



Accident to the ROBINSON - R22 registered F-GILS

on 07 September 2017

at Mulhouse-Habsheim (Haut-Rhin)

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

Time	Around 12:10 ⁽¹⁾
Operator	Héli Rhin
Type of flight	Instruction
Persons on board	Instructor and student pilot
Consequences and damage	Instructor injured, student pilot slightly injured, helicopter destroyed

This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in August 2021. As accurate as the translation may be, the original text in French is the work of reference.

Loss of control during a hover flight exercise, collision with the ground, in instruction

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements.

The instructor, accompanied by a student pilot, took off from the Mulhouse-Habsheim aerodrome parking area for a 30-minute air experience flight in dual control and flew forward to runway 16.

Once on the runway, he handed over the controls one by one to the student pilot. During an exercise to maintain hover, while the student pilot was only holding the cyclic pitch stick, he lost control of the helicopter. The instructor was unable to operate the controls effectively and could not regain control of the helicopter. The helicopter struck the ground and turned over onto its left side.

2 - ADDITIONAL INFORMATION

2.1 Examination of the wreckage

Examination of the wreckage showed that the helicopter struck the ground in a slightly nose-down attitude with a 90° left roll. The flight controls had multiple failures, all of which were a result of the accident. The engine was in operating condition.

2.2 Instructor information

The 50-year-old instructor held a valid Commercial Pilot Licence - Helicopters (CPL(H)) and instructor rating. He had logged 889 flight hours, 725 hours of which on type and 104 hours in the last three months.

2.3 Meteorological information

The meteorological conditions estimated at the site by the instructor were as follows: calm wind, CAVOK.

2.4 Organizational and management information

2.4.1 Flight context

An air experience flight was offered to the student pilot through a gift pack. According to the commercial offer, this experience flight included:

- a 30-minute theoretical ground training on the helicopter instrument system, the flight controls and flying notions;
- a 30-minute flight. After the instructor took off, the student pilot was offered the possibility to take the controls and put into practice what had been covered during the briefing. The following exercises were taught: transition to hovering, helicopter rotation and forward flight, hover flight, climbing, aircraft instrument checks, turns, and approach phase. At the end of the flight, the landing was carried out by the instructor.

2.4.2 Regulatory framework

Introductory flights⁽²⁾, commonly known as "*sightseeing flights*", may not be advertised for a fee or canvassed in any way, and in particular may not be the subject of any commercial offer by means of gift packs.

The "air experience flight" notion does not exist in the regulations. However, a flight in which a person takes the controls at any one time is an instruction flight that must be conducted within the regulatory framework applicable to aeronautical training⁽³⁾. Instruction flights shall be provided by approved training organisations (ATOs) or declared training organisations (DTOs) with the sole aim of issuing a licence or rating⁽⁴⁾. In particular, the organisation must define, in its training manual, each type of training provided and the associated programme. Thus, from the first flight, the approved training programme for the intended licence or rating must be followed. The training organisation must also assess the basic prerequisites for the start of the training.

2.4.3 Operator information

Héli Rhin was created in 2015 and had obtained a declared training organisation certificate, according to the regulations in force⁽⁵⁾ at that time, allowing it to provide training for the issuance of the Private Pilot Licence - Helicopters (PPL(H)) and R22 type ratings. In May 2017, the certificate was converted to an ATO certificate.

The conditions required to begin training, specified in the Héli Rhin training manual, were as follows: minimum age of 14 years for the start of training and 17 years for the issuance of the licence, a medical certificate before any solo flight and the use of a common language with the instructor.

⁽²⁾ Defined by [Regulation \(EU\) No 965/2012 "Air Ops"](#) Appendix VII Part NCO and specified in the [order of 18 August 2016](#) relating to the elements left to the discretion of the competent national authority by Regulation No 965/2012.

⁽³⁾ [Regulation \(EU\) No 1178/2011](#) of 03 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew.

⁽⁴⁾ See paragraphs ORA.ATO.100, ORA.ATO.125 and DTO.GEN.110 of Appendix VII to Regulation (EU) No 1178/2011

⁽⁵⁾ [Order of 31 July 1981](#) relating to the certificates, licences and ratings of civil aviation professional crew (aircraft flight crew with the exception of test and acceptance personnel).

⁽⁶⁾ French authority responsible for oversight and certification in the field of civil aviation.

The Heli Rhin training programme was based on the programme developed by the French Helicopter Federation (FFH). It states that the typical progress pattern involves one flight per module, but that the instructor may decide to complete the module in several flights, depending on the constraints or progress of the student pilot. The first module of the practical training for the PPL licence contains a one-hour long briefing and two one-and-a-half-hour flight lessons. It includes familiarisation with the helicopter (characteristics, cockpit layout, systems, checklist, procedures and checks), a familiarisation flight (defined as an introduction to flying and a flight exercise) and a flight where the functions and effects of the controls (airspeed, power, yaw, bank, attitude, hydraulics, friction) and the helicopter instrument system are covered.

The objective of this first module is for the student to discover the operation of the helicopter about its three axes by means of the associated controls.

2.4.4 DSAC supervision⁽⁶⁾

An initial audit of Heli Rhin was carried out when it obtained its declared organisation certificate in 2015. The training manual was not required at the time and the organisation had submitted its training programme during the audit. The latter had not raised any particular comment from the oversight inspector.

When the certificate was converted to an ATO certificate, an audit had been planned for September 2017 to validate the compliance of the ATO documentation and in particular its training manual. On the day of the accident, this audit had not yet taken place.

2.5 Statements

The instructor indicated that he had conducted the pre-flight check of the helicopter before greeting the student pilot and giving him a brief introduction to the helicopter. He had then conducted the theoretical part of the session and explained to the student pilot what the flight would include: exercises close to the ground and then a level flight. They had sat in the helicopter, he was on the left and the student pilot on the right. The instructor had taken off, flown forward to runway 16, and landed the helicopter.

He had then asked the student to take the collective pitch lever and to transit to hovering at 1.5 m from the ground, while he kept the other two controls, rudder and cyclic pitch. The student pilot had performed the manoeuvre three times and had then handed over the collective pitch lever.

After that, the instructor had rotated the aircraft fully to the left and then to the right using the rudder pedals and asked the student pilot to repeat the exercise, while he kept the other two controls, collective and cyclic pitch. The student had completed the exercise without difficulty.

The instructor had then put the helicopter into hover three metres above the ground. He had asked the student to take the cyclic pitch stick, while he kept the other two controls, rudder and collective pitch, and to maintain the position by fixing a landmark in the distance. The student had completed the exercise twice without difficulty. On the third performance, the helicopter had suddenly shifted to the left in a downward path. The instructor had attempted to regain control of the helicopter and had twice ordered the student pilot to release the controls.

The instructor believed that the student pilot had abruptly operated the control. He believed that the student pilot had not released the control when he had instructed him to do so, thereby preventing him from regaining control of the helicopter.

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

The instructor took off and flew forward to the runway. During one of the exercises to maintain hover, the student pilot, who was only holding the cyclic pitch stick, probably over-operated the stick and the helicopter suddenly shifted to the left in a downward path. The instructor was unable to regain control of the helicopter before it struck the ground.

Contributing factors

The following factors may have contributed to the loss of control and to the non-recovery of this control by the instructor:

- The constraint imposed by the limited duration of the flight, which did not allow the instructor to ensure the student pilot's dexterity and responsiveness.
- The student pilot's stress as a result of a sudden unfamiliar situation that caused him to tighten his grip on the controls.

Safety lessons

In accordance with the regulations, the air experience flight is an instruction flight. It was not formally described in the training programme. It corresponds theoretically to the first flight of the training for the issuance of the private pilot licence. However, the duration of this air experience flight is shortened and the student takes the controls more quickly.

On the accident flight, the instructor had planned first to do some close-to-the-ground exercises and then to fly in level flight. It is more appropriate to start with exercises at a sufficient height, thus leaving a safety margin for the instructor to regain control of the helicopter if necessary. It also allows the instructor to safely assess the student's ability to handle the controls and react to an unexpected situation.