

Loss of control, collision with the ground, instruction flight

Aircraft	Cirrus SR-20 registered F-HCPT
Date and time	31 July 2013 at 15 h 25 ⁽¹⁾
Operator	Club
Place	Poncins (42)
Type of flight	General aviation
Persons on board	Instructor and student
Consequences and damage	Instructor and student killed, aircraft destroyed

⁽¹⁾Times in this report are local, except where otherwise indicated.

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

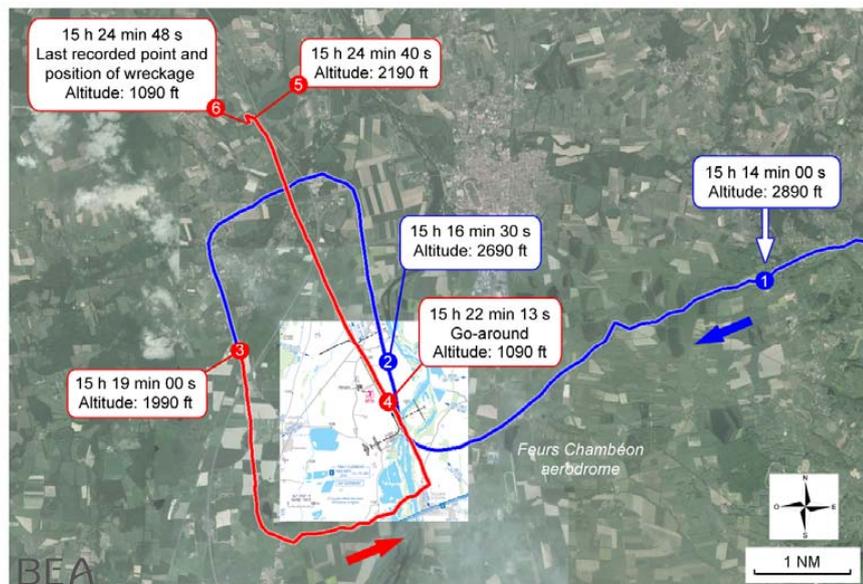
1 - HISTORY OF THE FLIGHT

The instructor and student took off at 14 h 55 from Lyon Bron aerodrome (69), where the aeroplane was based, for a VFR training flight.

They flew to Feurs aerodrome (42) where they circled the aerodrome before performing a go-around on short final on unpaved⁽²⁾ runway 33. The data taken from radar recordings shows that the aeroplane climbed away from the aerodrome along this runway's extended centre line with a constant ground speed of about 80 kt and with an average vertical speed of about 475 ft/min. When the aeroplane reached an altitude of 2,200 ft, i.e. a height above ground of about 1,000 ft, the flight path descended significantly and turned to the left.

⁽²⁾The club advises its members that they should not land this type of aircraft on unpaved runways.

The wreckage was found immediately beneath the position of the last recorded point.



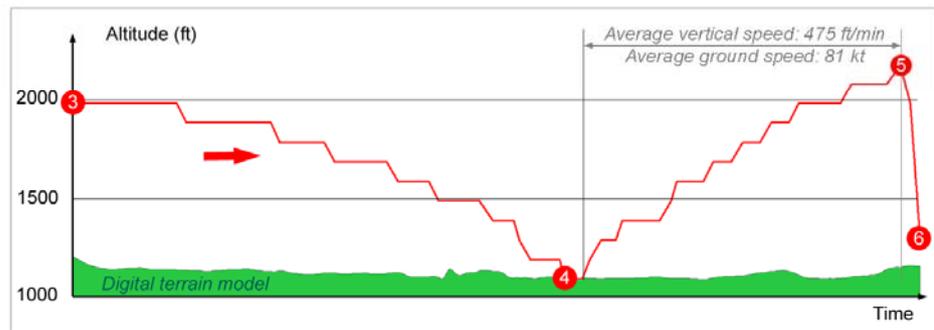
Cartographic source: Google Earth, SIA

— F-HCPT flight path based on Clermont-Ferrand radar data between 15 h 13 min 30 s and the last recorded point

The altitudes shown are calculated on the flight levels transmitted by the transponder (mode C) and corrected to QNH 1020

Times given are local

BEA Safety Investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liability.



2 – ADDITIONAL INFORMATION

2.1 Personnel Information

The student, who had held a private pilot licence since 2000, had about 265 flying hours experience. He had started flying on Cirrus SR-20s between January and October 2012, i.e. 14 hours of dual flying, then had flown three times as flight commander in October and November 2012, doing 4 hours 10 minutes flying. He had not flown between this date and June 2013, the date on which he resumed dual flying on Cirrus SR-20 (2 h 12 min flying time).

The instructor was the club's chief pilot. His total experience was about 2,600 flying hours, of which 180 hours on the club's Cirrus SR-20s. In the 12 months prior to the day of the accident, he had done 320 hours of flight instruction, 37 hours of which on Cirrus SR-20s. In the previous three months, he had flown 92 hours, 11 of which on Cirrus SR-20s, and all as flight instruction. On the morning of the day of the accident, he gave 2 hours of flight instruction.

2.2 Aircraft Information

The flight operations manual states that the indicated stall speed is 55 kt when the engine power is at idle, in landing configuration with zero bank angle, and with the aeroplane at its maximum weight of 3,000 lbs⁽³⁾. This speed is 80 kt under the same conditions when the bank angle is 60°. The aeroplane is fitted with an aural stall warning.

The flight operations manual states that the maximum demonstrated indicated speed for deploying the airframe parachute system is 135 kt. It does not indicate the minimum height for this operation since the loss of height during deployment varies depending on numerous factors (including the aeroplane's airspeed, altitude and attitude). It does, however, state that the probability of a successful deployment increases with height. For example, a height of 920 ft can be expected to be lost between the start of a spin and the stabilisation of the parachute. At a height of less than 2,000 ft, the decision to deploy the parachute must be taken immediately to increase the probability of a successful deployment.

The flaps configuration for take-off is 50%. The go-around procedure also requires this configuration.

The climb performance after take-off, as stated in the flight operations manual (maximum power, 50% flaps, indicated airspeed of 85 kt, at 2,000 ft and at 25°C), is as follows with:

- ❑ a maximum aeroplane weight of 3,000 lbs: 700 ft/min;
- ❑ an aeroplane weight of 2,500 lbs: 1,000 ft/min.

⁽³⁾The estimated weight of F-HCPT at the time of the accident was 2,700 lbs.

⁽⁴⁾The parameters recorded primarily relate to the operation of the engine. The altitude parameter is invalid for the entire duration of the flight. The parameters recorded do not include actions on the flight controls and on the flaps, or the indicated airspeed.

⁽⁵⁾This computer transfers the data from the microprocessor's volatile memory in blocks to a Compact Flash card (non-volatile memory) about once a minute. If the electrical power supply is lost, e.g. as the result of an impact, any data that has not been transferred is lost.

2.3 Meteorological Conditions

The meteorological conditions estimated at Poncins were as follows: wind variable and light, possibly reaching 10 kt, visibility of 9,999 m, NSC, SCT 6,000 ft on the surrounding terrain, temperature of 28 °C, QNH 1020 hPa.

2.4 Flight Data Recorders

The aeroplane was not fitted with a flight data recorder. It is not required by the regulations. However, the data stored by the on-board computer could be recovered⁽⁴⁾. The whole accident flight was recorded with the exception of the last minute or so⁽⁵⁾. Analysis of this data does not reveal any anomaly that might provide an explanation for the accident.

2.5 Wreckage and Impact Information

The wreckage was located on the edge of a wood. Examination of the wreckage and of the site indicated that:

- the aeroplane hit the trees and the ground with a steep nose-down pitch attitude (about 40°) heading in a northerly direction;
- the parachute was deployed in the trees. The parachute compartment's cover was found about 120 metres to the south-west of the wreckage. A photo taken by the emergency services when they arrived on the scene shows that the parachute activation handle was outside its compartment. The handle's cover was no longer in place;
- the aeroplane was in one piece, and had experienced a high energy impact with the ground;
- the engine had been running;
- the position of the fuel selector could not be determined. However, it was not set to OFF;
- the flaps were in the landing position (100%) and symmetrical. The flap control lever was in the landing position.

These examinations did not reveal any malfunction likely to have contributed to the accident.

2.6 Tests and Research

Examination of the logbook and of the fuel consumption recorded during previous flights shows that when the accident occurred both tanks contained fuel.

A test flight, performed on a similar aeroplane with weight and air density conditions as similar as possible to those present at the time of the accident demonstrated that:

- the climb performance determined from the radar records for the accident flight is compatible with a climb with the flaps set to the landing configuration;
- in this configuration, climbing at 80 kt, the aeroplane would have to be banked to about 50° to trigger the stall warning. The aircraft's pitch would then be approximately 10°;
- in this configuration, in climb with high engine power, the stall warning triggers at about 60 kt when the aircraft's pitch is more than 15°.

2.7 Summary of Witness Interviews

One witness saw the aeroplane fly past and heard the noise of the engine. He then saw the aircraft dive towards the ground, and then saw the parachute deploy when the aircraft was at a very low height, immediately before the impact. He heard the noise of an explosion.

A second witness saw the aircraft turn suddenly to the left and then dive. The aeroplane's attitude then appeared to return to normal, while it turned through more than 180°. He heard an explosion. He remembered seeing the parachute's webbing, but could not say at what point. He thought that he had heard the noise of the engine.

Two other witnesses heard an explosion. One of them then heard a second noise, which he attributed to the impact. He had previously seen the aeroplane in flight, and heard the noise of the engine. He did not see the aeroplane lose height, since his view was masked by trees.

3 - CONCLUSION

3.1 Scenario

Comparison of the performance determined from the radar data during the climb (after the go-around), with that obtained during a test flight appears to indicate that the climb was performed with the flaps in their landing configuration. The investigation could not determine the reasons for selecting this configuration, which is unusual when climbing.

If it is assumed that the average windspeed was low, then the indicated airspeed would have been very similar to the ground speed during the climb prior to the loss of control. This airspeed is about 25 knots greater than the aeroplane's stall speed with level wings, in this configuration. The test flight carried out confirmed that the occupants would have had a significant margin of manoeuvre before the onset of stall. The unusual position of the flaps does not therefore explain the loss of control. In the absence of any anomaly observed during the examination of the wreckage, it is likely that this loss of control was provoked by inappropriate and sudden actions on the flight controls.

The deployment of the airframe parachute system was activated by the occupants very shortly before impact; activation of the firing system was responsible for the explosion heard by the witnesses. The low height did not give the system time to absorb sufficient energy to protect the occupants.

3.2 Causes

The accident occurred as a result of a loss of control at low height. The investigation could not find any signs of a technical anomaly prior to the accident. The actions or decisions of the occupants, which might have caused this loss of control, could not be determined by the investigation.