



Accident to the JONKER JS-MD 3 RES “JS3”
registered **D-KPWZ**
on Saturday 22 June 2024
at La Motte-du-Caire

Time	Around 18:00 ¹
Operator	Private
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Glider substantially damaged
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.	

Non-stabilized approach, runway overshoot, vegetation strike, collision with ground

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements and data recorded by the glider's FLARM.

The pilot took off at 14:15 from La Motte-du-Caire glider aerodrome. After a flight lasting around three and a half hours, he returned to the glider aerodrome. He estimated that there was a north-north-west surface wind of 30 km/h and carried out a landing pattern for a north-facing landing. He left the glider descending area at an altitude of around 1,000 m (i.e. at a height of around 350 m with respect to the runway).

During the downwind leg, he configured the glider by extending the landing gear and flaps.

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

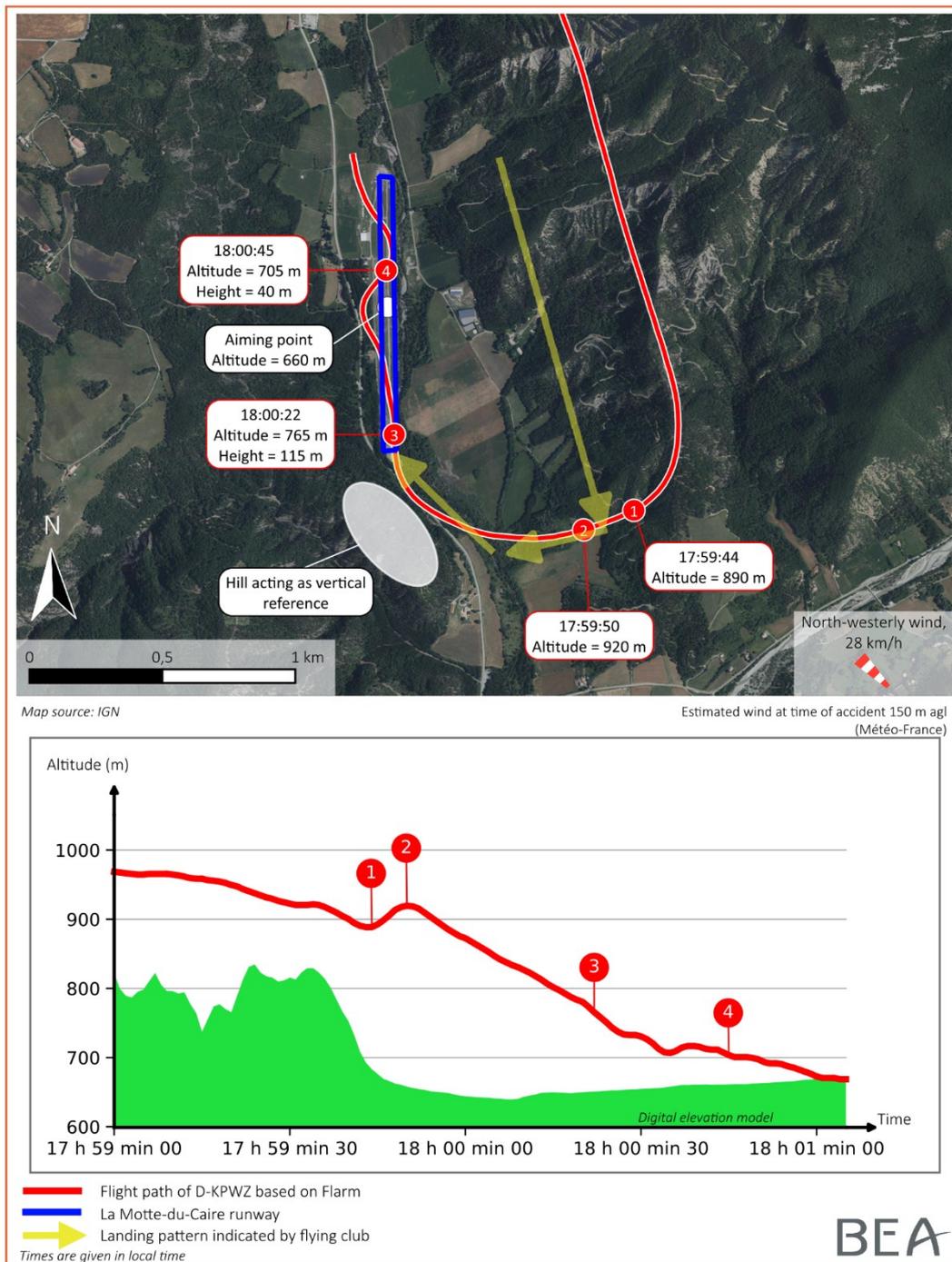


Figure 1: final flight path of glider (source: BEA)

On coming out of the turn onto the base leg (see **Figure 1**, point **1**), the indicated airspeed increased from 120 to 155 km/h and the glider rose around 30 m (point **2**). On the base leg, the pilot detected that he was too fast and too high on the slope. He fully extended the flaps and airbrakes. He came out of the last turn at a height of 115 m (point **3**) at around 600 m from the aiming point. His indicated airspeed was 120 km/h. He wanted to slightly reduce the speed in order to have more time to take a decision. The rate of descent and the speed progressively decreased as he flew over the runway.

One third of the way along the runway, he was still at a height of 75 m and offset the glider to the left-hand side with the intention of carrying out a 180° right-hand turn in order to land on the reciprocal QFU. He abandoned this project in order to carry out the La Motte-du-Caire emergency

procedure. This consisted of using the parking situated on the left-hand side of the end of the runway when the landing was too long. He returned to the runway at a height of around 40 m. At this point the remaining runway distance available was 230 m (point 4). Considering that he was still too high, he decided to land in the field situated after the parking. The glider, which had still not landed, struck the vegetation separating the parking and the field. It collided with the ground approximately 40 m further on.



Figure 2: photograph of damaged glider (source: gendarmerie)

2 ADDITIONAL INFORMATION

2.1 Pilot experience

The 45-year-old pilot held a sailplane pilot licence obtained in 2007 along with a glider instructor rating obtained in 2015. He had logged around 1,930 flight hours, including approximately 60 hours in the previous three months.

He was the co-owner of D- KPWZ since 2023. He had logged 93 flight hours on this glider, including 48 hours in the previous three months.

The pilot had been coming to La Motte-du-Caire for ten years. He spent about ten days there during the summer months and generally carried out one flight per day when conditions allowed. These flights lasted between three and eight hours. With D-KPWZ, at La Motte-du-Caire, he carried out six flights in 2023 and three flights in 2024, two of which involved north-facing landings.

2.2 Meteorological information

Météo-France estimated that the meteorological conditions at the accident site were as follows:

- northerly surface wind (valley breeze) of 6 kt (11 km/h) with gusts of 20 kt (37 km/h), visibility greater than 10 km, no low clouds, temperature 22°C, light to moderate surface turbulence;
- between a height of 50 and 300 m, light to moderate north-westerly wind (28 km/h at 150 m);
- there was neither turbulence nor curl-overs² in the vicinity of the glider aerodrome. It is very probable that there was no area of lifts or downdrafts in a 4 km-radius around the glider aerodrome.

2.3 Glider aerodrome information

The glider aerodrome is operated by La Motte-du-Caire glider club. Due to the terrain around the glider aerodrome, the approach pattern (landing pattern, descent slope) is not standard. Each season, before their first flight as pilot-in-command, pilots are required to carry out a flight with a club instructor.

The take-off and landing area is an unpaved strip measuring 1,100 m long. As the landing surface has a non-negligible rising slope in the north direction, this is the preferred direction for arrivals up to a southerly wind of around 10 kt (i.e. around 19 km/h).

The club provides pilots with instructions for the landing pattern on its website, including the following chart for landing on runway 36:

² A curl-over is a meteorological phenomenon associated with lee waves. It can give rise to strong turbulence.

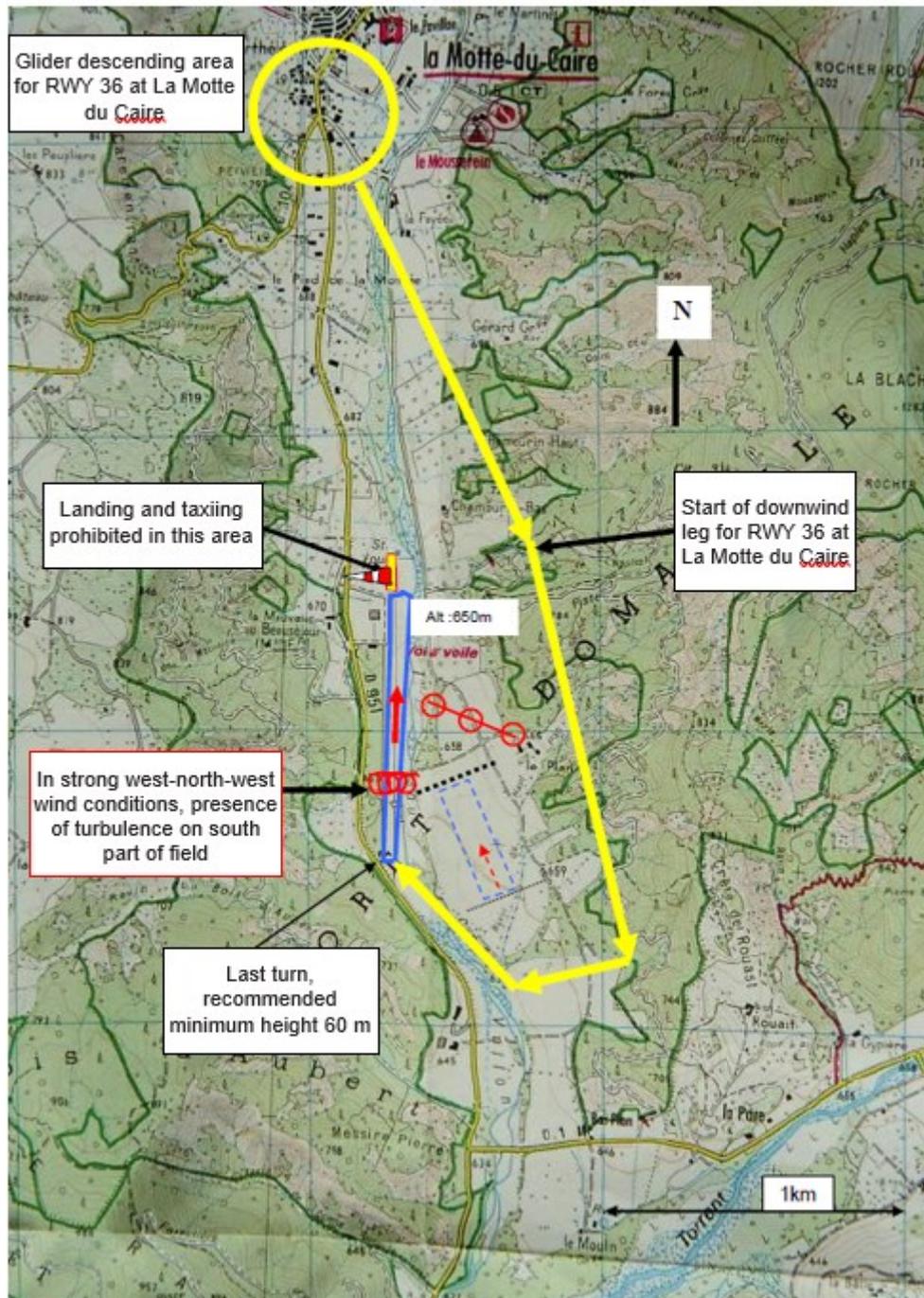


Figure 3: flying club chart for north-facing approach valid at the date of the accident (annotations BEA)

The flying club’s instructions indicate that the pilot is to leave the glider descending area between 1,000 and 1,100 m in order to join the downwind leg east of the runway.

The president of the glider centre indicated that:

- for a north-facing approach, the last turn (when flying over the start of the runway) is carried out level with a 80 m-high hill situated to the south of the runway;
- the final approach is carried out over the first half of the runway due to possible curl overs according to the wind conditions;

- the aiming point is shown by a white panel situated on the right-hand edge of the runway (see **Figure 1**).

Since the accident, the club has published changes to the instructions for a north facing approach and landing:

- the downwind leg is carried out at a greater distance from the runway, overhead the ridge, at an altitude of 900 m;
- the flight path to be followed on the base leg differs according to whether the glider is flying in the presence of a light breeze or a north wind (Mistral);
- the height for the last turn is 80 m when there is a breeze and 100 m when there is a Mistral.

2.4 Statements

2.4.1 Statement from pilot

The pilot indicated that he had attended the weather briefing that morning. At the end of the flight, on returning to La Motte-du-Caire glider aerodrome, he checked the windsock and estimated that there was a north-north-westerly wind of 30 km/h. This information seemed consistent with what he had read on his instruments 10 km earlier. He did not ask for weather information over the radio even though he sometimes did so.

The pilot considered that with a north-westerly wind, it was very difficult to land at La Motte-du-Caire, as curl overs could be present on the first half of the runway. He mentioned that if there was a Mistral, an additional height margin needed to be taken in the final turn. He had carried out a flight with the La Motte-du-Caire glider club instructor one week before on the Duo Discus. The instructor had reminded him not to fly lower than the hill (see **Figure 1**) which is used as the altitude reference, due to possible downdrafts.

The pilot indicated that in the base leg, the airbrakes were extended. When he perceived that he was too high, he fully extended the airbrakes and flaps (L position). He realised that the indicated airspeed was too high and thought he had reduced it to around 110 km/h. While flying over the runway, he adjusted the position of the airbrakes until he struck the vegetation.

He had not envisaged a manoeuvre to intercept the descent slope (see paragraph 2.7).

2.4.2 Witness on ground

A pilot who was at the aerodrome and who had landed a few minutes before the accident indicated that the wind was less than 10 kt, that all the high ground was in shadow and that there were no curl overs.

The witness specified that the circuit is carried out taking the slope as a reference. He indicated that if the wind is not calm, it is necessary to deliberately hold a very steep approach slope.

He specified that there are two alternate areas if needed: a small clearway at the end of the runway used as a parking and a field situated after this clearway. These two fields are separated by bushes.

2.5 Glider information

The JS3 is a high-performance, single-seat glider equipped with wing flaps. Two wingspan configurations exist (15 m and 18 m). D-KPWZ corresponds to the 18 m configuration.

The following information is taken from the flight manual:

Flap positions

The approach pattern can be flown with the flaps in positions 3 to 5 (+5° to +16.7°). During the final approach, the flaps can be set to L (+20°) to reduce the landing distance and touchdown speed.

Approach speed

In calm wind conditions, the recommended approach speed is 110 km/h with empty ballast tanks.

2.6 Read-out of recorded data

The glider was equipped with a Flarm flight computer, which records, among other things, GNSS tracks and the indicated airspeed. The data read out from the flight computer was used to construct the flight path shown in **Figure 1**.

The analysis of the data also showed that between the base leg and the start of the manoeuvre when flying over the runway, the average slope was 17%, which corresponds to a lift-to-drag ratio of 6 and is consistent with the data provided in the glider's manual for the full deployment of the airbrakes.

2.7 Glider approach information

The glider pilot manual³ indicates that during the final approach, the pilot must hold the optimum approach speed (VOA). The pilot must act on both the pitch attitude and the airbrakes to stay on the approach angle.

This manual also describes the preferred manoeuvres should the glider be too high during the approach:

- on the base leg, if the glider is too high despite the airbrakes being fully extended, pilots are reminded not to attempt a 360° turn. It is preferable to extend the base leg beyond the axis of the final approach and begin a new base leg on the opposite side. However, this solution is not possible at all aerodromes due to the terrain;
- at the very beginning of the final approach, the last resort solution is the "safety manoeuvre", which consists of intercepting the descent slope. This manoeuvre requires 600 m before the aiming point. With the airbrakes fully extended, the pilot must take a steep nose-down attitude until he passes under the nominal descent slope. During this manoeuvre, the airspeed will increase above the VOA (the manual cites a possible speed of 140 km/h as an example). When back on the approach slope, the pilot keeps the airbrakes extended until the speed is reduced to the VOA. This manoeuvre requires training and practise with an instructor.

Note: the method taught by the National Gliding Center (CNVV) is similar, but only requires intercepting the nominal slope (without passing below it).

³ Manuel du pilote vol à voile, Collectif, 15th issue 2024, published by Cépaduès.

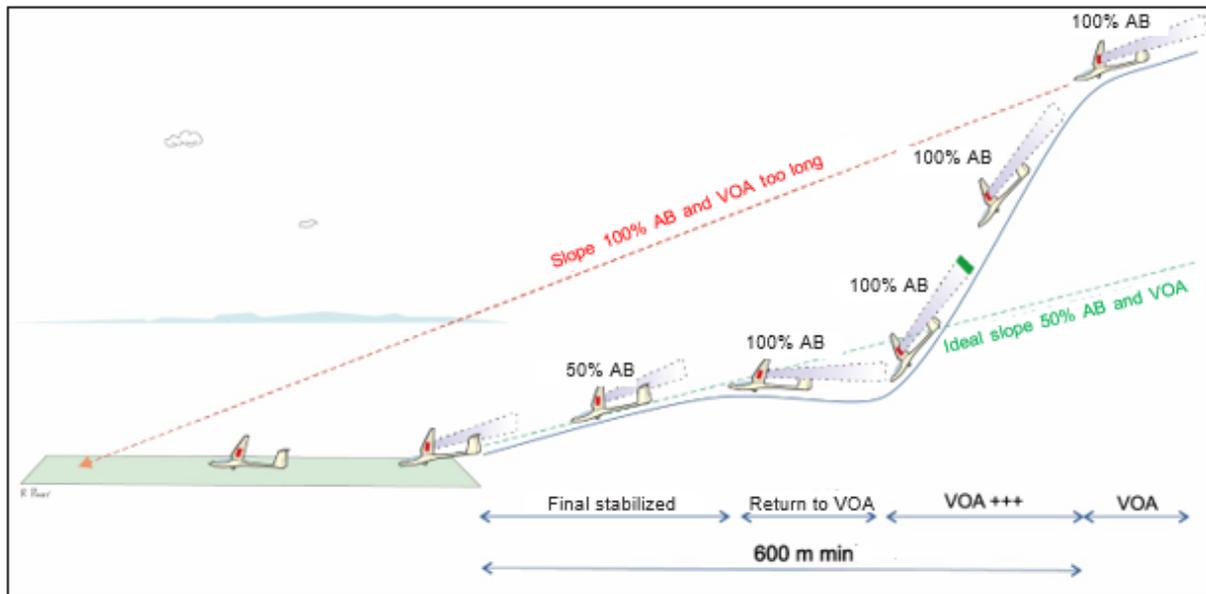


Figure 4: intercepting the descent slope on final
 (source: Gilder pilot manual, illustration Ropert Prat, annotations BEA)

With a glider that has a high wing loading, such as the JS3, it may be necessary to anticipate the execution of the manoeuvre.

At La Motte-du-Caire aerodrome, the final approach is made entirely over the runway, for approximately 600 m. The president of the glider centre indicated that the slope interception manoeuvre is feasible and that the landing can be extended in the parking area near the end of the runway if necessary.

3 CONCLUSIONS

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

Scenario

On returning from a local flight, the pilot estimated that there was a north-north-westerly wind of 30 km/h. He carried out the approach so that he would pass above any possible curl overs on the first half of the runway, generally present when there is a strong Mistral. In reality, there were no curl overs and the surface wind was a northerly valley breeze, of light to medium strength with quite strong gusts.

At the beginning of the base leg, the indicated airspeed and then the altitude of the glider increased. The pilot realised that he was too fast and too high and fully extended the airbrakes and flaps. The speed remained stable at around 120 km/h during the descent, slightly above the speed desired by the pilot.

The pilot, thinking that his actions had been sufficient to intercept the descent slope, was surprised to fly over the beginning of the runway at a height above that recommended.

During the final overhead the runway, he started a U-turn in order to land on the reciprocal QFU; the glider only descended a little during the manoeuvre. The pilot changed his mind and returned to the runway axis. The remaining distance to land on the runway was limited even taking into account the parking which could be used as a clearway.

As the pilot was finally attempting to land in a field beyond the parking, the glider struck the vegetation at the edge of the field and then collided with the ground.

Contributing factors

The following factors may have contributed to the non-stabilized approach, overshooting the runway and then the collision with vegetation:

- an erroneous assessment of the actual wind conditions on the glider aerodrome which resulted in the pilot carrying out a deliberately high approach;
- a gain in altitude at the beginning of the base leg possibly linked to downdrafts or a pilot input on the controls to reduce speed, or even a combination of both;
- a lack of anticipation concerning the strategy to be adopted in the case of a non-stabilized approach.

Safety lessons

Manoeuvre to intercept the descent slope on final

During the final approach, the pilot was particularly concentrated on reabsorbing the excess speed. Speed is a necessary but not sufficient condition for stabilizing an approach and landing safely. On the contrary, a manoeuvre to intercept the descent slope on final, in its first phase, sacrifices the holding of the optimum approach speed by taking a steep nose-down attitude.

This manoeuvre must be carried out at least 600 m before the aiming point. It must be anticipated so as to check its applicability and to determine the necessary references for its correct implementation.

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