET, THREE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VIII, TASK 4A (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	Target 3 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving targets from a stationary position.	1-4 100	1-5 100	1-9 100	Automatic Zero	
AMMUNITION	5 90	6 94	10 97	Not masked during an NBC engagement.	
Caliber .50: 100 rounds	6 80	7 88	11 93	Engaged friendly target.	
or	7 70	8 82	12 90	30-Point Penalty	
40mm (MK-19): 16 rounds	8 60	9 76	13 87	Weapon not on SAFE between engagements.	
7.62mm: 50 rounds	9 50	10 70	14 83	Fired into the berm.	
5.56mm: 30 rounds	10 40	11 64	15 80	Killed target beyond maximum vehicle exposure time.	
CONDITIONS	11 30	12 58	16 77	10-Point Penalty	
Total Targets: 3	12 20	13 52	17 73	Failed to follow instructions from authorized personnel.	
Target 1: RPG team, 50 to 200 meters.	13 10	14 46	18 70	Fired before "FIRE" or "ON THE WAY."	
Target 2: Bunker, 200 to 400 meters.	14+ 0	15 40	19 67	Improper engagement technique.	
Target 3: Moving truck, 400 to 600 meters (15-second delay).		16 34	20 63	Improper fire command.	
Civilians on the battlefield (COB) (15-second delay).		17 28	21 60	Did not return to turret-down position.	
EXPOSURE TIME		18 22	22 57	Target 1 Target 2 Target 3	
Target 1: 50 seconds		19 16	23 53	5-Point Penalty	
Target 2: 50 seconds		20 10	24 50	Improper response to the fire command.	
Target 3: 50 seconds		21 4	25 47	Improper reporting.	
STANDARDS		22/+ 0	26 43	Improper driving techniques.	
Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters.			27 40	Total Crew-Duty Penalty Points	
Hit bunker with 5 rounds caliber .50 or 2 rounds 40mm.			28 37		
Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.			29 33		
			30 30		
			31 27		
			32 23		
			33 20		
			34 17		
			35 13		
			36 10		
			37 7		
			38 3		
			39+ 0		
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 7-45. Sample scoresheet—RV Table VIII, Task 4A.

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GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE VIII, TASK 1B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Identify enemy vehicle and properly perform call for immediate suppression.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	
AMMUNITION	15 95	Not masked during NBC engagement.
None.	16 93	
	17 90	Engaged friendly target.
	18 88	
CONDITIONS	19 85	30-Point Penalty
Total Targets: 1	20 83	
Target 1: Stationary tank, >1,200 meters.	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
EXPOSURE TIME	25 70	10-Point Penalty
Target 1: 50 seconds	26 68	
	27 65	Failed to follow instructions from authorized personnel.
STANDARDS	28 63	
Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
	42 38	
	43 35	Improper driving techniques.
	44 33	
	45 30	
	46 28	
	47 25	Total Crew-Duty Penalty Points
	48 23	
	49 20	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-47. Sample scoresheet—RV Table VIII, Task 1BS.

GUNNERY SCORESHEET, TWO-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
RV TABLE VIII, TASK 2B (STATIONARY), UNIT/BUMPER NUMBER _____						
TASK Engage stationary and moving point targets from a stationary position. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds and 7.62mm: 50 rounds 5.56mm: 30 rounds CONDITIONS Total Targets: 2 Target 1: RPG team, 50 to 200 meters. Target 2: Moving truck, 400 to 600 meters (15-second delay). Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit RPG team with 1 round caliber .50, 7.62mm, 5.56mm, or 1 round 40mm within 5 meters. Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, or 1 round 40mm within 5 meters.	Target 1 RPG Team Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS	
	1-4	100	1-9	100	Automatic Zero	
	5	90	10	97		
	6	80	11	93	Not masked during an NBC engagement.	
	7	70	12	90		
	8	60	13	87	Engaged friendly target.	
	9	50	14	83		
	10	40	15	80	30-Point Penalty	
	11	30	16	77		
	12	20	17	73	Weapon not on SAFE between engagements.	
	13	10	18	70		
	14+	0	19	67	Fired into the berm.	
			20	63		
			21	60	Killed target beyond maximum vehicle exposure time.	
			22	57		
			23	53	10-Point Penalty	
			24	50		
			25	47	Failed to follow instructions from authorized personnel.	
			26	43		
			27	40	Fired before "FIRE" or "ON THE WAY."	
		28	37			
		29	33	Improper engagement technique.		
		30	30			
		31	27	Improper fire command.		
		32	23			
		33	20	Did not return to turret-down position.		
		34	17			
		35	13	5-Point Penalty		
		36	10			
		37	7	Improper response to the fire command.		
		38	3			
		39+	0	Improper reporting.		
				Improper driving technique.		
				Total Crew-Duty Penalty Points		
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____		
				Target 2 Points (b) _____		
				Total (a + b = c) (c) _____		
				Divide by 2 (# of targets) (c ÷ 2 = d)		
				Engagement Raw Score (d) _____		
				Total Crew-Duty Penalty Points (e) _____		
				Subtract crew-duty penalty points from raw score (d - e = f).		
				Engagement Score (f) _____		

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Figure 7-48. Sample scoresheet—RV Table VIII, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
RV TABLE VIII, TASK 3B (MOVING), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a moving position.	1-5 100	1-10 100	Automatic Zero	
	6 94	11 97		
	7 88	12 94	Not masked during an NBC engagement.	
AMMUNITION	8 82	13 91		
Caliber .50: 100 rounds	9 76	14 88	Engaged friendly target.	
or	10 70	15 85		
40mm (MK-19): 16 rounds	11 64	16 82	30-Point Penalty	
	12 58	17 79		
	13 52	18 76	Weapon not on SAFE between engagements.	
CONDITIONS	14 46	19 73		
Total Targets: 2	15 40	20 70	Fired into the berm.	
Target 1: Set of troops, 200 to 400 meters.	16 34	21 67		
	17 28	22 64	Killed target beyond maximum vehicle exposure time.	
Target 2: Stationary truck, 600 to 800 meters (15-second delay).	18 22	23 61		
	19 16	24 58	10-Point Penalty	
	20 10	25 55		
	21 4	26 52	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME	22/+ 0	27 49		
Target 1: 30 seconds		28 46	Fired before "FIRE" or "ON THE WAY."	
Target 2: 30 seconds		29 43		
		30 40	Improper engagement technique.	
		31 37		
		32 34	Improper fire command.	
		33 31	Did not return to turret-down position.	
		34 28		
STANDARDS		35 25	5-Point Penalty	
Hit 1 troop SIT with 1 round caliber .50 <u>or</u> 1 round 40mm within 5 meters, <u>and</u> suppress.		36 22		
		37 19	Improper response to the fire command.	
Hit truck with 3 rounds caliber .50 <u>or</u> 1 round 40mm within 5 meters.		38 16		
		39 13	Improper reporting.	
		40 10	Improper driving technique.	
		41 7	Total Crew-Duty Penalty Points	
		42 4		
		43 1		
		44+ 0		
Remarks:			Target 1 Points (a) _____	
_____			Target 2 Points (b) _____	
_____			Total (a + b = c) (c) _____	
_____			Divide by 2 (# of targets) (c ÷ 2 = d)	
_____			Engagement Raw Score (d) _____	
_____			Total Crew-Duty Penalty Points (e) _____	
_____			Subtract crew-duty penalty points from raw score (d - e = f).	
_____			Engagement Score (f) _____	

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Figure 7-49. Sample scoresheet—RV Table VIII, Task 3B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
RV TABLE VIII, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____					
TASK Engage stationary area targets from a moving position. AMMUNITION Caliber .50: 100 rounds or 40mm (MK-19): 16 rounds CONDITIONS Total Targets: 2 Target 1: Set of troops, 200 to 400 meters. Target 2: Set of troops, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS For each target, hit 1 troop SIT with 1 round caliber .50 or with 1 round 40mm within 5 meters, <u>and</u> suppress.	Target 1 Troops Time/Points		Target 2 Troops Time/Points		
	1-5	100	1-6	100	
	6	94	7	94	
	7	88	8	88	
	8	82	9	82	
	9	76	10	76	
	10	70	11	70	
	11	64	12	64	
	12	58	13	58	
	13	52	14	52	
	14	46	15	46	
	15	40	16	40	
	16	34	17	34	
	17	28	18	28	
	18	22	19	22	
	19	16	20	16	
	20	10	21	10	
	21	4	22	4	
	22/+	0	23/+	0	
			CREW-DUTY PENALTY POINTS		
			Automatic Zero		
			Not masked during an NBC engagement.		
			Engaged friendly target.		
		30-Point Penalty			
		Weapon not on SAFE between engagements.			
		Fired into the berm.			
		Killed target beyond maximum vehicle exposure time.			
		10-Point Penalty			
		Failed to follow instructions from authorized personnel.			
		Fired before "FIRE" or "ON THE WAY."			
		Improper engagement technique.			
		Improper fire command.			
		Did not return to turret-down position.			
		5-Point Penalty			
		Improper response to the fire command.			
		Improper reporting.			
		Improper driving technique.			
		Total Crew-Duty Penalty Points			
Remarks:		Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____			

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Figure 7-50. Sample scoresheet—RV Table VIII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
RV TABLE VIII, TASK 5B (SWING) (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION Caliber .50: 50 rounds or 40mm (MK-19): 8 rounds CONDITIONS NBC. Total Targets: 1 Target 1: Stationary truck, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds caliber .50, 5 rounds 7.62mm, <u>or</u> 1 round 40mm within 5 meters.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-9 100 10 97 11 93 12 90 13 87 14 83 15 80 16 77 17 73 18 70 19 67 20 63 21 60 22 57 23 53 24 50 25 47 26 43 27 40 28 37 29 33 30 30 31 27 32 23 33 20 34 17 35 13 36 10 37 7 38 3 39+ 0	Automatic Zero Not masked during NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 7-51. Sample scoresheet—RV Table VIII, Task 5BS.

Chapter 8

CFV Gunnery

CFV gunnery tables are designed to develop and test the proficiency of individual, crew, and section/platoon gunnery techniques. The series of engagements on each table are intended to duplicate (within the safety and resource constraints of live-fire CFV ranges) typical battlefield tasks under realistic firing conditions against likely target arrays. This chapter discusses the CFV gunnery tables, qualification requirements for crews and sections/platoons, and scoring procedures and standards. It also addresses the commander's considerations for ammunition allocation and firing during adverse weather.

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SECTION I - METHODOLOGY

8-1. The objectives of this gunnery program are to attain and sustain crew through section/platoon gunnery proficiency and evaluate the use of the CFV's fire control system and proper engagement techniques.

8-2. A comprehensive gunnery program must address five basic features of CFV engagements:

- Type of target and weapon fired (heavy armor, light armor, troops, main gun, coax, and so forth).
- Firing CFV posture (moving, stationary, NBC).
- Target posture (moving, stationary, fully exposed, turret down).
- Main gun engagement technique (precision or battlesight).
- Visibility (day, night, or limited).

8-3. CFV crews must be trained to defeat a specific enemy. Specifics for determining how to train include—

- Enemy doctrine and the employment of their weapon systems.
- The time-to-fire P_H and lethality of enemy weapons as a function of range and time.
- Enemy vulnerability to our P_H as a function of range.

8-4. Time standards (70-point time) for each task are based on the amount of time available before an average (50 percent) enemy system will be able to destroy you. The 100-point time line is based on the amount of time available before the top 25 percent of enemy systems is able to destroy you.

SECTION II - EVALUATION TABLE CONSIDERATIONS

8-5. The following tables comprise the gunnery proficiency part of the CFV combat tables:

- Table I—Basic Tracking and Manipulation.
- Table II—Basic Defense.
- Table III—Basic Offense.
- Table IV—Basic Crew Proficiency Course.
- Table V—Preliminary Machine Gun.
- Table VI—Preliminary Main Gun.
- Table VII—Crew Practice.
- Table VIII—Crew Qualification.
- Table IX—Section Practice (see Chapter 10).
- Table X—Section Qualification (see Chapter 10).
- Table XI—Platoon Practice (see Chapter 10).
- Table XII—Platoon Qualification (see Chapter 10).

Note. The tasks, conditions, and standards trained and evaluated in Tables I through III are embedded within the normal progression in all approved Bradley virtual gunnery training systems. However, if such systems are not available, crews will conduct training in accordance with the methodology described in Tables I through III of this chapter.

Bottom line: If crews successfully reach and pass the command-approved virtual training system gate, they are not required to conduct Tables I through III.

8-6. The gunnery tables are designed to train crews progressively in basic, intermediate, and advanced CFV gunnery.

- Virtual and device gunnery table techniques and engagements are trained on Tables I through III and tested on Table IV, BCPC.
- Crew live-fire gunnery tables are trained on Tables V through VII and tested on Table VIII.
- Collective gunnery tables are trained on Tables IX and XI and tested on Tables X and XII (see Chapter 10).

8-7. Table I is designed to train commanders and gunners on basic gunnery skills (including target acquisition, target designation, gun laying, and manipulation) from a stationary CFV. Tables II and III are designed to reinforce the objectives in Table I as well as direct-fire adjustment from a stationary CFV (Table II) and moving CFV (Table III). VCEs should be used to evaluate all CFV tables. The VCEs will be supplemented with observers/controllers (OC) on Tables IX and X.

8-8. Tables I, II, and III should be conducted prior to Table IV. Due to various missions and operational tempo (OPTEMPO), units should complete Tables I through III in the COFT. The following chart lists the appropriate engagements to qualify in the simulator.

	COFT
Tables I-III	Should fire to Reticle Aim 16 (Basic/Transition).
Note.	It is up to the commander to move the crew to the Bradley Advanced Matrix (BAM). The crew should fire Group 1. The crew must fire Group II and pass Exercise 204.

8-9. These tables should be conducted as new gunners are selected and previous gunners become CFV commanders. Since a majority of the tasks on these tables are not resource-intensive, they need to be a part of a unit's routine training plan to maintain individual and crew proficiency. For optimum training benefit, manipulation drills should be integrated with U-COFT and special-purpose exercises.

8-10. Tables IV, VIII, X, and XII are qualification tables and must be fired successfully before advancing to the next higher level of gunnery. All other tables (I, II, III, V, VI, VII, IX, and XI) are recommended for training in sequence. (See also Chapter 10 for Collective Gunnery [Tables IX through XII] information.)

8-11. Two phases and two variations of the tables can be used in a well-rounded CFV gunnery program:

- Day firing phase (A tables) trains and tests the CFV crew in rapid engagement and destruction of targets during daylight hours.
- Night firing phase (B tables) trains and tests the CFV crew in rapid engagement and destruction of targets at night and during periods of limited and reduced visibility.
- Device-based firing trains gunnery procedures and crew and section/platoon duties without expenditure of main gun ammunition. (The commander/master gunner determines when to fire simulator tables to sustain skills when live firing is restricted.)
- Dry firing develops teamwork and reinforces skills before live firing or when live firing is restricted. Units are encouraged to use PGS, MILES, and TSV during dry-fire exercises.

Notes. Day firing (A tables) should precede night firing (B tables) whenever possible, but this is not a requirement. All tables except Tables VIII (Crew Qualification), X (Section Qualification), and XII (Platoon Qualification) may be fired either dry, device-based, or both, if availability of main gun ammunition is a problem. However, it is strongly recommended that units fire Tables VI, VII, or both with live ammunition before firing Table VIII.

SECTION III - VEHICLE CREW EVALUATORS

8-12. The VCE is critical to the quality of the training and AAR of the firing unit. They not only evaluate the crews during the training event, but they also lead them (during the AAR) to an understanding of their actions in each engagement scenario. The same VCE or section/platoon evaluator who observed the firing crew or section/platoon will conduct the AAR to ensure quality. Other range evaluation personnel and the unit's chain of command may assist the VCE or section/platoon evaluator. VCEs and section/platoon evaluators must have training to make sure they are proficient at the necessary skills to properly evaluate the firing crew or section/platoon, and must continually practice their AAR techniques to make sure they are effective.

Note. **Squadron external evaluators will be used on Table VIII.** It is highly recommended that qualified personnel from outside the firing unit be used for all tables, if possible. This will ensure that there are no distractions for personnel having to fire or perform other missions who are organic to the firing unit.

Device and Crew Live-Fire Gunnery Tables

8-13. The firing unit's troop commander is the primary VCE of his unit's performance; however, for device and crew live-fire gunnery tables, he has designated representatives to evaluate each CFV crew. The commander (assisted by the troop master gunner) selects evaluators based on the unit's assets, mission, and prior training of personnel available. Squadron external evaluators are required for Table VIII. Basic guidelines for selecting VCEs are:

- Sergeant and above.
- Qualified on a Bradley crew qualification table within the preceding 12 months.
- Extensive knowledge of—
 - FM 3-20.8, Chapter 2, *Characteristics and Capabilities of the Scout Vehicles, Weapon Systems, and Ammunition*.
 - FM 3-20.8, Chapter 3, *Engagement Process*.
 - FM 3-20.8, Chapter 8, *Cavalry Gunnery*.
- Have been through the training and passed the test in the CFV evaluators exportable packet.

8-14. The VCE must have communications with the firing CFV so that he can monitor the intercom system for Tables I through VIII and maintain visual contact with the CFV at all times.

Notes. The VCE must have received training and be VCE certified by the unit commander, master gunner, or the mobile training team (MTT) for USAREUR-based units.
Any 19D in a line platoon who has prior CFV experience and has passed the CFV evaluators exportable packet test may also be considered for an evaluator tasking.

Collective Tables

8-15. The squadron commander is the primary evaluator of his unit's performance; however, he may have assistants for each section/platoon evaluated. The commander selects assistant evaluators based on the unit's assets and mission at that time. Basic guidelines for selecting assistant evaluators for the collective tables are:

- Platoon sergeant or above.
- Staff Sergeant or above for section/platoon evaluator.
- Qualified on the table being evaluated within the last 12 months (weapon systems qualified) and appointed by their battalion/squadron commander.
- Extensive knowledge of:
 - FM 3-20.8, Chapter 2, *Characteristics and Capabilities of the Scout Vehicles, Weapon Systems, and Ammunition*.
 - FM 3-20.8, Chapter 3, *Engagement Process*.
 - FM 3-20.8, Chapter 8, *Cavalry Gunnery* (specifically, Tables IX and X [see Chapter 10]).
- Familiar with the portion of the firing section/platoon SOP that relates to offensive and defensive operations.
- Safety qualified for the firing range being used.

8-16. Each evaluator should be in a safe position to allow visual monitoring of the firing unit. The evaluator must establish communications with the firing section or platoon so that he can monitor the net for collective gunnery tables. Each evaluator should be equipped with a driver and a vehicle with two net capabilities that allow them to move with the firing unit.

SECTION IV - AFTER-ACTION REVIEWS

8-17. The purpose of an AAR is to help the crew or section/platoon discuss their actions, discover their mistakes, and understand how to correct them. An AAR must include a discussion of crew cuts and an analysis of combat actions (critique of tactical proficiency) executed during the conduct of the table.

8-18. During the AAR, the VCE must emphasize the training objectives and evaluation points. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Quality AARs are the key to successful training.

8-19. The AAR is organized in the following standard format:

- **Introduction and rules.** During the introduction, the VCE must establish the objectives for the AAR. He identifies himself and each of the participants. Normally, the participants are arranged in an organized manner. If possible, the VCE should use the actual terrain on which the tasks were conducted. Most range complexes have debriefing areas with a terrain model or map that depicts the range layout. The VCE may use this established area for the AAR.
- **Review of objectives and intent.** The VCE must state the training objective for the specific task(s) being evaluated.
- **Summary of firing events.** The VCE presents each engagement in chronological order, stating the training objectives for each task. Training aids should be used to show the target arrays, firing points, and other significant overall points, but should avoid detailed examination of the firing events.

- **Discussion of key issues.** The VCE restates each engagement scenario (including the task, conditions, and standards), then asks leading questions to facilitate crew discussion of what actually happened during each engagement. A taped replay (video and audio) of actual crew fire commands and crew duties presented during the AAR is an excellent way to reinforce strengths, eliminate weaknesses, and reinforce training objectives. When possible, the VCE should have an evaluation of digital communication from each scenario and incorporate digital traffic as a portion of the AAR for digital-equipped units. The VCE guides and encourages all crew members to contribute to the discussion. (Avoid lecturing as it prevents crew contribution to the discussion.) Finally, the VCE discusses the strengths and weaknesses of each engagement. When possible, he allows the crew to discover its own strengths and weaknesses.
- **Discussion of optional issues.** The VCE must ask thought-provoking questions, focusing on the training objectives. These questions must explore alternate courses of action that might have been more effective and help the crew members understand how their own actions influenced the result of each engagement. As the crew learns how to correct the mistakes they made, they improve their gunnery proficiency. The VCE should explore training aids and techniques that may be used to sustain and improve training.
- **Discussion of force protection.** The VCE should emphasize safety strengths or weaknesses.
- **Closing comments.** The VCE reviews the training objectives and summarizes key learning points. He must make sure the crew understands what was good, average, or bad about their performance. After covering the objectives, learning points, and specific crew performance, the VCE should leave the area so the VC and crew can discuss their performance in private.

SECTION V - GUNNERY QUALIFICATION REQUIREMENTS

8-20. Each crew member is an integral part of his crew and should be recognized for his contribution to the success of that crew. Commanders should award the appropriate qualification badges, in accordance with AR 600-8-22, to all crews meeting the qualification standards. If optional awards are desired, commanders will use the same standards.

Prerequisites

8-21. Every crew member must have passed the GST, as outlined in this manual, Chapter 4. Prerequisites for the qualification courses are as follows:

- Table IV, *Basic Crew Proficiency Course (BCPC)*. Each crew member must pass the GST within 3 months (6 months for Reserve Component units) before progressing to Table IV. The CFV crew must qualify on Table IV before progressing to live fire.
- Before live-fire. Crews should have conducted live-fire preparatory training in accordance with this manual, Chapter 5.
- Table VIII, *Crew Qualification*. Each crew member must have qualified on Table IV within 3 months (3 months for Reserve Component units) before negotiating the intermediate crew qualification course. The CFV crew must successfully complete Table VIII before negotiating Tables X and XII.
- Table X, *Section Qualification* **or** Table XII, *Platoon Qualification*. Each crew member must have passed the GST and qualified on Table VIII within 6 months and must have completed Tables IX and XI within the last 3 months. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

Qualification

8-22. The following discusses the qualification rating requirements for Tables IV, VIII, X, and XII.

TABLE IV, BASIC CREW PROFICIENCY COURSE

8-23. Crews must successfully negotiate Table IV (BCPC), device-based (meet crew qualification standards listed below), and pass at least one NBC task, one commander's engagement, and two night tasks.

TABLE VIII, CREW QUALIFICATION COURSE

8-24. Crews must live-fire Table VIII for qualification. They will be rated by the following standards:

- **Distinguished:** Combined score of at least 900 points (90 percent or more) on Table VIIIA and B, and 9 out of 10 tasks must have at least 70 points.

- **Superior:** Combined score of 800-899 points (80-89 percent) on Table VIIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement and two night engagements.
- **Qualified:** Combined score of 700-799 points (70-79 percent) on Table VIIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement and two night engagements.
- **Unqualified:** Combined score of 699 or fewer points (69 percent or less) on Table VIIIA and B, or 4 out of 10 tasks have 69 or fewer points or crew fails to pass one NBC engagement, one commander's engagement or two night engagements.

TABLE X, SECTION QUALIFICATION AND TABLE XII, PLATOON QUALIFICATION

8-25. Sections and platoons must live-fire Tables X and XII for qualification. They will be evaluated on both gunnery and tactical proficiency. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

8-26. Sections and platoons will be rated by the following standards:

- **Distinguished.** Combined score of at least 900 points that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Superior.** Combined score of 800-899 points that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Qualified.** Combined score of 700-799 points that must include a minimum 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Unqualified.** Combined score of 699 or fewer points, or section/platoon fails to achieve 420 tactical points (70 percent) and 280 gunnery points (70 percent).

Special Notice

To make sure units use their weapons platform to its full capacity, digitized units *must* use their digital reporting capabilities to qualify on all CFV gunnery tables. All defensive engagements must be conducted using digital communications as the primary means of communications. FM communications will be primary when in the offense. Crews will start the tables with the intent of completing the tables using digital communications. The Squadron commander may allow crews that lose the digital link during an engagement to complete the remainder of the table. Vehicles with digital capability that have problems communicating should be treated the same as nondigital-capable vehicles having FCS or FM communication failure—they should be sent to maintenance for troubleshooting. A digital SPOTREP must be sent to start each engagement. The crew will complete and send a digital SITREP at the completion of the day and night runs. Units should develop standard graphics for each range.

SECTION VI - COMMANDER'S CONSIDERATIONS

All-Weather Firing

8-27. As in combat, firing should continue under all weather conditions. The squadron commander decides what constitutes effective training, based on many factors including mission and range availability. If the training can still be effective during reduced visibility, it should be consistent with the unit's mission requirement. Commanders should take the following into consideration:

- Training effectiveness.
- Operational mission.
- Preparation and planning.
- Safety restrictions.

8-28. Safety, combined with other considerations, will determine when all-weather firing can be continued and when it must be stopped.

Ammunition

8-29. Based on missions and resources available, units will need to determine the frequency for firing Tables IV through XII. For active duty soldiers, the STRAC, DA Pam 350-38, resources units to fire crew qualification tables twice annually and section and platoon qualification annually. The National Guard and Reserve units will fire crew qualification annually.

Targets

8-30. All stationary targets should be mounted on target-lift mechanisms to facilitate target acquisition and scoring. Moving targets should be presented at speeds between 24 and 32 kmph (15 to 20 mph). Moving, evasive targets should be presented at speeds between 8 and 32 kmph (5 to 20 mph). Currently, an evasive target can be programmed to move at varying speeds, conduct short halts (no more than 5 seconds), or change direction. They must be visible from the firing position for the entire exposure time, and must run for a minimum of 15 seconds in each step to allow for acquisition, tracking, and engaging. (This works on most computer-operated ranges. Remote-controlled, moving target lifters may need to substitute evasive moving targets for normal moving targets.) For future range upgrades, evasive targets should have the ability to change speed and direction and alter their appearance or thermal signature as the vehicles' directions change. CFV tables incorporate various targets. These targets are defined as tanks, APCs (BMP), PCs (BTR and BRDM), bunkers, technical vehicles, trucks, RPG teams, snipers, and troops. Master gunners and range-operations personnel must make sure targets are constructed to the correct dimensions to ensure crews using the choke sight determine the proper range.

Target Type	Standard Target
Frontal tank	H-1
Flank tank	H-2
Turret-down tank	H-3
Tank turret	H-5
Frontal HIND-D	H-7
Frontal BMP	M-1
Flank BMP	M-2
Frontal BRDM	M-5
Flank BRDM	M-6
Frontal BTR	M-11
Frontal truck	L-1
Flank truck	L-2
Troops	L-6, L-7, L-9

8-31. When target-lift mechanisms are used, a target that is hit may fail to fall. The control officer or VCE should observe every round fired. **To avoid wasting ammunition, if the target is killed and does not fall, the control officer or VCE will announce a sensing of "KILL, KILL, KILL" over the control net.** This is the only situation in which a sensing will be announced by anyone other than the firing crew. Targets should be repaired as quickly as possible if they fail to drop after being hit. When feasible, targets should be physically scored and patched.

8-32. If a target malfunctions, the crew will be alerted after the engagement during which the target malfunctioned. Based on the availability of targets, the crew may be re-presented the target either at that time or from another location (the target type and conditions for that target must be met). Alternate engagements are provided and should be used if a moving target fails.

TARGET TYPES

8-33. **Point Targets.** An RPG team will consist of three SITs in the open with full and half silhouettes displayed in a tactical array using both width and depth. A vehicle target will be either a flank or frontal silhouette. Stationary point targets should be mounted on separate target-lift mechanisms set on KNOCKDOWN mode of operation.

8-34. **Area Targets.** Area targets will be shown as 5 to 10 SITs in the open with full and half silhouettes displayed in a tactical array using both width and depth. The silhouettes will be placed no more than 5 meters apart or 10 meters in depth.

8-35. **Civilians on the Battlefield (COB)/Friendly Targets.**

- The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented on the specific tasks identified in the table description and in the specific scoresheet.
- Noncombatant targets may consist of any number of silhouettes dispersed in a small group. Noncombatant targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cutouts. All noncombatant/friendly targets will be placed within the range fans and the capabilities of the weapon systems. Friendly forces will be marked in accordance with the firing unit's SOP. Identification methods include, but are not limited to, VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

LATERAL SPREAD OF TARGETS

8-36. A minimum target spread must be used as part of the conditions for gunnery tables. The intent is to make sure gunners and commanders are not able to acquire both targets in a two- or three-target engagement while in NFOV. Therefore, the following guidelines for minimum target spread must be used:

- Given that the NFOV for the M3A2/M3A2 ODS is 2.2 degrees or 39 mils, the minimum target spread is 1-1/2 times the NFOV. For example, targets at 1,200 meters must be no closer than 72 meters. Follow the chart below for other ranges.
- Given that the M3A3 has two advanced sights with which to acquire targets, the minimum target spread for the M3A3 must be 1-1/2 times the WFOV (7 degrees or 186 mils). For example, targets at 1,400 meters must be at least 260 meters apart. Follow the chart below for other ranges.

Range	Minimum (meters) M3A2/ODS	Minimum (meters) M3A3
300	20	56
400	24	74
500	30	93
600	36	112
700	42	130
800	48	149
900	54	167
1,000	60	186
1,100	66	205
1,200	72	223
1,300	78	242
1,400	84	260
1,500	90	279
1,600	96	298
1,700	102	316
1,800	108	335
1,900	114	353
2,000	120	372

SECTION VII - EVALUATION PROCEDURES AND STANDARDS

8-37. All tables must be evaluated, and every crew must receive an AAR after each phase (day and night).

8-38. Alternate tasks are provided for contingencies (such as lack of resources, weather conditions, or range constraints) that preclude execution of the original engagements.

Tables IV through VIII

8-39. Each task on Tables IV through VIII will be scored using the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, and DA Form 7553-5-R) (see scoring procedures on pages 8-13 through 8-18). Once all tasks have been completed and scored, the VCE will complete the Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R, and attach it to the front of the scoresheets for each table (see Figure 8-1).

8-40. The VCE will rate crew duties for each engagement on Tables IV through VIII and subtract crew-duty penalty points from the total engagement points earned. The crew must obtain a minimum of 700 points and qualify (70 or more points on 7 of 10 tasks) on Tables IV and VIII. Crews must qualify a minimum of 70 percent of the total tasks presented and receive the minimum point value required for each table, to be qualified on Tables VI and VII. Crews who do not qualify on the first run of a table must renegotiate the course. Crews firing reruns should execute only the tasks on which they failed to qualify during the first run. In no case will a crew re-fire engagements before completing a first run. In no case will a crew who failed to qualify during their first run receive a rating higher than qualified/700 points after a subsequent run. After a crew meets the minimum qualification standard during their subsequent run, the troop/squadron commander may elect, due to resource constraints, to stop that crew's further negotiation of the course. The troop/squadron commander and master gunner will decide how many times a crew should be rerun. Their decision should be based on the possibility of the crew meeting the minimum requirements, and time and resources available.

TARGET SIGNATURE DEVICES

8-41. The commander may use target signature devices (such as the Hoffman device); however, no more than one device will be used for target signature purposes. When used, at least 5 seconds of target exposure time must elapse before the device is detonated or activated. Target signature device failure is not a valid alibi.

CREW PROTECTION STATUS

8-42. The troop/squadron commander will decide if the vehicle commanders will fight from the pop-up or open-protected position when they are receiving suppressive small-arms fire, airburst artillery, or near misses as a result of enemy direct fire.

8-43. Commanders will decide the appropriate MOPP level for NBC engagements based on the heat index; however, a minimum of mask and gloves will be worn.

COAX KILL STANDARDS

8-44. Machine gun engagements will be evaluated as follows:

- **Point Targets (RPG Teams and Snipers).** The crew receives full credit when one or more rounds are fired through the target.
- **Area Targets (Troops).** The primary device for scoring area targets will be the Area Target Scoring System (ATSS) or similar device. Crews must sweep through the target area providing 75 percent coverage. The crew receives full credit when there is 75 percent coverage of the target area. If the ATSS is not available, the crew receives full credit when the gunner or VC sweeps through the target area, achieves a kill on at least one silhouette (SIT) within the group (CFV exposure time for that group will stop when one target is killed), and suppresses the rest of the target area. The engagement consists of a sensing burst and three distinct killing bursts that cover the target area. The bursts should be 10 to 15 rounds in duration. The target area is defined as one target form up, down, left, or right of every target in the array.

SCOUT GUNNERY TABLE ROLL-UP SHEET					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
1. VEHICLE (Check one) ☐ CFV ☐ HMMWV ☐ RV ☐ TOW					2. TABLE
3. BUMPER #	4. UNIT		5. RANGE		6. SCORE AND RATING
7a. CREWMAN RANK, NAME, POSITION		7b. CREWMAN RANK, NAME, POSITION		7c. CREWMAN RANK, NAME, POSITION	
7d. CREWMAN RANK, NAME, POSITION		7e. CREWMAN RANK, NAME, POSITION		7f. CREWMAN RANK, NAME, POSITION	
8. DAY RUN DTG	9. EVALUATOR'S UNIT		10. DAY EVALUATOR NAME		11. EVALUATOR SIGNATURE
12. DAY SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
13. NIGHT RUN DTG	14. EVALUATOR'S UNIT		15. NIGHT EVALUATOR NAME		16. EVALUATOR SIGNATURE
17. NIGHT SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
18a. VEHICLE COMMANDER'S NAME			18b. VEHICLE COMMANDER'S SIGNATURE		
19a. HEAD EVALUATOR'S NAME			19b. HEAD EVALUATOR'S SIGNATURE		

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Figure 8-1. Sample Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R.

25MM KILL STANDARDS

8-45. Engagements will be evaluated as follows:

- Point targets (PCs, trucks, bunkers, and technical vehicles). The crew receives full credit when three rounds hit anywhere on the panel.
- Point targets (RPG teams and snipers). The crew receives full credit when one HE round hits or lands within 5 meters of one of the silhouettes.
- Area targets (troops). The crew receives full credit when one HE round hits or lands within 5 meters of one of the silhouettes (vehicle exposure time stops) and the firer sweeps through, suppressing the target area. Evaluators must take into account the 5-meter bursting radius of the HE rounds.

TOW KILL STANDARDS

8-46. The crew receives full credit when the missile hits anywhere on the panel or target.

CALL-FOR-FIRE (CFF) KILL STANDARDS

8-47. The crew receives full credit when the grid in the immediate suppression mission is within 150 meters of the target. A minimum score of 70 is achieved within 25 seconds.

TIMING PROCEDURES

8-48. The intent of scoring and timing is to cause crews to train as they would fight. Crews should be trained and rewarded for hitting targets rapidly.

8-49. The VCE's judgment is critical in implementing this policy. Knowledge of the CFV's capabilities and observation of firing conditions must be applied in order to maintain standards without penalizing the firing crew. VCEs must be in a position to observe the firing CFV at all times. The commander or master gunner will determine implementing procedures for these basic policies on any gunnery range.

8-50. Three types of time are used to evaluate gunnery engagements on Tables V through VIII: target exposure, CFV exposure, and target kill.

8-51. **Target Exposure Time.** Exposure time limits the time the target is exposed yet allows for situation-dependent contingencies beyond crew control.

8-52. For Tables V through VIII, target exposure time is listed for each target. Tasks are designed so—

- Targets are exposed for 50 seconds in the defense, starting from the time the target is in the fully locked (up) position.
- Targets are exposed for 30 seconds in the offense. This time starts when the target is in the fully locked (up) position.
- Each target in a target array has its own exposure time.
- Exposure time for all moving targets is 50 seconds. (Range constraints limit target exposure for targets moving 20 miles per hour or more.)
- Delayed targets in the defense are exposed for 35 seconds.

8-53. **CFV Exposure Time.** CFV exposure time is based on the amount of time a CFV may be exposed to a target before that target can engage and destroy the CFV. Each target maintains its own threat to the exposed CFV, thus a CFV may be exposed to more than one target at the same time.

8-54. In the defense, exposure time starts when the CFV moves from the turret-down position to a hull-down position **and** stops, or when the first round is fired, whichever comes first. In the offense, exposure time starts when the target(s) is locked in the full upright position or when the first round is fired, whichever comes first. In multiple target engagements, both targets will be presented at the same time. The only exception to this will be tasks with target delays. Delay times are given in the conditions for each task. In a multiple target engagement (except for delayed targets), the exposure time starts when the both targets are locked in the upright position.

Note. If there is more than a 3-second difference between when the two targets are in the fully upright position, then the targets must be timed separately.

8-55. When in the defense, the CFV exposure time stops when the target that the CFV is engaging is destroyed or when the CFV starts to move back into a turret-down position. In the offense, the exposure time will stop when the target is destroyed. In multiple target engagements, the CFV is exposed to more than one target. Once a target is destroyed, the exposure time for that target stops; however, the exposure time to the other target(s) will continue until the target(s) is destroyed in the offense or until the CFV pulls back into a turret-down position in the defense.

Note. Exposure time for area troops will stop once one target is hit; however, to receive full credit for the kill, the area must be suppressed.

8-56. Once a CFV moves back into a turret-down position, the CFV exposure time will reset. The exposure time is reset because now a target must reacquire, re-lay, and reengage the CFV. It is also implied that a CFV that has pulled back into a turret-down position will maneuver and engage from another position.

8-57. **Target Kill Time.** Target kill time is the time that it took the CFV crew to destroy the target. The target kill time will not exceed the CFV exposure time in order to receive a minimum passing score of 70 points.

8-58. **Timing Devices.** To score engagements in Tables V through VIII, you will need a minimum of three stopwatches to time a three-target engagement. The only time that needs to be tracked is the CFV exposure time; the tower or target control personnel will track the target exposure time automatically. The best device for this is one timing device that has multiple stopwatches with one common start button and an independent stop button for each watch.

ALIBIS

8-59. Although commanders have the ultimate authority regarding alibis, they should be limited to two occurrences: range/target malfunction and weapon malfunction that are not the fault of the crew and not correctable through immediate action. Commanders should ensure that gunnery is as combat realistic as possible. This means that crews should train to fight *through* problems.

REMEDIAL TRAINING

8-60. Unit commanders and master gunners must make sure crews that fail tables or habitually fail specific tasks receive remedial training. Virtual trainers, subcaliber devices, or dry runs as a last resort, are the recommended techniques for remedial training. Once remedial training has been completed and the crews have been cleared by the master gunner to continue training, the failed engagements should be fired, if ammunition and time if available.

EVALUATING CREW DUTIES

8-61. During the conduct of CFV tables, VCEs monitor crew duties. There is no limit to the number of crew-duty penalty points that can be assessed for a task; however, crew-duty penalties may not be carried over from one task to another. After each phase, the crew will receive an AAR. During the AAR, the VCE briefs the crew on crew duties such as fire commands, crew coordination, sectors of fire, target acquisition, methods of engagement, and tactical reporting.

8-62. Crew-duty penalties are implemented to ensure crews practice safe firing procedures. There are five categories of crew-duty penalties:

- Immediate disqualification.
- Automatic zero point.
- Failure to employ doctrinally correct engagement techniques (30 points).
- Failure to adhere to basic doctrine and safety precepts (10 points).
- Failure to employ correct engagement techniques or respond properly to fire commands (5 points).

Note. The following list of crew-duty penalties is not all-inclusive.

Immediate Disqualification

8-63. Any crew found firing outside the range fan will receive an immediate disqualification for the table that they are firing. Commanders will make decisions concerning other violations that constitute extremely hazardous conduct and what actions should be taken for crews caught cheating.

Automatic Zero-Point Penalty—Blatant Disregard for Announced Task, Conditions, and Standards

8-64. Any crew found in violation of the following policies will receive 0 points for the engagement that they are firing:

- Not wearing mask and gloves during an NBC engagement.
- Using announced degraded components.
- VC not firing his engagement.
- Engaging friendly or COB targets.

30-Point Penalty

8-65. Failure to employ doctrinally correct engagement techniques and exceeding vehicle exposure:

- Failure to raise the TOW launcher and conduct a self-test during a defensive engagement.
- Hatches not closed during NBC engagement.
- Firing into the berm (crews not ensuring that the main gun was clear of the berm).
- Target killed beyond maximum vehicle exposure time (only on multiple engagements and can be given only once per engagement).

10-Point Penalty

8-66. Failure to adhere to basic doctrinal and safety precepts:

- Failure to follow the instructions from authorized personnel.
- Firing before receiving the command “FIRE” or announcing “ON THE WAY.”
- Improper engagement technique (such as, firing at the least dangerous target first during a multiple-target engagement and improper suppressive fire techniques).
- Improper fire command.
- Failure to return to a turret-down position after completing a defensive engagement or between targets on a multiple-target engagement.

Note. If a safety violation or combination of safety violations indicates it may be unsafe for a crew to continue the course, the safety officer will disqualify the crew and remove them from the range. Any unsafe act may be assessed a 10-point safety penalty. Crews should be informed of safety crew cuts; this may prevent accident or injury.

5-Point Penalty

8-67. Failure to employ correct engagement techniques or respond properly to fire commands:

- Improper response to a fire command.
- Improper reporting (not sending a SALT and BDA report after the engagement). (**Note.** When conducting stationary engagements, digital-equipped units **must** use digital communications to report.)
- Improper driving techniques (driver not maintaining speed or steady platform [such as, jerky starts and stops, too fast for maneuver box, goes off the course or road]).
- Improper ammunition for the target (for example, firing HEI-T at an armored vehicle).

SCORING PROCEDURES

8-68. Each task has its own specific gunnery scoresheet; you must use the scoresheet for that specific task. The various gunnery scoresheets (DA Form 7553-3-R, DA Form 7553-4-R, and DA Form 7553-5-R) will be used to collect similar scoring information; however, the task, ammunition, conditions, targets, exposure times, standards, and points information, and whether the engagement is a one-target, two-target, or three-target task on each scoresheet will vary according to the table and task that will be tested. The time/points column on the

scoresheet for each task is based on the expected results of engagements between the CFV, selected enemy targets, and the performance of the crew. The instructions below explain how to use the scoresheet for one-target, two-target, and three-target tasks. Figure 8-2, page 8-16 shows an example of a completed scoresheet for a one-target task. Figure 8-3, page 8-17 shows an example of a completed scoresheet for a two-target task. Figure 8-4, page 8-18 shows an example of a completed scoresheet for a three-target task.

Note. If the engagement raw score has a decimal in it, the score will be rounded using normal mathematical rounding (.5 and above is rounded up and .4 and below is rounded down).

Scoring Instructions for One-Target Tasks

1. Once the target kill time has been received, circle the time in the Time/Points column. Annotate the points that correspond to that time on line (a) in the bottom right-hand box of the scoresheet.
2. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (b) in the bottom right-hand box of the scoresheet.
3. Subtract the total number of crew-duty penalty points from the target points ($a - b = c$). Annotate this total on line (c) in the bottom right-hand box of the scoresheet. The result is the engagement score.

8-69. **Example one-target task.** Table VIII, Task 1A (Defense) (see Figure 8-2, page 8-16). The crew engaged and destroyed the PC in 13 seconds. The gunner did not respond with “IDENTIFIED.”

Scoring Instructions for Two-Target Tasks

1. Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a) and (b)] in the bottom right-hand box of the scoresheet.
 2. Add the points for all targets ($a + b = c$). Annotate the total on line (c).
 3. Divide the total by the number of targets presented ($c \div 2 = d$). Annotate the result on line (d), which is the Engagement Raw Score.
 4. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (e) in the bottom right-hand box of the scoresheet.
- Note.** Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.
5. Subtract the total number of crew-duty penalty points from the raw score ($d - e = f$). Annotate this total on line (f) in the bottom right-hand box of the scoresheet. The result is the engagement score.

8-70. **Example two-target task.** Table VIII, Task 5A (Offense) (see Figure 8-3, page 8-17). The crew engaged and destroyed Target 1 in 5 seconds and engaged and destroyed Target 2 within 18 seconds of presentation. The driver stalled the CFV on the berm during the truck engagement.

Scoring Instructions for Three-Target Tasks

1. Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a), (b), and (c)] in the bottom right-hand box of the scoresheet.
2. Add the points for all targets ($a + b + c = d$). Annotate the total on line (d).
3. Divide the total by the number of targets presented ($d \div 3 = e$). Annotate the result on line (e), which is the Engagement Raw Score.

4. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (f) in the bottom right-hand box of the scoresheet.

Note. Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.

5. Subtract the total number of crew-duty penalty points from the raw score ($e - f = g$). Annotate this total on line (g) in the bottom right-hand box of the scoresheet. The result is the Engagement Score.

8-71. **Example three-target task.** Table VIII, Task 2AS (Defense) (see Figure 8-4, page 8-18). The crew engaged and destroyed Target 1 in 4 seconds, engaged and destroyed Target 2 within 11 seconds of presentation, and engaged and destroyed Target 3 within 6 seconds of presentation, but failed to return to the turret-down position after Target 2.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE VIII, TASK 1A (MANUAL) (DEFENSE), UNIT/BUMPER NUMBER <u>1/7 Cav, B-34</u>		
TASK Engage a stationary point target from a stationary CFV.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION TPDS-T: 8 rounds	1-9 100 10 96 11 93 12 89 <u>13</u> 85 14 81 15 78 16 74 17 <u>70</u> 18 66 19 63 20 59 21 55 22 51 23 48 24 44 25 40 26 36 27 33 28 29 29 25 30 21 31 18 32 14 33 10 34 6 35 3 36+ 0	Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target.
CONDITIONS Manual mode.		30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm.
Total Targets: 1 Target 1: Stationary PC, 1,000 to 1,200 meters. Gunner's position.		10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position.
EXPOSURE TIME Target 1: 50 seconds		5-Point Penalty Improper response to fire command. X Improper reporting. Improper driving techniques. Improper ammunition.
STANDARDS Hit PC with 3 rounds AP 25mm.		Total Crew-Duty Penalty Points 5
Remarks: <u>Gunner did not respond with</u> <u>"IDENTIFIED."</u>		Target 1 Points (a) <u>85</u> Total Crew-Duty Penalty Points (b) <u>-5</u> Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) <u>80</u>

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Figure 8-2. Sample Completed Scoresheet—One-Target Task.

GUNNERY SCORESHEET, TWO-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VIII, TASK 5A (NBC) (OFFENSE), UNIT/BUMPER NUMBER <u>17 Cav, C-36</u>			
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS
Engage stationary and moving point and area targets from a moving CFV.	<u>1-6</u> 100	1-13 100	Automatic Zero
	7 94	14 98	
	8 88	15 95	
AMMUNITION	9 82	16 93	Not masked during NBC.
7.62mm: 75 rounds	10 76	<u>18</u> 89	Used announced degraded components.
TP-T: 8 rounds	<u>11</u> 70	19 86	Commander did not fire his engagement.
	12 64	20 84	Engaged friendly target.
CONDITIONS	13 58	21 82	30-Point Penalty
NBC.	14 52	22 79	
	15 46	23 77	
Total Targets: 2	16 40	24 75	Failed to raise TOW launcher.
Target 1: Dismounted troops, 400 to 600 meters.	17 34	25 72	Hatches not closed during NBC.
Target 2: Moving truck, 800 to 1,000 meters.	18 28	<u>26</u> 70	Fired into the berm.
	19 22	27 68	Killed target beyond maximum vehicle exposure time.
Gunner's position.	20 16	28 66	10-Point Penalty
	21 10	29 63	
	22 4	30 61	
EXPOSURE TIME	23/+ 0	31 59	Failed to follow instructions from authorized personnel.
Target 1: 30 seconds		32 56	Fired before "FIRE" or "ON THE WAY."
Target 2: 30 seconds		33 54	Improper engagement technique.
		34 52	Improper fire command.
		35 49	Did not return to turret-down position.
		36 47	Target 1 Target 2
		37 45	5-Point Penalty
		38 43	
		39 40	
STANDARDS		40 38	Improper response to fire command.
Hit 1 troop SIT with 1 round		41 36	Improper reporting.
7.62mm <u>and</u> suppress.		42 33	Improper driving techniques. X
Hit truck with 3 rounds HE		43 31	Improper ammunition.
25mm.		44 29	
		45 26	
		46 24	
		47 22	
		48 20	
		49 17	
		50+ 0	Total Crew-Duty Penalty Points 5
Remarks: <u>Fast killing burst on troops.</u> <u>Driver stalled CFV on berm during the truck engagement.</u> <u>Good adjustments after problem with vehicle.</u>			Target 1 Points (a) <u>100</u> Target 2 Points (b) <u>89</u> Total (a + b = c) (c) <u>189</u> Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) <u>95</u> Total Crew-Duty Penalty Points (e) <u>-5</u> Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) <u>90</u>

DA FORM 7553-4-R, APR 2005

Figure 8-3. Sample Completed Scoresheet—Two-Target Task.

GUNNERY SCORESHEET, THREE-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VIII, TASK 2A (SWING) (DEFENSE), UNIT/BUMPER NUMBER <u>1/10 Cav, C-12</u>				
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	Target 3 Troops Time/Points	CREW-DUTY PENALTY POINTS
Engage stationary point and area targets from a stationary CFV.	<u>1-4</u> 100	1-8 100	1-5 100	Automatic Zero
AMMUNITION	5 90	9 96	<u>6</u> 94	Not masked during NBC.
7.62mm: 125 rounds	6 80	10 91	7 88	Used announced degraded components.
TP-T: 8 rounds	<u>7</u> <u>70</u>	<u>11</u> 87	8 82	Commander did not fire his engagement.
CONDITIONS	8 60	12 83	9 76	Engaged friendly target.
Total Targets: 3	9 50	13 77	<u>10</u> <u>70</u>	30-Point Penalty
Target 1: RPG team, 300 to 500 meters.	10 40	14 74	11 64	Failed to raise TOW launcher.
Target 2: Bunker, 800 to 1,000 meters.	11 30	<u>15</u> <u>70</u>	12 58	Hatches not closed during NBC.
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	12 20	16 66	13 52	Fired into the berm.
Civilians on the battlefield (COB) (15-second delay).	13 10	17 62	14 46	Killed target beyond maximum vehicle exposure time.
Gunner's position.	14+ 0	18 57	15 40	10-Point Penalty
EXPOSURE TIME		19 53	16 34	Failed to follow instructions from authorized personnel.
Target 1: 50 seconds		20 49	17 28	Fired before "FIRE" or "ON THE WAY."
Target 2: 50 seconds		21 44	18 22	Improper engagement technique.
Target 3: 35 seconds (15-second delay)		22 40	19 16	Improper fire command.
STANDARDS		23 36	20 10	Did not return to turret-down position.
Hit RPG team with 1 round 7.62mm.		24 32	21 4	Target 1 <u>Target 2</u> Target 3 X
Hit bunker with 3 rounds HE 25mm.		25 27	22+ 0	5-Point Penalty
Hit 1 troop SIT with 1 round 7.62mm and suppress.		26 23		Improper response to fire command.
		27 19		Improper reporting.
		28 14		Improper driving techniques.
		29 10		Improper ammunition.
		30 6		Total Crew-Duty Penalty Points
		31 2		10
		32 0		
REMARKS:				Target 1 Points (a) <u>100</u>
<u>Fast engagement times. Great techniques.</u>				Target 2 Points (b) <u>87</u>
				Target 3 Points (c) <u>94</u>
				Total (a + b + c = d) (d) <u>281</u>
				Divide by 3 (# of targets) (d ÷ 3 = e)
				Engagement Raw Score (e) <u>94</u>
				Total Crew-Duty Penalty Points (f) <u>-10</u>
				Subtract crew-duty penalty points from raw score (e - f = g)
				Engagement Score (g) <u>84</u>

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Figure 8-4. Sample Completed Scoresheet—Three-Target Task.

Tables IX through XII

8-72. Sections/platoons will be evaluated on both tactical and gunnery proficiency. One section/platoon evaluator must evaluate the section/platoon during the entire time they are on the range. Live-fire scoring of the table is conducted from the tower. The section/platoon leader must be allowed time to conduct troop-leading procedures. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

8-73. Each section/platoon will be critiqued at an AAR held after each firing run. Crew duties are not formally rated on these tables; however, unsatisfactory performance of individual CFV crews within the section/platoon may be informally evaluated during the AAR.

SECTION VIII - CONDUCT OF THE GUNNERY TABLES

Table I (Basic Tracking and Manipulation)

8-74. Table I introduces crews to train in a gunnery environment. Crews will use PGS or MILES if PGS is not available.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

8-75. Table I is used to develop coordination skills and provide the VC and gunner an opportunity to identify individual strengths and weaknesses. It should be conducted with commanders and gunners from the same crew. Each VC and gunner will evaluate the other throughout the individual tasks.

EXECUTION

8-76. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements will begin with the CFV starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

CONDUCT OF THE TASKS

8-77. Table I tasks are not range-dependent; most can be conducted in local training areas (LTA) and motor pools. Use of manipulation boards, full or scaled-targets, and switchology drills will allow the commander and gunner to conduct exercises from a stationary or moving CFV. Table I tasks should be integrated into the unit's routine training schedules.

8-78. **Gun-Laying Exercise.** The commander will be presented targets (one at a time) for which he must initiate a simulated engagement. Full-scale targets should be used. Viewing through the GPS (day/thermal) in WFOV, the gunner will evaluate the commander's gun-laying ability. At the completion of the commander's lay, the gunner should be able to identify the target within his optic. The commander achieves a GO when he lays the gun and the target appears within NFOV.

8-79. **Manipulation Exercise.** From their respective positions, the commander and gunner will manipulate the turret. This exercise consists of engaging ten stationary targets on a manipulation silhouette (tracking board) within one minute. The commander will engage his target with the commander's power control handle (CPCH). The gunner will engage his targets in the manual mode using manual controls with the day/thermal view.

Note. The magnification power on the tracking board will not correlate with the CFV magnification capabilities.

8-80. **Tracking Exercise.** Tracking exercises using manipulation boards train commanders/gunners hand and eye coordination, turret control, speed, and accuracy. They will be performed with the day, night, and auxiliary sights. Tracking exercises are best conducted using U-COFT, due to the evasive targets incorporated therein. Commanders and gunners will evaluate each other.

8-81. **Target-Engagement Exercise.** Target-engagement exercises are designed to train commanders and gunners in the direct-fire engagement process. Techniques to be trained include—

- Single and multiple engagements.
- Normal- and degraded-mode engagements.
- Direct-fire engagements.
- Main gun and machine gun engagements.
- Day, night, and limited-visibility engagements.
- Delayed targetry.

8-82. These exercises may be conducted dry or with PGS or MILES.

SCORING

8-83. The VCE will rate crew duties for each engagement in Table I. If the crewman commits more than one crew-duty error during a task, he will be rated UNSATISFACTORY in crew duties. Crew duties will be critiqued by the VCE during the AAR; however, they will not affect the overall GO/NO-GO rating for the task.

8-84. For the day and night phases, a crew must pass 7 of 10 engagements, to include one NBC and one commander's engagement.

Table 8-1. CFV Table I, A and B.

CFV TABLE I, A AND B			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A and B Defense	Moving PC, 1,200 to 1,400 meters. Stationary frontal truck, 800 to 1,000 meters. Gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 18 seconds. Hit truck with a minimum of 3 rounds within 20 seconds.
2A and B Defense	Stationary frontal PC, 1,000 to 1,200 meters. Gunner's position, manual.	Simulator	Hit PC with a minimum of 3 rounds within 17 seconds.
3A and B Defense NBC	RPG team, 600 to 800 meters. Stationary frontal truck, 1,200 to 1,400 meters. NBC, gunner's position.	Simulator	Hit 1 troop target within 12 seconds. Hit truck with a minimum of 3 rounds within 27 seconds.
4A and B Defense	Stationary frontal PC, 1,000 to 1,200 meters. Gunner's position (night).	Simulator	Hit PC with a minimum of 3 rounds within 17 seconds.
5A and B Defense	Stationary frontal PC, 800 to 1,000 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds.
6A and B Defense	Dismounted troops, 200 to 400 meters. Stationary frontal PC, 1,000 to 1,200 meters. Gunner's position.	Simulator	Hit 1 troop SIT within 8 seconds and suppress area. Hit PC with a minimum of 3 rounds within 17 seconds.
7A and B Defense	RPG team, 400 to 600 meters. Stationary frontal PC, 1,200 to 1,400 meters. Commander's position.	Simulator	Hit 1 troop target within 9 seconds. Hit PC with a minimum of 3 rounds within 18 seconds.
8A and B Defense NBC	Dismounted troops, 400 to 600 meters. Stationary frontal PC, 1,200 to 1,400 meters. NBC, gunner's position.	Simulator	Hit 1 troop SIT within 11 seconds and suppress area with a Z pattern. Hit PC with a minimum of 3 rounds within 22 seconds.
9A and B Defense	Stationary frontal truck, 600 to 800 meters. Gunner's position, manual.	Simulator	Hit truck with a minimum of 3 rounds within 19 seconds.
10A and B Defense	RPG team, 200 to 400 meters. Stationary frontal truck, 800 to 1,000 meters. Auxiliary sight.	Simulator	Hit 1 troop target within 8 seconds. Hit truck with a minimum of 3 rounds within 20 seconds.

Table II (Basic Defense)

8-85. Table II introduces crews to rapid target destruction from a stationary CFV. Crews will use PGS or MILES if PGS is not available.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

8-86. Table II is designed to develop the defensive driving skills of the driver while the crew engages stationary, moving, single, and multiple targets deployed in a realistic array. The crews will fire six day and six night engagements. A minimum of one day and one night engagement will be fired in an NBC environment (appropriate MOPP level). Engagements include 25mm and M240C engagement techniques using primary and auxiliary sights. Tasks will be scored using the criteria in the standards column for each task in Table 8-2.

CONDUCT OF THE TASKS

8-87. Table II develops the driving skills of the driver while the crew engages targets. Engagements begin with single targets and become more challenging as multiple targets are introduced. Table II should be conducted on a full-scale range using half-scale targets.

EXECUTION

8-88. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements will begin with the CFV starting in a turret-down position, then moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

8-89. The crew must pass 8 of the 12 tasks, to include one NBC and one commander's engagement on Table II. Crews should continue to practice Table II until they pass it before progressing to Table III.

Table 8-2. CFV Table II, A and B.

CFV TABLE IIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Defense	Moving tank, 1,800 to 2,000 meters. Gunner's position.	Simulator	Hit tank with one simulated missile.
2A Defense	Stationary frontal truck, 400 to 600 meters. Gunner's position, manual.	Simulator	Hit truck with a minimum of 3 rounds within 17 seconds.
3A Defense NBC	Moving PC, 600 to 800 meters. Stationary frontal truck, 400 to 600 meters. NBC, gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds. Hit truck with a minimum of 3 rounds within 18 seconds.
4A Defense	Stationary frontal truck, 600 to 800 meters. Auxiliary sight.	Simulator	Hit truck with a minimum of 3 rounds within 19 seconds.
5A Defense	Moving PC, 800 to 1,000 meters. Stationary frontal truck, 400 to 600 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds. Hit truck with a minimum of 3 rounds within 17 seconds.
6A Defense	RPG team, 200 to 400 meters. Moving PC, 1,000 to 1,200 meters. Gunner's position.	Simulator	Hit 1 troop target within 8 seconds. Hit PC with a minimum of 3 rounds within 15 seconds.

Table 8-2 (cont).

CFV TABLE IIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Defense	Stationary frontal PC, 800 to 1,000 meters. Stationary frontal truck, 400 to 600 meters. Gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds. Hit truck with a minimum of 3 rounds within 17 seconds.
2B Defense NBC	Moving PC, 800 to 1,000 meters. NBC, gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 18 seconds.
3B Defense	Stationary frontal PC, 600 to 800 meters. Stationary frontal truck, 400 to 600 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 14 seconds. Hit truck with a minimum of 3 rounds within 17 seconds.
4B Defense	Moving PC, 600 to 800 meters. Stationary frontal truck, 600 to 800 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 14 seconds. Hit truck with a minimum of 3 rounds within 19 seconds.
5B Defense	Moving PC, 800 to 1,000 meters. Stationary frontal truck, 1,000 to 1,200 meters. Gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 14 seconds. Hit truck with a minimum of 3 rounds within 22 seconds.
6B Defense	Moving tank, 1,800 to 2,000 meters. Gunner's position.	Simulator	Hit tank with one simulated missile.

Table III (Basic Offense)

8-90. Table III introduces crews to rapid target destruction from a moving CFV. Crews will use PGS or MILES if PGS is not available.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

8-91. Table III is designed to develop the offensive driving skills of the driver while the crew engages stationary, moving, single, and multiple targets deployed in a realistic array. The crews will fire six day and six night engagements. A minimum of one day and one night engagement will be fired in an NBC environment (appropriate MOPP level). Engagements include 25mm and M240C engagement techniques using primary sights. Tasks will be scored using the criteria in the standards column for each task in Table 8-3.

CONDUCT OF THE TASKS

8-92. Table III develops the driving skills of the driver while the crew engages targets. Engagements begin with single targets and become more challenging as multiple targets are introduced. Table III should be conducted on a full-scale range using half-scale targets.

EXECUTION

8-93. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All offensive engagements will be fired from a moving CFV using the stabilization system.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate maintenance personnel immediately. The crew will be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-94. The crew must pass 7 of the 10 tasks, to include one NBC and one commander's engagement for Table III. Crews should continue to practice Table III until they pass it before progressing to Table IV.

Table 8-3. CFV Table III, A and B.

CFV TABLE IIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Offense	Stationary frontal truck, 600 to 800 meters. Gunner's position, manual.	Simulator	Hit truck with a minimum of 3 rounds within 20 seconds.
2A Offense NBC	Moving PC, 1,000 to 1,200 meters. Stationary frontal truck, 800 to 1,000 meters. NBC, gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 22 seconds. Hit truck with a minimum of 3 rounds within 26 seconds.
3A Offense	Stationary frontal truck, 600 to 800 meters.	Simulator	Hit truck with a minimum of 3 rounds within 20 seconds.
4A Offense	Stationary PC, 800 to 1,000 meters. Stationary frontal truck, 400 to 600 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 18 seconds. Hit truck with a minimum of 3 rounds within 18 seconds.
5A Offense	RPG team, 200 to 400 meters. Moving truck, 800 to 1,000 meters. Gunner's position.	Simulator	Hit truck with a minimum of 3 rounds within 26 seconds. Hit 1 troop target within 10 seconds.
CFV TABLE IIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Offense	Stationary frontal PC, 800 to 1,000 meters. Stationary frontal truck, 400 to 600 meters. Gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 18 seconds. Hit truck with a minimum of 3 rounds within 18 seconds.
2B Offense NBC	Moving PC, 600 to 800 meters. NBC, gunner's position.	Simulator	Hit PC with a minimum of 3 rounds within 20 seconds.
3B Offense	Stationary frontal PC, 600 to 800 meters. Stationary frontal truck, 400 to 600 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds. Hit truck with a minimum of 3 rounds within 18 seconds.
4B Offense	Stationary PC, 600 to 800 meters. Stationary frontal truck, 400 to 600 meters. Commander's position.	Simulator	Hit PC with a minimum of 3 rounds within 15 seconds. Hit truck with a minimum of 3 rounds within 18 seconds.
5B Offense	Stationary frontal truck, 400 to 600 meters. Moving PC, 200 to 400 meters. Gunner's position.	Simulator	Hit truck with a minimum of 3 rounds within 18 seconds. Hit PC with a minimum of 3 rounds within 15 seconds.

Table IV (Basic Crew Proficiency Course)

8-95. Table IV evaluates the crew's basic level of proficiency. It tests the crew's ability to rapidly destroy stationary and moving targets from a stationary and moving CFV. Crews will use PGS or MILES if PGS is not available.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

8-96. Table IV is designed to train crews on a stationary and moving CFV to engage stationary, moving, single, and multiple targets deployed in a realistic array. The crews will fire the whole table during the day, then at night. A minimum of one day and one night engagement will be fired in an NBC environment (appropriate MOPP level).

8-97. Engagements include 25-mm and M240C engagement techniques using primary and alternate sights.

CONDUCT OF THE TASKS

8-98. Table IV allows the driver to integrate into the crew's coordination by moving the vehicle in and out of the firing positions and along a course road. Engagements are designed to integrate battlefield conditions, degradation of the firing system, and targets arrayed in a realistic manner.

EXECUTION

8-99. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements will begin with the CFV starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done or where turret-down positions do not exist, units should train using simulated battle positions.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate maintenance personnel immediately. The crew should be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-100. The crew must fire Table IVA and B for qualification. As a minimum, the crew must achieve 700 points, and 7 out of 10 tasks must have at least 70 points to achieve a qualified rating (at least 1 of the 7 tasks must be an NBC engagement, 1 of the tasks must be a commander's engagement and 2 of the tasks must be night engagements).

8-101. Tasks will be scored using the criteria in the standards column for each task in Table 8-4. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 8-13 through 8-17 for scoresheet scoring instructions and Figures 8-2 through 8-4, pages 8-15 through 8-17, respectively, for sample completed scoresheets. Refer to page 8-9 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

8-102. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points on Table IVA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Superior:** Combined score of 800-899 points on Table IVA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IVA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Unqualified:** Combined score of 699 points or less on Table IVA and B, or 4 out of 10 tasks have 69 points or less or crew fails to pass one NBC engagement, one commander's engagement, or two night engagements.

Table 8-4. CFV Table IV, A and B.

CFV TABLE IVA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Defense	Dismounted troops, 400 to 600 meters. Bunker, 800 to 1,000 meters. RPG team, 600 to 800 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). Gunner's position.	Simulator	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress. Hit bunker with 3 rounds HE 25mm. Hit RPG team with 1 round 7.62mm.
2A Defense	RPG team, 50 to 200 meters. Moving PC, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Auxiliary sight.	Simulator	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
3A Offense	Sniper in window, 200 to 400 meters. Stationary PC, 800 to 1,000 meters. Commander's position.	Simulator	Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
4A Offense NBC	Dismounted troops, 400 to 600 meters. Moving PC, 800 to 1,000 meters. Gunner's position, NBC.	Simulator	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress. Hit PC with 3 rounds AP 25mm.
5A Defense	Stationary truck, 1,000 to 1,200 meters. Gunner's position, manual.	Simulator	Hit truck with 3 rounds HE 25mm.
CFV TABLE IVB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Defense	Stationary frontal PC, 1,200 to 1,400 meters. Stationary tank, >1,200 meters. Gunner's position.	Simulator	Hit PC with 3 rounds AP 25mm. Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally, if so equipped.
2B Offense	Stationary PC, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Commander's position.	Simulator	Hit PC with 3 rounds AP 25mm.
3B (Swing) Defense	RPG team, 400 to 600 meters. Stationary PC, 1,200 to 1,400 meters. Dismounted troops, 600 to 800 meters (15-second delay). Gunner's position.	Simulator	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm. Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
4B Defense NBC	Moving truck, 800 to 1,000 meters. Stationary PC, 1,200 to 1,400 meters. Civilians on the battlefield (COB). Gunner's position, NBC.	Simulator	Hit truck with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm.
5B Offense	Dismounted troops, 400 to 600 meters. Stationary truck, 1,000 to 1,200 meters. Moving truck, 1,200 to 1,400 meters (15-second delay). Gunner's position.	Simulator	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress. Hit stationary truck with 3 rounds HE 25mm. Hit moving truck with 3 rounds HE 25mm.

GUNNERY SCORESHEET, THREE-TARGET TASK									
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.									
CFV TABLE IV, TASK 1A (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____									
TASK	Target 1 Troops		Target 2 Bunker		Target 3 RPG Team		CREW-DUTY PENALTY POINTS		
	Time/Points		Time/Points		Time/Points				
Engage stationary point and area targets from a stationary CFV.	1-5	100	1-8	100	1-5	100	Automatic Zero		
	6	93	9	96	6	94	Not masked during NBC.		
AMMUNITION	7	85	10	91	7	88	Used announced degraded components.		
Simulator.	8	78	11	87	8	82	Commander did not fire his engagement.		
CONDITIONS	9	70	12	83	9	76	Engaged friendly target.		
Total Targets: 3	10	63	13	77	10	70	30-Point Penalty		
Target 1: Dismounted troops, 400 to 600 meters.	11	55	14	74	11	64	Failed to raise TOW launcher.		
Target 2: Bunker, 800 to 1,000 meters.	12	48	15	70	12	58	Hatches not closed during NBC.		
Target 3: RPG team, 600 to 800 meters (15-second delay).	13	40	16	66	13	52	Fired into the berm.		
	14	33	17	62	14	46	Killed target beyond maximum vehicle exposure time.		
	15	25	18	57	15	40	10-Point Penalty		
Civilians on the battlefield (COB) (15-second delay).	16	18	19	53	16	34	Failed to follow instructions from authorized personnel.		
	17	10	20	49	17	28	Fired before "FIRE" or "ON THE WAY."		
Gunner's position.	18	3	21	44	18	22	Improper engagement technique.		
	19+	0	22	40	19	16	Improper fire command.		
EXPOSURE TIME			23	36	20	10	Did not return to turret-down position.		
Target 1: 50 seconds			24	32	21	4	Target 1 Target 2 Target 3		
Target 2: 50 seconds			25	27	22+	0	5-Point Penalty		
Target 3: 35 seconds (15-second delay)			26	23			Improper response to fire command.		
			27	19			Improper reporting.		
STANDARDS			28	14			Improper driving techniques.		
Hit 1 troop SIT with 1 round 7.62mm and suppress.			29	10			Improper ammunition.		
Hit bunker with 3 rounds HE 25mm.			30	6			Total Crew-Duty Penalty Points		
Hit RPG team with 1 round 7.62mm.			31	2					
			32	0					
REMARKS:							Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____		

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Figure 8-5. Sample Scoresheet—CFV Table IV, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE IV, TASK 2A (AUXILIARY) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point targets from a stationary CFV.	1-4	100	1-9	100	Automatic Zero
	5	90	10	96	Not masked during NBC.
AMMUNITION	6	80	11	93	Used announced degraded components.
Simulator.	7	70	12	89	Commander did not fire his engagement.
	8	60	13	85	Engaged friendly target.
CONDITIONS	9	50	14	81	30-Point Penalty
Auxiliary Sight.	10	40	15	78	Failed to raise TOW launcher.
	11	30	16	74	Hatches not closed during NBC.
	12	20	17	70	Fired into the berm.
Total Targets: 2	13	10	18	66	Killed target beyond maximum vehicle exposure time.
Target 1: RPG team, 50 to 200 meters.	14+	0	19	63	10-Point Penalty
Target 2: Moving PC, 1,000 to 1,200 meters.			20	59	Failed to follow instructions from authorized personnel.
Civilians on the battlefield (COB).			21	55	Fired before "FIRE" or "ON THE WAY."
Gunner's position.			22	51	Improper engagement technique.
			23	48	Improper fire command.
EXPOSURE TIME			24	44	Did not return to turret-down position.
Target 1: 50 seconds			25	40	Target 1 Target 2
Target 2: 50 seconds			26	36	5-Point Penalty
			27	33	Improper response to fire command.
STANDARDS			28	29	Improper reporting.
Hit RPG team with 1 round 7.62mm.			29	25	Improper driving techniques.
Hit PC with 3 rounds AP 25mm.			30	21	Improper ammunition.
			31	18	Total Crew-Duty Penalty Points
			32	14	
			33	10	
			34	6	
			35	3	
			36+	0	
Remarks:					
_____					Target 1 Points (a) _____
_____					Target 2 Points (b) _____
_____					Total (a + b = c) (c) _____
_____					Divide by 2 (# of targets) (c ÷ 2 = d)
_____					Engagement Raw Score (d) _____
_____					Total Crew-Duty Penalty Points (e) _____
_____					Subtract crew-duty penalty points from raw score (d - e = f).
_____					Engagement Score (f) _____

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Figure 8-6. Sample Scoresheet—CFV Table IV, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE IV, TASK 3A (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Sniper Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point targets from a moving CFV.	1-5	100	1-9	100	Automatic Zero
AMMUNITION	6	94	10	97	
Simulator.	7	88	11	93	Not masked during NBC.
	8	82	12	90	Used announced degraded components.
CONDITIONS	9	76	13	87	Commander did not fire his engagement.
	10	70	14	83	Engaged friendly target.
Commander's Sight Extension.	11	64	15	80	
	12	58	16	77	30-Point Penalty
Total Targets: 2	13	52	17	73	
Target 1: Sniper in window, 200 to 400 meters.	14	46	18	70	Failed to raise TOW launcher.
Target 2: Stationary PC, 800 to 1,000 meters.	15	40	19	67	Hatches not closed during NBC.
Commander's position.	16	34	20	63	Fired into the berm.
	17	28	21	60	Killed target beyond maximum vehicle exposure time.
EXPOSURE TIME	18	22	22	57	
Target 1: 30 seconds	19	16	23	53	10-Point Penalty
Target 2: 30 seconds	20	10	24	50	
	21	4	25	47	Failed to follow instructions from authorized personnel.
STANDARDS	22+	0	26	43	Fired before "FIRE" or "ON THE WAY."
Hit sniper with 1 round 7.62mm.			27	40	Improper engagement technique.
Hit PC with 3 rounds AP 25mm.			28	37	Improper fire command.
			29	33	Did not return to turret-down position.
			30	30	Target 1 Target 2
			31	27	
			32	23	5-Point Penalty
			33	20	
			34	17	Improper response to fire command.
			35	13	Improper reporting.
			36	10	Improper driving techniques.
			37	7	Improper ammunition.
			38	3	
			39+	0	Total Crew-Duty Penalty Points
Remarks:					
_____			Target 1 Points (a) _____		
_____			Target 2 Points (b) _____		
_____			Total (a + b = c) (c) _____		
_____			Divide by 2 (# of targets) (c ÷ 2 = d)		
_____			Engagement Raw Score (d) _____		
_____			Total Crew-Duty Penalty Points (e) _____		
_____			Subtract crew-duty penalty points from raw score (d - e = f).		
_____			Engagement Score (f) _____		

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Figure 8-7. Sample Scoresheet—CFV Table IV, Task 3A.

GUNNERY SCORESHEET, TWO-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE IV, TASK 4A (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____						
TASK Engage stationary and moving, point and area targets from a moving CFV. AMMUNITION Simulator. CONDITIONS NBC. Total Targets: 2 Target 1: Dismounted troops, 400 to 600 meters. Target 2: Moving PC, 800 to 1,000 meters. Gunner's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit 1 troop SIT with 1 round 7.62mm and suppress. Hit PC with 3 rounds AP 25mm.	Target 1 Troops Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS	
	1-7	100	1-11	100	Automatic Zero	
	8	96	12	97		
	9	91	13	95		
	10	87	14	92		
	11	83	15	89	Not masked during NBC.	
	12	79	16	86	Used announced degraded components.	
	13	74	17	84	Commander did not fire his engagement.	
	14	70	18	81	Engaged friendly target.	
	15	66	19	78	30-Point Penalty	
	16	62	20	76	Failed to raise TOW launcher.	
	17	57	21	73	Hatches not closed during NBC.	
	18	53	22	70	Fired into the berm.	
	19	49	23	67	Killed target beyond maximum vehicle exposure time.	
	20	44	24	65	10-Point Penalty	
	21	40	25	62	Failed to follow instructions from authorized personnel.	
	22	36	26	59	Fired before "FIRE" or "ON THE WAY."	
	23	32	27	57	Improper engagement technique.	
	24	27	28	54	Improper fire command.	
	25	23	29	51	Did not return to turret-down position.	
	26	19	30	48	Target 1 Target 2	
	27	14	31	46	5-Point Penalty	
	28	10	32	43	Improper response to fire command.	
	29	6	33	40	Improper reporting.	
	30	2	34	37	Improper driving techniques.	
	31+	0	35	35	Improper ammunition.	
			36	32	Total Crew-Duty Penalty Points	
			37	29		
			38	27		
			39	24		
			40	21		
		41	18			
		42	16			
		43	13			
		44	10			
		45	8			
		46	5			
		47	2			
		48+	0			
Remarks: _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____		
				Target 2 Points (b) _____		
				Total (a + b = c) (c) _____		
				Divide by 2 (# of targets) (c ÷ 2 = d)		
				Engagement Raw Score (d) _____		
				Total Crew-Duty Penalty Points (e) _____		
				Subtract crew-duty penalty points from raw score (d - e = f).		
				Engagement Score (f) _____		

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Figure 8-8. Sample Scoresheet—CFV Table IV, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE IV, TASK 5A (MANUAL) (DEFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary CFV.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Simulator.	1-11 100 12 97 13 95 14 92 15 89	Automatic Zero
CONDITIONS Manual.	16 86 17 84 18 81 19 78 20 76 21 73 22 70 23 67 24 65 25 62 26 59 27 57 28 54 29 51 30 48 31 46 32 43 33 40 34 37 35 35 36 32 37 29 38 27 39 24 40 21 41 18 42 16 43 13 44 10 45 8 46 5 47 2 48+ 0	Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target.
Total Targets: 1 Target 1: Stationary truck, 1,000 to 1,200 meters. Gunner's position.		30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm.
EXPOSURE TIME Target 1: 50 seconds		10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position.
STANDARDS Hit truck with 3 rounds HE 25mm.		5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-9. Sample Scoresheet—CFV Table IV, Task 5A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE IV, TASK 1B (DEFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary CFV.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Simulator.	1 - 9 100	Automatic Zero
	10 97	Not masked during NBC.
	11 93	Used announced degraded components.
	12 90	Commander did not fire his engagement.
	13 87	Engaged friendly target.
CONDITIONS	14 83	
Total Targets: 1	15 80	
Target 1: Stationary frontal PC, 1,200 to 1,400 meters.	16 77	30-Point Penalty
	17 73	Failed to raise TOW launcher.
Gunner's position.	18 70	Hatches not closed during NBC.
	19 67	Fired into the berm.
EXPOSURE TIME	20 63	
Target 1: 50 seconds	21 60	10-Point Penalty
	22 57	Failed to follow instructions from authorized personnel.
STANDARDS	23 53	Fired before "FIRE" or "ON THE WAY."
Hit PC with 3 rounds AP 25mm.	24 50	Improper engagement technique.
	25 47	Improper fire command.
	26 43	Did not return to turret-down position.
	27 40	
	28 37	5-Point Penalty
	29 33	Improper response to fire command.
	30 30	Improper reporting.
	31 27	Improper driving techniques.
	32 23	Improper ammunition.
	33 20	
	34 17	Total Crew-Duty Penalty Points
	35 13	
	36 10	
	37 7	
	38 3	
	39+ 0	
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-10. Sample Scoresheet—CFV Table IV, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE IV, TASK 2B (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving CFV.	Target 1: PC	CREW-DUTY PENALTY POINTS
	Time/Points	
	1-10 100	
AMMUNITION	11 97	Automatic Zero
Simulator.	12 91	Not masked during NBC.
	13 91	Used announced degraded components.
CONDITIONS	14 88	Commander did not fire his engagement.
Commander's Sight Extension.	15 85	Engaged friendly target.
	16 82	
	17 79	30-Point Penalty
Total Targets: 1	18 76	Failed to raise TOW launcher.
Target 1: Stationary PC, 1,000 to 1,200 meters.	19 73	Hatches not closed during NBC.
	20 70	Fired into the berm.
Civilians on the battlefield (COB).	21 67	
Commander's position.	22 64	10-Point Penalty
	23 61	Failed to follow instructions from authorized personnel.
EXPOSURE TIME	24 58	Fired before "FIRE" or "ON THE WAY."
Target 1: 30 seconds	25 55	Improper engagement technique.
	26 52	Improper fire command.
STANDARDS	27 49	Did not return to turret-down position.
Hit PC with 3 rounds AP 25mm.	28 46	
	29 43	5-Point Penalty
	30 40	Improper response to fire command.
	31 37	Improper reporting.
	32 34	Improper driving techniques.
	33 31	Improper ammunition.
	34 28	
	35 25	Total Crew-Duty Penalty Points
	36 22	
	37 19	
	38 16	
	39 13	
	40 10	
	41 7	
	42 4	
	43 1	
	44+ 0	
Remarks:		Target 1 Points (a) _____
_____		Total Crew-Duty Penalty Points (b) _____
_____		Subtract crew-duty penalty points from score (a - b = c).
_____		Engagement Score (c) _____

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Figure 8-11. Sample Scoresheet—CFV Table IV, Task 2B.

GUNNERY SCORESHEET, THREE-TARGET TASK									
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.									
CFV TABLE IV, TASK 3B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____									
TASK	Target 1 RPG Team Time/Points		Target 2 PC Time/Points		Target 3 Troops Time/Points		CREW-DUTY PENALTY POINTS		
Engage stationary and moving, point and area targets from a stationary CFV.	1-5	100	1-9	100	1-5	100	Automatic Zero		
	6	93	10	97	6	94	Not masked during NBC.		
	7	85	11	93	7	88	Used announced degraded components.		
AMMUNITION	8	78	12	90	8	82	Commander did not fire his engagement.		
Simulator.	9	70	13	87	9	76	Engaged friendly target.		
CONDITIONS	10	63	14	83	10	70	30-Point Penalty		
Total Targets: 3	11	55	15	80	11	64	Failed to raise TOW launcher.		
Target 1: RPG team, 400 to 600 meters.	12	48	16	77	12	58	Hatches not closed during NBC.		
Target 2: Stationary PC, 1,200 to 1,400 meters.	13	40	17	73	13	52	Fired into the berm.		
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	14	33	18	70	14	46	Killed target beyond maximum vehicle exposure time.		
	15	25	19	67	15	40	10-Point Penalty		
	16	18	20	63	16	34	Failed to follow instructions from authorized personnel.		
Gunner's position.	17	10	21	60	17	28	Fired before "FIRE" or "ON THE WAY."		
EXPOSURE TIME	18	3	22	57	18	22	Improper engagement technique.		
Target 1: 50 seconds	19/+	0	23	53	19	16	Improper fire command.		
Target 2: 50 seconds			24	50	20	10	Did not return to turret-down position.		
Target 3: 35 seconds (15-second delay)			25	47	21	4	Target 1 Target 2 Target 3		
			26	43	22+	0	5-Point Penalty		
STANDARDS			27	40			Improper response to fire command.		
Hit RPG team with 1 round 7.62mm.			28	37			Improper reporting.		
Hit PC with 3 rounds AP 25mm.			29	33			Improper driving techniques.		
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.			30	30			Improper ammunition.		
			31	27			Total Crew-Duty Penalty Points		
			32	23					
			33	20					
			34	17					
			35	13					
			36	10					
			37	7					
			38	3					
			39+	0					
REMARKS:							Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____		

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Figure 8-12. Sample Scoresheet—CFV Table IV, Task 3BS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE IV, TASK 4B (NBC) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK Engage stationary and moving, point targets from a stationary CFV.	Target 1 Truck Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
	1-13	100	1-11	100	
AMMUNITION Simulator.	14	98	12	97	Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target.
	15	95	13	95	
	16	93	14	92	
	17	91	15	89	
	18	89	16	86	
CONDITIONS	19	86	17	84	30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm. Killed target beyond maximum vehicle exposure time.
	20	84	18	81	
	21	82	19	78	
	22	79	20	76	
	23	77	21	73	
NBC.	24	75	22	70	10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. Target 1 Target 2
	25	72	23	67	
	26	70	24	65	
	27	68	25	62	
	28	66	26	59	
Total Targets: 2 Target 1: Moving truck, 800 to 1,000 meters. Target 2: Stationary PC, 1,200 to 1,400 meters.	29	63	27	57	5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition.
	30	61	28	54	
	31	59	29	51	
	32	56	30	48	
	33	54	31	46	
EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds	34	52	32	43	Total Crew-Duty Penalty Points
	35	49	33	40	
	36	47	34	37	
	37	45	35	35	
	38	43	36	32	
STANDARDS Hit truck with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm.	39	40	37	29	Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____
	40	38	38	27	
	41	36	39	24	
	42	33	40	21	
	43	31	41	18	
	44	29	42	16	
	45	26	43	13	
	46	24	44	10	
	47	22	45	8	
	48	20	46	5	
	49	17	47	2	
	50+	0	48+	0	
Remarks:					

Figure 8-13. Sample Scoresheet—CFV Table IV, Task 4B.

GUNNERY SCORESHEET, THREE-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE IV, TASK 5B (OFFENSE), UNIT/BUMPER NUMBER _____						
TASK	Target 1 Troops Time/Points	Target 2 Truck Time/Points	Target 3 Truck Time/Points	CREW-DUTY PENALTY POINTS		
Engage stationary and moving, point and area targets from a moving CFV.	1-6 100	1-13 100	1-16 100	Automatic Zero		
	7 94	14 98	17 98	Not masked during NBC.		
AMMUNITION	8 88	15 95	18 96	Used announced degraded components.		
Simulator.	9 82	16 93	19 94	Commander did not fire his engagement.		
	10 76	17 90	20 92	Engaged friendly target.		
CONDITIONS	11 70	18 88	21 90	30-Point Penalty		
Total Targets: 3	12 64	19 85	22 88	Failed to raise TOW launcher.		
Target 1: Dismounted troops, 400 to 600 meters.	13 58	20 83	23 86	Hatches not closed during NBC.		
Target 2: Stationary truck, 1,000 to 1,200 meters.	14 52	21 80	24 84	Fired into the berm.		
Target 3: Moving truck, 1,200 to 1,400 meters (15-second delay).	15 46	22 78	25 82	Killed target beyond maximum vehicle exposure time.		
	16 40	23 75	26 80	10-Point Penalty		
	17 34	24 73	27 78	Failed to follow instructions from authorized personnel.		
Gunner's position.	18 28	25 70	28 76	Fired before "FIRE" or "ON THE WAY."		
	19 22	26 68	29 74	Improper engagement technique.		
	20 16	27 65	30 72	Improper fire command.		
	21 10	28 63	31 70	Did not return to turret-down position.		
EXPOSURE TIME	22 4	29 60	32 68	Target 1 Target 2 Target 3		
Target 1: 30 seconds	23+ 0	30 58	33 66	5-Point Penalty		
Target 2: 30 seconds		31 55	34 64	Improper response to fire command.		
Target 3: 30 seconds (15-second delay)		32 53	35 62	Improper reporting.		
		33 50	36 60	Improper driving techniques.		
		34 48	37 58	Improper ammunition.		
		35 45	38 56	Total Crew-Duty Penalty Points		
		36 43	39 54			
STANDARDS		37 40	40 52			
Hit 1 troop SIT with 1 round 7.62mm and suppress.		38 38	41 50			
Hit stationary truck with 3 rounds HE 25mm.		39 35	42 48			
Hit moving truck with 3 rounds HE 25mm.		40 33	43 46			
		41 30	44 44			
		42 38	45 42			
		43 35	46 40			
		44 33	47 38			
		45 30	48 36			
		46 28	49 34			
		47 25	50+ 0			
		48 23				
		49 20				
		50+ 0				
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____		

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Figure 8-14. Sample Scoresheet—CFV Table IV, Task 5B.

Table V (Preliminary Machine Gun)

8-103. Table V introduces crews to a live-fire gunnery environment. Crews will use an M240C machine gun, PGS, or MILES if PGS is not available; however, the M240C machine gun is preferred and resourced in STRAC.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

8-104. Table V is designed to train crews to proficiency on turret manipulation by using the M240C machine gun on a stationary and moving CFV against single and multiple targets deployed in a realistic array. The crews will fire four day and four night engagements. A minimum of one day and one night engagement will be fired in an NBC environment (appropriate MOPP level). Engagements include M240C engagement techniques.

CONDUCT OF THE TASKS

8-105. The crew develops teamwork while engaging stationary and moving targets from a stationary and moving CFV. Engagements begin with single targets, and become more challenging as multiple targets are introduced. Table V is conducted on a full-scale range using half-scale targets. When indexing the range to the target into the ISU, the gunner should use the actual straight-line distance to the target.

EXECUTION

8-106. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the CFV starting in a turret-down position, and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All offensive engagements will be fired from a moving CFV using the stabilization system.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate maintenance personnel immediately. The crew will be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-107. Tasks will be scored using the criteria in the standards column for each task in Table 8-5. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to pages 8-13 through 8-17 for scoresheet scoring instructions and Figures 8-2 through 8-4, pages 8-15 through 8-17, respectively, for sample completed scoresheets. Refer to page 8-9 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

8-108. Crew ratings for Table V are as follows:

- **Distinguished:** Combined score of 720 to 800 points on Table VA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Superior:** Combined score of 640 to 719 points on Table VA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Qualified:** Combined score of 560 to 639 points on Table VA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Unqualified:** Combined score of 559 points or less on Table VA and B, or crew fails to qualify on at least one NBC engagement, one commander's engagement, or two night engagements.

AMMUNITION REQUIREMENTS

8-109. Ammunition and target requirements for Tables V are as follows:

Table VA	Table VB	Total Rounds
275 rounds 7.62mm	275 rounds 7.62mm	550 rounds 7.62mm

Table 8-5. CFV Table V, A and B.

CFV TABLE VA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Defense	RPG team, 50 to 200 meters. Gunner's position, manual.	50 rounds, 7.62mm	Hit RPG team with 1 round 7.62mm.
2A Defense	Dismounted troops, 600 to 800 meters. RPG team, 600 to 800 meters. Gunner's position, auxiliary sight.	125 rounds, 7.62mm	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress. Hit RPG team with 1 round 7.62mm.
3A Offense NBC	RPG team, 400 to 600 meters. Gunner's position, NBC.	50 rounds, 7.62mm	Hit RPG team with 1 round 7.62mm.
4A Offense	Moving truck, 600 to 800 meters. Civilians on the battlefield (COB). Commander's position.	50 rounds, 7.62mm	Hit truck with 5 rounds 7.62mm.
CFV TABLE VB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Defense NBC	Stationary truck, 600 to 800 meters. Gunner's position, NBC.	50 rounds, 7.62mm	Hit truck with 5 rounds 7.62mm.
2B Offense	Dismounted troops, 600 to 800 meters. Civilians on the battlefield (COB). Gunner's position.	75 rounds, 7.62mm	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
3B Defense	Sniper, 200 to 400 meters. Commander's position.	50 rounds, 7.62mm	Hit sniper with 1 round 7.62mm.
4B Offense	RPG team, 400 to 600 meters. Stationary truck, 600 to 800 meters. Gunner's position.	100 rounds, 7.62mm	Hit RPG team with 1 round 7.62mm. Hit truck with 5 rounds 7.62mm.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE V, TASK 1A (MANUAL) (DEFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a stationary CFV. AMMUNITION 7.62mm: 50 rounds CONDITIONS Manual. Total Targets: 1 Target 1: RPG team, 50 to 200 meters. Gunner's position. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit RPG team with 1 round 7.62mm.	Target 1: RPG Team Time/Points 1-4 100 5 90 6 80 7 70 8 60 9 50 10 40 11 30 12 20 13 10 14+ 0	CREW-DUTY PENALTY POINTS Automatic Zero Not masked during NBC. _____ Used announced degraded components. _____ Commander did not fire his engagement. _____ Engaged friendly target. _____ 30-Point Penalty Failed to raise TOW launcher. _____ Hatches not closed during NBC. _____ Fired into the berm. _____ 10-Point Penalty Failed to follow instructions from authorized personnel. _____ Fired before "FIRE" or "ON THE WAY." _____ Improper engagement technique. _____ Improper fire command. _____ Did not return to turret-down position. _____ 5-Point Penalty Improper response to fire command. _____ Improper reporting. _____ Improper driving techniques. _____ Improper ammunition. _____ Total Crew-Duty Penalty Points _____	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-15. Sample Scoresheet—CFV Table V, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE V, TASK 2A (AUXILIARY) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Troops Time/Points		Target 2 RPG Team Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point and area targets from a stationary CFV.	1-5	100	1-5	100	Automatic Zero
AMMUNITION	6	94	6	94	Not masked during NBC.
7.62mm: 125 rounds	7	88	7	88	Used announced degraded components.
CONDITIONS	8	82	8	82	Commander did not fire his engagement.
Auxiliary sight.	9	76	9	76	Engaged friendly target.
	10	70	10	70	30-Point Penalty
Total Targets: 2	11	64	11	64	Failed to raise TOW launcher.
Target 1: Dismounted troops, 600 to 800 meters.	12	58	12	58	Hatches not closed during NBC.
Target 2: RPG team, 600 to 800 meters.	13	52	13	52	Fired into the berm.
Gunner's position.	14	46	14	46	Killed target beyond maximum vehicle exposure time.
	15	40	15	40	10-Point Penalty
EXPOSURE TIME	16	34	16	34	Failed to follow instructions from authorized personnel.
Target 1: 50 seconds	17	28	17	28	Fired before "FIRE" or "ON THE WAY."
Target 2: 50 seconds	18	22	18	22	Improper engagement technique.
	19	16	19	16	Improper fire command.
STANDARDS	20	10	20	10	Did not return to turret-down position.
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	21	4	21	4	Target 1 Target 2
Hit RPG team with 1 round 7.62mm.	22+	0	22+	0	5-Point Penalty
					Improper response to fire command.
					Improper reporting.
					Improper driving techniques.
					Improper ammunition.
					Total Crew-Duty Penalty Points
Remarks:					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 8-16. Sample Scoresheet—CFV Table V, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE V, TASK 3A (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving CFV. AMMUNITION 7.62mm: 50 rounds CONDITIONS NBC. Total Targets: 1 Target 1: RPG team, 400 to 600 meters. Gunner's position. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit RPG team with 1 round 7.62mm.	Target 1: RPG Team Time/Points	CREW-DUTY PENALTY POINTS	
	1-7 100	Automatic Zero	
	8 96	Not masked during NBC.	
	9 91	Used announced degraded components.	
	10 87	Commander did not fire his engagement.	
	11 83	Engaged friendly target.	
	12 79	30-Point Penalty	
	13 74	Failed to raise TOW launcher.	
	14 70	Hatches not closed during NBC.	
	15 66	Fired into the berm.	
	16 62	10-Point Penalty	
	17 57	Failed to follow instructions from authorized personnel.	
	18 53	Fired before "FIRE" or "ON THE WAY."	
	19 49	Improper engagement technique.	
	20 44	Improper fire command.	
	21 40	Did not return to turret-down position.	
	22 36	5-Point Penalty	
	23 32	Improper response to fire command.	
	24 27	Improper reporting.	
	25 23	Improper driving techniques.	
	26 19	Improper ammunition.	
	27 14	Total Crew-Duty Penalty Points	
	28 10		
	29 6		
	30 2		
	31+ 0		
	Remarks:		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-17. Sample Scoresheet—CFV Table V, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE V, TASK 4A (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving CFV. AMMUNITION 7.62mm: 50 rounds CONDITIONS Commander's sight extension. Total Targets: 1 Target 1: Moving truck, 600 to 800 meters. Civilians on the battlefield (COB). Commander's position. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 5 rounds 7.62mm.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-12 100	Automatic Zero
	13 98	Not masked during NBC.
	14 95	Used announced degraded components.
	15 93	Commander did not fire his engagement.
	16 90	Engaged friendly target.
	17 88	30-Point Penalty
	18 85	Failed to raise TOW launcher.
	19 83	Hatches not closed during NBC.
	20 80	Fired into the berm.
	21 78	10-Point Penalty
	22 75	Failed to follow instructions from authorized personnel.
	23 73	Fired before "FIRE" or "ON THE WAY."
	24 70	Improper engagement technique.
	25 68	Improper fire command.
	26 65	Did not return to turret-down position.
	27 63	5-Point Penalty
	28 60	Improper response to fire command.
	29 58	Improper reporting.
	30 55	Improper driving techniques.
	31 53	Improper ammunition.
	32 50	Total Crew-Duty Penalty Points
	33 48	
	34 45	
	35 43	
	36 40	
	37 38	
	38 35	
	39 33	
	40 30	
41 38		
42 35		
43 33		
44 30		
45 28		
46 25		
47 23		
48 20		
49 18		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-18. Sample Scoresheet—CFV Table V, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE V, TASK 1B (NBC) (DEFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary CFV.	Target 1: Truck	CREW-DUTY PENALTY POINTS
	Time/Points	
	1-10 100	
	11 97	
	12 94	
	13 91	
	14 88	
	15 85	
	16 82	
	17 79	
	18 76	
	19 73	
	20 70	
	21 67	
	22 64	
	23 61	
	24 58	
	25 55	
	26 52	
	27 49	
	28 46	
	29 43	
	30 40	
	31 37	
	32 34	
	33 31	
	34 28	
	35 25	
	36 22	
	37 19	
	38 16	
	39 13	
	40 10	
	41 7	
	42 4	
	43 1	
	44+ 0	
AMMUNITION 7.62mm: 50 rounds		Automatic Zero
		Not masked during NBC.
		Used announced degraded components.
		Commander did not fire his engagement.
		Engaged friendly target.
CONDITIONS		
NBC.		
Total Targets: 1		30-Point Penalty
Target 1: Stationary truck, 600 to 800 meters.		Failed to raise TOW launcher.
Gunner's position.		Hatches not closed during NBC.
		Fired into the berm.
EXPOSURE TIME		10-Point Penalty
Target 1: 50 seconds		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
STANDARDS		Improper engagement technique.
Hit truck with 5 rounds 7.62mm.		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Improper ammunition.
		Total Crew-Duty Penalty Points
Remarks:		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 8-19. Sample Scoresheet—CFV Table V, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE V, TASK 2B (OFFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a moving CFV. AMMUNITION 7.62mm: 75 rounds CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 600 to 800 meters. Civilians on the battlefield (COB). Gunner's position. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	Target 1: Troops	CREW-DUTY PENALTY POINTS	
	Time/Points		
	1-6 100	Automatic Zero	
	7 95	Not masked during NBC.	
	8 90	Used announced degraded components.	
	9 85	Commander did not fire his engagement.	
	10 80	Engaged friendly target.	
	11 75	30-Point Penalty	
	12 70	Failed to raise TOW launcher.	
	13 65	Hatches not closed during NBC.	
	14 60	Fired into the berm.	
	15 55	10-Point Penalty	
	16 50	Failed to follow instructions from authorized personnel.	
	17 45	Fired before "FIRE" or "ON THE WAY."	
	18 40	Improper engagement technique.	
	19 35	Improper fire command.	
	20 30	Did not return to turret-down position.	
	21 25	5-Point Penalty	
	22 20	Improper response to fire command.	
	23 15	Improper reporting.	
	24 10	Improper driving techniques.	
	25 5	Improper ammunition.	
	26+ 0	Total Crew-Duty Penalty Points	
	Remarks:		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-20. Sample Scoresheet—CFV Table V, Task 2B.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE V, TASK 3B (COMMANDER) (DEFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary CFV. AMMUNITION 7.62mm: 50 rounds CONDITIONS Commander's sight extension. Total Targets: 1 Target 1: Sniper, 200 to 400 meters. Commander's position. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit sniper with 1 round 7.62mm.	Target 1: Sniper Time/Points 1-4 100 5 93 6 85 7 78 8 70 9 63 10 55 11 48 12 40 13 33 14 25 15 18 16 10 17 3 18+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC.	
		Used announced degraded components.	
		Commander did not fire his engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Failed to raise TOW launcher.	
		Hatches not closed during NBC.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
Improper ammunition.			
Total Crew-Duty Penalty Points			
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____		
	Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c).		
	Engagement Score (c) _____		

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Figure 8-21. Sample Scoresheet—CFV Table V, Task 3B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE V, TASK 4B (OFFENSE), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a moving CFV. AMMUNITION 7.62mm: 100 rounds CONDITIONS Total Targets: 2 Target 1: RPG team, 400 to 600 meters. Target 2: Stationary truck, 600 to 800 meters. Gunner's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit RPG team with 1 round 7.62mm. Hit truck with 5 rounds 7.62mm.	Target 1 RPG Team Time/Points		Target 2 Truck Time/Points		CREW-DUTY PENALTY POINTS
	1-6	100	1-10	100	Automatic Zero
	7	94	11	97	Not masked during NBC.
	8	88	12	94	Used announced degraded components.
	9	82	13	91	Commander did not fire his engagement.
	10	76	14	88	Engaged friendly target.
	11	70	15	85	
	12	64	16	82	30-Point Penalty
	13	58	17	79	Failed to raise TOW launcher.
	14	52	18	76	Hatches not closed during NBC.
	15	46	19	73	Fired into the berm.
	16	40	20	70	Killed target beyond maximum vehicle exposure time.
	17	34	21	67	
	18	28	22	64	10-Point Penalty
	19	22	23	61	Failed to follow instructions from authorized personnel.
	20	16	24	58	Fired before "FIRE" or "ON THE WAY."
	21	10	25	55	Improper engagement technique.
	22	4	26	52	Improper fire command.
	23+	0	27	49	Did not return to turret-down position.
			28	46	Target 1 Target 2
			29	43	5-Point Penalty
			30	40	Improper response to fire command.
			31	37	Improper reporting.
			32	34	Improper driving techniques.
		33	31	Improper ammunition.	
		34	28		
		35	25	Total Crew-Duty Penalty Points	
		36	22		
		37	19		
		38	16		
		39	13		
		40	10		
		41	7		
		42	4		
		43	1		
		44+	0		
Remarks:				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-22. Sample Scoresheet—CFV Table V, Task 4B.

Conduct of Table VI (Preliminary Main Gun)

8-110. Table VI is the first table that requires the crew to fire the M242 25-mm weapon system with full-caliber ammunition. The table uses combat ranges to teach the CFV crew 25-mm engagement techniques against stationary and moving targets and M240C engagement techniques against point and area targets.

CONCEPT

8-111. Table VI is designed to train the crew to employ direct-fire to destroy threat targets from a stationary or moving CFV. The crews will engage stationary and moving, area and point targets during day, night, and NBC environments (directed MOPP level), using the primary and auxiliary sights. Crews will fire four day and four night engagements. A minimum of one day and one night engagement will be fired in an NBC environment.

8-112. Table VI is a building block toward Table VII. The training unit commander can modify Table VI to train weak gunnery areas.

8-113. This table consists of two swing tasks (1AS and 2BS). Swing tasks may be fired either during the day or at night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be three with five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

8-114. Crews will employ direct fire to engage stationary and moving targets from a stationary or moving CFV. The crews will use proper engagement techniques. Precision fire commands will be used for all defensive engagements. Battlesight fire commands will be given for all offensive engagements.

EXECUTION

8-115. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements must begin with the CFV starting in a turret-down position and moving to a hull-down position to engage the target(s). On ranges where this cannot be done or where turret-down positions do not exist, units should train using simulated battle positions.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate maintenance personnel immediately. The crew will be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-116. Tasks will be scored using the criteria in the standards column for each task in Table 8-6. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 8-13 through 8-17 for scoresheet scoring instructions and Figures 8-2 through 8-4, pages 8-15 through 8-17, respectively, for sample completed scoresheets. Refer to page 8-9 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

8-117. Crew ratings for Table VI are as follows:

- **Distinguished:** Combined score of 810 to 900 points on Table VIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Superior:** Combined score of 720 to 809 points on Table VIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Qualified:** Combined score of 630 to 719 points on Table VIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Unqualified:** Combined score of 629 points or less on Table VIA and B, or crew fails to qualify on at least one NBC engagement, one commander's engagement, or two night engagements.

AMMUNITION REQUIREMENTS

8-118. Ammunition requirements for Table VI are as follows:

Table VIA	Table VIB	Total Rounds
16 rounds TPDS-T	24 rounds TPDS-T	40 rounds TPDS-T
24 rounds TP-T	16 rounds TP-T	40 rounds TP-T
100 rounds 7.62mm	250 rounds 7.62mm	350 rounds 7.62mm

Table 8-6. CFV Table VI, A and B.

CFV TABLE VIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A (Swing) Defense	Stationary truck, 1,000 to 1,200 meters. Gunner's position, manual.	8 rounds, TP-T	Hit truck with 3 rounds HE 25mm.
2A Offense	Sniper in window, 400 to 600 meters. Stationary PC, 1,000 to 1,200 meters. Commander's position.	50 rounds, 7.62mm 8 rounds, TPDS-T	Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
3A Defense	RPG team, 400 to 600 meters. Bunker, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Auxiliary sight.	50 rounds, 7.62mm 8 rounds, TP-T	Hit RPG team with 1 round 7.62mm. Hit bunker with 3 rounds HE 25mm.
4A Offense NBC	Stationary truck, 800 to 1,000 meters. Moving PC, 1,200 to 1,400 meters. Gunner's position, NBC.	8 rounds, TP-T 8 rounds, TPDS-T	Hit truck with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm.
CFV TABLE VIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Offense NBC	RPG team, 600 to 800 meters. Moving PC, 800 to 1,000 meters. Gunner's position, NBC.	50 rounds, 7.62mm 8 rounds, TPDS-T	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
2B (Swing) Defense	RPG team, 400 to 600 meters. Moving PC, 1,200 to 1,400 meters. Dismounted troops, 600 to 800 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). Gunner's position.	125 rounds, 7.62mm 8 rounds, TPDS-T	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm. Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
3B Offense	Stationary PC, 600 to 800 meters. Civilians on the battlefield (COB). Commander's position.	8 rounds, TPDS-T	Hit PC with 3 rounds AP 25mm.
4B Defense	Stationary truck, 600 to 800 meters. Moving truck, 800 to 1,000 meters. Dismounted troops, 600 to 800 meters (15-second delay). Gunner's position.	75 rounds, 7.62mm 16 rounds, TP-T	Hit stationary truck with 3 rounds HE 25mm. Hit moving truck with 3 rounds HE 25mm. Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
5B (Swing) Defense	Stationary tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally, if so equipped.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VI, TASK 1A (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary CFV. AMMUNITION TP-T: 8 rounds CONDITIONS Manual. Total Targets: 1 Target 1: Stationary truck, 1,000 to 1,200 meters. Gunner's position. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit truck with 3 rounds HE 25mm.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS	
	1-11 100 12 97 13 95 14 92 15 89 16 86 17 84 18 81 19 78 20 76 21 73 22 70 23 67 24 65 25 62 26 59 27 57 28 54 29 51 30 48 31 46 32 43 33 40 34 37 35 35 36 32 37 29 38 27 39 24 40 21 41 18 42 16 43 13 44 10 45 8 46 5 47 2 48+ 0	Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target. 30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition. Total Crew-Duty Penalty Points	
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-23. Sample Scoresheet—CFV Table VI, Task 1AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VI, TASK 2A (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____				
TASK Engage stationary point targets from a moving CFV. AMMUNITION 7.62mm: 50 rounds TPDS-T: 8 rounds CONDITIONS Commander's sight extension. Total Targets: 2 Target 1: Sniper in window, 400 to 600 meters. Target 2: Stationary PC, 1,000 to 1,200 meters. Commander's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.	Target 1 Sniper Time/Points		Target 2 PC Time/Points	
	1-6 100 7 94 8 88 9 82 10 76 11 70 12 64 13 58 14 52 15 46 16 40 17 34 18 28 19 22 20 16 21 10 22 4 23/+ 0		1-10 100 11 97 12 91 13 91 14 88 15 85 16 82 17 79 18 76 19 73 20 70 21 67 22 64 23 61 24 58 25 55 26 52 27 49 28 46 29 43 30 40 31 37 32 34 33 31 34 28 35 25 36 22 37 19 38 16 39 13 40 10 41 7 42 4 43 1 44+ 0	
CREW-DUTY PENALTY POINTS				
Automatic Zero				
Not masked during NBC.				
Used announced degraded components.				
Commander did not fire his engagement.				
Engaged friendly target.				
30-Point Penalty				
Failed to raise TOW launcher.				
Hatches not closed during NBC.				
Fired into the berm.				
Killed target beyond maximum vehicle exposure time.				
10-Point Penalty				
Failed to follow instructions from authorized personnel.				
Fired before "FIRE" or "ON THE WAY."				
Improper engagement technique.				
Improper fire command.				
Did not return to turret-down position.				
Target 1 Target 2				
5-Point Penalty				
Improper response to fire command.				
Improper reporting.				
Improper driving techniques.				
Improper ammunition.				
Total Crew-Duty Penalty Points				
Remarks: _____ _____ _____ _____ _____ _____ _____				
Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____				

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Figure 8-24. Sample Scoresheet—CFV Table VI, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VI, TASK 3A (AUXILIARY) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a stationary CFV. AMMUNITION 7.62mm: 50 rounds TP-T: 8 rounds CONDITIONS Auxiliary sight. Total Targets: 2 Target 1: RPG team, 400 to 600 meters. Target 2: Bunker, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Gunner's position. EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit RPG team with 1 round 7.62mm. Hit bunker with 3 rounds HE 25mm.	Target 1 RPG Team Time/Points		Target 2 Bunker Time/Points		CREW-DUTY PENALTY POINTS
	1-5	100	1-9	100	Automatic Zero
	6	93	10	96	Not masked during NBC.
	7	85	11	93	Used announced degraded components.
	8	78	12	89	Commander did not fire his engagement.
	9	70	13	85	Engaged friendly target.
	10	63	14	81	30-Point Penalty
	11	55	15	78	Failed to raise TOW launcher.
	12	48	17	70	Hatches not closed during NBC.
	13	40	18	66	Fired into the berm.
	14	33	19	63	Killed target beyond maximum vehicle exposure time.
	15	25	20	59	10-Point Penalty
	16	18	21	55	Failed to follow instructions from authorized personnel.
	17	10	22	51	Fired before "FIRE" or "ON THE WAY."
	18	3	23	48	Improper engagement technique.
	19/+	0	24	44	Improper fire command.
			25	40	Did not return to turret-down position.
			26	36	Target 1 Target 2
			27	33	5-Point Penalty
			28	29	Improper response to fire command.
			29	25	Improper reporting.
			30	21	Improper driving techniques.
			31	18	Improper ammunition.
			32	14	Total Crew-Duty Penalty Points
			33	10	
			34	6	
			35	3	
			36+	0	
Remarks: _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-25. Sample Scoresheet—CFV Table VI, Task 3A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VI, TASK 4A (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____				
TASK Engage stationary and moving point targets from a moving CFV. AMMUNITION TP-T: 8 rounds TPDS-T: 8 rounds CONDITIONS NBC. Total Targets: 2 Target 1: Stationary truck, 800 to 1,000 meters. Target 2: Moving PC, 1,200 to 1,400 meters. Gunner's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit truck with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm.	Target 1 Truck Time/Points		Target 2 PC Time/Points	
	1-13	100	1-14	100
	14	98	15	98
	15	95	16	96
	16	93	17	94
	17	91	18	91
	18	89	19	89
	19	86	20	87
	20	84	21	85
	21	82	22	83
	22	79	23	81
	23	77	24	79
	24	75	25	77
	25	72	26	74
	26	70	27	72
	27	68	28	70
	28	66	29	68
	29	63	30	66
	30	61	31	64
	31	59	32	62
	32	56	33	59
	33	54	34	57
	34	52	35	55
	35	49	36	53
	36	47	37	51
	37	45	38	49
	38	43	39	47
	39	40	40	44
	40	38	41	42
	41	36	42	40
	42	33	43	38
	43	31	44	36
	44	29	45	34
45	26	46	32	
46	24	47	29	
47	22	48	27	
48	20	49	25	
49	17	50+	0	
50+	0			
CREW-DUTY PENALTY POINTS Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target. 30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm. Killed target beyond maximum vehicle exposure time. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. Target 1 Target 2 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition. Total Crew-Duty Penalty Points				
Remarks: _____ _____ _____ _____ _____ _____ _____				
Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____				

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Figure 8-26. Sample Scoresheet—CFV Table VI, Task 4A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VI, TASK 1B (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a moving CFV.	1-8 100	1-11 100	Automatic Zero	
	9 96	12 97	Not masked during NBC.	
	10 93	13 95	Used announced degraded components.	
AMMUNITION	11 89	14 92	Commander did not fire his engagement.	
7.62mm: 50 rounds	12 85	15 89	Engaged friendly target.	
TPDS-T: 8 rounds	13 81	16 86		
	14 78	17 84		
	15 74	18 81		
CONDITIONS	16 70	19 78	30-Point Penalty	
NBC.	17 66	20 76	Failed to raise TOW launcher.	
	18 63	21 73	Hatches not closed during NBC.	
	19 59	22 70	Fired into the berm.	
Total Targets: 2	20 55	23 67	Killed target beyond maximum vehicle exposure time.	
Target 1: RPG team, 600 to 800 meters.	21 51	24 65		
Target 2: Moving PC, 800 to 1,000 meters.	22 48	25 62	10-Point Penalty	
	23 44	26 59	Failed to follow instructions from authorized personnel.	
Gunner's position.	24 40	27 57	Fired before "FIRE" or "ON THE WAY."	
	25 36	28 54	Improper engagement technique.	
	26 33	29 51	Improper fire command.	
	27 29	30 48	Did not return to turret-down position.	
EXPOSURE TIME	28 25	31 46	Target 1 Target 2	
Target 1: 30 seconds	29 21	32 43		
Target 2: 30 seconds	30 18	33 40	5-Point Penalty	
	31 14	34 37	Improper response to fire command.	
	32 10	35 35	Improper reporting.	
STANDARDS	33 6	36 32	Improper driving techniques.	
Hit RPG team with 1 round 7.62mm.	34 3	37 29	Improper ammunition.	
Hit PC with 3 rounds AP 25mm.	35+ 0	38 27		
		39 24	Total Crew-Duty Penalty Points	
		40 21		
		41 18		
		42 16		
		43 13		
		44 10		
		45 8		
		46 5		
		47 2		
		48+ 0		
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-27. Sample Scoresheet—CFV Table VI, Task 1B.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VI, TASK 2B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	Target 3 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving, point and area targets from a stationary CFV.	1-5 100	1-11 100	1-5 100	Automatic Zero	
	6 93	12 97	6 94	Not masked during NBC.	
AMMUNITION	7 85	13 95	7 88	Used announced degraded components.	
7.62mm: 125 rounds	8 78	14 92	8 82	Commander did not fire his engagement.	
TPDS-T: 8 rounds	9 70	15 89	9 76	Engaged friendly target.	
CONDITIONS	10 63	16 86	10 70	30-Point Penalty	
Total Targets: 3	11 55	17 84	11 64	Failed to raise TOW launcher.	
Target 1: RPG team, 400 to 600 meters.	12 48	18 81	12 58	Hatches not closed during NBC.	
Target 2: Moving PC, 1,200 to 1,400 meters.	13 40	19 78	13 52	Fired into the berm.	
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	14 33	20 76	14 46	Killed target beyond maximum vehicle exposure time.	
Civilians on the battlefield (COB) (15-second delay).	15 25	21 73	15 40	10-Point Penalty	
Gunner's position.	16 18	22 70	16 34	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME	17 10	23 67	17 28	Fired before "FIRE" or "ON THE WAY."	
Target 1: 50 seconds	18 3	24 65	18 22	Improper engagement technique.	
Target 2: 50 seconds	19/+ 0	25 62	19 16	Improper fire command.	
Target 3: 35 seconds (15-second delay)		26 59	20 10	Did not return to turret-down position.	
STANDARDS		27 57	21 4	Target 1 Target 2 Target 3	
Hit RPG team with 1 round 7.62mm.		28 54	22+ 0	5-Point Penalty	
Hit PC with 3 rounds AP 25mm.		29 51		Improper response to fire command.	
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.		30 48		Improper reporting.	
		31 46		Improper driving techniques.	
		32 43		Improper ammunition.	
		33 40		Total Crew-Duty Penalty Points	
		34 37			
		35 35			
		36 32			
		37 29			
		38 27			
		39 24			
		40 21			
		41 18			
		42 16			
		43 13			
		44 10			
		45 8			
		46 5			
		47 2			
		48+ 0			
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 8-28. Sample Scoresheet—CFV Table VI, Task 2BS.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VI, TASK 3B (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a moving CFV. AMMUNITION TPDS-T: 8 rounds CONDITIONS Commander's sight extension. Total Targets: 1 Target 1: Stationary PC, 600 to 800 meters. Civilians on the battlefield (COB). Commander's position. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit PC with 3 rounds AP 25mm.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS	
	1-8 100	Automatic Zero	
	9 96	Not masked during NBC.	
	10 91	Used announced degraded components.	
	11 87	Commander did not fire his engagement.	
	12 83	Engaged friendly target.	
	13 77		
	14 74	30-Point Penalty	
	15 70	Failed to raise TOW launcher.	
	16 66	Hatches not closed during NBC.	
	17 62	Fired into the berm.	
	18 57	10-Point Penalty	
	19 53	Failed to follow instructions from authorized personnel.	
	20 49	Fired before "FIRE" or "ON THE WAY."	
	21 44	Improper engagement technique.	
	22 40	Improper fire command.	
	23 36	Did not return to turret-down position.	
	24 32		
	25 27	5-Point Penalty	
	26 23	Improper response to fire command.	
	27 19	Improper reporting.	
	28 14	Improper driving techniques.	
	29 10	Improper ammunition.	
	30 6		
	31 2	Total Crew-Duty Penalty Points	
	32 0		
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-29. Sample Scoresheet—CFV Table VI, Task 3B.

GUNNERY SCORESHEET, THREE-TARGET TASK							
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.							
CFV TABLE VI, TASK 4B (DEFENSE), UNIT/BUMPER NUMBER _____							
TASK	Target 1 Truck Time/Points		Target 2 Truck Time/Points		Target 3 Troops Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving, point and area targets from a stationary CFV.	1-10	100	1-12	100	1-5	100	Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target.
AMMUNITION	11	97	13	97	6	94	
7.62mm: 75 rounds	12	93	14	95	7	88	
TP-T: 16 rounds	13	90	15	92	8	82	
CONDITIONS	14	87	16	89	9	76	
Total Targets: 3	15	83	17	86	10	70	
Target 1: Stationary truck, 600 to 800 meters.	16	80	18	84	11	64	30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm. Killed target beyond maximum vehicle exposure time.
Target 2: Moving truck, 800 to 1,000 meters.	17	77	19	81	12	58	
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	18	73	20	78	13	52	
Gunner's position.	19	70	21	76	14	46	
EXPOSURE TIME	20	67	22	73	15	40	
Target 1: 50 seconds	21	63	23	70	16	34	
Target 2: 50 seconds	22	60	24	67	17	28	10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. Target 1 Target 2 Target 3
Target 3: 35 seconds (15-second delay)	23	57	25	65	18	22	
STANDARDS	24	53	26	62	19	16	
Hit stationary truck with 3 rounds HE 25mm.	25	50	27	59	20	10	
Hit moving truck with 3 rounds HE 25mm.	26	47	28	57	21	4	
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	27	43	29	54	22+	0	
	28	40	30	51			5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition. Total Crew-Duty Penalty Points
	29	37	31	48			
	30	33	32	46			
	31	30	33	43			
	32	27	34	40			
	33	23	35	37			
	34	20	36	35			
	35	17	37	32			
	36	13	38	29			
	37	10	39	27			
	38	7	40	24			
	39	3	41	21			
	40+	0	42	18			
			43	16			
			44	13			
			45	10			
			46	8			
			47	5			
			48	2			
			49+	0			
REMARKS: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____						Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE VI, TASK 5B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary CFV.	Target 1: Tank	CREW-DUTY PENALTY POINTS
	Time/Points	
	1-13 100	
	14 98	
AMMUNITION	15 95	Automatic Zero
None.	16 93	Not masked during NBC.
	17 90	Used announced degraded components.
CONDITIONS	18 88	Commander did not fire his engagement.
	19 85	Engaged friendly target.
Total Targets: 1	20 83	
Target 1: Stationary tank,>1,200 meters.	21 80	30-Point Penalty
	22 78	
	23 75	Failed to raise TOW launcher.
EXPOSURE TIME	24 73	Hatches not closed during NBC.
Target 1: 50 seconds	25 70	Fired into the berm.
	26 68	
	27 65	10-Point Penalty
STANDARDS	28 63	
Perform call for immediate suppression.	29 60	Failed to follow instructions from authorized personnel.
Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30).	30 58	Fired before "FIRE" or "ON THE WAY."
Complete the call for fire digitally, if so equipped.	31 55	Improper engagement technique.
	32 53	Improper fire command.
	33 50	Did not return to turret-down position.
	34 48	
	35 45	5-Point Penalty
	36 43	
	37 40	Improper response to fire command.
	38 38	Improper reporting.
	39 35	Improper driving techniques.
	40 33	Improper ammunition.
	41 30	
	42 38	
	43 35	
	44 33	
	45 30	
	46 28	
	47 25	
	48 23	
	49 20	
	50+ 0	Total Crew-Duty Penalty Points
Remarks:		
		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 8-31. Sample Scoresheet—CFV Table VI, Task 5BS.

Conduct of Table VII (Crew Practice)

8-119. Table VII requires the CFV crew to conduct offensive and defensive engagements with full-caliber ammunition at combat ranges.

CONCEPT

8-120. Table VII is designed to train the CFV crew to engage stationary and moving targets during day, night, and NBC environments (directed MOPP level) from a stationary and moving CFV. The crews will fire four day and four night engagements. A minimum of one day and one night engagement will be fired in an NBC environment.

8-121. Table VII is a building block toward Table VIII. The training unit commander can modify Table VII to train weak gunnery areas.

8-122. This table consists of two swing tasks (3AS and 3BS). Swing tasks may be fired either during the day or at night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be three with five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

8-123. Crews will employ direct-fire to engage stationary and moving targets from a stationary and moving CFV. The crews will use proper engagement techniques. Precision fire commands will be used for defensive engagements, and battlesight fire commands will be used for offensive engagements.

EXECUTION

8-124. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the CFV starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done or where turret-down positions do not exist, units should train using simulated battle positions. All offensive engagements will be fired from a moving CFV using the stabilization system.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate personnel immediately. The crew will be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-125. Tasks will be scored using the criteria in the standards column for each task in Table 8-7. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 8-13 through 8-17 for scoresheet scoring instructions and Figures 8-2 through 8-4, pages 8-15 through 8-17, respectively, for sample completed scoresheets. Refer to page 8-9 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

8-126. Crew ratings for Table VII are as follows:

- **Distinguished:** Combined score of 810 to 900 points on Table VIIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Superior:** Combined score of 720 to 809 points on Table VIIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Qualified:** Combined score of 630 to 719 points on Table VIIA and B. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Unqualified:** Combined score of 629 points or less on Table VIIA and B, or crew fails to qualify on at least one NBC engagement, one commander's engagement, or two night engagements.

AMMUNITION REQUIREMENTS

8-127. Ammunition requirements for Table VII are as follows:

Table VIIA	Table VIIB	Total Rounds
24 rounds TPDS-T	24 rounds TPDS-T	48 rounds TPDS-T
16 rounds TP-T	24 rounds TP-T	40 rounds TP-T
125 rounds 7.62mm	250 rounds 7.62mm	375 rounds 7.62mm

Table 8-7. CFV Table VII, A and B.

CFV TABLE VIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Defense	Dismounted troops, 400 to 600 meters. Bunker, 800 to 1,000. Civilians on the battlefield (COB). Auxiliary sight.	75 rounds, 7.62mm 8 rounds, TP-T	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress. Hit bunker with 3 rounds HE 25mm.
2A Offense	Sniper in window, 200 to 400 meters. Stationary PC, 1,000 to 1,200 meters. Commander's position.	50 rounds, 7.62mm 8 rounds, TPDS-T	Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
3A (Swing) Defense	Stationary PC, 1,000 to 1,200 meters. Gunner's position, manual.	8 rounds, TPDS-T	Hit PC with 3 rounds AP 25mm.
4A Offense NBC	Stationary PC, 800 to 1,000 meters. Moving truck, 1,000 to 1,200 meters. Gunner's position, NBC.	8 rounds, TP-T 8 rounds, TPDS-T	Hit PC with 3 rounds AP 25mm. Hit truck with 3 rounds HE 25mm.
CFV TABLE VIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Defense NBC	RPG team, 600 to 800 meters. Stationary PC, 1,000 to 1,200 meters. Dismounted troops, 600 to 800 meters (15-second delay). Gunner's position, NBC.	125 rounds, 7.62mm 8 rounds, TPDS-T	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm. Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
2B Offense	Stationary PC, 1,200 to 1,400 meters. Stationary truck, 800 to 1,000 meters. Dismounted troops, 400 to 600 meters (15-second delay). Gunner's position.	75 rounds, 7.62mm 8 rounds, TP-T 8 rounds, TPDS-T	Hit PC with 3 rounds AP 25mm. Hit truck with 3 rounds HE 25mm. Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
3B (Swing) Defense	Bunker, 1,200 to 1,400 meters. Moving PC, 1,000 to 1,200 meters. RPG team, 400 to 600 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). Gunner's position.	50 rounds, 7.62mm 8 rounds, TPDS-T 8 rounds, TP-T	Hit bunker with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm. Hit RPG team with 1 round 7.62mm.
4B Offense	Moving truck, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Commander's position.	8 rounds, TP-T	Hit truck with 3 rounds HE 25mm.
5B (Swing) Defense	Stationary tank, >1,200 meters.	None.	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally, if so equipped.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VII, TASK 1A (AUXILIARY) (DEFENSE), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Troops Time/Points	Target 2 Bunker Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a stationary CFV.	1-5 100	1-8 100	Automatic Zero	
	6 93	9 96	Not masked during NBC.	
	7 85	10 91	Used announced degraded components.	
AMMUNITION	8 78	11 87	Commander did not fire his engagement.	
7.62mm: 75 rounds	9 70	12 83	Engaged friendly target.	
TP-T: 8 rounds	10 63	13 77	30-Point Penalty	
CONDITIONS	11 55	14 74	Failed to raise TOW launcher.	
Auxiliary sight.	12 48	15 70	Hatches not closed during NBC.	
	13 40	16 66	Fired into the berm.	
Total Targets: 2	14 33	17 62	Killed target beyond maximum vehicle exposure time.	
Target 1: Dismounted troops, 400 to 600 meters.	15 25	18 57	10-Point Penalty	
Target 2: Bunker, 800 to 1,000 meters.	16 18	19 53	Failed to follow instructions from authorized personnel.	
Civilians on the battlefield (COB).	17 10	20 49	Fired before "FIRE" or "ON THE WAY."	
Gunner's position.	18 3	21 44	Improper engagement technique.	
	19/+ 0	22 40	Improper fire command.	
EXPOSURE TIME		23 36	Did not return to turret-down position.	
Target 1: 50 seconds		24 32	Target 1 Target 2	
Target 2: 50 seconds		25 27	5-Point Penalty	
		26 23	Improper response to fire command.	
STANDARDS		27 19	Improper reporting.	
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.		28 14	Improper driving techniques.	
Hit bunker with 3 rounds HE 25mm.		29 10	Improper ammunition.	
		30 6	Total Crew-Duty Penalty Points	
		31 2		
		32 0		
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-32. Sample Scoresheet—CFV Table VII, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VII, TASK 2A (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____				
TASK Engage stationary point targets from a moving CFV. AMMUNITION 7.62mm: 50 rounds TPDS-T: 8 rounds CONDITIONS Commander's sight extension. Total Targets: 2 Target 1: Sniper in window, 200 to 400 meters. Target 2: Stationary PC, 1,000 to 1,200 meters. Commander's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.	Target 1 Sniper Time/Points		Target 2 PC Time/Points	
	1-5 100		1-10 100	
	6 94		11 97	
	7 88		12 91	
	8 82		13 91	
	9 76		14 88	
	10 70		15 85	
	11 64		16 82	
	12 58		17 79	
	13 52		18 76	
	14 46		19 73	
	15 40		20 70	
	16 34		21 67	
	17 28		22 64	
	18 22		23 61	
	19 16		24 58	
	20 10		25 55	
	21 4		26 52	
	22+ 0		27 49	
			28 46	
			29 43	
			30 40	
			31 37	
			32 34	
		33 31		
		34 28		
		35 25		
		36 22		
		37 19		
		38 16		
		39 13		
		40 10		
		41 7		
		42 4		
		43 1		
		44+ 0		
CREW-DUTY PENALTY POINTS				
Automatic Zero				
Not masked during NBC.				
Used announced degraded components.				
Commander did not fire his engagement.				
Engaged friendly target.				
30-Point Penalty				
Failed to raise TOW launcher.				
Hatches not closed during NBC.				
Fired into the berm.				
Killed target beyond maximum vehicle exposure time.				
10-Point Penalty				
Failed to follow instructions from authorized personnel.				
Fired before "FIRE" or "ON THE WAY."				
Improper engagement technique.				
Improper fire command.				
Did not return to turret-down position.				
Target 1		Target 2		
5-Point Penalty				
Improper response to fire command.				
Improper reporting.				
Improper driving techniques.				
Improper ammunition.				
Total Crew-Duty Penalty Points				
Remarks: _____ _____ _____ _____ _____ _____ _____ _____				
Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____				

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Figure 8-33. Sample Scoresheet—CFV Table VII, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VII, TASK 3A (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary CFV. AMMUNITION TPDS-T: 8 rounds CONDITIONS Manual mode. Total Targets: 1 Target 1: Stationary PC, 1,000 to 1,200 meters. Gunner's position. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 3 rounds AP 25mm.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS	
	1-9 100	Automatic Zero	
	10 96	Not masked during NBC.	
	11 93	Used announced degraded components.	
	12 89	Commander did not fire his engagement.	
	13 85	Engaged friendly target.	
	14 81		
	15 78	30-Point Penalty	
	16 74	Failed to raise TOW launcher.	
	17 70	Hatches not closed during NBC.	
	18 66	Fired into the berm.	
	19 63	10-Point Penalty	
	20 59	Failed to follow instructions from authorized personnel.	
	21 55	Fired before "FIRE" or "ON THE WAY."	
	22 51	Improper engagement technique.	
	23 48	Improper fire command.	
	24 44	Did not return to turret-down position.	
	25 40	5-Point Penalty	
	26 36	Improper response to fire command.	
	27 33	Improper reporting.	
	28 29	Improper driving techniques.	
	29 25	Improper ammunition.	
	30 21		
	31 18	Total Crew-Duty Penalty Points	
	32 14		
	33 10		
	34 6		
	35 3		
	36+ 0		
	Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-34. Sample Scoresheet—CFV Table VII, Task 3AS.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VII, TASK 4A (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____				
TASK	Target 1 PC Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a moving CFV.	1-11 100	1-14 100	Automatic Zero	
	12 97	15 98	Not masked during NBC.	
	13 94	16 96	Used announced degraded components.	
AMMUNITION	14 91	17 94	Commander did not fire his engagement.	
TP-T: 8 rounds	15 88	18 91	Engaged friendly target.	
TPDS-T: 8 rounds	16 85	19 89		
	17 82	20 87		
CONDITIONS	18 79	21 85	30-Point Penalty	
NBC.	19 76	22 83	Failed to raise TOW launcher.	
	20 73	23 81	Hatches not closed during NBC.	
	21 70	24 79	Fired into the berm.	
Total Targets: 2	22 67	25 77	Killed target beyond maximum vehicle exposure time.	
Target 1: Stationary PC, 800 to 1,000 meters.	23 64	26 74		
Target 2: Moving truck, 1,000 to 1,200 meters.	24 61	27 72	10-Point Penalty	
Gunner's position.	25 58	28 70	Failed to follow instructions from authorized personnel.	
	26 55	29 68	Fired before "FIRE" or "ON THE WAY."	
	27 52	30 66	Improper engagement technique.	
	28 49	31 64	Improper fire command.	
	29 46	32 62	Did not return to turret-down position.	
EXPOSURE TIME	30 43	33 59	Target 1 Target 2	
Target 1: 30 seconds	31 40	34 57	5-Point Penalty	
Target 2: 30 seconds	32 37	35 55	Improper response to fire command.	
	33 34	36 53	Improper reporting.	
	34 31	37 51	Improper driving techniques.	
	35 28	38 49	Improper ammunition.	
STANDARDS	36 25	39 47	Total Crew-Duty Penalty Points	
Hit PC with 3 rounds AP 25mm.	37 22	40 44		
Hit truck with 3 rounds HE 25mm.	38 19	41 42		
	39 16	42 40		
	40 13	43 38		
	41 10	44 36		
	42 7	45 34		
	43 4	46 32		
	44 1	47 29		
	45+ 0	48 27		
		49 25		
		50+ 0		
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-35. Sample Scoresheet—CFV Table VII, Task 4A.

GUNNERY SCORESHEET, THREE-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE VII, TASK 1B (NBC) (DEFENSE), UNIT/BUMPER NUMBER _____						
TASK	Target 1 RPG Team Time/Points		Target 2 PC Time/Points		Target 3 Troops Time/Points	
Engage stationary point and area targets from a stationary CFV.	1-6	100	1-10	100	1-6	100
AMMUNITION	7	95	11	97	7	95
7.62mm: 125 rounds	8	90	12	91	8	90
TPDS-T: 8 rounds	9	85	13	91	9	85
CONDITIONS	10	80	14	88	10	80
NBC.	11	75	15	85	11	75
	12	70	16	82	12	70
	13	65	17	79		
	14	60	18	76		
Total Targets: 3	15	55	19	73	13	65
Target 1: RPG team, 600 to 800 meters.	16	50	20	70	14	60
Target 2: Stationary PC, 1,000 to 1,200 meters.	17	45	21	67	15	55
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	18	40	22	64	16	50
Gunner's position.	19	35	23	61	17	45
EXPOSURE TIME	20	30	24	58	18	40
Target 1: 50 seconds	21	25	25	55	19	35
Target 2: 50 seconds	22	20	26	52	20	30
Target 3: 35 seconds (15-second delay)	23	15	27	49	21	25
STANDARDS	24	10	28	46	22	20
Hit RPG team with 1 round 7.62mm.	25	5	29	43	23	15
Hit PC with 3 rounds AP 25mm.	26+	0	30	40	24	10
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.			31	37	25	5
			32	34	26+	0
			33	31		
			34	28		
			35	25		
			36	22		
			37	19		
			38	16		
			39	13		
			40	10		
			41	7		
			42	4		
			43	1		
			44+	0		
CREW-DUTY PENALTY POINTS						
Automatic Zero						
Not masked during NBC.						
Used announced degraded components.						
Commander did not fire his engagement.						
Engaged friendly target.						
30-Point Penalty						
Failed to raise TOW launcher.						
Hatches not closed during NBC.						
Fired into the berm.						
Killed target beyond maximum vehicle exposure time.						
10-Point Penalty						
Failed to follow instructions from authorized personnel.						
Fired before "FIRE" or "ON THE WAY."						
Improper engagement technique.						
Improper fire command.						
Did not return to turret-down position.						
Target 1 Target 2 Target 3						
5-Point Penalty						
Improper response to fire command.						
Improper reporting.						
Improper driving techniques.						
Improper ammunition.						
Total Crew-Duty Penalty Points						
REMARKS:						
	Target 1 Points (a) _____					
	Target 2 Points (b) _____					
	Target 3 Points (c) _____					
	Total (a + b + c = d) (d) _____					
	Divide by 3 (# of targets) (d ÷ 3 = e)					
	Engagement Raw Score (e) _____					
	Total Crew-Duty Penalty Points (f) _____					
	Subtract crew-duty penalty points from raw score (e - f = g)					
	Engagement Score (g) _____					

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Figure 8-36. Sample Scoresheet—CFV Table VII, Task 1B.

GUNNERY SCORESHEET, THREE-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE VII, TASK 2B (OFFENSE), UNIT/BUMPER NUMBER _____						
TASK	Target 1 PC Time/Points	Target 2 Truck Time/Points	Target 3 Troops Time/Points	CREW-DUTY PENALTY POINTS		
Engage stationary point and area targets from a moving CFV.	1-11 100	1-12 100	1-6 100	Automatic Zero		
AMMUNITION	12 97	13 97	7 94	Not masked during NBC.		
7.62mm: 75 rounds	13 95	14 95	8 88	Used announced degraded components.		
TP-T: 8 rounds	14 92	15 92	9 82	Commander did not fire his engagement.		
TPDS-T: 8 rounds	15 89	16 89	10 76	Engaged friendly target.		
CONDITIONS	16 86	17 86	11 70	30-Point Penalty		
Total Targets: 3	17 84	18 84	12 64	Failed to raise TOW launcher.		
Target 1: Stationary PC, 1,200 to 1,400 meters.	18 81	19 81	13 58	Hatches not closed during NBC.		
Target 2: Stationary truck, 800 to 1,000 meters.	19 78	20 78	14 52	Fired into the berm.		
Target 3: Dismounted troops, 400 to 600 meters (15-second delay).	20 76	21 76	15 46	Killed target beyond maximum vehicle exposure time.		
Gunner's position.	21 73	22 73	16 40	10-Point Penalty		
EXPOSURE TIME	22 70	23 70	17 34	Failed to follow instructions from authorized personnel.		
Target 1: 30 seconds	23 67	24 67	18 28	Fired before "FIRE" or "ON THE WAY."		
Target 2: 30 seconds	24 65	25 65	19 22	Improper engagement technique.		
Target 3: 30 seconds (15-second delay)	25 62	26 62	20 16	Improper fire command.		
	26 59	27 59	21 10	Did not return to turret-down position.		
	27 57	28 57	22 4	Target 1 Target 2 Target 3		
	28 54	29 54	23/+ 0	5-Point Penalty		
STANDARDS	29 51	30 51		Improper response to fire command.		
Hit PC with 3 rounds AP 25mm.	30 48	31 48		Improper reporting.		
Hit truck with 3 rounds HE 25mm.	31 46	32 46		Improper driving techniques.		
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	32 43	33 43		Improper ammunition.		
	33 40	34 40		Total Crew-Duty Penalty Points		
	34 37	35 37				
	35 35	36 35				
	36 32	37 32				
	37 29	38 29				
	38 27	39 27				
	39 24	40 24				
	40 21	41 21				
	41 18	42 18				
	42 16	43 16				
	43 13	44 13				
	44 10	45 10				
	45 8	46 8				
	46 5	47 5				
	47 2	48 2				
	48+ 0	49+ 0				
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____		

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Figure 8-37. Sample Scoresheet—CFV Table VII, Task 2B.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VII, TASK 3B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Bunker Time/Points	Target 2 PC Time/Points	Target 3 RPG Team Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a stationary CFV.	1-9 100	1-10 100	1-5 100	Automatic Zero	
AMMUNITION	10 97	11 97	6 93	Not masked during NBC.	
7.62mm: 50 rounds	11 93	12 91	7 85	Used announced degraded components.	
TP-T: 8 rounds	12 90	13 91	8 78	Commander did not fire his engagement.	
TPDS-T: 8 rounds	13 87	14 88	9 70	Engaged friendly target.	
CONDITIONS	14 83	15 85	10 63	30-Point Penalty	
Total Targets: 3	15 80	16 82	11 55	Failed to raise TOW launcher.	
Target 1: Bunker, 1,200 to 1,400 meters.	16 77	17 79	12 48	Hatches not closed during NBC.	
Target 2: Moving PC, 1,000 to 1,200 meters.	17 73	18 76	13 40	Fired into the berm.	
Target 3: RPG team, 400 to 600 meters (15-second delay).	18 70	19 73	14 33	Killed target beyond maximum vehicle exposure time.	
Civilians on the battlefield (COB) (15-second delay).	19 67	20 70	15 25	10-Point Penalty	
Gunner's position.	20 63	21 67	16 18	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME	21 60	22 64	17 10	Fired before "FIRE" or "ON THE WAY."	
Target 1: 50 seconds	22 57	23 61	18 3	Improper engagement technique.	
Target 2: 50 seconds	23 53	24 58	19/+ 0	Improper fire command.	
Target 3: 35 seconds (15-second delay)	24 50	25 55		Did not return to turret-down position.	
	25 47	26 52		Target 1 Target 2 Target 3	
	26 43	27 49		5-Point Penalty	
	27 40	28 46		Improper response to fire command.	
	28 37	29 43		Improper reporting.	
	29 33	30 40		Improper driving techniques.	
	30 30	31 37		Improper ammunition.	
	31 27	32 34		Total Crew-Duty Penalty Points	
	32 23	33 31			
	33 20	34 28			
	34 17	35 25			
	35 13	36 22			
	36 10	37 19			
STANDARDS	37 7	38 16			
Hit bunker with 3 rounds HE 25mm.	38 3	39 13			
Hit PC with 3 rounds AP 25mm.	39+ 0	40 10			
Hit RPG team with 1 round 7.62mm.		41 7			
		42 4			
		43 1			
		44+ 0			
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 8-38. Sample Scoresheet—CFV Table VII, Task 3BS.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE VII, TASK 4B (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a moving CFV.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION TP-T: 8 rounds	1-14 100 15 98 16 96 17 94 18 91	Automatic Zero
CONDITIONS Commander's sight extension.	19 89 20 87 21 85 22 83 23 81	Not masked during NBC.
Total Targets: 1 Target 1: Moving truck, 1,000 to 1,200 meters.	24 79 25 77 26 74 27 72	Used announced degraded components.
Civilians on the battlefield (COB).	28 70	Commander did not fire his engagement.
Commander's position.	29 68 30 66 31 64 32 62	Engaged friendly target.
EXPOSURE TIME Target 1: 30 seconds	33 59 34 57 35 55 36 53 37 51 38 49 39 47 40 44 41 42 42 40 43 38 44 36 45 34 46 32 47 29 48 27 49 25 50+ 0	30-Point Penalty
STANDARDS Hit truck with 3 rounds HE 25mm.		Failed to raise TOW launcher.
		Hatches not closed during NBC.
		Fired into the berm.
		10-Point Penalty
		Failed to follow instructions from authorized personnel.
		Fired before "FIRE" or "ON THE WAY."
		Improper engagement technique.
		Improper fire command.
		Did not return to turret-down position.
		5-Point Penalty
		Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Improper ammunition.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 8-39. Sample Scoresheet—CFV Table VII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE VII, TASK 5B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary CFV. AMMUNITION None. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally, if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	Not masked during NBC.
	15 95	Used announced degraded components.
	16 93	Commander did not fire his engagement.
	17 90	Engaged friendly target.
	18 88	30-Point Penalty
	19 85	Failed to raise TOW launcher.
	20 83	Hatches not closed during NBC.
	21 80	Fired into the berm.
	22 78	10-Point Penalty
	23 75	Failed to follow instructions from authorized personnel.
	24 73	Fired before "FIRE" or "ON THE WAY."
	25 70	Improper engagement technique.
	26 68	Improper fire command.
	27 65	Did not return to turret-down position.
	28 63	5-Point Penalty
	29 60	Improper response to fire command.
	30 58	Improper reporting.
	31 55	Improper driving techniques.
	32 53	Improper ammunition.
	33 50	Total Crew-Duty Penalty Points
	34 48	
	35 45	
	36 43	
	37 40	
	38 38	
	39 35	
	40 33	
	41 30	
42 28		
43 25		
44 23		
45 20		
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-40. Sample Scoresheet—CFV Table VII, Task 5BS.

Conduct of Table VIII (Crew Qualification)

8-128. Table VIII evaluates the M3 crew's ability to acquire and engage targets during various firing conditions at combat ranges.

CONCEPT

8-129. Table VIII is a single-vehicle qualification table. Normal combat-oriented procedures, such as reporting, should be used. The crew uses proper engagement techniques against targets from a stationary and moving CFV during normal and NBC conditions (directed MOPP level) using primary and auxiliary sights. Day firing phase will precede night firing phase.

8-130. This table consists of five day, five night, and one TOW task. (**Note.** Task 5BS may use a TOW missile at the commander's discretion. If the TOW is not used, then score Task 5BS as a two-target engagement.) There are three swing tasks (2AS, 1BS, and 5BS) in this table. Swing tasks may be fired either during the day or at night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with six tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASK

8-131. Crews will employ direct-fire to engage stationary and moving targets from a stationary and moving CFV. The crews will use proper engagement techniques. Precision fire commands will be used for defensive engagements, and battlesight fire commands will be used for offensive engagements.

EXECUTION

8-132. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the CFV starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done or where turret-down positions do not exist, units should train using simulated battle positions. All offensive engagements will be fired from a moving CFV utilizing the stabilization system.

Note. If the stabilization system is nonoperational, the crew should notify the appropriate maintenance personnel immediately. The crew will be given an alibi for the remainder of the engagement in accordance with the alibi criteria.

SCORING

8-133. The crew must fire Table VIIIA and B for qualification. As a minimum, the crew must achieve 700 points, and 7 out of 10 tasks must have at least 70 points to achieve a qualified rating (at least 1 of the 7 tasks must be an NBC engagement, 1 of the tasks must be a commander's engagement and 2 of the tasks must be night engagements).

8-134. Tasks will be scored using the criteria in the standards column for each task in Table 8-8. Use the appropriate gunnery scoresheet (DA Form 7553-3-R, DA Form 7553-4-R, or DA Form 7553-5-R) and time/points column for each task. Refer to pages 8-13 through 8-17 for scoresheet scoring instructions and Figures 8-2 through 8-4, pages 8-15 through 8-17, respectively, for sample completed scoresheets. Refer to page 8-9 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

8-135. Crew ratings for Table VIII are as follows:

- **Distinguished:** Combined score of at least 900 points on Table VIIIA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Superior:** Combined score of 800-899 points on Table VIIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.
- **Qualified:** Combined score of 700-799 points on Table VIIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass at least one NBC engagement, one commander's engagement, and two night engagements.

- **Unqualified:** Combined score of 699 points or less on Table VIIIA and B, or 4 out of 10 tasks have 69 points or less or crew fails to pass one NBC engagement, one commander's engagement, or two night engagements.

AMMUNITION REQUIREMENTS

8-136. Ammunition requirements for Table VIII are as follows:

Table VIIIA	Table VIIIB	Total Rounds
24 rounds TPDS-T	24 rounds TPDS-T	48 rounds AP
16 rounds TP-T	32 rounds TP-T	48 rounds TP-T
300 rounds 7.62mm	175 rounds 7.62mm	475 rounds 7.62mm
	1 TOW missile (commander's option)	1 TOW missile

Table 8-8. CFV Table VIII, A and B.

CFV TABLE VIIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Defense	Stationary frontal PC, 1,000 to 1,200 meters. Gunner's position, manual.	8 rounds, TPDS-T	Hit PC with 3 rounds AP 25mm.
2A (Swing) Defense	RPG team, 300 to 500 meters. Bunker, 800 to 1,000 meters. Dismounted troops, 600 to 800 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). Gunner's position.	125 rounds, 7.62mm 8 rounds, TP-T	Hit RPG team with 1 round 7.62mm. Hit bunker with 3 rounds HE 25mm. Hit 1 troop SIT with 1 round 7.62mm and suppress.
3A Offense	Sniper in window, 200 to 400 meters. Stationary PC, 800 to 1,000 meters. Commander's position.	50 rounds, 7.62mm 8 rounds, TPDS-T	Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
4A Defense	RPG team, 200 to 400 meters. Moving PC, 1,200 to 1,400 meters. Civilians on the battlefield (COB). Auxiliary sight.	50 rounds, 7.62mm 8 rounds, TPDS-T	Hit RPG team with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.
5A Offense NBC	Dismounted troops, 400 to 600 meters. Moving truck, 800 to 1,000 meters. Gunner's position, NBC.	75 rounds, 7.62mm 8 rounds, TP-T	Hit 1 troop SIT with 1 round 7.62mm and suppress. Hit truck with 3 rounds HE 25mm.
continued on next page			

Table 8-8 (cont.)

CFV TABLE VIII B			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B (Swing) Defense	Stationary truck, 400 to 600 meters. Dismounted troops, 600 to 800 meters. Moving truck, 800 to 1,000 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). Gunner's position.	125 rounds, 7.62mm 8 rounds, TP-T	Hit truck with 5 rounds 7.62mm. Hit 1 troop SIT with 1 round 7.62mm and suppress. Hit truck with 3 rounds HE 25mm.
2B Offense	Stationary truck, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Commander's position.	8 rounds, TP-T	Hit truck with 3 rounds HE 25mm.
3B Defense NBC	Stationary PC, 1,200 to 1,400 meters. Moving truck, 1,000 to 1,200 meters. Gunner's position, NBC.	8 rounds, TPDS-T 8 rounds, TP-T	Hit PC with 3 rounds AP 25mm. Hit truck with 3 rounds HE 25mm.
4B Offense	Sniper in window, 400 to 600 meters. Moving truck, 1,000 to 1,200 meters. Stationary PC, 1,200 to 1,400 meters (15-second delay). Gunner's position.	50 rounds, 7.62mm 8 rounds, TP-T 8 rounds, TPDS-T	Hit sniper with 1 round 7.62mm. Hit truck with 3 rounds HE 25mm. Hit PC with 3 rounds AP 25mm.
5B (Swing) Defense	3 stationary tanks, 1,000 to 3,000 meters. *Stationary tank, 1,000 to 3,000 meters. Stationary PC, 1,600 to 1,800 meters. Gunner's position.	8 rounds, TPDS-T 1 TOW missile (fired at commander's discretion)	Perform call for immediate suppression, grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Hit tank with TOW missile. Hit PC with 3 rounds AP 25mm.
* TOW fired at commander's discretion.			

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VIII, TASK 1A (MANUAL) (DEFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary point target from a stationary CFV. AMMUNITION TPDS-T: 8 rounds CONDITIONS Manual mode. Total Targets: 1 Target 1: Stationary PC, 1,000 to 1,200 meters. Gunner's position. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 3 rounds AP 25mm.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS	
	1-9 100	Automatic Zero	
	10 96	Not masked during NBC.	
	11 93	Used announced degraded components.	
	12 89	Commander did not fire his engagement.	
	13 85	Engaged friendly target.	
	14 81		
	15 78	30-Point Penalty	
	16 74	Failed to raise TOW launcher.	
	17 70	Hatches not closed during NBC.	
	18 66	Fired into the berm.	
	19 63	10-Point Penalty	
	20 59	Failed to follow instructions from authorized personnel.	
	21 55	Fired before "FIRE" or "ON THE WAY."	
	22 51	Improper engagement technique.	
	23 48	Improper fire command.	
	24 44	Did not return to turret-down position.	
	25 40	5-Point Penalty	
	26 36	Improper response to fire command.	
	27 33	Improper reporting.	
	28 29	Improper driving techniques.	
	29 25	Improper ammunition.	
	30 21		
	31 18	Total Crew-Duty Penalty Points	
	32 14		
	33 10		
	34 6		
	35 3		
	36+ 0		
	Remarks: _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 8-41. Sample Scoresheet—CFV Table VIII, Task 1A.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VIII, TASK 2A (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 RPG Team Time/Points	Target 2 Bunker Time/Points	Target 3 Troops Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point and area targets from a stationary CFV.	1-4 100	1-8 100	1-5 100	Automatic Zero	
	5 90	9 96	6 94	Not masked during NBC.	
AMMUNITION	6 80	10 91	7 88	Used announced degraded components.	
7.62mm: 125 rounds	7 70	11 87	8 82	Commander did not fire his engagement.	
TP-T: 8 rounds	8 60	12 83	9 76	Engaged friendly target.	
CONDITIONS	9 50	13 77	10 70	30-Point Penalty	
Total Targets: 3	10 40	14 74	11 64	Failed to raise TOW launcher.	
Target 1: RPG team, 300 to 500 meters.	11 30	15 70	12 58	Hatches not closed during NBC.	
Target 2: Bunker, 800 to 1,000 meters.	12 20	16 66	13 52	Fired into the berm.	
Target 3: Dismounted troops, 600 to 800 meters (15-second delay).	13 10	17 62	14 46	Killed target beyond maximum vehicle exposure time.	
Civilians on the battlefield (COB) (15-second delay).	14+ 0	18 57	15 40	10-Point Penalty	
Gunner's position.		19 53	16 34	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME		20 49	17 28	Fired before "FIRE" or "ON THE WAY."	
Target 1: 50 seconds		21 44	18 22	Improper engagement technique.	
Target 2: 50 seconds		22 40	19 16	Improper fire command.	
Target 3: 35 seconds (15-second delay)		23 36	20 10	Did not return to turret-down position.	
STANDARDS		24 32	21 4	Target 1 Target 2 Target 3	
Hit RPG team with 1 round 7.62mm.		25 27	22+ 0	5-Point Penalty	
Hit bunker with 3 rounds HE 25mm.		26 23		Improper response to fire command.	
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.		27 19		Improper reporting.	
		28 14		Improper driving techniques.	
		29 10		Improper ammunition.	
		30 6		Total Crew-Duty Penalty Points	
		31 2			
		32 0			
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 8-42. Sample Scoresheet—CFV Table VIII, Task 2AS.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VIII, TASK 3A (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a moving CFV. AMMUNITION 7.62mm: 50 rounds TPDS-T: 8 rounds CONDITIONS Commander's sight extension. Total Targets: 2 Target 1: Sniper in window, 200 to 400 meters. Target 2: Stationary PC, 800 to 1,000 meters. Commander's position. EXPOSURE TIME Target 1: 30 seconds Target 2: 30 seconds STANDARDS Hit sniper with 1 round 7.62mm. Hit PC with 3 rounds AP 25mm.	Target 1 Sniper Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
	1-5	100	1-9	100	Automatic Zero
	6	94	10	97	Not masked during NBC.
	7	88	11	93	Used announced degraded components.
	8	82	12	90	Commander did not fire his engagement.
	9	76	13	87	Engaged friendly target.
	10	70	14	83	30-Point Penalty
	11	64	15	80	Failed to raise TOW launcher.
	12	58	16	77	Hatches not closed during NBC.
	13	52	17	73	Fired into the berm.
	14	46	18	70	Killed target beyond maximum vehicle exposure time.
	15	40	19	67	10-Point Penalty
	16	34	20	63	Failed to follow instructions from authorized personnel.
	17	28	21	60	Fired before "FIRE" or "ON THE WAY."
	18	22	22	57	Improper engagement technique.
	19	16	23	53	Improper fire command.
	20	10	24	50	Did not return to turret-down position.
	21	4	25	47	Target 1 Target 2
	22+	0	26	43	5-Point Penalty
			27	40	Improper response to fire command.
			28	37	Improper reporting.
			29	33	Improper driving techniques.
			30	30	Improper ammunition.
		31	27	Total Crew-Duty Penalty Points	
		32	23		
		33	20		
		34	17		
		35	13		
		36	10		
		37	7		
		38	3		
		39+	0		
Remarks: _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-43. Sample Scoresheet—CFV Table VIII, Task 3A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VIII, TASK 4A (AUXILIARY) (DEFENSE), UNIT/BUMPER NUMBER _____				
TASK Engage stationary point targets from a stationary CFV.	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	CREW-DUTY PENALTY POINTS	
	1-4 100	1-9 100	Automatic Zero	
	5 93	10 97	Not masked during NBC.	
AMMUNITION	6 85	11 93	Used announced degraded components.	
7.62mm: 50 rounds	7 78	12 90	Commander did not fire his engagement.	
TPDS-T: 8 rounds	8 70	13 87	Engaged friendly target.	
	9 63	14 83		
CONDITIONS	10 55	15 80	30-Point Penalty	
Auxiliary sight.	11 48	16 77	Failed to raise TOW launcher.	
	12 40	17 73	Hatches not closed during NBC.	
Total Targets: 2	13 33	18 70	Fired into the berm.	
Target 1: RPG team, 200 to 400 meters.	14 25	19 67	Killed target beyond maximum vehicle exposure time.	
Target 2: Moving PC, 1,200 to 1,400 meters.	15 18	20 63		
Civilians on the battlefield (COB).	16 10	21 60	10-Point Penalty	
Gunner's sight.	17 3	22 57	Failed to follow instructions from authorized personnel.	
	18+ 0	23 53	Fired before "FIRE" or "ON THE WAY."	
		24 50	Improper engagement technique.	
EXPOSURE TIME		25 47	Improper fire command.	
Target 1: 50 seconds		26 43	Did not return to turret-down position.	
Target 2: 50 seconds		27 40	Target 1 Target 2	
		28 37	5-Point Penalty	
STANDARDS		29 33	Improper response to fire command.	
Hit RPG team with 1 round 7.62mm.		30 30	Improper reporting.	
Hit PC with 3 rounds AP 25mm.		31 27	Improper driving techniques.	
		32 23	Improper ammunition.	
		33 20	Total Crew-Duty Penalty Points	
		34 17		
		35 13		
		36 10		
		37 7		
		38 3		
		39+ 0		
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-44. Sample Scoresheet—CFV Table VIII, Task 4A.

GUNNERY SCORESHEET, TWO-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
CFV TABLE VIII, TASK 5A (NBC) (OFFENSE), UNIT/BUMPER NUMBER _____			
TASK Engage stationary and moving point and area targets from a moving CFV.	Target 1 Troops Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-6 100	1-13 100	Automatic Zero
	7 94	14 98	Not masked during NBC.
	8 88	15 95	Used announced degraded components.
AMMUNITION	9 82	16 93	Commander did not fire his engagement.
7.62mm: 75 rounds	10 76	17 91	Engaged friendly target.
TP-T: 8 rounds	11 70	18 89	
		19 86	
CONDITIONS	12 64	20 84	30-Point Penalty
NBC.	13 58	21 82	Failed to raise TOW launcher.
	14 52	22 79	Hatches not closed during NBC.
	15 46	23 77	Fired into the berm.
Total Targets: 2	16 40	24 75	Killed target beyond maximum vehicle exposure time.
Target 1: Dismounted troops, 400 to 600 meters.	17 34	25 72	
Target 2: Moving truck, 800 to 1,000 meters.	18 28	26 70	10-Point Penalty
Gunner's position.	19 22	27 68	Failed to follow instructions from authorized personnel.
	20 16	28 66	Fired before "FIRE" or "ON THE WAY."
EXPOSURE TIME	21 10	29 63	Improper engagement technique.
Target 1: 30 seconds	22 4	30 61	Improper fire command.
Target 2: 30 seconds	23/+ 0	31 59	Did not return to turret-down position.
		32 56	Target 1 Target 2
STANDARDS		33 54	5-Point Penalty
Hit 1 troop SIT with 1 round 7.62mm and suppress.		34 52	Improper response to fire command.
Hit truck with 3 rounds HE 25mm.		35 49	Improper reporting.
		36 47	Improper driving techniques.
		37 45	Improper ammunition.
		38 43	
		39 40	Total Crew-Duty Penalty Points
		40 38	
		41 36	
		42 33	
		43 31	
		44 29	
		45 26	
		46 24	
		47 22	
		48 20	
		49 17	
		50+ 0	
Remarks:	Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____		

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Figure 8-45. Sample Scoresheet—CFV Table VIII, Task 5A.

GUNNERY SCORESHEET, THREE-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE VIII, TASK 1B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____						
TASK	Target 1 Truck Time/Points		Target 2 Troops Time/Points		Target 3 Truck Time/Points	
Engage stationary and moving, point and area targets from a stationary CFV.	1-5	100	1-9	100	1-12	100
AMMUNITION	6	94	10	96	13	97
7.62mm: 125 rounds	7	88	11	93	14	95
TP-T: 8 rounds	8	82	12	89	15	92
CONDITIONS	9	76	13	85	16	89
Total Targets: 3	10	70	14	81	17	86
Target 1: Stationary truck, 400 to 600 meters.	11	64	15	78	18	84
Target 2: Dismounted troops, 600 to 800 meters.	12	58	16	74	19	81
Target 3: Moving truck, 800 to 1,000 meters (15-second delay).	13	52	17	70	20	78
Civilians on the battlefield (COB) (15-second delay).	14	46	18	66	21	76
Gunner's position.	15	40	19	63	22	73
EXPOSURE TIME	16	34	20	59	23	70
Target 1: 50 seconds	17	28	21	55	24	67
Target 2: 50 seconds	18	22	22	51	25	65
Target 3: 35 seconds (15-second delay)	19	16	23	48	26	62
STANDARDS	20	10	24	44	27	59
Hit stationary truck with 5 rounds 7.62mm.	21	4	25	40	28	57
Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	22+	0	26	36	29	54
Hit moving truck with 3 rounds HE 25mm.			27	33	30	51
			28	29	31	48
			29	25	32	46
			30	21	33	43
			31	18	34	40
			32	14	35	37
			33	10	36	35
			34	6	37	32
			35	3	38	29
			36+	0	39	27
					40	24
					41	21
					42	18
					43	16
					44	13
					45	10
					46	8
					47	5
					48	2
					49+	0
CREW-DUTY PENALTY POINTS						
Automatic Zero						
Not masked during NBC.						
Used announced degraded components.						
Commander did not fire his engagement.						
Engaged friendly target.						
30-Point Penalty						
Failed to raise TOW launcher.						
Hatches not closed during NBC.						
Fired into the berm.						
Killed target beyond maximum vehicle exposure time.						
10-Point Penalty						
Failed to follow instructions from authorized personnel.						
Fired before "FIRE" or "ON THE WAY."						
Improper engagement technique.						
Improper fire command.						
Did not return to turret-down position.						
Target 1 Target 2 Target 3						
5-Point Penalty						
Improper response to fire command.						
Improper reporting.						
Improper driving techniques.						
Improper ammunition.						
Total Crew-Duty Penalty Points						
REMARKS:						
	Target 1 Points (a) _____					
	Target 2 Points (b) _____					
	Target 3 Points (c) _____					
	Total (a + b + c = d) (d) _____					
	Divide by 3 (# of targets) (d ÷ 3 = e)					
	Engagement Raw Score (e) _____					
	Total Crew-Duty Penalty Points (f) _____					
	Subtract crew-duty penalty points from raw score (e - f = g)					
	Engagement Score (g) _____					

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Figure 8-46. Sample Scoresheet—CFV Table VIII, Task 1BS.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
CFV TABLE VIII, TASK 2B (COMMANDER) (OFFENSE), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving CFV. AMMUNITION TP-T: 8 rounds CONDITIONS Commander's sight extension. Total Targets: 1 Target 1: Stationary truck, 1,000 to 1,200 meters. Civilians on the battlefield (COB). Commander's position. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit truck with 3 rounds HE 25mm.	Target 1: Truck Time/Points	CREW-DUTY PENALTY POINTS
	1-13 100	Automatic Zero
	14 98	Not masked during NBC.
	15 95	Used announced degraded components.
	16 93	Commander did not fire his engagement.
	17 90	Engaged friendly target.
	18 88	30-Point Penalty
	19 85	Failed to raise TOW launcher.
	20 83	Hatches not closed during NBC.
	21 80	Fired into the berm.
	22 78	10-Point Penalty
	23 75	Failed to follow instructions from authorized personnel.
	24 73	Fired before "FIRE" or "ON THE WAY."
	25 70	Improper engagement technique.
	26 68	Improper fire command.
	27 65	Did not return to turret-down position.
	28 63	5-Point Penalty
	29 60	Improper response to fire command.
	30 58	Improper reporting.
	31 55	Improper driving techniques.
	32 53	Improper ammunition.
	33 50	Total Crew-Duty Penalty Points
	34 48	
	35 45	
	36 43	
	37 40	
	38 38	
	39 35	
	40 33	
	41 30	
42 28		
43 25		
44 23		
45 20		
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 8-47. Sample Scoresheet—CFV Table VIII, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
CFV TABLE VIII, TASK 3B (NBC) (DEFENSE), UNIT/BUMPER NUMBER _____				
TASK	Target 1 PC Time/Points	Target 2 Truck Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary and moving point targets from a stationary CFV.	1-11 100	1-13 100	Automatic Zero	
	12 97	14 98	Not masked during NBC.	
	13 95	15 95	Used announced degraded components.	
AMMUNITION	14 92	16 93	Commander did not fire his engagement.	
TP-T: 8 rounds	15 89	17 90	Engaged friendly target.	
TPDS-T: 8 rounds	16 86	18 88		
	17 84	19 85		
CONDITIONS	18 81	20 83		
	19 78	21 80	30-Point Penalty	
NBC.	20 76	22 78	Failed to raise TOW launcher.	
	21 73	23 75	Hatches not closed during NBC.	
	22 70	24 73	Fired into the berm.	
Total Targets: 2	23 67	25 70	Killed target beyond maximum vehicle exposure time.	
Target 1: Stationary PC, 1,200 to 1,400 meters.	24 65	26 68		
Target 2: Moving truck, 1,000 to 1,200 meters.	25 62	27 65	10-Point Penalty	
	26 59	28 63	Failed to follow instructions from authorized personnel.	
Gunner's position.	27 57	29 60	Fired before "FIRE" or "ON THE WAY."	
	28 54	30 58	Improper engagement technique.	
	29 51	31 55	Improper fire command.	
	30 48	32 53	Did not return to turret-down position.	
EXPOSURE TIME	31 46	33 50	Target 1 Target 2	
Target 1: 50 seconds	32 43	34 48	5-Point Penalty	
Target 2: 50 seconds	33 40	35 45	Improper response to fire command.	
	34 37	36 43	Improper reporting.	
	35 35	37 40	Improper driving techniques.	
	36 32	38 38	Improper ammunition.	
STANDARDS	37 29	39 35		
Hit PC with 3 rounds AP 25mm.	38 27	40 33		
Hit truck with 3 rounds HE 25mm.	39 24	41 30		
	40 21	42 38		
	41 18	43 35		
	42 16	44 33		
	43 13	45 30		
	44 10	46 28		
	45 8	47 25		
	46 5	48 23		
	47 2	49 20		
	48+ 0	50+ 0	Total Crew-Duty Penalty Points	
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 8-48. Sample Scoresheet—CFV Table VIII, Task 3B.

GUNNERY SCORESHEET, THREE-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
CFV TABLE VIII, TASK 4B (OFFENSE), UNIT/BUMPER NUMBER _____						
TASK	Target 1 Sniper Time/Points		Target 2 Truck Time/Points		Target 3 PC Time/Points	
Engage stationary and moving, point targets from a moving CFV.	1-6	100	1-14	100	1-11	100
AMMUNITION	7	94	15	98	12	97
7.62mm: 50 rounds	8	88	16	96	13	95
TP-T: 8 rounds	9	82	17	94	14	92
TPDS-T: 8 rounds	10	76	18	91	15	89
CONDITIONS	11	70	19	89	16	86
Total Targets: 3	12	64	20	87	17	84
Target 1: Sniper in window, 400 to 600 meters.	13	58	21	85	18	81
Target 2: Moving truck, 1,000 to 1,200 meters.	14	52	22	83	19	78
Target 3: Stationary PC, 1,200 to 1,400 meters (15-second delay).	15	46	23	81	20	76
Gunner's position.	16	40	24	79	21	73
EXPOSURE TIME	17	34	25	77	22	70
Target 1: 30 seconds	18	28	26	74	23	67
Target 2: 30 seconds	19	22	27	72	24	65
Target 3: 30 seconds (15-second delay)	20	16	28	70	25	62
STANDARDS	21	10	29	68	26	59
Hit sniper with 1 round 7.62mm.	22	4	30	66	27	57
Hit truck with 3 rounds HE 25mm.	23/+	0	31	64	28	54
Hit PC with 3 rounds AP 25mm.			32	62	29	51
			33	59	30	48
			34	57	31	46
			35	55	32	43
			36	53	33	40
			37	51	34	37
			38	49	35	35
			39	47	36	32
			40	44	37	29
			41	42	38	27
			42	40	39	24
			43	38	40	21
			44	36	41	18
			45	34	42	16
			46	32	43	13
			47	29	44	10
			48	27	45	8
			49	25	46	5
			50+	0	47	2
					48+	0
CREW-DUTY PENALTY POINTS	Automatic Zero Not masked during NBC. Used announced degraded components. Commander did not fire his engagement. Engaged friendly target. 30-Point Penalty Failed to raise TOW launcher. Hatches not closed during NBC. Fired into the berm. Killed target beyond maximum vehicle exposure time. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. Target 1 Target 2 Target 3 5-Point Penalty Improper response to fire command. Improper reporting. Improper driving techniques. Improper ammunition. Total Crew-Duty Penalty Points					
REMARKS:	Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____					

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Figure 8-49. Sample Scoresheet—CFV Table VIII, Task 4B.

GUNNERY SCORESHEET, THREE-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
CFV TABLE VIII, TASK 5B (SWING) (DEFENSE), UNIT/BUMPER NUMBER _____					
TASK	Target 1 3 Tanks Time/Points	Target 2 Tank Time/Points	Target 3 PC Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary CFV.	1-13 100	1 - 15 100	1-11 100	Automatic Zero	
AMMUNITION	14 98	16 98	12 97	Not masked during NBC.	
TOW: 1 missile	15 95	17 96	13 95	Used announced degraded components.	
(commander's discretion)	16 93	18 94	14 92	Commander did not fire his engagement.	
TPDS-T: 8 rounds	17 90	19 91	15 89	Engaged friendly target.	
Note. If the TOW is not used, score as a two-target engagement.	18 88	20 89	16 86	30-Point Penalty	
	19 85	21 87	17 84	Failed to raise TOW launcher.	
	20 83	22 85	18 81	Hatches not closed during NBC.	
CONDITIONS	21 80	23 83	19 78	Fired into the berm.	
	22 78	24 81	20 76	Killed target beyond maximum vehicle exposure time.	
	23 75	25 79	21 73	10-Point Penalty	
Total Targets: 3	24 73	26 77	22 70	Failed to follow instructions from authorized personnel.	
Target 1: 3 stationary tanks, 1,000 to 3,000 meters.	25 70	27 74	23 67	Fired before "FIRE" or "ON THE WAY."	
	26 68	28 72	24 65	Improper engagement technique.	
Target 2: Stationary tank, 1,000 to 3,000 meters (TOW fired at commander's discretion).	27 65	29 70	25 62	Improper fire command.	
	28 63	30 68	26 59	Did not return to turret-down position.	
	29 60	31 66	27 57	Target 1 Target 2 Target 3	
	30 58	32 64	28 54	5-Point Penalty	
Target 3: Stationary PC, 1,600 to 1,800 meters.	31 55	33 62	29 51	Improper response to fire command.	
	32 53	34 59	30 48	Improper reporting.	
ISU, gunner's position.	33 50	35 57	31 46	Improper driving techniques.	
	34 48	36 55	32 43	Improper ammunition.	
EXPOSURE TIME	35 45	37 53	33 40	Total Crew-Duty Penalty Points	
Target 1: 90 seconds	36 43	38 51	34 37		
Break for CFF	37 40	39 49	35 35		
Target 2: 50 seconds	38 38	40 47	36 32		
Target 3: 90 seconds	39 35	41 44	37 29		
	40 33	42 42	38 27		
STANDARDS	41 30	43 40	39 24		
Perform call for immediate suppression, grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Hit tank with TOW missile (see note below). Hit PC with 3 rounds AP 25mm.	42 38	44 38	40 21		
	43 35	45 36	41 18		
	44 33	46 34	42 16		
	45 30	47 32	43 13		
	46 28	48 29	44 10		
	47 25	49 27	45 8		
	48 23	50+ 0	46 5		
	49 20		47 2		
	50+ 0		48+ 0		
REMARKS:				Target 1 Points (a) _____ Target 2 Points (b) _____ Target 3 Points (c) _____ Total (a + b + c = d) (d) _____ Divide by 3 (# of targets) (d ÷ 3 = e) Engagement Raw Score (e) _____ Total Crew-Duty Penalty Points (f) _____ Subtract crew-duty penalty points from raw score (e - f = g) Engagement Score (g) _____	

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Figure 8-50. Sample Scoresheet—CFV Table VIII, Task 5BS.

Chapter 9

TOW HMMWV Gunnery

Gunnery tables are designed to develop and test the proficiency of TOW HMMWV individual, crew, and section/platoon gunnery techniques. The series of engagements on each table is intended to duplicate (within the safety and resource constraints of live-fire ranges) typical battlefield tasks under realistic firing conditions against likely target arrays. This chapter discusses the TOW HMMWV gunnery tables, qualification requirements for crews and sections/platoons, and scoring procedures and standards. It also addresses the commander's considerations for ammunition allocation and firing during adverse weather.

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SECTION I - METHODOLOGY

9-1. The objectives of this gunnery program are to attain and sustain crew through section/platoon gunnery proficiency, and to evaluate the use of the fire control system and proper engagement techniques.

9-2. A comprehensive gunnery program must address six basic features of engagements:

- Type of target/weapon fired (heavy armor, light armor, troops, main gun, machine gun, etc.).
- Firing vehicle posture (moving, stationary, NBC).
- Target posture (moving, stationary, fully exposed, turret down).
- Machine gun engagement technique (precision or battle sight).
- Visibility (day/night or obscuration).

9-3. Scout crews must be trained to defend against or defeat a specific enemy. Specifics for determining how to train include—

- Enemy doctrine on the employment of their weapon systems.
- The time-to-fire P_H , and lethality of enemy weapons as a function of range and time.
- Enemy vulnerability to our P_H as a function of range.

9-4. Time standards (70-point time) for each task are based on the amount of time available before an average enemy system will be able to destroy you. The 100-point time is based on the time available before the top 25 percent of enemy systems is able to destroy you.

SECTION II - EVALUATION TABLE CONSIDERATIONS

9-5. The following tables comprise the gunnery proficiency part of the combat tables:

- Table I—Virtual Training.
- Table II—Individual Weapons Qualification.
- Table III—Advanced Individual Weapons Qualification.
- Table IV—TOW Crew Proficiency Course (TCPC).
- Table V—Stationary Mounted Gunnery.
- Table VI—Maneuver Mounted Gunnery.
- Table VII—Crew Practice.
- Table VIII—Crew Qualification.
- Table IX—Section Practice (see Chapter 10).
- Table X—Section Qualification (see Chapter 10).
- Table XI—Platoon Practice (see Chapter 10).
- Table XII—Platoon Qualification (see Chapter 10).

9-6. The gunnery tables are designed to train crews progressively in basic, intermediate, and advanced gunnery.

- Basic gunnery techniques and engagements are trained in simulation and dry-fire mode on Table I and tested on Table IV.
- Intermediate engagements are trained on Tables V through VII and tested on Table VIII.
- Collective gunnery engagements are trained on Tables IX and XI and tested on Tables X and XII (see Chapter 10 for collective gunnery [Tables IX through XII] information).

9-7. Table I is designed to train vehicle commanders and gunner teams on basic gunnery skills (including target acquisition, target designation, gun laying, manipulation, and direct-fire adjustment) in a virtual environment. Table IV is designed to evaluate vehicle commanders and gunner teams on the same basic gunnery skills as Table I, but with full-crew interaction from a stationary and moving vehicle. These tasks develop coordination skills and provide the crew an opportunity to identify individual strengths and weaknesses. Table I should be conducted with a vehicle commander and gunner from the same crew. Table IV **must** be fired until the crew is proficient and is required before to live-fire gunnery.

9-8. These tables should be conducted as new gunners are selected and previous gunners become vehicle commanders. Since these tables are the foundation of gunnery skills, they should be scheduled as part of a unit's routine training plan to maintain individual and crew proficiency. For optimum training benefit, manipulation drills should be integrated into the virtual training systems.

9-9. Tables IV, VIII, X, and XII are qualification tables and must be fired successfully before advancing to the next higher level of gunnery. All other tables (I, II, III, V, VI, VII, IX, and XI) are recommended for training in sequence. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

9-10. Two phases and two variations of the tables can be used in a well-rounded gunnery program:

- Day firing phase (A tables) trains and tests the crew in rapid engagement and destruction of targets during daylight hours.
- Night firing phase (B tables) trains and tests the crew in rapid engagement and destruction of targets at night and during periods of reduced visibility.
- Device-based firing trains gunnery procedures and crew and section/platoon duties without expenditure of main gun ammunition. (The commander determines when to fire subcaliber tables to sustain skills when live firing is restricted.)
- Dry firing is used to develop teamwork before live firing and to sustain skills when live firing is restricted.

9-11. Day firing (A tables) should precede night firing (B tables) whenever possible; however, this is not a requirement. All tables except Tables VIII (Mounted Qualification), X (Section Qualification), and XII

(Platoon Qualification) may be fired either dry, device-based, or both, if availability of ammunition is a problem. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

Note. Table IV will not be considered qualified if it is fired using virtual trainers.

SECTION III - VEHICLE CREW EVALUATORS

9-12. The VCE is critical to the quality of the training and AAR of the firing unit. They not only evaluate the crews during the training event, but they also lead them (during the AAR) to an understanding of their actions in each engagement scenario. To ensure a quality AAR, the same VCE who observed the firing crew will conduct the AAR. Other range evaluation personnel and the unit's chain of command may assist the VCE. VCEs must have training to make sure they are proficient at the needed skills to properly evaluate the firing crew, and must continually practice their AAR techniques to make sure they are effective.

Note. Squadron external evaluators will be used on Table VIII. It is highly recommended that qualified personnel from outside the firing unit be used for all tables, if possible. This will ensure that there are no distractions for personnel having to fire or perform other missions who are organic to the firing unit.

Basic and Intermediate Tables

9-13. The firing unit's commander is the primary evaluator of his unit's performance; however, for basic and intermediate tables, he has designated representatives to evaluate each crew. The commander (assisted by the troop master gunner), selects evaluators based on the unit's assets, mission, and prior training of personnel available. Basic guidelines for selecting VCEs are:

- Sergeant and above.
- Qualified on the table being evaluated within the preceding 12 months.
- Extensive knowledge of scoring criteria and procedures.

9-14. The VCE must have communications with the firing vehicle so that he can monitor the intercom system for Tables IV, V, VI, VII, and VIII and maintain visual contact with the vehicle at all times.

Notes. The VCE must have received training and passed the Crew Evaluator Exportable Packet (CEEP) evaluation, and be certified as VCE qualified by the unit commander.

Where circumstances do not permit live-fire qualification, such as service with a training support brigade (TSB), the battalion commander/TSB commander can waive the live-fire qualification requirement provided the VCE has previously qualified and is fully knowledgeable of applicable gunnery manuals as substantiated by passing the CEEP.

SECTION IV - AFTER-ACTION REVIEWS

9-15. The purpose of an AAR is to help the crew understand their actions and interactions during a training event. An AAR must include a discussion of crew cuts and an analysis of combat actions (critique of tactical proficiency) executed during the conduct of the table.

9-16. During the AAR, the VCE emphasizes the training objectives and evaluation points. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Quality AARs are the key to successful training.

9-17. The AAR is organized in the following standard format:

- **Introduction and rules.** During the introduction, the VCE must establish the objectives for the AAR. The VCE identifies himself and each of the participants. Normally, the participants are arranged in an organized manner. If possible, the VCE should use the actual terrain on which the tasks were conducted. Most range complexes have debriefing areas with a terrain model or map that depicts the range layout. The VCE may use this established area for the AAR.

- **Review of objectives and intent.** The VCE should state the training objective for the specific task(s) being evaluated.
- **Summary of firing events.** The VCE presents each engagement in chronological order, stating the training objectives for each task. Training aids should be used to show the target arrays, firing points, and other significant overall points, but should avoid detailed examination of the firing events. (The next part of the AAR [discussion of key issues] examines the firing events in detail.)
- **Discussion of key issues.** The VCE restates each engagement scenario (including the task, conditions, and standards), and then asks leading questions to facilitate crew discussion of what actually happened during each engagement. A taped replay (video or audio) of actual crew fire commands and crew duties presented during the AAR is an excellent way to reinforce strengths, eliminate weaknesses, and reinforce training objectives. When possible, the VCE should have an evaluation of digital communication from each scenario and incorporate digital traffic as a portion of the AAR for digital-equipped units. To achieve a quality AAR, the VCE must guide the discussion in a way that ensures all crew members contribute to the discussion. (Avoid lecturing as it prevents crew contribution to the discussion.) Finally, the VCE discusses the strengths and weaknesses of each engagement; when possible, the VCE allows the crew to discover its own strengths and weaknesses.
- **Discussion of optional issues.** The VCE must ask thought-provoking questions focusing on the training objectives. These questions must explore alternate courses of action that might have been more effective and help the crew members understand how their own actions influenced the result of each engagement. As the crew learns how to correct the mistakes they made, they improve their gunnery proficiency. The VCE should explore training aids and techniques that may be used to sustain and improve training.
- **Discussion of force protection (safety).** The VCE should emphasize safety strengths and weaknesses.
- **Closing comments.** The VCE reviews the training objectives and summarizes key learning points. He must make sure the crew understands what was good, average, or bad about their performance. After covering the objectives, learning points, and specific crew performance, the VCE should leave the area so the crew can discuss their performance in private.

SECTION V - GUNNERY QUALIFICATION REQUIREMENTS

9-18. Each crew member is an integral part of his crew and should be recognized for his contribution to the success of that crew. Commanders should award the appropriate qualification badges, in accordance with AR 600-8-22, to all crews meeting the qualification standards. If optional awards are desired, commanders will use the same standards.

Prerequisites

9-19. Each crew member must have passed the GST, as outlined in Chapter 4. Prerequisites for the qualification courses are as follows:

- Table IV, *TOW Crew Proficiency Course (TCPC)*. Each crew member must pass the GST within 3 months (6 months for Reserve Component units) before negotiating Table IV. The crew must qualify on Table IV before negotiating the crew qualification course (Table VIII).
- Before live-fire. Crews must have conducted live-fire preparatory training in accordance with Chapter 5 before live firing.
- Table VIII, *Crew Qualification*. Each crew member must have qualified on Table IV within 3 months (6 months for Reserve Component units) before negotiating the crew qualification course. The crew must successfully complete Table VIII before negotiating the section/platoon qualification course (Table X).
- Table X, *Section Qualification* **or** Table XII, *Platoon Qualification*. Each crew member must have qualified on Table VIII within 3 months (6 months for Reserve Component units) before negotiating the section or platoon qualification course.

Qualification

9-20. The following discusses the qualification rating requirements for Tables IV, VIII, X, and XII.

TABLE IV, TOW CREW PROFICIENCY COURSE

9-21. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points (90% or more) on Table IV (day and night), and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IV (day and night), and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IV (day and night), and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 points or less on Table IV (day and night), or 4 out of 10 tasks have 69 points or less, or crew fails to pass two night engagements.

TABLE VIII, CREW QUALIFICATION COURSE

9-22. Crews must live-fire Table VIII for qualification. They will be rated by the following standards:

- **Distinguished.** The crew obtains a combined score of at least 900 points (90 percent or more) on Tables VIIIA and B with at least 70 points on 9 of the 10 tasks. The crew must pass two night engagements.
- **Superior.** The crew obtains a combined score of 800-899 points (80-89 percent) on Tables VIIIA and VIIIB with at least 70 points on 8 of the 10 tasks. The crew must pass two night engagements.
- **Qualified.** The crew obtains a combined score of 700-799 points (70-79 percent) on Tables VIIIA and VIIIB with at least 70 points on 7 out of 10 tasks. The crew must pass two night engagements.
- **Unqualified.** The crew obtains a combined score of 699 or fewer points (69 percent or less) on Tables VIIIA and VIIIB, or 69 or fewer points on 4 or more of the 10 tasks, or the crew fails to pass two night engagements.

TABLE X, SECTION QUALIFICATION AND TABLE XII, PLATOON QUALIFICATION

9-23. Sections and platoons will be rated by the following standards:

- **Distinguished.** The crew obtains a combined score of at least 900 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Superior.** The crew obtains a combined score of at least 800-899 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Qualified.** The crew obtains a combined score of at least 700-799 points that must include 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Unqualified.** The crew obtains a combined score of 699 or fewer points, or section fails to achieve 420 tactical points (70 percent) and 280 gunnery points (70 percent).

SECTION VI - EVALUATION PROCEDURES AND STANDARDS

9-24. All tables must be evaluated, and every crew must receive an AAR after each phase (day/night). Alternate tasks are for contingencies (such as lack of resources, weather conditions, or range constraints) that preclude execution of the original engagements.

Tables IV through VIII

9-25. Each task on Tables IV through VIII will be scored using the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) (see scoring procedures on pages 9-11 through 9-13). Once all tasks have been completed and scored, the VCE will complete the Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R, and attach it to the front of the scoresheets for each table (see Figure 9-1).

SCOUT GUNNERY TABLE ROLL-UP SHEET					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
1. VEHICLE (Check one) ☐ CFV ☐ HMMWV ☐ RV ☐ TOW					2. TABLE
3. BUMPER #	4. UNIT		5. RANGE		6. SCORE AND RATING
7a. CREWMAN RANK, NAME, POSITION		7b. CREWMAN RANK, NAME, POSITION		7c. CREWMAN RANK, NAME, POSITION	
7d. CREWMAN RANK, NAME, POSITION		7e. CREWMAN RANK, NAME, POSITION		7f. CREWMAN RANK, NAME, POSITION	
8. DAY RUN DTG		9. EVALUATOR'S UNIT		10. DAY EVALUATOR NAME	
11. EVALUATOR SIGNATURE					
12. DAY SCORE	a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
13. NIGHT RUN DTG	14. EVALUATOR'S UNIT		15. NIGHT EVALUATOR NAME		16. EVALUATOR SIGNATURE
17. NIGHT SCORE		a. TARGET 1 (Type, Max Time, Kill Time)	b. TARGET 2 (Type, Max Time, Kill Time)	c. TARGET 3 (Type, Max Time, Kill Time)	d. CREW PENALTIES AND DEDUCTIONS
e. ENG SCORE					
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
18a. VEHICLE COMMANDER'S NAME			18b. VEHICLE COMMANDER'S SIGNATURE		
19a. HEAD EVALUATOR'S NAME			19b. HEAD EVALUATOR'S SIGNATURE		

DA FORM 7560-R, APR 2005

APD V1.00

Figure 9-1. Sample Scout Gunnery Table Roll-Up Sheet, DA Form 7560-R.

9-26. The VCE will rate crew duties for each engagement and subtract crew-duty penalty points from the total engagement points earned. Crews must qualify a minimum of 70 percent of the total tasks presented and receive a minimum point value required for each table to be qualified on Tables IV through VIII. At no time, will a crew dry-fire Table VIII prior to their qualification run. Crews who do not qualify on the first run of a table may renegotiate the course. Crews firing reruns should execute only the tasks on which they failed to qualify during the first run. In no case will a crew who failed to qualify during their first run receive a rating higher than qualified after a subsequent run. Re-fires or subsequent run scores will be added to the score only after all the tasks have been negotiated once. After a crew meets the minimum qualification standard during their subsequent run, the local commander may elect, due to resource or time constraints, to stop that crew's further negotiation of the course. The local commander and master gunner will decide how many times a crew should be rerun. Their decision should be based on the possibility of the crew meeting the minimum requirements, and time and resources available.

TARGETS

9-27. All stationary targets should be mounted on pop-up mechanisms (see FM 17-12-7 [scheduled for rewrite in 2005 as FM 3-20.7]) to facilitate target acquisition and scoring. Moving targets should be presented at speeds between 24 and 32 kmph (15 to 20 mph). TOW HMMWV gunnery tables incorporate various targets. These targets are defined as PCs (BMP, BTR, BRDM), trucks, RPG teams, bunkers, and troops. Master gunners and range-operation personnel must make sure targets are constructed to the correct dimensions.

Target Type	Standard Target
Frontal BMP	M-1
Flank BMP	M-2
Frontal BRDM	M-5
Flank BRDM	M-6
Frontal BTR	M-11
Frontal truck	L-1
Flank truck	L-2
Troops	L-6, L-7, L-9

9-28. When target-lift mechanisms are used, a target that is hit may fail to fall. The control officer or VCE should observe every round fired. **To avoid wasting ammunition, if the target is killed and does not fall, the control officer or VCE will announce a sensing of "KILL, KILL, KILL" over the control net.** This is the only situation in which a sensing will be announced by anyone other than the firing crew. Targets should be repaired as quickly as possible if they fail to drop after being hit. When feasible, targets should be physically scored and patched.

9-29. If a target malfunctions, the crew will be alerted after the engagement during which the target malfunctioned. Based on the availability of targets, the crew may be re-presented the target either at that time or from another location (the target type and conditions for that target must be met). Alternate engagements are provided and should be used if a moving target fails.

Target Types

9-30. **Point targets.** An RPG team consists of three troop targets (SITs) in the open with full and half silhouettes displayed in a tactical array using both width and depth. A vehicle target will be either a flank or frontal silhouette. Stationary point targets should be mounted on separate target-lift mechanisms set on KNOCKDOWN mode of operation.

9-31. **Area targets.** Area targets will be shown as 5 to 10 SITs in the open with full and half silhouettes displayed in a tactical array using both width and depth. The silhouettes will be placed no more than 5 meters apart or 10 meters in depth. The target area is defined as one target form up, down, left, or right of any target in the array.

9-32. **Civilians on the battlefield (COB)/friendly targets.**

- The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented on the specific tasks identified in the table description and in the specific scoresheet.

- Noncombatant targets may consist of any number of silhouettes dispersed in a small group. Noncombatant targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cutouts. All noncombatant/friendly targets will be placed within the range fans and the capabilities of the weapon systems. Friendly forces will be marked in accordance with the firing unit's SOP. Identification methods include, but are not limited to, VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

TARGET SIGNATURE DEVICES

9-33. The commander may use target signature devices (such as the Hoffman device, LA06, or LA07); however, no more than one device will be used for target signature purposes. When used, at least 5 seconds of target exposure time must elapse before the device is detonated or activated. Target signature device failure is not a valid alibi. The LA06 and LA07 should be used on targets that would mount a larger weapon type, such as tanks, PCs, trucks, and bunkers. The allocation of the LA06 and LA07 in STRAC should match the amount of targets mentioned; however, this may not always be the case. When this discrepancy occurs, the commander and master gunner will decide which targets will receive the devices.

- The LA06 is a flash/bang device used to simulate a large caliber weapon being fired (replacing the Hoffman device).
- The LA07 is a star cluster-type device used to show target hits; however, this manual uses the LA07 as a target destruction signature device. The star cluster signature can be seen in both day and thermal sights, thus allowing the gunner to see when the prescribed amount of hits has been achieved.

CREW PROTECTION STATUS

9-34. All crew members should be in MOPP 4 when conducting NBC engagements. The commander will decide if MOPP 4 is warranted due to environmental conditions; at a minimum, the mask with hood and gloves will be worn.

TARGET KILL STANDARDS

9-35. Scouts will use the M240B 7.62mm and the TOW missile launcher to supply suppressive fire and/or destroy targets. The crew receives full credit when the target has been suppressed or destroyed. Target kills will be assessed as follows:

- M240B 7.62mm: All targets will be engaged with direct fire using intermittent bursts of 10 to 15 rounds. Kill standards are as follows:
 - Area troops: Hit 1 troop SIT with 1 round 7.62mm, **and** suppress troops.
 - Snipers and RPG teams: Hit target with 1 round 7.62mm.
 - Trucks: Hit target with 5 rounds 7.62mm.
- TOW: All targets will be engaged with a TOW simulation device. Kill standards are as follows:
 - Tanks, PCs, bunkers, trucks (beyond M240B range): Hit with 1 simulated missile.
- The call-for-fire engagement is based on STP 6-13F14-SM-TG, Task 061-283-1014, *Conduct an Immediate Suppression Mission*. The complete call for fire must take place within 25 seconds of identification. The initial grid must be within 150 meters of the target.

TIMING PROCEDURES

9-36. The intent of scoring and timing is to cause crews to train as they would fight. Crews should be trained and rewarded for engaging targets rapidly, but not penalized when artificial maneuver constraints prevent them from continuing to engage the target.

9-37. The VCE's judgment is critical in implementing this policy. Knowledge of the vehicle's capabilities and observation of firing conditions must be applied in order to maintain standards without penalizing the firing crew. VCEs must be in a position to observe the firing vehicle at all times. The commander or master gunner will determine implementing procedures for these basic policies on any gunnery range.

9-38. Three types of time are used to evaluate gunnery engagements on Tables IV through VIII: target exposure time, vehicle exposure time, and target kill time.

9-39. **Target Exposure Time.** Exposure time limits the time the target is exposed yet allows for situation-dependent contingencies beyond crew control.

9-40. Target exposure time is listed for each target for Tables IV through VIII. Tasks are designed so—

- Targets are exposed for 50 seconds (plus 5 seconds for lift time) in the defense, starting from the time the target is in the fully locked (up) position.
- Targets are exposed for 30 seconds in the offense. This time starts when the target is in the fully locked (up) position.
- Exposure time for all moving targets is 50 seconds. (Range constraints limit target exposure for targets moving 20 miles per hour or more.)
- Each target in a target array has its own exposure time.

9-41. **Vehicle Exposure Time.** Vehicle exposure time is based on the amount of time a vehicle may be exposed to a target before that target can engage the vehicle. Each target maintains its own threat to the exposed vehicle, thus a vehicle may be exposed to more than one target at the same time.

9-42. In the defense, the vehicle exposure time starts when the vehicle moves from the turret-down position to a hull-down position **and** stops or when the first round is fired, whichever comes first. For moving engagements, the vehicle exposure time starts when the target(s) is locked in the full upright position or when the first round is fired, whichever comes first. Multiple targets will have a 15-second delay for the second target. In a multiple target engagement, the vehicle exposure time starts for each target when the target is locked in the upright position.

9-43. When in the defense, the vehicle exposure time stops when the target that the vehicle is engaging is destroyed or when the vehicle starts to move back into a turret-down position. In the offense, the exposure time will stop when the target is destroyed. In multiple target engagements, the vehicle is exposed to more than one target. Once a target is destroyed, the exposure time for that target stops; however, the exposure time to the other target will continue until the target is destroyed, for moving and defensive engagements, or until the vehicle pulls back into a turret-down position in the defense.

9-44. Once a vehicle moves back into a turret-down position, the vehicle exposure time will reset. The vehicle exposure time is reset because now a target must reacquire, re-lay and reengage the vehicle. It is also implied that a vehicle that has pulled back into a turret-down position will maneuver and engage from another position.

9-45. **Target Kill Time.** Target kill time is the time that it took the crew to engage and/or suppress the target. Target kill time will not exceed the maximum vehicle exposure time in order to receive a minimum passing score of 70 points.

9-46. **Timing Devices.** To score Tables IV through VIII engagements, you will need a minimum of two stopwatches to time a two-target engagement. The only time that needs to be tracked is the vehicle exposure time; the tower or target control personnel will track the target exposure time automatically. The best device for this is one timing device that has multiple stopwatches with one common start button and an independent stop button for each watch.

ALIBIS

9-47. Although commanders have the ultimate authority regarding alibis, they should be limited to two occurrences: target/range malfunction and weapon malfunction that are not the fault of the crew and not correctable through immediate action. Commanders should ensure that gunnery is as combat realistic as possible. This means that crews should train to fight *through* problems.

REMEDIAL TRAINING

9-48. Unit commanders and master gunners must make sure crews that fail tables or habitually fail specific tasks receive remedial training. Virtual trainers, subcaliber devices, or dry runs as a last resort, are the recommended techniques for remedial training. Once remedial training has been completed and the crews have been cleared by the master gunner to continue training, the failed engagements should be fired, if ammunition and time if available.

ALL-WEATHER FIRING

9-49. As in combat, firing should continue under all weather conditions. The commander decides what constitutes effective training, based on many factors including mission and range availability. If the training can still be effective during reduced visibility, it should be consistent with the unit's mission requirement. Commanders should consider the following:

- Training effectiveness.
- Operational mission.
- Preparation and planning.
- Safety restrictions.

9-50. Safety, combined with the other considerations, will determine when all-weather firing can be continued and when it must be stopped.

EVALUATING CREW-DUTY PENALTIES

9-51. During the conduct of gunnery tables, VCEs monitor crew duties. There is no limit to the number of crew-duty penalty points that can be assessed for a task; however, crew-duty penalties may not be carried over from one task to another. After each phase, the crew will receive an AAR. During this AAR, the VCE will brief the crew on crew duties such as fire commands, crew coordination, sectors of fire, target acquisition, method of engagements, and tactical reporting.

9-52. Crew-duty penalties are implemented to ensure crews practice safe firing procedures. There are five categories of crew-duty penalties:

- Immediate disqualification—extremely hazardous conduct.
- Automatic zero point—blatant disregard for announced task, conditions, and standards.
- Failure to employ correct safety techniques (30 points).
- Failure to adhere to basic doctrinal and safety precepts (10 points).
- Failure to employ correct engagement techniques or respond properly to fire commands (5 points).

Note. The following list of crew-duty penalties is not all-inclusive.

Immediate Disqualification—Extremely Hazardous Conduct

9-53. Any crew found firing outside the range fan will receive an immediate disqualification for the table that they are firing. Commanders will make decisions concerning what other violations constitute extremely hazardous conduct and what actions should be taken for crews caught cheating.

Automatic Zero-Point Penalty—Blatant Disregard for Announced Task, Conditions, and Standards

9-54. Any crew found in violation of the following policies will receive 0 points for the engagement they are firing:

- Not masked during an NBC engagement.
- Engaging friendly targets (if applicable).

30-Point Penalty

9-55. Failure to employ doctrinally correct engagement techniques and exceeding vehicle exposure:

- Leaving the gun armed or the gun select switch in the FIRE position during loading or between engagements (points will be deducted from previous engagement).
- Firing into the berm (crews not ensuring that the weapon was clear of the berm).
- Target killed beyond maximum vehicle exposure time (only on multiple engagements and can be given only once per engagement).

10-Point Penalty

9-56. Failure to adhere to basic safety precepts:

- Failure to follow the instructions of the VCE, control or safety officer, or troop/squadron commander while negotiating the course.
- Firing before receiving the command “FIRE” or announcing “ON THE WAY.”
- Improper engagement technique (firing at the least dangerous target first during a multiple-target engagement, improper suppressive fire techniques, or not coming to a halt prior to firing during a moving engagement).
- Improper fire command.
- Failure to return to a turret-down position after completing a defensive engagement or between targets on a multiple-target engagement.

Note. If a safety violation or combination of safety violations indicates it may be unsafe for a crew to continue the course, the safety officer will disqualify the crew and remove them from the range. Any unsafe act may be assessed a 10-point safety penalty. Crews should be informed of safety crew cuts; this may prevent accident or injury.

5-Point Penalty

9-57. Failure to employ correct engagement techniques or respond properly to fire commands:

- Incorrect response to a fire command or subsequent fire command.
- Improper reporting (not sending a SALT and BDA report after the engagement). (**Note.** When conducting stationary engagements, digital-equipped units **must** use digital communications to report.)
- Incorrect driving techniques (driver not maintaining speed or steady platform [such as, jerky starts and stops, too fast for maneuver box, goes off the course or road]).

SCORING PROCEDURES

9-58. Each task has its own specific gunnery scoresheet; you must use the scoresheet for that specific task. The various gunnery scoresheets (DA Form 7553-3-R and DA Form 7553-4-R) will be used to collect similar scoring information; however, the task, ammunition, conditions, targets, exposure times, standards, and points information, and whether the engagement is a one-target or two-target task on each scoresheet will vary according to the table and task that will be tested. The time/points column on the scoresheet for each task is based on the expected results of engagements between the vehicle, selected enemy targets, and the performance of the crew. The instructions below explain how to use the scoresheet for one-target and two-target tasks. Figure 9-2, page 9-12 shows an example of a completed scoresheet for a one-target task. Figure 9-3, page 9-13 shows an example of a completed scoresheet for a two-target task.

Note. If the engagement raw score has a decimal in it, the score will be rounded using normal mathematical rounding (.5 and above is rounded up and .4 and below is rounded down).

Scoring Instructions for One-Target Tasks

- | |
|--|
| <ol style="list-style-type: none"> 1. Once the target kill time has been received, circle the time in the Time/Points column. Annotate the points that correspond to that time on line (a) in the bottom right-hand box of the scoresheet. 2. Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (b) in the bottom right-hand box of the scoresheet. 3. Subtract the total number of crew-duty penalty points from the target points ($a - b = c$). Annotate this total on line (c) in the bottom right-hand box of the scoresheet. The result is the engagement score. |
|--|

9-59. **Example one-target task.** Table VIII, Task 2B (Moving) (Figure 9-2). The crew engaged and destroyed the PC in 18 seconds but did not send a SITREP after the engagement.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VIII, TASK 2B (MOVING), UNIT/BUMPER NUMBER <u>H-26</u>		
TASK Engage a moving point target from a moving vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Moving PC, 1,000 to 1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC	CREW-DUTY PENALTY POINTS
	Time/Points	
	1-15 100	Automatic Zero
	16 98	
	17 96	Not masked during NBC engagement.
	18 94	Engaged friendly target.
	19 92	
	20 90	30-Point Penalty
	21 88	Weapon not on SAFE between engagements.
	22 86	Fired into the berm.
	23 84	10-Point Penalty
	24 82	Failed to follow instructions from authorized personnel.
	25 80	Fired before "FIRE" or "ON THE WAY."
	26 78	Improper engagement technique.
	27 76	Improper fire command.
	28 74	Did not return to turret-down position.
	29 72	5-Point Penalty
	30 70	Improper response to fire command.
	31 68	Improper reporting.
	32 66	Improper driving techniques.
	33 64	
	34 62	
	35 60	
	36 58	
	37 56	
	38 54	
	39 52	
	40 50	
	41 48	
	42 46	
43 44		
44 42		
45 40		
46 38		
47 36		
48 34		
49 32		
50+ 0		
Remarks: <u>Did not send SITREP.</u>		Target 1 Points (a) <u>94</u> Total Crew-Duty Penalty Points (b) <u>-5</u> Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) <u>89</u>

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Figure 9-2. Sample Completed Scoresheet—One-Target Task.

Scoring Instructions for Two-Target Tasks

- Once the target kill time for each target has been received, circle the time in the Time/Points column for each target. Annotate the points that correspond to that time on the appropriate lines [(a) and (b)] in the bottom right-hand box of the scoresheet.
- Add the points for all targets ($a + b = c$). Annotate the total on line (c).
- Divide the total by the number of targets presented ($c \div 2 = d$). Annotate the result on line (d), which is the Engagement Raw Score.
- Add all of the crew-duty penalty points from the far right-hand column, and annotate the total in the Total Crew-Duty Penalty Points box. Annotate this total on line (e) in the bottom right-hand box of the scoresheet.

Note. Notice that on the multiple-target tasks, there is an additional 30-point crew-duty penalty for killing a target beyond the maximum vehicle exposure time. This additional penalty is only for multiple-target tasks.

5. Subtract the total number of crew-duty penalty points from the raw score ($d - e = f$). Annotate this total on line (f) in the bottom right-hand box of the scoresheet. The result is the engagement score.

9-60. **Example two-target task.** Table VIII, Task 1B (Stationary) (Figure 9-3). The crew engaged and destroyed Target 1 in 10 seconds and engaged and destroyed Target 2 in 16 seconds. The gunner did not announce "ON THE WAY," and the commander gave an improper fire command.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE VIII, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER <u>H-15</u>				
TASK	Target 1 Bunker Time/Points	Target 2 Tank Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary vehicle.	1-12 100 13 97 14 95 15 92 16 89 17 86 18 84 19 81 20 78 21 76 22 73 23 70 24 67 25 65 26 62 27 59 28 57 29 54 30 51 31 48 32 46 33 43 34 40 35 37 36 35 37 32 38 29 39 27 40 24 41 21 42 18 43 16 44 13 45 10 46 8 47 5 48 2 49+ 0	1-14 100 15 98 16 95 17 93 18 91 19 89 20 86 21 84 22 82 23 79 24 77 25 75 26 72 27 70 28 68 29 66 30 63 31 61 32 59 33 56 34 54 35 52 36 49 37 47 38 45 39 43 40 40 41 38 42 36 43 33 44 31 45 29 46 26 47 24 48 22 49 20 50+ 0	Automatic Zero Not masked during an NBC engagement. Engaged friendly target. 30-Point Penalty Weapon not on SAFE between engagements. Fired into the berm. Killed target beyond maximum vehicle exposure time. 10-Point Penalty Failed to follow instructions from authorized personnel. Fired before "FIRE" or "ON THE WAY." Improper engagement technique. Improper fire command. Did not return to turret-down position. 5-Point Penalty Improper response to the fire command. Improper reporting. Improper driving technique. Total Crew-Duty Penalty Points	
AMMUNITION				
M-80: 2 rounds.				
CONDITIONS				
Total Targets: 2				
Target 1: Bunker, 400 to 600 meters.				
Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay).				
EXPOSURE TIME				
Target 1: 50 seconds				
Target 2: 50 seconds				
STANDARDS				
Hit bunker with 1 simulated TOW missile.				
Hit tank with 1 simulated TOW missile.				
Remarks:			Target 1 Points (a) <u>100</u> Target 2 Points (b) <u>95</u> Total (a + b = c) (c) <u>195</u> Divide by 2 (# of targets) ($c \div 2 = d$) Engagement Raw Score (d) <u>98</u> Total Crew-Duty Penalty Points (e) <u>-20</u> Subtract crew-duty penalty points from raw score ($d - e = f$). Engagement Score (f) <u>78</u>	
Gunner did not announce "ON THE WAY." Commander messed up target change over.				

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Figure 9-3. Sample Completed Scoresheet—Two-Target Task.

Tables IX through XII

9-61. Sections/platoons will be evaluated on both tactical and gunnery proficiency. One section/platoon evaluator must evaluate the section/platoon during the entire time they are on the range. Live-fire scoring of the table is conducted from the tower. The section/platoon leader must be allowed time to conduct troop-leading procedures. (See also Chapter 10 for collective gunnery [Tables IX through XII] information.)

9-62. Each section/platoon will be critiqued at an AAR held after each firing run. Crew duties are not formally rated on these tables; however, unsatisfactory performance of individual vehicle crews within the section/platoon may be informally evaluated during the AAR.

SECTION VII - CONDUCT OF THE GUNNERY TABLES

Table I (Virtual Training)

9-63. Table I introduces the crew to rapid target destruction from stationary and moving vehicle-mounted weapon systems.

CONCEPT

9-64. Table I is designed to develop the engagement skills of the gunner in a simulated environment. The crew should fire the scenarios that are applicable to scout HMMWV gunnery if that system has them. When utilizing the EST, the crew must use the scenario builder to create a table that best replicates the tables from this manual.

CONDUCT OF THE TASKS

9-65. Table I develops the skills of the gunner and commander in various positions while engaging targets in a virtual environment.

EXECUTION

9-66. Crew members will be briefed on the enemy situation and weapons capabilities prior to conducting this table. Vehicle commanders should practice fire commands and overall crew coordination during this exercise. It is recommended that all crew members are present to become familiar with procedures that will be used throughout all gunnery tables.

SCORING

9-67. Table I will be evaluated by section-/platoon- or troop-level evaluators. Gunners should fire the table as often as necessary to become proficient prior to firing Table II.

Table II (Individual Weapons Qualification) and Table III (Advanced Individual Weapons Qualification)

CONCEPT

9-68. These tables are essential to the ease of completion for the entire gunnery density. These time periods should be used to complete any qualification required for both individual and crew-served weapons. These tables are also intended for the firing of close-quarter marksmanship and reflexive fires.

Table IV (TOW Crew Proficiency Course)

9-69. Table IV evaluates the crew's basic level of proficiency. It tests the crew's ability to rapidly destroy stationary and moving targets from a stationary and moving vehicle. Crews can use simulation devices when available, however no resources are available for this table in STRAC.

Note. MILES does not allow crews to use proper engagement procedures (BOT, TOT, and proper lead).

CONCEPT

9-70. Table IV is designed to train crews on a stationary and moving vehicle to engage stationary, moving, single, and multiple targets deployed in a realistic array. The crews will fire the whole table during the day, and then at night. One engagement will be fired in an NBC environment (appropriate MOPP level).

CONDUCT OF THE TASKS

9-71. Table IV allows the driver to integrate into the crew's coordination by moving the vehicle in and out of the firing positions and moving from one firing position to another. Engagements are designed to integrate battlefield conditions and targets arrayed in a realistic manner. Table IV is can be conducted on a full-scale range using half-scale targets.

EXECUTION

9-72. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements will begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. All moving engagements will be fired from a short halt.

SCORING

9-73. The VCE will rate crew duties for each engagement. If the crewman commits more than one crew-duty error during a task, he will be rated UNSAT in crew duties. Crew duties will be critiqued by the VCE during the AAR; however, they will not affect the overall GO/NO-GO rating for the task.

9-74. Tasks will be scored using the criteria in the standards column for each task in Table 9-1. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to page 9-11 for scoresheet scoring instructions and pages 9-12 and 9-13 for sample completed scoresheets. Refer to page 9-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

9-75. Crew ratings for Table IV are as follows:

- **Distinguished:** Combined score of at least 900 points (90 percent or more) on Table IV (day and night), and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table IV (day and night), and 8 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Qualified:** Combined score of 700-799 points on Table IV (day and night), and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table IV (day and night), or 4 out of 10 tasks have 69 or fewer points, or crew fails to pass two night engagements.

Table 9-1. TOW HMMWV Table IV.

TOW HMMWV IV (A and B)			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1. Stationary	1 bunker, 400 to 600 meters. RPG team, 400 to 600 meters (15-second delay).	Simulator	Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.
2. Moving	1 RPG team, 600 to 800 meters.	Simulator	Hit RPG team with 1 round 7.62mm.
3. Stationary NBC	1 stationary PC, 1,000 to 1,200 meters. 1 moving tank, 1,200 to 1,400 meters (60-second delay)	Simulator	Hit PC with 1 simulated TOW missile. Hit tank with 1 simulated TOW missile.
4. Moving	1 stationary tank, 1,600 to 1,800 meters.	Simulator	Hit tank with 1 simulated TOW missile.
5. Stationary	Stationary tank, >1,200 meters.	Simulator	Hit tank with 1 simulated TOW missile.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE IV, TASK 1 (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Bunker Time/Points	Target 2 RPG Team Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary vehicle.	1 - 12 100	1 - 5 100	Automatic Zero	
	13 97	6 93		
	14 95	7 85		
AMMUNITION	15 92	8 78	Not masked during an NBC engagement.	
Simulator.	16 89	9 70	Engaged friendly target.	
	17 86	10 63		
CONDITIONS	18 84	11 55	30-Point Penalty	
Total Targets: 2	19 81	12 48		
Target 1: Bunker, 400 to 600 meters.	20 78	13 40	Weapon not on SAFE between engagements.	
Target 2: RPG team, 400 to 600 meters (15-second delay).	21 76	14 33	Fired into the berm.	
	22 73	15 25	Killed target beyond maximum vehicle exposure time.	
	23 70	16 18		
	24 67	17 10	10-Point Penalty	
EXPOSURE TIME	25 65	18 3		
Target 1: 50 seconds	26 62	19+ 0	Failed to follow instructions from authorized personnel.	
Target 2: 50 seconds	27 59		Fired before "FIRE" or "ON THE WAY."	
	28 57		Improper engagement technique.	
	29 54		Improper fire command.	
STANDARDS	30 51		Did not return to turret-down position.	
Hit bunker with 1 simulated TOW missile.	31 48		5-Point Penalty	
Hit RPG team with 1 round 7.62mm.	32 46		Improper response to the fire command.	
	33 43		Improper reporting.	
	34 40		Improper driving technique.	
	35 37		Total Crew-Duty Penalty Points	
	36 35			
	37 32			
	38 29			
	39 27			
	40 24			
	41 21			
	42 18			
	43 16			
	44 13			
	45 10			
	46 8			
	47 5			
	48 2			
	49+ 0			
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 9-4. Sample Scoresheet—TOW HMMWV Table IV, Task 1.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE IV, TASK 2 (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle.	Target 1: RPG team Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION Simulator.	1 - 6 100	Automatic Zero
CONDITIONS Total Targets: 1	7 95	Not masked during NBC engagement.
Target 1: RPG team, 600 to 800 meters.	8 90	Engaged friendly target.
EXPOSURE TIME Target 1: 30 seconds	9 85	30-Point Penalty
STANDARDS Hit RPG team with 1 round 7.62mm.	10 80	Weapon not on SAFE between engagements.
	11 75	Fired into the berm.
	12 70	10-Point Penalty
	13 65	Failed to follow instructions from authorized personnel.
	14 60	Fired before "FIRE" or "ON THE WAY."
	15 55	Improper engagement technique.
	16 50	Improper fire command.
	17 45	Did not return to turret-down position.
	18 40	5-Point Penalty
	19 35	Improper response to fire command.
	20 30	Improper reporting.
	21 25	Improper driving techniques.
	22 20	Total Crew-Duty Penalty Points
	23 15	
	24 10	
	25 5	
	26+ 0	
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-5. Sample Scoresheet—TOW HMMWV Table IV, Task 2.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE IV, TASK 3 (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 PC Time/Points		Target 2 Tank Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a stationary vehicle.	1 -14	100	1 -16	100	Automatic Zero
	15	98	17	98	
AMMUNITION	16	95	18	96	
Simulator.	17	93	19	94	Not masked during an NBC engagement.
	18	91	20	92	
CONDITIONS	19	89	21	90	Engaged friendly target.
	20	86	22	88	
NBC.	21	84	23	86	30-Point Penalty
	22	82	24	84	
Total Targets: 2	23	79	25	82	Weapon not on SAFE between engagements.
Target 1: Stationary PC, 1,000 to 1,200 meters.	24	77	26	80	
	25	75	27	78	Fired into the berm.
	26	72	28	76	
Target 2: Moving tank, 1,200 to 1,400 meters (60-second delay).	27	70	29	74	Killed target beyond maximum vehicle exposure time.
	28	68	30	72	
EXPOSURE TIME	29	66	31	70	10-Point Penalty
	30	63	32	68	
Target 1: 50 seconds	31	61	33	66	Failed to follow instructions from authorized personnel.
	32	59	34	64	
Target 2: 50 seconds	33	56	35	62	Fired before "FIRE" or "ON THE WAY."
	34	54	36	60	
STANDARDS	35	52	37	58	Improper engagement technique.
Hit PC with 1 simulated TOW missile.	36	49	38	56	
	37	47	39	54	Improper fire command.
	38	45	40	52	Did not return to turret-down position.
Hit tank with 1 simulated TOW missile.	39	43	41	50	
	40	40	42	48	5-Point Penalty
	41	38	43	46	
	42	36	44	44	Improper response to the fire command.
	43	33	45	42	
	44	31	46	40	Improper reporting.
	45	29	47	38	
	46	26	48	36	Improper driving technique.
	47	24	49	34	
	48	22	50+	0	Total Crew-Duty Penalty Points
	49	20			
	50+	0			
Remarks:			Target 1 Points (a) ____ Target 2 Points (b) ____ Total (a + b = c) (c) ____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) ____ Total Crew-Duty Penalty Points (e) ____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) ____		

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Figure 9-6. Sample Scoresheet—TOW HMMWV Table IV, Task 3.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE IV, TASK 4 (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle. AMMUNITION Simulator. CONDITIONS Total Targets: 1 Target 1: Stationary tank, 1,600 to 1,800 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit tank with 1 simulated TOW missile.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 -15 100	Automatic Zero
	16 98	Not masked during NBC engagement.
	17 96	Engaged friendly target.
	18 94	
	19 92	30-Point Penalty
	20 90	Weapon not on SAFE between engagements.
	21 88	Fired into the berm.
	22 86	
	23 84	10-Point Penalty
	24 82	Failed to follow instructions from authorized personnel.
	25 80	Fired before "FIRE" or "ON THE WAY."
	26 78	Improper engagement technique.
	27 76	Improper fire command.
	28 74	Did not return to turret-down position.
	29 72	
	30 70	5-Point Penalty
	31 68	Improper response to fire command.
	32 66	Improper reporting.
	33 64	Improper driving techniques.
	34 62	
	35 60	
	36 58	
	37 56	
	38 54	
	39 52	
	40 50	
	41 48	
	42 46	
	43 44	
	44 42	
45 40		
46 38		
47 36		
48 34		
49 32		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-7. Sample Scoresheet—TOW HMMWV Table IV, Task 4.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE IV, TASK 5 (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage stationary point targets from a stationary vehicle with indirect fire. AMMUNITION Simulator. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 - 13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
42 28		
43 25	Improper driving techniques.	
44 23		
45 20	Total Crew-Duty Penalty Points	
46 18		
47 15		
48 12		
49 10		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-8. Sample Scoresheet—TOW HMMWV Table IV, Task 5.

Table V (Stationary Mounted Gunnery)

9-76. Table V introduces crews to a mounted live-fire gunnery environment. Crews will fire the assigned weapon system from the vehicle-mounted position.

CONCEPT

9-77. Table V is designed to train crews to proficiency using the assigned weapon system on a stationary vehicle against stationary single targets deployed in a realistic array. The crews will fire four day and three night engagements. One day engagement will be fired in an NBC environment (appropriate MOPP level).

9-78. This table consists of two swing tasks (3AS and 4BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

9-79. The crew develops teamwork while engaging stationary and moving targets from a stationary vehicle. Table V can be conducted on a full-scale range using half-scale targets.

EXECUTION

9-80. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

9-81. Tasks will be scored using the criteria in the standards column for each task in Table 9-2. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to page 9-11 for scoresheet scoring instructions and pages 9-12 and 9-13 for sample completed scoresheets. Refer to page 9-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

9-82. Crew ratings for Table V are as follows:

- **Distinguished:** Combined score of at least 810 points on Table VA and B, and 8 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Superior:** Combined score of 720-809 points on Table VA and B, and 7 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Qualified:** Combined score of 630-729 points on Table VA and B, and 6 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Unqualified:** Combined score of 629 or fewer points on Table VA and B, or 3 out of 9 tasks have 69 or fewer points, or crew fails to pass two night engagement.

AMMUNITION REQUIREMENTS

9-83. Ammunition and target requirements for Tables V are as follows:

Table VA	Table VB	Total Rounds
50 rounds 7.62mm	50 rounds 7.62mm	100 rounds 7.62mm
5 M-80 TOW blast simulators	5 M-80 TOW blast simulators	10 M-80 TOW blast simulators
4 LA06s	4 LA06s	8 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 9-2. TOW HMMWV Table V, A and B.

TOW HMMWV TABLE VA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	1 stationary tank, 1,200 to 1,400 meters. 1 stationary tank, 1,600 to 1,800 meters (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
2A Stationary	1 stationary tank, 1,200 to 1,400 meters. 1 RPG team, 200 to 400 meters.	1 round M-80 50 rounds 7.62mm	Hit tank with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.
3A(Swing) Stationary	1 bunker, 600 to 800 meters.	1 round M-80	Hit bunker with 1 simulated TOW missile.
4A Stationary NBC	1 moving tank, 1,800 to 2,000 meters.	1 round M-80	Hit tank with 1 simulated TOW missile.
5A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
TOW HMMWV TABLE VB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 bunker, 400 to 600 meters. 1 RPG team, 400 to 600 meters (15-second delay).	1 round M-80 50 rounds 7.62mm	Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.
2B Stationary	1 stationary tank, 1,200 to 1,400 meters.	1 round M-80	Hit tank with 1 simulated TOW missile.
3B Stationary	1 stationary PC, 1,200 to 1,400 meters. 1 moving PC, 1,800 to 2,000 meters (60-second delay).	2 rounds M-80	Hit each PC with 1 simulated TOW missile.
4B(Swing) Stationary	1 moving tank, 2,400 to 2,600 meters.	1 round M-80	Hit tank with 1 simulated TOW missile.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE V, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK	Target 1 Tank	Target 2 Tank	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary vehicle.	1 -14 100	1 - 15 100	Automatic Zero	
	15 98	16 98		
	16 95	17 96		
AMMUNITION	17 93	18 94	Not masked during an NBC engagement.	
M-80: 2 rounds.	18 91	19 91		
	19 89	20 89	Engaged friendly target.	
CONDITIONS	20 86	21 87		
Total Targets: 2	21 84	22 85	30-Point Penalty	
Target 1: Stationary tank, 1,200 to 1,400 meters.	22 82	23 83		
	23 79	24 81	Weapon not on SAFE between engagements.	
Target 2: Stationary tank, 1,600 to 1,800 meters (60-second delay).	24 77	25 79		
	25 75	26 77	Fired into the berm.	
	26 72	27 74		
	27 70	28 72	Killed target beyond maximum vehicle exposure time.	
	28 68	29 70		
EXPOSURE TIME	29 66	30 68	10-Point Penalty	
Target 1: 50 seconds	30 63	31 66		
	31 61	32 64	Failed to follow instructions from authorized personnel.	
Target 2: 50 seconds	32 59	33 62		
	33 56	34 59	Fired before "FIRE" or "ON THE WAY."	
	34 54	35 57		
STANDARDS	35 52	36 55	Improper engagement technique.	
Hit each tank with 1 simulated TOW missile.	36 49	37 53		
	37 47	38 51	Improper fire command.	
	38 45	39 49		
	39 43	40 47	Did not return to turret-down position.	
	40 40	41 44		
	41 38	42 42	5-Point Penalty	
	42 36	43 40		
	43 33	44 38	Improper response to the fire command.	
	44 31	45 36		
	45 29	46 34	Improper reporting.	
	46 26	47 32		
	47 24	48 29	Improper driving technique.	
	48 22	49 27		
	49 20	50+ 0	Total Crew-Duty Penalty Points	
	50+ 0			
Remarks:			Target 1 Points (a) _____	
_____			Target 2 Points (b) _____	
_____			Total (a + b = c) (c) _____	
_____			Divide by 2 (# of targets) (c ÷ 2 = d)	
_____			Engagement Raw Score (d) _____	
_____			Total Crew-Duty Penalty Points (e) _____	
_____			Subtract crew-duty penalty points from raw score (d - e = f).	
_____			Engagement Score (f) _____	

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Figure 9-9. Sample Scoresheet—TOW HMMWV Table V, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE V, TASK 2A (STATIONARY), UNIT/BUMPER NUMBER				
TASK	Target 1 Tank Time/Points	Target 2 RPG Team Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a stationary vehicle.	1 -14 100	1 - 4 100	Automatic Zero	
	15 98	5 93		
	16 95	6 85		
AMMUNITION	17 93	7 78	Not masked during an NBC engagement.	
M-80: 2 rounds.	18 91	8 70		
7.62mm: 50 rounds.	19 89	9 63	Engaged friendly target.	
	20 86	10 55		
CONDITIONS	21 84	11 48	30-Point Penalty	
Total Targets: 2	22 82	12 40		
Target 1: Stationary tank, 1,200 to 1,400 meters.	23 79	13 33	Weapon not on SAFE between engagements.	
	24 77	14 25		
Target 2: RPG team, 200 to 400 meters (15-second delay).	25 75	15 18	Fired into the berm.	
	26 72	16 10		
	27 70	17 3	Killed target beyond maximum vehicle exposure time.	
	28 68	18+ 0		
	29 66		10-Point Penalty	
	30 63			
EXPOSURE TIME	31 61		Failed to follow instructions from authorized personnel.	
Target 1: 50 seconds	32 59			
Target 2: 50 seconds	33 56		Fired before "FIRE" or "ON THE WAY."	
	34 54			
	35 52		Improper engagement technique.	
STANDARDS	36 49			
Hit tank with 1 simulated TOW missile.	37 47		Improper fire command.	
	38 45		Did not return to turret-down position.	
Hit RPG team with 1 round 7.62mm.	39 43			
	40 40		5-Point Penalty	
	41 38			
	42 36		Improper response to the fire command.	
	43 33			
	44 31		Improper reporting.	
	45 29			
	46 26		Improper driving technique.	
	47 24			
	48 22		Total Crew-Duty Penalty Points	
	49 20			
	50+ 0			
Remarks:			Target 1 Points (a) _____	
			Target 2 Points (b) _____	
			Total (a + b = c) (c) _____	
			Divide by 2 (# of targets) (c ÷ 2 = d)	
			Engagement Raw Score (d) _____	
			Total Crew-Duty Penalty Points (e) _____	
			Subtract crew-duty penalty points from raw score (d - e = f).	
			Engagement Score (f) _____	

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Figure 9-10. Sample Scoresheet—TOW HMMWV Table V, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE V, TASK 3A (SWING)(STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: Bunker Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION M-80: 1 round.	1 - 12 100	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: Bunker, 600 to 800 meters.	13 98	Not masked during NBC engagement.
EXPOSURE TIME Target 1: 50 seconds	14 95	Engaged friendly target.
STANDARDS Hit bunker with 1 simulated TOW missile.	15 93	30-Point Penalty
	16 90	Weapon not on SAFE between engagements.
	17 88	Fired into the berm.
	18 85	10-Point Penalty
	19 83	Failed to follow instructions from authorized personnel.
	20 80	Fired before "FIRE" or "ON THE WAY."
	21 78	Improper engagement technique.
	22 75	Improper fire command.
	23 73	Did not return to turret-down position.
	24 70	5-Point Penalty
	25 68	Improper response to fire command.
	26 65	Improper reporting.
	27 63	Improper driving techniques.
	28 60	Total Crew-Duty Penalty Points
	29 58	
	30 55	
	31 53	
	32 50	
	33 48	
	34 45	
	35 43	
	36 40	
	37 38	
	38 35	
	39 33	
	40 30	
	41 38	
	42 35	
	43 33	
	44 30	
	45 28	
	46 25	
	47 23	
	48 20	
	49 18	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____	
	Total Crew-Duty Penalty Points (b) _____	
	Subtract crew-duty penalty points from score (a - b = c).	
	Engagement Score (c) _____	

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Figure 9-11. Sample Scoresheet—TOW HMMWV Table V, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE V, TASK 4A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS NBC. Total Targets: 1 Target 1: Moving tank, 1,800 to 2,000 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit tank with 1 simulated TOW missile.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 -17 100	Automatic Zero
	18 98	Not masked during NBC engagement.
	19 97	Engaged friendly target.
	20 95	30-Point Penalty
	21 93	Weapon not on SAFE between engagements.
	22 91	Fired into the berm.
	23 89	10-Point Penalty
	24 88	Failed to follow instructions from authorized personnel.
	25 86	Fired before "FIRE" or "ON THE WAY."
	26 84	Improper engagement technique.
	27 82	Improper fire command.
	28 81	Did not return to turret-down position.
	29 79	5-Point Penalty
	30 77	Improper response to fire command.
	31 75	Improper reporting.
	32 74	Improper driving techniques.
	33 72	Total Crew-Duty Penalty Points
	34 70	
	35 68	
	36 67	
	37 65	
	38 63	
	39 61	
	40 60	
	41 58	
	42 56	
	43 54	
	44 53	
	45 51	
	46 49	
	47 47	
	48 45	
	49 44	
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-12. Sample Scoresheet—TOW HMMWV Table V, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE V, TASK 5A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage stationary point targets from a stationary vehicle with indirect fire.	Target 1: Tank	CREW-DUTY PENALTY POINTS
	Time/Points	
	1 - 13 100	
	14 98	Automatic Zero
	15 95	
	16 93	Not masked during NBC engagement.
	17 90	
	18 88	Engaged friendly target.
	19 85	
	20 83	30-Point Penalty
	21 80	
	22 78	Weapon not on SAFE between engagements.
	23 75	
	24 73	Fired into the berm.
	25 70	
	26 68	10-Point Penalty
	27 65	
	28 63	Failed to follow instructions from authorized personnel.
	29 60	
	30 58	Fired before "FIRE" or "ON THE WAY."
	31 55	
	32 53	Improper engagement technique.
	33 50	
	34 48	Improper fire command.
	35 45	
	36 43	Did not return to turret-down position.
	37 40	
	38 38	5-Point Penalty
	39 35	
	40 33	Improper response to fire command.
	41 30	
	42 38	Improper reporting.
	43 35	
	44 33	Improper driving techniques.
	45 30	
	46 28	
	47 25	
	48 23	
	49 20	Total Crew-Duty Penalty Points
	50+ 0	
AMMUNITION None required.		
CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters.		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-13. Sample Scoresheet—TOW HMMWV Table V, Task 5A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE V, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER					
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 1 round. 7.62mm: 50 rounds. CONDITIONS Total Targets: 2 Target 1: Bunker, 400 to 600 meters. Target 2: RPG team, 400 to 600 meters (15-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.	Target 1 Bunker Time/Points		Target 2 RPG Team Time/Points		CREW-DUTY PENALTY POINTS
	1 - 12	100	1 - 5	100	Automatic Zero
	13	97	6	93	Not masked during an NBC engagement.
	14	95	7	85	
	15	92	8	78	
	16	89	9	70	Engaged friendly target.
	17	86	10	63	30-Point Penalty
	18	84	11	55	
	19	81	12	48	
	20	78	13	40	Weapon not on SAFE between engagements.
	21	76	14	33	
	22	73	15	25	
	23	70	16	18	Fired into the berm.
	24	67	17	10	Killed target beyond maximum vehicle exposure time.
	25	65	18	3	
	26	62	19+	0	
	27	59			10-Point Penalty
	28	57			
	29	54			
	30	51			Failed to follow instructions from authorized personnel.
	31	48			
	32	46			
	33	43			Fired before "FIRE" or "ON THE WAY."
	34	40			Improper engagement technique.
	35	37			
	36	35			
	37	32			Improper fire command.
	38	29			
	39	27			
	40	24			Did not return to turret-down position.
41	21				
42	18				
43	16			5-Point Penalty	
44	13				
45	10				
46	8			Improper response to the fire command.	
47	5				
48	2				
49+	0			Improper reporting.	
				Improper driving technique.	
				Total Crew-Duty Penalty Points	
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____	
				Target 2 Points (b) _____	
				Total (a + b = c) (c) _____	
				Divide by 2 (# of targets) (c ÷ 2 = d)	
				Engagement Raw Score (d) _____	
				Total Crew-Duty Penalty Points (e) _____	
				Subtract crew-duty penalty points from raw score (d - e = f).	
				Engagement Score (f) _____	

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Figure 9-14. Sample Scoresheet—TOW HMMWV Table V, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE V, TASK 2B (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Stationary tank, 1,200 to 1,400 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit tank with 1 simulated TOW missile.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 -14 100	Automatic Zero
	15 98	
	16 95	Not masked during NBC engagement.
	17 93	
	18 91	Engaged friendly target.
	19 89	
	20 86	30-Point Penalty
	21 84	
	22 82	Weapon not on SAFE between engagements.
	23 79	
	24 77	Fired into the berm.
	25 75	
	26 72	10-Point Penalty
	27 70	
	28 68	Failed to follow instructions from authorized personnel.
	29 66	
	30 63	Fired before "FIRE" or "ON THE WAY."
	31 61	
	32 59	Improper engagement technique.
	33 56	
	34 54	Improper fire command.
	35 52	
	36 49	Did not return to turret-down position.
	37 47	
	38 45	5-Point Penalty
	39 43	
	40 40	Improper response to fire command.
	41 38	
	42 36	Improper reporting.
43 33		
44 31	Improper driving techniques.	
45 29		
46 26	Total Crew-Duty Penalty Points	
47 24		
48 22		
49 20		
50+ 0		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 9-15. Sample Scoresheet—TOW HMMWV Table V, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE V, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER					
TASK	Target 1 PC		Target 2 PC		CREW-DUTY PENALTY POINTS
	Time/Points		Time/Points		
Engage stationary and moving point targets from a stationary vehicle.	1 -14 100		1 -16 100		Automatic Zero
	15 98		17 98		
AMMUNITION	16 95		18 96		
M-80: 2 rounds.	17 93		19 94		Not masked during an NBC engagement.
	18 91		20 92		
CONDITIONS	19 89		21 90		Engaged friendly target.
	20 86		22 88		
Total Targets: 2	21 84		23 86		30-Point Penalty
	22 82		24 84		
Target 1: Stationary PC, 1,200 to 1,400 meters.	23 79		25 82		Weapon not on SAFE between engagements.
	24 77		26 80		
Target 2: Moving PC, 1,800 to 2,000 meters (60-second delay).	25 75		27 78		Fired into the berm.
	26 72		28 76		
EXPOSURE TIME	27 70		29 74		Killed target beyond maximum vehicle exposure time.
	28 68		30 72		
STANDARDS	29 66		31 70		10-Point Penalty
	30 63		32 68		
Target 1: 50 seconds	31 61		33 66		Failed to follow instructions from authorized personnel.
	32 59		34 64		
Target 2: 50 seconds	33 56		35 62		Fired before "FIRE" or "ON THE WAY."
	34 54		36 60		
	35 52		37 58		Improper engagement technique.
	36 49		38 56		
	37 47		39 54		Improper fire command.
Hit each PC with 1 simulated TOW missile.	38 45		40 52		
	39 43		41 50		Did not return to turret-down position.
	40 40		42 48		
	41 38		43 46		5-Point Penalty
	42 36		44 44		
	43 33		45 42		Improper response to the fire command.
	44 31		46 40		
	45 29		47 38		Improper reporting.
	46 26		48 36		
	47 24		49 34		Improper driving technique.
	48 22		50+ 0		
	49 20				Total Crew-Duty Penalty Points
	50+ 0				
Remarks:					
				Target 1 Points (a) _____	
				Target 2 Points (b) _____	
				Total (a + b = c) (c) _____	
				Divide by 2 (# of targets) (c ÷ 2 = d)	
				Engagement Raw Score (d) _____	
				Total Crew-Duty Penalty Points (e) _____	
				Subtract crew-duty penalty points from raw score (d - e = f).	
				Engagement Score (f) _____	

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Figure 9-16. Sample Scoresheet—TOW HMMWV Table V, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE V, TASK 4B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle.	Target 1: Tank	CREW-DUTY PENALTY POINTS
	Time/Points	
	1 -17 100	Automatic Zero
	18 98	
AMMUNITION	19 97	Not masked during NBC engagement.
M-80: 1 round.	20 95	
	21 93	Engaged friendly target.
CONDITIONS	22 91	
Total Targets: 1	23 89	30-Point Penalty
Target 1: Moving tank, 2,400 to 2,600 meters.	24 88	
	25 86	Weapon not on SAFE between engagements.
EXPOSURE TIME	26 84	
Target 1: 50 seconds	27 82	Fired into the berm.
	28 81	
STANDARDS	29 79	10-Point Penalty
Hit tank with 1 simulated TOW missile.	30 77	
	31 75	Failed to follow instructions from authorized personnel.
	32 74	
	33 72	Fired before "FIRE" or "ON THE WAY."
	34 70	
	35 68	Improper engagement technique.
	36 67	
	37 65	Improper fire command.
	38 63	
	39 61	Did not return to turret-down position.
	40 60	
	41 58	5-Point Penalty
	42 56	
	43 54	Improper response to fire command.
	44 53	
	45 51	Improper reporting.
	46 49	Improper driving techniques.
	47 47	
	48 45	
	49 44	Total Crew-Duty Penalty Points
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 9-17. Sample Scoresheet—TOW HMMWV Table V, Task 4B.

Conduct of Table VI (Maneuver Mounted Gunnery)

9-84. Table VI is the first table that requires the crew to fire the assigned weapon system while moving. The table uses combat ranges to teach the vehicle crew engagement techniques against stationary and moving targets in both stationary and moving scenarios.

CONCEPT

9-85. Table VI is designed to train the crew to employ direct fire to destroy threat targets from a stationary or moving vehicle. The crews will engage stationary and moving, area and point targets during day, night, and NBC environments (directed MOPP level). Crews will fire five day and four night engagements. One day engagement will be fired in an NBC environment.

9-86. Table VI is a building block toward Table VII.

9-87. This table consists of two swing tasks (3AS and 4BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with five tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

9-88. Crews will employ direct fire to engage stationary and moving targets from a stationary or moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

9-89. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements must begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target. On ranges where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

9-90. Tasks will be scored using the criteria in the standards column for each task in Table 9-3. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to page 9-11 for scoresheet scoring instructions and pages 9-12 and 9-13 for sample completed scoresheets. Refer to page 9-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

9-91. Crew ratings for Table VI are as follows:

- **Distinguished:** Combined score of at least 810 points on Table VIA and B, and 8 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Superior:** Combined score of 720-809 points on Table VIA and B, and 7 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Qualified:** Combined score of 630-729 points on Table VIA and B, and 6 out of 9 tasks must have at least 70 points. The crew must pass two night engagement.
- **Unqualified:** Combined score of 629 or fewer points on Table VIA and B, or 3 out of 9 tasks have 69 or fewer points, or crew fails to pass two night engagement.

AMMUNITION REQUIREMENTS

9-92. Ammunition requirements for Table VI are as follows:

Table VIA	Table VIB	Total Rounds
50 rounds 7.62mm	50 rounds 7.62mm	100 rounds 7.62mm
3 M-80 TOW blast simulators	5 M-80 TOW blast simulators	8 M-80 TOW blast simulators
2 LA06s	4 LA06s	6 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 9-3. TOW HMMWV Table VI, A and B.

TOW HMMWV TABLE VIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	1 Stationary tank, 1,200 to 1,400 meters. COB.	1 round M-80	Hit tank with 1 simulated TOW missile.
2A Moving	1 RPG team, 200 to 400 meters.	50 rounds 7.62mm	Hit RPG team with 1 round 7.62mm.
3A(Swing) Stationary	1 bunker, 600 to 800 meters. COB.	1 round M-80	Hit bunker with 1 simulated TOW missile.
4A Moving NBC	1 moving PC, 1,000 to 1,200 meters.	1 round M-80	Hit PC with 1 simulated TOW missile.
5A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
TOW HMMWV TABLE VIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 bunker, 400 to 600 meters. 1 stationary tank, 1,200 to 1,400 meters (60-second delay).	2 rounds M-80	Hit bunker with 1 simulated TOW missile. Hit tank with 1 simulated TOW missile.
2B Moving	1 RPG team, 400 to 600 meters.	50 rounds 7.62mm	Hit RPG team with 1 round 7.62mm.
3B Stationary	1 stationary tank, 1,200 to 1,400 meters. 1 moving tank, 1,800 to 2,000 meters (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
4B(Swing) Stationary	1 moving PC, 2,400 to 2,600 meters. COB.	1 round M-80	Hit PC with 1 simulated TOW missile.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Stationary tank, 1,200 to 1,400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit tank with 1 simulated TOW missile.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 -14 100	Automatic Zero
	15 98	
	16 95	Not masked during NBC engagement.
	17 93	
	18 91	Engaged friendly target.
	19 89	
	20 86	30-Point Penalty
	21 84	
	22 82	Weapon not on SAFE between engagements.
	23 79	
	24 77	Fired into the berm.
	25 75	
	26 72	10-Point Penalty
	27 70	
	28 68	Failed to follow instructions from authorized personnel.
	29 66	
	30 63	Fired before "FIRE" or "ON THE WAY."
	31 61	
	32 59	Improper engagement technique.
	33 56	
	34 54	Improper fire command.
	35 52	
	36 49	Did not return to turret-down position.
	37 47	
	38 45	5-Point Penalty
	39 43	
	40 40	Improper response to fire command.
	41 38	
	42 36	Improper reporting.
	43 33	
	44 31	Improper driving techniques.
	45 29	
	46 26	Total Crew-Duty Penalty Points
47 24		
48 22		
49 20		
50+ 0		
Remarks: _____ _____ _____ _____	Target 1 Points (a) _____	
	Total Crew-Duty Penalty Points (b) _____	
	Subtract crew-duty penalty points from score (a - b = c).	
	Engagement Score (c) _____	

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Figure 9-18. Sample Scoresheet—TOW HMMWV Table VI, Task 1A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle.	Target 1: RPG Team Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION 7.62mm: 50 rounds.	1 - 5 100	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: RPG team, 200 to 400 meters.	6 94	Not masked during NBC engagement.
EXPOSURE TIME Target 1: 30 seconds	7 88	Engaged friendly target.
STANDARDS Hit RPG team with 1 round 7.62mm.	8 82	
	9 76	
	10 70	30-Point Penalty
	11 64	Weapon not on SAFE between engagements.
	12 58	Fired into the berm.
	13 52	
	14 46	10-Point Penalty
	15 40	Failed to follow instructions from authorized personnel.
	16 34	Fired before "FIRE" or "ON THE WAY."
	17 28	Improper engagement technique.
	18 22	Improper fire command.
	19 16	Did not return to turret-down position.
	20 10	
	21 4	5-Point Penalty
	22+ 0	Improper response to fire command.
		Improper reporting.
		Improper driving techniques.
		Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____
		Total Crew-Duty Penalty Points (b) _____
		Subtract crew-duty penalty points from score (a - b = c).
		Engagement Score (c) _____

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Figure 9-19. Sample Scoresheet—TOW HMMWV Table VI, Task 2A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 3A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle.	Target 1: Bunker Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION M-80: 1 round.	1 - 12 100 13 98 14 95 15 93 16 90 17 88 18 85 19 83 20 80 21 78 22 75 23 73 24 70 25 68 26 65 27 63 28 60 29 58 30 55 31 53 32 50 33 48 34 45 35 43 36 40 37 38 38 35 39 33 40 30 41 38 42 35 43 33 44 30 45 28 46 25 47 23 48 20 49 18 50+ 0	Automatic Zero Not masked during NBC engagement. ☐ Engaged friendly target. ☐ 30-Point Penalty Weapon not on SAFE between engagements. ☐ Fired into the berm. ☐ 10-Point Penalty Failed to follow instructions from authorized personnel. ☐ Fired before "FIRE" or "ON THE WAY." ☐ Improper engagement technique. ☐ Improper fire command. ☐ Did not return to turret-down position. ☐ 5-Point Penalty Improper response to fire command. ☐ Improper reporting. ☐ Improper driving techniques. ☐ Total Crew-Duty Penalty Points
CONDITIONS Total Targets: 1 Target 1: Bunker, 600 to 800 meters. Civilians on the battlefield (COB).		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Hit bunker with 1 simulated TOW missile.		
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 9-20. Sample Scoresheet—TOW HMMWV Table VI, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 4A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS NBC. Total Targets: 1 Target 1: Moving PC, 1,000 to 1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
	1-15 100	Automatic Zero
	16 98	Not masked during NBC engagement.
	17 96	Engaged friendly target.
	18 94	
	19 92	30-Point Penalty
	20 90	Weapon not on SAFE between engagements.
	21 88	Fired into the berm.
	22 86	
	23 84	10-Point Penalty
	24 82	Failed to follow instructions from authorized personnel.
	25 80	Fired before "FIRE" or "ON THE WAY."
	26 78	Improper engagement technique.
	27 76	Improper fire command.
	28 74	Did not return to turret-down position.
	29 72	
	30 70	5-Point Penalty
	31 68	Improper response to fire command.
	32 66	Improper reporting.
	33 64	Improper driving techniques.
	34 62	
	35 60	Total Crew-Duty Penalty Points
	36 58	
	37 56	
	38 54	
	39 52	
	40 50	
	41 48	
	42 46	
	43 44	
44 42		
45 40		
46 38		
47 36		
48 34		
49 32		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-21. Sample Scoresheet—TOW HMMWV Table VI, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 5A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage stationary point targets from a stationary vehicle with indirect fire. AMMUNITION None required. CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.	Target 1: Tank Time/Points	CREW-DUTY PENALTY POINTS
	1 - 13 100	Automatic Zero
	14 98	
	15 95	Not masked during NBC engagement.
	16 93	
	17 90	Engaged friendly target.
	18 88	
	19 85	30-Point Penalty
	20 83	
	21 80	Weapon not on SAFE between engagements.
	22 78	
	23 75	Fired into the berm.
	24 73	
	25 70	10-Point Penalty
	26 68	
	27 65	Failed to follow instructions from authorized personnel.
	28 63	
	29 60	Fired before "FIRE" or "ON THE WAY."
	30 58	
	31 55	Improper engagement technique.
	32 53	
	33 50	Improper fire command.
	34 48	
	35 45	Did not return to turret-down position.
	36 43	
	37 40	5-Point Penalty
	38 38	
	39 35	Improper response to fire command.
	40 33	
	41 30	Improper reporting.
42 28		
43 25	Improper driving techniques.	
44 23		
45 20	Total Crew-Duty Penalty Points	
46 18		
47 15	Target 1 Points (a) _____	
48 12		
49 10	Total Crew-Duty Penalty Points (b) _____	
50 8		
51 6	Subtract crew-duty penalty points from score (a - b = c).	
52 4		
53 2	Engagement Score (c) _____	
54 0		
Remarks: _____ _____ _____ _____ _____		

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Figure 9-22. Sample Scoresheet—TOW HMMWV Table VI, Task 5A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VI, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 2 rounds. CONDITIONS Total Targets: 2 Target 1: Bunker, 400 to 600 meters. Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit bunker with 1 simulated TOW missile. Hit tank with 1 simulated TOW missile.	Target 1 Bunker		Target 2 Tank		CREW-DUTY PENALTY POINTS
	1 - 12	100	1 - 14	100	Automatic Zero
	13	97	15	98	
	14	95	16	95	Not masked during an NBC engagement.
	15	92	17	93	Engaged friendly target.
	16	89	18	91	
	17	86	19	89	30-Point Penalty
	18	84	20	86	
	19	81	21	84	Weapon not on SAFE between engagements.
	20	78	22	82	Fired into the berm.
	21	76	23	79	Killed target beyond maximum vehicle exposure time.
	22	73	24	77	
	23	70	25	75	10-Point Penalty
	24	67	26	72	
	25	65	27	70	Failed to follow instructions from authorized personnel.
	26	62	28	68	Fired before "FIRE" or "ON THE WAY."
	27	59	29	66	Improper engagement technique.
	28	57	30	63	Improper fire command.
	29	54	31	61	Did not return to turret-down position.
	30	51	32	59	5-Point Penalty
	31	48	33	56	
	32	46	34	54	Improper response to the fire command.
	33	43	35	52	Improper reporting.
	34	40	36	49	Improper driving technique.
	35	37	37	47	
	36	35	38	45	Total Crew-Duty Penalty Points
	37	32	39	43	
	38	29	40	40	
	39	27	41	38	
	40	24	42	36	
41	21	43	33		
42	18	44	31		
43	16	45	29		
44	13	46	26		
45	10	47	24		
46	8	48	22		
47	5	49	20		
48	2	50+	0		
49+	0				
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 9-23. Sample Scoresheet—TOW HMMWV Table VI, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 2B (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle.	Target 1: RPG Team Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION 7.62mm: 50 rounds.	1 - 6 100	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: RPG team, 400 to 600 meters.	7 94	Not masked during NBC engagement.
EXPOSURE TIME Target 1: 30 seconds	8 88	Engaged friendly target.
STANDARDS Hit RPG team with 1 round 7.62mm.	9 82	
	10 76	30-Point Penalty
	11 70	Weapon not on SAFE between engagements.
	12 64	Fired into the berm.
	13 58	10-Point Penalty
	14 52	Failed to follow instructions from authorized personnel.
	15 46	Fired before "FIRE" or "ON THE WAY."
	16 40	Improper engagement technique.
	17 34	Improper fire command.
	18 28	Did not return to turret-down position.
	19 22	5-Point Penalty
	20 16	Improper response to fire command.
	21 10	Improper reporting.
	22 4	Improper driving techniques.
	23+ 0	Total Crew-Duty Penalty Points
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-24. Sample Scoresheet—TOW HMMWV Table VI, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
TOW HMMWV TABLE VI, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____						
TASK Engage stationary and moving point targets from a stationary vehicle. AMMUNITION M-80: 2 rounds. CONDITIONS Total Targets: 2 Target 1: Stationary tank, 1,200 to 1,400 meters. Target 2: Moving tank, 1,800 to 2,000 meters (60-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit each tank with simulated TOW missile.	Target 1 Tank		Target 2 Tank		CREW-DUTY PENALTY POINTS	
	Time/Points		Time/Points			
	1 -14	100	1 -16	100	Automatic Zero	
	15	98	17	98	Not masked during an NBC engagement.	
	16	95	18	96		
	17	93	19	94	Engaged friendly target.	
	18	91	20	92		
	19	89	21	90	30-Point Penalty	
	20	86	22	88		
	21	84	23	86	Weapon not on SAFE between engagements.	
	22	82	24	84		
	23	79	25	82	Fired into the berm.	
	24	77	26	80		
	25	75	27	78	Killed target beyond maximum vehicle exposure time.	
	26	72	28	76		
	27	70	29	74	10-Point Penalty	
	28	68	30	72		
	29	66	31	70	Failed to follow instructions from authorized personnel.	
	30	63	32	68		
	31	61	33	66	Fired before "FIRE" or "ON THE WAY."	
	32	59	34	64		
	33	56	35	62	Improper engagement technique.	
	34	54	36	60		
	35	52	37	58	Improper fire command.	
	36	49	38	56		
	37	47	39	54	Did not return to turret-down position.	
	38	45	40	52		
	39	43	41	50	5-Point Penalty	
	40	40	42	48		
	41	38	43	46	Improper response to the fire command.	
	42	36	44	44		
43	33	45	42	Improper reporting.		
44	31	46	40			
45	29	47	38	Improper driving technique.		
46	26	48	36			
47	24	49	34	Total Crew-Duty Penalty Points		
48	22	50+	0			
49	20					
50+	0					
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) ____		
				Target 2 Points (b) ____		
				Total (a + b = c) (c) ____		
				Divide by 2 (# of targets) (c ÷ 2 = d)		
				Engagement Raw Score (d) ____		
				Total Crew-Duty Penalty Points (e) ____		
				Subtract crew-duty penalty points from raw score (d - e = f).		
				Engagement Score (f) ____		

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Figure 9-25. Sample Scoresheet—TOW HMMWV Table VI, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VI, TASK 4B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Moving PC, 2,400 to 2,600 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
	1 -17 100	Automatic Zero
	18 98	Not masked during NBC engagement.
	19 97	Engaged friendly target.
	20 95	
	21 93	
	22 91	30-Point Penalty
	23 89	Weapon not on SAFE between engagements.
	24 88	Fired into the berm.
	25 86	
	26 84	10-Point Penalty
	27 82	Failed to follow instructions from authorized personnel.
	28 81	Fired before "FIRE" or "ON THE WAY."
	29 79	Improper engagement technique.
	30 77	Improper fire command.
	31 75	Did not return to turret-down position.
	32 74	
	33 72	5-Point Penalty
	34 70	Improper response to fire command.
	35 68	Improper reporting.
	36 67	Improper driving techniques.
	37 65	
	38 63	
	39 61	
	40 60	
	41 58	
	42 56	
	43 54	
	44 53	
	45 51	
46 49		
47 47		
48 45		
49 44		
50+ 0		
Remarks: _____ _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-26. Sample Scoresheet—TOW HMMWV Table VI, Task 4B.

Conduct of Table VII (Crew Practice)

9-93. Table VII requires the vehicle crew to conduct offensive and defensive engagements on combat ranges in preparation for qualification.

CONCEPT

9-94. Table VII is designed to train the vehicle crew to engage stationary and moving targets during day, night, and NBC environments (directed MOPP level) from a stationary and moving vehicle. The crews will fire five day and five night engagements. One engagement will be fired in an NBC environment.

9-95. Table VII is a building block toward Table VIII.

9-96. This table consists of three swing tasks (3AS, 2BS and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with six tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASKS

9-97. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

9-98. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions.

SCORING

9-99. Tasks will be scored using the criteria in the standards column for each task in Table 9-4. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to page 9-11 for scoresheet scoring instructions and pages 9-12 and 9-13 for sample completed scoresheets. Refer to page 9-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

9-100. Crew ratings for Table VII are as follows:

- **Distinguished:** Combined score of 720-800 points on Table VIIA and B. The crew must pass two night engagements.
- **Superior:** Combined score of 640-719 points on Table VIIA and B. The crew must pass two night tasks.
- **Qualified:** Combined score of 560-639 points on Table VIIA and B. The crew must pass two night tasks.
- **Unqualified:** Combined score of 559 or fewer points on Table VIIA and B, or crew fails to qualify on two night engagements.

AMMUNITION REQUIREMENTS

9-101. Ammunition requirements for Table VII are as follows:

Table VIIA	Table VIIB	Total Rounds
100 rounds 7.62mm	75 rounds 7.62mm	175 rounds 7.62mm
5 M-80 TOW blast simulators	6 M-80 TOW blast simulators	11 M-80 TOW blast simulators
4 LA06s	5 LA06s	9 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 9-4. HMMWV Table VII, A and B.

TOW HMMWV TABLE VIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary NBC	1 stationary tank, 1,200 to 1,400 meters. 1 stationary tank, 1,200 to 1,400 meters (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
2A Moving	1 RPG team, 200 to 400 meters. COB. 1 stationary PC, 1,000 to 1,200 meters (15-second delay).	1 round M-80 50 rounds 7.62mm	Hit 1 RPG team with 1 round 7.62mm. Hit PC with 1 simulated TOW missile.
3A(Swing) Stationary	1 bunker, 600 to 800 meters. 1 RPG team, 200 to 400 meters (15-second delay).	1 round M-80 50 rounds 7.62mm	Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.
4A Moving	1 moving PC, 1,000 to 1,200 meters. COB.	1 round M-80	Hit PC with 1 simulated TOW missile.
5A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
TOW HMMWV TABLE VII B			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 bunker, 400 to 600 meters. 1 stationary tank, 1,200 to 1,400 meters (60-second delay).	2 rounds M-80	Hit bunker with 1 simulated TOW missile. Hit tank with 1 simulated TOW missile.
2B(Swing) Moving	Dismounted troops, 200 to 400 meters. COB.	75 rounds 7.62mm	Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.
3B Stationary	1 stationary tank, 1,200 to 1,400 meters. 1 moving tank, 1,800 to 2,000 meters (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
4B Moving	1 stationary PC, 1,000 to 1,200 meters. COB.	1 round M-80	Hit PC with 1 simulated TOW missile.
5B(Swing) Stationary	1 moving PC, 2,400 to 2,600 meters.	1 round M-80	Hit PC with 1 simulated TOW missile.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VII, TASK 1A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Tank Time/Points		Target 2 Tank Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point targets from a stationary vehicle.	1 -14	100	1 -14	100	Automatic Zero
	15	98	15	98	
	16	96	16	96	
AMMUNITION	17	94	17	94	Not masked during an NBC engagement.
M-80: 2 rounds.	18	91	18	91	
	19	89	19	89	Engaged friendly target.
CONDITIONS	20	87	20	87	
	21	85	21	85	30-Point Penalty
	22	83	22	83	
NBC	23	81	23	81	Weapon not on SAFE between engagements.
Total Targets: 2	24	79	24	79	
Target 1: Stationary tank, 1,200 to 1,400 meters.	25	77	25	77	Fired into the berm.
	26	74	26	74	
Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay).	27	72	27	72	Killed target beyond maximum vehicle exposure time.
	28	70	28	70	10-Point Penalty
	29	68	29	68	
	30	66	30	66	
EXPOSURE TIME	31	64	31	64	Failed to follow instructions from authorized personnel.
Target 1: 50 seconds	32	62	32	62	
Target 2: 50 seconds	33	59	33	59	Fired before "FIRE" or "ON THE WAY."
	34	57	34	57	
	35	55	35	55	Improper engagement technique.
STANDARDS	36	53	36	53	
Hit each tank with 1 simulated TOW missile.	37	51	37	51	Improper fire command.
	38	49	38	49	Did not return to turret-down position.
	39	47	39	47	5-Point Penalty
	40	44	40	44	
	41	42	41	42	Improper response to the fire command.
	42	40	42	40	
	43	38	43	38	Improper reporting.
	44	36	44	36	Improper driving technique.
	45	34	45	34	
	46	32	46	32	Total Crew-Duty Penalty Points
	47	29	47	29	
	48	27	48	27	
	49	25	49	25	
	50+	0	50+	0	
Remarks:					Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____

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Figure 9-27. Sample Scoresheet—TOW HMMWV Table VII, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK				
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE VII, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____				
TASK	Target 1 RPG Team Time/Points	Target 2 PC Time/Points	CREW-DUTY PENALTY POINTS	
Engage stationary point targets from a moving vehicle.	1 - 5 100	1 -14 100		
AMMUNITION	6 94	15 98	Automatic Zero	
M-80: 1 round.	7 88	16 95		
7.62mm: 50 rounds.	8 82	17 93	Not masked during an NBC engagement.	
	9 76	18 91		
	10 70	19 89	Engaged friendly target.	
CONDITIONS	11 64	20 86		
Total Targets: 2	12 58	21 84	30-Point Penalty	
Target 1: RPG team, 200 to 400 meters.	13 52	22 82		
Civilians on the battlefield (COB).	14 46	23 79	Weapon not on SAFE between engagements.	
	15 40	24 77		
	16 34	25 75	Fired into the berm.	
	17 28	26 72		
Target 2: Stationary PC, 1,000 to 1,200 meters (15-second delay).	18 22	27 70	Killed target beyond maximum vehicle exposure time.	
	19 16	28 68		
	20 10	29 66	10-Point Penalty	
	21 4	30 63		
	22+ 0	31 61	Failed to follow instructions from authorized personnel.	
EXPOSURE TIME		32 59		
Target 1: 30 seconds		33 56	Fired before "FIRE" or "ON THE WAY."	
Target 2: 30 seconds		34 54		
		35 52	Improper engagement technique.	
		36 49		
		37 47	Improper fire command.	
		38 45		
STANDARDS		39 43	Did not return to turret-down position.	
Hit RPG team with 1 round 7.62mm.		40 40		
		41 38	5-Point Penalty	
		42 36		
		43 33	Improper response to the fire command.	
		44 31		
Hit PC with 1 simulated TOW missile.		45 29	Improper reporting.	
		46 26		
		47 24	Improper driving technique.	
		48 22		
		49 20	Total Crew-Duty Penalty Points	
		50+ 0		
Remarks:			Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 9-28. Sample Scoresheet—TOW HMMWV Table VII, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.				
TOW HMMWV TABLE VII, TASK 3A (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____				
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 1 round. 7.62mm: 50 rounds. CONDITIONS Total Targets: 2 Target 1: Bunker, 600 to 800 meters Target 2: RPG team, 200 to 400 meters. (15-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.	Target 1 Bunker Time/Points	Target 2 RPG Team Time/Points	CREW-DUTY PENALTY POINTS	
		1 - 12 100	1 - 4 100	Automatic Zero
	13 98	5 93	Not masked during an NBC engagement.	
	14 95	6 85	Engaged friendly target.	
	15 93	7 78	30-Point Penalty	
	16 90	8 70	Weapon not on SAFE between engagements.	
	17 88	9 63	Fired into the berm.	
	18 85	10 55	Killed target beyond maximum vehicle exposure time.	
	19 83	11 48	10-Point Penalty	
	20 80	12 40	Failed to follow instructions from authorized personnel.	
	21 78	13 33	Fired before "FIRE" or "ON THE WAY."	
	22 75	14 25	Improper engagement technique.	
	23 73	15 18	Improper fire command.	
	24 70	16 10	Did not return to turret-down position.	
	25 68	17 3	5-Point Penalty	
	26 65	18+ 0	Improper response to the fire command.	
	27 63		Improper reporting.	
	28 60		Improper driving technique.	
	29 58		Total Crew-Duty Penalty Points	
	30 55			
	31 53			
	32 50			
	33 48			
	34 45			
	35 43			
	36 40			
	37 38			
	38 35			
	39 33			
	40 30			
	41 38			
	42 35			
	43 33			
	44 30			
	45 28			
	46 25			
	47 23			
	48 20			
	49 18			
	50+ 0			
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____			

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Figure 9-29. Sample Scoresheet—TOW HMMWV Table VII, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VII, TASK 4A (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a moving vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Moving PC, 1,000 to 1,200 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
	1 -15 100	Automatic Zero
	16 98	Not masked during NBC engagement.
	17 96	Engaged friendly target.
	18 94	
	19 92	30-Point Penalty
	20 90	Weapon not on SAFE between engagements.
	21 88	Fired into the berm.
	22 86	10-Point Penalty
	23 84	Failed to follow instructions from authorized personnel.
	24 82	Fired before "FIRE" or "ON THE WAY."
	25 80	Improper engagement technique.
	26 78	Improper fire command.
	27 76	Did not return to turret-down position.
	28 74	5-Point Penalty
	29 72	Improper response to fire command.
	30 70	Improper reporting.
	31 68	Improper driving techniques.
	32 66	
	33 64	Total Crew-Duty Penalty Points
	34 62	
	35 60	
	36 58	
	37 56	
	38 54	
	39 52	
	40 50	
	41 48	
	42 46	
	43 44	
44 42		
45 40		
46 38		
47 36		
48 34		
49 32		
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-30. Sample Scoresheet—TOW HMMWV Table VII, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VII, TASK 5A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage stationary point targets from a stationary vehicle with indirect fire.	Target 1: Tank	CREW-DUTY PENALTY POINTS
	Time/Points	
	1 - 13 100	
	14 98	Automatic Zero
	15 95	
	16 93	Not masked during NBC engagement.
	17 90	
	18 88	Engaged friendly target.
	19 85	
	20 83	30-Point Penalty
	21 80	
	22 78	
	23 75	Weapon not on SAFE between engagements.
	24 73	
	25 70	Fired into the berm.
	26 68	
	27 65	10-Point Penalty
	28 63	
	29 60	
	30 58	Failed to follow instructions from authorized personnel.
	31 55	
	32 53	Fired before "FIRE" or "ON THE WAY."
	33 50	
	34 48	Improper engagement technique.
	35 45	
	36 43	Improper fire command.
	37 40	
	38 38	Did not return to turret-down position.
	39 35	
	40 33	5-Point Penalty
	41 30	
	42 28	Improper response to fire command.
	43 25	
	44 23	Improper reporting.
	45 20	
	46 18	Improper driving techniques.
	47 15	
	48 12	
	49 10	Total Crew-Duty Penalty Points
	50+ 0	
AMMUNITION None required.		
CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters.		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-31. Sample Scoresheet—TOW HMMWV Table VII, Task 5A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VII, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Bunker Time/Points		Target 2 Tank Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point targets from a stationary vehicle.	1 - 12	100	1 - 14	100	Automatic Zero
	13	97	15	98	
	14	95	16	95	
AMMUNITION	15	92	17	93	Not masked during an NBC engagement.
M-80: 2 rounds.	16	89	18	91	
	17	86	19	89	Engaged friendly target.
CONDITIONS	18	84	20	86	
Total Targets: 2	19	81	21	84	30-Point Penalty
Target 1: Bunker, 400 to 600 meters.	20	78	22	82	
	21	76	23	79	Weapon not on SAFE between engagements.
	22	73	24	77	
Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay).	23	70	25	75	Fired into the berm.
	24	67	26	72	
	25	65	27	70	Killed target beyond maximum vehicle exposure time.
EXPOSURE TIME	26	62	28	68	
Target 1: 50 seconds	27	59	29	66	10-Point Penalty
Target 2: 50 seconds	28	57	30	63	
	29	54	31	61	Failed to follow instructions from authorized personnel.
	30	51	32	59	
STANDARDS	31	48	33	56	Fired before "FIRE" or "ON THE WAY."
Hit bunker with 1 simulated TOW missile.	32	46	34	54	
	33	43	35	52	Improper engagement technique.
	34	40	36	49	
Hit tank with 1 simulated TOW missile.	35	37	37	47	Improper fire command.
	36	35	38	45	
	37	32	39	43	Did not return to turret-down position.
	38	29	40	40	
	39	27	41	38	5-Point Penalty
	40	24	42	36	
	41	21	43	33	Improper response to the fire command.
	42	18	44	31	
	43	16	45	29	Improper reporting.
	44	13	46	26	
	45	10	47	24	Improper driving technique.
	46	8	48	22	
	47	5	49	20	Total Crew-Duty Penalty Points
	48	2	50+	0	
	49+	0			
Remarks:				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____	

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Figure 9-32. Sample Scoresheet—TOW HMMWV Table VII, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
TOW HMMWV TABLE VII, TASK 2B (SWING) (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a moving vehicle. AMMUNITION 7.62mm: 75 rounds. CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 200 to 400 meters. Civilians on the battlefield (COB). EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round of 7.62mm <u>and</u> suppress.	Target 1: Troops Time/Points 1 - 5 100 6 94 7 88 8 82 9 76 10 70 11 64 12 58 13 52 14 46 15 40 16 34 17 28 18 22 19 16 20 10 21 4 22+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Weapon not on SAFE between engagements.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
		Total Crew-Duty Penalty Points	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-33. Sample Scoresheet—TOW HMMWV Table VII, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VII, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Tank Time/Points		Target 2 Tank Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary and moving point targets from a stationary vehicle.	1 -14	100	1 -16	100	Automatic Zero
	15	98	17	98	
AMMUNITION	16	95	18	96	
M-80: 2 rounds.	17	93	19	94	Not masked during an NBC engagement.
	18	91	20	92	
CONDITIONS	19	89	21	90	Engaged friendly target.
	20	86	22	88	
Total Targets: 2	21	84	23	86	30-Point Penalty
Target 1: Stationary tank, 1,200 to 1,400 meters.	22	82	24	84	
	23	79	25	82	Weapon not on SAFE between engagements.
Target 2: Moving tank, 1,800 to 2,000 meters (60-second delay).	24	77	26	80	
	25	75	27	78	Fired into the berm.
	26	72	28	76	
EXPOSURE TIME	27	70	29	74	Killed target beyond maximum vehicle exposure time.
	28	68	30	72	
	29	66	31	70	10-Point Penalty
	30	63	32	68	
STANDARDS	31	61	33	66	Failed to follow instructions from authorized personnel.
Hit each tank with simulated TOW missile.	32	59	34	64	
	33	56	35	62	Fired before "FIRE" or "ON THE WAY."
	34	54	36	60	Improper engagement technique.
	35	52	37	58	
	36	49	38	56	Improper fire command.
	37	47	39	54	Did not return to turret-down position.
	38	45	40	52	
	39	43	41	50	5-Point Penalty
	40	40	42	48	
	41	38	43	46	Improper response to the fire command.
	42	36	44	44	
	43	33	45	42	Improper reporting.
	44	31	46	40	
	45	29	47	38	Improper driving technique.
	46	26	48	36	
	47	24	49	34	Total Crew-Duty Penalty Points
	48	22	50+	0	
	49	20			
	50+	0			
Remarks:					
					Target 1 Points (a) _____
					Target 2 Points (b) _____
					Total (a + b = c) (c) _____
					Divide by 2 (# of targets) (c ÷ 2 = d)
					Engagement Raw Score (d) _____
					Total Crew-Duty Penalty Points (e) _____
					Subtract crew-duty penalty points from raw score (d - e = f).
					Engagement Score (f) _____

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Figure 9-34. Sample Scoresheet—TOW HMMWV Table VII, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VII, TASK 4B (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle.	Target 1: PC	CREW-DUTY PENALTY POINTS
	Time/Points	
	1 -14 100	
	15 98	Automatic Zero
AMMUNITION	16 95	
M-80: 1 round.	17 93	Not masked during NBC engagement.
	18 91	
CONDITIONS	19 89	Engaged friendly target.
Total Targets: 1	20 86	
Target 1: Stationary PC, 1,000 to 1,200 meters	21 84	30-Point Penalty
Civilians on the battlefield (COB).	22 82	
	23 79	Weapon not on SAFE between engagements.
	24 77	
	25 75	Fired into the berm.
	26 72	
EXPOSURE TIME	27 70	10-Point Penalty
Target 1: 30 seconds	28 68	
	29 66	Failed to follow instructions from authorized personnel.
STANDARDS	30 63	
Hit PC with 1 simulated TOW missile.	31 61	Fired before "FIRE" or "ON THE WAY."
	32 59	
	33 56	Improper engagement technique.
	34 54	
	35 52	Improper fire command.
	36 49	
	37 47	Did not return to turret-down position.
	38 45	
	39 43	5-Point Penalty
	40 40	
	41 38	Improper response to fire command.
	42 36	
	43 33	Improper reporting.
	44 31	
	45 29	Improper driving techniques.
	46 26	
	47 24	
	48 22	Total Crew-Duty Penalty Points
	49 20	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____	

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Figure 9-35. Sample Scoresheet—TOW HMMWV Table VII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VII, TASK 5B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Moving PC, 2,400 to 2,600 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
	1 -17 100	Automatic Zero
	18 98	
	19 97	Not masked during NBC engagement.
	20 95	
	21 93	Engaged friendly target.
	22 91	
	23 89	30-Point Penalty
	24 88	
	25 86	Weapon not on SAFE between engagements.
	26 84	
	27 82	Fired into the berm.
	28 81	
	29 79	10-Point Penalty
	30 77	
	31 75	Failed to follow instructions from authorized personnel.
	32 74	
	33 72	Fired before "FIRE" or "ON THE WAY."
	34 70	
	35 68	Improper engagement technique.
	36 67	
	37 65	Improper fire command.
	38 63	
	39 61	Did not return to turret-down position.
	40 60	
	41 58	5-Point Penalty
	42 56	
	43 54	Improper response to fire command.
	44 53	
	45 51	Improper reporting.
	46 49	Improper driving techniques.
	47 47	
	48 45	
	49 44	Total Crew-Duty Penalty Points
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-36. Sample Scoresheet—TOW HMMWV Table VII, Task 5B.

Conduct of Table VIII (Crew Qualification)

9-102. Table VIII evaluates the vehicle crew's ability to acquire and engage targets during various firing conditions at combat ranges. Crews must successfully pass this table before proceeding to Table X.

CONCEPT

9-103. Table VIII is a single-vehicle qualification table. Normal combat-oriented procedures, such as reporting, will be used. The crew uses proper engagement techniques against targets from a stationary and moving vehicle during normal and NBC conditions (directed MOPP level). The day firing phase should precede the night firing phase.

9-104. This table consists of five day and five night tasks. This table consists of three swing tasks (4AS, 4BS and 5BS). Swing tasks may be fired either day or night (depending on the length of daylight). For example, during the short days and long nights of winter, the day swing task may be fired at night. Then the number of tasks fired during the day would be four with six tasks fired at night for more effective time and range utilization.

CONDUCT OF THE TASK

9-105. Crews will employ direct and indirect fire to engage stationary and moving targets from a stationary and moving vehicle. The crews will use proper engagement techniques and fire commands.

EXECUTION

9-106. Crew members will be briefed on the enemy situation and vehicle capabilities prior to conducting this table. All defensive engagements should begin with the vehicle starting in a turret-down position and moving to a hull-down position to engage the target(s). On a range where this cannot be done, or where turret-down positions do not exist, units should train using simulated battle positions. Offensive engagements may be fired from a short halt.

SCORING

9-107. The crew must fire Table VIIIA and B for qualification. As a minimum, the crew must achieve 700 points, and 7 out of 10 tasks must have at least 70 points to achieve a qualified rating (2 of the tasks must be night engagements).

9-108. Tasks will be scored using the criteria in the standards column for each task in Table 9-5. Use the appropriate gunnery scoresheet (DA Form 7553-3-R or DA Form 7553-4-R) and time/points column for each task. Refer to page 9-11 for scoresheet scoring instructions and pages 9-12 and 9-13 for sample completed scoresheets. Refer to page 9-6 for a sample scout gunnery table roll-up sheet (DA Form 7560-R).

9-109. Crew ratings for Table VIII are as follows:

- **Distinguished:** Combined score of at least 900 points on Table VIIIA and B, and 9 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Superior:** Combined score of 800-899 points on Table VIIIA and B, and 8 out of 10 tasks must have at least 70 points. The crew must pass and two night engagements.
- **Qualified:** Combined score of 700-799 points on Table VIIIA and B, and 7 out of 10 tasks must have at least 70 points. The crew must pass two night engagements.
- **Unqualified:** Combined score of 699 or fewer points on Table VIIIA and B, or 4 out of 10 tasks have 69 or fewer points or crew fails to pass two night engagements.

AMMUNITION REQUIREMENTS

9-110. Ammunition requirements for Table VIII are as follows:

Table VIIIA	Table VIIIB	Total Rounds
125 rounds 7.62mm	50 rounds 7.62mm	175 rounds 7.62mm
5 M-80 TOW blast simulators	6 M-80 TOW blast simulators	11 M-80 TOW blast simulators
4 LA06s	5 LA06s	9 LA06s
Note. The LA06 will simulate hostile fire. It will replace the L602 Hoffman.		

Table 9-5. TOW HMMWV Table VIII, A and B.

TOW HMMWV TABLE VIIIA			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1A Stationary	1 stationary tank, 1,200 to 1,400 meters. 1 stationary tank, 1,200 to 1,400 meters (60-second delay). COB (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
2A Moving	1 stationary tank, 1,200 to 1,400 meters. 1 moving tank, 1,800 to 2,000 meters (60-second delay).	2 rounds M-80	Hit each tank with 1 simulated TOW missile.
3A Stationary NBC	1 bunker, 600 to 800 meters. 1 RPG team, 200 to 400 meters (15-second delay). COB (15-second delay).	1 round M-80 50 rounds 7.62mm	Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.
4A(Swing) Moving	Dismounted troops, 400 to 600 meters.	75 rounds 7.62mm	Hit 1 troop SIT with 1 round 7.62mm and suppress.
5A Stationary	1 stationary tank, >1,200 meters.	None	Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.
TOW HMMWV TABLE VIIIB			
TASK	CONDITIONS	AMMUNITION	STANDARDS
1B Stationary	1 bunker, 400 to 600 meters. 1 stationary tank, 1,200 to 1,400 meters (60-second delay).	2 rounds M-80	Hit bunker with 1 simulated TOW missile. Hit tank with 1 simulated TOW missile.
2B Moving	1 moving PC, 1,000 to 1,200 meters.	1 round M-80	Hit PC with 1 simulated TOW missile.
3B Stationary	1 RPG team, 600 to 800 meters. COB. 1 stationary PC, 1,000 to 1,200 meters (15-second delay).	1 round M-80 50 rounds 7.62mm	Hit RPG team with 1 round 7.62mm. Hit PC with 1 simulated TOW missile.
4B(Swing) Moving	1 stationary PC, 1,000 to 1,200 meters. COB.	1 round M-80	Hit PC with 1 simulated TOW missile.
5B(Swing) Stationary	1 moving PC, 2,400 to 2,600 meters.	1 round M-80	Hit PC with 1 simulated TOW missile.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VIII, TASK 1A (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 2 rounds. CONDITIONS Total Targets: 2 Target 1: Stationary tank, 1,200 to 1,400 meters. Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay). Civilians on the battlefield (COB) (60-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit each tank with 1 simulated TOW missile.	Target 1 Tank		Target 2 Tank		CREW-DUTY PENALTY POINTS
	Time/Points		Time/Points		
	1-14	100	1-14	100	Automatic Zero
	15	98	15	98	
	16	95	16	95	Not masked during an NBC engagement.
	17	93	17	93	
	18	91	18	91	Engaged friendly target.
	19	89	19	89	
	20	86	20	86	30-Point Penalty
	21	84	21	84	
	22	82	22	82	Weapon not on SAFE between engagements.
	23	79	23	79	
	24	77	24	77	Fired into the berm.
	25	75	25	75	
	26	72	26	72	Killed target beyond maximum vehicle exposure time.
	27	70	27	70	
	28	68	28	68	10-Point Penalty
	29	66	29	66	
	30	63	30	63	Failed to follow instructions from authorized personnel.
	31	61	31	61	
	32	59	32	59	Fired before "FIRE" or "ON THE WAY."
	33	56	33	56	
	34	54	34	54	Improper engagement technique.
	35	52	35	52	
	36	49	36	49	Improper fire command.
	37	47	37	47	
	38	45	38	45	Did not return to turret-down position.
	39	43	39	43	
	40	40	40	40	5-Point Penalty
	41	38	41	38	
	42	36	42	36	Improper response to the fire command.
43	33	43	33		
44	31	44	31	Improper reporting.	
45	29	45	29		
46	26	46	26	Improper driving technique.	
47	24	47	24		
48	22	48	22	Total Crew-Duty Penalty Points	
49	20	49	20		
50+	0	50+	0		
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____	
				Target 2 Points (b) _____	
				Total (a + b = c) (c) _____	
				Divide by 2 (# of targets) (c ÷ 2 = d)	
				Engagement Raw Score (d) _____	
				Total Crew-Duty Penalty Points (e) _____	
Subtract crew-duty penalty points from raw score (d - e = f).				Engagement Score (f) _____	

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Figure 9-37. Sample Scoresheet—TOW HMMWV Table VIII, Task 1A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VIII, TASK 2A (MOVING), UNIT/BUMPER NUMBER _____					
TASK Engage stationary and moving point targets from a moving vehicle. AMMUNITION M-80: 2 rounds. CONDITIONS Total Targets: 2 Target 1: Stationary tank, 1,200 to 1,400 meters. Target 2: Moving tank, 1,800 to 2,000 meters (60-second delay). EXPOSURE TIME Target 1: 30 seconds Target 2: 50 seconds STANDARDS Hit each tank with 1 simulated TOW missile.	Target 1 Tank		Target 2 Tank		CREW-DUTY PENALTY POINTS
	Time/Points		Time/Points		
	1 -14	100	1 -17	100	Automatic Zero
	15	98	18	98	
	16	96	19	97	Not masked during an NBC engagement.
	17	94	20	95	Engaged friendly target.
	18	91	21	93	
	19	89	22	91	30-Point Penalty
	20	87	23	89	Weapon not on SAFE between engagements.
	21	85	24	88	Fired into the berm.
	22	83	25	86	Killed target beyond maximum vehicle exposure time.
	23	81	26	84	
	24	79	27	82	10-Point Penalty
	25	77	28	81	Failed to follow instructions from authorized personnel.
	26	74	29	79	Fired before "FIRE" or "ON THE WAY."
	27	72	30	77	Improper engagement technique.
	28	70	31	75	Improper fire command.
	29	68	32	74	Did not return to turret-down position.
	30	66	33	72	
	31	64	34	70	5-Point Penalty
	32	62	35	68	Improper response to the fire command.
	33	59	36	67	Improper reporting.
	34	57	37	65	Improper driving technique.
	35	55	38	63	
	36	53	39	61	Total Crew-Duty Penalty Points
	37	51	40	60	
	38	49	41	58	
	39	47	42	56	
	40	44	43	54	
	41	42	44	53	
	42	40	45	51	
	43	38	46	49	
44	36	47	47		
45	34	48	45		
46	32	49	44		
47	29	50+	0		
48	27				
49	25				
50+	0				
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____					Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____

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Figure 9-38. Sample Scoresheet—TOW HMMWV Table VIII, Task 2A.

GUNNERY SCORESHEET, TWO-TARGET TASK						
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.						
TOW HMMWV TABLE VIII, TASK 3A (NBC) (STATIONARY), UNIT/BUMPER NUMBER _____						
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 1 round. 7.62mm: 50 rounds. CONDITIONS NBC. Total Targets: 2 Target 1: Bunker, 600 to 800 meters. Target 2: RPG team, 200 to 400 meters (15-second delay). Civilians on the battlefield (COB) (15-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit bunker with 1 simulated TOW missile. Hit RPG team with 1 round 7.62mm.	Target 1 Bunker Time/Points		Target 2 RPG Team Time/Points		CREW-DUTY PENALTY POINTS	
	1 - 13	100	1 - 5	100	Automatic Zero	
	14	98	6	94		
	15	95	7	88	Not masked during an NBC engagement.	
	16	93	8	82		
	17	90	9	76	Engaged friendly target.	
	18	88	10	70		
	19	85	11	64	30-Point Penalty	
	20	83	12	58		
	21	80	13	52	Weapon not on SAFE between engagements.	
	22	78	14	46		
	23	75	15	40	Fired into the berm.	
	24	73	16	34		
	25	70	17	28	Killed target beyond maximum vehicle exposure time.	
	26	68	18	22		
	27	65	19	16	10-Point Penalty	
	28	63	20	10		
	29	60	21	4	Failed to follow instructions from authorized personnel.	
	30	58	22+	0		
	31	55			Fired before "FIRE" or "ON THE WAY."	
	32	53				
	33	50			Improper engagement technique.	
	34	48				
	35	45			Improper fire command.	
	36	43				
	37	40			Did not return to turret-down position.	
	38	38				
	39	35			5-Point Penalty	
	40	33				
	41	30			Improper response to the fire command.	
	42	38				
	43	35			Improper reporting.	
44	33					
45	30			Improper driving technique.		
46	28					
47	25			Total Crew-Duty Penalty Points		
48	23					
49	20					
50+	0					
Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____				Target 1 Points (a) _____ Target 2 Points (b) _____ Total (a + b = c) (c) _____ Divide by 2 (# of targets) (c ÷ 2 = d) Engagement Raw Score (d) _____ Total Crew-Duty Penalty Points (e) _____ Subtract crew-duty penalty points from raw score (d - e = f). Engagement Score (f) _____		

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Figure 9-39. Sample Scoresheet—TOW HMMWV Table VIII, Task 3A.

GUNNERY SCORESHEET, ONE-TARGET TASK			
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.			
TOW HMMWV TABLE VIII, TASK 4A (SWING) (MOVING), UNIT/BUMPER NUMBER _____			
TASK Engage a stationary area target from a moving vehicle. AMMUNITION 7.62mm: 75 rounds. CONDITIONS Total Targets: 1 Target 1: Dismounted troops, 400 to 600 meters. EXPOSURE TIME Target 1: 30 seconds STANDARDS Hit 1 troop SIT with 1 round 7.62mm <u>and</u> suppress.	Target 1: Troops Time/Points 1 - 6 100 7 94 8 88 9 82 10 76 11 70 12 64 13 58 14 52 15 46 16 40 17 34 18 28 19 22 20 16 21 10 22 4 23+ 0	CREW-DUTY PENALTY POINTS	
		Automatic Zero	
		Not masked during NBC engagement.	
		Engaged friendly target.	
		30-Point Penalty	
		Weapon not on SAFE between engagements.	
		Fired into the berm.	
		10-Point Penalty	
		Failed to follow instructions from authorized personnel.	
		Fired before "FIRE" or "ON THE WAY."	
		Improper engagement technique.	
		Improper fire command.	
		Did not return to turret-down position.	
		5-Point Penalty	
		Improper response to fire command.	
		Improper reporting.	
		Improper driving techniques.	
		Total Crew-Duty Penalty Points	
		Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-40. Sample Scoresheet—TOW HMMWV Table VIII, Task 4A.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VIII, TASK 5A (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a stationary vehicle with indirect fire.	Target 1: Tank	CREW-DUTY PENALTY POINTS
	Time/Points	
	1 - 13 100	
	14 98	Automatic Zero
	15 95	
	16 93	Not masked during NBC engagement.
	17 90	
	18 88	Engaged friendly target.
	19 85	
	20 83	30-Point Penalty
	21 80	
	22 78	Weapon not on SAFE between engagements.
	23 75	
	24 73	Fired into the berm.
	25 70	
	26 68	10-Point Penalty
	27 65	
	28 63	Failed to follow instructions from authorized personnel.
	29 60	
	30 58	Fired before "FIRE" or "ON THE WAY."
	31 55	
	32 53	Improper engagement technique.
	33 50	
	34 48	Improper fire command.
	35 45	
	36 43	Did not return to turret-down position.
	37 40	
	38 38	5-Point Penalty
	39 35	
	40 33	Improper response to fire command.
	41 30	
	42 38	Improper reporting.
	43 35	
	44 33	Improper driving techniques.
	45 30	
	46 28	
	47 25	
	48 23	
	49 20	Total Crew-Duty Penalty Points
	50+ 0	
AMMUNITION None required.		
CONDITIONS Total Targets: 1 Target 1: Stationary tank, >1,200 meters.		
EXPOSURE TIME Target 1: 50 seconds		
STANDARDS Perform call for immediate suppression. Grid must be within 150 meters (call-for-fire procedures must be IAW FM 6-30). Complete the call for fire digitally if so equipped.		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-41. Sample Scoresheet—TOW HMMWV Table VIII, Task 5A.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VIII, TASK 1B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK	Target 1 Bunker Time/Points		Target 2 Tank Time/Points		CREW-DUTY PENALTY POINTS
Engage stationary point targets from a stationary vehicle.	1 - 12	100	1 - 14	100	Automatic Zero
	13	97	15	98	
	14	95	16	95	
AMMUNITION	15	92	17	93	Not masked during an NBC engagement.
M-80: 2 rounds.	16	89	18	91	
	17	86	19	89	Engaged friendly target.
CONDITIONS	18	84	20	86	
Total Targets: 2	19	81	21	84	30-Point Penalty
Target 1: Bunker, 400 to 600 meters.	20	78	22	82	
	21	76	23	79	Weapon not on SAFE between engagements.
	22	73	24	77	
Target 2: Stationary tank, 1,200 to 1,400 meters (60-second delay).	23	70	25	75	Fired into the berm.
	24	67	26	72	
	25	65	27	70	Killed target beyond maximum vehicle exposure time.
EXPOSURE TIME	26	62	28	68	
Target 1: 50 seconds	27	59	29	66	10-Point Penalty
Target 2: 50 seconds	28	57	30	63	
	29	54	31	61	Failed to follow instructions from authorized personnel.
	30	51	32	59	
STANDARDS	31	48	33	56	Fired before "FIRE" or "ON THE WAY."
Hit bunker with 1 simulated TOW missile.	32	46	34	54	
	33	43	35	52	Improper engagement technique.
	34	40	36	49	
Hit tank with 1 simulated TOW missile.	35	37	37	47	Improper fire command.
	36	35	38	45	
	37	32	39	43	Did not return to turret-down position.
	38	29	40	40	
	39	27	41	38	5-Point Penalty
	40	24	42	36	
	41	21	43	33	Improper response to the fire command.
	42	18	44	31	
	43	16	45	29	Improper reporting.
	44	13	46	26	
	45	10	47	24	Improper driving technique.
	46	8	48	22	
	47	5	49	20	Total Crew-Duty Penalty Points
	48	2	50+	0	
	49+	0			
Remarks:					
_____					Target 1 Points (a) _____
_____					Target 2 Points (b) _____
_____					Total (a + b = c) (c) _____
_____					Divide by 2 (# of targets) (c ÷ 2 = d)
_____					Engagement Raw Score (d) _____
_____					Total Crew-Duty Penalty Points (e) _____
_____					Subtract crew-duty penalty points from raw score (d - e = f).
_____					Engagement Score (f) _____

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Figure 9-42. Sample Scoresheet—TOW HMMWV Table VIII, Task 1B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VIII, TASK 2B (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a moving vehicle.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION M-80: 1 round.	1 -15 100	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: Moving PC, 1,000 to 1,200 meters.	16 98	Not masked during NBC engagement.
EXPOSURE TIME Target 1: 50 seconds	17 96	Engaged friendly target.
STANDARDS Hit PC with 1 simulated TOW missile.	18 94	30-Point Penalty
	19 92	Weapon not on SAFE between engagements.
	20 90	Fired into the berm.
	21 88	10-Point Penalty
	22 86	Failed to follow instructions from authorized personnel.
	23 84	Fired before "FIRE" or "ON THE WAY."
	24 82	Improper engagement technique.
	25 80	Improper fire command.
	26 78	Did not return to turret-down position.
	27 76	5-Point Penalty
	28 74	Improper response to fire command.
	29 72	Improper reporting.
	30 70	Improper driving techniques.
	31 68	Total Crew-Duty Penalty Points
	32 66	
	33 64	
	34 62	
	35 60	
	36 58	
	37 56	
	38 54	
	39 52	
	40 50	
	41 48	
	42 46	
	43 44	
	44 42	
	45 40	
	46 38	
	47 36	
	48 34	
	49 32	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____	
	Total Crew-Duty Penalty Points (b) _____	
	Subtract crew-duty penalty points from score (a - b = c).	
	Engagement Score (c) _____	

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Figure 9-43. Sample Scoresheet—TOW HMMWV Table VIII, Task 2B.

GUNNERY SCORESHEET, TWO-TARGET TASK					
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.					
TOW HMMWV TABLE VIII, TASK 3B (STATIONARY), UNIT/BUMPER NUMBER _____					
TASK Engage stationary point targets from a stationary vehicle. AMMUNITION M-80: 1 round. 7.62mm: 50 rounds. CONDITIONS Total Targets: 2 Target 1: RPG team, 600 to 800 meters. Civilians on the battlefield (COB). Target 2: Stationary PC, 1,000 to 1,200 meters (15-second delay). EXPOSURE TIME Target 1: 50 seconds Target 2: 50 seconds STANDARDS Hit RPG team with 1 round 7.62mm. Hit PC with 1 simulated TOW missile.	Target 1 RPG Team Time/Points		Target 2 PC Time/Points		CREW-DUTY PENALTY POINTS
	1 - 5	100	1 - 13	100	Automatic Zero
	6	94	14	98	
	7	88	15	95	Not masked during an NBC engagement.
	8	82	16	93	Engaged friendly target.
	9	76	17	91	
	10	70	18	89	30-Point Penalty
	11	64	19	86	Weapon not on SAFE between engagements.
	12	58	20	84	Fired into the berm.
	13	52	21	82	Killed target beyond maximum vehicle exposure time.
	14	46	22	79	
	15	40	23	77	10-Point Penalty
	16	34	24	75	Failed to follow instructions from authorized personnel.
	17	28	25	72	Fired before "FIRE" or "ON THE WAY."
	18	22	26	70	Improper engagement technique.
	19	16	27	68	Improper fire command.
	20	10	28	66	Did not return to turret-down position.
	21	4	29	63	
	22+	0	30	61	5-Point Penalty
			31	59	Improper response to the fire command.
			32	56	Improper reporting.
			33	54	Improper driving technique.
			34	52	Total Crew-Duty Penalty Points
	Remarks: _____ _____ _____ _____ _____ _____ _____ _____ _____				
Target 2 Points (b) _____					
Total (a + b = c) (c) _____					
Divide by 2 (# of targets) (c ÷ 2 = d)					
Engagement Raw Score (d) _____					
Total Crew-Duty Penalty Points (e) _____					
Subtract crew-duty penalty points from raw score (d - e = f).					
					Engagement Score (f) _____

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Figure 9-44. Sample Scoresheet—TOW HMMWV Table VIII, Task 3B.

GUNNERY SCORESHEET, ONE-TARGET TASK		
For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VIII, TASK 4B (SWING) (MOVING), UNIT/BUMPER NUMBER _____		
TASK Engage a stationary point target from a moving vehicle.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
AMMUNITION M-80: 1 round.	1 -14 100	Automatic Zero
CONDITIONS Total Targets: 1 Target 1: Stationary PC, 1,000 to 1,200 meters Civilians on the battlefield (COB).	15 98	Not masked during NBC engagement.
	16 95	Engaged friendly target.
	17 93	30-Point Penalty
	18 91	Weapon not on SAFE between engagements.
	19 89	Fired into the berm.
	20 86	10-Point Penalty
	21 84	Failed to follow instructions from authorized personnel.
EXPOSURE TIME Target 1: 30 seconds	22 82	Fired before "FIRE" or "ON THE WAY."
STANDARDS Hit PC with 1 simulated TOW missile.	23 79	Improper engagement technique.
	24 77	Improper fire command.
	25 75	Did not return to turret-down position.
	26 72	5-Point Penalty
	27 70	Improper response to fire command.
	28 68	Improper reporting.
	29 66	Improper driving techniques.
	30 63	Total Crew-Duty Penalty Points
	31 61	
	32 59	
	33 56	
	34 54	
	35 52	
	36 49	
	37 47	
	38 45	
	39 43	
	40 40	
	41 38	
	42 36	
	43 33	
	44 31	
	45 29	
	46 26	
	47 24	
	48 22	
	49 20	
	50+ 0	
Remarks: _____ _____ _____ _____ _____	Target 1 Points (a) _____	
	Total Crew-Duty Penalty Points (b) _____	
	Subtract crew-duty penalty points from score (a - b = c).	
	Engagement Score (c) _____	

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Figure 9-45. Sample Scoresheet—TOW HMMWV Table VIII, Task 4B.

GUNNERY SCORESHEET, ONE-TARGET TASK For use of this form, see FM 3-20.8; the proponent agency is TRADOC.		
TOW HMMWV TABLE VIII, TASK 5B (SWING) (STATIONARY), UNIT/BUMPER NUMBER _____		
TASK Engage a moving point target from a stationary vehicle. AMMUNITION M-80: 1 round. CONDITIONS Total Targets: 1 Target 1: Moving PC, 2,400 to 2,600 meters. EXPOSURE TIME Target 1: 50 seconds STANDARDS Hit PC with 1 simulated TOW missile.	Target 1: PC Time/Points	CREW-DUTY PENALTY POINTS
	1 -17 100	Automatic Zero
	18 98	Not masked during NBC engagement.
	19 97	Engaged friendly target.
	20 95	
	21 93	30-Point Penalty
	22 91	Weapon not on SAFE between engagements.
	23 89	Fired into the berm.
	24 88	
	25 86	10-Point Penalty
	26 84	Failed to follow instructions from authorized personnel.
	27 82	Fired before "FIRE" or "ON THE WAY."
	28 81	Improper engagement technique.
	29 79	Improper fire command.
	30 77	Did not return to turret-down position.
	31 75	
	32 74	5-Point Penalty
	33 72	Improper response to fire command.
	34 70	Improper reporting.
	35 68	Improper driving techniques.
	36 67	
	37 65	Total Crew-Duty Penalty Points
	38 63	
	39 61	
	40 60	
	41 58	
	42 56	
	43 54	
	44 53	
	45 51	
	46 49	
	47 47	
	48 45	
	49 44	
50+ 0		
Remarks: _____ _____ _____ _____ _____		Target 1 Points (a) _____ Total Crew-Duty Penalty Points (b) _____ Subtract crew-duty penalty points from score (a - b = c). Engagement Score (c) _____

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Figure 9-46. Sample Scoresheet—TOW HMMWV Table VIII, Task 5B.

Chapter 10

Collective Gunnery

The scout section and platoon gunnery tables train and evaluate scout sections and platoons. They test the unit's ability to conduct reconnaissance and security missions and engage stationary and moving targets. In any tactical scenario, the focus must be on the scout's primary mission of collecting and reporting information. The scout's ability to use his combat resources (direct- and indirect-fire assets) effectively while remaining undetected on the battlefield must be evaluated also.

Table IX (section) and Table XI (platoon) train the section and platoon to control and distribute section and platoon direct and indirect fire to destroy enemy targets in a tactical scenario.

Table X (section) and Table XII (platoon) are the collective qualification courses. These tables challenge the section and platoon leaders to integrate fire and maneuver while testing the section's and platoon's ability to engage moving, stationary, and ground targets with all weapons during daylight and periods of limited visibility.

Note. The commander uses his METL to decide what level of collective tables his unit will fire. The unit may fire either section (Tables IX and X) or platoon (Tables XI and XII) training events. This decision is critical to the planning of the training because ONLY ONE event is resourced through DA Pam 350-38 (STRAC)—either one Table X or one Table XII.

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SECTION I - DEVELOPING THE COLLECTIVE GUNNERY PROGRAM

10-1. All scout sections and platoons perform reconnaissance, security, and economy-of-force missions. Each of these missions consists of unit and individual tasks. Gunnery tables provide the commander with the opportunity to evaluate his scout section's or platoon's ability to execute tactical and gunnery tasks. A successful section and platoon gunnery program trains all tasks required to support the unit's METL. Due to limited range resources, individual and collective tasks must be trained before gunnery tables. ARTEP 17-97F-10-MTP outlines the steps needed for a unit to establish a successful training program for all tasks that support the unit's METL. When developing the section's/platoon's gunnery program, the commander should remember the training principles in FM 25-100:

- Train as you will fight or support.
- Make commanders/leaders the primary trainers.
- Train using appropriate doctrine.
- Use performance-oriented training.
- Use mission-oriented training.

- Train to fight and support as a combined-arms and services team.
- Train to sustain proficiency.
- Train to challenge.

10-2. The scenarios in Table 10-2, page 10-5 for scout section or platoon gunnery are examples only. Using the following information as a guide, the commander can design his own tables based on resources available and the unit's training needs. This flexibility ensures that each unit receives the training required for its scout sections/platoons to function effectively.

10-3. The section or platoon is required to fire a scenario linking day and night phases. The section or platoon practice courses should be developed to follow a similar scenario to that of the qualification courses.

10-4. The collective tables must begin with an operations order (OPORD) issued to the section or platoon. Graphics used to control movement to the range and section or platoon sectors of fire and axis of advance (range limitations) will be developed as a hard copy. Situation reports (SITREP) and fragmentary orders (FRAGO) used to control the section or platoon will be used in conjunction with the graphics.

10-5. Other direct and indirect fires (such as mortars, antitank weapons, and artillery) may be incorporated (live or simulated) to provide enhanced training in fire planning and calling for supporting fires. Collective tables include—

- A live-fire scenario linked together by maneuver tasks.
- Troop-leading procedures conducted by the section/platoon leader.
- Ground reconnaissance of the battle positions (BP) (range) conducted by the section or platoon leader and vehicle commanders before executing any of the collective tables.
- Administrative and safety briefings required by local regulations.

10-6. To maintain tactical emphasis throughout the collective tables, there are nine mandatory combat critical tasks in each table. All collective tables must contain these nine combat critical tasks and a minimum of three commander-selected tactical tasks (see Table 10-1). The tactical tasks make up 60 percent of each table; the remaining 40 percent consists of vehicle or dismounted gunnery tasks. Sections and platoons are formally evaluated on tactics and gunnery tasks.

Table 10-1. Combat Critical Tasks and Sample Tactical Tasks.

REQUIRED COMBAT-CRITICAL TASKS	SAMPLE TACTICAL TASKS
Execute actions on contact.	Coordinate with adjacent platoon-size elements.
Collect/report information—SALUTE.	Perform an area reconnaissance.
Call for/adjust indirect fire.	Perform a route reconnaissance.
Conduct tactical movement.	Perform a reconnaissance-by-fire.
Control scout team fires.	Prepare overlays for route reconnaissance reports.
Conduct a screen.	Emplace and retrieve a hasty minefield.
Perform a passage of lines.	Execute a dismounted patrol.
Select firing positions.	Supervise the preparation of a team's defensive position.
Perform a zone reconnaissance.	Consolidate and reorganize a team following enemy contact (defense).
	Initiate unmasking procedures.
	Cross a chemically contaminated area.
	Prepare and submit an NBC-4 report.
	Prepare and submit an NBC-1 report.
	Calculate and designate placement of timber-cutting charges.
	Calculate and designate placement of steel-cutting charges.
	React to indirect fire.

10-7. ARTEP 17-97F-10-MTP is the primary source for developing the performance checklists used during the tactical portion of the tables. Unit SOPs and other FM's may be used to develop performance checklists not addressed in ARTEP 17-97F-10-MTP.

Evaluation Procedures and Standards

10-8. The evaluation procedures allow sections and platoons to train and practice the skills normally performed in combat. Evaluators use after-action reviews to critique the unit upon completion of the tables. Crew duties are not rated on these tables; however, a unit is penalized if an individual scout squad fails to perform sound tactical maneuvering or achieve target hits.

10-9. **Evaluation Procedures.** Evaluators will use the performance checklists in ARTEP 17-97F-10-MTP to evaluate scout sections and platoons on tactics. If a commander must develop a performance checklist for each task and base each checklist on ARTEP 17-97F-10-MTP.

10-10. **Evaluation Standards.** Terrain, weather, and distance between engagements dictate course time. Tactical tasks can be conducted at a nearby training area and combined with the gunnery portion if range areas are not extensive enough to allow tactical maneuvering, however, this is an exception. Commanders should integrate the tactical and gunnery tasks to maximize the training effectiveness of these tables.

10-11. The section or platoon must achieve, as a minimum, a GO on 70 percent of the tactical tasks on the scout collective tables (an equivalent of 420 points on each table).

10-12. The section or platoon must achieve, as a minimum, a 70 percent target kill rate on gunnery tasks during each table (an equivalent of 280 points on each table).

Scoring Procedures

10-13. Each table uses a 1,000-point system for the areas of tactics and gunnery. The breakdown of scoring is as follows:

- *Tactics* is worth 60 percent or a total of 600 points. Evaluators will use the performance checklists in ARTEP 17-97F-10-MTP. The commander may modify these checklists to more accurately reflect their METL. Commanders can use the formula below to determine total tactical points or, at the commander's option based on METL importance, point values can be assigned for each task. Total cumulative tactical points will not exceed 600.

Formula: To determine the *percentage* score on tactics evaluation, divide the number of tactical tasks passed (T_P) by the number of tactical tasks evaluated (T_E) and multiply the result by 100:

For example: If (T_P) = 29 and (T_E) = 31, then $(29 \div 31 = .94) \times 100 = 94\%$

Formula: To determine the *points* earned on tactics evaluation, divide the number of tactical tasks passed (T_P) by the number of tactical tasks evaluated (T_E) and multiply the result by 600 (possible tactical points):

For example: If (T_P) = 29 and (T_E) = 31, then $(29 \div 31 = .94) \times 600 = 564$ points

The resulting number is the points awarded for the TACTICAL evaluation of the tables.

- *Gunnery* is worth 40 percent or a total of 400 points. Commanders will use the formula below to determine gunnery points. Total cumulative gunnery points will not exceed 400.

Formula: To determine the *percentage* score on *gunnery* evaluation, divide the number of targets destroyed (G_D) by the number of targets presented (G_P) and multiply the result by 100:

For example: If (G_D) = 40 and (G_P) = 48, then $(40 \div 48 = .83) \times 100 = 83\%$

Formula: To determine the *points* earned on *gunnery* evaluation, divide the number of targets destroyed (G_D) by the number of targets presented (G_P) and multiply the result by 400 (possible gunnery points):

For example: If (G_D) = 40 and (G_P) = 48, then $(40 \div 48 = .83) \times 400 = 332$ points

The resulting number is the points awarded for the GUNNERY evaluation of the tables.

10-14. Tactical and gunnery points are added together for the overall score. This point value will reflect the scout section's or platoon's overall score for Tables IX and X. When filling out the Scout Collective Tables IX, X, XI, and XII Scoresheet (DA Form 7565-R) (see Figure 10-1 on page 10-12), if the number of tasks exceed the number of spaces on the sheet, use an additional scoresheet and fill out the final score on the first scoresheet.

For example: 564 (tactical points) + 332 (gunnery points) = 896 points

Note. It is strongly encouraged that civilians on the battlefield (COB)/friendly targets be added to the collective tables. The penalty for engaging a COB/friendly target (whether or not the target is destroyed) is 100 points (one rating) off the final tactical/gunnery combined score. For example: If the unit's combined score was 896 points, and the unit *engaged* a COB/friendly target, the unit's total score would be 796 points (unqualified).

10-15. Sections and platoons will be rated by the following standards:

- **Distinguished** - Combined score of 900 points or higher that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Superior** - Combined score of 800-899 points that must include a minimum of 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Qualified** - Combined score of 700-799 points that must include a minimum 420 tactical points (70 percent) and 280 gunnery points (70 percent).
- **Unqualified** - Combined score of 699 or fewer points, or the unit fails to achieve 420 tactical points (70 percent) or 280 gunnery points (70 percent).

Targets

10-16. Target arrays should be consistent with the type of threat forces a section or platoon will normally encounter. FM 3-20.98 describes these forces in detail for both reconnaissance and security missions. Based on the unit's METL and ammunition available, the commander determines the number and types of targets to be engaged. The number of targets for the practice table will be based on the target-to-round ratio below:

50 rounds of Caliber .50	1 target
8 rounds of 40mm	1 target
8 rounds of 25mm	1 target
50 rounds of 7.62mm	1 target
1 TOW missile	1 target

10-17. There will be no fewer than the following number of targets per vehicle in Tables IX through XII:

HMMWV		
M2 Caliber .50	7 targets	350 rounds
MK-19	7 targets	56 rounds
M240B	2 RPG targets	100 rounds

TOW HMMWV		
M240B	2 RPG targets	100 rounds
TOW	6 targets	6 blast simulators

Stryker RV		
M2 Caliber .50	7 targets	350 rounds
MK-19	7 targets	56 rounds
M240B	2 RPG targets 2 troop arrays	300 rounds

CFV		
25mm AP	6 targets	48 rounds
25mm HE	6 targets	48 rounds
M240C Coax	3 RPG targets 3 troop arrays	450 rounds

Notes. The above ammunition allocations are based on DA Pam 350-38 (STRAC) as of the date of this publication. These numbers must be updated as DA Pam 350-38 is updated.

Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition.

10-18. Civilians on the Battlefield (COB)/Friendly Targets.

- The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented on the specific tasks identified in the table description and in the specific scoresheet.
- Noncombatant targets may consist of any number of silhouettes dispersed in a small group. Noncombatant targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cutouts. All noncombatant/friendly targets will be placed within the range fans and the capabilities of the weapon systems. Friendly forces will be marked in accordance with the firing unit's SOP. Identification methods include, but are not limited to, VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

10-19. **Target Signature.** When appropriate to the scenario, hostile-fire simulators can be used to simulate the threat vehicle(s) firing at the unit.

10-20. **Target Exposure Time.** The following target exposure times are used for tables:

- Indirect-fire engagements will be presented for 90 seconds.
- All direct-fire engagements will be presented for 50 seconds.

SECTION II - CONDUCT OF TABLE IX, SECTION PRACTICE AND TABLE XI, PLATOON PRACTICE

10-21. The section and platoon practice tables train and evaluate the unit's tactical and gunnery skills in preparation for section or platoon qualification. At the commander's discretion, the unit's practice tables may be conducted in a dry, laser-fire, or live-fire mode, if rounds are available. The unit's practice tables must contain, as a minimum, the nine combat critical tasks, three commander-selected tactical tasks, and the required percentage of gunnery tasks (Table 10-2). When filling out the Scout Collective Tables IX, X, XI, and XII Scoresheet (DA Form 7565-R) (see Figure 10-1 on page 10-12), if the number of tasks exceed the number of spaces on the sheet, use an additional scoresheet and fill out the final score on the first scoresheet.

Prerequisites

10-22. The scout section or platoon must meet the following criteria prior to conducting Table IX, *Section Practice* or Table XI, *Platoon Practice*:

- Each crew must receive a passing score on Table VIII within 3 months of firing the section or platoon practice table.
- Each crewman must have passed the GST IAW this FM within 3 months of execution of Table IX or XI.
- Each scout section must qualify Table IX in a virtual trainer prior to conducting that table under live (device-based) conditions. (If a virtual trainer [such as CCTT] is not available, scout sections must execute multiple iterations of Table IX.).

- Each scout platoon must qualify Table XI in a virtual trainer prior to conducting that table under live (device-based) conditions. (If a virtual trainer [such as CCTT] is not available, scout sections must execute multiple iterations of Table XI.).
- Each scout section must qualify Table IX under live (device-based) conditions prior to conducting Table X.
- Each scout platoon must qualify Table XI under live (device-based) conditions prior to conducting Table XII.

Table 10-2. Example Section/Platoon Practice Table, Day and Night.

Section/Platoon Practice Table, Day			
TASK	CONDITION/TARGET/ SITUATION	TARGET HIT	TACTICAL TASKS
1. Conduct a zone reconnaissance.	Scout team conducts a zone reconnaissance.		Conduct a passage of lines. Perform a zone reconnaissance. Control techniques of movement.
2. Detect a combat outpost.	Scout team observes two PCs, 800 to 1,000 meters.		Perform a zone reconnaissance. Execute actions on contact. Call for fire. Send a spot report (SPOTREP).
3. Engage an outpost.	Scout team engages one PC, 800 to 1,000 meters. Reports civilians on the battlefield (COB).	0 1	Execute actions on contact. Send a SPOTREP. Select firing positions. Control scout team fires. Perform a zone reconnaissance.
4. Establish an observation post (OP).	On order, team establishes an OP and conducts a patrol.		Establish a screen. Execute actions on contact. Plan and conduct a patrol.
Section and Platoon Practice Table, Night			
TASK	CONDITION/TARGET/ SITUATION	TARGET HIT	TACTICAL TASKS
1. Conduct a zone reconnaissance.	Scout team conducts a zone reconnaissance to a screen position.		Issue the order. Perform a zone reconnaissance.
2. Conduct a screen.	Scout team conducts a screen and receives an order to perform a patrol.		Establish a screen. Plan and conduct a patrol.
3. Conduct a screen.	Scout team engages two PCs, 800 to 1,000 meters.	0 1 2	Call for fire. React to indirect fires. Displace to subsequent screen line. Send a SPOTREP. Select firing positions. Control scout-team fires. Conduct a passage of lines.

Requirements

10-23. Each scout section or platoon must receive a passing score on the practice table before firing the qualification table (see pages 10-3 and 10-4 for scoring procedures information).

10-24. **Task.** The scout section or platoon conducts a reconnaissance and/or security mission and acquires, reports, and employs accurate direct and indirect fires to engage targets in a tactical array.

10-25. **Conditions.** The scout section or platoon uses reconnaissance and engagement techniques against threat targets. Moving and stationary targets appear individually and simultaneously. At least one NBC engagement must be planned in the table.

10-26. **Standards.** Gunnery points are awarded in accordance with page 10-4. Crews will be critiqued on engagement techniques. Tactical standards are in accordance with ARTEP 17-97F-10-MTP.

Conduct of the Range

10-27. Depending on the availability of maneuver area, range time, and ammunition availability, scout sections and platoons can fire the practice table in a local training area with laser-based training or at a range facility with live ammunition. The commander must decide, based on range time availability and his design of the section or platoon tables, the most appropriate location to conduct the table, such as laser-based training aid-conducted tables, force-on-force engagements, or target-lift mechanisms with LTID.

TACTICAL TASKS

10-28. The unit commander must select a minimum of three METL tasks to train and evaluate with the nine combat critical tasks. A friendly and threat scenario must then be developed to evaluate these tasks within a realistic tactical training setting. The minimum recommended area for this training is 1 km X 2 km. Performance checklists are used to record tactical evaluation.

GUNNERY TASKS

10-29. The gunnery tasks for the section or platoon practice table can be a live-fire table or laser-based training aid table. In either case, the number of targets presented in the scenario or rounds allocated per engagement will not be fewer than the numbers given in paragraph 10-16 and 10-17 above. Live-fire gunnery is preferred; however, range, maneuver area, and ammunition constraints may dictate conducting separate tactical and gunnery portions. Commanders should integrate tactical and gunnery tasks whenever possible. Units may use device-based gunnery to train before a major gunnery table. Available resources of time, training area, range facilities, and ammunition will determine the commander's method of training.

RESOURCES

10-30. A recommended resource list for live-fire gunnery and device-based gunnery to assist the commander in identifying resources needed for table execution is provided below.

10-31. Live-fire gunnery requires a multilane range facility, such as a multipurpose range complex (MPRC) that allows at least two vehicles to maneuver as a section or platoon. Local range SOPs will dictate support requirements.

10-32. Device-based gunnery requires the use of laser-based training aids. A scout unit is easy to equip with laser-based training aids; however, inattention to detail and failure to follow boresight and checkout procedures seriously degrades training. Including laser-based training aids, in a precombat evaluation helps identify and correct shortcomings. When using laser-based training aids, the master gunner makes sure the mounting and checkout procedures are in accordance with TM 9-1265-375-10.

10-33. Both device-based and live-fire gunnery tables require evaluator support. Evaluators (selected from troop level) are identified, trained, and scheduled before conducting the table. A scoring packet containing performance checklists, scenarios, OPORDs, and sequence of events list are given to each evaluator. Internal evaluation is acceptable; however, external evaluation is the preferred method.

10-34. The following is a resource list for live-fire gunnery (it is not all-inclusive):

- Multipurpose range complex or suitable facility allowing two vehicles to maneuver as a team.
- Class V, consisting of but not limited to—
 - 40-mm TP.
 - Caliber .50 4:1 mix.
 - 7.62-mm 4:1 ball/tracer.
 - Artillery simulators.
 - Smoke pots.
 - Red smoke grenades.
 - White smoke grenades.
 - Green smoke grenades.
 - Red star clusters.
 - White or green star clusters.
- Evaluators and support packages consisting of—
 - Performance checklists.
 - Sequence of events.
 - OPORD.
 - Scenario.
 - Dual-net radio capability.
 - Night-vision devices.

- Wheeled/tracked vehicles for evaluators and support packages.
- Medical support as required by local SOP.
- Any items required by the supporting range facility SOP.
- References:
 - FM 3-20.98.
 - ARTEP 17-97F-10-MTP.

10-35. The following is a resource list for device-based gunnery:

- HMMWV MILES equipment for each vehicle, consisting of—
 - MITTS kit.
 - Vipers.
 - Caliber .50 blank firing adapter (BFA).
 - Caliber .50 transmitters.
 - 7.62-mm transmitters.
 - M16 transmitters.
- Target-holding mechanisms with MILES target interface devices, OPFOR with MILES, or vehicles modified to represent OPFOR.
- MILES controller guns.
- Class V, consisting of but not limited to—
 - 5.56-mm blank.
 - 7.62-mm blank.
 - Caliber .50 blanks.
 - Hoffman devices.
 - Antitank weapon effect signature simulation (ATWESS) cartridges.
 - Artillery simulators.
 - Smoke pots.
 - Red smoke grenades.
 - White or green star clusters.
- Training area 1 km X 2 km or larger. Evaluators and support package as follows:
 - Performance checklists.
 - Scenario.
 - Sequence of events.
 - OPORD.
 - Night-vision devices.
 - Dual-radio net capability.

After-Action Review

10-36. An AAR for the entire section or platoon is conducted on completion of the table. During the AAR, the evaluator and members of the unit discuss their strengths and weaknesses and how to improve. Videotaped tables provide positive and negative visual feedback to the unit and should be used whenever possible.

SECTION III - CONDUCT OF TABLE X, SECTION QUALIFICATION AND TABLE XII, PLATOON QUALIFICATION

10-37. Section and platoon qualifications evaluate the scout's tactical and gunnery proficiency in a realistic tactical and live-fire scenario (Table 10-3). The unit qualification table must contain, as a minimum, the nine combat critical tasks, three commander-selected tactical tasks (see Table 10-1 on page 10-2), and the required percentage of gunnery tasks (see Table 10-3). When filling out the Scout Collective Tables IX, X, XI, and XII Scoresheet (DA Form 7565-R) (see Figure 10-1 on page 10-12), if the number of tasks exceed the number of spaces on the sheet, use an additional scoresheet and fill out the final score on the first scoresheet.

Table 10-3. Example Section or Platoon Qualification, Day and Night.

Section/Platoon Qualification, Day			
TASK	CONDITION/TARGET/SITUATION	TARGET HIT	TACTICAL TASKS
1. Scout team conducts a route reconnaissance.	Scout team conducts reconnaissance of a route.		Perform a passage of lines. Reconnoiter a route specified in OPORD. Report all obstacles. Report trafficability. Complete mission within 1 hour.
2. Conduct a zone reconnaissance.	On order, scout team conducts a zone reconnaissance.		Conduct a zone reconnaissance. Coordinate with adjacent unit. Control a technique of movement.
3. Scout team detects a security outpost.	Scout team detects one PC, 800 to 1,000 meters.		Execute actions on contact. Send a SPOTREP. Call for fire.
4. Scout team detects elements of a combat outpost.	Scout team detects two PCs, 800 to 1,000 meters. Reports civilians on the battlefield (COB).		Execute actions on contact. Send a SPOTREP. Call for fire.
5. Scout team is engaged by security outpost.	Scout team engages two PCs, 800 to 1,000 meters and two infantry squads, 400 to 600 meters.	0 1 2 3 4	Execute actions on contact. Send a SPOTREP. Select firing positions. Control scout team fires. Targets killed within 35 seconds.
6. Scout team detects a combat outpost.	Scout team detects three BTRs and one T-64, 1,800 to 2,200 meters.		Execute actions on contact. Send a SPOTREP. Call for fire.
7. Scout team is engaged by elements of a combat outpost.	Scout team engages two PCs, 600 to 1,000 meters and two infantry squads, 400 to 600 meters.	0 1 2 3 4	Execute actions on contact. Send a SPOTREP. Call for fire. Select firing positions. Control scout team fires. Targets killed within 30 seconds.
8. Scout team establishes a screen and engages division reconnaissance patrol elements.	On order, scout team establishes a screen. Scout team engages two PCs, 800 to 1,200 meters and two infantry squads, 400 to 600 meters.	0 1 2 3 4	Execute actions on contact. Send a SPOTREP. Call for fire. Select firing positions. Control scout team fires. Targets killed within 35 seconds.
Section/Platoon Qualification, Night			
TASK	CONDITION/TARGET/SITUATION	TARGET HIT	TACTICAL TASKS
1. Scout team engages elements of a regimental reconnaissance patrol.	Scout team engages three PCs, 800 to 1,000 meters and one infantry squad, 400 to 600 meters.	0 1 2 3 4	Execute actions on contact. Send a SPOTREP. Call for fire. Select firing positions. Control scout team fires. Targets killed within 35 seconds.
2. Scout team engages elements of a motorized rifle company.	Scout team engages three PCs, 800 to 1,000 meters and one infantry squad, 400 to 600 meters.	0 1 2 3 4	Execute actions on contact. Send a SPOTREP. Call for fire. Select firing positions. Control scout team fires. Targets killed within 35 seconds.

Prerequisites

10-38. The scout section or platoon must meet the following criteria prior to conducting Table X, *Section Qualification* or Table XII, *Platoon Qualification*:

- Each crew must receive a passing score on Table VIII within 3 months of firing the section or platoon practice table.
- Each crewman must have passed the GST IAW this FM within 3 months of execution of Table IX or XI.
- Each scout section must qualify Table IX in a virtual trainer prior to conducting that table under live (device-based) conditions. (If a virtual trainer [such as CCTT] is not available, scout sections must execute multiple iterations of Table IX.).

- Each scout platoon must qualify Table XI in a virtual trainer prior to conducting that table under live (device-based) conditions. (If a virtual trainer [such as CCTT] is not available, scout sections must execute multiple iterations of Table XI.).
- Each scout section must qualify Table IX under live (device-based) conditions prior to conducting Table X.
- Each scout platoon must qualify Table XI under live (device-based) conditions prior to conducting Table XII.

Requirements

10-39. Each section or platoon must qualify on the qualification table. As a minimum, the unit must be rated GO on 70 percent of the tactical tasks and achieve target kills on 70 percent of the gunnery tasks.

10-40. **Task.** The section or platoon conducts a reconnaissance and/or security mission and acquires, reports, and employs accurate direct and indirect fires to engage targets in a tactical array.

10-41. **Conditions.** The section or platoon uses reconnaissance and engagement techniques against threat targets. Moving and stationary targets appear individually and simultaneously. At least one NBC engagement must be planned in the table.

10-42. **Standards.** Gunnery points are awarded IAW page 10-4. Crews are critiqued on engagement techniques. Tactical standards are IAW ARTEP 17-97F-10-MTP.

Conduct of the Range

10-43. Section and platoon qualification tasks should drive the content of the practice table. Unit qualification is a full-caliber gunnery table for a multilane range facility. When range facilities permit free maneuvering, the tactical tasks and gunnery tasks should be conducted at the same time. When free maneuvering cannot be performed on a range facility, the tactical tasks of unit qualification can be conducted on a separate 1 km X 2 km training area. Practice runs are not permitted on the unit qualification course. Day firing should precede night firing whenever possible.

10-44. Local range SOPs dictate the conduct of the range. Scenarios for firing should be developed and approved well in advance of the unit qualification. The number of targets for the qualification table will be based on the target-to-round ratio below:

50 rounds of Caliber .50	1 target
8 rounds of 40mm	1 target
8 rounds of 25mm	1 target
50 rounds of 7.62mm	1 target
1 TOW missile	1 target

10-45. There will be no fewer than the following number of targets per vehicle in Tables IX through XII:

HMMWV		
M2 Caliber .50	7 targets	350 rounds
MK-19	7 targets	56 rounds
M240B	2 RPG targets	100 rounds

TOW HMMWV		
M240B	2 RPG targets	100 rounds
TOW	6 targets	6 blast simulators

Stryker RV		
M2 Caliber .50	7 targets	350 rounds
MK-19	7 targets	56 rounds
M240B	2 RPG targets 2 troop arrays	300 rounds

CFV		
25mm AP	6 targets	48 rounds
25mm HE	6 targets	48 rounds
M240C Coax	3 RPG targets 3 troop arrays	450 rounds

Notes. The above ammunition allocations are based on DA Pam 350-38 (STRAC) as of the date of this publication. These numbers must be updated as DA Pam 350-38 is updated.

Ammunition allocation is based on the type of weapon the vehicle is assigned. If the vehicle is assigned an M2 caliber .50, the crew will be issued caliber .50 ammunition and no 40mm. A MK-19 crew will not be issued caliber .50 ammunition.

10-46. The tactical tasks of scout section or platoon qualification require a free-maneuver range facility or a separate 1 km X 2 km training area.

10-47. OPFOR or target-lift mechanisms can be used in the training area to reinforce acquisition, reporting and call-for-fire procedures.

10-48. The gunnery tasks of a unit qualification require a multilane facility that allows multiple vehicles to maneuver as a section or platoon. Range support packages are dictated by local range SOPs.

10-49. Evaluator support is necessary for the tactical and gunnery tasks of unit qualification. Commanders identify, train, and schedule evaluators (troop level) before the conduct of the table. Evaluators are given a scoring packet that contains performance checklist scenarios, OPORDs, and a sequence of events. Internal evaluation is acceptable; however, external evaluation is the preferred method.

Figure 10-1. Sample Scout Collective Tables IX, X, XI, and XII Scoresheet.

Appendix

Urban Operations

With the world's populations shifting from rural- to urban-based societies, the Army must adapt its doctrine to meet the unique requirements of operating in the urban environment. When he can, the enemy will try to offset standoff and precision fire by drawing the fight to these urban areas. This appendix discusses the principles of urban operations (UO) and provides TTPs for operating in urban areas.

The urban gunnery training methodology is designed to develop and test the scout crew, section, and platoon's ability to acquire, discern, engage, and destroy targets with the appropriate weapon system while maneuvering in an urban environment. These exercises are referred to as section and platoon urban gunnery exercises (S/PUGEX). Addition, this methodology is designed to integrate the entire combined-arms team in an urban live-fire exercise. The skills learned and evaluated in the crew and collective tables serve as building blocks toward the successful execution of both scout section and platoon urban gunnery training as well as the combined-arms urban gunnery exercise (CAUGEX).

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SECTION I - COMMANDER'S CONSIDERATIONS

A-1. The commander must treat any urban area as a terrain complex. He must know the characteristics of each type of urban terrain and how it will affect his units and weapons. He must also understand the advantages and disadvantages that urbanization offers, and how it will affect tactical operations.

A-2. Urban sprawl complicates adherence to the following principles:

- Battalions task organize around the brigade.
- Units below battalion operate as part of the battalion task force rather than alone.
- The battalion tries to avoid costly, time-consuming UO by isolating and bypassing built-up areas.

A-3. The commander can conduct urban combat operations to capitalize on the area's strategic or tactical advantages or to deny these advantages to the enemy. Major urban areas represent their country's power and wealth in the form of industrial bases, transportation complexes, economic institutions, and political and cultural centers. Denying or capturing these can boost morale enough to decide the success or failure of the larger conflict. Villages and small towns are often caught up in a battle due to their nearness to major avenues of approach or because they sit on lines of communications needed for ground combat operations.

Target Acquisition

A-4. Urban areas present units with unique target-acquisition challenges. For example, urban areas often favor the defender's ability to acquire targets. This makes offensive target acquisition extremely important, because whoever fires first could win the engagement. Whether halted or moving, units and soldiers must try to acquire targets continuously. Urban terrain affects target acquisition as follows:

- They tend to perform the six steps of target acquisition (search, detect, locate, identify, classify, and confirm) much faster in an urban environment than they would elsewhere.
- Buildings mask movement and the effects of direct and indirect fires. Intact and rubble structures cover and conceal both attackers and defenders.
- For the CFV and the Stryker RV, closed hatches reduce situational awareness. The M2A3 offers the CFV commander the ability to maintain his awareness by using his CIV.
- The driver has an increased role in UO target acquisition. Acquiring targets is most challenging when traveling past narrow side streets and alleys. The driver must watch the left side of the vehicle, because a threat could appear there first.
- Crews should modify their normal scanning techniques to fit the urban environment. When scanning a multistory building, crews can use either the ground-to-rooftop method and/or the horizontal slow-scan. For the ground-to-rooftop method, start at the lower left corner of the building and move up to the top, over and down to the ground. This is done until the entire building is scanned. When using the horizontal slow-scan, start at the top right corner of the building and scan to the right corner, move down and back to the left. This is repeated until the entire building has been scanned (see Figure A-1).

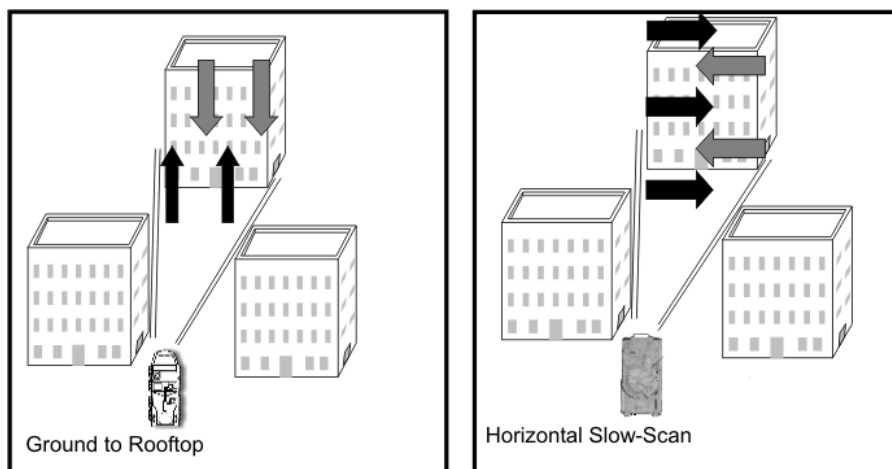


Figure A-1. Multifloor Building Scanning Techniques.

SEARCH

A-5. Urban battlefields are three dimensional. Soldiers must use all of their senses to detect a threat. Just as on other types of terrain, patrols and OPs help locate enemy forces. The crew's ability to detect targets will be affected by friendly and enemy smoke, fire, and dust from debris. Thermal sights reflect off glass and prevent crews from seeing through windows; therefore, crews should alternate the daylight and thermal sight while scanning. The use of hunter-killer teams is highly encouraged.

A-6. **Target-Acquisition Devices.** Soldiers searching the urban battlefield should use all available devices (binoculars, image-intensifiers, thermal sights, GSR, remotely emplaced and monitored sensors (REMS), platoon early warning system (PEWS), and field-expedient early warning devices) to acquire targets, because no single device can meet every need. The LRAS3 and the CFV's sights serve as excellent combat multipliers in modern urban combat. Gunners search for targets on major streets, ensuring that the bottom of the sight picture (in WFOV) allows them to see just a few feet in front of the vehicle, and that the top of the sight picture (also in WFOV) allows them to see the first floor of buildings. The vehicle commander can simultaneously scan upper-level floors, rooftops, and narrow side streets and alleys. The CFV commander may do this using the CIV while protected from sniper fire.

A-7. **Observation.** The unit develops and implements clear observation SOPs. To ensure all-around and up-down (three-dimensional) security, leaders must clearly explain observation duties to crew members. Soldiers quickly learn to recognize the sights, smells, and sounds of their urban battlefield, and to distinguish targets. The vehicle commander uses binoculars and the naked eye to search above ground, including rooftops and upper floors. At the same time, the gunner searches streets and lower levels. The driver scans the street to the vehicle's front and, as previously stated, to the left when the vehicle passes alleys and side streets. To increase survivability during observation, the CFV and Stryker RV crews should keep all hatches closed or in the "popup" position, while "up-armored" HMMWV crews should keep all doors and windows closed. Gunners for the Stryker RV and the HMMWV should utilize the ballistic protection shroud mounted to the weapon system.

A-8. **Movement.** Because attackers and defenders might have short distances between them, the crew should stop often to scan their sector. They must choose their routes carefully, using buildings and rubble to mask their movement. Crews who encounter a threat while crossing a major road or intersection can back up and use a building as protection while they prepare to engage the threat; however, they might be able to bound through the road or intersection and hand off the target by radio to the next vehicle in formation. In the case of two FBCB2-equipped vehicles, the first one could bound through a major road or intersection, then digitally hand off the target to the next one. The crew or section uses the same movement techniques in urban areas as on open terrain (traveling, traveling overwatch, and bounding overwatch), except the overwatching element also watches the upper floors.

A-9. **Observation Posts.** In selecting OPs, the commander considers the military aspects of urban terrain. For example, upper-floor OPs offer better vantage points than do street-level OPs; however, leaders should avoid obvious positions such as water towers or church steeples.

Target Discrimination

A-10. Target discrimination, the act of quickly distinguishing combatants from noncombatants/friendlies and engaging the combatants, is vital in urban combat. U.S. forces try to prevent casualties among noncombatants/friendlies. Selective engagement is less important in areas without noncombatants/friendlies; however, even in such areas, gunners can always mistake friendly soldiers for enemy. Unless crews are well-trained in fire discrimination and control, and practice firing discipline, urban combat can result in unintentional casualties among noncombatants/friendlies. Distances in urban environments are ever-changing. During short halts or as time permits, crews should continuously check the focus, level and gain, and brightness and contrast on their applicable sights. This is how crews learn to discriminate friend from foe using the weapon system sights. Finally, commanders must recognize the stress that discriminating targets causes soldiers, and take steps to prevent and relieve it.

Target Engagement

A-11. At ground level, structures and obscurants (smoke, dust, and airborne debris) reduce the ranges of observation and fields of fire. Most urban engagements consist of close (within 100 meters), violent firefights. Victory, perhaps even survival, depends on correct identification of friend and foe, strict fire control, precise fire, quick reflexes, and impeccable teamwork. Short ranges restrict the use of TOWs. In most urban firefights, "danger close" is the norm for indirect fires.

Note. The laser range finders on ODS- and A3-model vehicles require a range of at least 200 meters; however, the M3A3 crews can index 100 meters and the M3A2 ODS crews can index 0 or 200 meters. Then, if they happen to acquire a target that exceeds the indexed range, they can always lase to the target.

Offensive Operations

A-12. While reconnaissance units are not considered maneuver units, they must be prepared to conduct offensive and defensive operations in the economy-of-force role. The BCT is inherently task-organized; however, commanders in urban operations may further refine the organization to meet the mission needs. Each scout vehicle has assets and liabilities that a commander must consider prior to mission execution. While the dismounts provide local security for the CFV and the Stryker RV, the vehicles provide critical fire support to the dismounted element. In the M3A3 or Stryker RV-equipped units, the squad leader's display (SLD) gives

the dismount elements excellent situational awareness before they exit the vehicle. For example, before they even leave the vehicle, they can determine potential routes or entry points to buildings.

A-13. **Killing Zones.** Streets and alleys are natural firing lanes and killing zones. Because of this, all vehicular traffic is greatly restricted and canalized and subject to ambush and short-range attack. The wide elevation ranges of the 25-mm gun and 7.62-mm coax machine gun on the CFV (about -10 to +60 degrees) and the machine guns of the Stryker RV and the HMMWV (about -20 to +60 degrees) give the scout vehicles a target engagement advantage over tanks. Figure A-2 compares the scout vehicle's and the M1 tank's fields of fire on urban terrain. The scout vehicle can engage targets nine to ten stories high at 20 meters, whereas an M1 tank requires 90 meters.

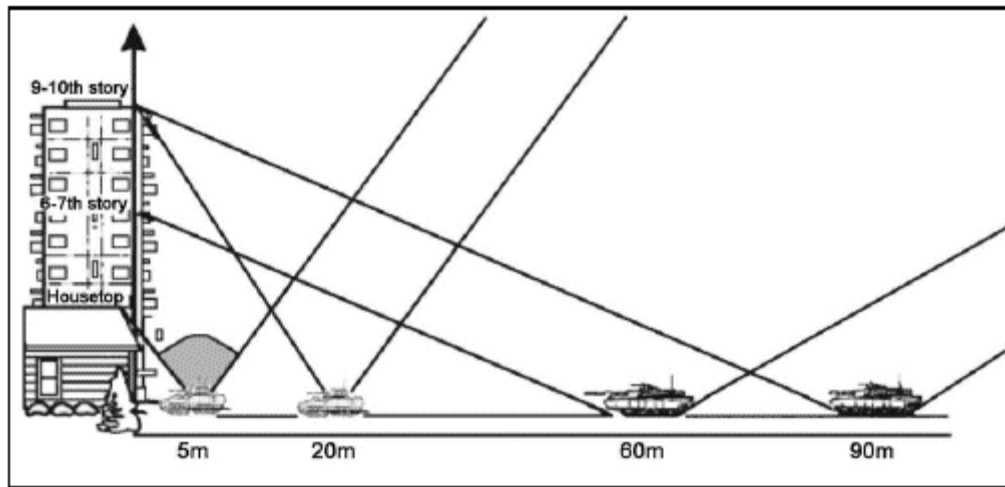


Figure A-2. Comparison of Scout Vehicles and Tank Fields of Fire.

A-14. **Movement.** When moving on a large enough street, the vehicle remains buttoned up, hugs the buildings on one side of the street, and covers the opposite side of the street. The next vehicle in line does the same on the opposite side of the street. All sights on the CFV provide decent fields of view needed for urban terrain. The Stryker RV and the HMMWV gunners have full 360-degree views; however, they must maintain their primary sectors while other crew members maintain theirs. This helps the crew detect signals from the dismounted element and detect possible enemy activity.

A-15. **Elements and Missions.** The Stryker RV platoon has mounted and dismounted elements. The other types of scout platoons may be augmented with dismounted personnel to support their mission. Based on the troop commander's guidance and the factors of METT-TC, the platoon leader determines how to deploy these elements. When supporting dismounted operations, the dismounted element provides local security for the mounted element.

A-16. **Antitank Guided Missiles.** All scout vehicles lack adequate armor protection to withstand medium to heavy ATGM fire; however, because of the reconnaissance role, the scout is the designated element to find and eliminate this threat. Commanders must implement tactical control measures to increase his scouts' survivability. Utilization of dismounts, whether organic or attached, will greatly increase survivability against close-range ATGM attack. Speed and stealth should be used to protect against longer range attacks, however, the scouts must not lose their focus of the reconnaissance mission.

A-17. **Offensive Task Organization.** Scouts will normally augment their parent unit in offensive operations. METT-TC always drives organization and maneuver of elements during offensive operations. Dismounted security for the scout vehicles are a key to sustained urban operations. Commanders should augment scout platoons to units that can assist in dismounted security while conducting these missions. If he needs the dismounted element for another task, he must leave sufficient local security with the scouts to protect them from an enemy counterattack or anti-armor ambush.

A-18. **Assault tasks.** Scouts must be prepared to conduct the security portion of an assault task and assist in the assault if the situation arises. Normally, a scout will not conduct an assault order without support. A

commander that has scout vehicles for an assault mission must remember to organize sufficient dismounted personnel with the vehicles to protect them.

A-19. **Support tasks.** A scout platoon will most likely be assigned the support element tasks in urban operations. When acting as the support element in an urban assault, the scout platoon usually provides direct-fire support and other aid as needed to support the assault element. When leading the support element, the scout platoon leader commands and controls his platoon and other support element assets. Some of the platoon's support tasks are:

- Use the 25-mm gun, the 7.62-mm coax machine gun, and other dismounted assets, and suppress the enemy within the objective building(s) and adjacent structures.
- Breach walls enroute to and within the objective buildings.
- Use the 25-mm gun and the 7.62-mm coax machine gun to destroy enemy positions within a building.
- Provide replacements for the assault element.
- Provide a mobile reserve for the company team.
- Resupply ammunition and explosives.
- Evacuate casualties, prisoners, and noncombatants/friendlies.

A-20. **Direct-Fire Support.** Ideally, scouts provide direct-fire support to infantry. The scouts move with the infantry, when possible, and engage targets encountered (see Figures A-3 and A-4). The scout vehicle's dash speed (acceleration) enables it to rapidly cross streets, open areas, or alleys.

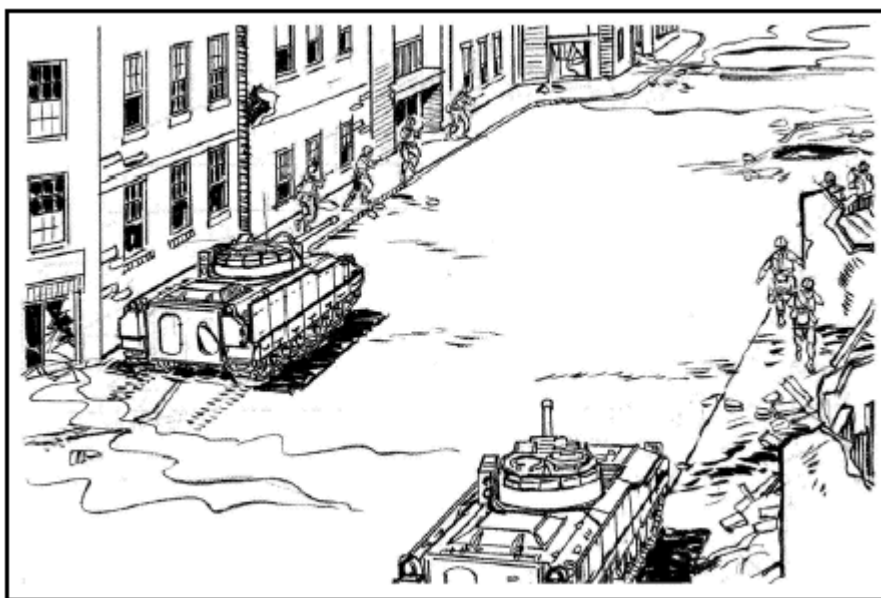


Figure A-3. Movement with Dismounted Element.

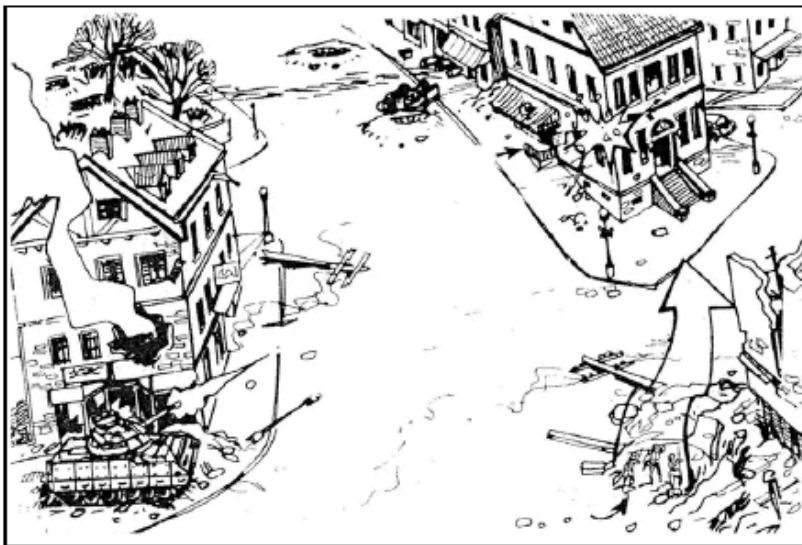


Figure A-4. Support by the 25-mm gun for the Dismounted Element.

A-21. **Safety.** As with all operations, safety of personnel is of the utmost importance. This is especially difficult to maintain in the confined, close quarters of urban operations. The scout must maintain his situational awareness as well as that of the elements with whom he is working. Rehearsals before and constant communication during the operation are essential; they provide information on location and activities of friendly elements.

A-22. Using the 25-mm gun to support dismounted personnel naturally requires CFV personnel to observe certain safety considerations. High-explosive 25-mm rounds arm 10 meters from the gun and explode on contact. Because the APDS-T round discards plastic sabots to the front of the gun, the 25-mm has a 60-degree safety fan. This fan extends 30 degrees to each side of the gun-target line and out 100 meters to the front of the gun (see Figure A-5). Thus, when the gunner or commander fires armor-piercing rounds, exposed soldiers must remain to the rear of the 25-mm's muzzle (outside the 60-degree arc) or at least 100 meters from the muzzle blast.

A-23. To prevent fratricide, scout units must develop SOPs to help crews identify friendly elements, to include dismounted soldiers. When attached to another unit, the scouts must become familiar with the gaining unit's SOP for marking. They can mark load-bearing equipment (LBE), helmets, or uniforms with reverse-polarity tape, thermal or chemical lights, and so on; however, use of such measures must be weighed against the enemy's thermal capabilities. For example, the LRAS3 and the CFV's ISU/IBAS allow the viewer to see helmet bands and LBEs marked with reverse-polarity tape.

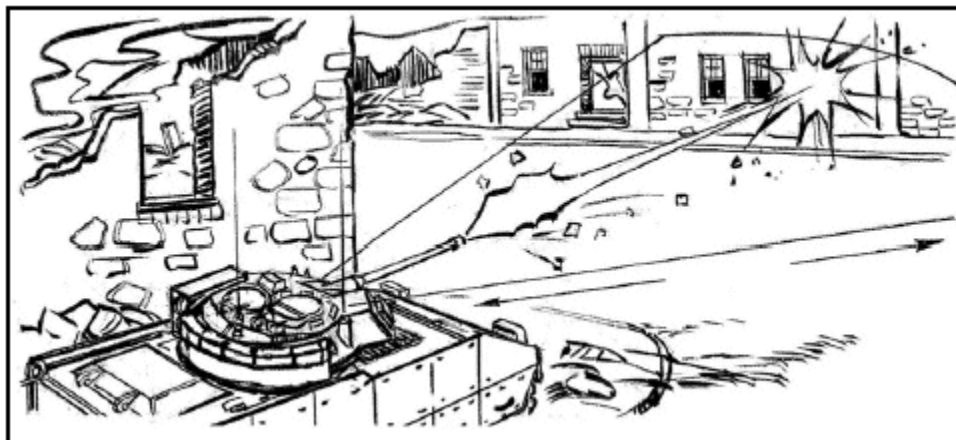


Figure A-5. Safety Fan for 25-mm Gun.

A-24. **Isolation of a Building.** Support of an infantry assault on a building is a common mission for scouts. With their organic firepower, scouts can isolate the building from enemy reinforcements and suppress enemy positions in adjacent buildings. To isolate a building, the scouts must take an overwatch position that gives gunners the ability to fire their weapons and create a clear path for the assault force. They may also adjust indirect fire to suppress enemy troops in the building and in nearby buildings who can fire at the assault force. Communication with the assault force is mandatory. This will allow the scouts to know when and where to shift fires when the assault force moves in.

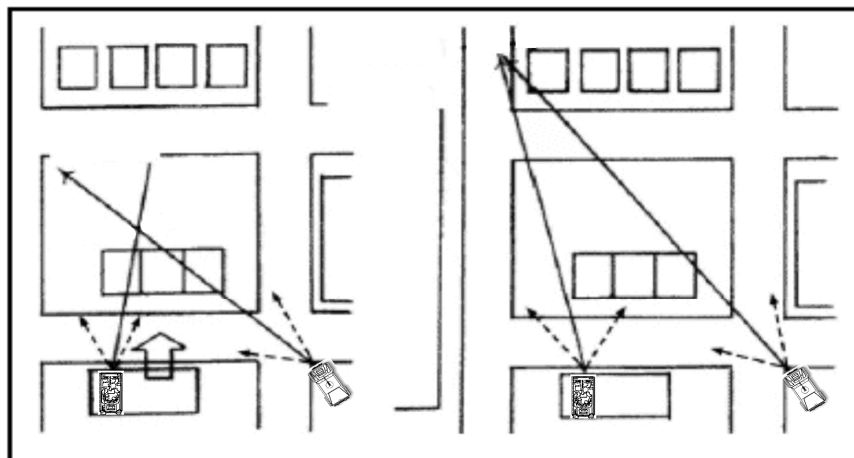


Figure A-6. Isolation of a Building and Shifting of Fires.

Defensive Tasks

A-25. In the defense, scouts will usually support their parent unit; however, the scout unit must be prepared to conduct the defense without support. The following are typical defensive tasks given to a scout crew in the defense:

- Provide fire support for dismounted elements and mutual support to other vehicles.
- Destroy enemy armored vehicles and direct-fire artillery pieces.
- Destroy or make enemy footholds untenable.
- Provide rapid, protected transport for rifle teams or other infantry elements.
- Reinforce threatened areas by movement through covered and concealed routes to new firing positions.
- Provide mutual support to other antiarmor fires.
- Provide flank security for the parent unit.
- Provide a mobile reserve and counterattack force.
- Provide resupply of ammunition and other supplies to friendly elements.
- Evacuate casualties, prisoners, and noncombatants/friendlies.

Note. Weigh the overall value of the scout vehicle to the defense against the need to resupply or evacuate casualties.

DEFENSIVE PLAN

A-26. In the security and economy-of-force roles, the scouts should be integrated into the battalion/squadron defensive fire plan. The weapon system's fields of fire cover streets and open areas; TOWs are used to cover armor avenues of approach. Once placed in their position and integrated into the fire plan, the vehicles should

not be moved for logistical or administrative functions. Other vehicles should accomplish these functions, when possible.

A-27. Positioning of Vehicles and Weapons. Once the commander gives the scout platoon leader his mission, the platoon leader will position his vehicles and dismounts. Dismounted machine guns should be positioned to have grazing fire. For the vehicle mounted machine guns to have grazing fire, the vehicles must be in a hull-down position. The elements are assigned primary, alternate, and supplementary positions. ATGMs should be positioned on upper stories for longer range and to permit firing at the tops of armored vehicles. These positions should permit continuous coverage of the primary sectors and all-around defense.

A-28. Engagement Ranges. Due to the close engagement ranges on urban terrain, the 25-mm guns and machine guns are used more than TOWs. Short ranges degrade the TOW's capability, so units must rely instead on Dragons, Javelins, and AT4s, if so equipped. ATGM and AT positions should be placed where they can support the vehicles (Figure A-7), but must not attract enemy attention to the vehicle's location. Dragons, Javelins, and AT4s are much more effective against the flanks, rear, and tops of enemy armored vehicles and should be positioned to attack those areas. TOWs are also employed against enemy armored vehicles; however, minimum arming distances and back blast areas should always be taken into consideration during employment.



Figure A-7. Position of AT4 Supporting BFV.

Note. TOWs on the CFV cannot be dismounted. Commanders must determine which weapon will work most effectively against the threat he is anticipating. Ideally, the CFV should be positioned to take advantage of all the weapons on the vehicle.

A-29. Integration of Fires. All of the scout's crew-served weapons are integrated with the rest of the company/troop's weapons and assets. The positions are recorded on a company/troop sector sketch and forwarded to battalion/squadron.

Safety

A-30. Safety is a major concern in every training event, especially those conducted in combined-arms collective training facilities (CACTF) and urban training sites where combat vehicles and personnel are maneuvering. DA Pam 385-63 provides guidance for firing ammunition during training. Commanders and staff agencies involved in live-fire range planning must comply with all aspects of live-fire safety. Although the use of short range training ammunition (SRTA) and subcaliber training devices does allow for increased flexibility in target placement, commanders, master gunners and other leaders must remain aware that SRTA remains lethal out to its maximum range (7.62mm, 600m and caliber .50, 700m). The amount of realism that can be achieved in

training is often impaired by inaccurate perceptions of safety regulations and policy. Careful planning, coordination with range operations, and an effective training program will allow weapons to be fired in close proximity to maneuvering elements. Reasonable amounts of risk, based on unit proficiency, may be accepted as long as risks are mitigated to prevent accidents. The standard is *no accidents during training*. Safety is the responsibility of every soldier and must be enforced at every echelon when planning and conducting the exercise. (A risk analysis must be completed before conducting any exercise.)

A-31. Early and frequent coordination with range control is imperative during the conceptualization and development of urban gunnery exercises. Leaders must develop and execute these exercises with an eye toward scout sections and platoons executing realistic tasks under conditions that mirror urban operations in the contemporary operational environment (COE). Although urban gunnery exercises are complex, they must be executed in a manner that maintains appropriate safety measures; therefore, COE implementation and safety considerations are integrated throughout this chapter.

SECTION II - CONDUCT OF SECTION AND PLATOON URBAN GUNNERY EXERCISE (S/PUGEX)

A-32. The section and platoon urban gunnery exercises are used to train sections and platoons in direct-fire control, distribution, maneuver, and command and control within a COE-based urban tactical scenario. S/PUGEXs require both a night and day phase and are prerequisites for participation in CAUGXs. The urban scenario must be designed to challenge the section and/or platoon leader's command and control capabilities. It must also test the unit's ability to engage moving and stationary ground targets. Table S/PUGEX scenarios must also include friendly and noncombatant targetry presentations. The primary means of conducting these exercises is with the barrel replacement subcaliber training device, caliber .50 recoil amplifier, and 7.62mm and caliber .50 SRTA. The alternate method is to use 7.62mm and caliber .50 blank ammunitions coupled with laser-based training devices. Sections and platoons must successfully conduct dry runs and be certified by the company/troop commander prior to execution of a live-fire S/PUGEX. These dry runs also reinforce the platoon direct-fire control, distribution, and command and control SOPs as well as decrease the risk of a live-fire accident. During the conduct of the exercise, section and platoon digital and FM communications should be routed through the nonfiring platoon leader, platoon sergeant or company XO in accordance with the company/troop SOP.

A-33. Although the preliminary tables contain urban engagements, they do not adequately train and evaluate scout crews in urban target maneuver, target acquisition, and engagement techniques. The complexity of urban combat can only be replicated within CACTFs and other urban training sites where scout crews and leaders can train and certify in urban combat under the stresses of a live-fire scenario.

Concept

A-34. Section and platoon urban gunnery exercises are offensive-based training events conducted within a CACTF or other urban training sites having the required surface danger zone. Units that only have access to CACTFs or urban training facilities not having the required surface danger zones can conduct S/PUGEXs using blank ammunitions coupled with laser-based training devices. S/PUGEXs are designed to train sections and platoons in direct-fire control, distribution, maneuver, and command and control within a COE-based urban tactical scenario. S/PUGEXs require day and night phases that follow the guidelines developed by the U.S. Army Armor Center, Fort Knox, KY.

A-35. Section and platoon urban gunnery exercises must begin with an OPORD issued to the platoon or section by the platoon leader or section sergeant. Graphics used to control movement within the urban complex and sectors of fire and axes of advance (facility limitations) will be developed as a hard copy and transmitted, if capable, via digital communications. Platoon and section leaders must develop their own additional direct-fire control and distribution measures and maneuver graphics using the platoon or company SOP. SITREPs and FRAGOs used to control the section or platoon will be issued based on these graphics.

A-36. Section and platoon urban gunnery exercises must include the following—

- An offensive-based scenario linking both live-fire and maneuver tasks, to include but not limited to:
 - Conduct Troop-Leading Procedures (17-2-0065.17-RSTT).
 - Conduct Assembly Area Activities (17-2-2000.17-RSTT).

- Conduct a Tactical Road March (17-2-0212.17-RSTT).
- Conduct Tactical Movement (17-2-1016.17-RSTT).
- Execute Actions on Contact (17-2-0221.17-RSTT).
- Conduct Urban Area Reconnaissance (17-2-4015.17-RSTT).
- Conduct Area Surveillance (17-2-0415.17-RSTT).
- Conduct Resupply Operations (17-2-0601.17-RSTT).
- Conduct a Hasty Attack (17-2-2450.17-RSTT).
- Reorganize (17-2-9267.17-RSTT).
- Targetry and target presentations that reflect the COE:
 - Friendly and noncombatant target arrays.
 - Enemy infantry, tanks, IFVs, and technical trucks (100 to 2,200 meters).
 - Enemy RPG/sapper teams on roof tops and within first- and second-story buildings.
- Troop-leading procedures conducted by the platoon leader, platoon sergeant, and section sergeants.
- Leader's reconnaissance of the section's zone of attack conducted by the platoon leader and vehicle commanders before executing the exercise.
- Administrative and safety briefings required by local regulations.

Note. All reports, orders, and graphics will be sent digitally, along with backup hard copies. During contact, however, FM will be the primary means of communications for the section. Digital communications will continue as soon as the tactical situation permits its use.

Prerequisite

A-37. Scout crews must qualify Table VIII within six months of their participation in a S/PUGEX. Scout sections and platoons must complete a full-up dry run of the S/PUGEX and be certified by the troop or company commander prior to live-fire execution.

Conduct of the Exercise

A-38. The primary means of conducting these exercises is with the caliber .50 recoil amplifier and 7.62mm and caliber .50 SRTA. The alternate method is to use 7.62mm and caliber .50 blank ammunitions, coupled with laser-based training devices. Sections should conduct a virtual table and a dry run to master fire control and distribution techniques and the platoon and section SOPs prior to conducting S/PUGEXs using subcaliber ammunition.

A-39. Commanders and master gunners have the ability and freedom to design realistic scenarios that meet safety requirements while simultaneously replicating urban COE conditions. Targetry must be emplaced in a manner that permits a realistic presentation to the scout crews. The tactical tasks must be sequenced in a logical order to maintain realism within the scenario.

A-40. If a scout section fails to qualify the live-fire table, then it must be retrained using dry or virtual methods (when available) prior to reinitiating an additional live run.

Ammunition Required

A-41. Since this event is not supported by STRAC, ammunition allocations should be based on the unit's ability to procure the necessary ammunition based on the targetry guidelines below.

DEVICES REQUIRED

A-42. **M3 Recoil Amplifier.** Enables the use of caliber .50 short-range training ammunition with the M2 caliber .50 machine gun.

A-43. **Barrel Replacement Subcaliber Training Device.** Requires the M2 machine gun, coupled with the M3 recoil amplifier, to replicate use of the 25mm main gun (device is unapproved but under consideration).

TARGETRY

A-44. **Facility Protection.** Targets emplaced within CACTFs and other urban training sites to conduct S/PUGEXs must be backstopped with 3/4" plywood in line with the anticipated gun target line. Although

SRTA has a slower velocity than ball ammunition, it can still cause damage to building walls within the training site. This backstop material will eliminate undue facility damage and reduce training costs. This same backstop material should also line the forward edge of windows containing targets to protect the window frames from the strike of the SRTA.

A-45. Target lifters on the ground must also be protected because CACTFs will rarely allow units to dig target pits within the facility. Sandbags with 3/4" plywood has proven effective in protecting target lifters from the strike of SRTA.

A-46. **Targets.** The total main gun targets presented during the exercise is dependent on the training focus of the commander. Urban environments within the COE reflect a high density of machine gun targets. The number of rounds allocated depends on the type of weapon system used. Use the following to compute the number of targets to present per type of weapon system:

- Caliber .50 SRTA for CFV (barrel replacement subcaliber training device)—8 rounds per target.
- Caliber .50 SRTA for HMMWV and Stryker RV—50 rounds per target.
- 7.62 mm SRTA for all 240 machine guns—50 rounds per target.

A-47. All targets will be presented for 50 seconds. During these engagements, maximum use of targets in multiple directions is recommended. Targetry must be placed in a manner that replicates urban COE conditions. Targets should be exposed at ranges from 15 to 500 meters to replicate actual urban conditions. The target design and ammunition allocation is an art, not a science, since each target can correctly be engaged by multiple ammunition types with multiple weapon systems (such as technical trucks). The U.S. Army Armor Center, Fort Knox, KY recommends that no less than seven targets be presented during a S/PUGEX.

A-48. One RPG team target consists of three SITs dispersed over a 5-meter area. A sapper target consists of two SITs dispersed over a 2-meter area.

A-49. **Noncombatant/Friendly Targets.** The U.S. Army Armor Center, Fort Knox, KY requires the use of noncombatant targets within all gunnery tables. Friendly and noncombatant targets will be presented randomly throughout the S/PUGEXs. Noncombatant/friendly U.S. forces targets will be emplaced as follows:

- A minimum of two vehicle presentations.
- A minimum of three enemy troop presentations.
- A minimum of one night presentation.
- A minimum of two friendly/U.S. forces target presentations.
- A minimum of two noncombatant target presentations.

A-50. Noncombatant/friendly targets may consist of any number E-type silhouettes dispersed in a small group. Noncombatant/friendly targets can be wrapped in civilian shirts, painted with colors that depict civilian attire, or be life-size digital photos adhered to plywood cut outs. All noncombatant/friendly targets will be placed within the SDZ limitations and the capabilities and limitations of the weapon systems. Friendly/U.S. forces will be marked in accordance with the firing unit's SOP. Identification methods include but are not limited to VS-17 panels, thermal reflective tape, battlefield reference marking system (BRMS), and infrared (IR) strobe lights.

Scoring

A-51. The section or platoon must hit 70 percent of the targets presented. Target hit standards are—

- Any troop targets: hit with one round.
- Vehicle targets:
 - CFV 25mm: hit with three rounds.
 - All other weapons: hit with 5 rounds.

Note. A 10-percent crew duty penalty will be assessed on the final score, if any of the friendly targets or noncombatants are engaged.

A-52. Sections and platoons will be evaluated on both target hits and tactics and procedures. A section must receive a T (trained) or P (practice) on 70 percent of the tactical tasks (and subtasks) evaluated to be considered a qualified section.

A-53. The gunnery score is determined by dividing the number of targets hit by the number of targets presented.

Example:
$$\frac{\text{Targets Hit}}{\text{Targets Presented}} = \text{Gunnery Score}$$

A-54. The tactical score is determined by dividing the number of tasks (and subtasks) scored as T or P by the total number of tasks (and subtasks) evaluated.

Example:
$$\frac{\text{Targets Scored as T or P}}{\text{Total Tactical Tasks Evaluated}} = \text{Tactical Score}$$

A-55. The overall S/PUGEXs score is determined by adding the gunnery score and tactical score and dividing by two.

Example:
$$\text{Gunnery Score} + \text{Tactical Score} \div 2 = \text{Overall S/PUGEXs Score}$$

Note. The section or platoon will receive an “Unqualified” if they do not use digital communications.

A-56. Overall scoring will be as follows:

- Unqualified—0 to 69 percent.
- Qualified—70 to 79 percent.
- Superior—80 to 89 percent.
- Distinguished—90 to 100 percent.

CODES FOR SCORESHEET BLOCKS

A-57. **Weather.** Use the following codes to indicate the type of weather encountered during the test (two codes may be used; for example, a 2 and a 3 means rain and fog):

- 1—Clear.
- 2—Rain.
- 3—Fog.
- 4—Snow.

A-58. **Temperature.** Use the following codes to indicate the temperature during the test:

- 1—Less than 21°F.
- 2—21°F to 50°F.
- 3—51°F to 90°F.
- 4—Greater than 90°F.

A-59. **Visibility.** Use the following codes to indicate the visibility during the test (distance that can be seen with the unaided eye):

- 1—Less than 1,001 meters.
- 2—1,001 meters to 1,500 meters.
- 3—1,501 meters to 2,000 meters.
- 4—2,001 meters to 2,500 meters.
- 5—Greater than 2,500 meters.

Note. Units are encouraged to use the Table X scoresheet on page 6-71, 7-86, 8-86, and 9-75 of Chapters 6, 7, 8, and 9, respectively, to evaluate the S/PUGEX.

SECTION III - SECTION/PLATOON URBAN GUNNERY EXERCISE—LIVE-FIRE SCENARIO

A-60. The live fire scenarios listed in this manual for Tables IX and X can be adapted to fit a S/PUGEX; however, the U.S. Army Armor Center, Fort Knox, KY recommends that commanders and master gunners develop their own S/PUGEX scenarios to fit the particularities of the available urban training site.

A-61. Considerations:

- Target acquisition and engagement is difficult in an urban environment. Because of this, more targets must be emplaced within the urban training site than the trainer anticipates being engaged. This allows the trainer to expose those targets that the scout crews can acquire using urban scanning techniques rather than those they have no chance of seeing.
- Targets must be emplaced on multiple elevations and in multiple directions reference the crews. This will encourage proper scanning techniques.
- The scenario must be realistic. The mission must be fit with COE conditions. Cordon (isolate), convoy escort, and deliberate attack are some missions the S/PUGEX can be built around.
- Scout crews and leaders must conduct a walk through, drive through, and full-up rehearsal of the S/PUGEX prior to live-fire execution. This allows commanders to certify units and decreases the inherent safety risks.
- The RSO, target operator, and vehicle crew evaluator must walk or ride in a vehicle behind the vehicles participating in the S/PUGEX. This allows the target operator to expose those targets visible to the crews while maintaining overall range safety.

SECTION IV - SCOUT URBAN GUNNERY CONSIDERATIONS

Planning Consideration

A-62. Planning for urban gunnery requires the commanders and master gunners to take safety into account yet provide realistic training.

Target Acquisition

A-63. In urban operations, the crew's ability to detect targets will be affected by friendly and enemy smoke, fire, and dust from debris. Thermal sights reflect off glass and prevent crews from seeing through windows; therefore, crews should alternate the daylight and thermal sight while scanning. The use of hunter-killer teams is highly encouraged.

Target Engagement

A-64. Due to the short range of targets, the possible lateral spread of fleeting targets, and the speed required to engage moving targets, gunners may engage targets in low magnification in the CFV. Due to the fact that the low magnification setting does not have a reticle, the CFV crew must use BOT or TOT to engage targets.

A-65. Commanders and master gunners will have to determine the battlesight range for particular rounds on their analysis of METT-TC in conjunction with the data attained from firing tables.

Training

A-66. To prepare for urban operations, vehicle commanders and crews should practice the following procedures:

- Closed hatch operations (if applicable).
- Scanning techniques.
- Crew drills: backing up and pivot steering while engaging targets.

- Reduced fire commands.
- Battlesight and degraded-gunners techniques (if applicable).
- Rehearsals with dismounted infantry, engineers, and tankers.

SECTION V - CONDUCT OF THE COMBINED-ARMS URBAN GUNNERY EXERCISE (CAUGEX)

A-67. A CAUGEX is the culminating urban live-fire training event. It is focused at the company-team level; however, sections task organized into combined-arms platoons containing Bradleys, tanks, and engineers can also perform CAUGEXs. The CAUGEX is used to train and evaluate combined-arms units in the performance of combat missions under live-fire conditions in a realistic, COE-based, urban environment.

Concept

A-68. A CAUGEX is a costly, resource-intensive exercise in which combined-arms teams maneuver and employ organic and supporting weapon systems in an urban environment. It is the most realistic measure of a combined-arms team's ability to perform urban combat operations and should be an integral part of every unit's training program. Commanders must be aware of the limitations of the CAUGEX, particularly in regard to flank maneuvering, and firing SRTA on urban training sites. Commanders should use CAUGEXs to train certain aspects of combat readiness, such as distribution, coordination, and synchronization of direct fires with maneuver within an urban environment.

A-69. CAUGEXs are offensive-based training events conducted within a CACTF or other urban training sites having the required surface danger zone. The primary means of conducting these exercises is with the caliber .50 inbore device (Abrams-series tank), the caliber .50 recoil amplifier, barrel replacement subcaliber training device (Bradley-series fighting vehicle), 5.56mm, 7.62mm and caliber .50 SRTA. Units that only have access to CACTFs or urban training facilities not having the required surface danger zones can conduct CAUGEXs using blank ammunitions, coupled with laser-based training devices.

A-70. For an exercise of this nature to be effective, it must involve detailed planning and careful resourcing. Supplementary missions and a wide range of supporting tasks can be integrated into the exercise. Resources, including personnel, equipment, urban facilities, and backstop material must be programmed and coordinated early in the planning process to ensure that the exercise can be conducted during the day and at night.

Notes. This information is not intended to supersede the live-fire program at the Joint Readiness Training Center (JRTC), but to compliment it. Certain planning aspects described herein address common constraints at Army posts worldwide.

All reports, orders, and graphics will be sent digitally, along with backup hard copies. During contact; however, FM will be the primary means of communications. Digital communications will continue as soon as the situation permits.

Prerequisites

A-71. Individual and crew-level weapon system proficiency is a critical prerequisite to the effectiveness of the CAUGEX. It is required that participating combat platforms be qualified on Table VIII or equivalent vehicle qualification within 6 months of executing a CAUGEX. Command elements (platoon leaders; platoon sergeants; CS and CSS commanders; and company, battalion, brigade, and division commanders) must successfully participate in and complete an FCX prior to a CAUGEX.

Note. DA Pam 350-38 (STRAC) provides the frequency of resourced events. CAUGEXs are currently not resourced.

Training Philosophy

A-72. Command elements (company or battalion) participate in all aspects of planning, execution, and evaluation of CAUGEX participants. They receive reports from the maneuvering company team, issue FRAGOs, portray the friendly and enemy situation throughout the battlefield, and coordinate the maneuver and support of CS and CSS elements not under the company's span of control. If the exercise actively integrates

sustainment tasks, the command elements provide command and control and direct and support resupply and reconstitution. A CAUGEX must have at least two different weapon system platforms participating in the event (such as, tank, Bradley, engineers, and so forth).

A-73. The primary trainer during a company team CAUGEX is the battalion/squadron commander. His participation provides experience, reinforces the chain of command, and provides first-hand observation of the subordinate staff, commanders, and supporting assets. A CAUGEX gives units the opportunity to accomplish multi-echelon, combined-arms training and evaluation in an urban environment.

A-74. The training objective of a CAUGEX is to accomplish a designated urban combat mission (attack, movement to contact) with live ammunition, a realistic target array, and required CS assets. Standards are found in applicable ARTEP MTPs for the selected mission, as modified by local conditions and the commander's guidance.

A-75. The training assessment of the unit(s) is important in determining the tasks to be trained during a CAUGEX, as well as all preliminary training, which should precede all exercises.

- What is the required level of unit proficiency?
- What is the current level of training?
- What training is necessary?

Planning Guidelines

A-76. A CAUGEX is a major training event. To be realistic and effective, it must be well planned and well supported with specific consideration given to each unit and weapon system to be employed. The number of inherent supporting missions and tasks that are exercised may vary according to a number of planning factors, such as the number and types of weapon systems used, the nature of the training facilities, and weather conditions anticipated for the exercise. The capabilities of the ranges (target pits, lifting devices, control console, facility limits, weapons authorized, maneuver freedom, and range time available) have an impact on the conduct of the exercise.

A-77. Long-range planning considerations is crucial in the allocation of major resources, identification of participants, and the prerequisite training needed prior to a CAUGEX.

A-78. Short-range planning includes the identification and allocation of ammunition, petroleum, oils, and lubricants equipment and support personnel. Coordination for facilities and resources should be continued. Scenario development is initiated during the short-range planning phase. Prerequisite individual and collective training continues throughout the planning phases.

A-79. Detailed planning by the control headquarters focuses on the training objectives and development of the scenario. The mission specified by the control headquarters may be the same primary mission for each company, or it may vary between companies. The inherent tasks to be exercised may be specified in the commander's initial guidance, or developed as the scenario is designed.

A-80. The S2 develops the appropriate threat array based on threat doctrine. The participating units' S1s, S4s, and battalion maintenance officers (BMO) provide the estimate of troops and equipment available for the exercise. The identification of CS assets, internal support capabilities, and external tasking requirements is crucial in the early stages of a CAUGEX.

A-81. Once the control headquarters approves the scenario concept, the scenario is drafted and submitted for the approval of the range control. The firing overlay is included with the scenario. From the scenario, the OPORD and control plans are developed, and the detailed schedule is finalized and published.

A-82. The scenario is written in narrative format with key cues and responses in operational terms. Different installations vary in the degree of detail required. As much maneuver freedom as possible should be retained for the maneuver commanders.

A-83. As in all preceding gunnery tables, friendly and noncombatant target array presentations must be integrated to further enforce fire control and discipline among CAUGEX players.

A-84. Planners must not underestimate the time and resources required in the planning and conduct of a CAUGEX.

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Glossary

AAR	after-action review
ABS	antilock brake system
ADR	air defense reticle
ammo	ammunition
AP	armor piercing
APC	armored personnel carrier
APDS	armor-piercing discarding sabot (ammunition)
APDS-T	armor-piercing discarding sabot tracer (ammunition)
APFSDS-T	armor-piercing fin-stabilized discarding sabot tracer (ammunition)
API	armor-piercing incendiary (ammunition)
API-T	armor-piercing incendiary tracer (ammunition)
AR	Army regulation
ARTEP	Army Training and Evaluation Program
ATGM	antitank guided missile
ATSS	area target scoring system
ATT	automatic target tracker
attn	attention
ATWESS	antitank weapon effect signature simulation
BAM	Bradley advanced matrix
BATS	Bradley advanced training system
BCPC	Basic Crew Proficiency Course
BDA	battle damage assessment
BELRF	Bradley eye-safe laser range finder
BFA	blank firing adapter
BGM	ballistic guided missile
BII	basic issue items
BIT	built-in test
BMP	Soviet vehicle
BOT	burst on target
BP	battle position

BPI	bolt position indicator
BRMS	battlefield reflective marking system
BSS	ballistic solution software
C	celsius
C2	command and control
CACTF	combined arms collective training facilities
CAUGEX	combined arms urban gunnery exercise
CCTT	close combat tactical trainer
CEEP	crew evaluator exportable packet
CFF	call for fire
CFT	captive flight trainer
CFV	cavalry fighting vehicle
CGE	command guidance electronics
CGF	computer-generated force
CHS	commander's handstation
CIP	combat identification panels (also called battle boards)
CIPC	Crew Integrated Proficiency Course
CIV	commander's independent viewer
CLU	command launch unit
cm	centimeter(s)
COB	civilians on the battlefield
COE	comtemporany operating environment
COFT	conduct-of-fire trainer
CP	command post; control panel
CSE	commander's sight extension
CTD	commander's tactical display
CTIS	central tire inflation system
DA	Department of the Army
D.C.	District of Columbia
DC	direct current
DCGE	digital command guidance electronics
DCS	digital compass system
DODIC	Department of Defense Identification Code
DTG	date-time group
DUD	driver unit dual
DVE	driver's vision enhancer
DVO	direct-view optics

eng	engagement
EPD	environmental parameter data
ELRF	eye-safe laser rangefinder
etc	et cetera (and so forth)
F	fahrenheit; fire (safety switch nomenclature)
FBCB2	Force XXI Battle Command Brigade and Below
FCS	fire control system
FCSW	fire control software
FGM	flight guidance module
FIST	fire support team
FIST-V	fire support team vehicle
FLASHWESS	flash weapon effects signature simulator
FLIR	forward-looking infrared
FM	field manual
FOV	field of view
FPS	feet per second
FRAGO	fragmentary order
ft	foot (feet)
FT	firing target
FTT	field tactical trainer
FTX	field training exercise
G _D	gunnery (targets) destroyed (formula for scoring procedures for Tables IX and X)
GHS	gunner's handstation
G _P	gunnery (targets) presented (formula for scoring procedures for Tables IX and X)
GPS	gunner's primary sight
GST	gunnery skills test
HB	heavy barrel
HE	high explosive
HEI-T	high-explosive incendiary tracer (ammunition)
HEUI	hydraulic electronic unit injector
HMMWV	high-mobility, multipurpose wheeled vehicle
HMS	height management system
hp	horsepower
HUMINT	human intelligence
IAW	in accordance with
IBAS	improved Bradley acquisition subsystem

IC3	integrated communications, command, and control
IED	improvised explosive devices
IFV	infantry fighting vehicle
INU	inertial navigation unit
IO	instructor operator
IR	infrared
ISU	integrated sight unit
ITOW	improved TOW (see also TOW)
JRTC	Joint Readiness Training Center
kg	kilogram(s)
km	kilometer(s)
kmph	kilometers per hour
KY	Kentucky
lb	pound
LBE	load-bearing equipment
LCD	liquid crystal display (computer display)
LFX	live-fire exercise
LiSO ₂	lithium-sulfur-dioxide (battery)
LOA	limit of advance
LRAS3	long-range advanced scout surveillance system
LRF	laser range finder
LTA	local training area
LTID	laser target interface device
m	meter(s)
mil	mil
max	maximum
MCD	missile countermeasure device
MCOFT	mobile conduct-of-fire trainer
METL	mission-essential task list
METT-TC	mission, enemy, terrain (and weather), troops (and support available), time available, and civilian considerations (factors taken into account in situational awareness and in the mission analysis process)
MGS	missile guidance system
mi	mile(s)
MILES	multiple integrated laser engagement system
MITTS	mobile igor tracking telescope system
mm	millimeter(s)

MOPP	mission-oriented protective posture
mph	miles per hour
MPRC	multipurpose range complex
mps	meters per second
MRE	meals, ready-to-eat
MSR	missile simulation round
MTP	mission training plan
MTT	mobile training team
NA	not applicable
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NFOV	narrow field of view
NVS	night-vision sight
ODS	Operation Desert Storm
OIC	officer in charge
OP	observation post
OPFOR	opposing forces
OPORD	operations order
P	practive
PC	personnel carrier
PD	primer detonating
PEWS	platoon early warning system
PGS	precision-gunnery system
P_H	probability of hit
PIBD	point initiating, base detonating
P_K	probability of kill
PLGR	precision lightweight GPS receiver (see also GPS)
PMCS	preventive maintenance checks and services
POL	petroleums, oils, and lubricants
POS/NAV	positioning/navigation (subsystem)
R	right; range factor (used in mil-relation formula to determine range to a target using binoculars)
RBD	remote biocular display
RC	Reserve Component
rds	rounds

REMS	remotely emplaced and monitored sensor
ROE	rules of engagement
RP	reference point
RPG	rocket-propelled grenade
rpm	p. 2-10, Table 2-4
RSO	range safety officer
RSTA	reconnaissance, surveillance, and target acquisition
RTO	radiotelephone operator
RV	reconnaissance vehicle (Stryker)
S	safe (safety switch position nomenclature)
SALT	size, activity, location, and time (abbreviated SALUTE report)
SALUTE	size, activity, location, unit, time, and equipment
SCB	system control box
sec	second(s)
SIMNET	simulations network
SINGARS	single-channel ground/airborne radio system
SIT	stationary infantry targets (troop targets)
SITREP	situation report
SLD	squad leader's display
SOP	standing operating procedures
SP	self-propelled
SPC	special-purpose computer
SPF	special forces
SPOTREP	spot report
S/PUGEX	scout and platoon urban gunnery exercise
SRM	short-range marksmanship
SRTA	short-range training ammunition
STRAC	Standards in Training Commission
STX	situational training exercise
T	tracer; trained
TACNAV	tactical navigation (system)
TAS	target acquisition system
TB	technical bulletin
TBOS	tracer burst obscuration system
TC	training circular
TCPC	TOW crew proficiency course
TD	technical document

TDIP	training device interface panel
TDS	turret drive system
T _E	(tactical) tasks evaluated (formula for scoring procedure for Tables IX and X)
T&E	traverse and elevation
thru	through
TM	technical manual
TOE	table of organization and equipment
TOT	tracer-on-target
TOW	tube-launched, optically tracked, wire-guided (missile)
T _P	(tactical) tasks passed (formula for scoring procedure for Tables IX and X)
TP	target practice
TPDS-T	target practice discarding sabot tracer (ammunition)
TP-T	target practice tracer (ammunition)
TRADOC	(U.S. Army) Training and Doctrine Command
TRC	training readiness condition
TRP	target reference point
TSB	training support brigade
TSC	training support center
TSV	thru-sight vehicle
TUAV	tactical unmanned aerial vehicle
TWGSS	tank weapons gunnery simulation system
TWS	thermal weapon sight
UCOFT	unit conduct-of-fire trainer
UNSAT	unsatisfactory
UO	urban operations
U.S.	United States (of America)
USAREUR	United States Army Europe
UXD	unexploded ordnance
VC	vehicle commander
VCE	vehicle crew evaluator
VCEEP	vehicle crew evaluator exportable packet
VIGS	videodisc integrated gunnery simulator
VMS	vehicle motion sensor
VPC	vehicle power conditioner
W	known target measurement factor (used in mil-relation formula to determine range to a target using binoculars)

WFOV	wide field of view
WRP	weapon reference point
X	power (magnification)

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SCOUT GUNNERY SKILLS TEST CHECKSHEET

For use of this form, see FM 3-20.8; the proponent agency is TRADOC.

1. NAME	2. RANK	3. UNIT	4. TEST DATE (YYYYMMDD)
5. DUTY POSITION	6. BUMPER #	7. EVALUATOR'S NAME	8. OVERALL RATING ☐ GO ☐ NO-GO
9. REMARKS			

Note: Evaluators will initial in the appropriate box to indicate the outcome of each task (GO or NO-GO) and annotate the number of

10. TASK TITLE	GO	NO-GO	NUMBER OF RETESTS
Task 1 Remove...an M242 25-mm Gun.			
Task 2 Load a 25-mm Gun Feeder.			
Task 3 Unload and Clear an M242 25-mm Gun Feeder.			
Task 4 Load and Unload the 25-mm AP Ready Box.			
Task 5 Load and Unload the 25-mm HE Ready Box.			
Task 6 Apply Immediate Action on an M242 25-mm Gun.			
Task 7 Disassemble...an M240C Coaxial Machine Gun.			
Task 8/8A Install an M240C Coaxial Machine Gun.			
Task 9/9A Remove an M240C Coaxial Machine Gun.			
Task 10/10A Load...an M240C Coaxial Machine Gun.			
Task 11/11A Clear M240C and Unload 7.62-mm Ammunition.			
Task 12 Raise...the TOW Launcher in the Power Mode.			
Task 13 Raise and Lower the TOW Launcher in the Manual Mode.			
Task 14 Load the CFV TOW Launcher.			
Task 15 Fire and Apply Immediate Action for a TOW Misfire.			
Task 16 Remove a Misfired TOW Missile from the TOW Launcher.			
Task 17/17A Boresight the Turret Weapon Systems.			
Task 18 Prepare a Range Card.			
Task 19 Identify Combat Vehicles.			
Task 20/20A Clear...an M240B/M60 Machine Gun.			
Task 21/21A Mount...the Unit-Issued Night-Vision Sight.			
Task 22 Clear...an M2 HB Machine Gun.			
Task 23 Clear...an MK-19 40-mm Machine Gun.			
Task 24 Mount...the Unit-Issued Night-Vision Sight on M2 HB Machine Gun.			
Task 25 Mount...Unit-Issued Night-Vision Sight on the MK-19 40-mm Machine Gun.			
Task 26 Load, Arm, and Unload an Encased TOW Missile.			
Task 27 Perform...for a Hangfire or Misfire on an M220-A2 TOW Missile Launcher on an M966 HMMWV.			
Task 28 Stow an M220-A1 TOW Launcher System in an M966 HMMWV and Place an M966 HMMWV in the Ready-to-Fire Configuration.			
Task 29 Assemble the M220-A2 TOW Launcher System.			

SCOUT GUNNERY TABLE ROLL-UP SHEET

For use of this form, see FM 3-20.8; the proponent agency is TRADOC.

1. VEHICLE <i>(Check one)</i> ☐ CFV ☐ HMMWV ☐ RV ☐ TOW					2. TABLE
3. BUMPER #	4. UNIT		5. RANGE		6. SCORE AND RATING
7a. CREWMAN RANK, NAME, POSITION		7b. CREWMAN RANK, NAME, POSITION		7c. CREWMAN RANK, NAME, POSITION	
7d. CREWMAN RANK, NAME, POSITION		7e. CREWMAN RANK, NAME, POSITION		7f. CREWMAN RANK, NAME, POSITION	
8. DAY RUN DTG	9. EVALUATOR'S UNIT		10. DAY EVALUATOR NAME		11. EVALUATOR SIGNATURE
12. DAY SCORE	a. TARGET 1 <i>(Type, Max Time, Kill Time)</i>	b. TARGET 2 <i>(Type, Max Time, Kill Time)</i>	c. TARGET 3 <i>(Type, Max Time, Kill Time)</i>	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
13. NIGHT RUN DTG	14. EVALUATOR'S UNIT		15. NIGHT EVALUATOR NAME		16. EVALUATOR SIGNATURE
17. NIGHT SCORE	a. TARGET 1 <i>(Type, Max Time, Kill Time)</i>	b. TARGET 2 <i>(Type, Max Time, Kill Time)</i>	c. TARGET 3 <i>(Type, Max Time, Kill Time)</i>	d. CREW PENALTIES AND DEDUCTIONS	e. ENG SCORE
Eng 1 Task #					
Eng 2 Task #					
Eng 3 Task #					
Eng 4 Task #					
Eng 5 Task #					
Eng 6 Task #					
Eng 7 Task #					
18a. VEHICLE COMMANDER'S NAME			18b. VEHICLE COMMANDER'S SIGNATURE		
19a. HEAD EVALUATOR'S NAME			19b. HEAD EVALUATOR'S SIGNATURE		

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DA FORM 7565-R, APR 2005 APD V1.00

FM 3-20.8
15 August 2005

By Order of the Secretary of the Army:

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0520701

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