

**ARMY, NAVY, AIR FORCE, MARINE CORPS**



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CENTER**

# **UXO**

**MULTISERVICE PROCEDURES  
FOR  
UNEXPLODED ORDNANCE  
OPERATIONS**

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**MULTISERVICE TACTICS, TECHNIQUES, AND PROCEDURES**

# PREFACE

## 1. Scope

This unclassified multiservice tactics, techniques, and procedures (MTTP) publication describes the unexploded explosive ordnance (UXO) threat and provides guidelines to minimize the impact of UXO hazards. It provides warfighting personnel at the operational and tactical levels with information to optimize UXO safety and increase efficiency, while reducing or eliminating losses of personnel and equipment to UXO hazards.

## 2. Purpose

This MTTP provides commanders and their units guidelines and strategies for operating with UXO hazards, while minimizing the impact of these hazards on friendly operations. This publication will facilitate coordination, integration, and force protection requirements regarding UXO during joint exercises, contingencies, or other operations. It also identifies functions and responsibilities for planning, reporting, tracking, and clearing UXO to accomplish the mission, while minimizing the impact of UXO on the operation.

## 3. Applicability

This publication applies to all commanders, leaders, staff, and warfighters participating in joint operations. This publication will assist the joint force commander (JFC), service component commanders, their staffs, and anyone responsible for force protection of personnel and resources.

## 4. Implementation Plan

Participating service command offices of primary responsibility will review this publication, validate the information, and reference and incorporate it in service and command manuals, regulations, and curricula as follows:

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## **5. User Information**

The Air Land Sea Application (ALSA) Center is the proponent for this publication with the joint participation of the approving service commands. ALSA will review and update this publication as required.

We encourage recommendations for changes to improve this publication. Key specific comments to the chapter, page, and paragraph. Also provide the rationale for each recommendation. Send comments through the appropriate service doctrine point of contact, for the ALSA Center.

## **Army**

**Commander  
U.S. Army Training and Doctrine Command  
ATTN: ATDO-A  
Fort Monroe, VA 23651-5000  
DSN 680-3454 COMM (757) 788-3454  
E-mail: doctrine@monroe.army.mil**

## **Marine Corps**

**Commanding General  
U.S. Marine Corps Combat Development  
Command  
ATTN: C42  
3300 Russell Road, Suite 318A  
Quantico, VA 22134-5021  
DSN 278-6233/6234 COMM (703) 784-6233/6234**

## **Navy**

**Commander, Navy Warfare Development  
Command  
ATTN: N5  
686 Cushing Road  
Newport, RI 02841-1207  
DSN 948-4201 COMM (401) 841-4201**

## **Air Force**

**Headquarters Air Force Doctrine Center  
ATTN: DJ  
216 Sweeney Boulevard, Suite 109  
Langley Air Force Base, VA 23665-2722  
DSN 574-8091 COMM (757) 764-8091  
E-mail: afdocdet1@langley.af.mil**

## **ALSA**

**ALSA Center  
ATTN: Director  
114 Andrews Street  
Langley Air Force Base, VA 23665-2785  
DSN 575-0902 COMM (757) 225-0902  
E-mail: alsa.director@langley.af.mil**



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# EXECUTIVE SUMMARY

## UXO

### Multiservice Procedures for Unexploded Ordnance Operations

This manual—

- Describes the UXO threat to friendly forces and operations.
- Provides guidelines for planning, reporting, tracking, and marking UXO hazards and training recommendations for the joint force.
- Provides commanders several options for applying force protection measures against UXO hazards.
- Delineates the roles of explosive ordnance disposal (EOD) and engineer units with regard to UXO hazards.
- Describes service-specific UXO missions and capabilities.

### Introduction

Every military operation can produce UXO hazards. UXO pose a threat to operational mobility, personnel, equipment and facilities. Understanding the impact of UXO hazards and the procedures used to minimize their effects can maximize the efficiency of resources available during a joint operation. Establishing procedures and training the force to react to these hazards enhances joint force capabilities. This publication contains TTP to mitigate UXO hazards while conducting joint operations.

### Concept

This publication makes a critical distinction between land-based mines and other UXO hazards. Mines and minefields are, by definition, a category of UXO; distinction of the specific type of UXO is critical to determine which methods and forces to employ to mitigate the hazards of mines and other UXO. The breaching, reduction, or clearing of land-based mine hazards is primarily the responsibility of combat engineer units; the reduction or clearing of all other UXO hazards is primarily the responsibility of EOD units. (More details concerning this distinction are available in Chapter 2 of this publication.) Non-UXO trained military personnel should avoid, mark, and report UXO hazards using the methods prescribed by this publication. When possible, include UXO-trained personnel in any operation involving UXO. EOD technicians are the ordnance experts, however, EOD forces comprise less than one percent of the entire force. It is critical that EOD experts conduct detailed clearance of UXO hazards. This publication is not intended to train Soldiers, Marines, Sailors, or Airmen as UXO experts.



## Organization

The chapters in this MTTP address UXO hazards, procedures for avoiding UXO hazards during joint operations, and unique service capabilities. The appendices of this MTTP are quick references defining specific skills needed when UXO hazards are encountered.

## Chapters

**Chapter I (UXO Hazards)**—Defines UXO hazards and describes the degree of risk for different operational categories (such as maneuver, air assault, aviation, amphibious, and air base operations).

**Chapter II (Joint Force UXO Operations)**—Describes the responsibilities for planning and executing a joint operation with UXO hazards. This chapter introduces the UXO reporting, marking, and tracking requirements and defines considerations when planning and conducting operations with UXO hazards. It also defines options commanders may use when confronting UXO hazards.

**Chapter III (Service Component Capabilities)**—Outlines individual service missions, command and control (C2) structures, and specific capabilities of engineer and EOD forces of each service.

## Appendices

**Appendix A (Identifying UXO)**—Assists non-UXO trained personnel in identifying the different types of UXO hazards. This appendix complements Appendix C by providing methods to describe and identify UXO hazards during reporting. Identification of the ordnance is a requirement for line 4 of the UXO Spot Report.

**Appendix B (Marking UXO)**—Describes the procedures for marking UXO hazards to warn personnel operating in the proximity of the hazard and assists clearance personnel in finding the hazard.

**Appendix C (Reporting UXO)**—Describes the routing and format of the nine-line UXO Spot Report.

**Appendix D (Protective Measures)**—Provides three methods to protect personnel and equipment when operating near UXO hazards: evacuate, isolate, or barricade. This appendix further describes the benefits of each method and provides examples to assist with implementation.

**Appendix E (UXO Graphics)**—Establishes graphic control measures to assist commanders, staff, and warfighters in tracking UXO hazards.

**Appendix F (UXO and Obstacle Numbering)**—Describes the numbering methodology for tracking and labeling UXO and obstacles on the engineer obstacle overlay.

**Appendix G (UXO Training)**—Provides leaders a guide for training military personnel on identifying, marking, and reporting UXO hazards. This appendix also describes the protective measures necessary to survive when operating in an environment with UXO hazards.

## **PROGRAM PARTICIPANTS**

The following commands and agencies participated in the development of this publication:

### **Joint**

Joint Staff, J-7, Joint Doctrine Education and Training Division, Washington, D.C.

Joint Staff, J-34, Combating Terrorism, Washington, D.C.

Department of Defense EOD Technology and Training Secretariat, Indian Head, MD

Joint Warfighting Center, Fort Monroe, VA

Commandant, Naval School EOD, Eglin AFB, FL

### **Army**

HQDA, ATTN: DALO-AMA-EOD, Washington, D.C.

U.S. Army Training and Doctrine Command, Deputy Chief of Staff, Doctrine (ATTN: ATDO-A), Fort Monroe, VA

XVIII Airborne Corps, Assistant Corps Engineer, Fort Bragg, NC

HQ, 52nd Ordnance Group (EOD), Fort Gillem, GA

HQ, 79th Ordnance Battalion (EOD), Fort Sam Houston, TX

U.S. Army Technical Detachment, Navy EOD Technology Division, Indian Head, MD

Army EOD Training Representative, Fort Lee, VA

### **Marine Corps**

Marine Corps Combat Development Command, Joint Doctrine Branch (C427) and Ground Branch (C422), Quantico, VA

Marine Corps Base, EOD, Quantico, VA

HQ, USMC Logistics, Planning and Operations, Washington, D.C.

Marine Corps Directorate, Navy EOD Technical Division, Indian Head, MD

Seventh Engineer Support Battalion, Camp Pendleton, CA

Eighth Engineer Support Battalion, Camp Lejeune, NC

## **Navy**

Navy Warfare Development Command, ALSA Liaison Officer (LNO), Norfolk Naval Base, Norfolk, VA

Commander, EOD Group ONE, San Diego, CA

Commander, EOD Group TWO, Norfolk, VA

## **Air Force**

HQ, USAF Civil Engineer, Washington, DC

Air Force Doctrine Center, Detachment 1, Langley AFB, VA

Air Combat Command, CE/EOD Division, Langley AFB, VA

Air Force Civil Engineer Support Agency, Tyndall AFB, FL

Air Force Special Operations Command, CE/EOD Division, Hurlburt Field, FL

Air Force Materiel Command, CE/EOD Division, Wright-Patterson AFB, OH

HQ, AF Space Command, CE/EOD Division, Peterson AFB, CO

HQ, Air Mobility Command, CE/EOD Division, Scott AFB, MO

Air Education Training Command, CE/EOD Division, Randolph AFB, TX

HQ, USAF Europe, Ramstein AFB, CE/EOD Division, Germany

HQ, Pacific Air Force, CE/EOD Division, Hickam AFB, HI

75th CE Group, Hill AFB, UT

56th CE Squadron, Luke AFB, AZ

Detachment 63, Aircraft and Armament Center, Indian Head, MD

# Chapter I

## UXO Hazards

### 1. Background

a. **Introduction.** Saturation with UXO has become a characteristic of the modern battlespace and will likely continue to threaten military forces and operations. U.S. personnel have been killed or injured by UXO in virtually every conflict or contingency in which the United States has participated. This can be attributed primarily to unfamiliarity with UXO countermeasures and avoidance procedures. Every individual participating in a joint operation should be able to recognize and react safely to UXO hazards. To this end, leaders should train their personnel to conduct operations in UXO contaminated environments. Commanders should further consider risks to personnel and operations from UXO and integrate the impact of the UXO hazard into mission planning. This MTTP provides the appropriate information for planning, implementing, and executing operations to minimize risks to forces and operations from UXO. Examples illustrated in this manual are U.S. ordnance; however, most foreign militaries possess explosive ordnance with similar capabilities and hazards.

#### b. **Joint Publication (JP) 1-02 Definitions.**

(1) UXO. Explosive ordnance that has been primed, fused, armed, or otherwise prepared for action, and fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel or materiel and remains unexploded either by malfunction or design or for any other cause.

(2) EOD. The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of UXO. It may also include explosive ordnance that has become hazardous by damage or deterioration.

### 2. Hazards

c. **Production of Hazards.** The United States prides itself on the low dud rates of its munitions; however, all explosive ordnance has the potential to become UXO. Therefore, commanders and staff should plan for duds and the impact on future maneuver or cleanup after hostilities are complete. The actual hazard area produced by UXO depends on the type and density. The following examples provide a method to predict the potential magnitude of a UXO hazard:

- A fire mission of 36 multiple launch rocket system (MLRS) rockets could produce 1,159 (36 X 644 X 5 percent dud rate) UXO hazards in the target area.

- A B-52 dropping a full load of 45 cluster bomb units (CBUs) (with each CBU containing up to 650 submunitions) may produce 1,462 (650 X 45 X 5 percent dud rate) UXO hazards.

- The family of scatterable mines (FASCAM) can produce a significant amount of UXO hazards. For example, the bomb live unit (BLU)-91 and 92/B Gator system can dispense hundreds of mines covering an average area of 200 by 650 meters in a matter of seconds. All scatterable mines have a self-destruct mechanism, ranging from four hours to 15 days; however,