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

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SAFETY INVESTIGATION REPORT

Accident to the Jodel DR1050 Ambassadeur registered F-BJOZ on Saturday 5 July 2025 close to Châteauroux – Villers aerodrome

Time	Around 09:30[1]
Operator	Private
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Pilot 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.	

In-flight engine failure, return to departure aerodrome, loss of control during go-around[2]

1 HISTORY OF THE FLIGHT

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

The pilot took off from runway 04 of Châteauroux – Villers aerodrome to carry out a local flight in the north sector. A few minutes later, at 09:19, the pilot called the AFIS officer at Châteauroux – Déols aerodrome, informed him of his intentions and indicated that the aeroplane was at an altitude of 2,500 ft. He left the frequency at 09:22 (see **Figure 1**, point 2).

The pilot then carried out a U-turn at 09:23 and came back onto the frequency, indicating that he was returning to Châteauroux – Villers due to an "engine failure" (point 3) and that he was trying to restart the engine. One minute later, he informed the AFIS officer that the engine had restarted and then left the frequency to contact Châteauroux – Villers (point 5).

The pilot flew over the aerodrome, carried out a U-turn in the south (point 7) and then joined the final for runway 04. According to two eyewitnesses on the ground (see **Figure 2**), the aeroplane was travelling fast when it flew over the runway. At a height of a few metres, the pilot initiated a go-around and passed in front of the first of the two eyewitnesses situated close to the hangars. The latter estimated that full power was not reached. At the end of the runway, the pilot opened up to the left, passed close to the second eyewitness situated on the road and then turned right in the direction of the runway.

[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.

According to these two witnesses, the pilot carried out the right-hand turn with a steep bank; the height of the aeroplane did not exceed 150 ft. The first eyewitness indicated that during the turn the engine misfired and then shut down. The pilot lost control of the aeroplane which was then in a steep right-hand bank. The aeroplane collided with the ground a few seconds later.

The meteorological conditions were favourable for the flight. There was a light wind.

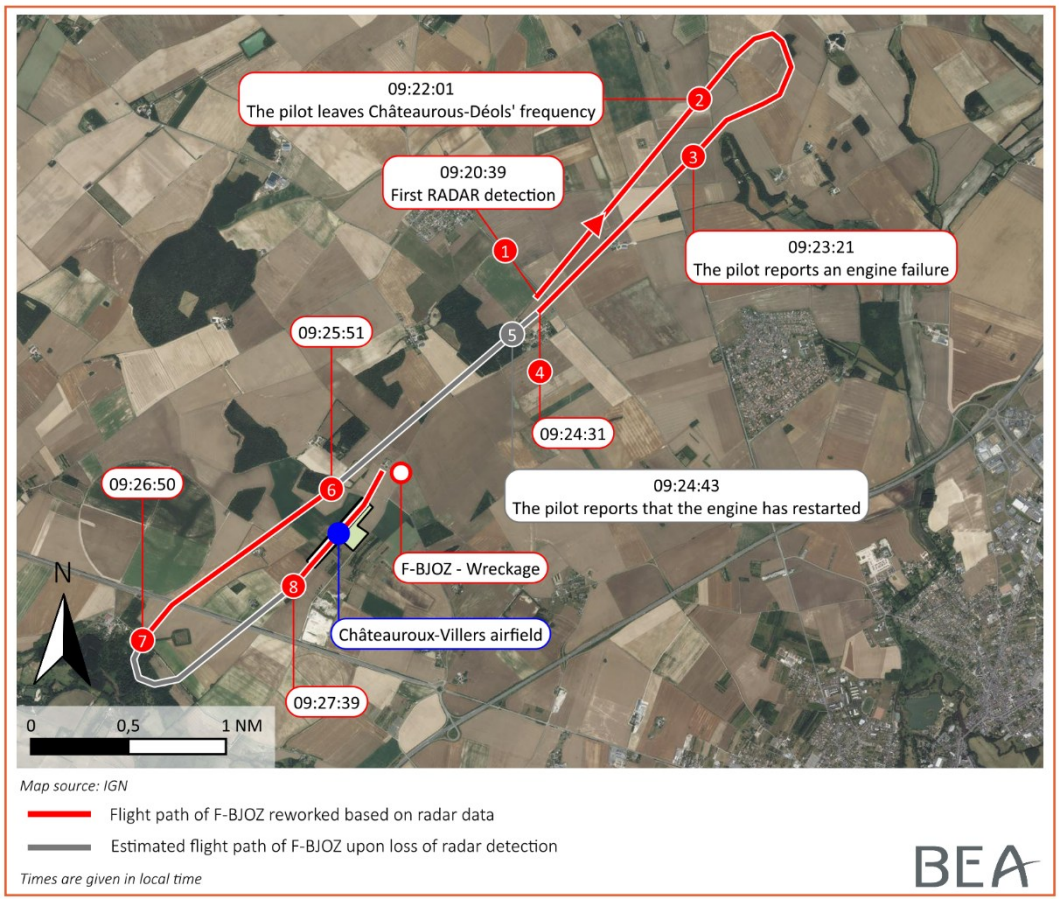

Figure 1: flight path of F-BJOZ

<u>Note regarding flight path data:</u> mode C was not available in the recorded data. It is possible that the pilot only activated mode A of the transponder. This information could not be checked during the investigation due to the damage to the instrument panel. Furthermore, detection of the aeroplane was lost several times during the accident flight.

2 ADDITIONAL INFORMATION

2.1 Pilot information

The 53-year-old pilot held an aeroplane Private Pilot Licence (PPL (A)) obtained in 2018. According to his logbook, he had totalled just over 190 flight hours, including around 75 hours as pilot-in-command. He was also a class 3 microlight pilot. The pilot mainly flew on F-BJOZ.

In 2024, he logged a flight time on aeroplanes of 12 h 30 min including 8 h 30 min with an instructor. He did not pilot between September 2024 and mid-February 2025. In 2025, he logged a flight time on aeroplanes of 5 h 15 min all on F-BJOZ including two short flights with an instructor in February. The pilot's last flight before the accident as pilot-in-command was on 16 May 2025. He had logged a total flight time of 36 min in the three months preceding the accident.

2.2 Aerodrome information

Châteauroux – Villers aerodrome, operated using the A/A frequency, is situated in the CTR of Châteauroux – Déols aerodrome, at an altitude of 542 ft. It is customary to rapidly contact Châteauroux – Déols after taking off or when returning to the aerodrome, whether the CTR is active or not. The CTR was not active at the time of the accident.

Runway 04 of Châteauroux – Villers aerodrome measures 800 m x 80 m. The runway has a slight downward slope (0.5%).

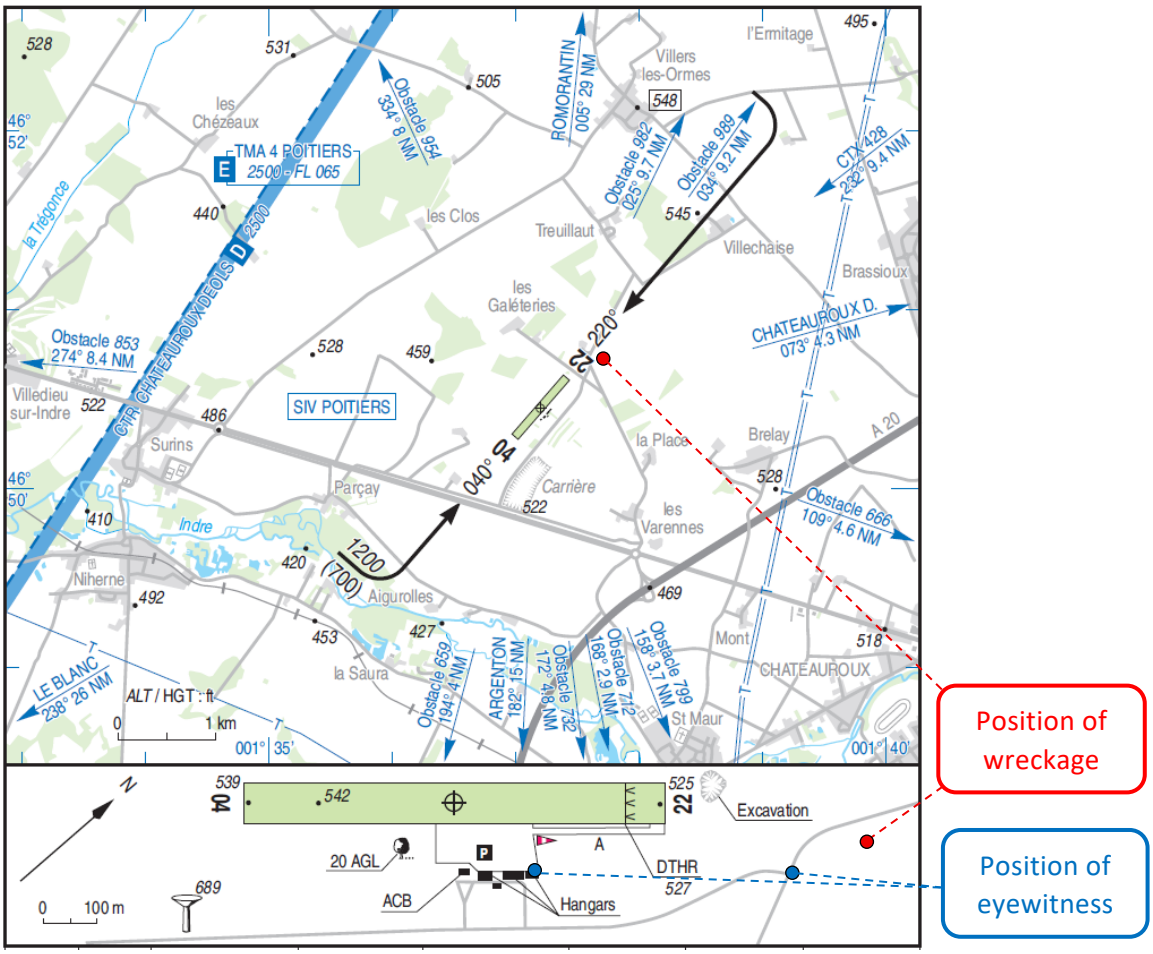

Figure 2: excerpt from Châteauroux - Villers aerodrome VAC chart (source: SIA, annotations BEA)

2.3 Site and wreckage information

The wreckage was situated around 400 m from the end of runway 04, in a field without crops or obstacles, alongside a road. This field was surrounded in all directions, by numerous other recently harvested fields.

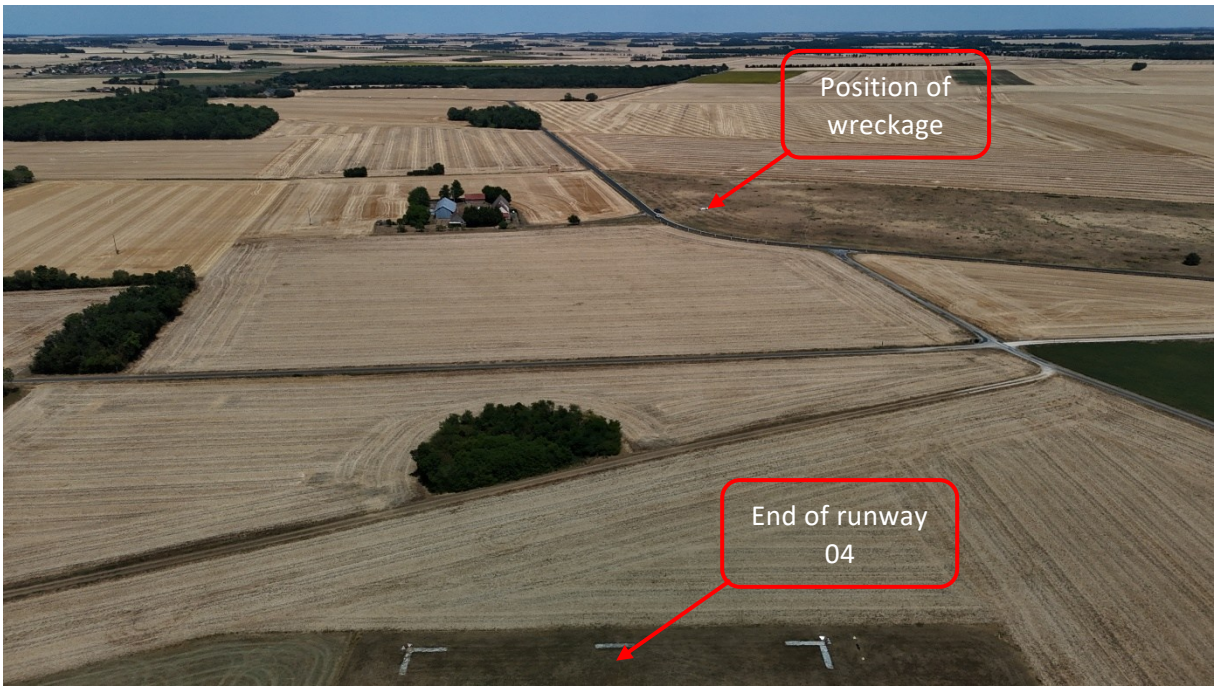

Figure 3: surroundings of end of runway 04 on day of accident (source: GTA drone, annotations BEA)

The wreckage was complete and grouped together. The aeroplane had collided with the ground on the right front.

The flight controls were continuous at the time of the collision with the ground.

The deformations and damage to the propeller blades did not show the presence of engine torque at the time of the collision with the ground.

F-BJOZ was equipped with two fuel tanks as illustrated in the diagram below.

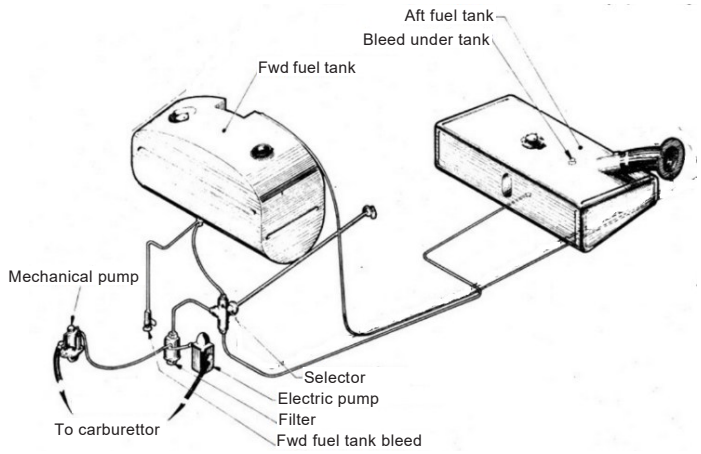

Figure 4: partial diagram of fuel system of DR1050 (source: aeroplane manual, annotations BEA)

Several litres of fuel were present in the aft fuel tank. The forward fuel tank was ripped open and found empty. The fuel selector was damaged during the accident, its position could not be determined due to the deformations. It was in a position close to that for the forward tank. There was fuel in the gascolator filter and in the electric pump. However, the carburettor bowl was empty.

The mechanical pump was damaged during the accident and could not be tested. The key inserted in the magneto selector was broken, it was found in the OFF position.

2.4 Aeroplane and maintenance information

F-BJOZ was a Jodel DR1050 Ambassadeur, built in 1960. The DR1050 is a "wood and fabric" aeroplane with conventional landing gear. The aeroplane was equipped with a Rolls-Royce O-200-A engine providing a maximum power of 100 hp.

The pilot was the owner of F-BJOZ since May 2023. The pilot was responsible for the continuing airworthiness and had entrusted the maintenance operations to an approved maintenance organization. The aeroplane's fabric covering had been renewed when he purchased it.

The aeroplane held a Restricted Certificate of Airworthiness (CDNR) with no management organization ensuring the type continuing airworthiness. In this respect and in accordance with Article 9 of the order of 12 September 2003 concerning the CDNR, the owner is responsible for defining the times between overhaul, the operating times and the service lives of the aircraft parts. They also define a maintenance program adapted to their aircraft.

The aeroplane's CDNR maintenance program, issue 1, revision 0, dated 5 July 2023, filed with OSAC on 13 July 2023, specified, in particular, that the engine maintenance limit was "on condition". However, the scheduled inspections had to be carried out as stipulated.

The following maintenance operations were carried out on F-BJOZ:

- July 2023: 1 year calendar/100 hour inspection:
  - the aeroplane had totalled 87 h since the last general overhaul;
  - the engine had totalled 667 h since the last general overhaul;
- August 2023 - February 2024: repair of right-hand main landing gear following an incident on landing;
- March 2025: 1 year calendar/100 hour inspection:
  - the aeroplane had totalled 100 h since the last general overhaul;
  - the engine had totalled 680 h since the last general overhaul;
  - various jobs were carried out, notably the replacement of cylinder No 1 of the engine due to a compression fault.

The maintenance reports did not show any engine, fuel system and electrical and ignition system faults (see paragraph 2.5.1). However, the approved maintenance organization informed the BEA that it was aware that the electrical system was in an aged condition but it was functional.

2.5 Additional examinations

2.5.1 Technical examinations

The engine as well as its fuel, electrical and ignition systems were examined in depth (see technical document No BEA2025-0284_Tec01).

The examination of the fuel system notably found that:

- the level in the carburettor bowl[3] was abnormally high;
- black soot was present on the spark plug electrodes and carburettor inlet pipe.

These observations seem to indicate an excessively rich air/fuel mixture. For this reason, the hypothesis that a momentary excess of fuel may have contributed to an engine flame-out cannot be excluded. It was not, however, confirmed by tests during the investigation.

Certain components of the electrical and ignition system showed anomalies, wear and an aged condition.

It is possible that a combination of these different conditions may have contributed to the engine failure.

In the weather conditions of the day, as during the missed approach the engine control was in the full power position, icing of the engine induction system seems unlikely.

2.5.2 Fuel analysis

The fuel recovered in the aft fuel tank showed reduced volatility compared to nominal fuel. The deterioration of this characteristic can theoretically lead to difficulties in starting and a (non-quantifiable) leaner mixture, and thus a reduction in performance, particularly at a high speed.

It is possible that this deterioration was linked to the pilot's small use of the aeroplane (a total of approximately 13 h in the year preceding the accident). In addition, the aeroplane operating manual recommends using the forward fuel tank first. "Old" fuel can therefore stay in the aft tank. The last replenishment operations dated back to 15 February and 31 March 2025.

2.6 Procedure in the event of an engine failure after take-off

The aeroplane operating manual does not contain a procedure in the event of an engine failure after take-off.

The ENAC instructor's guide indicates the following steps in these circumstances:

- take a descent pitch attitude with the engine idling;
- the flight path shall be modified to avoid large obstacles taking into account the permitted bank and remaining height;
- a U-turn to try to reach the runway is to be avoided, as generally the height is insufficient.

[3] The maintenance programme did not specify an inspection of the internal components of the carburettor.

2.7 Statements

The instructor with whom the pilot had flown in the previous 12 months specified that the simulation of an engine failure on take-off was an exercise that he regularly practised with the pilot. He confirmed that the environment around the end of runway 04, on the day of the accident, was obstacle free with harvested fields. He did not understand the turn to return to the aerodrome instead of landing straight ahead without hesitation. He put forward the hypothesis of the pilot preferring a runway rather than a field to prevent damaging the aeroplane again (see paragraph 2.4).

The pilot's partner specified that the aeroplane's downtime from the end of 2023 to the beginning of 2024 had been "trying" and that the aeroplane had had other failures requiring work (see paragraph 2.4). She added that the pilot's decision to turn around may be explained by a wish not to damage the aeroplane again. However, she specified that the pilot was not the type to take risks and that he often said that an aeroplane glides.

3 CONCLUSIONS

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

Scenario

During a local flight, the pilot had been confronted with an intermittent engine failure. On returning to the departure aerodrome, the pilot carried out a missed approach a few metres from the ground. According to witnesses, the landing was long and the speed high.

An eyewitness indicated that, during the climb, the engine did not seem to be providing full power. At low height, the pilot started a U-turn with a high bank angle during which he lost control of the aeroplane which collided with the ground. The engine was very probably no longer providing power during the last seconds of the flight.

The investigation was not able to determine the cause of this loss of power. However, in-depth examinations of the propulsion system revealed several singularities which might have contributed to an engine malfunction.

Safety messages

Partial or progressive degraded engine performance
A major failure, such as a total loss of engine power, leaves no choice but to make a forced landing. Pilots are generally trained and have practise in dealing with this type of anomaly during take-off. When the engine malfunction is partial or gradual, a case less frequently mentioned in training, the pilot may be strongly tempted to fly for example an appropriate circuit and in this present case, to carry out a U-turn.

Regardless of the level of degraded engine performance, a BEA study[4] has shown that in the event of a reduction in engine power during take-off, the fatal accidents were all the result of a loss of control in flight, itself following a significant change in heading. Maintaining the appropriate airspeed according to the bank angle will enable the pilot to maintain control during manoeuvres.

[4] Reduction in engine power during take-off published in March 2021.

Maintenance of old aircraft

The scheduled aircraft inspections are an occasion for carrying out routine maintenance of the engine and its components. They do not necessarily lead to the replacement of ageing components if they have not failed.

However, on an old aircraft, the appearance of intermittent anomalies, signs of ageing or degraded operation may indicate advanced ageing of certain components even when the scheduled inspections do not reveal characterized failures. These signs may warrant the implementation of in-depth checks or the preventive replacement of components.

Certain documents published by OSAC, although they are not intended for aircraft covered by a CDNR and which no longer benefit from manufacturer support, may constitute an aid for the owners responsible for the continuing airworthiness of their aircraft. In particular, the documents describe the regular checks, inspections and tests which can be set up, to be adapted to the age, history and operating conditions of the aircraft, and with the support of maintenance technicians.

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