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

www.bea.aero

SAFETY INVESTIGATION REPORT

Accident to the TECNAM P2002-JF registered F-HTPS on Wednesday 12 March 2025 at Plabennec

Time	Around 17:25[1]
Operator	Iroise Aéro Formation
Type of flight	Ferry flight
Persons on board	Pilot
Consequences and damage	Aeroplane 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 fence during take-off from a field

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on the operator's internal investigation.

At around 08:30, during the walk-around inspection with a view to carrying out a cross-country flight from Brest Bretagne airport in the scope of PPL(A)[2] training, the instructor compared the quantity of fuel displayed by the gauges with that present in the fuel tank (visual inspection). He detected a fault on the gauge for the right-hand fuel tank. He cancelled the flight and informed the maintenance service and operations. As another Tecnam was available provided that he started the flight quickly, the instructor did not hand over the keys to the maintenance services nor flight operations and took off. As the flight had not been carried out, he did not record the gauge fault in the F-HTPS flight logbook.

Later in the morning, a pilot (member of Iroise Aero Formation) who had reserved F-HTPS did not see on the club's flight reservation site, that his slot which had been initially reserved with F-HTPS had been transferred to another aeroplane, as in the meantime, the gauge problem on F-HTPS had been taken into account by the maintenance service.

The pilot, accompanied by a passenger who also held a PPL(A), collected the aeroplane's logbook and keys which were still available. He checked the logbook which did not mention the fuel gauge fault. During the walk-around inspection, he checked the level displayed by the gauges which indicated around 50 l of fuel in the right-hand tank and 25 l in the left-hand tank, each tank having a capacity of 50 l (see paragraph 2.4). The pilot did not visually check the quantity present in each tank (around 10 l in the right-hand fuel tank and 25 l in the left-hand tank).

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

He took off a few minutes later from runway 07L[3] to carry out runway circuits. The right-hand tank was supplying the engine with fuel. The left-hand circuit for runway 07L is to be carried out at an altitude of 800 ft, i.e. a height of around 500 ft. As such, it is considered to be a "low height" runway circuit with the flaps kept in the take-off/approach position and with the electric pump operating.

During the fourth runway circuit at a height of 500 ft, the engine misfired before shutting down. The electric pump was already operating. The passenger activated the carburettor heat. The pilot transmitted an emergency message on the frequency[4] and identified a field on his right-hand side to land in. He extended the flaps to the landing position and landed in a field of wet grass. By means of the brakes and a tight right-hand turn, the pilot was able to stop the aeroplane before the various obstacles around the edge of the field. No injury or damage were observed.

Figure 1: F-HTPS at a standstill in the field (source: Iroise Aéro Formation)

Due to the lack of damage to the aeroplane, a take-off from the 250-m long field oriented north-south was envisaged. The application of a correction factor of 1.3[5] to the take-off run distance in order to take into account the soft ground seemed to confirm that the take-off was possible from the field. A prefectural order was thus issued subject to certain conditions, after agreement by the DSAC/west, to authorize the take-off.

At around 17:20, a pilot, who was also an instructor for the company, carried out test take-off runs. He positioned the aeroplane at the north end of the field and contacted the tower controller at Brest Bretagne airport to inform him of the take-off. The tower controller told him that there was a northerly wind of 5 kt. According to the pilot, on observing the vegetation around the edge of the field, he considered that there was a light wind in the field. The pilot started the take-off run at approximately 17:25[6]. He indicated that acceleration was normal up until reaching 35 kt. The acceleration was then weak and the speed reached 40 kt at three-quarters of the length of the field. The pilot considered that rejecting the take-off at this point would not prevent a collision with the field's fence and he continued the take-off. During the rotation, the main landing gear struck the field's fence. The pilot perceived the noise from this and continued the take-off. He asked the controller if he could make a pass at a low height for a visual inspection of the landing gear before landing shortly after.

[3] Paved runway measuring 700 m long.

[4] In response to the pilot's message, the Brest tower controller replied that the two runways were available. The height of the aeroplane at the time of the failure and thus the small margin for manoeuvre meant that the pilot preferred landing in the field.

[5] See paragraph 2.5.2

[6] On 12 March 2025, the aeronautical night at Brest started at 18:50.

2 ADDITIONAL INFORMATION

2.1 Meteorological information

The 17:30 METAR issued by the Brest Bretagne airport weather station indicated wind from 010 of 7 kt, varying in direction between 330 and 030, CAVOK and a temperature of 8°C.

2.2 Field information

The field in which the emergency landing and take-off occurred was situated at around 1.2 NM north of the Brest Bretagne airport runways, under the downwind leg. The field measured around 240 m long and 80 m wide. The ground was soft with a few mounds and the grass was on average 20 cm long. A fence was present at the south end of the field.

There were obstacles to the north of the field which meant that it was not possible to take off in this direction. To the south, the climb-out area on a heading of 165° was free of obstacles apart from the fence less than a metre high at the edge of the field. A section of wire from this fence was torn off by the aeroplane during the take-off and carried until the landing at Brest Bretagne airport.

2.3 Information about pilot who took off from field

The pilot held an ATPL(A) obtained in October 2023. He had logged more than 6,500 flight hours including more than 4,200 hours as pilot-in-command and 600 hours on the Tecnam P2002. In the three months prior to the accident, he had logged approximately 220 flight hours of which 160 hours as pilot-in-command, and 12 hours on the P2002. He was an instructor (FI(A)) in the company and examiner (FE(A)). He also held positions of responsibility within Iroise Aéro Formation.

2.4 Aircraft information

2.4.1 General

The Tecnam P2002-JF is a two-seater single engine aeroplane with a tapered low wing, equipped with a fixed tricycle landing gear and a steerable nose wheel. It is certified by EASA in accordance with the certification specifications CS-VLA. The maximum take-off mass is 580 kg. The recommended rotation speed for take-off is 45 kt.

It is fitted with two 50-l fuel tanks. A selector on the pedestal between the instrument panel and the front seats allows the pilot to switch from one fuel tank to the other. The Aéro Formation emergency procedure for troubleshooting an in-flight engine failure specifies the following actions:

1. activate the carburettor heat system, if necessary;
2. activate the electric pump;
3. check the fuel gauges;
4. check the fuel tank selector and select the opposite fuel tank, if necessary;
5. check the magnetos and carry out the start-up actions;
6. adjust the throttle control.

The procedure in the aeroplane's flight manual is similar. It also asks the pilot to select the opposite fuel tank if the engine is operating in an irregular manner.

2.4.2 Damage

The damage to the aeroplane was confined to the right-hand flap and the left-hand main landing gear (impact from fence wire). The engine mount and nose gear hardware were replaced after observing that they were worn.

After landing in the field, the left-hand fuel tank containing approximately 25 litres of fuel and the right-hand tank were empty.

2.5 Operator information

2.5.1 General information

Iroise Aero Formation is a DSAC-approved training organization (ATO). It is based at Brest Bretagne airport and has several training sites.

2.5.2 Take-off performance

The mass before take-off from the field was estimated as being approximately 420 kg[7]. With an outside air temperature of 6°C at an altitude of around 325 ft, the operator used the information in the aeroplane flight manual[8] applying to a dry grass runway with no slope. The take-off run distance was thus estimated at 100 m without wind and 130 m with a tailwind component of 3 kt (estimated component according to axis of field). The take-off distances were estimated at 140 m without wind and 170 m with a tailwind component of 3 kt. A correction of 1.3 (see note below) was applied to these distances. The maximum take-off distance calculated with this factor and with a tailwind component of 3 kt was 220 m, 30 m less than the length of the field.

The take-off distance calculations and the authorization to take off from the field (see paragraph 2.6) meant that the option proposed by a mechanic, present on the site at the request of Iroise Aéro Formation, was not taken into account. The latter proposed disassembling the aeroplane and bringing it back on a trailer or in a lorry.

Note: The regulation[9] does not propose the application of a correction factor according to the type of surface for the non-commercial operation (NCO) of aircraft. Requirement NCO.OP.175 states that the pilot-in-command shall check, before commencing take-off, that the weather conditions and the condition of the runway or FATO would not prevent a safe take-off. In commercial air transport and for performance class B[10] aeroplanes such as the Tecnam P2002, requirement CAT.POL.A.305 proposes factors to be applied according to the type of surface. In particular, a factor of 1.3 is indicated for a wet surface with grass up to 20 cm long. It is also specified that:

- *the soil should be considered firm with no rutting;*
- *when taking off on grass with a single-engined aeroplane, care should be taken to assess the rate of acceleration and consequent distance increase.*

[7] Empty mass of aeroplane, weight of pilot and fuel on-board.

[8] Extrapolated from take-off performance provided for masses between 480 and 580 kg, the maximum approved take-off mass.

[9] Regulation (EU) No 965/2012, known as "AIR-OPS".

[10] Propeller-driven aeroplanes with a maximum operational passenger seating configuration of 9 or less and a maximum take-off mass of less than or equal to 5,700 kg.

2.5.3 Measures taken based on analysis of circumstances of emergency landing

Based on the analysis of the circumstances of this emergency landing, the operator drew up several lessons and reminders covering:

- the need to record any technical fault in the journey logbook, even if the flight is cancelled;
- the importance of transmitting information to all the persons concerned (for example, pilots, maintenance, operations);
- locking all documents and keys when the aeroplane is not available to avoid any misunderstanding;
- the reliability of the gauges and the need to check the indications provided and the actual quantity present in the fuel tanks.

2.6 Prefectural order authorizing take-off from field

Article D6212-2 of the French Code of Transport stipulates that the prefect may authorize an aircraft to take off from the location where it has landed due to a *force majeure*, when requested by the pilot-in-charge of executing the take-off manoeuvres. The authorization is granted upon a favourable opinion from the locally competent interregional civil aviation safety directorate and after consultation with customs and police services when the aircraft is coming from or going to a foreign country. It takes into account the type of aircraft, the condition of the ground and that there are no obstacles.

After landing in the field, DSAC/west which is based at Brest Bretagne airport, was contacted by the ATO. An inspector pilot visited the site and issued a favourable opinion for take-off from the field in the conditions of the day, on applying a factor of 1.3 to the take-off run and take-off distance calculations. Furthermore, he advised having the fence at the end of the field removed to increase the take-off clearance margin. DSAC/west forwarded the favourable opinion to the prefecture, which issued the take-off authorization. This order specifically required that a preliminary test take-off run be carried out, and that there be no tailwind component nor obstacle that could compromise flight safety.

The inspector pilot was equipped with a small flag in the field, originally intended to scare away any birds near the field. He observed with this flag that the wind was coming from the north, consistent with the information provided by the tower controller before take-off from the field, and he notified the instructor of this.

3 CONCLUSIONS

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

Scenario

A series of circumstances after the identification of the fuel gauge failure during the walk-around inspection of the first flight of the day, led to an emergency landing in a field. During the analysis of the take-off conditions from the field in which the aeroplane was located, the application of a correction factor of 1.3, corresponding to the figure to be taken to calculate take-off distances for the commercial operation of class B aeroplanes from a wet grass runway, was considered sufficient to support the decision to undertake the take-off from the field in reasonable safe conditions.

The option to disassemble the aeroplane and bring it back to the airport by road was thus discarded by Iroise Aéro Formation. The desire to bring back the aeroplane as rapidly as possible before the end of the day may have also had an influence.

The pilot assessed the run conditions in the field before taking off. However, the uneven ground reduced the acceleration of the aeroplane's take-off run once the speed had reached 35 kt i.e. 10 kt below the rotation speed. In these conditions and with a probable tailwind component of around 5 kt, the increased run and take-off distances allowed did not enable the aeroplane to reach a sufficient speed to avoid it striking the fence before taking off. With a remaining field length of approximately 100 m, little time to make a decision in a dynamic flight phase and unknown conditions, the pilot preferred not to reject the run and continued the take-off. He was not able to avoid the collision with the wire of the fence. He felt the collision and continued the flight to land at Brest Bretagne without any other difficulties.

Contributing factors

The following factors may have contributed to the collision with a fence during the take-off from a field:

- the difficultly, when preparing the flight, of assessing the influence of the nature of the ground (uneven, wet or type of surface, for example) on the acceleration of an aeroplane during the take-off run;
- the confidence gained from taking into account, when assessing the take-off performance, a correction factor mentioned for commercial operations on wet grass runways, and not intended for take-offs from a field;
- the motivation to bring back the aeroplane as quickly as possible and before nightfall, which led to the flight being undertaken without disassembling the field fence.

Safety message

Acceleration during take-off run

Checking the evolution of the speed and engine parameters is often specified during the take-off run in order to decide whether to proceed with the take-off or not. However, it may not be sufficient in certain conditions. The nature of the ground (uneven, wet or type of surface, for example) as well as technical factors (such as undetectable wheel braking) can influence the aeroplane's acceleration and thus increase the take-off run distance. While not always possible or easy to perform, monitoring the take-off run distance using certain identified lateral references (runway lateral markings and lateral lighting when present, or a pre-defined reference point) in relation to the indicated airspeed can facilitate the decision to proceed with or reject the take-off.