



Accident to the DG– LS8-e neo¹
registered **HB-2550**
on Thursday 6 April 2023
at Thorame-Basse

Time	Around 15:38 ²
Operator	Private
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Pilot seriously injured, glider 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 tree during an off-field landing

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements and data from the glider's on-board LX9000 computer.

At 13:55, the pilot carried out a towed take-off from Sisteron-Vaumeilh aerodrome (Alpes-de-Haute-Provence). He headed eastwards and managed to reach a maximum altitude of 2,863 m (see **Figure 1**, point **2**).

From 15:04, when the glider was at an altitude of 2,700 m, it lost altitude at an average vertical speed of around -0.7 m/s.

¹ Glider equipped with electric sustainer motor.

² Except where otherwise indicated, the times in this report are in local time.

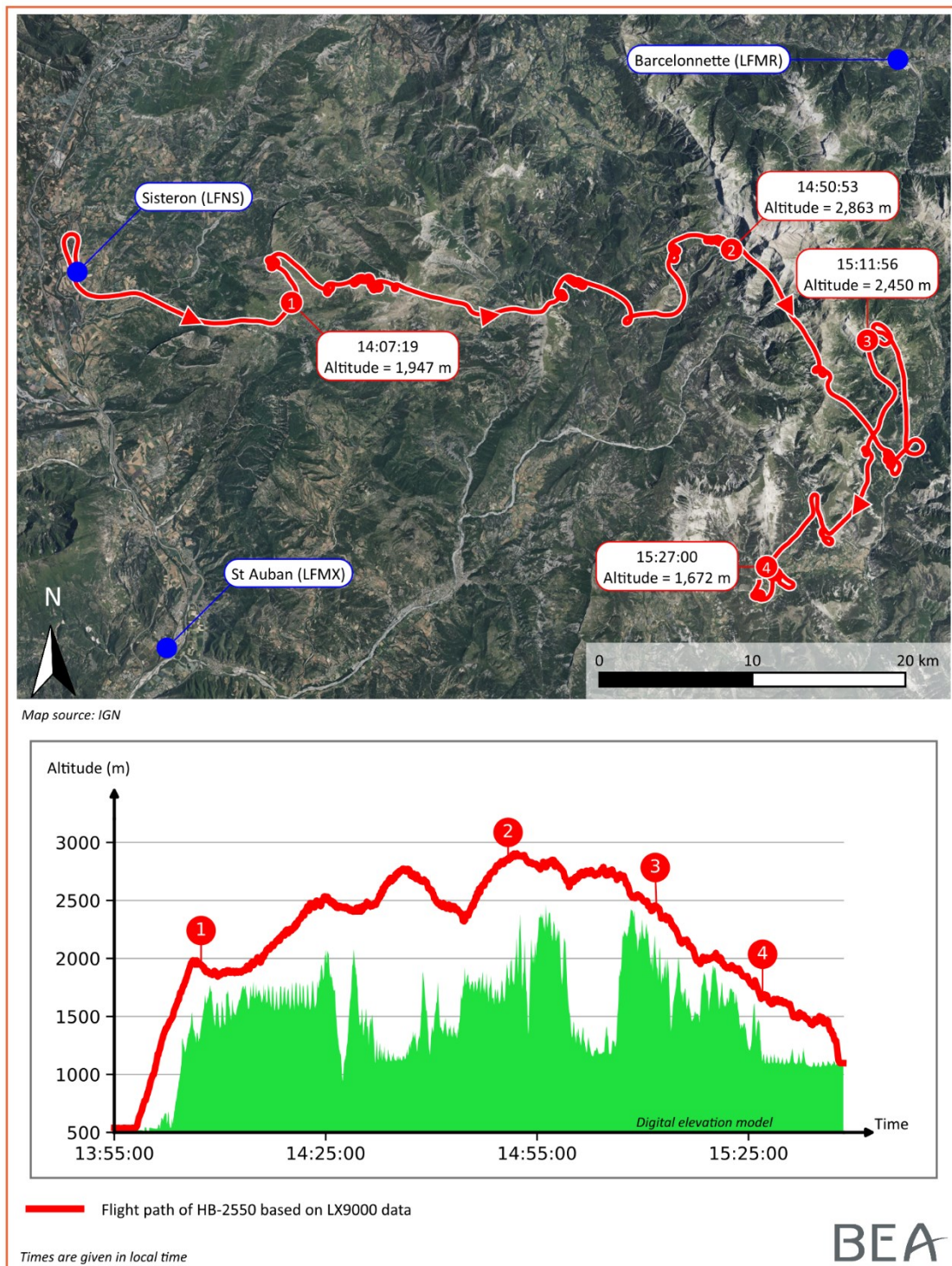


Figure 1: flight path of glider (complete flight)

At 15:27 (see **Figure 1** and **Figure 2**, point **4**), the pilot entered Thorame-Basse valley. He carried out a few spirals to try to gain altitude but without success.

At 15:33 (see **Figure 2**, point **5**), after losing 200 m in altitude, he decided to perform an off-field landing. He chose a field that he believed had a slight upward slope, flew some spirals again to try

to gain altitude one more time and then started the final to land. The slope on short final was around 20% for an average vertical speed of -7.5 m/s. The recorded ground speed was roughly 150 km/h³.

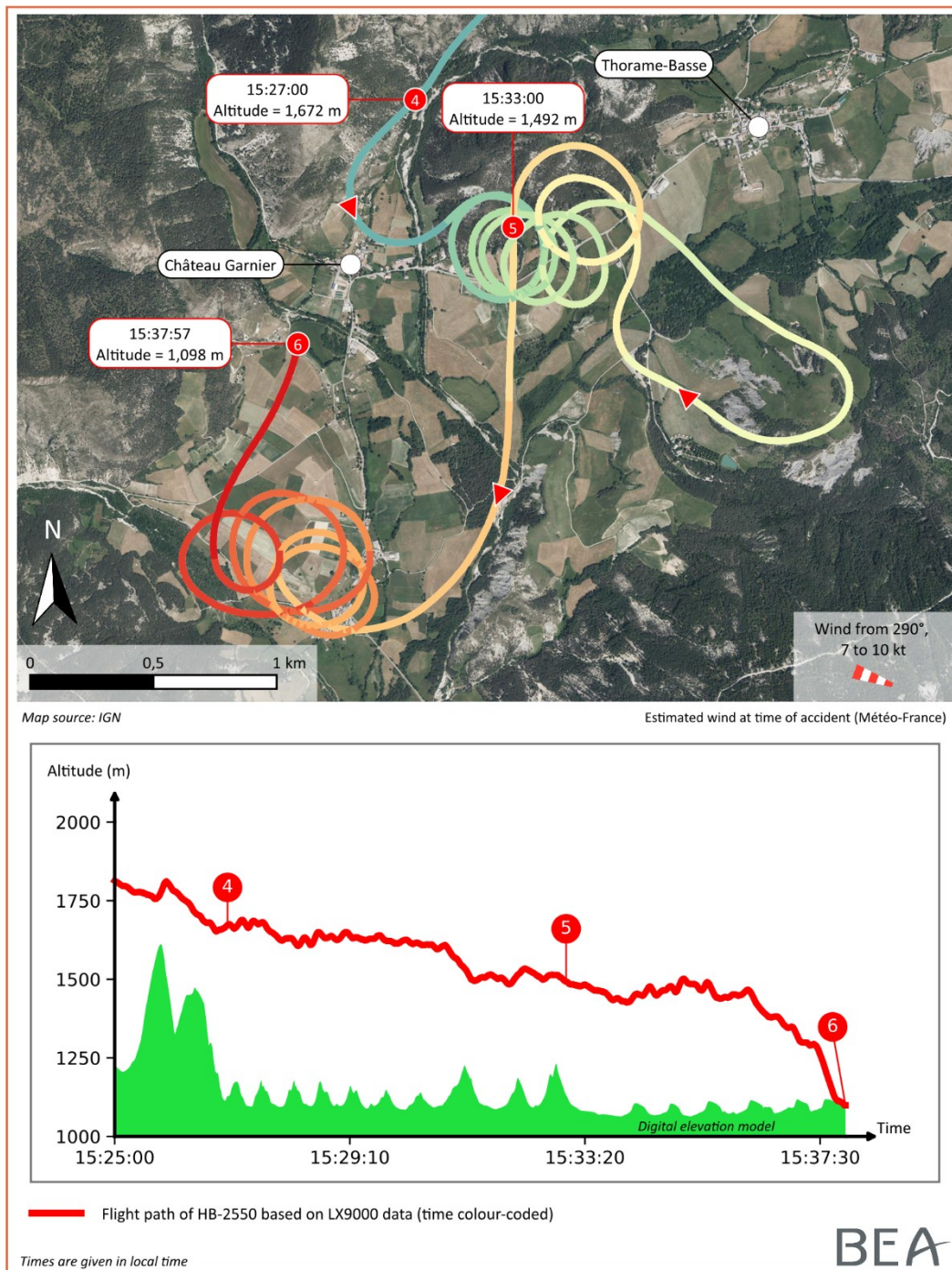


Figure 2: final flight path of glider

³ The flight manual recommends a minimum approach speed of 90 km/h. According to the glider pilot manual, the optimum approach speed (VOA) when there are strong gusts is calculated as follows: $VOA = 1.3 \times \text{stall speed} + \frac{1}{2} \text{ maximum wind}$.

i.e. $VOA = 1.3 \times 80 \text{ km/h} + \frac{1}{2} \times (37 \text{ to } 55 \text{ km/h}) = 122 \text{ to } 131 \text{ km/h}$. The maximum wind value was estimated based on the meteorological data at surface level and over the terrain (see paragraph 2.2).

During the flare, the glider's central landing gear and then the left wing came into contact with the ground. The glider bounced, ran to the end of the field then violently struck a tree on its path before coming to a halt in another field lower down.



Figure 3: position of glider wreckage (source: BEA)

2 ADDITIONAL INFORMATION

2.1 Pilot experience

The 72-year-old pilot held a SPL⁴ obtained in 2007. He had logged 1,420 flight hours including 1,140 hours on the LS8 and 19 hours in the last three months. He stated that around 80% of his flights were carried out in high mountain regions. Most of the flights departed from the Swiss aerodromes, Schänis (LSZX) and Münster (LSPU) and from the Austrian aerodrome, Nötsch (LOKN).

The pilot added that he had carried out 11 flights in the region around Sisteron for a total time of 48 hours.

2.2 Meteorological information

Météo-France estimated that there were the following weather conditions at the accident site: west-north-west wind of 7 to 10 kt, with gusts close to the ground of 15 to 20 kt, visibility greater than 10 km, passing high clouds, no low clouds, light to moderate turbulence close to the ground, temperature 12°C.

⁴ The glossary of acronyms and abbreviations frequently used by the BEA can be found on its [website](#).

The terrain situated at less than 5 km north west of the accident site rose to an altitude of 2,300 m. The 20 to 30 kt wind blowing from the north west at the top of the terrain created subsiding air on its lee side. The accident site was in the area of these downdrafts estimated as light, but nevertheless significant for gliding.

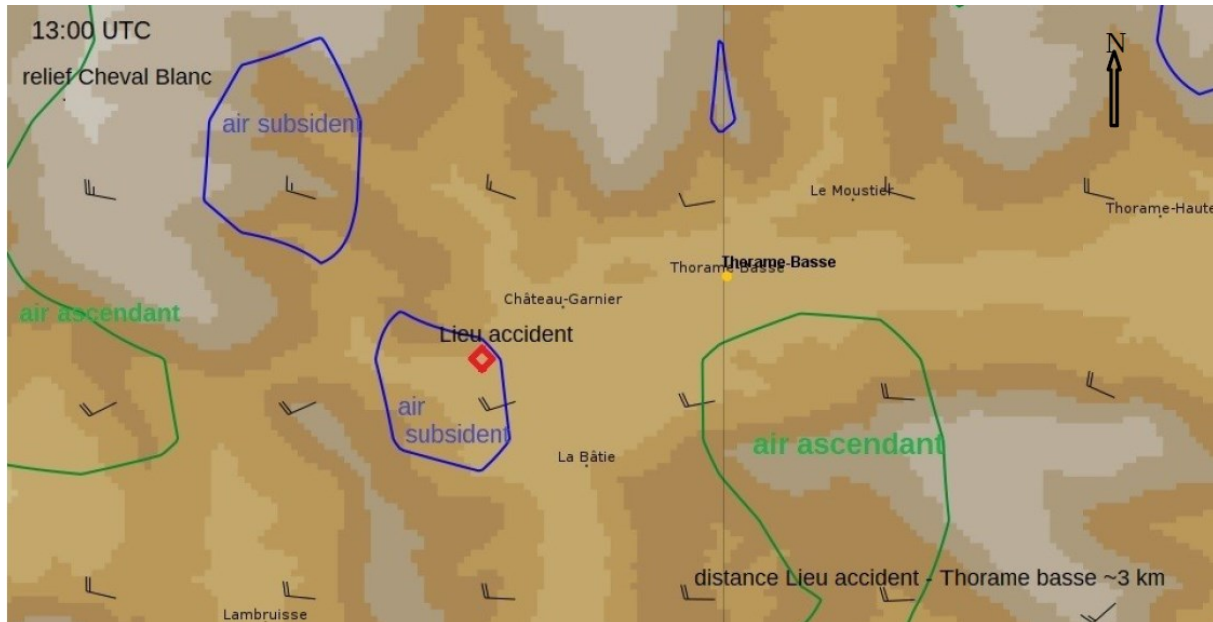


Figure 4: map of terrain, gusts and areas of subsiding air at 15:00.

The gusts are shown using black barbs, the areas of subsiding air (downdrafts) are circled in blue and the areas of uplift circled in green.

(source: Météo-France, annotations BEA)

2.3 Pilot's statement

The pilot specified that he arrived at Sisteron-Vaumeilh aerodrome in the morning of the day of the accident, that he removed his glider from his trailer and rigged it together. At around 10:00, he attended the briefing given by the chief pilot at Sisteron flying club.

He indicated that when he entered the valley, he found himself downwind of the northerly wind. He could no longer exit the valley where he had met with rates of sink of between 0.5 and 3 m/s. The pilot explained that the electric motor enabled rates of climb slightly above 1 m/s at an optimum speed of 95 km/h. In the strong downdraft conditions, it seemed to him that the use of the electric motor was not appropriate.

The final approach seemed normal to him, he used his speedbrakes and the indicated airspeed was around 100 km/h⁵. He reported that he saw that the field was sloped when flaring.

The pilot was not aware of the existence of a safe landing area situated a few hundred metres from where he decided to land. He did not use the Guide to safe landing areas in the Alps published by the French glider federation (FFVP).

⁵ The recorded ground speed on short final was roughly 150 km/h.

3 CONCLUSIONS

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

Scenario

When the pilot entered Thorame-Basse valley, he remained on the lee side of the terrain and encountered an area of subsiding air. He tried to gain altitude by performing spirals but did not manage to find uplifts. He might have been able to find uplifts upwind of the terrain south of Thorame-Basse (see **Figure 4**). He finally decided to land in a field that he considered suitable for an off-field landing.

During the flare, the left wing struck the ground when the speed of the glider was still significant. The pilot lost control of the glider which continued its run to the end of the field and then collided with a tree. It is possible that the glider experienced a tailwind gust on short final which would have extended the landing distance.

Contributing factor

The mountainous environment probably made it difficult to estimate the horizon and thus assess the slope of the field.

Safety lessons

In the French glider pilot manual, in the chapter concerning off-field landings, it is stated that a sloping field is not recommended, as it is a guarantee that the glider will perform a ground loop. It is also stated that softly contoured terrain is difficult to discern from above.

This event highlights the difficulty of estimating the slope of a field when preparing for an off-field landing (see **Figure 5**) and in the absence of a reconnaissance and a suitable circuit.



Figure 5: view of field (source: Géoportail, annotations BEA)

The Guide to safe landing areas in the Alps published by the FFVP allows the pilot to locate the most appropriate places for an off-field landing. There is an area referenced LF0459 "Thorame-Basse" which the pilot could have used to land (see **Figure 6**).

The document [Safety in mountain flying](#), available in several languages (French, English, German, Italian and Polish) specifies, "Study all the outfield landings known in the area and mark them on one's map; keep the updates on the GPS and the data bases. Do not take off without an updated safety out landing zone booklet."

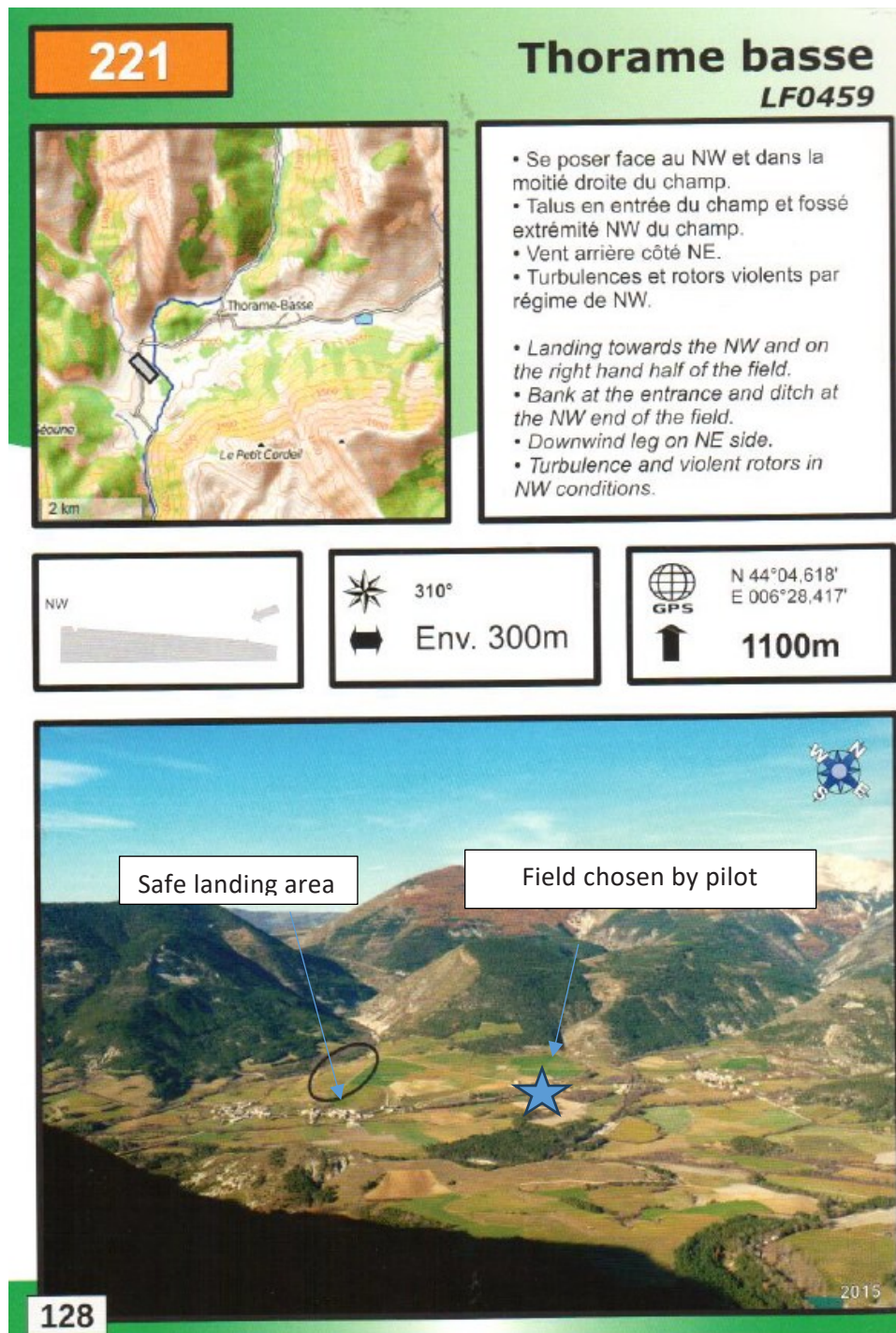


Figure 6: "Thorame-Basse" safe landing area (source: Guide des aires de sécurité, 4th edition)

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