



Serious incident to the Airbus AS350-B3 registered F-HJSC

on 22 July 2020

5 NM north-east of Nîmes Garons (Gard)

⁽¹⁾ Except where otherwise indicated, the times in this report are in local time.

Time	Around 15:25 ⁽¹⁾
Operator	LEI MOA
Type of flight	Transport on own account
Persons on board	Pilot and three passengers
Consequences and damage	Front passenger injured, canopy broken
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in December 2020. As accurate as the translation may be, the original text in French is the work of reference.	

Bird strike on approach

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements, radio communication recordings and recordings from the Visio1000 camera equipping the helicopter.

The pilot took off from Annecy airport (Haute Savoie) with four passengers for a private flight to Dieulefit (Drôme) where he set down one of the passengers. He then continued his flight to Nîmes-Garons airport. At the request of the Orange controller, he cruised at FL60 and started his descent to Nîmes at a ground speed of approximately 140 kt.

Passing through 1,100 ft in descent, approximately 5 NM north-east of Nîmes Garons, the helicopter struck a bird of prey, which went through the canopy, breaking it. The passenger seated in the front left seat was injured and bleeding profusely. It is likely that the bird of prey struck the thorax of the passenger and that his scalp was cut by shards from the canopy. The pilot was not touched and assisted the passenger who was in a state of shock.

After hitting the aft bulkhead, the bird of prey fell onto the collective pitch control lever. This did not affect the conduct of the flight as the pilot had set the friction control in steady flight to high.

The pilot monitored the engine parameters which remained nominal. He detected no anomaly.

He reported an emergency situation to the controller at Nîmes and squawked 7700. He requested assistance from the rescue and firefighting services (RFFS) upon arrival, as well as medical assistance for his passenger.

The pilot was cleared to land on runway 18 by the controller. To ensure that the emergency services attended the passenger as quickly as possible, he informed the controller that he planned to land directly at stand P5.

The landing was unremarkable and the passenger was evacuated.

2 - ADDITIONAL INFORMATION

2.1 Pilot information

The 36-year-old pilot held a Commercial Pilot Licence - Helicopters (CPL(H)) and an AS350 / EC 130 rating. He had logged 5,900 flight hours, 1,150 hours of which on type and 34 hours in the preceding three months.

2.2 Helicopter information



Source: BEA

Front view of F-HJSC

The canopy was penetrated on the passenger side, in the immediate vicinity of the windscreen centre post, over a height of 78 cm and a width of 40 cm approximately. The upper metal section of the windscreen post had an impact mark of a few centimetres, located 20 cm to the left of the centre post (aft looking forward). No impact mark or remains of the bird of prey were visible at the air intake, on the rotor mast or on the blades. On the pilot's side, the canopy was intact.

The protection of the engine fuel shut-off handle was no longer in its safety position. The pilot stated that he had not touched it. The fuel shut-off handle had not moved. Biological traces were found on the aft bulkhead of the cabin and the backs of the rear seats. The biggest pieces of the canopy debris found measured around 25 cm.

⁽²⁾ CS-27 for light helicopters.

⁽³⁾ Never-exceed speed.

The certification rules applicable to the AS350 B3⁽²⁾ do not specify any information pertaining to the resistance of the windscreen in the event of a birdstrike.

By way of comparison, regulation CS-29 applicable to large rotorcraft specifies that they must be able to withstand the impact of a one kilogram bird at VNE⁽³⁾ (CS 29.631 Birdstrike).

2.3 Information based on radio communications and recordings from the Visio 1000 camera

The helicopter pilot contacted the Nîmes controller at 15:19. The controller cleared him to join the left-hand base leg for runway 18 asking him to maintain a high speed due to an arriving IFR aircraft. The pilot confirmed he was able to maintain 135 kt. He sent his emergency message at 15:23.

The helicopter was equipped with a video camera located between the front seats, set back. It enables data displayed on the instrument panel to be recorded. In the case of the incident, it is possible to distinguish the shattering of the canopy, a very high ventilation of the cabin resulting in an item of clothing falling onto the central pedestal and the presence of the bird of prey on the collective pitch control lever.

2.4 Statements

2.4.1 Pilot's statement

The pilot stated that he had perceived a potential conflict of the path with the bird of prey but without certainty and had therefore been unable to implement an anti-collision strategy. He had taken instinctive evasive action by a low-amplitude right bank angle just before the strike.

2.4.2 Airport operator's statement

Weighing around 800 g, the bird of prey was identified by the STAC (French Civil Aviation Technical Centre) as being a red kite.

Prior to the accident, the airport operator had assessed the bird hazard in the vicinity of the airport in compliance with the requirements of European regulation No 139/2014⁽⁴⁾, in particular its Annex IV Part ADR.OPS.B.020 pertaining to the "*wildlife strike hazard reduction*", as well as the AMC⁽⁵⁾ and associated GMs⁽⁶⁾.

The operator had assessed that in the sector in which the birdstrike occurred, there was no identified hazard concerning birds of prey. The presence of this bird of prey was considered to be an isolated case.

⁽⁴⁾ [Commission Regulation \(EU\) of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation \(EC\) No 216/2008 of the European Parliament and of the Council.](#)

⁽⁵⁾ Acceptable means of compliance.

⁽⁶⁾ Guidance Material.

3 - CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.

Scenario

During the descent with a view to joining the airport circuit, the pilot detected a lone bird of prey but was unable to take action to avoid the strike. The bird of prey struck the canopy and penetrated the cockpit. Shards from the canopy injured the head of the front passenger. Air flowing into the cabin lifted up the light objects inside. The pilot assessed the flight qualities of the helicopter and decided to continue to the planned destination. He then reassured the injured passenger whilst optimising his path to ensure the passenger could receive help from the emergency services on the ground as quickly as possible.

Safety lessons

No specific bird hazard was identified in the sector by the airport operator. However, the hazard assessment methods used are not effective in identifying the presence of isolated and/or random birds. They aim to take into account expected high concentrations.

If the pilot had been injured in a way similar to that of the passenger, flight safety would have been compromised. The wearing of a protective helmet with face shield, by the pilot, would offer greater protection against this hazard. Due to exposure to other specific hazards, this practice is widely used in aerial work⁽⁷⁾. During the investigation pertaining to the accident to the helicopter registered F-GOLH⁽⁸⁾ in 2015 in another operating context (commercial air transport of passengers), the BEA showed that the pilot, who had not been wearing a protective helmet, had suffered a head injury. Remaining lucid and agile despite his injuries, the pilot's intervention was crucial in mitigating the consequences of the collision with the ground, in particular in terms of securing the wreckage and evacuating the passengers. The report for this investigation contains a non-exhaustive list of thirteen helicopter accidents during which the wearing of a helmet was instrumental in limiting injuries to the pilot wearing one or could have helped if the pilot had been wearing one.

⁽⁷⁾ The wearing of a protective helmet on flights classified as "specialized operation" is recommended through GM1 associated with SPO.IDE.H.205 of [Regulation \(EU\) No 965/2012](#) which requires the wearing of individual protective equipment adapted to this type of operation. This provision was recommended by the BEA within the context of the [investigation into the accident in 2009 to F-GVCE during an aerial work mission](#).

⁽⁸⁾ <https://www.bea.aero/les-enquetes/evenements-notifies/detail/accident-de-lairbus-helicopters-ec130-b4-immatricule-f-golh-survenu-le-24-10-2015-a-megeve-74/>