BEA
Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

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SAFETY INVESTIGATION REPORT

Accident to the Cessna F172N registered F-GCHO on Sunday 30 June 2024 on the A4 motorway, near Lognes - Émerainville aerodrome

Time	Around 15:40[1]
Operator	Aeroflight
Type of flight	Local
Persons on board	Pilot and two passengers
Consequences and damage	Pilot and passengers 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 a power line, then with the ground

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on radar data, radio communication recordings, video recordings from security cameras and a car in traffic, as well as statements.

The pilot, accompanied by his parents, took off from Lognes - Émerainville aerodrome at 14:55 for a local flight around Coulommiers and then Meaux.

At 15:30, on returning from his flight and at an altitude of 1,420 ft[2,3], the pilot contacted the Lognes tower controller again, indicating that he was 5 min from point ECHO. The controller asked him to call back at ECHO, and the pilot read back the information. The aeroplane's ground speed was around 85 kt.

At 15:33:34 (see **Figure 1**, point 1), at an altitude[4] of 1,220 ft, the pilot announced that he was at point ECHO. The controller replied to the pilot that he (*Fox Hotel Oscar*) was not at all at point ECHO, but at the toll, and that point ECHO was 4 NM west from his position. The aeroplane was flying over the A4 motorway, in a slight descent, at a rate of approximately 200 ft/min. The aeroplane's ground speed was around 85 kt.

At 15:35:49 (point 2), at an altitude of 970 ft and still in descent, the pilot asked the controller if he had passed point ECHO. The latter replied to the pilot that he (*Fox Hotel Oscar*) had still not passed point ECHO, that this point was still 1 NM ahead of him, and that, on passing point ECHO, he would be able to carry out a straight-in approach to grass runway 26. The controller then rectified this information, telling the pilot (*Fox Hotel Oscar*) that, on passing ECHO, he had to call

[1] 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.
[3] The altitudes indicated in this report are corrected altitudes at the QNH of the day.
[4] The QNH altitude was indicated on the air traffic controller's radar display.

back overhead the area at 1,500 ft, traffic Robin, at the end of the downwind leg for grass runway. The pilot read back the information saying that he would call back at 1,500 ft overhead the area. This was the pilot's last message.

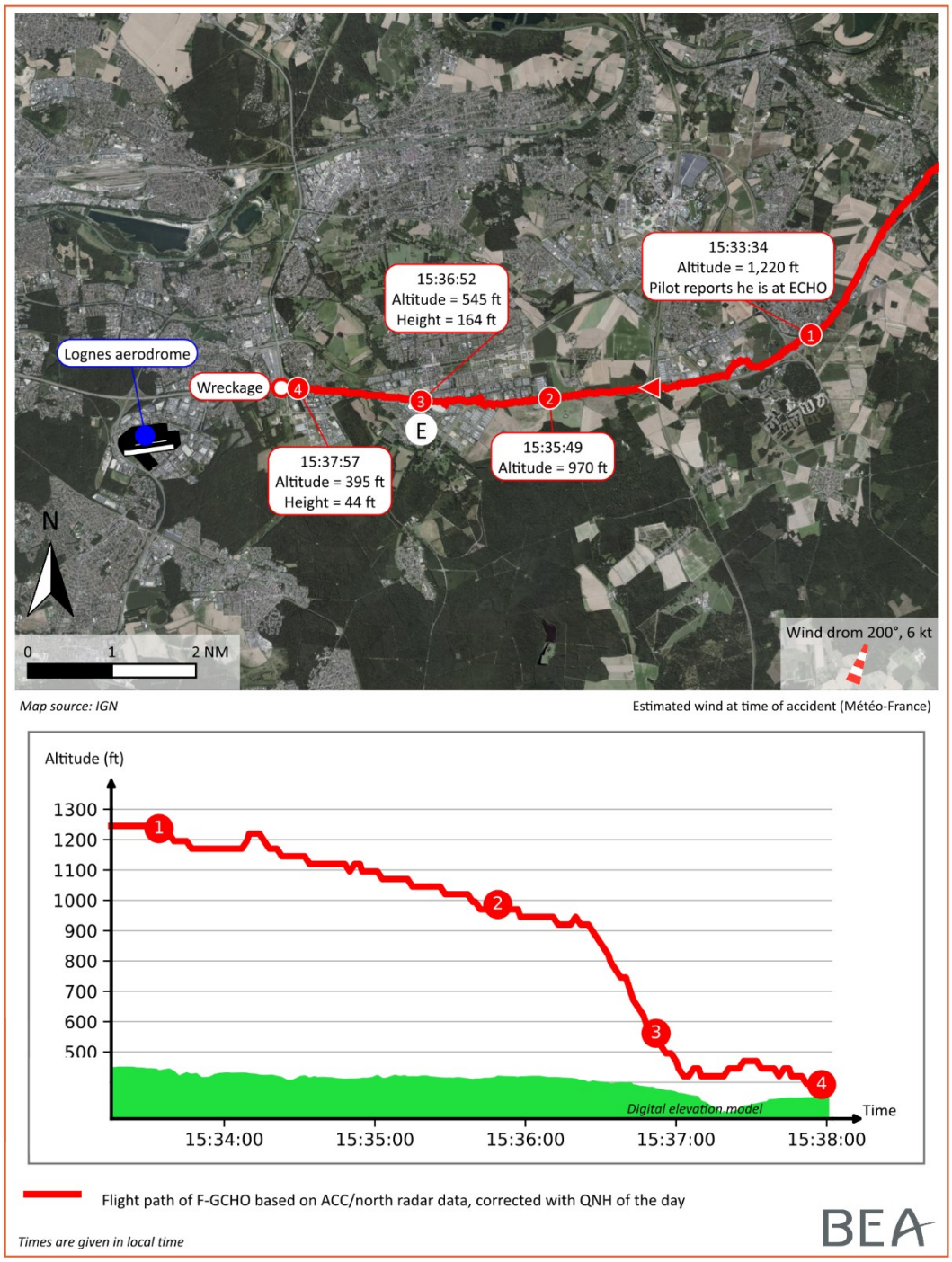

Figure 1: path of end of flight

One minute later, at 15:36:52 (see **Figure 1** and **Figure 2**, point 3), the aeroplane was overhead point ECHO at an altitude of 545 ft. The aeroplane flew over the motorway bridge located at the intersection of the A4 motorway with the D35 road, at a height of less than 170 ft[5], i.e. less than 50 m.

From point ECHO up to the collision with the power line (which represents a distance of 1.7 NM and a flight time of approximately 1 min and 15 s), several videos and radar data showed that the aeroplane was stable over the A4 motorway. It was flying level or in a slight descent with a loss of altitude of less than 100 ft, with the wings flat and the flaps retracted, at a height generally less than 150 ft. The aeroplane's ground speed was around 80 kt. The controller was then in radio communication with four other aircraft in traffic.

At 15:37:57 (point 4), the controller spoke to the pilot, saying that he (*Fox Hotel Oscar)* had to call back overhead the aerodrome at 1,500 ft and had to avoid flying along the motorway on coming back from ECHO, as he would then be in full conflict with the outbound traffic. There was no response from the pilot to this message.

At 15:38:05, the aeroplane flew over the first motorway bridge of the A4/A104 intersection at a height of less than 50 ft, i.e. less than 20 m. In the seconds that followed, it flew over the main bridge of the intersection, remaining relatively stable in level flight with its wings flat, before colliding with the very high-voltage power line located behind it. The controller made several unsuccessful attempts to contact the pilot, before calling the emergency services.

[5] The heights given in the report do not take into account the existing obstacles, in particular the lampposts of several tens of meters high located along this road.

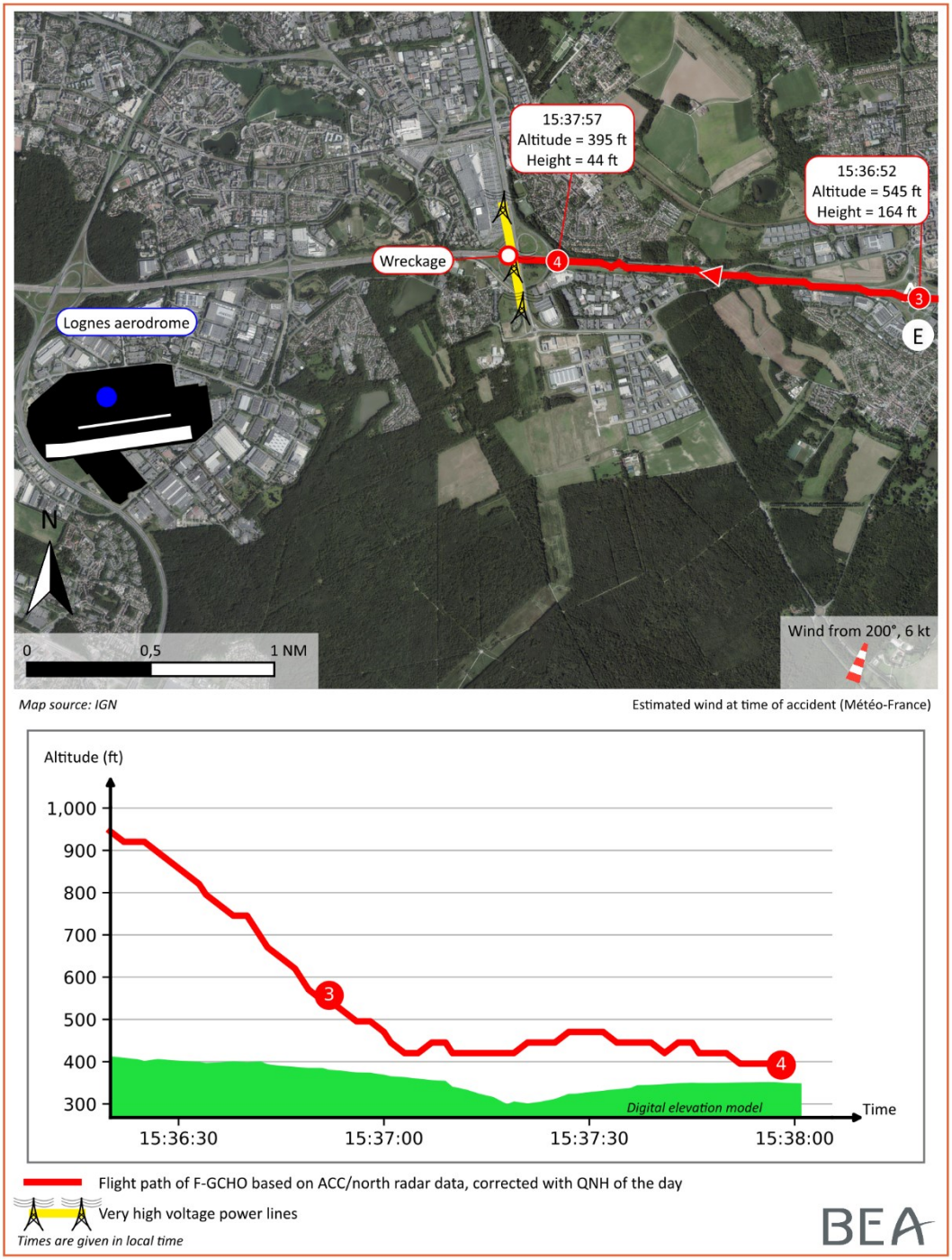

Figure 2: zoom on the last minutes of the flight

2 ADDITIONAL INFORMATION

2.1 Examination of site and wreckage

The main wreckage of the aeroplane was located on the median strip of the A4 motorway, around 10 m after the very high-voltage power lines. The aeroplane's left wing separated from the airframe when the aeroplane collided with the power line and caught fire. It burned for around 40 min on the motorway entry slip road. Four electrical cables on the very high-voltage line were frayed, but not broken.

Figure 3: main wreckage of the aeroplane, left wing and very high-voltage lines (Source: BEA)

This electrical infrastructure consists of three very high-voltage power lines (one 400 kV at the centre and two 225 kV on either side) with a total of 42 cables. Two of these cables, located on the central line, are fitted with aeronautical lighting visible during the day (see **Figure 4**) in accordance with the regulations applicable in the vicinity of aerodromes.

The tops of the pylons located in the immediate vicinity of the motorway are respectively at a height of 48 m, 51 m and 47 m, in the direction of flight of the aeroplane. They are clear of any vegetation and clearly visible from onboard an aeroplane following the path of F-GCHO.

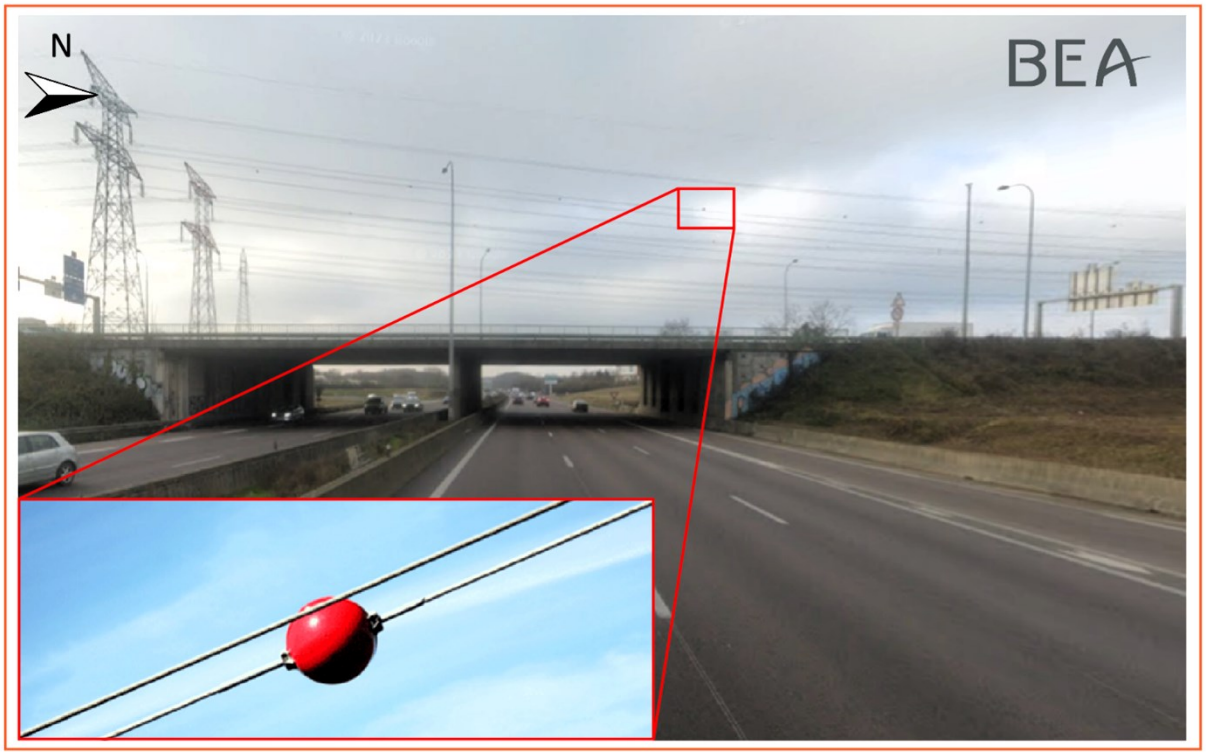

Figure 4: view of the power lines, in the direction of flight of the aeroplane (Source: Google) - Insert: aerial lighting (Source: RTE)

The examinations carried out on the wreckage of the aeroplane showed that the flight control linkages were continuous during the accident and that the flaps were in the retracted position.

The engine was not blocked and could be turned by hand. The marks observed on the powerplant indicate that the engine was transmitting torque at the time of the collision with the power lines.

Examination of the wreckage did not find any elements likely to explain the accident.

The aeroplane was not equipped with a navigation system and the pilot did not use any aeronautical or navigation applications during the flight.

2.2 Radio communication analysis

A spectral analysis of the radio communications was carried out to determine the aeroplane's engine speed, from the first communication with the tower on returning from the local flight, to the pilot's last utterance before the accident.

The analysis showed that the engine speed was approximately between 2,300 and 2,400 rpm during the initial exchanges. During the last exchange with the controller, the engine speed was around 2,000 rpm. These values are consistent with the observed manoeuvring speeds and allow manoeuvres to be made, including in climb.

Moreover, the tone and hesitations in the exchanges suggest an increase in the pilot's stress level at the end of the flight.

2.3 Aerodrome information

Lognes - Émerainville aerodrome is a controlled aerodrome. The aerodrome circuit is flown to the north of the facilities and the base leg for runway 26 is generally entered with a continuous right turn above the motorway bridge and the very high-voltage power lines where the accident occurred.

The aerodrome is located below the Class A airspace of the Paris 2 Terminal Manoeuvring Area (TMA), the floor of which is at 1,500 ft, which restricts flight manoeuvres.

The special instructions in the aeronautical publication of the AIS (Aeronautical Information Service) stipulate that, for arrivals from the east, the tower should be contacted at least 2 min before point ECHO (identified Ⓔ on **Figure 5**), at 1,200 ft and approach the aerodrome circuit with a speed of less than 100 kt.

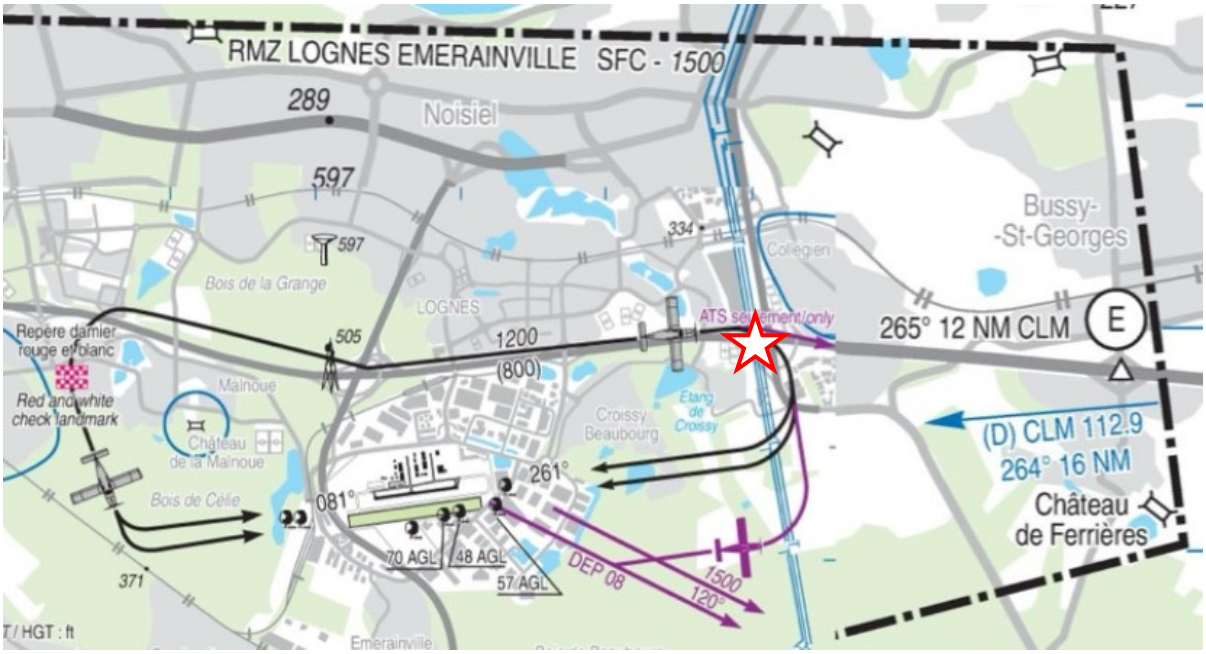

Figure 5: aerodrome circuit and accident site ☆ (Source: AIS VAC chart)

2.4 Meteorological information

The weather conditions were compatible with a VFR flight.

The METAR report at 15:30 for Paris-Orly airport (Val-de-Marne), located 11 NM south-west of Lognes - Émerainville aerodrome, indicated the following: 240° wind of 9 kt, varying in direction between 200° and 260°, visibility greater than 10 km, few clouds at 4,000 ft, broken cloud layer at 4,600 ft, temperature 21°C, dew point temperature 14°C and QNH 1,014 hPa.

Data from the Torcy weather station, less than 2 NM from Lognes, is similar to that from Orly. On average, during the time period from 15:00 to 16:00, there was a 200° wind of 6 kt, with a peak of 13 kt at 15:38.

2.5 Pilot and passengers' information

The 35-year-old pilot carried out his initial training at Meaux-Esbly aerodrome between 2019 and 2023 on Cessna C152s. His training was interrupted on several occasions, in particular due to the COVID-19 pandemic. He obtained his Private Pilot Licence - Aeroplanes (PPL(A)) in October 2023 after logging approximately 100 flight hours, around 12 hours of which as pilot-in-command.

During his training, he made only one cross-country flight bound for Lognes aerodrome. His instructors at Meaux, as well as the examiner who conducted his PPL exam flight, described him as a "standard" student, not particularly confident, but not stressed either, who took time to learn things. All of them agreed that, on completing his training, he had the level expected from a private pilot.

After obtaining his licence, the pilot enrolled at the Approved Training Organisation (ATO) based at Lognes with a view to starting a career as an airline pilot. To this end, he held a class 1 medical certificate issued in Spain in November 2023 and had stopped his professional career to dedicate his time to his pilot training.

He resumed flights in May 2024 by making three flights with an instructor (two in the area between ECHO and Coulommiers, and one at Lognes for runway circuits), each one lasting one hour, to be signed off to fly on C172s (on which he had never flown before) at Lognes aerodrome. The instructor stated that the specific characteristics associated with joining the aerodrome circuit from the east were addressed during these flights. He described the pilot as a "standard" student confident during radio exchanges and cross-country flights. In his opinion, there was no problem for the pilot to fly on his own from Lognes aerodrome after his three instruction flights.

The accident flight was his first flight since he was signed off for solo flights at Lognes. It was also his first flight without an instructor since obtaining his PPL, a few months before. Finally, it was his first flight as a pilot-in-command with passengers.

His parents, who were the passengers of the flight, had no aeronautical knowledge.

The results of the autopsy did not find any elements likely to explain the accident.

The BEA had access to additional information on the pilot, which indicated a complex (past and current) family background involving the occupants of the aeroplane and other relatives, relationship problems, as well as beliefs and practices that could lead to non-rational acts on the part of the pilot. However, none of the people from the aviation industry who were interviewed during the investigation reported anything particular about the pilot's personality.

In the absence of audio or video recordings on board the aeroplane during the last minutes of flight, it was not possible to establish whether there was a link between these aspects of the pilot's personality and the accident.

3 CONCLUSIONS

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

Scenario

On returning from a local flight from Lognes - Émerainville aerodrome, the pilot provided the air traffic controller with information that was inconsistent with his actual position. He indicated that he was five minutes from point ECHO, then at ECHO, whereas he was around 4 NM further east. He then asked if he had passed ECHO while he was still about 1 NM away. Moreover, he read back to the air traffic controller the information that he would fly overhead the facilities at 1,500 ft, while he actually continued to descend until he was in level flight at a very low height (less than 150 ft), for approximately 2 NM, above the motorway, without asking the air traffic controller for help.

The radar track and the videos of the accident showed that the flight remained under control until the aeroplane collided with a power line. No technical anomaly was detected on the aeroplane during the investigation, and the power line, which was visible from the aeroplane, was identified and fitted with the regulatory aeronautical lighting.

The investigation was unable to explain why the pilot performed this level-off manoeuvre for more than 1 min, at an abnormally low height that did not guarantee a sufficient safety margin to clear obstacles and without informing the controller of any difficulty.

Contributing factors

The accident occurred during the pilot's first flight since he was signed off for solo flights at Lognes - Émerainville aerodrome, which involved traffic and space constraints. It was also his first flight without an instructor since obtaining his PPL, a few months before, and his first flight as a pilot-in-command with passengers.

This lack of experience, combined with the pilot's error in positioning the aeroplane, may have induced a great deal of stress for the pilot and difficulties in managing the situation.