



Accident to the CESSNA - FA150K
registered **F-HPRE**
on 30 January 2023
at La Drenne (Oise)

Time	Around 12:30 ¹
Operator	Private
Type of flight	Cross-country
Persons on board	Pilot accompanied by an instructor
Consequences and damage	Aeroplane substantially damaged
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 a power line en route,
main landing gear torn off**

1 HISTORY OF THE FLIGHT

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

The pilot, accompanied by an instructor, took off from Pontoise – Corneilles-en-Vexin aerodrome (Val d'Oise) at approximately 12:20 under special VFR, bound for Amiens-Glisy aerodrome (Somme). The ATIS information for Pontoise indicated overcast at 700 ft AGL (i.e. an altitude of around 1,000 ft). The visibility was greater than 10 km.

At 12:27:11 (see **Figure 1**, point **1**), the pilot exited Pontoise airspace and was flying at an altitude of around 900 ft, below the cloud ceiling. Two minutes later, at 12:29:44 (point **2**), the pilot contacted the Beauvais tower controller and specified that they were flying at an altitude of 800 ft (the aeroplane's height was then around 400 ft). At 12:31:50 (point **3**), the controller indicated to the pilot that he was transiting in special VFR and provided him with the weather conditions measured at Beauvais airport: visibility greater than 10 km, broken clouds at 1,000 ft AGL (i.e. an altitude of around 1,400 ft) and at 2,700 ft AGL.

At 12:32:13 (point **4**), the instructor indicated to the controller that the conditions were not good and that they were therefore climbing as a safety measure. He added that they were in IMC. At this point, the aeroplane was at an altitude of around 775 ft (height of around 100 ft). The controller then asked him to try to maintain VMC conditions to continue. He then announced to the pilot that he no longer had radar contact with the aeroplane and asked him to turn around to recover VMC conditions.

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

Between these last two radio messages, at 12:32:33 (point 5), the aeroplane collided with a power line, its highest point being at an altitude of approximately 850 ft, the height of the aeroplane being around 150 ft. The transponder stopped transmitting about ten seconds after the collision.

The pilot and instructor noticed that the main landing gear was no longer present under the aeroplane's fuselage, and that the horizontal stabiliser was damaged.

The instructor then took over the controls and climbed in the cloud layer to continue the flight. He asked the controller for radar vectoring to reach Beauvais airport, but the controller, who could not see the aeroplane on his radar screen, was unable to meet his request. The instructor confirmed to the controller that the transponder was no longer working². About 30 s later, the instructor regained external visual references. He had sight of Beauvais-Tillé airport. Once there, the instructor made a first pass over the runway, and the controller confirmed that he only saw the nose landing gear. The instructor then landed on the secondary runway at Beauvais airport (runway 22), on the nose landing gear, after coordinating the associated safety actions with the pilot.

² The investigation did not attempt to determine the reason why the transponder stopped transmitting. No antenna on the fuselage was damaged.

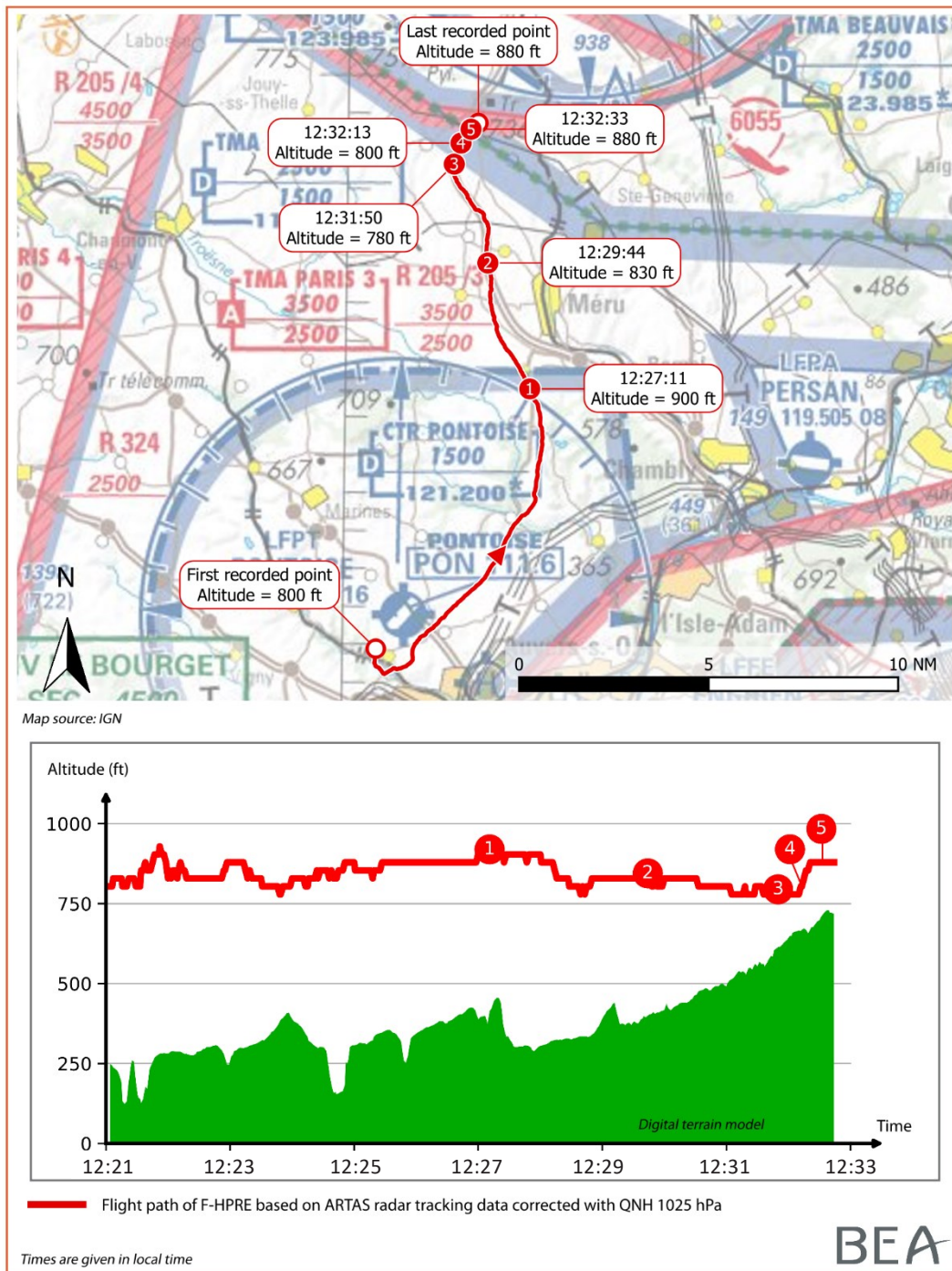


Figure 1: path of F-HPRE³ (source: BEA)

2 ADDITIONAL INFORMATION

2.1 Aeroplane information

F-HPRE is a Cessna FA150K. This is a fixed tricycle gear aeroplane with a high wing. The pilot is the owner of the aeroplane. The aeroplane is powered by a Continental O-200-A engine. It is not equipped for IFR flight.

³ The aeroplane was correctly set to QNH 1025 hPa.

The aeroplane was grounded from 15 June 2021 to 18 January 2023. During this period, in 2022, an overhaul was carried out on the engine. On 04 October 2022, the company in charge of the overhaul carried out engine run-in on a bench for two hours, in accordance with the engine manufacturer's documentation.

The manufacturer's documentation specifies that a test flight with mineral oil is required to complete the run-in, including:

- an en-route phase at 75 % power for one hour with mixture set to best power or full rich;
- alternating en-route phases at 65 % and 75 % during the second hour, with mixture set to the en-route parameters for best power.

A first flight lasting 1 h and 20 min was carried out on 18 January 2023, with the first part of the engine run-in being completed. No anomaly was detected during this flight. This flight, departing from Pontoise aerodrome bound for Rouen airport, was carried out by the pilot with the instructor. The accident flight corresponded to the second part of the engine run-in.

The mechanic from the maintenance workshop who supervised the engine overhaul said that he generally recommends that owners carry out local flights (ideally, in the Pontoise CTR) for the test flight(s) after such an overhaul.

2.2 Navigation between Pontoise and Amiens

Within the Pontoise CTR, to the north of the aerodrome, topographic points are marked at 578, 667 and 709 ft on the 1:500,000 ICAO chart published by the French National Geographic Institute (IGN). In this zone, the minimum flight altitude⁴ was between 1,078 ft and 1,209 ft.

Between Pontoise and Beauvais, the 1:500,000 ICAO chart published by the IGN shows:

- several high-voltage power lines;
- terrain culminating at an altitude of 759 ft, with a high-voltage power line on top of it;
- an obstacle reaching its highest point at an altitude of 938 ft (height 361 ft).

On this section, the minimum flight altitude was therefore 1,259 ft in relation to the ground and 1,438 ft in relation to obstacles.

Flying along the motorway involved a minimum overflight height of 1,000 ft⁵.

Between Beauvais and Amiens, the 1:500,000 ICAO chart published by the IGN shows:

- one high-voltage power line;
- terrain with a peak altitude of 486 ft;
- numerous wind turbines reaching at their highest point, an altitude of 1,006 ft (height of 441 ft).

On this section, the minimum flight altitude was therefore around 986 ft in relation to the ground and around 1,506 ft in relation to obstacles.

⁴ 500 ft above the ground or water, or above the highest obstacle within a 150 m radius from the aircraft.

⁵ See French order of 10 October 1957 concerning the overflight of built-up areas and gathering of persons and animals ([Version in force on the day of the accident](#)).

2.3 Meteorological information

The valid SIGWX chart for 13:00 (available from 11:00) indicated the following for the scalloped area incorporating the planned path:

- visibility locally greater than 8 km, visibility between 5 and 8 km, and visibility locally between 1.5 and 5 km due to rain, drizzle and widespread mist;
- rain and drizzle locally;
- drizzle inland locally;
- broken (BKN) stratocumulus and cumulus clouds, overcast (OVC) locally, with a base between an altitude of 1,500 ft and 3,000 ft and a top between an altitude of 5,000 ft and 7,000 ft;
- scattered (SCT) and broken (BKN) stratus clouds locally, with a base between an altitude of 500 ft and 1,000 ft and a top between an altitude of 1,500 ft and 2,000 ft;
- 0°C isotherm at 5,000 ft and 7,000 ft;
- moderate icing at 3,000 ft and 7,000 ft.

The 12:00 TAF for Beauvais – Tillé airport indicated the following for the relevant period:

- visibility greater than 10 km;
- overcast (OVC) at a height of 900 ft;
- changing, between 13:00 and 15:00, to scattered clouds (SCT) at a height of 1,500 ft and to broken clouds (BKN) at a height of 3,000 ft.

The 12:00 METAR for Pontoise – Cormeilles-en-Vexin aerodrome (altitude 325 ft) indicated the following visibility and cloud cover parameters:

- visibility greater than 10 km;
- overcast (OVC) at a height of 700 ft.

The METAR for Beauvais – Tillé airport (altitude 359 ft) indicated the following:

- visibility greater than 10 km;
- broken clouds (BKN) at a height of 600 ft;
- open overcast (OVC) at a height of 1,200 ft;
- changing to scattered clouds (SCT) at a height of 2,000 ft.

The METAR for Albert – Bray airport (altitude 363 ft), located 13 NM from Amiens - Glisy aerodrome, indicated the following:

- visibility greater than 10 km;
- FEW clouds at a height of 1,200 ft;
- scattered clouds (SCT) at a height of 2,700 ft;
- broken clouds (BKN) at a height of 3,400 ft.

The analysis of Météo-France specified that the accident area was in the warm sector of a disturbance, with drizzle episodes and the presence of stratus clouds. This disturbance was moving southwards. The weather improved slowly from the north-west, reaching the Paris region in the afternoon. Outside of the precipitation, visibility was greater than 10 km. Under the drizzle, during the morning, visibility was generally reduced to between 2 and 5 km. Ceilings observed at Beauvais – Tillé airport were as low as 600 ft, corresponding to a cloud base at an altitude of around 1,000 ft. The ceiling was estimated as being at 200-300 ft at the accident site which was at around 700 ft.

2.4 Persons on board information

2.4.1 Instructor's experience and statement

The 49-year-old instructor held a Commercial Pilot Licence - Aeroplanes (CPL(A)) issued in 2007 (private pilot licence issued in 1996) with a Multi-Engine Piston rating (MEP), the Multi-Engine Instrument Rating (IR/ME) and a Single-Engine Turbine (SET) TBM rating. He also held a Flight Instructor - Aeroplane rating (FI(A)) issued in 2015 and an aeroplane IFR instructor rating (IRI(A)) issued in 2016. He held examiner authorisations. He had logged approximately 3,300 flight hours, 1,500 hours of which as an instructor.

The instructor indicated that the flight was not an instruction flight⁶. He explained that he acted as safety pilot on this flight intended for engine run-in purposes, and that he was accompanying the pilot, who was qualified, but did not feel safe enough and wanted an instructor to upgrade his skills. However, he considered that he was the pilot-in-command during this flight.

The instructor stated that he felt no particular pressure to make the flight. He indicated that he flew a lot, every day, that he was acting as an instructor (mainly under IFR), that he was the president of a flying club, that he was a pilot for owners of DA42s and TBMs and that he also managed other aviation activities. He did not have any cash-flow problems. He specified that he did not take the time to analyse the weather conditions before leaving home, as he usually did, because he had to deal with a case relating to one of his activities. When he considered cancelling the flight because of the weather conditions on his way to the aerodrome, the pilot was already at the hangar. He added that he enjoyed flying with the pilot in his refurbished aeroplane.

The instructor explained that he spent two hours with the pilot in the briefing room, during which they analysed the weather charts, in particular all the charts available on the Internet. The weather conditions were improving from the north to the south. The flight was supposed to head north. He added that he knew this route very well, in particular the safe altitudes. They therefore delayed their departure by two hours to allow the weather conditions to improve. They did not delay the flight any longer because the instructor had other activities planned for the afternoon.

During the first engine run-in flight, the weather conditions had allowed them to fly between 1,000 and 2,000 ft. This flight had been an opportunity to train the pilot in blind navigation⁷.

During the accident flight, close to the motorway, the instructor noticed that they were low. He stated that he told the pilot to climb, but he did not check the input actually made by the pilot, in whom he had complete confidence. He added that just before the collision with the power line, he was looking at the engine parameters for run-in purposes. He did not see the pylon or cables. He then took over the controls, climbed in the cloud layer and continued the flight up to Beauvais – Tillé airport. He decided to land at Beauvais airport because emergency resources were available there. In addition, the weather conditions were more suitable for a VFR flight at this airport.

⁶ However, the instructor entered this flight as an instruction flight in his logbook.

⁷ They indicated that they did not use any special equipment (goggles, hood, etc.) and had remained in VMC conditions.

The instructor explained that he may have been less attentive to the management of the flight and over-confident in the pilot's abilities. He considered that this was probably due to a high number of aviation operations. He had no explanation as to why he undertook this flight.

2.4.2 Pilot's experience and statement

The 71-year-old pilot held a Private Pilot Licence - Aeroplanes (PPL(A)) issued in 1992. He had not flown in an aeroplane since July 2021, except for the first engine run-in flight after its general overhaul⁸. He had logged around 250 flight hours, 60 hours of which as pilot-in-command. He also held a Private Pilot Licence - Helicopters (PPL(H)) along with the R22 type rating issued in 2017, which expired in 2020. He had logged approximately 120 flight hours on helicopters, 20 hours of which as pilot-in-command. In the previous three months, he had logged just under two flight hours on R44 in instruction, for local handling flights. Lastly, he held a class 3 (fixed-wing) microlight pilot certificate issued in 2007. He had logged 36 flight hours in microlights.

The pilot explained that he wanted to fly with an instructor to upgrade his skills, because he had not flown in an aeroplane for more than 18 months.

The pilot stated that they studied the weather conditions very carefully before departure. He indicated that he did not have an aeronautical chart with him, but that the instructor had his tablet with the charts. He explained that he usually prepared his cross-country flights with safe altitudes, but he did not do so for this flight. He had no navigation log. He added that if he had been alone, he would not have undertaken a flight in such conditions. He indicated that visibility was not very good during the flight, but that he was not worried because the instructor held an IFR type rating.

During the flight, he was focused on the route along the motorway, which he kept to his left. He explained that a few moments before the collision, he saw power cables with a pylon on his right. He therefore applied a nose-down input to pass under the cables, and then a nose-up input to regain altitude. It was at this point that they felt a jolt, which they initially attributed to the manoeuvre, and not to the main landing gear being torn off or to a landing gear strut colliding with the horizontal stabiliser.

Lastly, he added that the maintenance workshop had asked him to run in the engine during the first two flights following the release from maintenance, and to comply with various engine reference values. According to him, the workshop did not ask him to stay close to the aerodrome for the run-in flights. He added that the instructor checked the various recommendations, in particular with a mechanic that he knew. The instructor therefore planned to apply different engine speeds for pre-established periods.

2.5 Power line information

The power line struck by the aeroplane is indicated on:

- the 1:500,000 ICAO chart published by the IGN;
- the VAC chart for Beauvais – Tillé airport (near the SW point).

⁸ According to the pilot's logbook, the flights made in 2021 (before the aeroplane was grounded) and the flight on 18 January 2023 were instruction flights.



Figure 2: annotated photograph of the power line (source: BEA)
 Photograph taken the day after the accident

The power line is made up of two power links (on either side of the pylon), each made up of three bundles (three-phase current), each comprising three cables. These cables are twisted strands of unshathed steel, 3 cm in diameter. The electrical potential difference between each phase is 400 kV. Above each link is an overhead ground cable, connected to earth, which acts as lightning protection.

The height of the bundle struck was approximately 125 ft, i.e. an altitude of around 850 ft. It was slightly frayed. The impact zone is located around 15 m from the pylon. At this point, the pylons are spaced around 550 m apart.

The two struts of the main landing gear were found approximately 15 m after the power line.

3 CONCLUSIONS

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

Scenario

The pilot and the instructor undertook a flight in weather conditions that were not suitable for a VFR flight. The purpose of this flight was to run in the engine, which had recently been overhauled.

The pilot at the controls, who had not flown for more than 18 months, wanted to upgrade his skills with an instructor. The instructor considered himself to be the pilot-in-command. He was responsible for making decisions and monitoring parameters during the engine run-in.

During the flight preparation, the pilots considered that the weather conditions were improving to the north. They did not determine a safe altitude for their flight.

The flight was performed at a relatively constant altitude, at the edge of the cloud layer. The height of the aeroplane gradually decreased from 500 ft to 100 ft due to the rising terrain.

About 30 s before the collision with the power line, the aeroplane's altitude increased slightly, probably in response to the instructor's request to climb. After briefly losing visual references in the cloud layer, the pilots were unable to avoid collision with the power line.

Contributing factors

The following factors may have contributed to the collision with the power line:

- the decision to undertake a VFR flight, with a cloud ceiling preventing the destination to be reached following the planned route;
- the failure to determine a minimum altitude limit during the flight preparation;
- the decision to continue the flight in weather conditions that were not suitable for a VFR flight;
- insufficient look-out, which, if sufficient, would have allowed the pilots to identify the decrease in the aeroplane's height;
- the decision to carry out an engine run-in flight in marginal weather conditions requiring a heightened look-out;
- mutual overconfidence between the pilot and the instructor.

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