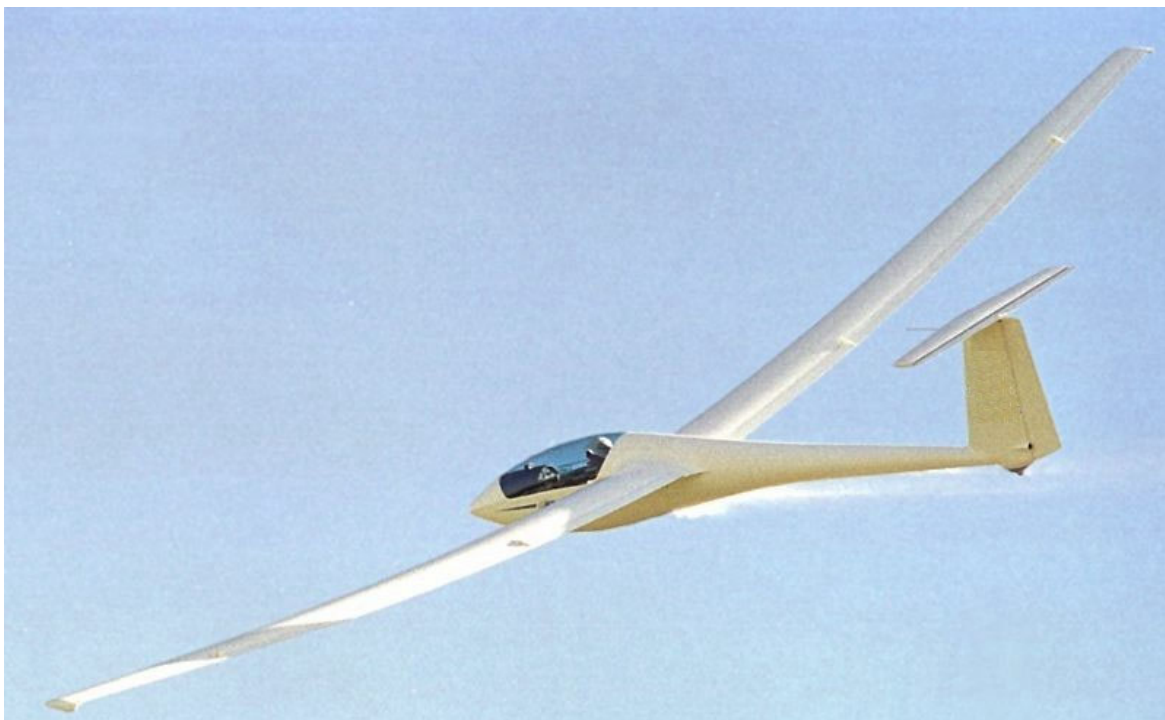


AIRCRAFT ACCIDENT REPORT
OCCURRENCE NUMBER 02/99
ALEXANDER SCHLEICHER SEGELFLUGZEUGBAU ASW20
ZK-GVW
NEAR OMARAMA
22 JANUARY 2002



Glossary of abbreviations used in this report:

CAA	Civil Aviation Authority
CAR	Civil Aviation Rule(s)
E	east
FAA	Federal Aviation Administration (USA)
ft	Feet
GPS	Global Positioning System
NZDT	New Zealand Daylight Time
S	south

AIRCRAFT ACCIDENT REPORT

OCCURRENCE No 02/99

Aircraft type, serial number and registration:	Alexander Schleicher Segelflugzeugbau ASW 20, 20378, ZK-GVW
Number and type of engines:	Not applicable
Year of manufacture:	1980
Date and time:	22 January 2002, 1528 hours*
Location:	Ohau Range, Near Omarama Latitude: S 44° 18.849' Longitude: E 169° 47.581'
Type of flight:	Commercial Gliding
Persons on board:	Crew: 1
Injuries:	Crew: 1 fatal
Nature of damage:	Aircraft substantially damaged
Pilot-in-command's licence	Commercial Glider Pilot Licence (FAA issued)
Pilot-in-command's age	53 years
Pilot-in-command's total flying experience:	485 hours,
Information sources:	Civil Aviation Authority field investigation
Investigator in Charge:	Mr Michael A.Carrelli

* Times are NZDT (UTC + 13 hours)

Synopsis

The Civil Aviation Authority was notified of the accident at 1550 hours on Tuesday 22 January 2002. The Transport Accident Investigation Commission was in turn notified shortly thereafter, but declined to investigate. A CAA site investigation was commenced later the following day.

The pilot was on a cross-country flight in company with three other gliders, which were ridge soaring. The four gliders were flying left hand circuits above a scree slope at approximately 4500 ft amsl when the lowest glider which was in a turn at close proximity to the slope was observed to strike the ground in a near vertical flight path. The first person to arrive at the scene approximately ten minutes later found the pilot had been killed.

1. Factual information

1.1 History of the flight

- 1.1.1 The Glider was launched from Omarama Airfield by an aero tow at approximately 1400 hours.
- 1.1.2 In the company of three other gliders the flight progressed in an anti-clockwise direction around the locality of the Omarama valley.
- 1.1.3 During the flight, altitude was gained by ridge soaring and the use of thermals.
- 1.1.4 Just prior to the accident the glider was gaining altitude by flying left hand circuits close to the ridge to maximise the low lift that was available.
- 1.1.5 The three gliders above had all transitioned through this level whilst gaining altitude.
- 1.1.6 The other three pilots reported that they had not experienced any wind shear or other adverse air currents whilst transitioning up the slope.
- 1.1.7 Whilst turning left toward the slope the glider was seen, by one of the other glider pilots soaring at a higher altitude, to do what appeared to be a wing over to the left followed by a dive vertically toward the ground.
- 1.1.8 There was no radio communication from the pilot immediately prior to the accident.
- 1.1.9 The other pilots reported that there was no reason to suspect that there may have been anything amiss with the pilot or the glider.
- 1.1.10 The accident occurred in daylight, at 1528 hours NZDT, on the eastern slope of the Ohau Range at an elevation of approximately 4400 ft. Grid reference 260-H39-540500, latitude S 44° 18.849', longitude E 169° 47.581'.

1.2 Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Other</i>
Fatal	1	0	0
Serious	0	0	0
Minor/None	0	0	

1.3 Damage to aircraft

1.3.1 The aircraft was substantially damaged.

1.4 Other damage

1.4.1 Nil.

1.5 Personnel information

1.5.1 The pilot held a valid Commercial Glider Pilot Licence first issued 17 March 1999 by the Federal Aviation Administration of the USA.

1.5.2 Up until 22 January 2002 the pilot had flown a total of 485 hours, all of which were on gliders.

1.5.3 The pilot had done much of his gliding in the Colorado Rockies and was thus considered to be experienced in mountain flying.

1.6 Aircraft information

1.6.1 Alexander Schleicher Segelflugzeugbau ASW 20 serial number 20378 was manufactured in 1980.

1.6.2 The glider was imported into New Zealand from Denmark in December 2000.

1.6.3 Up until 22 January 2002 the glider had accrued a total time in service of 2149 hours. The most recent scheduled maintenance was an annual inspection at 2122 airframe hours on 20 September 2001. An annual review of airworthiness had been carried out on 20 September 2001.

1.6.4 The glider was of a single seat design and constructed of glass-reinforced plastic.

1.7 Meteorological information

1.7.1 The wind was a light easterly flow, with overcast conditions at 5500 ft. The easterly flow was blowing up against the eastern slopes of the mountain range and thereby creating orographical uplift on which the gliders were operating at the time of the accident. Visibility was good with no precipitation.

1.8 Aids to navigation

1.8.1 Not applicable.

1.9 Communications

1.9.1 Not applicable.

1.10 Aerodrome information

1.10.1 Not applicable.

1.11 Flight recorders

1.11.1 A Cambridge Aero Instruments 301/302 data logger was installed in the glider. This was sent to the manufacturer for retrieval of navigational data recorded during the flight. The data logger recorded the information from three-dimensional GPS readings and did not show actual aircraft indications. The rate of sampling was at 4 second intervals. This information confirmed the statements given by the other glider pilots. However the last manoeuvres of the glider could not be confirmed due to the 4 second sampling rate.

1.12 Wreckage and impact information

1.12.1 The glider had struck the ground on an easterly heading, on a scree slope, of approximately 40°, at an approximate elevation of 4400 ft.

1.12.2 The wreckage was not examined at the accident site as it was feared that the weather would deteriorate and recovery would become impossible. The police and a local glider pilot took photographs of the wreckage at the crash site. Thereafter the wreckage was moved to a paddock at a lower elevation, where detailed examination was carried out.

1.12.3 The ground impact marks and the damage to the glider indicated that the glider had struck the ground in a wings-level and near-vertical attitude. The wreckage was localised at the impact site. All parts of the aircraft were accounted for.

1.12.4 The airspeed indicator had what appeared to be an impact mark at 50kts. This could not be confirmed as the speed at impact, as the instrument was substantially damaged and the needle was missing.

1.12.5 The complete cockpit area up until approximately 20 cm forward of the wing leading edge was completely destroyed.

1.12.6 The left wing leading edge had split open at the wing root as a result of forward flexure during the impact.

1.12.7 The empennage section had broken free at the design weak point just forward of the vertical stabiliser.

1.12.8 Pre-impact integrity of the rudder, elevator and ailerons was positively established partly before removal from the accident site, and later during inspection in the paddock.

1.12.9 The weight and balance of the glider was not calculated. However there was no evidence to suggest that it was outside the prescribed limits.

1.13 Medical and pathological information

1.13.1 Post-mortem examination of the pilot revealed that he had died of traumatic injuries sustained at the time of impact. The post-mortem examination did not reveal any medically incapacitating condition that may have contributed to the accident.

1.14 Fire

1.14.1 There was no fire.

1.15 Survival aspects

1.15.1 The accident was not survivable owing to the high decelerative forces involved. The pilot was restrained by a combination lap and shoulder harness, but the cockpit configuration with the pilot seated in a semi-recumbent position, meant that there was little crushable structure forward of the pilot. Any significant longitudinal impact in this type of aircraft usually results in the destruction of the cockpit area with consequent effects on the pilot.

1.16 Tests and research

1.16.1 Not applicable.

1.17 Organisational and management information

1.17.1 Not applicable.

1.18 Additional information

1.18.1 Not applicable.

1.19 Useful or effective investigation techniques

1.19.1 Nil.

2. Analysis

2.1 There was no evidence to show any pre-accident failure of the airframe.

2.2 There were three other gliders ridge soaring at the same place at the time of the accident.

2.3 The other three gliders were above the accident glider. They had all gained altitude along the same ridge whilst carrying out left hand climbing circuits. None of the three had encountered any wind shear or unexpected loss of airspeed whilst climbing through the same area.

- 2.4 There was only minimal lift at this point, and as a result, and as is normal practice, the gliders would sometimes be clearing the slope by approximately 100 ft.
- 2.5 The thermalling speed of the glider, when circling in lift, is only about 5-10 knots above the stall speed. However it is standard practice at this gliding club to add another 10 knots when close to the ground for an added safety margin.
- 2.6 The height required for recovery from a level slow deceleration stall is 75-100 ft. The height required for recovery from an incipient or full spin will be substantially greater.
- 2.7 The cloud base was at approximately 5500 ft and the glider struck the ground at approximately 4400 ft.
- 2.8 The slope where impact occurred is a scree slope, of approximately 40°, a uniform gravely surface with no easily definable points.
- 2.9 With a grey overcast and a grey slope it is very likely that the pilot became disorientated due to lack of visual cues and was unable to accurately judge his proximity to the slope and his bank angle. It was calculated from the information contained on the data logger that the glider was at a bank angle of approximately 23 degrees whilst turning left and pointing directly toward the slope.
- 2.10 It is possible, in this situation, that the pilot misjudged the radius of turn towards the slope. This may have occurred for a number of reasons including distraction, misidentifying the size of an object on the slope, or looking away from the slope for too long. If the pilot assessed the radius of turn to be too large to complete the manoeuvre, his response would most likely have been to increase the bank angle and G loading. As a result it is possible that he entered an incipient spin to the left, which is consistent with the manoeuvre described by the other glider pilots.
- 2.11 After having entered the incipient spin it would have been extremely difficult to judge the attitude of the glider due to the proximity of the sloping, featureless terrain which, combined with the very low nose attitude would have only allowed the pilot to see a uniform grey scree ahead of him.
- 2.12 The most likely cause of this accident was the combination of the visual illusion of merging grey clouds and grey slope leading to a 'grey out', followed by disorientation which led the pilot to lose control of his aircraft with insufficient height to recover.
- 2.13 It was not possible from the evidence available, to determine a definite cause for this accident.
- 2.14 It has not been possible from the evidence gathered to be able to make any safety recommendations.

3. Conclusions

- 3.1 The pilot was properly licensed, rated and fit for the flight undertaken.
- 3.2 The glider had been subject to regular maintenance and appeared to be airworthy prior to the accident.
- 3.3 The aircraft did not recover from a spin manoeuvre and collided with the ground.
- 3.4 There was no evidence of pilot in-flight incapacitation.
- 3.5 The accident was not survivable.
- 3.6 It was not possible to determine a conclusive cause for the accident.

(signed)

Michael A. Carrelli
Investigator in Charge

(signed)

Authorised by
Richard White
Manager Safety Investigation

Date: 12 November 2002