



Accident to the EKOLOT JK 05 identified 71LO

on 30 July 2021

at Vesoul-Frotey

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

Time	Around 09:45 ⁽¹⁾
Operator	Private
Type of flight	Local flight, in aerodrome circuits
Persons on board	Non-licenced student pilot and a passenger
Consequences and damage	Student pilot and passenger fatally injured, microlight destroyed

This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in May 2022. As accurate as the translation may be, the original text in French is the work of reference.

Technical problem reported during initial climb, turn-around, loss of control, collision with the ground

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements and observation of the site and the wreckage

The student pilot, owner of the microlight, carried out aerodrome circuits on paved runway 08 at Vesoul Frotey aerodrome. He was sitting in the left seat and accompanied by a passenger, holder of a microlight pilot license. After a touch-and-go landing, during the initial climb, one of the occupants reported a problem on the frequency and said he was going to return to land on the reciprocal QFU.

A microlight and aeroplane instructor pilot was in a DA 40 at the holding point, approximately 250 m beyond the runway 08 threshold. When he heard the radio message, he looked for the microlight and saw it at the end of runway 08, at an apparently constant height that he estimated at 200 ft, with a left bank of around 20°. During the turn, he saw the microlight suddenly roll to the left and then pitch nose-down to the ground. The configuration of the runway meant that he was not able to see the end of the microlight's flight path.

The microlight collided with the ground at approximately 30 m to the right of the end of runway 08.

2 - ADDITIONAL INFORMATION

2.1 Microlight information

The Ekolot JK05 is a two-seat microlight with high wings, mainly made of fibreglass. 71LO was equipped with a ROTAX 582 engine and a DUC three-blade propeller made of

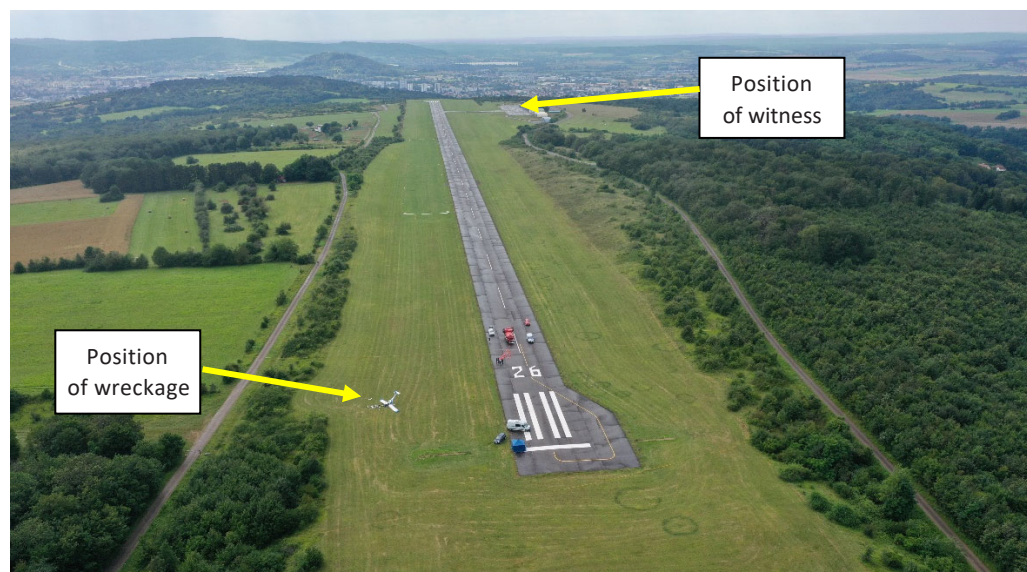
The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.

composite material. It had dual controls, but the main instruments were on the left side of the instrument panel, which made flying easier from the left seat.

Two fibreglass fuel tanks, each with a capacity of around 30 l, were located behind the seats. The fuel was routed to the engine through a T-fitting, a filter and an electric pump.

2.2 Examination of site and wreckage

The wreckage was complete and located next to the end of runway 08. The examination of the wreckage showed that the microlight collided with the ground with a nose-down attitude, following a flight path close to vertical and with strong energy. The airframe parachute was not deployed.



Source: GTA

Figure 1: aerial view of site and wreckage

The front section of the microlight's airframe was destroyed by the impact. The examination of the flight control surfaces and their controls did not reveal any anomaly. The deformations and failures observed were all caused by the accident or by the rescue operations.

One of the propeller blades was broken at its base on being bent backwards. Apart from this failure, it suffered little damage. The two other blades showed only slight damage. The examination of the propeller indicated low rotation energy during the collision with the ground.

The engine was collected and examined at the BEA. The engine teardown showed no anomaly. The examination of the fuel system did not reveal any obstruction or contamination.

The two fuel tanks did not show any damage and were almost empty. No odour or trace of fuel was found on the backs of the seats situated immediately in front of the fuel tanks. The fuel supply valve was found open. The two-position switch of the fuel system electric pump was set to off.⁽²⁾ In this position, the engine was fed by gravity from the two tanks situated at the back and slightly above the carburetors.

⁽²⁾ It is possible that the selector had been moved during the emergency services' operation.

2.3 Meteorological information

At the time of the accident, the temperature was 20° and the south-easterly wind was calm. The ceiling and visibility conditions were CAVOK. The instructor who witnessed the accident stated that the wind was calm.

2.4 Aerodrome information

Vesoul aerodrome has two 08/26 parallel runways: a 435 m long unpaved runway and an 1,408 m long paved runway. QFU 08 is preferred in order to limit the environmental impact. Runway 08 rises over its first three quarters with a gradient of around 1.5%. The aerodrome is on top of a hill, the terrain descends steeply before and after the runway.

The aerodrome surroundings, especially on the take-off axis of runway 08, are wooded and hilly.

2.5 Aéroclub de la Haute Saône information

The Aéroclub de la Haute Saône is located on the aerodrome. The club's instructors teach their students the areas suitable for an emergency landing in case of problem during the initial climb. These areas are not on the take-off axis and do not appear on the Visual Approach Chart.



Figure 2: area taught by the club instructors to be used for an emergency landing in case of problem during the initial climb after take-off from runway 08 (excerpt from IGN map)

The club has hangars housing the club's aeroplanes as well as the club members' aeroplanes. It also has a storage fuel tank reserved for refuelling the club's aeroplanes. The club members who own their aeroplane must use cans that they fill at a petrol station; this is what the owner of 71LO did. It was not possible to determine whether the pilot had refuelled before the accident flight.

The witness, the club's instructor, stated that he had already seen the two men but did not really know them. The aero club's chief pilot added that the owner of 71LO had been a member of the aero club for a short time, mainly so he might park his microlight in the hangar.

At Vesoul, the owner of 71LO always flew with the passenger whom he introduced as his instructor. They had not flown with any of the club's instructors.

2.6 Microlight occupant information

2.6.1 Student pilot

The 65-year-old student pilot had bought the microlight in April 2019 and had based it at Vesoul in November 2020. He did not hold any pilot license and, from the information collected, only flew "in instruction" with the passenger on board his microlight. His flying experience is unknown. He maintained his microlight himself.

2.6.2 Passenger

The 32-year-old passenger had a microlight pilot licence issued in May 2019 and had obtained passenger carrying privileges in November 2019. He did not hold a flight instructor rating. The investigation was not able to determine his experience.

He was trained to fly at Gray and had made inquiries with his training organization on becoming an instructor. He had not started this training.

The investigation could not establish if the microlight's owner knew that the passenger in the right seat did not hold an instructor rating.

2.6.3 Microlight instructor training

The microlight instructor training is broken down into two parts:

- ❑ The microlight instructor initial training during which the student instructor does not teach any student pilot. It includes theoretical and practical aspects. The student instructor takes a proficiency test at the end of this.
- ❑ The trainee-instructor phase during which the student instructor teaches student pilots under the supervision of a microlight instructor on aerodromes registered by the training organization⁽³⁾.

At the end of the two parts, the student instructor is evaluated through a final examination including a theoretical component and an inflight assessment conducted by an examiner.

2.6.4 BEA study of events related to an engine power decrease during take-off

In the first quarter of 2021, the BEA published the study [Reduction in engine power at take-off](#). This study is based on accidents of this type which occurred in France between 2015 and 2019 to pilots of single engine light aeroplanes or class 3 microlights (fixed wing).

The study shows that *"Marked heading changes, or even attempted turn-arounds, were undertaken in 18 of the 31 cases studied. In at least 10 of these 18 cases, the pilots may have been concerned about the consequences of holding the heading due to the presence of buildings, vegetation or water in the runway centreline."*

It concludes that, in the sample of accidents studied, *"all fatal injuries were the result of a loss of control in flight. The occupants are generally exposed to more energy during an impact caused by a loss of control in flight than during a controlled collision with obstacles in flight and, of course, always more than during a hard landing and/or a landing on a rough surface or surface with obstacles."*

These losses of control in flight most often occur when making a significant change to the heading, indeed when attempting to turn around, during which the stall speed increases significantly. These manoeuvres are undertaken by pilots with various backgrounds, all under stress and possibly in the presence of other factors, such as equipment issues.

This observation leads us to issue a reminder of the importance of maintaining sufficient speed, which must take precedence over any other concern (dealing with a failure, avoiding an obstacle, searching for a clear area, etc.).

From this point of view, it seems appropriate to promote take-off briefings that are as detailed as possible, rather than allowing generic briefings to continue, when such briefings actually take place. The relevance of these briefings to the conditions of the day and the location will depend on the information collected during flight preparation.

⁽³⁾ Vesoul aerodrome is not among the aerodromes registered by the organization who trained the pilot in the right seat.

This flight preparation phase is also of particular interest from a prevention aspect. At least one-third of the events studied resulted from a pilot error in operating the aircraft."

3 - CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.

Scenario

The owner of 71LO had been flying out of Vesoul aerodrome for a short time. He did not hold a microlight pilot license and only flew his microlight with a passenger, also a microlight pilot, who did not hold an instructor rating. During a touch-and-go landing, he encountered a problem. He decided to return to land on the reciprocal QFU and carried out a 180° left turn. During the turn, the microlight stalled and collided with the ground.

Contributing factors

Decision to carry out the flight

The owner of the microlight had introduced the passenger as his instructor to the other members of the aero club, which the passenger had not denied. The investigation did not determine whether the owner knew that the passenger did not hold an instructor rating. The owner had probably trusted the passenger's abilities to deal with an unusual situation.

Problems encountered during initial climb

It is possible that the student pilot forgot to switch on the electric pump. In this case, the engine was only supplied with fuel under gravity. Several factors might then have caused unpriming of the fuel feed and a reduction in engine power:

- the low level of fuel in the tanks;
- the position of the tanks, slightly raised and aft of the carburettors;
- the microlight's pitch attitude due to a take-off run on a rising runway, then climbing at full power.

Decision to turn around in flight

- The two occupants had been flying together out of Vesoul aerodrome for a short time and had not benefited from the club instructors' advice. After a touch-and-go landing, facing a wooded and hilly environment, they decided to turn around at low height to land on the reciprocal QFU.
- The decision to turn around at low height was not questioned either by the owner nor the passenger who had only been licensed for two years and who did not have the prerogatives to teach flying.

Safety lessons

Attempts to turn around after a reduction in engine power at take-off

The BEA study [Reduction in engine power at take-off](#) shows that attempts to turn around in flight can be caused by buildings, vegetation or a body of water on the runway axis. During these manoeuvres, the stall speed increases significantly and losses of control in flight are frequent.

The study stresses that the energy the occupants are exposed to during an impact after a loss of control in flight is generally greater than during a controlled collision with obstacles in flight and always greater than during a landing on a surface which is uneven or scattered with obstacles.

Familiarization with local specificities

When a pilot is at an aerodrome which is new to him and from which he wants to regularly fly, advice from more experienced pilots will help him to become acquainted with the local specificities. Flying with an instructor based at the aerodrome will help with this.

A knowledge of the areas suitable for an emergency landing might have resulted in the pilot adopting a different strategy and not attempting a turn around.