



Accident to the FK LIGHT PLANES FK9SW Mark VI
identified **974PQ**
on Saturday 6 August 2022
at Saint-Paul (La Réunion)

Time	Around 15:34 ¹
Operator	Papangue ULM
Type of flight	Instruction
Persons on board	Instructor and pilot
Consequences and damage	Instructor fatally injured, pilot seriously injured, microlight 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.

Loss of control on final during a simulated engine failure exercise, collision with ground, in instruction

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements along with the recordings from a security camera and a fixed camera on board the microlight.

The pilot, accompanied by an instructor, took off at 15:04 from runway 14 of Réunion Roland-Garros airport (La Réunion) bound for Cambaie microlight strip (La Réunion) for an advanced instruction flight in order to obtain passenger carrying privileges. He left the CTR² and the frequency at 15:17. He then headed towards Piton Cabris (4,708 ft), reaching an altitude of around 6,400 ft before descending with the engine in idle towards Cambaie microlight strip.

¹ Except where otherwise indicated, times in this report are given in local time.

² The glossary of acronyms and abbreviations frequently used by the BEA can be found on its [website](#).

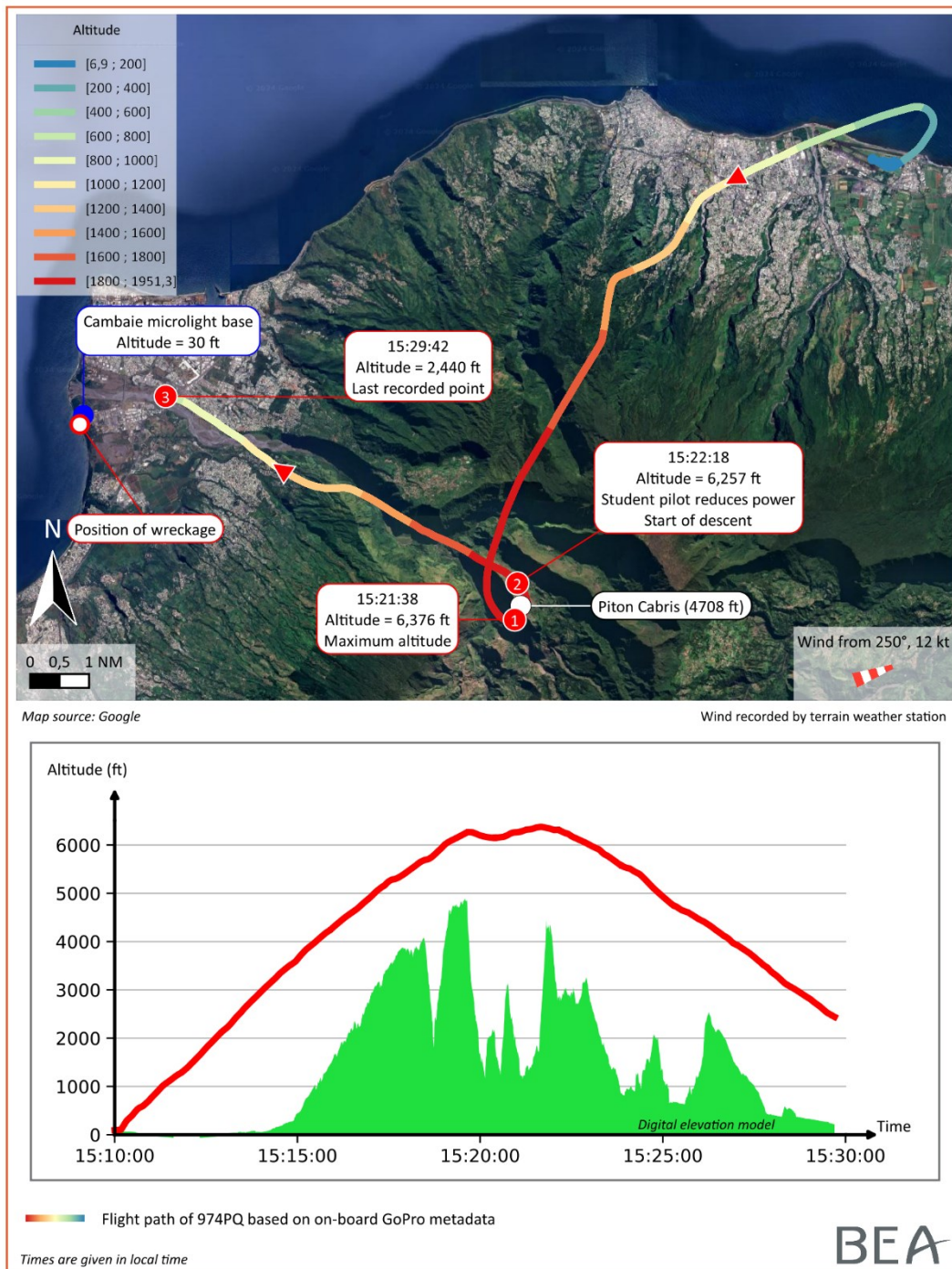


Figure 1: flight path based on onboard camera data

A witness, situated at around one kilometre from Cambaie microlight strip saw the microlight turn left and then rapidly lose altitude. He then heard the collision with the ground.

The microlight crashed onto a pebble beach close to the threshold of runway 05. The microlight was inverted, with a large part of the cockpit submerged. Several people immediately intervened to keep the microlight on the shore as it was being carried away by the swell. They then rescued the occupants of the microlight.



Figure 2: position of wreckage (source: GTA, annotations BEA)

2 ADDITIONAL INFORMATION

2.1 Site and wreckage information



Figure 3: wreckage on accident site after being moved out of the water (source: BEA)

The microlight was found on its back at around 200 m before and to the RH side of the threshold of runway 05, at the edge of the shore. It was equipped with an airframe parachute which had not been activated.

The examination of the wreckage found that the microlight had struck the ground with a large nose-down attitude and little bank.

The examination of the flight controls did not reveal any anomaly which could have contributed to the accident. The flaps were in position but their mechanism was found broken following the impact with the ground. The deformations observed on the worm screw of the motor actuating the flaps seem to indicate that the flaps were extended to their first detent position at the time of the collision with the ground.

The engine and the propeller were substantially damaged, in particular, the two carburetors were torn off. The examination of the engine was unable to determine if it was providing power when the accident occurred.

On 974PQ, the position of the seats can be adjusted longitudinally by means of a series of holes in the floor into which two pins situated under the seats are inserted. The angle of the backrest can be adjusted using a quick-release rod which, once in place, also locks all of the seat. This rod was not present on the RH seat. It was found in the hanger of the company where the two other FK9s belonging to the company were parked.

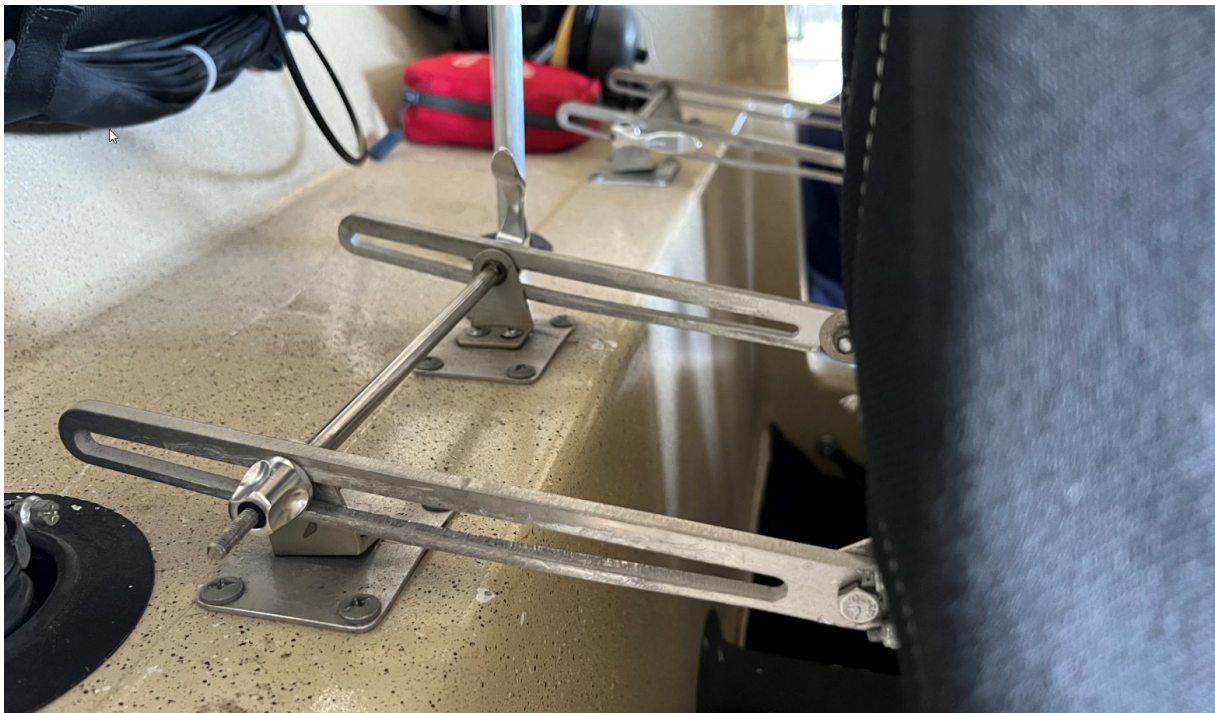


Figure 4: back rest securing system (source: BEA)



Figure 5: system for securing seat in floor (source: Papangue ULM)

2.2 Occupant information

2.2.1 Instructor in right seat

The 70-year-old instructor held a microlight pilot certificate obtained in 2010 along with a valid flight instructor rating obtained in 2014. According to several witnesses, the instructor flew very regularly over the last few years.

2.2.2 Pilot in left seat

The 17-year-old pilot obtained his microlight certificate with the fixed-wing rating in May 2022. His training had been provided by Papangue ULM, and for the majority of it, by the instructor on board at the time of the accident. He did not have passenger carrying privileges. He had logged around 40 flight hours, all on the FK9, including 6 hours as pilot-in-command.

The company manager indicated that he had given several instruction flights to the pilot, in particular before he was approved for solo flight and that he had carried out the examination flight with the pilot to obtain his certificate. He had also carried out two advanced flights to prepare the pilot for the passenger carrying privileges during which they had carried out “S” shaped approaches to Bras-Panon microlight strip (La Réunion).

The pilot had no recollection of the accident flight or of its preparation. He nevertheless specified that this instruction flight was planned and that its purpose was to carry out “U” and “S” approaches to Cambaie microlight strip. He added that he had never carried out this type of exercise with this instructor.

2.3 Absence of securing rod on RH seat

Company manager statement

The witness indicated that in the morning of the day of the accident, after having carried out an instruction flight with another FK9, he had observed that the seat securing rod was broken. He then asked the accident instructor to remove the securing rod from 974PQ in order to install it on this FK9. He then parked 974PQ in a locked hangar close to the company’s hangar and indicated to the instructor that the microlight was not to be used, and especially not for instruction.

During the lunchtime period, the company's hangar was used for a meal. Several tables had been set up in front of the hangar and blocked the company's other Fk9s inside the building. The witness indicated that before leaving the airport, he saw the accident pilot. The latter informed him that he was going to carry out a flight with the instructor.

This witness thought that the instructor had most certainly taken 974PQ in order not to disturb the people sat at the tables preventing the other two Fk9s from exiting the hangar.

Pilot in instruction statement

The pilot indicated that he did not know that the securing rod of the instructor's seat was missing. He could not remember whether he had seen or not the instructor block the seat backrest with a cushion or any other object.

2.4 Analysis of on-board camera and security camera recordings

The pilot had installed a camera above the instrument panel for the flight. The recording stopped several minutes before the accident³. The pilot specified that this camera frequently stopped recording unexpectedly. The exchanges between the pilot and the instructor were difficult to hear because of the background noise. The intelligibility of these vocal exchanges was improved by filtering and processing the signal. However, it remained difficult to accurately transcribe the content of the conversation and only certain exchanges at the end of the flight when the engine was in idle could be transcribed.

In addition to the video, the GPS positions were recorded by the camera which made it possible to determine the flight path below. This flight path information was supplemented by an estimation of the microlight's position based on the recording of a security camera on a building situated at less than two kilometres from the accident site.

³ The camera was found around two months after the accident and returned to the family of the pilot in the left seat. The camera was substantially damaged, nevertheless a member of the family managed to download the data from the memory card. The BEA examined the memory card and camera several months later.



Figure 5: estimated end of flight path

The analysis of these recordings made it possible to determine that:

- the instructor frequently intervened on the stick and his hands were regularly resting on it;
- around 12 min before the accident, the student pilot reduced power and put the microlight into descent. The engine speed was stabilized at around 2,200 rpm with variations of less than 100 rpm. This speed was stable up to the end of the recording, i.e. approximately five minutes before the accident;
- on the security camera recording, the microlight can be seen overhead the ocean in descent and approaching the runway. It can be seen first turning left and then turning right before completely losing control in a left turn. These manoeuvres are consistent with an "S" approach to runway 05.

After a flight time of around 15 minutes, when they were flying over the terrain, the instructor removed his seatbelt shoulder straps. He did not put them back on before the end of the recording.

2.5 Meteorological information

According to Météo-France, on the day of the occurrence, La Réunion island was under moderate trade winds in a relatively dry air mass. Between 15:00 and 16:00, the initially north-easterly wind veered to a south-westerly wind of 20-30 km/h. The initially clear sky became cloudier.

There was a north-easterly surface wind in La Possession bay and a south-westerly surface wind in Saint-Paul bay causing horizontal windshear and an area of turbulence.

Cambaie microlight strip has a weather station. Between 15:00 and 16:00, the latter recorded a change in wind direction from 240° to 270° with speeds of between 15 and 18 km/h. At 15:35, the recorded wind direction was 247° for an average speed of 16 to 21 km/h. The temperature was approximately 24°C and the dew point temperature 18°C.

On the video from the on-board camera, it can be seen that there is no significant cloud cover in the area of Cambaie microlight strip.

2.6 “S” approach

The “S” approach consists of joining the runway axis on a steep approach slope and carrying out a series of “S” turns either side of the axis to join a standard approach slope.

In the microlight world, this training is often associated with an engine failure exercise, in particular in regions with constraints offering few suitable areas for a forced landing.

In this exercise, there is the particular risk of substantially banking the microlight by increasing the angle of attack to return to the runway axis while not ensuring flight symmetry.

2.7 Survival aspects

In addition to the consequences for controlling the aircraft, the fact that the seat was not locked and therefore not integral with the microlight frame might have had an impact on the instructor's chances of survival, in particular when the microlight turned over onto its back after the collision with the ground.

The investigation was not able to determine if the instructor put his shoulder straps back on during the last minutes of the flight. However, this seems unlikely.

The probable absence of the shoulder straps and the fact that the seat was not locked compromised the instructor's chances of survival.

3 CONCLUSIONS

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

Scenario

Control was lost of a microlight during manoeuvres on final approach when the pilot was in instruction. One of the training objectives of this instruction session was to carry out an “S” approach with the engine in idle.

The presence of a tailwind component when the pilot was carrying out this exercise may have prompted him to make tighter turns. Just before the loss of control, the microlight was at a low height, close to the runway threshold and offset to its RH side. This seems to indicate that they were in a situation where the exercise could no longer be safely carried out to its conclusion. The investigation was not able to explain the reasons why the instructor did not bring the exercise to a

stop earlier. It is, however, possible, that as the back rest of the instructor's seat was not locked, this could have prevented him from effectively taking the controls (or interfered with the pilot's actions).

The company manager had informed the instructor of the absence of the left seat locking bar and had put 974PQ in a hanger locked by key. However, the instructor minimised the risks associated with the seat not being locked and decided to carry out a flight on this microlight in order not to disturb people sat at a table in front of the club hangar and blocking the access to the other two FK9.

Contributing factors

The following factors may have contributed to the loss of control:

- continuing the exercise up to a point where it could no longer be safely stopped;
- the instructor making an uncontrolled deliberate input, or a non-deliberate input on the controls due to the back rest of his seat having freedom of movement.

Aggravating factors

The following factors may have aggravated the consequences of the accident:

- the instructor probably only partially wearing the safety harness;
- the instructor's seat being incompletely secured due to a part having been transferred to another microlight.

Safety lessons

Seat locking system

A lack of stability in the pilot's seat when the aircraft experiences accelerations, as for example in turbulence, may make piloting difficult in an already demanding flight phase. Undertaking a flight with a non-operational seat can contribute to a loss of control and compromise recovery, as well as compromising the chances of survival in the event of an accident.

Stopping an exercise in instruction

The very nature of the situation means that a student pilot or a pilot in instruction may not correctly reproduce an educational instruction given by an instructor. It can be difficult for the instructor to assess at what point the exercise has to be stopped. Once the decision has been taken, the instructor's verbalisation of the end of the exercise means that the action plan for returning to normal flying conditions can be shared. In particular, the instructor's verbalisation that he has taken the controls will prevent the student pilot and the instructor from making simultaneous inputs on the flight controls.

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