

Accident to the Serge Pennec GAZ'AILE 2 identified 64AAC

on 26 June 2018

at Gurmençon (Pyrénées-Atlantiques)

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

Time	Around 20:15 ⁽¹⁾
Operator	Private
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Pilot fatally injured, microlight destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in December 2020. As accurate as the translation may be, the original text in French is the work of reference.	

Engine in-flight shutdown, forced landing, collision with the ground

1 - HISTORY OF THE FLIGHT

⁽²⁾ System comprising a screen to display flight parameters among others, see § 2.3.

⁽³⁾ The aerodrome is located at an altitude of 984 ft.

Note: the following information is principally based on statements and on the iEFIS built-in computer⁽²⁾.

The pilot took off from runway 07 at Oloron Herrère aerodrome (Pyrénées-Atlantiques) at 19:50 for a local flight north-west of the aerodrome. Upon return, the engine shut down when the microlight was at an altitude of 1,500 ft⁽³⁾, in descent and approximately 4 km from the aerodrome. The pilot continued gliding to the aerodrome but did not reach it. When he failed to return, his family raised the alarm. The wreckage was found the next morning in the commune of Gurmençon, approximately one kilometre from and on the centreline of runway 07.

2 - ADDITIONAL INFORMATION

2.1 Site and wreckage information

The wreckage was found in a large, sloping and recently harvested field stretching along the length of a small valley surround by forests. The point of impact was located one kilometre to the south-west of the threshold of runway 07 at Oloron Herrère aerodrome.

Marks left on the ground and debris were spread over a stretch of around 50 m following a south to north heading. The southernmost mark was that of the left wing tip. Several metres further on, a deep crater left by the propeller hub showed evidence of a high level of energy upon collision with the ground. The microlight airframe was lying on its belly. It was oriented on the south heading. Both wings were detached. The composite fuel tank was separated from the cockpit and was found approximately five metres from the airframe, upside down in the grass and empty of fuel. No smell was detected.

The examination of the composite three-blade propeller, still attached to the engine and the reduction gearbox, showed the bending failure of two blades at their root and of the third blade half way along its length. There was no indication of power.

Observation of the topography of the fields located to the south of the flight path, at the time of the failure, confirm that this area was suitable for an emergency landing.

2.2 Additional examinations

The examination of the propulsion system showed no anomaly or damage that could explain an uncommanded shutdown of the engine in flight.

Several cases of damage were observed on the reduction gearbox, in the area of the engine output:

- ❑ One of the four screws forming the mechanical connection between the flexible coupling attached to the engine output and the “*engine*” shaft of the reduction gearbox was fractured. The characteristics of the fracture surfaces indicated fatigue cracking with multiple initiation points on the surface followed by a sudden fracture due to overload, principally associated with torsional loads.
- ❑ Friction marks showed evidence of an interaction between the reduction gearbox structure and its pinion on the engine side. These marks were obviously produced when this pinion was rotating. The remaining three screws kept the reduction gear in place.

Fuel was recovered in several areas of the system making the hypothesis of fuel exhaustion unlikely. The fuel sampled showed physical-chemical properties compatible with a normal operation.

No pollution was identified in the fuel system.

2.3 Examination of the computer

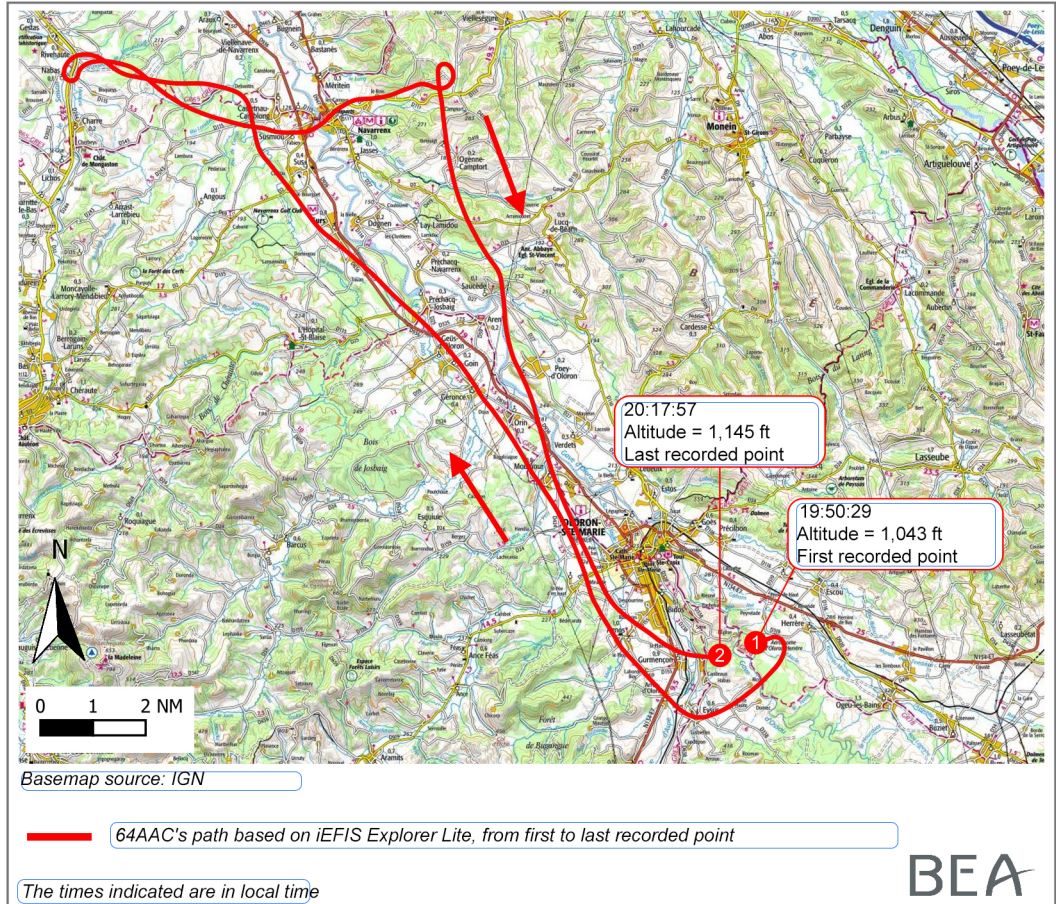
The microlight was equipped with an iEFIS Explorer Lite computer used to display flight parameters, among others, on a screen. This computer saves around one to two hours of data including:

- ❑ flight and attitude parameters;
- ❑ GNSS and navigation parameters;
- ❑ engine and fuel parameters.

The computer can be configured to save flight data on an SD card.

The computer on board 64AAC was severely damaged but it was possible to extract parameters from it corresponding to five flights, including the accident flight.

A path, shown below, was produced based on the parameters saved:



Analysis of the saved parameters showed that:

- the engine shut down at 20:16:44 when the microlight passed through 1,500 ft in descent;
- the flight continued without the engine for more than one minute before colliding with the ground.

2.4 Microlight information

The Gaz'aile 2 is an amateur-built fixed wing microlight made of wood and composite material. The 64AAC was equipped with a PSA Peugeot 42 KW diesel engine and with a carbon three-blade propeller.

The user manual of the microlight specifies that its maximum lift-drag ratio is 12.9 based on a height of 3,000 ft.

Given the height at which the engine shutdown occurred (approximately 500 ft above Oloron-Herrère aerodrome), the microlight could cover a maximum distance of 2.5 km.

2.5 Pilot information

The 75-year-old pilot held a fixed wing microlight pilot licence (class 3) issued in August 1996 by equivalence with his private pilot licence for aeroplanes issued in November 1979, and always kept valid. The investigation was unable to determine the number of flight hours he had logged in a class 3 microlight. He had logged approximately 1,850 flight hours in an aeroplane.

2.6 Meteorological information

The meteorological conditions estimated by Météo-France at the site of the accident were suitable for this particular flight.

2.7 Statements

Three witnesses, who lived near Oloron Herrère aerodrome, saw the microlight on long final for runway 07. Two of them heard spluttering. The third witness clearly heard the engine racing and vibrating.

3 - CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are in no way intended to apportion blame or liability.

Scenario

The pilot took off at the end of the afternoon from Oloron Herrère aerodrome for a local flight. Upon return to the aerodrome, the engine shut down when the microlight was at an altitude of 1,500 ft in descent.

The examinations conducted on the engine showed no evidence of malfunction that could have resulted in an uncommanded engine shutdown. However, signs of friction of a pinion observed on the reduction gearbox at the engine output would certainly have been accompanied by abnormal noises or vibrations that may have resulted in the pilot intentionally shutting down the engine.

The pilot attempted to glide to the runway that was around four kilometres away but the microlight's performance rendered this action impossible. One kilometre before the threshold of the runway, at very low height, he decided to make a forced landing in a field that was unsuitable and lost control at low speed.

Contributing factors

The following factors may have contributed to the pilot's decision to continue with the flight:

- The acquisition of visual references enabling him to assess the proximity of his destination aerodrome at the time of the engine shutdown.
- A strong desire to land at an aerodrome rather than in a field immediately following engine shutdown.