DATA SUMMARY

LOCATION

Date and time	**Tuesday, 22 July 2003; 15:40 local time**
Place	**Municipal district of Ortigosa del Monte (Segovia)**

AIRCRAFT

Registration	**OY-NXS**
Type and model	**SCHEMPP-HIRTH VENTUS 2CM**
Operator	**Private**

Engines

Type and model	**SOLO KLEINMOTOREN GMBH SOLO 2625**
Number	**1**

CREW

Pilot in command

Age	**59 years**
Licence	**Glider pilot**
Total flight hours	**1.100 h**
Flight hours on the type	**10 h**

INJURIES

	Fatal	Serious	Minor/None
Crew	**1**		
Passengers			
Third persons			

DAMAGE

Aircraft	**Destroyed**
Third parties	**Not applicable**

FLIGHT DATA

Operation	**General aviation – Private**
Phase of flight	**En route**

REPORT

Date of approval	**28 September 2005**

1. FACTUAL INFORMATION

1.1. History of the flight

The aircraft took off from the Fuentemilanos aerodrome at 15:25 h local time, with the intention of flying in the direction of Riaza. Take-off was by means of the aircraft's own engine. Following the search organised after the aircraft failed to answer a radio call from the departure aerodrome, the aircraft was located on 24 July 2003 on a hillside some 5 km to the east of Otero de Herreros.

1.2. Injuries to persons

The pilot was killed.

1.3. Damage to aircraft

The aircraft was destroyed.

1.4. Personnel information

The pilot held a glider pilot's licence issued on 24 September 1975 by the Civil Aviation Authority of the Kingdom of Denmark. The licence has no expiry date and its validity is subject to that of the medical certificate. The pilot held a class two medical certificate valid until 27 March 2004.

The pilot's flight record shows that his experience of glider flying was some 1,100 h, of which approximately 110 were on powered gliders, of which around 10 were on the type. On 07 July 2003 the annotation had been made relating to the training on differences corresponding to the model of aircraft involved in the accident.

The pilot had been coming to this aerodrome for some 10 years. The duration of his stays was one or two weeks every year. He had arrived on 19 July 2003 and this was his first flight during this visit.

1.5. Aircraft information

The aircraft had an airworthiness certificate last renewed on 19 March 2003 and valid until 01 April 2004.

1.6. Meteorological information

The information obtained from other pilots who were at the same aerodrome on the day of the accident is that visibility was good and the wind was generally from the north-west.

1.7. Communications

After fifteen minutes an attempt was made to contact the aircraft by radio from the aerodrome, but without success. This was the only use of communications in the course of the flight.

1.8. Flight recorders

The aircraft was equipped with a Cambridge Secure Flightlogger 302 for verifying the flights made. Although this is not a true FDR (this is not its purpose) and it was found badly damaged after the accident, it was possible to extract data on the flight from it. After observing that the data were consistent, the data used were UTC time, GPS co-ordinates, pressure altitude (QNH, 1,013.2 mb) and GPS altitude, course, GPS ground-speed, vertical speed and engine operation (the latter being simply engine on or off). The data are recorded every four seconds, which leads to interpolation errors in some circumstances, but these errors can be delimited and do not affect the utility of the data.

1.9. Wreckage and impact information

The site of the impact (see figure 1) (40° 48.498' north, 004° 09.422' west) is situated at a height of 1,520 m (GPS measurements) on a wooded hillside facing practically east. The slope at the accident site varies between 15 and 30 degrees, but a few metres higher up the slope it increases to values of between 30 and 45 degrees. The summit of this slope is some 150 m above the impact site.

The wreckage and the marks of the impact extended in an approximately straight line running west to east (curving slightly to the left in the direction of movement of the aircraft) and over a distance of approximately 60 m.

A first impact was observed on a branch of a tree some 9 m from the ground. At the foot of this tree the end of the left wingtip was found (a piece some 50 cm long of the bottom surface). Some 7 m from the foot of the tree was the start of a groove approximately 6 m long that was traced by the left wingtip (the rest of the wingtip lay at the end of the groove). Eight metres from the end of the groove was the mark left by the

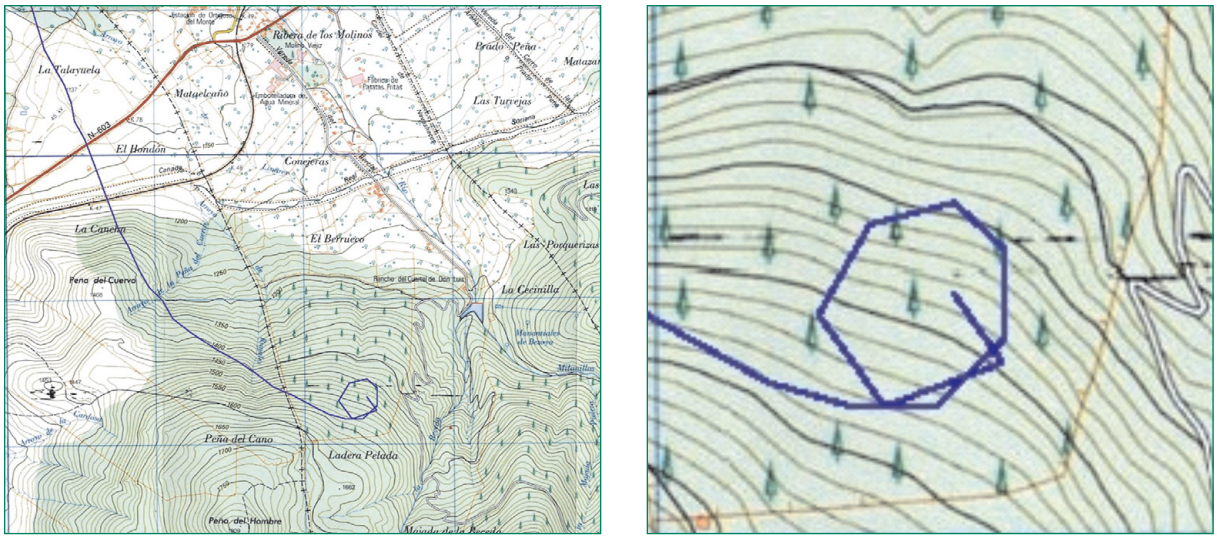

Figure 1. Airplane trajectory and detail of last seconds of flight

impact of the nose of the aircraft. This distance is very approximately the distance from the wingtip to the nose. The aircraft had the feature of allowing the wingtips to be adjusted for two different wingspans (15 and 18 m); at the moment of the accident it was configured for 15 m.

1.10. Fire

No fire was caused.

1.11. Tests and research

1.11.1. *Inspection of the wreckage of the aircraft*

The engine operation time indicator was found to show 14:71 (it divides each hour into 100 parts). It showed 14:55 at take-off, which means that the engine operated for 16 hundredths of an hour, equivalent to approximately nine and a half minutes.

The aircraft's engine was found among the wreckage of the fuselage (approximately in its normal location). The fuel control lever was set to «off» and blocked in that position. The propeller appeared to have been stationary at the moment of impact. The activator that deploys and retracts the engine was in the retracted position.

1.11.2. *Data obtained from the logger*

The duration of the flight was a little under 10 min. From the departure aerodrome to the accident site, the aircraft followed an almost constant course to the south-east.

From the horizontal groundspeeds recorded, and taking into account the usual indicated airspeed in climbing under engine power, it is deduced that the aircraft probably had a tail wind of some 20 kilometres per hour. The wind was therefore probably from the north-west: this coincides with the information set out in section 1.6 and would mean that the accident site was probably on the leeward side of the hill into which the aircraft crashed.

It is noted that the engine stopped moments before the accident, coinciding with a turn to the left. The aircraft was quite close to the ground when this manoeuvre was performed.

Some thirty seconds before the impact, the recorded groundspeeds fall below the stalling speed and finish practically at zero, and at the same time sharp increases are observed in the vertical descent speed, to a final recorded value of 6.4 metres per second. The changes of course indicate a very tight turn to the left.

1.11.3. *Information on the manoeuvre of stopping the engine*

The manoeuvre of stopping and retracting the engine consists in stopping the engine itself, then stopping the propeller (which has two blades) in a vertical position, so that by turning the shaft on which the engine and propeller are supported the whole unit can be retracted into its bay in the aircraft's fuselage. All of this operation is carried out by looking into a small mirror. It is a procedure that requires attention and practice on the part of the pilot. During the manoeuvre there is an increase in the aerodynamic resistance of the aircraft, with the consequent loss of speed.

2. ANALYSIS

All of the data obtained and set out in the previous sections indicate that the aircraft went into stall moments before the impact.

It has to be highlighted that retracting the engine is a manoeuvre that requires attention on the part of the pilot, and that in this case the pilot's experience on this type of aircraft was limited. In addition, during the time when the engine is being stopped and retracted there is a significant increase in the aerodynamic drag of the aircraft.

The most probable hypothesis is that while the pilot was busy stopping and retracting the engine (while making a turn to the left), he did not realise that the aircraft's speed was rapidly falling to values below its stalling speed. A possible variation of this theory (with the same consequences) is that at a certain moment the pilot realised that he was very close to the hillside and tightened further the turn he was making.

3. CONCLUSIONS

It is considered that the most probable cause of the accident was that the aircraft went into stall because the pilot was busy stopping and retracting the engine while making a turn to the left and did not realise that the aircraft's speed was reducing. In addition, the aircraft was very close to the ground while these manoeuvres were being made, and therefore the pilot was unable to recover the stall.