

## Accident to the LA MOUETTE - ORYX (P) identified 31RS

on 29 July 2021

at Fousseret (Haute-Garonne)

<sup>(1)</sup> Except where  
otherwise indicated,  
times in this  
report are local.

<b>Time</b>	Around 08:30 <sup>(1)</sup>
<b>Operator</b>	Private
<b>Type of flight</b>	Local
<b>Persons on board</b>	Pilot
<b>Consequences and damage</b>	Pilot fatally injured, microlight destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in February 2022. As accurate as the translation may be, the original text in French is the work of reference.	

### Loss of control after take-off, collision with the ground

#### 1 - HISTORY OF THE FLIGHT

*Note: the following information is principally based on statements and on a camera fixed to the microlight sail.*

The pilot, owner of the microlight, arrived at Fousseret microlight strip at around 08:00 to prepare his microlight with the aim of making a local flight.

Witnesses saw him carry out his pre-flight inspection, put on the equipment and then get into the trike and start the engine that he left running before starting taxiing on the taxiway.

The pilot lined up and then ran approximately 200 m on grass runway 10 (380 x 40 m) before taking off. The microlight climbed to a height of 45 m then steadily descended again to the ground, remaining on the runway axis. It struck the ground approximately 170 m beyond the end of the runway, then bounced before ending its course in the vegetation several metres from the point of impact.

#### 2 - ADDITIONAL INFORMATION

##### 2.1 Pilot information

The 67-year-old pilot held a microlight pilot certificate issued in 2011, with a paramotor rating issued in 2011 and a flex-wing rating issued in January 2021. It was not his practice to log his flight hours. Witnesses stated that he had flown a few hours since the start of the year, around 10 hours of which on 31RS. A paramotor pilot who regularly flew with him specified that he performed two flights per week on average.

## 2.2 Microlight information

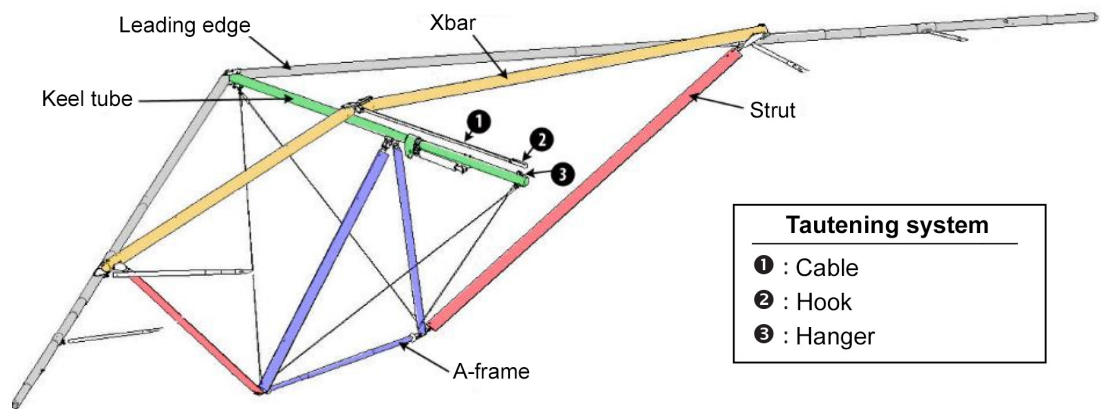
### 2.2.1 General

The microlight identified 31RS was a flex-wing microlight (class 2) with two seats in tandem configuration, equipped with an ORYX 14 wing and a Cosmos trike. It was fitted with a VHF radio, a GNSS Reversale VGP altimeter/vertical speed indicator and a reserve parachute.

The power unit was composed of a Rotax 582 UL DCDI two-cylinder engine delivering a maximum power of 48 kW at 6,800 rpm and a composite three-blade, fixed pitch propeller.

### 2.2.2 Wing composition

The ORYX 14 wing is a delta wing with no mast. The diagram below illustrates the structure of the wing and is associated with a parts list intended to facilitate understanding in the remainder of the document.



Source: La mouette

Figure 1: Diagram of the wing structure

The Xbar is held in the “open wing” position using a tautening system (see Figure 1). When this tautening system is not in position, the wing can fold freely. The manufacturer’s documentation shows how to unfold and make the wing taut before installing it on the trike.

The tautening system is composed of a metal cable ①, which is attached to the Xbar and is equipped with a metal hook ② at its other end. The cable is attached to the hook with a shackle (see Figure 2). A hanger ③ made of a U-shaped metal part is attached to the rear of the keel tube (see Figure 2). This hanger has a series of drill-holes equally spaced along its length.



Source: BEA

Figure 2: Tautening system

The tautening operation (see Figure 3) consists in:

- slipping the front tip of the metal hook under the fixed pin of the rear hanger (positioned in drill-holes 1R and 1L);
- folding down the hook into the hanger, thus stretching the tautening cable;
- keeping the hook in position<sup>(2)</sup> using a ball pin; this pin is positioned in the centre through-hole in the hook and in drill-holes 4R and 4L in the rear hanger.

<sup>(2)</sup> By design, the hook cannot remain in position in the hanger when the sail is taut and the pin is not in position.



Hook tip slipped under fixed pin of hanger



Tip slipped under fixed pin



Hook folded down into hanger and ball pin in position

Source: BEA

Figure 3: Tautening operation

## 2.3 Examination of site and wreckage

The accident site was located immediately to the east of runway 10 of Fousseret microlight strip.

Marks made by the three landing gears were visible on the ground before the wreckage, confirming flat impact of the trike.

The main wreckage was not dispersed and all component parts were present between the initial point of impact and the wreckage.

The wing structure presented multiple distortions and failures, all of which were a result of the accident.

The Xbar was not taut. The hook was not in place in the rear hanger. The tautening system components were not damaged. The ball pin securing the hook in the hanger was partially inserted in drill-hole 6R (see [Figure 2](#)). This position does not hold the tautening system in place.



Source: BEA

Figure 4: Tautening system as it was found on the wing

The trike presented multiple distortions and failures, all of which were a result of the accident.

Nothing of note was identified on the propulsion system and the associated systems.

The reserve parachute had not been used.

<sup>(3)</sup> According to the manufacturer, it is not necessary to slacken the sail to replace a batten.

## 2.4 Maintenance

The owner maintained his microlight himself. Several days before his flight, he had told the wing dealer that he wanted to replace a batten<sup>(3)</sup> on the right wing and had slackened the wing by opening the aforementioned rear tautening system.

The assembly instructions do not specify that the sail has to be removed from the trike to be tautened.

It is likely that the pilot did not remove the wing from the trike and that he replaced the batten with the wing at height.

## 2.5 Read-out of video recording

A TecTecTec brand XPRO2 camera was fixed to the right section of the wing and was switched on by the pilot before the flight. The recording was used to piece together the following sequence:

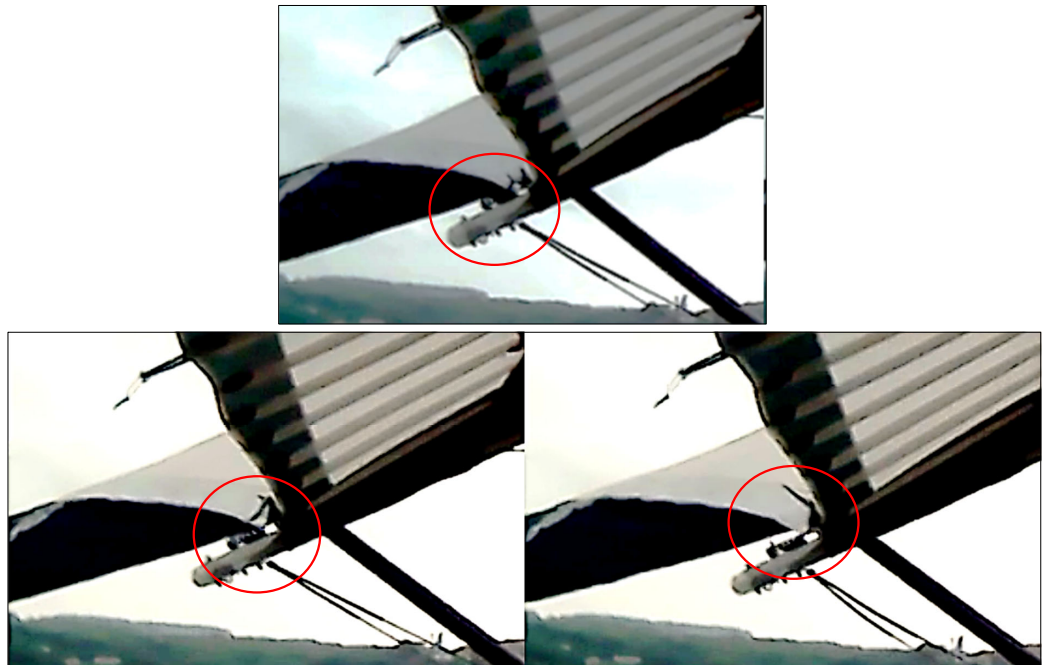


Figure 5: Tautening system at time T not in place (excerpt from the video)

Figure 5 shows, image by image, the movement of the tautening hook and its lever which can be seen moving forwards.

T-20 s	The pilot applies power, the microlight accelerates ❶.
T-12 s T-1 s	The acceleration seems normal during the take-off run, the microlight takes off and climbs, there is nothing unusual about the initial climb.
T  T+5 s	The wing deforms and folds very suddenly ❷, the trike oscillates (swings under the sail), the pilot loses control, the microlight starts to quickly descend towards the ground, the engine rating is constant.  When the wing deforms, the hook is not in position in the rear hanger.
T+6 s	The trike strikes the ground ❸.

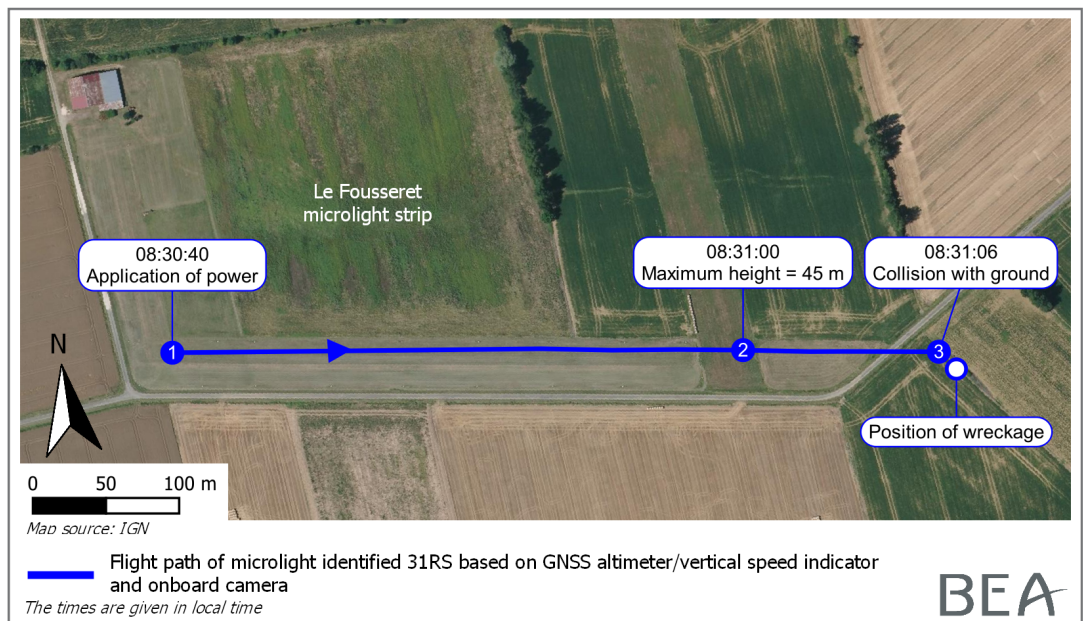


Figure 6: Path of 31RS

### 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

A few days before the accident, the pilot performed a maintenance operation to replace a batten on the right wing. To do this, he handled the rear tautening system of the wing. It is likely that he did not remove the wing from the trike. After replacing the batten, when he tautened the wing, he did not put the hook and the ball pin back into position.

During the first flight following this operation, with the rear tautening system device not in position, the pilot took off in 31RS and rose to a height of 45 m. The force of the air on the leading edges of the wing caused it to partially fold. The trike swung then the microlight descended rapidly. The pilot tried to push on the control bar but was unable to control the descent. The microlight struck the ground.

#### Contributing factors

The following factor may have contributed to the disengagement of the hook:

- A visual inspection made difficult by the height of the sail, installed on the trike, preventing detection of the erroneous positioning of the ball pin on the hanger.