



Accident to the Robin DR400 – 120 registered F- GJZH

on 17 December 2019

at Belfort - Chaux (Territoire de Belfort)

⁽¹⁾ Unless otherwise stated, all times given in this report are in local time.

Time	Around 15:00 ⁽¹⁾
Operator	Association Belfortaine de vol moteur (Belfort aero club)
Type of flight	Training
Persons on board	Student pilot
Consequences and damage	Student pilot slightly injured, aeroplane destroyed

This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in April 2020. As accurate as the translation may be, the original text in French is the work of reference.

Collision with a tree during an aborted landing, in solo training

1 - HISTORY OF THE FLIGHT

Note: the following information is based mainly on statements.

⁽²⁾ The wind was south-easterly, 5 kt.

At the end of a first right-hand runway circuit for runway 18R⁽²⁾ in dual-command training, the student pilot took off again for three runway circuits as part of a supervised solo flight. He made a full stop landing for each circuit. On the last landing, the aeroplane bounced and then continued along the runway. The pilot estimated that he no longer had enough runway left for the run and applied full throttle to take-off. The aeroplane veered to the left and struck a tree on the edge of the aerodrome at the beginning of the initial climb. Shortly thereafter, the plane entered a left roll before turning onto its back on the ground.

2 - ADDITIONAL INFORMATION

2.1 Instructor and student information

2.1.1 Instructor

On the day of the accident, the 65-year-old instructor held a CPL(A) licence with SEP and instructor ratings. She had logged over 12,600 flight hours, including about 7,900 flight hours as an instructor.

2.1.2 Student pilot

The 71-year-old student pilot had logged approximately 94 dual-command flight hours on aeroplanes since November 2014 and 10 minutes of supervised solo flight time with a full stop landing on 26 November 2019. In the month preceding the accident, he had logged 2 hours 15 minutes on dual-command flights.

The training was monitored by two instructors. The instructor had been supervising the student pilot since 2019. They had made about 40 flights, including around 40 landings (mainly full stop landings). The average duration of the flights in 2019 was less than 30 minutes.

2.2 Aerodrome information

Belfort - Chaux aerodrome has two grass runways adjacent to each other:

- runway 18R/36L, used by aeroplanes;
- runway 18L/36R, used by microlights and gliders.

Runway 18R/36L, measuring 920 m by 50 m, is orientated QFU 176°.

Runway 18R has a displaced threshold. The published distances are:

- landing distance available (LDA) = 765 m;
- take-off distance available (TODA) = 900 m;
- accelerate-stop distance available (ASDA) = 920 m.

2.3 Aircraft information

Under the conditions of the accident flight, the performance calculated according to the AFM is as follows (maximum weight 700 kg, grass runway):

Take-off run distance	185 m
Take-off distance (to + 50 ft off the ground)	355 m
Landing run distance (without braking)	230 m
Landing distance (from + 50 ft off the ground)	460 m

2.4 Site and wreckage information

The aeroplane struck a tree at a height of about 10 metres with a slight left bank. This tree is located 235 m from the end of runway 18R to the left of the runway centreline. The wreckage was located about 30 m from the tree along a southbound path.

The plane was destroyed and lying on its back. The front part (engine) was badly damaged. The left wing displayed compression marks; the right wing was severed. The damage had been caused by the impact with the ground.

The following observations were also made:

- the flaps were in the landing configuration;
- the carburettor heat control was partially pulled.



Source: BEA

Figure 1: severed tree (right) / view from the wreckage



Source: BEA

Figure 2: wreckage of F-GJZH

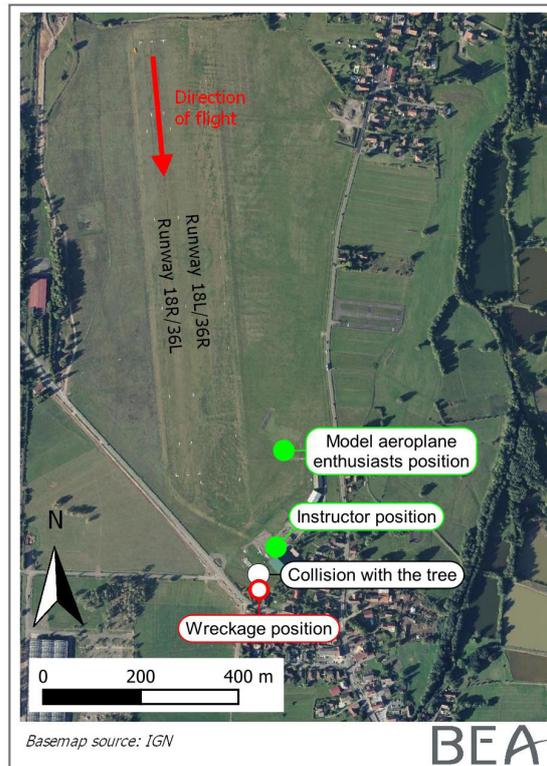


Figure: 3

2.5 Statements

Interviews were conducted with the instructor, the student pilot and model aeroplane enthusiasts on site at the time of the accident. The following points emerged from these interviews.

After dropping off the instructor after the first runway circuit, the student pilot mentioned that he was leaving for three further runway circuits. After each full stop landing, the instructor communicated with him on the frequency.

The student pilot indicated that the approach for the last landing was stabilised and that he bounced when he landed. When he came back down to the ground, he felt that he no longer had enough runway in front of him for the run and decided to take off again. He failed to retract the flaps to place them in the take-off configuration and does not recall pushing the carburettor heat control. The model aeroplane enthusiasts saw the aeroplane abeam their position a few metres above the ground, level with the threshold of runway 36R (microlight/glider runway). According to them, the engine was not at full power.

The instructor added that full stop landings are usually made on dual-command flights because the runway is short.

The pilot indicated that his concentration may have waned after the three solo runway circuits.

2.6 Balked landing recovery technique

It is stated in the ENAC's⁽³⁾ VFR Instructor's Manual that in the event of a bounced landing or if the path climbs again in response to an excessively sudden input, or under the effect of a gust, the aeroplane could find itself at a critical angle of attack. The speed is low and the power is reduced, the angle of attack is steep and the height is uncontrolled. The power input must be made while:

- counteracting the engine effects;
- blocking the aircraft's pitch attitude at that moment;
- changing the pitch attitude based on the speed and pitch attitude of the aircraft.

The pilot must also reconfigure the aeroplane to the take-off configuration. To do this, the flaps must be set to the take-off detent and the carburettor heat control pushed.

2.7 Previous occurrences

Over the period 2010-2019, the BEA recorded a total of 967 accidents involving at least one light aeroplane (less than 2.250 t), including 105 fatal accidents and 182 fatalities.

Of these accidents, 375 occurred while landing at an aerodrome other than a high-altitude airport or mountain landing area. Five accidents resulted in fatal injuries and six in serious injuries. An aborted landing was attempted in all five fatal accidents and in four of the six accidents where the occupants were seriously injured.

In addition, of the 105 fatal accidents, 48 were the result of a loss of control in flight, outside the landing phase.

⁽³⁾ École nationale de l'aviation civile (French Civil Aviation University).

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

On his last landing, after bouncing, the student pilot estimated that he would not be able to stop the aeroplane before the end of the runway and decided to abort the landing. He took off again with the flaps in the landing configuration and with the carburettor heat on, thereby degrading climb performance. The climb gradient was insufficient to enable the aeroplane to clear the obstacles in the vicinity of the aerodrome. The uncontrolled engine effects caused the aeroplane to enter a steep left turn.

Contributing factors

The following factors may have contributed to the collision with a tree during the aborted landing:

- The fatigue mentioned by the pilot, at the end of this flight (dual-command flight, followed by three supervised solo runway circuits).
- Insufficient understanding of the bailed landing recovery technique.

Safety lessons

Faced with an unexpected situation during landing (long flare, bounces, lateral drift), the pilot may have to make choices in a quickly changing situation: continue the landing at the risk of damaging the aeroplane or take off again. A study of past occurrences shows that serious landing accidents occur mainly when the pilot applies power without having sufficient control over the aircraft.

During training or recurrent training, it is important to remember the various phenomena linked to the theory of flight that occur during an aborted landing. It is also essential to consider all the criteria to be taken into account when deciding whether it is preferable to abort rather than continue with a landing.