



AC NO: 91-32

DATE: 7 May 71

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

SUBJECT: SAFETY IN AND AROUND HELICOPTERS

1. PURPOSE. This advisory circular provides suggestions to improve helicopter safety by means of acquainting non-flight crew personnel and passengers with the precautions and procedures necessary to avoid undue hazards.
2. GENERAL. People have been injured, some fatally in helicopter accidents which would not have occurred had they been informed of the proper method of boarding or deplaning. A properly briefed passenger should never be endangered by a spinning tail rotor, yet some have lost their lives because they were not told the proper way to approach or depart the aircraft. The simplest method of avoiding accidents of this sort is to have the rotors stopped before passengers are boarded or allowed to depart. Because this action is not always practicable, and to realize the vast and unique capabilities of the helicopter, it is often necessary to take on passengers or to deplane them while the engine and rotors are at, or close to, operational settings. Therefore, if accidents are to be avoided, it is essential that all persons associated with helicopter operations including passengers, be made aware of all possible hazards, and instructed as to how they can be avoided.
3. NON-FLIGHT CREW PERSONNEL. Persons directly involved with enplaning or deplaning passengers, aircraft servicing, rigging or hooking up of external loads, etc., should be instructed as to their duties. It would be difficult if not impossible to cover each and every type of operation or non-flight crew training matter related to helicopters. A few of the more obvious and common are covered below:
 - a. Ramp attendants and aircraft servicing personnel. These personnel should be instructed as to their specific duties, and the proper method of fulfilling them. In addition, the ramp attendant should be taught to:
 - (1) Keep passengers and unauthorized persons out of the helicopter landing and takeoff area.

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- (2) Brief passengers on the best way to approach and board a helicopter with its rotors turning. (see 4a)
 - b. External load riggers. Rigger training is possibly one of the most difficult and continually changing problems of the helicopter external load operator. A poorly rigged cargo net, light standard, or load pallet could result in a serious and costly accident. It is imperative that all riggers be thoroughly trained to meet the needs of each individual external load operation. Since rigging requirements may vary several times in a single day, proper training is of the utmost importance to safe operations.
 - c. External load hook-up men.
 - (1) Know the lifting capability of the helicopters involved. Since some operators have models of helicopters that have almost identical physical characteristics but with different lifting capabilities, this knowledge is essential. For example, a hook-up man may be working with a turbo-supercharged helicopter on a high altitude project and without any warning a non-supercharged helicopter, which looks exactly the same to the ground crew, comes to a hover to pick up a load. It does not take a vivid imagination to see what could happen if the hook-up man connects a load far too heavy for the non-supercharged helicopter to lift.
 - (2) Know the pilots. The safest plan would be to standardize all pilots insofar as the manner in which sling loads are picked up and released. Without pilot standardization, the hook-up man should learn the technique used by each pilot. Does he come in fast or slow, high or low? Does he try to lift the load off with a combination of collective and cyclic? The hook-up man should specifically demand standardization on the pilot technique for any sort of emergency occurring while he is beneath the helicopter.
 - (3) Know the cargo. Many items carried via sling are very fragile, others can take a beating. The hook-up man should always know when a hazardous article is involved, and the nature of the hazard; such as explosives, radio active materials, toxic chemicals. In addition to knowing this, he should be familiar with the types of protective gear or clothing or actions that are necessary for his and the operations safety.
4. PASSENGERS. The term passenger used throughout this circular refers to all non-flight crew personnel that ride in helicopters, and is not limited to the fare-paying customer. All persons that board a helicopter while its rotors are spinning should be instructed as to the safest means of doing so. Naturally, if the pilot is at the controls, he could not possibly conduct a boarding briefing. Therefore, the individual who

arranged for the passenger flight or assigned as the ramp attendant should accomplish this task. The exact procedures may vary slightly from one helicopter model to another, but in general the following should suffice:

a. Boarding.

- (1) Stay away from the rear of the helicopter.
- (2) Crouch low before getting under the main rotor.
- (3) Approach from the side or front, but never out of the pilot's line of vision.
- (4) Hold firmly to hats and loose articles.
- (5) Never reach up or dart after a hat or other object that might be blown off or away.
- (6) Protect eyes by shielding with a hand or by squinting.
- (7) If suddenly blinded by dust or a blowing object STOP - CROUCH LOWER OR BETTER YET SIT DOWN AND AWAIT HELP.
- (8) NEVER GROPE OR FEEL YOUR WAY TOWARD OR AWAY FROM THE HELICOPTER.

b. Pre-takeoff briefing. Since few helicopters carry cabin attendants, this briefing must be made by the pilot. The type of operation will dictate what sort of briefing is necessary. Passengers should always be briefed on:

- (1) Overwater flights. The location and use of flotation gear and other survival equipment that might be on board. How and when to abandon ship should a ditching be necessary.
- (2) Flights over rough or isolated terrain. All occupants should be told where maps and survival gear are located.
- (3) Emergency instructions. In the event of an emergency each passenger should be instructed as to what actions and precautions to take. Such as the body position for best spinal protection against a high vertical impact landing (erect with back firmly against the seat back). When and how to exit after landing.

c. Pre-landing briefing. The nature of the landing area will determine what the passengers need to be told. A few items to consider are;

- (1) If on a hill, depart downhill. If this involves walking around the helicopter to avoid the area of lowest rotor clearance, always go around the front, NEVER THE REAR.
- (2) Repetition of the basic instructions shown in 4a.

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5. SAFETY AROUND HELICOPTERS. The material appearing in Appendix 1 was taken from the June 1970 issue of ROTORNEWS, a publication of the Helicopter Association of America.

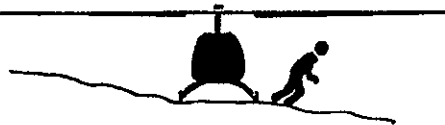


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Flight Standards Service

SAFETY AROUND HELICOPTERS



1. Approach or leave machine in a crouching manner (for extra clearance from main rotor).



2. Approach or leave on the down slope side (to avoid main rotor).



3. Approach or leave in pilot's field of vision (to avoid tail rotor).



4. Carry tools horizontally, below waist level (never upright or over shoulder).



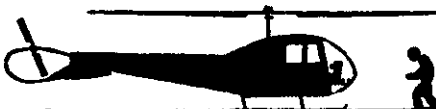
5. Hold onto hard hat when approaching or leaving machine, unless chin straps are used.



6. Fasten seat belt on entering helicopter and leave it buckled until pilot signals you to get out.



7. If leaving machine at the hover, get out and off in one smooth, unhurried motion.



8. Do not touch bubble or any of the moving parts (tail rotor linkage, etc.).



9. Keep helispot clear of loose articles — water bags, groundsheets, empty cans, etc.



10. Keep cooking fires well clear of helispot.



11. Loading assistants should always be supplied with plastic eye shields.



12. After hooking up cargo sling, move forward and to side to signal pilot (to avoid entanglement and getting struck, with loaded sling).



13. When directing machine for landing, stand with back to wind with arms outstretched toward landing pad.



14. When directing pilot by radio, give no landing instructions that require acknowledgement as pilot will have both hands busy.



15. When moving larger crews:

- (a) Brief them on safety as above.
- (b) Keep them together and well back at side of landing zone (this gives the pilot a chance in the event he has to land suddenly either during landing or take-off).
- (c) Have them face away from machine during landing and take-off.
- (d) Have each man look after his own personal gear.
- (e) Have men paired off and ready to get aboard, as soon as pilot gives the signal.

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