

November 1998

FM 17-12-8

LIGHT CAVALRY GUNNERY

Headquarters, Department of the Army



DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

LIGHT CAVALRY GUNNERY

Table of Contents

	Page
Preface	vi
Chapter 1. Introduction	1-1
Purpose	1-1
Scope	1-1
Chapter 2. Weapon Systems and Ammunition Capabilities	2-1
M60 7.62-mm Machine Gun	2-1
M240B 7.62-mm Machine Gun	2-1
M2 HB Caliber .50 Machine Gun	2-2
MK 19 40-mm Grenade Machine Gun	2-2
Tube-Launched, Optically Tracked, Wire-Guided (TOW)	
Weapon System	2-3
Weapon Systems Characteristics.....	2-5
Chapter 3. Target Acquisition	3-1
Crew Search.....	3-1
Target Detection.....	3-5
Target Location	3-8
Target Identification.....	3-8
Battlefield Combat Identification System (BCIS).....	3-9
Target Classification	3-9
Target Confirmation.....	3-10
Acquisition Reports.....	3-11
Chapter 4. Range Determination	4-1
Primary Range Determination Methods.....	4-1
Other Methods	4-3
Chapter 5. Fire Commands	5-1
Elements of a Fire Command	5-1
Types of Fire Commands.....	5-3
Crew Duties in Response to a Fire Command	5-8
Crew Ready Reports	5-8

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

*This publication supersedes FM 17-12-8, 28 October 1994.

	Page
Chapter 6. Engagement Techniques	6-1
Machine Gun Engagement Techniques	6-1
Range Card Techniques	6-7
Chapter 7. Fire Control and Distribution.....	7-1
Principles of Fire Control and Distribution	7-1
Standing Operating Procedures	7-2
Fire Control Measures	7-2
Fire Distribution	7-3
Platoon Fire Planning	7-4
Platoon and Section Fire Commands.....	7-5
Chapter 8. Training Management and Unit Training Plans.....	8-1
Master Gunner	8-1
Crew Stability Management.....	8-2
Long-Range Planning	8-3
Short-Range Planning	8-3
Near-Term Training Plan	8-4
Chapter 9. Range Operations	9-1
Range Operations	9-1
Range and Training Area Reconnaissance	9-4
Range and Training Area Personnel, Equipment, and Layout	9-5
Scaled Ranges.....	9-9
Training Devices	9-11
Chapter 10. Prepare to Fire.....	10-1
Prefire Checklist	10-1
Chapter 11. TOW Training Program.....	11-1
Training Assessment and Planning	11-1
Collective Training	11-3
TOW Training Phases	11-3
TOW Gunnery Trainer	11-4
TOW Field Tactical Trainer.....	11-5
M70-Series Training Set.....	11-6
DA Form 5107-R.....	11-9
Gunner's Skill Test.....	11-11
Field Tracking	11-12

	Page
Chapter 12. Light Cavalry Tables.....	12-1
Machine Gun Gunnery Program.....	12-1
M2 HB Caliber .50 Basic Gunnery Tables	12-13
M2 HB Caliber .50 Intermediate Gunnery Tables	12-31
MK 19 40-mm Grenade Basic and Intermediate Gunnery Tables.....	12-68
TOW Basic and Intermediate Tables	12-110
Chapter 13. Scout Section Gunnery	13-1
Tactical Training.....	13-1
Evaluation Procedures	13-2
Table IX—Section Training Course	13-3
Table X—Section Qualification Course	13-5
Appendix A. Test Administrative Guides and Criterion Scoring	
Checklists for the GST	A-1
Administrative Procedures.....	A-1
Prerequisites.....	A-1
Evaluation Procedures	A-1
Evaluation Criteria	A-2
Scoring.....	A-2
Performance Checklists	A-2
Station 1. Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on an M60 Machine Gun.....	A-3
Station 1A. Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on an M240B Machine Gun.....	A-6
Station 2. Clear, Disassemble (Field Strip), Assemble, Set Headspace and Timing, Perform a Function Check, Load, and Perform Immediate Action on an M2 HB Machine Gun.....	A-10
Station 3. Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on a MK 19 Machine Gun	A-16
Station 4. Prepare a Sector Sketch, and Engage Targets Using the Sector Sketch Data	A-20
Station 5. Mount, Place Into Operation, and Dismount the AN/TVS-5 Night-Vision Sight (Using the M2 HB Machine Gun).....	A-23
Station 6. Mount, Place Into Operation, and Dismount the AN/TVS-5 Night-Vision Sight (Using the MK 19 Machine Gun).....	A-25
Station 7. Mount, Place Into Operation, and Dismount the AN/PVS-4 Night-Vision Sight (Using the M60 Machine Gun).....	A-27
Station 7A. Mount, Place Into Operation, and Dismount the AN/PVS-4 Night-Vision Sight (Using the M240B Machine Gun).....	A-30
Station 8. Identify Combat Vehicles.....	A-33
Overall Scoresheet.....	A-36

	Page
Appendix B. TOW Gunnery Skills Test.....	B-1
Administrative Procedures	B-1
Prerequisites	B-1
Evaluation Procedures	B-1
Evaluation Criteria	B-2
Scoring	B-2
Performance Checklists.....	B-2
Station 1. Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on an M60 Machine Gun	B-3
Station 1A. Clear, Disassemble (Field Strip), Assemble, Perform a Function Check, Load, and Perform Immediate Action on an M240B Machine Gun	B-6
Station 2. Mount, Place Into Operation, and Dismount the AN/PVS-4 Night-Vision Sight (Using the M60 Machine Gun)	B-10
Station 2A. Mount, Place Into Operation, and Dismount the AN/PVS-4 Night-Vision Sight (Using the M240B Machine Gun)	B-13
Station 3. Load, Arm, and Unload an Encased TOW Missile	B-16
Station 4. Perform Immediate Action Procedures for a Hangfire or Misfire of an M220-A2 TOW Missile Launcher (Mounted on an M966 HMMWV)	B-19
Station 5. Conduct a System Check-out Procedure and Preoperational Inspection on an M220-A2 TOW Launcher System and Encased Missile	B-21
Station 6. Identify Combat Vehicles	B-23
Station 7. Determine if a Target can be Engaged by an M220-Series TOW Launcher System.....	B-26
Station 8. Prepare an Antiarmor Range Card	B-28
Station 9. Assemble the M220-A2 TOW Launcher System	B-31
Station 10. Install an M220-A2 TOW Launcher System and an Encased Missile on an M966 HMMWV.....	B-33
Station 11. Place an M966 HMMWV in the Ready-to-Fire Configuration	B-35
Overall Scoresheet	B-37
 Appendix C. Scout Section Gunnery Tactical Tasks.....	 C-1
Execute Actions on Contact	C-2
Report Enemy Information.....	C-3
Call For and Adjust Indirect Fire	C-4
Conduct a Tactical Movement.....	C-5
Control Scout Section Fires.....	C-6
Conduct a Screen	C-7
Perform a Passage of Lines	C-8
Select Firing Positions	C-9
Perform a Zone Reconnaissance.....	C-10
Coordinate with an Adjacent Platoon	C-12
Perform an Area Reconnaissance	C-13
Perform a Route Reconnaissance.....	C-15

	Page
Perform Reconnaissance by Fire	C-16
Prepare a Route Reconnaissance Overlay.....	C-17
Emplace and Retrieve a Hasty Protective Minefield	C-18
Execute a Dismounted Patrol.....	C-21
Conduct a Defense by a Squad.....	C-23
Reorganize a Squad Following Enemy Contact While in the Defense.....	C-24
Conduct Unmasking Procedures	C-25
Cross a Chemically Contaminated Area.....	C-26
Prepare and Submit NBC-4 Reports.....	C-27
Prepare and Submit NBC-1 Reports.....	C-28
Calculate and Designate Placement of Steel-Cutting Charges	C-30
Calculate and Designate Placement of Timber-Cutting Charges ..	C-30
React to Indirect Fire.....	C-31
 Appendix D. Engagement Skills Trainer	D-1
Characteristics.....	D-1
Training Capabilities.....	D-3
 Glossary	Glossary-1
 References	References-1
 Index	Index-1

Preface

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

This manual is designed for vehicle commanders, platoon sergeants, and unit staff of light cavalry units to develop gunnery programs to attain and sustain combat readiness. It is a ready reference for unit commanders, vehicle commanders, and gunners. It may also be used by combat support and combat service support units, and armor and mechanized infantry HMMWV scout platoons.

The proponent of this publication is HQ TRADOC. Send changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward it to Commander, United States Army Armor Center, ATTN: ATZK-TDD-G, Fort Knox, Kentucky 40121-5212. E-mail: CGD@ftknox-dtdd-emh5.army.mil.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

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, light cavalry crews must be well trained and prepared to take maximum advantage of these capabilities.

To defeat the threat force, light cavalry 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, light cavalry 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.

Purpose

The gunnery tactics, techniques, and procedures in this manual are unique to light cavalry 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.

This manual is intended to be a guide; units may modify the gunnery program to meet local training constraints. Gunnery tables are prepared for live fire, MILES, engagement skills trainers (EST), and other training devices. 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

This manual outlines light cavalry gunnery tables designed to attain and sustain gunnery proficiency at crew through section levels. It consists of 13 chapters and 4 appendixes.

The first 11 chapters provide combat training principles, techniques, and exercises for light cavalry crews. Light 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.
- Operate machine guns (an explanation of their functions and role during direct-fire engagements is included).
- Develop a light cavalry gunnery training program.
- Establish new training sites for light cavalry combat training.

The remaining chapters include the light cavalry gunnery tables for the M2 HB caliber .50 machine gun, the MK 19 40-mm grenade machine gun, and the TOW weapon system; the scout section tables; the tasks, conditions, and standards for the scout section gunnery skills test and the TOW section gunnery skills test; scout section gunnery tactical tasks; and information about the engagement skills trainer.