

## **SAFETY INFORMATION 4/2022**

16 February 2022



### **AVOIDING WIRE STRIKES IN HELICOPTER OPERATIONS AND OPERATIONS OF HELICOPTER PASSENGER DOORS**

#### **Purpose:**

The CAAM is urging all helicopter pilots to increase their vigilance for wire/cable strike after an incident involving a helicopter striking a wire while making a precautionary landing at a school football field due to suspected passenger door opening during flight.

#### **Background:**

Recently, there was an incident involving a helicopter making a precautionary landing due to a passenger door was suspected to be partially opened. The pilot decided to make the landing on a football field to inspect the door. On final approach to land at about 20 feet, the pilot noticed a cable in front of him. Due to the momentum and close proximity to the ground, the pilot was unable to take evasive action and the helicopter struck the cable. The pilot felt some vibration but managed to land the helicopter safely.

#### **Discussion:**

##### 1. Wire and Cable Hazards.

Electrical wires and other cables are statistically one of the most significant hazards for helicopter especially for Low Altitude Helicopter Operations (LALT) and may result in fatal accidents.

Striking wires may have critical consequences: it results in fatalities in approximately 30% of the accidents and up to 60% when operating in Instrument Meteorological Conditions (IMC) or at night. Wire and obstacle strike are one of the top operational causes of fatal Rotorcraft accidents, as rotorcraft fly approximately 90% of their time in LALT operations in the wire environment. Besides, number of flight hours is not a guarantee for avoiding wires, as most wire strike accidents statistically occur to experienced pilots with more than 2000 flight hours and good knowledge of the area. As reported by numerous accident investigations, even very experienced pilots, to avoid IMC flight conditions and looking for visual contact with the ground, forget to ensure that no wires are in the area.

Note. - [Cable Collisions | EASA Community \(europa.eu\)](#)

## 2. Securing and Operating Helicopter Passenger Doors

Civil Aviation Regulations 2016, Regulation 85 (h) states that “Before an aircraft takes off, the pilot-in-command of the aircraft shall take all reasonable steps to ensure that any pre-flight check system established by the operator and specified in the operations manual or elsewhere has been complied with by each member of the crew of the aircraft”.

In addition to the above, Regulation 86 (a) states that “The pilot-in-command of a Malaysian aircraft shall take all reasonable steps to ensure that before the aircraft takes off on any flight, all passengers are made familiar with the position and method of use of emergency exits, safety belts, safety harness and oxygen equipment, life jackets and the floor path lighting system and all other devices required by these Regulations and intended for use by passengers individually in the case of an emergency occurring to the aircraft”.

It is therefore the responsibility of the commander of the helicopter to ensure that:

- a) the passenger doors are securely closed and locked before flight as specified in the operations manual.
- b) the passenger/s are briefed on the operations of the doors.

### **Recommended Actions:**

#### 1. Wire and Cable Hazards

There are a number of things that pilots can do to help mitigate the risks:

##### **a) Preparation and planning:**

- 1) Undergo wire-strike safety training programme including hazards understanding, mission preparation and Crew Resource Management (CRM), and implement wire avoidance flying techniques and procedures in flight.
- 2) Understand the risk of wire strikes by taking the necessary precautions especially when flying at low altitude.
- 3) Prepare your flight thoroughly and review any known cable installations on the planned flight path. Every year, new electrical and communication towers and antennas and hundreds of kilometers of wire are being added - the situation can change from one day to another. Always download the latest version of maps locating wires and other hazards such as natural and artificial obstacles including wind turbines in your flying area. Familiarise yourself with the terrain, navigational charts and obstacles.
- 4) Use if possible an aircraft equipped with wire detection and avoidance and wire cutting technologies. Using technology to its maximum benefit requires dedicated training. Note that pilots often turn off cable or terrain audio warnings as these may disturb attention in highly critical manoeuvring and exceed mental processing capacity. Detection systems are ineffective when audio warnings are turned off! If you are used to a helicopter equipped with

detection systems, the risk can increase when moving to a non-equipped helicopter because you are used to, but won't receive audio warnings.

**b) During the flight:**

- 1) Do not fly at low altitude unless necessary for the operation and permitted by the CAAM in compliance with the Civil Aviation Directive 2 – Rules Of the Air, Chapter 4 – Visual Flight Rules.
- 2) Around 40% of the pilots who hit wires however knew there were there but couldn't see them. Visibility becomes a huge issue when looking at wires from above. Even when wires are visible from the ground, they are not consistently visible for pilots in the air! At typical flight speed, most wires are hard to see. Maintain situational awareness during the whole flight and ensure there is sufficient clearance from any obstacle on either side of the flight path and at all heights, especially in a mountainous or hilly environment. Stay focused on the flight and avoid distractions!
- 3) Invite everyone onboard to look actively for cables, support structures, terrain, obstacles and traffic, especially when the mission requires flying at low altitude. If thin cables are hard to see, use support structures like poles and tower for guidance of the presence of cables.
- 4) A higher level reconnaissance is recommended before descending and entering a potentially dangerous wire environment, typically below 500 ft.
- 5) Pay maximum attention to the flight path ahead. Scan wide and slow a 70-degree wide field beyond the center, actively looking for wires and indicators that can reveal the presence of wires such as towers, poles and pathways cut out in trees. Expect wires around roads and buildings and towers on hills and hilltops.
- 6) In Special Operations (aerial work), Helicopter Medical Services (HEMS) and other critical missions performed at low altitude, external influences like changing wind direction or gust could be highly demanding especially in mountainous areas. Beware also of poor or deteriorating weather and visibility conditions! Flight preparation and anticipation is key. Mission training, CRM and experience gathering are essential for critical missions.

Even the latest version of maps with obstacles locations, is not a guarantee that all obstacles are properly identified. Consider all types of wires such as transport cables, guy-wires, ski cables, electrical and communication cables, mobile tree cables, cable cars and slack lines. Thin cables are particularly difficult to see and can be hidden by trees and other natural or artificial obstacles.

**Additionally**, for operations in confined area, the following should be considered:

Size – The size of the landing site is sufficient to accommodate your aircraft. Approximately 2 rotor disc from the center of the landing point.

Shape – The shape should be able to accommodate the minimum size required.

Surrounding – Take note of any hazards around the landing area. To spot cables and wires, lookout for poles. The location of the poles will enable the pilot to predict the presence and direction of cables or wires.

Surface and slope – Assess the landing site surface condition and slope.

Approach – Take note of the wind direction and surrounding obstructions. Determine the best path to carry out the approach. Always carry out a dummy approach if you are not familiar with the area or you believe that your approach is not safe. Be prepare to overshoot.

Circuit – Decide the low-level circuit pattern.

Markers – Decide the landing point, final and most important the tail clearance marker.

Overshoot path – Determine a safe overshoot path.

For further information on Wire Strikes, please refer to the link below:

[Cable Collisions | EASA Community \(europa.eu\)](#)

## 2. Securing Helicopter Passenger Doors

Civil Aviation Regulations 2016 Regulation 83 [4] states that no pilot-in-command of a helicopter shall permit a helicopter rotor to be turned under power for the purpose of making a flight unless there is a pilot with appropriate rating at the controls.

Pursuant to the above, helicopter operations with single pilot carrying passenger(s) shall not carryout rotors turning during embarking and disembarking passenger(s). The single pilot has to perform a complete shutdown to conduct a pre-flight safety briefing for the passenger(s) and ensure all passenger doors have to been securely closed and locked before starting up for the next flight.



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**DATUK CAPTAIN CHESTER VOO CHEE SOON**

Chief Executive Officer  
for Civil Aviation Authority of Malaysia

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