



**Accident** to the ROBIN - R3000 - 160  
registered **HB-KEQ**  
on Friday 11 November 2022  
at Megève

<b>Time</b>	Around 09:40 <sup>1</sup>
<b>Operator</b>	Aéroclub de Verein Hausair (Switzerland)
<b>Type of flight</b>	Cross-country
<b>Persons on board</b>	Pilot and passenger
<b>Consequences and damage</b>	Aeroplane 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.	

## **Approach below the approach slope, collision with trees on final**

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

*Note: the following information is principally based on a statement from the pilot, on the examination of the site, as well as on data from the aeronautical application used by the pilot.*

The pilot, accompanied by one passenger, took off from Hausen am Albis aerodrome (Switzerland) for a flight bound for Megève mountain airfield (Savoie). At approximately 09:40, after two reconnaissance passes, the pilot started the approach to runway 15. He stated that he was dazzled by the sun on final approach and that he lost visual contact with the runway. The aeroplane struck and severed the top of a fir tree, then it fell vertically from the tree and came to a stop on its back in the forest.

### **2 ADDITIONAL INFORMATION**

#### **2.1 Examination of site and wreckage**

The aeroplane was destroyed. The wreckage was located in a wood approximately 400 m before the threshold of runway 15. It was laying on its back at an altitude of 4,573 ft.

The front section, including the front landing gear, the power unit and the instrument panel, was found a few metres from the main wreckage.

The right wing was ruptured in line with the root. The tailplane was substantially damaged. The flaps were extended in the landing position.

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

The pilot stated that he had not observed any technical problems with the aeroplane or the engine during the approach phase. Examinations on the aeroplane were reduced accordingly.



*Figure 1: view of the wreckage (Source: BEA)*

## **2.2 Meteorological information**

The meteorological conditions analysed by Météo-France at the mountain airfield around 09:00 were as follows:

- light wind varying in direction;
- visibility greater than 10 km;
- clear sky with a few thin cirrus clouds at 30,000 ft;
- temperature around 6°C, dew point temperature -2°C.

At the time of the accident, the position of the sun was at an azimuth of 141° which placed it on the centreline of the runway, and at 17° above the horizon.

## **2.3 Pilot's experience and statement**

The 50-year-old pilot held a Light Aircraft Pilot Licence - Aeroplane (LAPL (A)) issued in 2014 by the authorities in Switzerland, as well as a class 2 medical certificate with VDL<sup>2</sup> endorsement. He also held a mountain "wheel" rating issued in September 2021. He had logged 442 flight hours, 52 hours of which on type and 8 hours of which performed in the previous three months. He had logged 53 flight minutes on this aeroplane in 2022 and seven landings at this mountain airfield.

Most of the information gathered comes from a form completed by the pilot, who did not wish to speak to the BEA.

He specified on the form that he was dazzled by the sunlight on final and that he lost visual contact with runway 15. He was wearing sunglasses. He remembered being low in relation to the approach slope on final approach, and then hitting a fir tree.

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<sup>2</sup> Obligation to wear optical correction for defective distant vision; this also means that a spare set of spectacles must be carried in the cabin.

The pilot specified that the weather conditions were good at Megève mountain airfield.

## 2.4 Aerodrome information

Megève mountain airfield is a restricted-use aerodrome. As regards aeroplanes, it is reserved for pilots holding a mountain “wheel” and/or “skis” rating or a valid site authorisation for this mountain airfield.

The mountain airfield has a paved runway 15/33. Runway 15 is used for landings only, and runway 33 is used for take-offs.

The VAC chart specifies that arrivals must be performed via point N at an altitude of 5,600 ft. Pilots must then fly overhead at 5,300 ft. In the absence of specific provisions, in accordance with the Order of 12 July 2019<sup>3</sup>, the downwind leg must be performed 300 ft above the upper platform of the mountain airfield, i.e. at 5,100 ft.

The threshold of runway 15 is at an altitude of 4,697 ft.

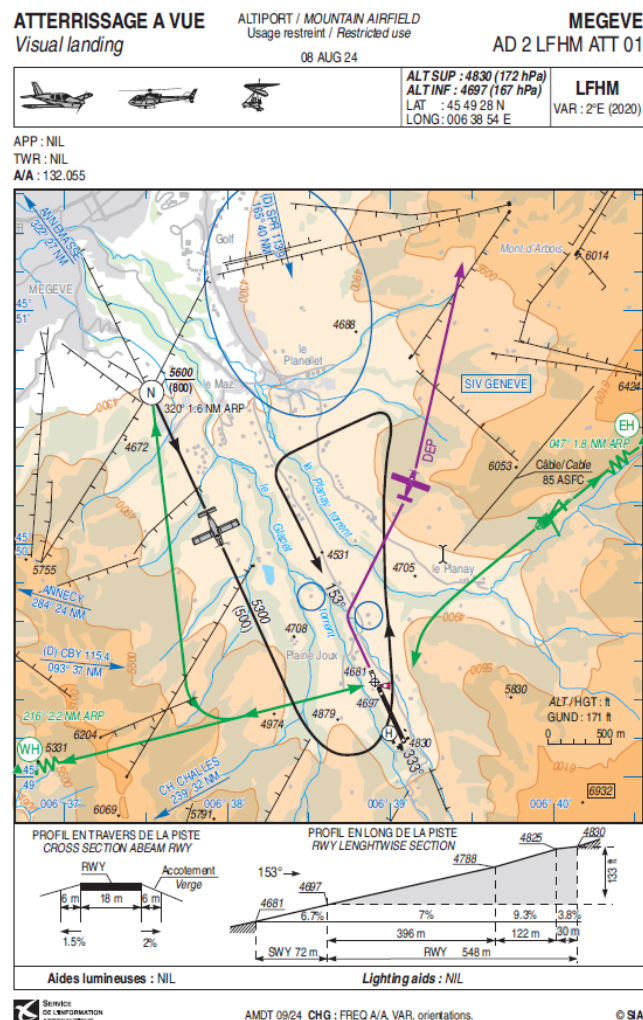


Figure 2: Megève mountain airfield VAC chart

<sup>3</sup> Order of 12 July 2019 on general air traffic procedures for the use of aerodromes by aircraft ([Version in force on the day of the accident](#)); Part C relating to additional provisions for mountain airfields and mountain landing areas.

## **2.5 Read-out of GNSS data recorded by the SkyDemon aeronautical application**

The read-out of data showed that the pilot started the descent in the final turn and did not stay level thereafter. He had therefore passed through an altitude of around 5,000 ft in descent when he intercepted the approach path; he was then on an approach slope of 5% leading to the threshold of runway 15.

At around 0.9 NM from the threshold, the pilot increased the glide slope up to 10%. At 0.6 NM from the threshold, the aeroplane was about 100 ft below the approach slope of 5%.

The aeroplane passed in the shadow of the terrain to the south of the runway, at 09:41:30 and 0.35 NM from the threshold. It passed below the altitude of the runway threshold 0.34 NM from the latter. The aeroplane then collided with the vegetation, with the last point being recorded at 09:42.



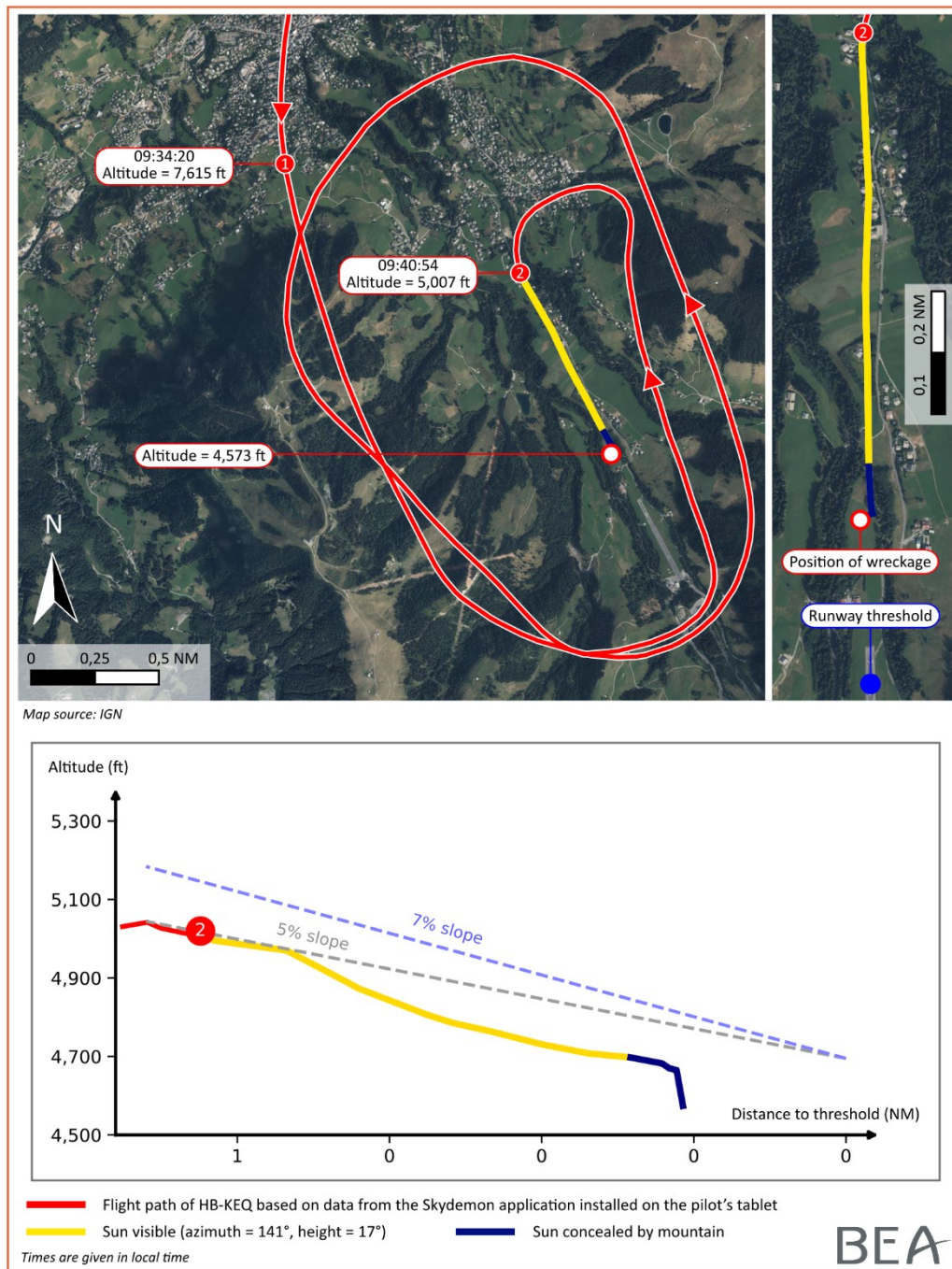


Figure 3: path of the aeroplane

## 2.6 Reconnaissance in mountain flying

On arriving near a mountain airfield, it is common practice to observe and analyse external elements, to determine whether it is possible to take-off and land. The runway illumination is one of the parameters to take into account during reconnaissance. During the final, if pilots cannot clearly distinguish the aiming point due to visual discomfort, they may be unable to stabilise a path towards the target point. This situation is particularly dangerous, because it is often impossible to miss the approach once the aeroplane is on final.

## 2.7 Final in mountain flying

The manual on mountain flying<sup>4</sup> indicates that the start of the final approach must be performed in level flight, and that the descent must then be performed on the approach slope that corresponds to an average engine speed in landing configuration. For most piston aeroplanes equipped with flaps, the slope is therefore greater than 5% and can be as steep as 7%.

Approaches on a gentle slope in a mountainous environment should be avoided, as they do not allow pilots to accurately adjust the approach slope to external elements such as aerology. In some cases, they do not provide sufficient obstacle clearance.

## 2.8 Landing into the sun

When on a path into the sun, visual fatigue extending to discomfort may contribute to the loss of external visual references and compromise the correct performance of a landing or touch-and-go.

Visual fatigue linked to a path being flown into the sun may be increased by other possible age-related vision disorders such as presbyopia (gradual loss of accommodation). This is characterized by visual adaptation difficulties and a certain slowness, or even impossibility, to focus.

The transition from an area of high luminance to an area of shadow or low luminance requires the human eye to adapt in order to focus. The human eye and the lens of an autofocus camera work in a very similar way. In bright light conditions, the pupil narrows, reducing the amount of light needed to focus, and in low light conditions, the pupil dilates, letting in more light. Combined with reduced accommodation, the transition from high to low brightness levels can increase visual discomfort.

## 3 CONCLUSIONS

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

### Scenario

The pilot started the descent during the final turn and continued descending after intercepting the final approach path, whereas a level-off is recommended and normally carried out before starting the final descent to a mountain airfield. Already low in relation to the approach slopes usually followed to this type of runway, he increased the approach slope. As a consequence, at approximately 0.3 NM from the runway threshold, he was below the threshold altitude.

The discomfort caused by the aeroplane's position into the sun and the sudden transition to a shadowed area probably did not help the pilot to correct the final approach path or to detect the tree with which the aeroplane collided.

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<sup>4</sup> *Le vol en montagne expliqué au pilote*, Daniel Agnoux, third edition, 2011, published by CÉPADUÈS, "Les expliqués" collection.

## Safety lessons

### Reconnaissance and consideration of the luminosity and illumination for landing in mountainous environments

In 2022, the French Aeronautical Federation (FFA) published a practical guide entitled “*Pilote de plaine et vol en montagne*” (Lowland pilots and mountain flying) to make pilots aware of the main hazards inherent in mountain flying. In particular, this guide states that: Depending on the season, position of the sun, luminosity and illumination, the pilot’s vision of distances, depth and contrast can be easily modified. One of the consequences of this modification is that certain obstacles, whether natural or artificial, may not be perceived or may be poorly perceived by the brain.

The manual on mountain flying also indicates that the platform reconnaissance phase is essential. This reconnaissance is the basis on which decisions are made and allows pilots to determine the various parameters that will be used to establish a stabilised approach.

### Threats specific to an aerodrome

For several years, the FFA has published “[Icarus](#)<sup>5</sup>” sheets, which summarise the threats identified at certain French aerodromes. In 2025, the FFA published the second edition of the Icarus sheet for Megève mountain airfield. It states that the outbound altitude is 5,100 ft and that it is possible at this altitude to reset the altimeter, in line with the chalet on the right, at the start of the outbound leg. The document also reminds pilots that from 1 November to 15 January, until 11:00 local time, the illumination conditions may compromise visibility of the glide slope and of the path aiming point. During this period, landings are strongly discouraged.

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

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<sup>5</sup> *Informations Complémentaires d’Aérodrome Utiles à la Sécurité* (additional aerodrome safety information).