

**DATA SUMMARY**

**LOCATION**

Date and time	<b>Thursday, 28 June 2007; 15:00 UTC<sup>1</sup></b>
Site	<b>Belsierre (Huesca)</b>

**AIRCRAFT**

Registration	<b>PH 1213</b>
Type and model	<b>SCHEMPP-HIRTH FLUGZEUGBAU DUO DISCUS Glider</b>
Operator	<b>Private</b>

**Engines**

Type and model	<b>N/A</b>
Number	<b>N/A</b>

**CREW**

	Pilot in command	Copilot
Age	<b>39 years</b>	<b>36 years</b>
Licence	<b>Glider pilot</b>	<b>Glider pilot</b>
Total flight hours	<b>583 h (1,160 flights)</b>	<b>311 h (825 flights)</b>
Flight hours on the type	<b>40 h</b>	

**INJURIES**

	Fatal	Serious	Minor/None
Crew		<b>1</b>	<b>1</b>
Passengers			
Third persons			

**DAMAGE**

Aircraft	<b>Significant</b>
Third parties	

**FLIGHT DATA**

Operation	<b>General Aviation – Pleasure</b>
Phase of flight	<b>Landing</b>

**REPORT**

Date of approval	<b>26 September 2007</b>
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<sup>1</sup> The reference time used in this report is UTC unless specifically noted otherwise. To obtain local time, add 2 hours to UTC.

## **1. FACTUAL INFORMATION**

### **1.1. Event description**

On 28 June 2007, at about 11:35, the Duo Discus glider, registration PH 1213, took off under tow from the aerodrome at Santa Cilia (LECI) on a cross-country flight. Aboard were two people, the pilot and the copilot. After catching several updrafts, the glider headed to the east. At around 15:00, the pilot flying, on seeing they could not gain height, decided to look for a field to land near the town of Belsierre (Huesca). During the landing the glider impacted the ground, resulting in significant damage to the fuselage, stabilizer and right wing tip.

The pilot's right leg was injured, while the copilot escaped unharmed. Both were evacuated aboard a Civil Guard helicopter to a hospital, where the copilot was treated and released. The pilot was admitted and remained for several days while he recovered from the injuries sustained in the accident.

### **1.2. Crew and aircraft information**

The pilot was a licensed glider pilot with a total of 583 flying hours and 1,159 flights. He was also certified to tow gliders.

The copilot was also a licensed glider pilot with a total of 311 flying hours and 825 flights.

The glider's Airworthiness Certificate, issued on 21 March 2007, was valid until 6 February 2009.

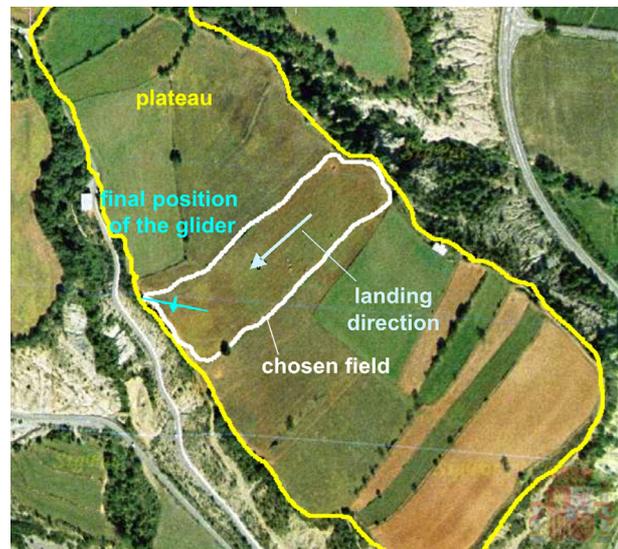
### **1.3. Crew statement**

According to the crew, the glider took off from the aerodrome at Santa Cilia de Jaca (LECI) at 11:35 on a cross-country flight. The glider caught updrafts to an altitude of 2,800 m above sea level and headed east through the valleys. At around 14:00, near a lake in the vicinity of Ainsa, the updrafts weakened, so they headed north toward some cumulus clouds in the hopes of finding updrafts. Upon reaching the area and failing to find good thermals, they started looking for a field with suitable characteristics for landing (sufficient length, without obstacles on the approach, with a headwind, no negative slope).

The fields within view were not very long, nor were there any fields which continued onto other fields to make the landing easier. They finally found a field atop a plateau (see Picture 1) that satisfied their requirements. The crew tried using an external

indication of wind speed and direction (such as a column of smoke), but could find none. They initiated a 360-degree descent circuit (at around 3 m/s) and finished the pre-landing procedures.

In the days before the accident, there had been strong surface winds at the aerodrome (and in the valley as well) and light winds aloft. Expecting, therefore, turbulence and strong downdrafts on the final leg, the pilot decided to land at 120 km/h to ensure reaching the top of the plateau and being able to land on the field.



Picture 1. Landing field and surrounding area

The final leg of the approach was steep (with full airbrakes) and they arrived at the edge of the field at an height of 1 meter. At that point, the pilot leveled the wings and continued gliding the length of the field without touching down. Upon reaching the far end, to keep from overshooting the field and losing his chance to land, the pilot tipped the right wing so as to initiate a turn. The aircraft turned some 130° before the cockpit struck the ground, breaking up and injuring the pilot in the process. The aircraft turned another 180° on the ground and slid backwards, breaking the tail (see Picture 2).

According to the crew, the field was some 200 m long. They could feel a slight tailwind after landing.



Picture 2. Final condition of the aircraft

## 1.4. Information on operating the aircraft

The following excerpts are taken from the approach and landing section of the Normal Operating Procedures in the aircraft's Flight Manual:

### 4.5.4 Approach

"Normal approach speed with airbrakes fully extended and the wheel down is 90 km/h (49 kt, 56 mph) without water ballast and flown solo, or 105 km/h (57 kt, 65 mph) at maximum permitted all-up mass.

The yellow triangle on the ASI (Airspeed Indicator) at the 100 km/h mark (54 kt, 62 mph) is the recommended approach speed for the maximum all-up mass without water ballast (660 kg, 1455 lb) [...]"

### 4.5.5 Landing

"For off-field landings the undercarriage should always be extended, as the protection of the crew is much better, especially from vertical impacts on landing. Main wheel and tail wheel should touch down simultaneously.

To avoid a long ground run, make sure that the sail plane touches down at minimum speed. A touch-down at a speed of 90 km/h (49 kt, 56 mph) instead of 70 km/h (38 kt, 43 mph) means that kinetic energy to be dissipated by braking is increased by a factor of 1.65 and therefore the ground run is lengthened considerably.

The hydraulic main wheel disc brake is actuated via the airbrake linkage with airbrake almost fully extended.

As the effectiveness of the wheel brake is good, the landing run is considerably shortened (the elevator control should be kept fully back)."

## 1.5. Analysis and Conclusions

The crew decided on an off-field landing due to the lack of thermals. They had ample time to survey the chosen field, located atop a plateau, even completing a 360°-pattern around the field. The pilot made the approach at 120 km/h, according to his statement, in anticipation of strong downdrafts near the surface which could have forced the glider to descend excessively, causing them to undershoot the field. Such winds had been present on previous days in the same area, though they could not confirm their presence through the use of external indicators, such as cloud movement or smoke columns.

Once they reached the field, the glider continued flying at a height of one meter above the ground without landing. As they reached the far end, the pilot decided to initiate a turn by tipping the right wing and stalling the aircraft, since the flat terrain was

coming to an end. During that maneuver the aircraft turned some 130 degrees and the cockpit struck the ground. The aircraft turned another 180° more on the ground while sliding backwards, which caused the tail to break off.

According to the aircraft's Flight Manual, the recommended approach speed for full load conditions without water ballast is 100 km/h, and 90 km/h without water ballast and one occupant. The conditions in this case implied an approach speed between those two values. For off-field landings, the Manual calls for a minimum approach speed (70 km/h) to avoid a long landing run. In this case, given the field's short length (some 250 m), the speed should have been minimized to guarantee a short landing run.

The most likely cause of the accident, therefore, was the aircraft's high approach speed resulting from a faulty assessment of surface winds. The speed prolonged the aircraft's glide and forced the crew to stall the aircraft so as to keep from overshooting the chosen landing site.