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Bureau d'Enquêtes et d'Analyses
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SAFETY INVESTIGATION REPORT

Accident to the ROBIN DR400-180 registered F-GUXO on Sunday 7 January 2024 at Vichy

Time	Around 15:10[1]
Operator	Aéroclub de Vichy
Type of flight	Local
Persons on board	Pilot and one passenger
Consequences and damage	Pilot and passenger fatally injured, aeroplane destroyed
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.	

Collision with ground, at end of downwind leg

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements, radar detection data and radio-communication recordings.

The pilot, accompanied by a passenger who was also a pilot, took off from runway 01 at Vichy - Charmeil aerodrome. He climbed to a height of 1,350 ft[2], then carried out a U-turn (see **Figure 1**, point 1) and descended to a height of 300 ft to fly over the runway on the reciprocal QFU (see point 2). He headed towards the end of the downwind leg for runway 01 while climbing to 400 ft (see point 3). From this point, the radar plot shows the aeroplane making a smooth descent. A witness, who saw the aeroplane descending before losing it from view, found the aeroplane wreckage in a field.

[1] Except where otherwise indicated, the times in this report are in local time.
[2] The glossary of abbreviations and acronyms frequently used by the BEA can be found on its web site.

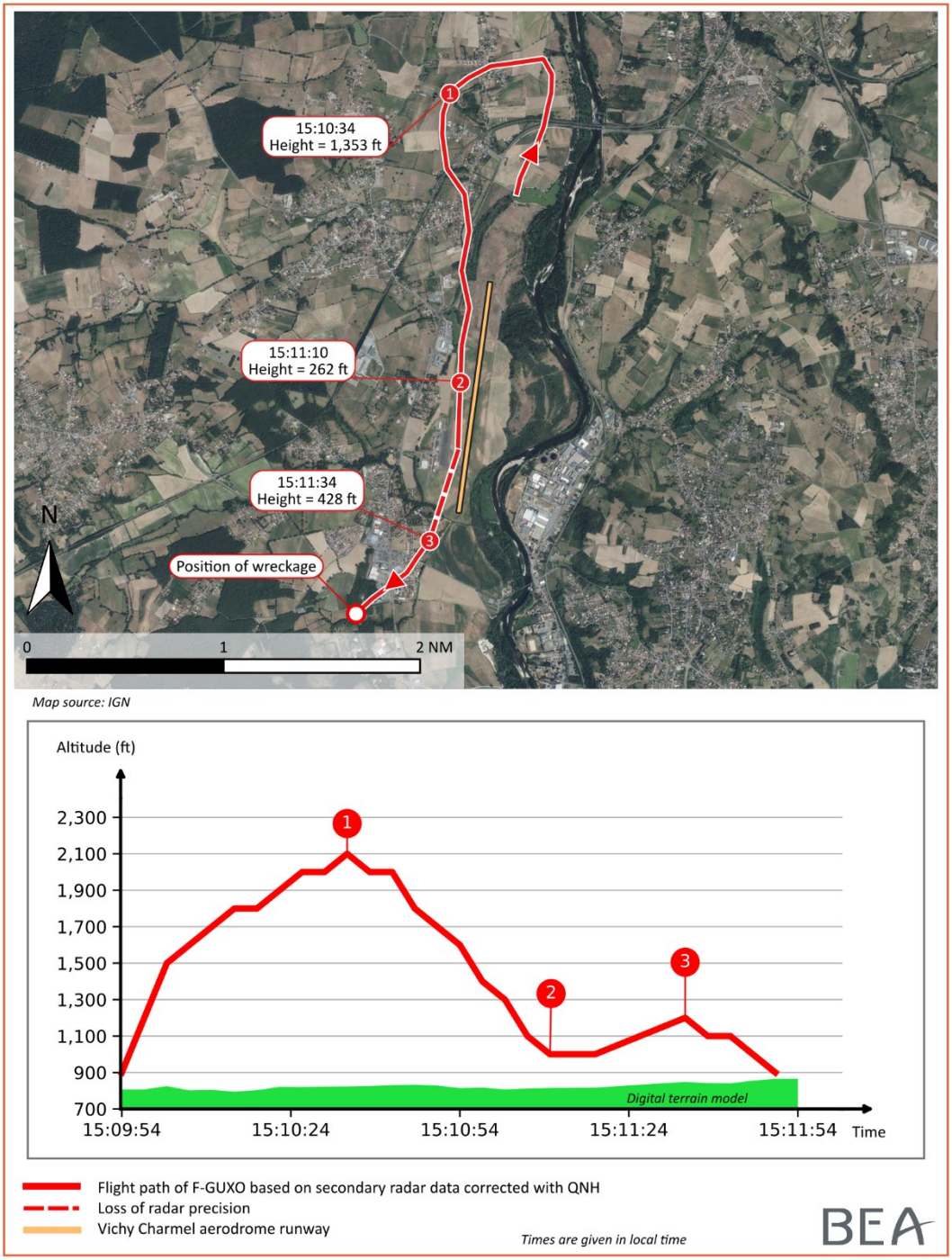

Figure 1: flight path of aeroplane

2 ADDITIONAL INFORMATION

2.1 Examination of site and wreckage, additional examinations

The accident site was situated south-west of and around 0.7 NM from the threshold of runway 01 of Vichy - Charmeil aerodrome. The aeroplane was found in a field. The approach flight path on a south-westerly heading passed abeam a group of trees bordering the field.

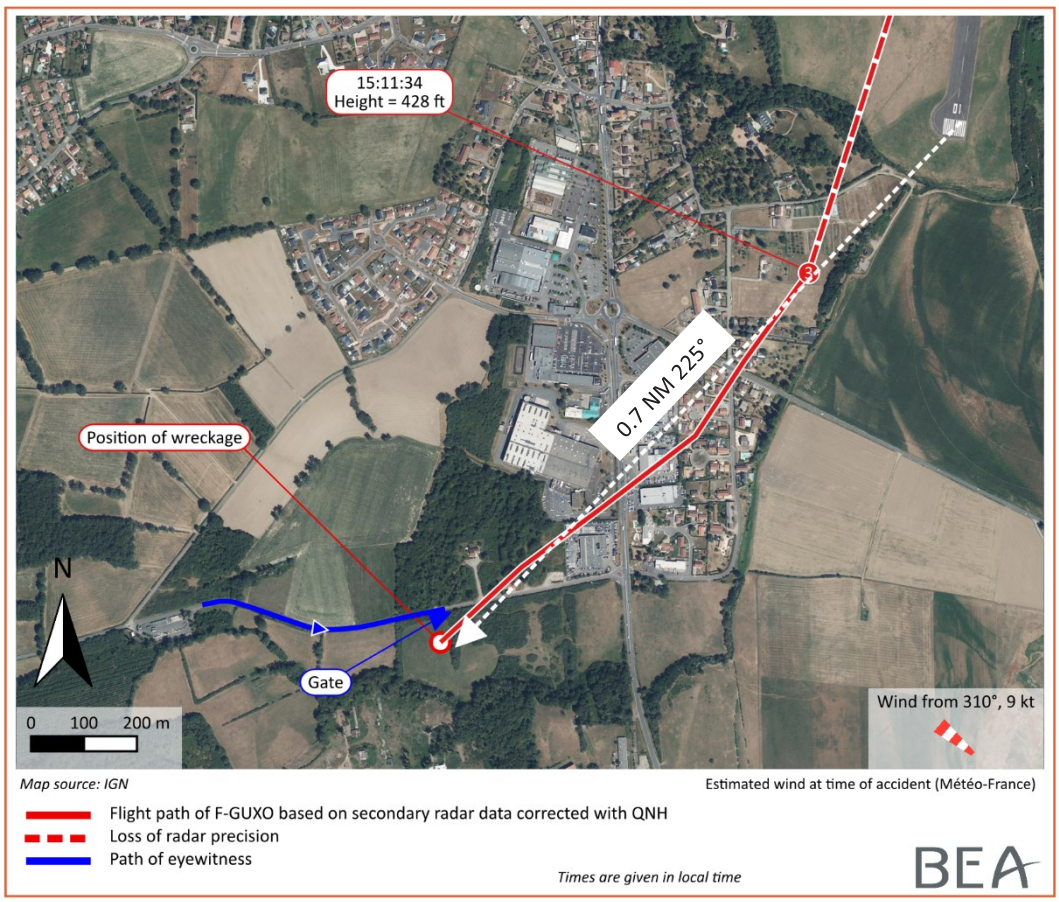

Figure 2: situational view of wreckage and environment

The damage to the front section of the aeroplane and the distribution of the debris indicate a high-energy impact and a nose-down attitude at the time of the collision with the ground.

The parts found in and around the group of trees show that the loss of the RH wing, the propeller, the starter ring gear and the propeller flange was due to contact with the vegetation when the aeroplane passed through the trees.

The battery and alternator switches were found in the "OFF" position. No sign of an incipient electrical fire which might have required the pilot to cut off the electrical power supply during the flight was observed which suggests that the on-board power supply might have been cut off just before the attempted landing, in compliance with the "emergency landing" procedure. The examination of the warning lights seems to indicate that they were extinguished before the collision with the ground which corroborates the electrical power supply being cut off before the impact.

The fuel valve was set to the main fuel tank, the LH seat throttle control was set to idle and bent, the richness control was set to full rich and the carburettor heat control was pushed (the carburettor heating was not on).

The examination of the flight controls did not find any anomaly that could explain a loss of control of the aeroplane. The ruptures to the aileron control cables were sudden failures very probably resulting from the impact with the vegetation or the ground.

There was no evidence of a fuel supply or ignition fault. However, it was not possible to completely test all of the fuel supply and ignition systems given the substantial damage to the aeroplane.

The condition (clean with no clogging) of the manifold filter situated before the powerplant could not be checked because of the substantial damage sustained in this area during the collision with the ground.

The damage to the propeller showed no signs of engine torque before the aeroplane passed through the trees and the propeller flange broke.

The rupture of the propeller flange was a sudden failure, probably resulting from the aeroplane's impact with the vegetation. No signs of torsion indicating the presence of engine torque at the time of impact were found in the area of this rupture.

2.2 Pilot information

The 77-year-old pilot held an aeroplane Private Pilot Licence (PPL (A)). He had logged approximately 1,500 flight hours. He held a valid class 2 medical fitness certificate with a restriction since 2003, requiring the on-board presence of a second pilot with the aircraft type rating, and prohibiting aerobatic flight. The pilot was also the owner of an amateur-build aeroplane which had a restricted certificate of airworthiness (CNRA).

In 2023, the pilot carried out approximately two flight hours spread over three flights on the aeroplanes of the club where he had been a member since 1983. It was not possible to determine the number of flight hours that he had carried out on his own aeroplane.

The 72-year-old passenger-pilot in the RH seat held a LAPL (A) pilot licence, a class 2 medical fitness certificate and was qualified for the DR400. In 2023, he carried out approximately 12 flight hours spread over 13 flights on the aeroplanes of the club, including F- GUXO.

2.3 Statements

2.3.1 Flying club president

The president of the flying club indicated that the flight was part of a “Father Christmas” day for the children of flying club members. The flight was to consist of a pass over the runway so that the pilot, who was in the RH seat and dressed as Father Christmas, could wave at the children (which explains the reciprocal-QFU). The plane was then to land and taxi back to the apron so that “Father Christmas” could get out and distribute the presents on board the aeroplane to the children.

He added that he took the aeroplane out of the hangar and checked the fuel and oil levels. He specified that the two wing tanks were almost full, and that the main tank was “half full” according to the dipstick. He indicated that he placed the Father Christmas costume in the plane and loaded the presents into the cargo hold. He estimated that there were around 20 kg of presents. He added that another pilot moved the plane to the foot of the control tower. He specified that the aeroplane started up normally.

He stated that when he crossed the two pilots, he told them he had not carried out the pre-flight check. The pilot-in-command replied that he would take care of it while the second pilot put on his costume.

He specified that he saw the aeroplane taxiing to the holding point and heard variations in the engine speed, characteristic of the tests to be carried out before lining up on the runway. He saw the aeroplane take off and climb in a northerly direction, before returning to carry out the pass over the runway. During the pass, he stated that the aeroplane had speed, and he could hear the engine noise, which seemed normal to him. At the end of the pass, as the aeroplane regained altitude, he heard an increase in engine speed and then lost sight of the aeroplane.

2.3.2 Eyewitness

The eyewitness specified that he was a passenger in a car travelling along the road which runs alongside the accident site. He indicated that he saw an aeroplane in a smooth descent from left to right “without any noise”. He saw it fly low over the trees and then disappear behind the hedge separating the field from the road. When he arrived at the gate to the field, he saw the wreckage and called the emergency services. He specified that the windows of his vehicle were closed, and added that there were no smoke or flames when he saw the aeroplane in descent.

2.4 Meteorological information

The meteorological conditions recorded at 15:00 by the weather station situated on Vichy - Charmeil aerodrome indicated:

- wind from 310° at 9 kt, varying in direction between 280° and 350°;
- visibility greater than 10 km;
- scattered clouds at 1,400 ft, overcast at 3,200 ft;
- outside air temperature +2.7°C, dew point 0°C;
- humidity 85%;
- pressure 1016 hPa;
- freezing level at an altitude of 1,000 ft.

The 12:00 and 15:00 UTC SIGWX charts indicated in the Vichy region:

- a cloud layer of cumulus and stratocumulus varying in density, with a cloud base between 1,500 ft and 3,200 ft;
- moderate icing between 1,500 and 7,000 ft;
- locally, rain or snow showers.

Although the meteorological data seems to be conducive to the occurrence of icing phenomena (carburettor, induction system), it was not possible during the investigation, on the sole basis of the on-site observations of the wreckage, to rule on the occurrence of such a phenomenon during the flight.

2.5 ATC communications

At the time of the accident, the aerodrome was using the A/A frequency, but communications were recorded. The analysis of these communications did not reveal any element likely to explain the accident. No messages indicating a problem on board the aeroplane were transmitted. The pilot's last radio message indicated his intention to fly over runway 19.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation.

Scenario

The pilot, accompanied by a passenger who was also a pilot, took off from runway 01 at Vichy - Charmeil aerodrome for a short flight as part of an event organized by the flying club. After carrying out a low pass over the facilities, the pilot headed towards the end of the downwind leg while climbing, most probably with a view to landing on runway 01.

While outbound, it is highly likely that an unforeseen event, unexplained by the safety investigation, occurred. Given the flight path, the pitch attitude of the aeroplane described by the eyewitness, and the on-board electrical power being set to off, it seems that the pilot was forced to make an emergency landing. During this manoeuvre, the aeroplane struck a group of trees and ended its run in a field.

The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.