

Helicopter & Aircraft Safety Considerations

Introduction

Various aviation resources are used in a SAR context in New Zealand.

The primary asset for LandSAR is the helicopter. These can be operated by the military (NH-90 or AW-109), air ambulances (S-76, AW-169, EC145, BK-117), and private operators (AS-350 later version H125, MD500, BK-117 newer version EC145/H145, B-206, and UH-1).

Common safety requirements

Helicopters have two rotors that must be avoided. General safety considerations are common to most aviation assets. A link to a video pointing out general aircraft safety can be found here: [Safety Around Aircraft » NZSAR](#).

The pilot or crewman will always brief passengers prior to a flight; or will ensure that a responsible person has briefed passengers and/or is controlling boarding and disembarkation.

If winching is required then use of the various harnesses, nappies, or collars will be demonstrated and practiced with the passenger often provided with a practice winch activity.

Specific helicopter type requirements

There are two general types of helicopters in regard to safety. Those that have low main rotors and those that have generally high rotor systems.

Both the Sikorsky S-76 and the Leonardo AW-169 types have rotors that are set up to droop at the front. These helicopters must only be approached from the side. If you approach from the front there is a distinct possibility of injury.

Tilt head rotor systems as fitted to the old Huey (UH-1) and the Bell Jet Ranger (B-206) can flap down to the front and sides during start up or shut down. That is why you must never approach any helicopter during startup or shut down.

AREC Member transport in helicopters

There is usually no reason for an AREC member to travel in a helicopter other than as a seated passenger restrained by a seatbelt on a flight from A to B or, A to B to A.


Any flight to or over a remote area must only be undertaken by AREC members who are capable and equipped to walk out from that location and/or self-sufficient to remain on site in the event the helicopter has to leave the location stranding the AREC member.

If winching in to a site is required then the expectation is that the AREC person is trained and capable of walking out from the location. Once winched in it may not be possible for the helicopter to return and extract the member.

Key criteria to consider are:

- Is the requirement for an AREC member to fly to a remote site unavoidable. Is it possible to get a physically more capable and fitter person to do the work?
- Does the member have the necessary equipment and fitness level that ensures they can walk out and/or be self-sufficient for an extended period if they are stranded.
- Has a specific safety plan been created for the work to be completed onsite including considerations regarding transport.
- Has the AREC member received the necessary training and briefing to safely travel?


Typical helicopter safety information




CAA
CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

Safety Around Helicopters


APPROACHING OR LEAVING A HELICOPTER




Do not approach without receiving a visual signal from the pilot. Do not leave without a visual or spoken instruction to do so. Stay where the pilot can see you at all times.




On sloping ground always approach or leave on the downslope side for maximum rotor clearance.



If blinded by swirling dust or grit, STOP – crouch lower, or sit down and wait for assistance.




If disembarking while the helicopter is hovering, get out slowly and smoothly when cleared to by the pilot.




Do not approach or leave a helicopter when the engine and rotors are running down or starting up.


Helicopter Safety Zones



The diagram shows a helicopter with three safety zones: a red 'Prohibited' zone behind the tail rotor, a yellow 'Acceptable' zone in front and to the sides, and a green 'Preferred' zone directly in front of the rotor hub. Arrows indicate the direction of rotor wash.




Crouch while walking for extra rotor clearance. Always remove hats. Never reach up or chase after anything that blows away.




Carry long objects horizontally below waist level – never upright or on the shoulder.

TAKEOFF, LANDING, AND LOADING OPERATIONS




Clear helipad of loose articles. Secure your gear from the effects of rotor wash.




When transporting personnel, loading staff should ensure that:


- Passengers are briefed on approaching and leaving the helicopter
- They are grouped together and positioned to one side of the landing zone
- They face away from helicopter during takeoff and landing
- Each person looks after their own gear
- They are ready to board in turn as soon as the pilot gives the signal, and they are escorted to the helicopter.




When directing the pilot for landing, stand with back to wind and arms raised.



When directing the pilot by radio, remember they may be too busy to give a reply.



After hooking up a cargo sling, move forward and to the side to signal the pilot. Ensure the sling is not across the skid. Never ride on the sling.



Fasten and adjust your seat belt on entering the helicopter and leave it fastened until the pilot signals you to get out.

Revised April 2007

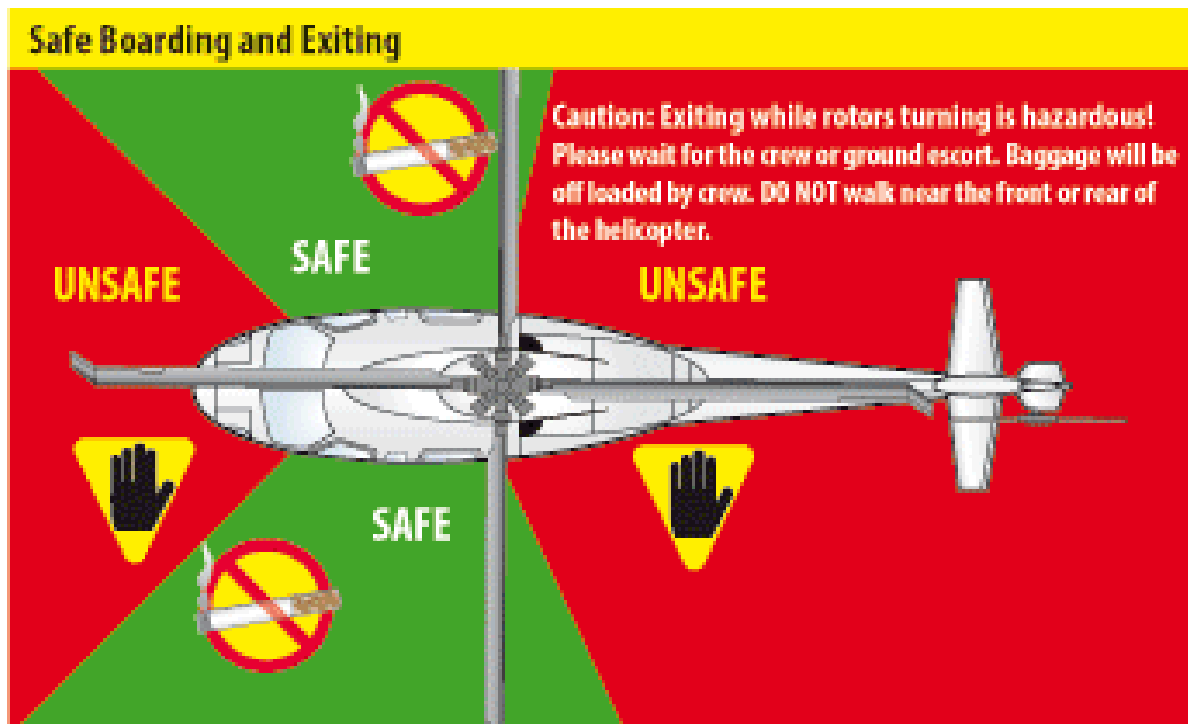
HelicopterSafety-GeneralConsiderations-2023-04-21.docx

Page 2 of 3

Low Droop Rotor systems

This picture shows the safety zones around a Sikorsky S-76 helicopter as operated in Northland. They same zones apply to the Leonardo AW-169 operated in Auckland. Also remember, if it is a windy day rotor blades can flap down a long way, especially for a tilting rotor head system as used by the Huey UH-1 and Bell B-206.

If any doubt exists as to which helicopter type you are approaching use the diagram below as it is effective for all helicopter types.



Further information

There are many sources of information regarding safety in and around helicopters.

LandSAR training includes the following module under the IMT competency framework:

Elective 1: Helicopter Safety

This unit of competency should be considered mandatory for any IMT member involved in helicopter operations, including but not limited to: radio repeater deployment, in-field tasking/debriefing.

130.0 Helicopter Safety

Operate safely around helicopters.

130.01 Describes the hazards associated with working around rotary wing aircraft.

Range: may include but not limited to - Aircraft components, manoeuvring, prohibited approach zones.

130.02 Demonstrate safe procedures for loading and unloading personnel.

Range: may include but not limited to - Safe approach, entry, and exit including the loading and unloading of equipment.

130.03 Describe the likely hazards around a landing Site.

Range: may include but not limited to – Vehicles, operating clearances, dust, unsecured items, poor visibility, uneven terrain.

130.04 Explain or demonstrate how to brace for impact and escape from an aircraft in an emergency.

130.05 Explain the use of emergency equipment for helicopters.

Range: Should include emergency beacons, fuel shut off and battery isolation.