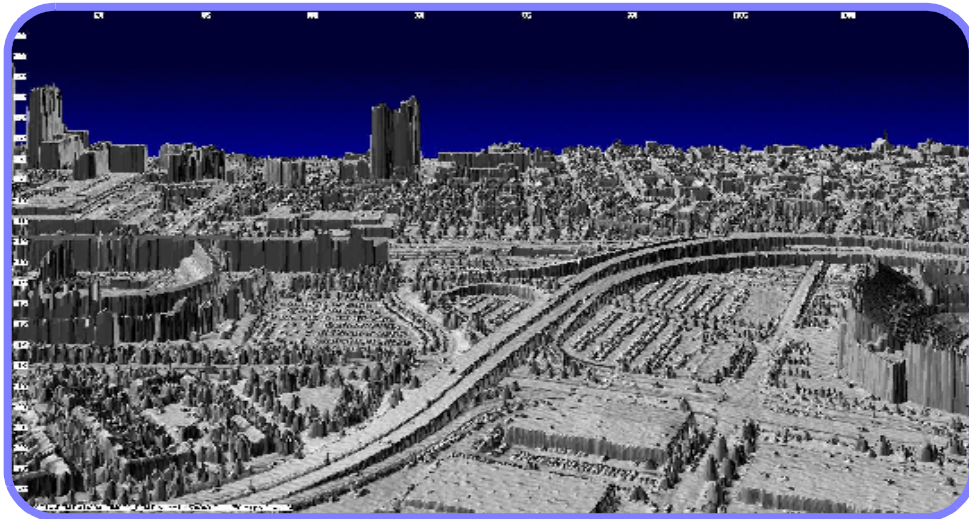


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Topographic Operations

Headquarters, Department of the Army

TOPOGRAPHIC OPERATIONS

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Preface

This field manual (FM) describes doctrine for topographic operations in support of the United States (US) Army's strategic, operational, and tactical missions.

The Army's strategic challenge is to prepare for the rise of a major military competitor who is both competent and capable. All topographic operations must rise to the challenges of providing topographic information to a battle commander so that the battle space can be visualized in time, space, and distance. This requires absolute fidelity and definition of the battle space for decision making and mission execution.

Appendix A contains an English-to-metric measurement conversion chart.

The proponent of this publication is HQ TRADOC. Send comments and recommendations on Department of the Army (DA) Form 2028 directly to Commandant, US Army Engineer School (USAES), ATTN: ATSE-DOT-DD, Directorate of Training, 320 Engineer Loop, Suite 336, Fort Leonard Wood, Missouri 65473-8929.

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

Introduction

Geospatial information and services (GI&S) incorporate the processes that collect, manage, extract, store, disseminate, and exploit geographic information and imagery. This process is an evolutionary change that reflects the expansion of previous topographic operations within the Army. The GI&S play a significant role in military operations. Geospatial information (GI) provides the foundation upon which all other battle-space information is referenced to form the common operating picture. The GI&S aid the commander in visualizing the battle space to plan and execute military operations effectively, to navigate, and to target the adversary accurately. The GI&S support plays an important role in the full range of military operations; commanders cannot afford to conduct military operations without up-to-date GI.

The GI&S within the future force structure combine the resources of national and commercial capabilities and host nations with the Army topographic-engineering community. This union allows the topographer to provide the battlefield commander a clear understanding of the current state (with relation to the enemy and the environment) and the ability to envision a desired end state (which represents mission accomplishment). The topographer molds the geographic information into map products, tactical decision aids (TDAs), user-defined topographic-analysis products or data sets, and precise geodetic-positioning products. These products can then be digitally transmitted or graphically plotted/printed to enhance battlefield visualization.

The engineer's GI&S technology is the cornerstone for information dominance that is critical for a smaller, agile, and more lethal army.

Chapter 1

The Army's Operational Concept for Battle Command

Historically, the Army has used the term command and control (C²) to describe the system that commanders used to plan, direct, coordinate, and control combat operations or other military activities. Because of confusion created by this terminology, the Army now emphasizes that command and control are two distinct, but interdependent, concepts rather than one. The commander and his staff, as a team, use command with control to accomplish the mission.

OVERVIEW

1-1. Battle command is the commander's portion of C². Battle command is the art of battle decision making, leading, and controlling operations. It includes—

- Controlling operations and motivating soldiers and their organizations into actions to accomplish missions.
- Visualizing the current and future states, then formulating a concept of the operation to progress from one phase to the other.
- Assigning missions.
- Prioritizing and allocating resources.
- Selecting the critical time and place to act.
- Knowing how and when to make adjustments during the fight.

1-2. Battle command requires the commander to have the mental agility, discipline, and experience necessary to make timely, relevant, and high-payoff decisions; to optimize the force's capabilities; and to control the tempo of mission execution.

ARMY XXI

1-3. Army XXI is the programmed force for the Army in the near-term development cycle. This cycle is undergoing upgrades to existing systems to take advantage of new technologies and opportunities immediately available for organizational improvement. United States Army Training and Doctrine Command (TRADOC) Pamphlet (Pam) 525-5 guides this development and addresses the familiar TRADOC requirements—doctrine, training, leader development, organization, materiel, and soldiers (DTLOMS).

1-4. Since the early 1990s, topographic-engineer units have been receiving more sophisticated equipment for performing GI&S for the Army. This