MULTISERVICE HELICOPTER SLING LOAD:

SINGLE-POINT LOAD RIGGING PROCEDURES

HEADQUARTERS
DEPARTMENT OF THE ARMY
UNITED STATES MARINE CORPS
DEPARTMENT OF THE NAVY
DEPARTMENT OF THE AIR FORCE
UNITED STATES COAST GUARD

FIELD MANUAL 10-450-4
MARINE CORPS REFERENCE PUBLICATION 4-23E, VOL II
NAVAL WARFARE PUBLICATION 3-04.12
AIR FORCE JOINT MANUAL 11-223, VOL II
COMMANDANT INSTRUCTIONS M13482.2A

HEADQUARTERS
DEPARTMENT OF THE ARMY
UNITED STATES MARINE CORPS
DEPARTMENT OF THE NAVY
DEPARTMENT OF THE AIR FORCE
UNITED STATES COAST GUARD
Washington, DC,

MULTISERVICE HELICOPTER SLING LOAD: SINGLE-POINT RIGGING PROCEDURES

PREFACE

This manual is one of a series of manuals for aviation and ground personnel who perform helicopter sling load missions ashore or aboard ship. Other manuals in this series are FM 10-450-3/MCRP 4-23E, VOL I/NWP 3-04.11/ AFJMAN 11-223, VOL I/COMDTINST M13482.2A and FM 55-450-5/FMFRP 5-31, VOL III/NWP 42-1,VOL III/ AFR 50-16, VOL III/COMDTINST M13482.4.

These manuals are a coordinated effort of the US Army, US Marine Corps, US Navy, US Air Force, and US Coast Guard. All services participate in the sling load certification program begun by the Army in 1984. These manuals include standardized rigging procedures and other information from that program. Chapters 2 through 14 contain rigging procedures for single-point loads which have been certified for sling load. Chapters 15 through 24 contain rigging procedures which have not been certified but have demonstrated acceptable static lift and flight characteristics during a flight test.

Efforts were made to standardize ground crew and hookup procedures and terminology. Where service-unique requirements apply to an entire chapter or body of text, the service initials are at the beginning of the chapter or text. Otherwise the initials are at the end of the applicable sentence.

Rigging equipment and procedures described in this manual may not be authorized for all aircraft or services because of equipment or service restrictions.

*This publication supersedes FM 55-450-4, 11 February 1991.

MARINE CORPS PCN: 14400003900

The proponent of this publication is HQ TRADOC. Recommendations for changes or improvement to the manual are requested.

Army personnel submit DA Form 2028 (Recommended Changes to Publications and Blank Forms) to:

Aerial Delivery and Field Services Department
USA Quartermaster Center and School
ATTN: ADMMO
1010 Shop Road
Fort Lee, VA 23801-1502

Navy personnel submit recommended changes to:

Chief of Naval Operations
Code OP 506
Washington, DC 20350-2000

Marine Corps personnel submit user suggestion form to:

Commanding General
Marine Corps Combat Development Command
Doctrine Division C42
Quantico, VA 22134-5021

With a copy to:

Commanding General
Marine Corps Systems Command (PSE)
Quantico, VA 22134-5021

Air Force personnel submit AF Form 847 (Recommendation for Change of Publication) to:

HQ AFSOC/DOXT
Hurlburt Field, FL 32544-5273

Coast Guard personnel submit rapidraft letter (CG-3883) or AF Form 847 to:

Commandant (G-OAV)
US Coast Guard
2100 2nd Street SW
Washington, DC 20593

With a copy to:

Commander
Aviation Training Center (TRADIV)
Mobile, AL 36117

TABLE OF CONTENTS

CHAPTER 1

FUNDAMENTAL PRINCIPLES

1-1. INTRODUCTION

This chapter contains general information about certification for helicopter sling load and explains the role of the Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) and the Department of Defense (DOD) sling load certification authority. This authority rests with the US Army Natick Research, Development, and Engineering Center (NRDEC). This chapter also explains the information contained in the equipment rigging procedures and gives some general rigging instructions.

1-2. CLASSIFICATION DEFINITIONS OF SLING LOADS

a. Certified Sling Loads. Certified sling loads are those items of equipment and their associated rigging procedures which have completed the evaluation and testing required by NRDEC for sling load certification. These rigging procedures are in Chapters 2 through14. Only certified sling loads are authorized for the Marine Corps. The US Army NRDEC has indicated that any single point sling load certified under a specific aircraft is also certified for any aircraft with suitable lift capability. The following restrictions apply for sling load certification to remain in effect:

(1) The load must be within the lifting capability of the desired helicopter model and not exceed the rated capacity of the sling set being used.

(2) The load shall be rigged in accordance with the certified rigging procedure.

(3) The recommended stable airspeed specified for the load in the applicability section of the rigging procedure is a recommendation and not a restriction, unless so stated.

(4) This certification is limited to single-point loads only.

NOTE: When carrying loads at weights close to the aircraft hook limitations, close coordination with the aviation unit is required.

CAUTION

Loads weighing less than 6,000 pounds may not fly in a stable condition and may incur jettisoning problems when flown under a CH-53E helicopter. CH-53E units may have restrictions on flying light loads. Direct coordination with CH-53E units is encouraged.

b. Suitable Sling Loads. Suitable sling loads are those items of equipment and their associated rigging procedures that have not been certified but have demonstrated acceptable static lift and flight characteristics during a flight test. In most cases these loads were not pull tested in accordance with MIL STD 913, but are known loads which have been flown without incident for years and which NRDEC considers to be proven safe. These rigging procedures are in Chapters 15 through 24.

c. Unique Sling Loads. Unique loads are equipment carried on a one time or low-frequency basis, such as telephone poles, artillery targets, or barrier material. The lack of sling load certification in itself does not preclude a unit commander from carrying a load that is not certified. Each service is responsible for determining its policy on carrying loads that have not been certified for sling load.

d. Prohibited Sling Loads. Prohibited sling loads are items of equipment that are prohibited from sling loading as determined by each service. These loads have been denied sling load certification and are a safety hazard if carried. They have either structural deficiencies or have exhibited unstable flight characteristics during flight testing. Each service will identify these loads and transmit this information by separate list. Contact your service point of contact identified in the Preface if you have any questions regarding the classification of a particular load.

1-3. CERTIFICATION OF EQUIPMENT FOR HELICOPTER SLING LOAD

a. Objective. The objective of helicopter sling load certification is to assure the user that the equipment being

transported can withstand the stresses of a sling load flight environment. Certification for sling load assures the user that the item has met minimum standards for structural integrity and that the associated rigging procedures have been developed specifically for that item.

b. Responsibilities. Within the US Army, the MTMCTEA is responsible for transportability approval of developmental equipment. Within the DOD, NRDEC is the lead activity responsible for providing sling load certification and rigging procedures for military equipment. When an item is certified for sling load, it means that NRDEC, in cooperation with various test activities, has:

(1) Conducted an engineering analysis of the load and lifting provisions for structural adequacy during sling loading.

(2) Verified that the lift provisions meet the strength requirements of the applicable military standard by means of proof load testing.

(3) Developed and/or validated sling load rigging procedures through static lift testing.

(4) Evaluated flight test reports and determined that the particular load meets acceptable flight characteristics with the type helicopter flown during the flight test.

(5) Issued a statement of sling load certification for the particular load, including load configuration(s), weight(s), types of helicopter(s), and maximum stable airspeed(s) as attained during the flight test(s). Certification is valid only for the conditions specified in the rigging procedures.

1-4. REQUESTS FOR SLING LOAD CERTIFICATION

a. Fielded Equipment. Each service headquarters must designate, request, and prioritize the fielded equipment to be evaluated by NRDEC for sling load certification. Individual units can request sling load certification for fielded equipment through the appropriate service agency which will add the item to the prioritized list. The NRDEC will evaluate the equipment on a priority basis. The following agencies are responsible for their branch of service:

(1) US Army - Commander, Combined Arms Support Command, ATTN: QM Combat Developments, Suite 250, 3901 A Avenue, Fort Lee, VA 23801-1809.

(2) US Marine Corps - Commanding General, Marine Corps System Command (PSE) Quantico, VA 22134-5021.

(3) US Navy - Naval Air Systems Command (NAVAIR).

(4) US Air Force - US Air Force Systems Command.

b. Previously Certified Single-Point Loads. Organizations can request certification for single-point loads transported by helicopters not listed in the applicability paragraph of the certified single-point load rigging procedure. The procedure for certifying a single-point load for sling load under a different helicopter from that listed in the applicability paragraph is as follows:

(1) Contact your service point of contact to determine if the load has been certified with the different helicopter subsequent to the manual publication.

(2) Obtain a multiservice flight data collection sheet (MSFDCS) from Commander, NRDEC, ATTN: STRNC-UAS, Natick, MA 01760-5017.

(3) Following the steps in the MSFDCS, conduct a flight test for the item using the certified single-point rigging procedures in this manual.

(4) Complete the MSFDCS and return it to NRDEC. NRDEC will evaluate the completed MSFDCS and certify the item as appropriate for the specified helicopter.

c. Previously Certified Dual-Point Loads. Loads cannot be certified for dual-point lift based on previously certified dual-point rigging procedures because of the differences in dual hook helicopters, such as the distance between the two cargo hooks. Rigging procedures for dual-point loads must be developed and/or approved by NRDEC before the test flight.

1-5. UNIQUE ITEMS OF EQUIPMENT OR OPERATIONAL REQUIREMENTS

Helicopter sling loading of unique items, due to operational requirements, will be at the discretion of the