

FIELD MANUAL
No. 23-91

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 March 2000

MORTAR GUNNERY

CONTENTS

	Page
Preface	vi

Part One INTRODUCTION AND FUNDAMENTALS OF MORTAR GUNNERY

CHAPTER 1. INTRODUCTION

1-1. Organization	1-1
1-2. General Doctrine	1-1
1-3. Indirect Fire Team	1-2
1-4. Mortar Positions	1-3

CHAPTER 2. FUNDAMENTALS OF MORTAR GUNNERY

Section	I. Elements of Firing Data and Ballistics.....	2-1
	2-1. Direction.....	2-1
	2-2. Range.....	2-1
	2-3. Vertical Interval.....	2-1
	2-4. Distribution of Bursts.....	2-1
	2-5. Interior Ballistics	2-2
	2-6. Nature of Propellents and Projectile Movements.....	2-2
	2-7. Standard Muzzle Velocity.....	2-3
	2-8. Nonstandard Muzzle Velocity.....	2-3
	2-9. Exterior Ballistics.....	2-5
	2-10. Trajectory	2-5
Section	II. FIRING TABLES.....	2-7
	2-11. Purpose	2-8
	2-12. Unit Corrections	2-8
	2-13. Standard Range	2-9

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

*This publication supersedes FM 23-91, 6 December 1991.

		Page
Section	III. FIRE PLANNING.....	2-10
	2-14. Terminology	2-10
	2-15. Target Considerations	2-13
	2-16. Support of Offensive Operations.....	2-14
	2-17. Support of Defensive Operations	2-14
	2-18. Fire Support Coordination Measures	2-15
	2-19. Company Fire Support Plan	2-16
	2-20. Battalion Fire Support Plan	2-18
Section	IV. TARGET ANALYSIS AND ATTACK.....	2-19
	2-21. Target Description	2-19
	2-22. Registration and Survey Control	2-19
	2-23. Size of Attack Area	2-20
	2-24. Maximum Rate of Fire	2-20
	2-25. Amount and Type of Ammunition	2-21
	2-26. Unit Selection.....	2-23
	2-27. Typical Targets and Methods of Attack	2-24

Part Two

FIRE DIRECTION CENTER

CHAPTER 3. INTRODUCTION

3-1. Principles of Fire Direction	3-1
3-2. Organization.....	3-1
3-3. Personnel Duties.....	3-2

CHAPTER 4. MAJOR CONCERNS OF THE FIRE DIRECTION CENTER

4-1. Types of Sheaves.....	4-1
4-2. Computer's Record.....	4-2
4-3. Data Sheet	4-7
4-4. Angle T.....	4-10
4-5. Firing Tables	4-12
4-6. Ballistic Meteorological Message	4-17
4-6.1 Computer MET Message	4-31.1
4-7. The 6400-Mil MET Message	4-32
4-8. Computation of MET Corrections for Large Sector Capability	4-32
4-9. Meteorological (MET) Corrections.....	4-35

CHAPTER 5. CALL FOR FIRE

5-1. Introduction	5-1
5-2. Observer Identification.....	5-1
5-3. Warning Order.....	5-1
5-4. Target Description.....	5-2
5-5. Method of Engagement	5-3
5-6. Methods of Fire and Control	5-3

	Page
5-7. Message to Observer	5-5
5-8. Call-For-Fire Format	5-5
5-9. Authentication	5-6

Part Three

MORTAR BALLISTIC COMPUTER

CHAPTER 6. INTRODUCTION

6-1. Description	6-1
6-2. Audio Alarm.....	6-7
6-3. Capabilities.....	6-8
6-4. Memory Storage	6-9
6-5. Error Messages	6-9

CHAPTER 7. PREPARATION OF FIRE CONTROL EQUIPMENT

7-1. Types of Data Entry.....	7-1
7-2. Initialization	7-5

CHAPTER 8. TYPES OF MISSIONS

8-1. Grid Mission.....	8-1
8-2. Shift Mission	8-5
8-3. Polar Mission	8-7
8-4. Technical Fire Control	8-9
8-5. Sheaves.....	8-10
8-6. Traversing Fire	8-11
8-7. Searching or Zone Fire	8-19
8-8. Illumination	8-22
8-9. Coordinated Illumination	8-25

CHAPTER 9. SPECIAL PROCEDURES

9-1. Registration and Sheaf Adjustment.....	9-1
9-2. Mean Point of Impact Registration	9-3
9-3. Radar Registration.....	9-5
9-4. Final Protective Fires	9-8
9-5. Immediate Smoke or Immediate Suppression.....	9-11
9-6. Quick Smoke	9-12
9-7. Special Keys and Functions	9-16

CHAPTER 10. DIGITAL MESSAGE DEVICE SUPPORTED

10-1. Application	10-1
10-2. Communications	10-1

Part Four

M16 AND M19 PLOTTING BOARDS

CHAPTER 11. INTRODUCTION

11-1. M16 Plotting Board	11-1
11-2. M19 Plotting Board	11-3
11-3. Capabilities	11-4

CHAPTER 12. PREPARATION OF FIRE CONTROL EQUIPMENT

12-1. Observed Firing Charts	12-1
12-2. Modified-Observed Firing Chart	12-14
12-3. Transfer of Targets	12-19
12-4. Deflection Conversion Table	12-22
12-5. Grid Mission	12-24
12-6. Shift Mission	12-24
12-7. Polar Mission	12-25

CHAPTER 13. TYPES OF MISSIONS

13-1. Traversing Fire	13-1
13-2. Searching and Zone Fire	13-8
13-3. Illumination	13-13

CHAPTER 14. SPECIAL CONSIDERATIONS

14-1. Registration and Sheaf Adjustment	14-1
14-2. Mean Point of Impact Registration	14-12
14-3. Vertical Interval Correction Factors	14-16
14-4. Radar Registration	14-18
14-5. Final Protective Fires	14-20

APPENDIX A. MORTAR TRAINING STRATEGY	A-1
APPENDIX B. SAFETY PROCEDURES	B-1
APPENDIX C. FIELD-EXPEDIENT SURVEY TECHNIQUES	C-1
APPENDIX D. FIRE DIRECTION CENTER CERTIFICATION	D-1
APPENDIX E. TERRAIN MORTAR POSITIONING	E-1
GLOSSARY	Glossary-1
REFERENCE	References-1
INDEX	Index-1