

AERIAL DELIVERY DISTRIBUTION IN THE THEATER OF OPERATIONS

AUGUST 2003

DISTRIBUTION RESTRICTION: Approved for public release, distribution is unlimited

HEADQUARTERS DEPARTMENT OF THE ARMY

Headquarters Department of the Army Washington, DC, 29 August 2003

Aerial Delivery Distribution in the Theater of Operations

Field Manual No. 4-20.41

Contents

Page

| | PREFACE | |
|-----------|--|-----------------|
| Chapter 1 | AERIAL DELIVERY DISTRIBUTION ON THE BATTLEFIELD | 1-1 |
| | Service-Specific, Joint, Combined Operations | 1-1 |
| | Threat/Battlefield Environment | 1-1 |
| | Current Doctrine and Future Concepts | 1-2 |
| Chapter 2 | FUNDAMENTALS OF AERIAL DELIVERY DISTRIBUTION OPERATION | FIONS2-1 |
| | Stages of Aerial Delivery Distribution | 2-1 |
| | Types and Methods of Airdrop | 2-2 |
| | Sling-Load Operations and Equipment | 2-6 |
| | Advantages and Disadvantages of Aerial Delivery Operations | 2-9 |
| Chapter 3 | AIRLAND/AIRDROP DISTRIBUTION ORGANIZATIONS | 3-1 |
| | Organizations | 3-1 |
| | Airdrop-Related Organizations | 3-2 |
| | Theater Support | 3-5 |
| | Augmentation Support | 3-5 |
| | Special Operations Force Support | 3-6 |
| Chapter 4 | AIRLAND/AIRDROP DISTRIBUTION OPERATIONS | 4-1 |
| | Airdrop Responsibilities | 4-2 |
| | Airland Responsibilities | 4-3 |
| | Request Procedures | 4-4 |
| | Airland/Airdrop Equipment Retrograde | 4-7 |
| Chapter 5 | SLING-LOAD DISTRIBUTION OPERATIONS | 5-1 |
| | Responsibilities | 5-2 |
| | Request Procedures | 5-3 |
| | Sling-Load Equipment Retrograde | 5-3 |

Distribution Restriction: Approved for public release; distribution is unlimited. *This publication supersedes FM 10-500-1, dated 19 June 1991.

| Chapter 6 | AERIAL DELIVERY PLANNING CONSIDERATIONS | |
|-----------|---|----------------|
| | Aerial Delivery Equipment | 6-1 |
| | Force Structure | 6-1 |
| | Safety | |
| | Threat | |
| Chapter 7 | THE FUTURE OF AERIAL DELIVERY | 7-1 |
| | Equipment Enhancements | 7-2 |
| | Automation/Communication Enhancements | 7-5 |
| | GLOSSARY | Glossary-1 |
| | BIBLIOGRAPHY | Bibliography-1 |
| | INDEX | Index-1 |

Figures

| Figure 1-1. Battlefield Environment | 1-2 |
|---|-----|
| Figure 2-1. Bundle at the Door of a C-130 | 2-3 |
| Figure 2.2. Aerial Extraction Method of Aerial Delivery | 2-4 |
| Figure 2-3. C-17 Airdrop of Pallets Using the Gravity Airdrop Method and DRAS | 2-5 |
| Figure 2-4. DRAS C-17 Internal View | 2-6 |
| Figure 2-5. Sling-Load Cargo Net | 2-7 |
| Figure 2-6. A-22 Cargo Bag | 2-8 |
| Figure 2-7. CH-53 Using Cargo Slings | 2-9 |
| Figure 3-1. QM Airdrop Equipment and Support Company, TOE 10337L | 3-3 |
| Figure 3-2. QM Airdrop Supply Company (Light), TOE 10443L | 3-3 |
| Figure 3-3. QM Airdrop Equipment Repair and Supply Company, TOE 10449L | 3-4 |
| Figure 3-4. QM Airdrop Equipment Support, TOE 10437L | 3-4 |
| Figure 3-5. QM Airdrop Supply Company (Heavy), TOE 106431L | 3-5 |
| Figure 3-6. QM Airdrop Equipment Repair and Supply Company, TOE 10649L | 3-5 |
| Figure 3-7. QM Airdrop Support Detachment, TOE 10510LA | 3-6 |
| Figure 4-1. C-17s Delivering Vital Supplies | 4-1 |
| Figure 4-2. C-130 at a Tactical LZ | 4-4 |
| Figure 4-3. C-17 at an Austere Airstrip | 4-4 |
| Figure 5-1. CH-47 A-22 Bag and Cargo Net Sling Load | 5-1 |
| Figure 6-1. Circle of Safety | 6-3 |
| Figure 7-1. Precision Extended Glide Aerial Delivery System (PEGASYS) | 7-2 |
| Figure 7-2. The Rapid Rigging and De-Rigging Airdrop System (RRDAS) | 7-3 |
| Figure 7-3. The 500-Foot Low Velocity Airdrop System (LVADS) | 7-4 |
| Figure 7-4. The "Slipper" | 7-5 |
| Figure 7-5. Current AOE Army Battle Command System (ABCS) | 7-6 |
| | |

Preface

This manual combines the three facets of aerial delivery, airdrop, airland, and sling load, in one overarching distribution-related manual. The references to airland operations included in this manual provide more complete information. Detailed information about airland operations can be found in the applicable joint and Army (Transportation Corps proponent) doctrinal manuals. This manual addresses the full scope of the three related and commingled facets of aerial delivery doctrine.

This is an umbrella manual for the maneuver unit commander. It addresses the basic principles of aerial delivery distribution, the advantages and disadvantages of each facet, specific airland/airdrop related units, request procedures, and recovery and evacuation of aerial delivery equipment. However, the scope will be limited to aerial delivery as it relates to sustainment, not the operational use of aerial delivery assets for personnel/unit moves.

This manual documents current aerial delivery doctrine and broadens the scope to address aerial delivery distribution as it applies to, and operates within, the overall Army distribution system. It amplifies the flexibility, agility, and force multiplier potential added to the Army distribution system by aerial delivery.

This manual recognizes the ongoing Army Transformation and addresses how aerial delivery will be affected by these changes. It also highlights new equipment and forthcoming technologies that will enhance aerial delivery capability. Finally, this manual addresses major changes that must occur within the aerial delivery system to allow it to reach its full potential within the framework of the new environment.

The proponent of this publication is U.S. Army Training and Doctrine Command (TRADOC). Send comments and recommendations on DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) directly to the Commander, U.S. Army Combined Support Command, ATTN: ATCL-Q, Fort Lee, Virginia 23801-5036.

Chapter 1 Aerial Delivery Distribution on the Battlefield

Today's aerial delivery includes airdrop, airland, and sling-load operations. Airdrop and airland distribution are joint (Army and U.S. Air Force [USAF]) operations that require large fixed-wing aircraft; sling-load operations are usually unilateral using rotary-wing aircraft. Historically, U.S. military forces have been called on to execute aerial delivery operations in support of unilateral and allied force combat operations or humanitarian relief efforts throughout the world. Since the fall of the Soviet Bloc, the threat environment has become far more uncertain than before; the forecast is that it will become even more ambiguous and dangerous in the future. The September 11, 2001, World Trade Center and Pentagon tragedy, the bombing of the USS Cole, and numerous other recent terrorist-related actions serve to reinforce this belief. It follows that future operations will require a smaller, continental United States (CONUS)-based, force projection Army, capable of conducting fullspectrum combat operations. Therefore, aerial delivery will continue to play an increasingly vital role in the supporting distribution system necessary to meet the requirements of the force.

SERVICE-SPECIFIC, JOINT, COMBINED OPERATIONS

1-1. Sling-load operations are generally service-specific operations; airdrop and airland operations are almost always joint operations involving the Army and the USAF. The Army has most of the available lift (or utility helicopters); therefore, as aerial delivery becomes more accepted as the mode of choice, sling load could become a standard joint mission and, therefore, the Army will become the transporter for the other services. Combined operations rarely involve aerial delivery because it is normally considered a national responsibility; however, this doctrine could be applied to the needs of a combined command based on the combatant commander's directive(s).

THREAT/BATTLEFIELD ENVIRONMENT

1-2. Current battlefields have very large areas of operations (AOs); future battlefields will have even greater AOs. Combat organizations will operate within a box as large as 1,000 kilometers x 1,000 kilometers (see figure 1-1). Further, they will operate in a non-contiguous/non-linear battlespace with large unsecured areas. Units will have increasingly smaller logistics footprints and, therefore, require more responsive and efficient delivery systems. In addition, the lines of communications (LOC) will be longer with a large proportion of the support provided by intermediate staging bases