

Accident to the ROBINSON - R22 - BETA II registered F-HVRA

on 4 June 2019

at Caupennes-d'Armagnac (Gers)

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

Time	Around 17:25 ⁽¹⁾
Operator	Aéroclub du Bas-Armagnac André Malibos
Type of flight	Instruction
Persons on board	Student-pilot
Consequences and damage	Student-pilot slightly injured, helicopter destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in January 2021. As accurate as the translation may be, the original text in French is the work of reference.	

Loss of control over an unlisted landing area, with tailwind, in solo instruction

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements from the student-pilot and data from an aeronautical application used by the latter.

The student-pilot took off from Nogaro airport (Gers) at around 16:55. He headed north-west with the aim of practising approaches over an off-field landing area.

At around 17:15, during his return to Nogaro airport, he decided to practise an approach over a flat and uncultivated field he had just spotted. This was the first time he had practised in this approximately 200 m x 200 m area. He did not plan to land but to only make an approach facing into the wind that he estimated to be blowing from the north.

Following this approach, the helicopter hovered over the middle of the field at a height of approximately three metres. It was then oriented northwards opposite a forest whose closest trees were just under 100 m away.

To take off into the wind and clear the obstacles represented by these trees, the student-pilot decided to distance himself from the edge of the forest. He made a U-turn and flew in forward flight southwards.

After flying approximately 20 m, he lost control of the helicopter, which collided with the ground.

2 - ADDITIONAL INFORMATION

2.1 Student-pilot information

The 49-year-old student-pilot was training to be a private helicopter pilot.

He had logged 58 flight hours of which 19 hours were in solo flight. All of his flights were made in a Robinson R22.

In the three months preceding the accident, he had logged 11 flight hours of which 9 hours were in solo flight.

He did not yet have his pilot licence but his instructor had submitted the request to arrange a test flight with an examiner. No date was set for this test flight.

The student-pilot booked F-HVRA on the internet to make a solo flight on 4 June 2019.

The flying club has an online flight booking tool.

On the day of the accident, the student-pilot arrived at the flying club at around 16:00. He then sent a text message to his instructor to notify him of his intention to fly.

Wanting to practice his off-field approaches, he took the initiative to work on his approach away from the heliport. He did not discuss this matter with his instructor.

The field he chose to practise this exercise was not listed.

2.2 Student-pilot's statement

He stated that after remaining stationary in hover flight facing northwards and into the wind, during the forward flight southwards to distance himself from the edge of the forest, he had pondered whether to perform the forward flight exercises from another field located to his right. As this field was cultivated, he thought that the rotor downwash could cause damage.

It was then that he lost control of the helicopter.

He stated that the nose of the helicopter had suddenly yawed to the left.

He then pulled on the collective pitch lever to gain height, but the helicopter collided with the ground.

He added that he had heard the engine race and make a very loud noise. His hypothesis is that one of the two blades of the main rotor tore off in flight and stated that this could explain the loss of control and the engine racing.

2.3 Examination of the wreckage

The helicopter wreckage was found laying on its side and not dispersed. One of the two main rotor blades was found on the ground 30 m away.

The blade which had torn off was bent. The trailing edge was deformed under compression. These elements are characteristic of an impact between a fast rotating blade and an obstacle, in this case, the ground.

Indeed, the same types of deformations were observed on the blade that remained attached to the rotor hub. The two blades came into contact with the ground but only one broke.

The premature loss of a blade before it came into contact with the ground would have caused an imbalance, in turn causing significant loads on the rotor mast and the main gearbox. This would have caused damage to them and even the detachment of the rotor mast and the separation of the main gearbox from its mounts, with it tipping over in relation to the transmission deck. The examination of the wreckage did not reveal damage of this type and led to the conclusion that the torn blade became detached from the hub after coming into contact with the ground, with a rotor transmitting power.

The rotating star was examined. This part is the part used to transmit pitch and roll orders to the two main rotor blades by modification of the blade pitch using the cyclic pitch stick and collective pitch lever as well as the cranks and rods.

One of the two blade pitch-change rods, positioned between the rotating star and the main rotor hub, suddenly broke along its upper threaded section. The break resulted from the application of an abnormally high compression/buckling load, consistent with the impact of this blade and the ground.

The other rod was deformed but not broken.

Furthermore, the tail rotor was found intact, attached to the end of the tail boom.

All of the damage observed was caused by the impact with the ground.

2.4 Meteorological information

The meteorological conditions estimated at the site of the accident by Météo-France were as follows:

- scattered cumulus and stratocumulus at 4,000 ft;
- wind 300°/320° for 10 kt, with gusts up to 20 kt;
- slight turbulence;
- temperature 24°C;

Moreover, the possibility of a curl-over effect caused by the trees at the end of the field is slim. The flow was laminar below 3,000 ft and the estimated wind in the 300°/320° sector came from a relatively clear zone.

3 - CONCLUSION

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

At the end of the PPL training, the student-pilot took off alone for an unsupervised practice session.

After 20 minutes of flight, he decided to carry out an approach exercise over an unlisted field. After remaining stationary in hover flight, he made a U-turn and with a tailwind, flew forward to create a greater distance to perform his take-off opposite the edge of the forest. The student-pilot then lost control of the helicopter, which collided with the ground.

The student-pilot probably encountered difficulties controlling the helicopter that was flying at low speed, with a tailwind and when he was no longer in ground effect.