



**Accident** to the HUMBERT AVIATION - Tétrás  
identified **21AJD**  
on 21 August 2021  
at Courcelles (Doubs)

<b>Time</b>	Around 11:15 <sup>1</sup>
<b>Operator</b>	Private
<b>Type of flight</b>	Cross country
<b>Persons on board</b>	Pilot
<b>Consequences and damage</b>	Pilot fatally injured, fixed-wing 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.

## **Collision with a power line and then ground during low-height flight**

### **1 HISTORY OF THE FLIGHT**

*Note: the following information is principally based on statements.*

The day before the accident, the pilot of the Tétrás identified 21AJD took off from Saint-Dié aerodrome (Vosges) and flew to Arbois (Jura), where he met up with several microlight pilots. For the following day, they had planned to carry out a flight to Super-Devoluy for a weekend of bivouacking in the Alps. Due to the adverse weather forecasts, several of them cancelled the flight. They opted for a flight to Lanans (Doubs) which included flying over the river Loue. The weather conditions were good in this area.

The pilot of 21AJD followed the pilot of a Babette II and was followed by a pilot on board a Tétrás.

As they were flying at a low height over the river, 21AJD collided with a power line and then the ground.

### **2 ADDITIONAL INFORMATION**

#### **2.1 Pilot**

The 69-year-old pilot held a fixed-wing microlight pilot licence with passenger carrying privileges issued in 2012. He also held an aeroplane private pilot licence obtained in 1972, the associated SEP rating had expired in 2017. It was not possible to determine his total number of flight hours.

<sup>1</sup> Except where otherwise indicated, the times in this report are in local time (UTC + 2 h).

The pilot purchased the microlight identified 21AJD with a second person in January 2020. According to the second co-owner, he flew around 100 h a year. The microlight was based in a hangar at Saint-Dié aerodrome. The pilot had been a member of the Saint-Dié aerodrome club for 25 years.

## 2.2 Examination of site and wreckage

On the BEA's arrival at the site, the wreckage was lying in a field, it was complete and grouped together. No impact or rub marks were visible on the ground in the area around the wreckage.

The microlight was situated at around 60 m from a 20 kV power line. This power line was made up of three parallel cables, the two most easterly cables had been severed by the aircraft. The portion of the line which had been severed was suspended between two 12 m-tall pylons: one to the north on top of a small ridge around 50 m high overlooking the Loue, and one to the south, just behind a hedge of trees at the edge of the field in which the wreckage was laying.



*Figure 1: wreckage with ridge in background (source: BEA)  
The red arrow indicates the north pylon.*

The height of the cables where they pass over the Loue is between 17 and 20 m.

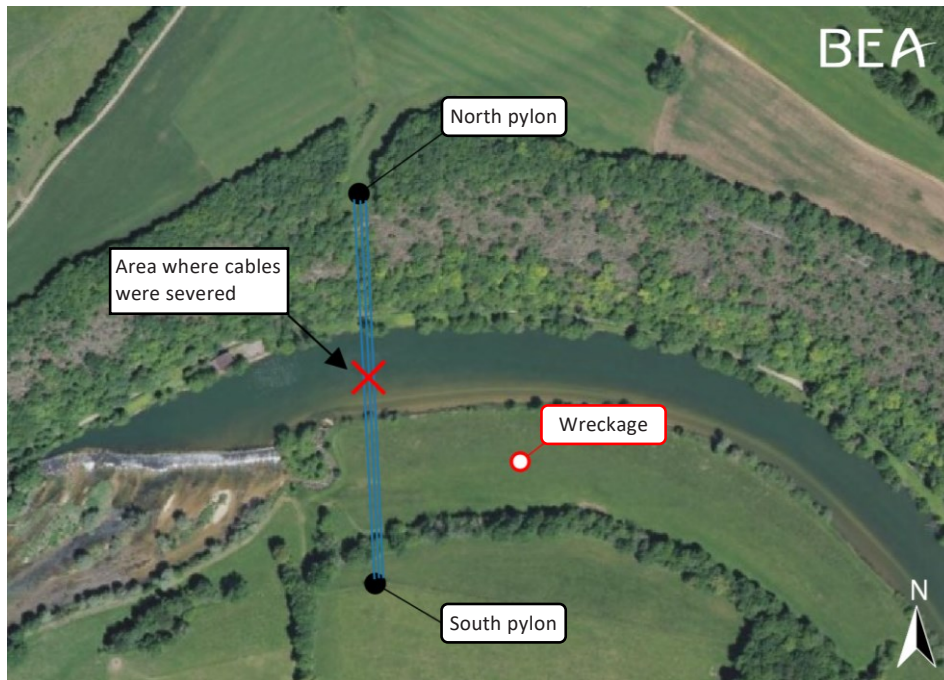


Figure 2: configuration of power line and position of wreckage (source: BEA)

The microlight hit the power line cables with its main landing gear and then struck the ground with a high nose-down pitch, the wings level and substantial energy. No technical anomaly prior to the power line strike was observed. The airframe parachute was activated by explosive experts.

## 2.3 Statements

### 2.3.1 Eyewitness of the flight

Four witnesses or groups of witnesses reported having observed several aircraft flying over the Loue. The location of the witnesses is shown on the following figure:

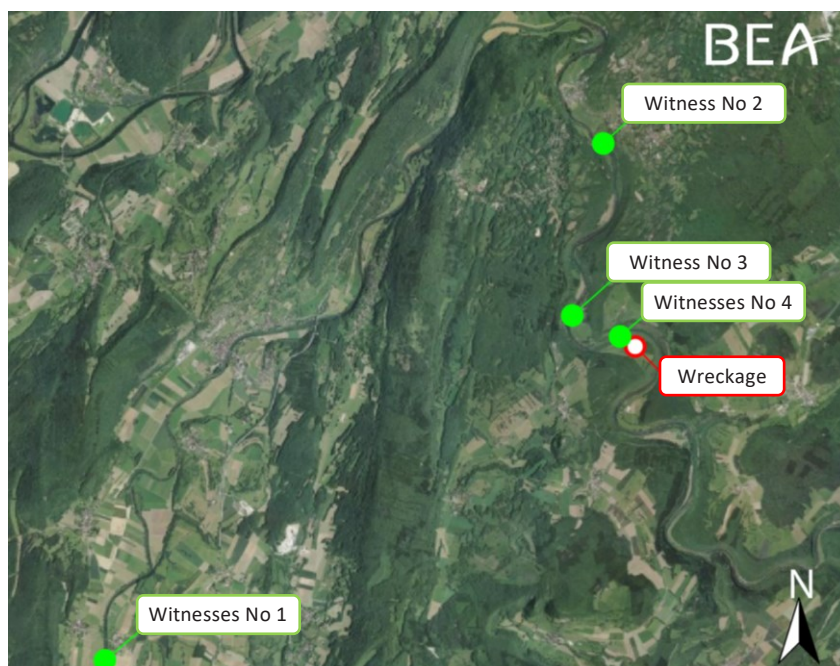


Figure 3: location of various witnesses

The first witnesses (witnesses No 1, Figure 3) were paddle boarding. They reported seeing aircraft coming towards them "one after the other", all at approximately the same height. They were flying up the river (south to north direction) and were closely following each other. These witnesses counted seven aircraft. They thought all the aircraft looked the same; they thought it was an airshow. They saw them intermittently as the aircraft were flying sufficiently low to be hidden by the trees.

The witnesses took a series of photos. The aircraft flew over the river at 10:25. The witnesses remained on the Loue until 11:30 and did not hear or see any other aircraft fly past after that<sup>2</sup>.

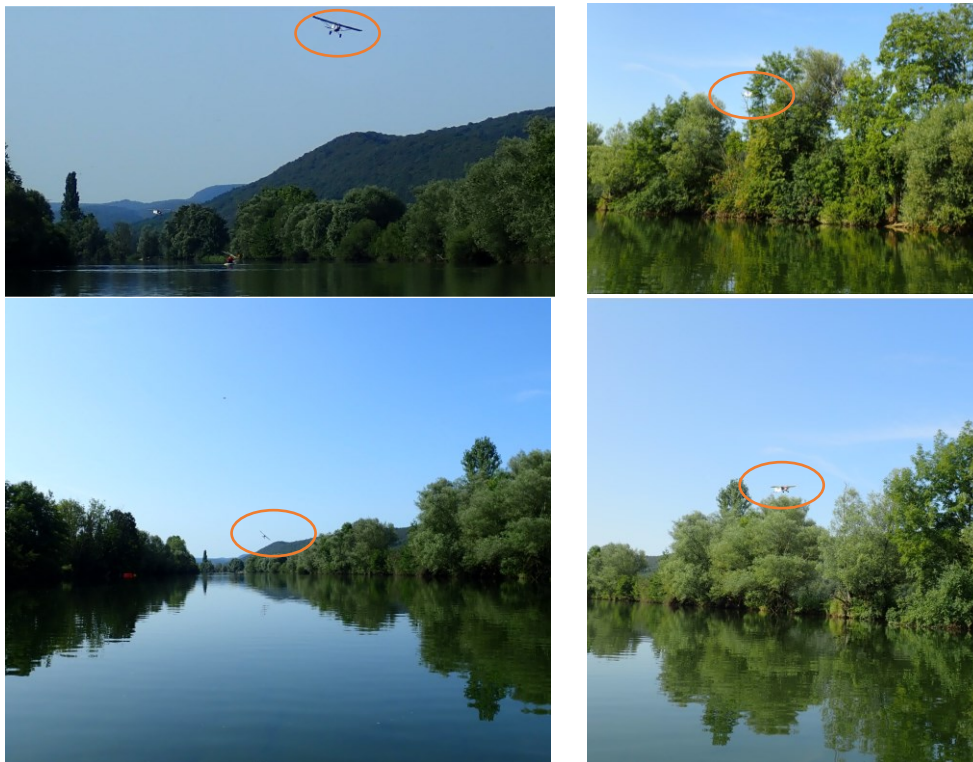


Figure 4: photos taken by witnesses in position 1 on Figure 3

The second witness was located about 500 m upstream of the accident site. He reported having seen five or six aircraft following each other at low height. Those flying the highest were at around 200 ft, at the height of the top of the cliffs. One of them was a little lower than the others, possibly the 3rd, at tree-top level. They were fairly close together (around 80 to 100 m between each aircraft) and were following the river.

The third witness, who had flying experience, was working in a workshop open to the exterior. It was just after 11:00 when he heard the sound of engines. He went outside and saw the microlights flying up the Loue. He stated that he saw three "high wing" type microlights following each other at four to five second intervals. They were flying at a height of approximately one and a half times the height of the trees, i.e. around 100 ft. A few seconds after the microlights had passed, the power went down in his workshop.

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<sup>2</sup> All of the elements analysed in these photos confirmed that they effectively showed the flight of the microlight group during which the accident to 21AJD occurred.

The witnesses to the accident (witnesses 4 on Figure 3) were a group of six people split between five kayaks. They were approaching a dam at around 11:15 when the three aircraft appeared, flying towards them at a very low height. The witnesses stated that they were following each other with a short distance between each aircraft, flying no higher than the ridge. A first aircraft flew by at a low height, a little before the others, at around the height of the ridge. They added that the second microlight arrived a lot lower and then descended even more, apparently to say hello to them. The witnesses very clearly saw the pilot's gestures, he was leaning forwards and waving to them. One of them observed that the pilot was a man of a "certain age". The kayaker who was in the last kayak saw the aircraft's landing gear strike the power line, the microlight tip, abruptly take a nose-down attitude and strike the ground on the axis of its flight path. The other kayakers heard the noise of the impact with the power line. They did not see the aircraft because of the trees. They turned around and then heard the noise of the impact with the ground.

### **2.3.2 Survival aspects**

Witnesses No 3 and No 4 called the emergency services and arrived at the microlight around five minutes after the accident to provide first aid care.

The pilot remained conscious for 20 - 25 minutes after the impact. The emergency services arrived around 45 minutes after the accident, the pilot was dead on their arrival.

### **2.3.3 Other pilots**

Only two pilots gave statements. The pilots of the other microlights were not identified and did not come forward.

#### **2.3.3.1 Pilot in lead position in group of three microlights (ahead of 21AJD)**

The day of the accident, the 50-year-old microlight pilot in the lead position held a paramotor microlight (class 1) pilot licence issued in 2005 and a fixed-wing licence issued in 2006 with passenger carrying privileges. He was the owner of his amateur-build microlight and flew around 70 hours a year.

He specified that he did not know the pilot of 21AJD and that he knew the pilot of the third microlight very well. He carried out paramotor competitions with him.

It had initially been planned that as a group, they would fly to the Alps to a meeting organised by the French mountain pilot association (AFPM) but that they had abandoned this because of the meteorological conditions. They opted for a local flight as an alternative. They looked for somewhere to have lunch and reserved a restaurant at Lanans. They then decided to carry out the Arbois-Lanans flight. As he was from the region, he indicated to the other two pilots that he would guide them. They did not carry out any specific preparation for the flight. At the beginning of the flight, he indicated over the frequency that they were using (123.45 MHz) that they should be vigilant as there were high voltage power lines.

The flight consisted of flying over the Loue at a height, according to him, of 500 ft, i.e. approximately 2,000 ft QNH. It is a route a lot of pilots in the region appreciated. According to him, they were flying at a distance of 500 m to 1 km to each other.

He indicated that the pilot of 21AJD found the view very beautiful and said so over the frequency. When he flew over Buillon château, the latter had exclaimed how beautiful it was.

### 2.3.3.2 Pilot in third position (following 21AJD)

The day of the accident, the 34-year-old microlight pilot in the third position held a paramotor and a fixed-wing microlight pilot licence issued in 2006 with passenger carrying privileges. He was a paramotor and fixed-wing microlight instructor and examiner. He indicated that he had totalled around 1,800 flight hours. He also held a valid aeroplane private pilot licence obtained in 2014.

His microlight was based in a hangar at Saint-Dié aerodrome. The pilot was a member of the Saint-Dié aerodrome club.

He indicated that the pilot of the Babette II knew the area and led the way. He liked staying at the rear to have freedom of movement. The pilot of 21AJD thus found himself in second position. They did not carry out any specific briefing before the flight. He could not remember if they had mentioned the power lines and did not see any in flight.

According to him, they flew one behind the other, at quite large distances and kept quite a big margin of around one kilometre. He had sight of the aircraft ahead except during a few manoeuvres.

The three pilots exchanged with each other on 123.45 MHz. They mutually indicated landmarks to be looked out for. He indicated that he did not witness the accident but saw the crashed Tétrás on the ground. The pilot added that he descended to fly over the accident site. As he could not safely land nearby, he landed at Arbois after checking that the kayakers were on site to provide assistance.

Concerning the exchanges on the frequency just before the occurrence, he indicated that the pilot of 21AJD was filled with enthusiasm about the beauty of the château and the river. He could not remember word for word what was said, but he explained that the pilot of 21AJD indicated that he was going to “say hello” to the kayakers.

### 2.3.4 Note concerning statements

Differences can be seen between the statements from the eyewitnesses and the pilots concerning the flight height and space between aircraft. The photographs back up the eyewitness accounts.

## 2.4 Power lines

### 2.4.1 Installation and signalling of power lines

The regulations<sup>3</sup> do not fix a maximum height to not be exceeded for overhead structures. Only the minimum distances above ground level are specified by this order. Furthermore, there is no obligation to signal medium voltage overhead power lines if the minimum regulatory height has effectively been complied with. In compliance with the above mentioned order, 20 kV lines must have a minimum distance above ground level of six metres, taken at the lowest point of the span between two supports. The height of these supports is between eight and twelve metres above ground level according to the topology of the site.

The power lines equipped with devices indicating their presence, close to aircraft descent and take-off corridors are very high voltage power lines (more than 63 kV).

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<sup>3</sup> Order of 17 May 2001 setting out the technical conditions to be complied with for electrical power distribution ([Version in force the day of the accident](#)).

## 2.4.2 Identification of power lines



Figure 5: location of electrical power lines  
(sources: on left, IGN/ICAO map scale 1:500,000, on right Enedis)

Only the very high voltage electrical power lines are indicated on the IGN/ICAO aeronautical charts to a scale of 1:500,000 with the following key: T—Power line of 225 kV and more (height can exceed 150 ft). On the flight path taken by 21AJD, only one power line is shown on the aeronautical chart to the east of the accident site. On the other hand, the survey provided by Enedis in the scope of the investigation showed numerous sections of medium-voltage power line overhanging the Loue.

### 2.4.3 Microlight flight height

The rules of the air indicate that except for the purposes of taking off and landing, or unless authorised by the competent authorities, no VFR flight shall fly over an open-air assembly of people at less than 300 m (1,000 ft) above the highest obstacle located within a 600 m radius of the aircraft. Elsewhere, a VFR flight must not be flown at a height of less than 150 m (500 ft) above the ground or water.

Isolated obstacles of a height of less than 300 ft are not shown on the IGN/ICAO chart.

### 2.4.4 Conclusion concerning power lines

When preparing the flight, the medium voltage power line at a height of around 60 ft could not be identified. These power lines were not signalled. The minimum flight heights specified by the regulations ensure that these obstacles are cleared by a large margin. The height at which the various aircraft were flying implied reduced safety margins with respect to the different power lines. It was not possible to determine from the statements if the pilot had identified this risk beforehand.

When the microlight approached the power line, the poles which visually signal the presence of the line were below the aircraft or hidden by vegetation. Furthermore, the pilot was looking at the people on the ground to one side.

In these conditions, it is very probable that the pilot did not perceive the power line, or did so too late in relation to the time required for an avoidance manoeuvre.

## 2.5 Risk taking

Flying low and descending to wave to people on the ground represents a clear risk taken by the pilot, which could be explained by various factors:

- Insufficient consideration given to safety in the organisation of the flight

According to the statements, no briefing was carried out. The flight path chosen was based on one of the group member's knowledge of the route. The flight height adopted by all the members of the group seems to indicate that safety was not a top priority.

As has been observed in several group excursions, the risk assessment can be partial or even implicit. It is not necessarily individualised at the outset nor does it necessarily take into account each person's skills or habits (knowledge of the route, low flying, etc.)<sup>4</sup>. Thereafter, during the flight, the consideration of risks may be diluted<sup>5</sup>.

When flight safety is not based on a "no-go" (in this case the flight height), it is the pilot's awareness of the risks that will ensure that certain safety margins are complied with. If the pilot is not used to doing this, s/he will not have internalized the risks and associated limits. Once a "no-go" is ignored, there are no more limits. Thus from the moment the pilot flies below the standard flight height, there is nothing to hold him/her back from descending even further.

- Unusual risk-taking favoured by the group effect

The impact of the group on risk-taking is well known and documented. Studies of the dynamics of small groups highlight the fact that belonging to a group can confer a feeling of invulnerability.

A group excursion may lead to a desire to prove oneself in relation to peers or third parties. This safety issue has been raised frequently in safety investigations into fatal accidents involving all categories of aircraft. The BEA has mentioned this subject several times, notably in its contribution to the 2018 aviation safety report published by the DGAC<sup>6</sup> and in the light aeroplane 2020 thematic review<sup>7</sup>.

- Impact of emotions

The positive feelings of it being the weekend, the pleasure of flying and a physical effort over a long period are a source of well-being. While the impact of stress is well documented in the aeronautic field, the impact of 'positive' emotions and the pursuit of pleasure is less so. However, just as stress has an impact on decision-making, a state of euphoria or elation<sup>8</sup>, can lead to a search for immediate reward and potentially impair judgement, particularly risk assessment.

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<sup>4</sup> See for example: [Accident to the Piper - PA28 - 161 registered F-OGKO on 16/02/2020 near Dominica \(Caribbean Island\) \[Investigation delegated to BEA by the authorities of Dominica\]](#).

<sup>5</sup> See for example: [Accident to the Extra 200 registered F-GPIT on 25 February 2016 at Saint-Héand \(Loire\)](#).

<sup>6</sup> [Rapport sur la sécurité aérienne](#), p45.

<sup>7</sup> [Light aeroplane thematic review – 2020](#).

<sup>8</sup> See for example: [Accident to the Cap 10C registered F-GYZA on 6 August 2004 at Saint-Martin Lys](#).



### 3 CONCLUSIONS

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

#### Scenario

To replace a weekend in the Alps, the pilots undertook a cross-country flight following a river. As one of them knew the route, they planned to follow each other and did not prepare the flight navigation. The pilots flew overhead the river, following each other closely and at low height for the whole of the route. The pilot of the microlight identified 21AJD expressed his enthusiasm several times on the frequency, indicating his state of exaltation. The height at which he was flying along the route meant that his safety margins in relation to obstacles were reduced. He also descended to, in his words, say hello to people on the ground. During this manoeuvre, he did not perceive the power line or did so too late and was unable to avoid it.

#### Contributing factors

The following factors may have contributed to the risk-taking and the loss of separation with obstacles:

- shortfalls in the pilots' safety culture, as evidenced by the lack of preparation with respect to the specificities of this formation flight and by all the pilots disregarding flight height rules along the route;
- a group effect:
  - leading to the second pilot probably underestimating the risks in his reliance on the leading pilot's knowledge of the route and potentially his confidence in the instructor following him,
  - encouraging a possible feeling of invulnerability,
  - leading to a possible desire to prove to other pilots or third parties what he could do,
- possible impairment of judgement.

On the basis of the statements gathered, when the pilot spoke on the frequency, he seemed to be in a possible euphoric state which may have impaired his judgement and contributed to unusual risk-taking.

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