



Final report RL 2019:03e

Accident at Falköping Airport on 26 July 2018 involving glider D-4033 of the model SZD-9 bis 1 E Bocian, operated by a private individual.

File no. L-92/18

13/02/2019

SHK investigates accidents and incidents from a safety perspective. Its investigations are aimed at preventing a similar event from occurring in the future, or limiting the effects of such an event. The investigations do not deal with issues of guilt, blame or liability for damages.

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General observations

The Swedish Accident Investigation Authority (Statens haverikommission – SHK) is a state authority with the task of investigating accidents and incidents with the aim of improving safety. SHK accident investigations are intended to clarify, as far as possible, the sequence of events and their causes, as well as damages and other consequences. The results of an investigation shall provide the basis for decisions aiming at preventing a similar event from occurring in the future, or limiting the effects of such an event. The investigation shall also provide a basis for assessment of the performance of rescue services and, when appropriate, for improvements to these rescue services.

SHK accident investigations thus aim at answering three questions: *What happened? Why did it happen? How can a similar event be avoided in the future?*

SHK does not have any supervisory role and its investigations do not deal with issues of guilt, blame or liability for damages. Therefore, accidents and incidents are neither investigated nor described in the report from any such perspective. These issues are, when appropriate, dealt with by judicial authorities or e.g. by insurance companies.

The task of SHK also does not include investigating how persons affected by an accident or incident have been cared for by hospital services, once an emergency operation has been concluded. Measures in support of such individuals by the social services, for example in the form of post crisis management, also are not the subject of the investigation.

Investigations of aviation incidents are governed mainly by Regulation (EU) No 996/2010 on the investigation and prevention of accidents and incidents in civil aviation and by the Accident Investigation Act (1990:712). The investigation is carried out in accordance with Annex 13 of the Chicago Convention.

The investigation

SHK was informed on 26/07/2018 that an accident involving a glider with the registration D-4033 had occurred at Falköping Airport in Västra Götaland County on the same day at 14:27 hrs.

The accident has been investigated by SHK represented by Mr Jonas Bäckstrand, Chairperson, and Mr Sakari Havbrandt, Investigator in Charge.

Mr Frank Stahlkopf has participated as accredited representative on behalf of Germany.

Mr Magnus Axelsson has participated as advisor on behalf of the Swedish Transport Agency.

The following organisations have been notified: the German Federal Bureau of Aircraft Accident Investigation (Bundesstelle für Flugunfalluntersuchungen – BFU), the Polish State Commission of Aircraft Accident Investigation (SCAAI), the European Aviation Safety Agency (EASA), the European Commission and the Swedish Transport Agency (Transportstyrelsen).

Investigation material

The pilot has submitted a written statement regarding the event.

Interviews have been conducted with two witnesses regarding the sequence of events and with a third witness regarding the flight characteristics of the aircraft model.

Final report RL 2019:03e

Aircraft:	
Registration, type	D-4033, SZD-9
Model	SZD-9 bis 1 E Bocian
Class, Airworthiness	Normal, Certificate of Airworthiness and Valid Airworthiness Review Certificate (ARC) ¹
Serial number	P-457
Owner	Privately owned
Time of occurrence	26/07/2018, 14:27 hrs in daylight Note: All times are given in Swedish daylight saving time (UTC ² + 2 hours)
Place	North of Falköping airport, Västra Götaland County, (position 5810N 01335E, 239 metres above mean sea level)
Type of flight	Private
Weather	According to SMHI's analysis: wind south 5–10 knots, visibility >10 kilometres, no clouds at 5,000 feet, temperature/dewpoint +29/+6 °C, QNH ³ 1019 hPa
Persons on board:	1
Injuries to persons	Serious
Damage to aircraft	Substantially damaged
Other damage	None
Pilot in command:	
Age, licence	73 years, LAPL (S) ⁴
Total flying hours	143 hours, of which 23 hours on type
Flying hours previous 90 days	7 hours, of which 1.25 hours on type

¹ ARC (Airworthiness Review Certificate).

² UTC (Coordinated Universal Time).

³ QNH (Barometric pressure at mean sea level).

⁴ LAPL (S) (Light Aircraft Pilot License Sailplane).

Factual information

The pilot intended to make a local flight. The aircraft had a flight data recorder that registered altitude and position every four seconds. The sequence of events described below is based primarily on data from the flight data recorder. The indicated altitudes refer to elevation above the airport.

Following a winch launch to 500 metres, the pilot managed to climb another 100 metres on a thermal near the airport. The thermal died down, at which point the pilot headed south to look for another thermal. However, his altitude was constantly falling and it was necessary to land.

The pilot set out on a downwind leg for a right-hand pattern for runway 22 and was abeam the far end of the runway at an altitude of 100 metres. The airspeed was 60–65 km/hour during the downwind leg.

Across the normal point of touchdown, the altitude was 50 metres. A turn onto the base leg was initiated at 40 metres altitude, after which the glider rapidly lost altitude and hit the ground (see figure 1).

Two witnesses, both experienced glider pilot instructors, have stated that the nose was raised just as the aircraft entered the turn onto the base leg and that the aircraft then went into a spin⁵.

The pilot was seriously injured and taken by helicopter to Skövde hospital. The injuries included multiple leg fractures.



Figure 1. The front cockpit was severely demolished upon impact. Photo: Henrik Svensson.

⁵ Spin – A spiralling yaw and roll rotation caused by the inner wing having a higher proportion of separated flow than the outside wing, which leads to increased drag and reduced lift.

Minimum altitudes for a normal landing pattern:

- 200 metres when the downwind leg is initiated.
- 150 metres across the intended point of touchdown.
- 100 metres after completed turn onto the base leg.
- 50 metres after completed turn to final approach.

The aircraft model was constructed in the 1950s and is made from pinewood and birch veneer. When the aircraft was built, there were no set requirements on crashworthiness. The cockpit is comprised of thin plywood, which gives no suitable protection for the pilots in the event of an accident.

The aircraft model has classic stall⁶ and spin characteristics. This means that the aircraft easily enters a spin if the speed is too low and the angle of attack consequently becomes too high.

According to the flight manual, the stall speed is 58 km/hour. Optimal range is 25.5 times the altitude loss at 90 km/h. At 60 km/hour, the range is only 16.5 times the altitude.

Conclusions

Data from the GPS log show that the flight speed was close to stall speed throughout the landing pattern and that the altitude was roughly half the minimum altitude required for a normal landing.

One explanation for the low flight speed could be that the pilot was attempting to minimise the loss of altitude, even if this entailed a lesser range.

It is well established that high air temperatures can cause dehydration, which can have an impact on the capacity to make decisions.

It is possible that the relatively high air temperature, +29 degrees, led to dehydration and thus affected the pilot so that he did not actively make a decision to adapt the landing procedure to the actual altitude.

The accident was the result of the landing attempt was being continued despite low altitude and speed.

Safety recommendations

None.

On behalf of the Swedish Accident Investigation Authority

Jonas Bäckstrand

Sakari Havbrandt

⁶ Stall – The airflow around the wing is completely or partially separated, which leads to increased drag and reduced lift.