

**AIRCRAFT ACCIDENT REPORT**  
**OCCURRENCE NUMBER 03/3668**  
**ALEXANDER SCHLEICHER GmbH & Co ASW 27**  
**ZK-GRE**  
**MANAWARU**  
**17 DECEMBER 2003**



## **Glossary of abbreviations used in this report**

CAA	Civil Aviation Authority
CAR	Civil Aviation Rule(s)
ft	foot or feet
GPS	Global Positioning System
km	kilometre(s)
m	metre(s)
NZDT	New Zealand Daylight Time
UTC	Coordinated Universal Time
WGS 84	World Geodetic System 1984

## AIRCRAFT ACCIDENT REPORT

### OCCURRENCE No 03/3668

<b>Aircraft type, serial number and registration:</b>	Alexander Schleicher GmbH & Co ASW 27, 27026, ZK-GRE
<b>Number and type of engines:</b>	Not applicable
<b>Year of manufacture:</b>	1996
<b>Date and time:</b>	17 December 2003, 1340 hours <sup>1</sup> (approx)
<b>Location:</b>	Manawaru Latitude <sup>2</sup> : S 37° 40.03' Longitude: E 175° 47.39'
<b>Type of flight:</b>	Private
<b>Persons on board:</b>	Crew: 1
<b>Injuries:</b>	Crew: 1 fatal
<b>Nature of damage:</b>	Aircraft destroyed.
<b>Pilot's licence:</b>	FAI Gliding Certificate, Silver Badge
<b>Pilot's age:</b>	55 years
<b>Pilot's total flying experience:</b>	1972 hours, 85 on type
<b>Information sources:</b>	Civil Aviation Authority field investigation
<b>Investigator in Charge:</b>	Mr J A Daley

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<sup>1</sup> Times are NZDT (UTC + 13 hours).

<sup>2</sup> WGS 84 co-ordinates.

## Synopsis

The Civil Aviation Authority was notified of the accident at 1355 hours on Wednesday 17 December 2003. The Transport Accident Investigation Commission was in turn notified shortly thereafter, but declined to investigate. A CAA site investigation was commenced later the same day.

The pilot was on a local soaring flight from Matamata aerodrome when he advised that he intended to complete an out landing to the south of Te Aroha. The glider was seen on the landing approach to suddenly pitch down before striking the ground. The first rescuers on the scene found that the pilot had been killed in the accident.

## 1. Factual information

### 1.1 History of the flight

- 1.1.1 On Wednesday 17 December 2003 a number of gliders were participating in local flights from the pilot's gliding club based at Matamata aerodrome.
- 1.1.2 ZK-GRE, flown by its part owner, was aerotow launched at 1307 hours to an altitude of approximately 2300 feet where it was released. The pilot then decided to fly towards the Kaimai ranges tracking in a north east direction.
- 1.1.3 The aircraft was in a gradual descent after the aerotow release and when approximately one mile to the south of Gordon and at an altitude of 1600 feet, it completed a right hand descending orbit.
- 1.1.4 The pilot then continued heading towards the Kaimai Ranges and at approximately one mile to the east of Gordon completed an orbit to the right then turned south east briefly and then north west, probably looking for thermalling conditions. At this time he tracked northwest in descent, flying parallel to but below the range ridgeline at approximately 1440 feet (the height of the range in this area is approximately 2500 feet). It was about this time that other glider pilots in the area heard him advise via radio that he was returning to Matamata aerodrome.
- 1.1.5 The pilot did not return to the aerodrome but continued to fly in the Kaimai Range area. Abeam Ngatamahinuera the pilot completed an orbit to the left then two more orbits to the right. The altitude of the glider at the completion of these manoeuvres was approximately 1260 feet. It would have been at this phase of the flight that the pilot advised by radio that he was making an out landing. The chosen landing area was probably some paddocks two miles to the west of his present position. At about three quarters of a mile from the paddocks he then completed three orbits to the right to lose height for his final approach; the aircraft was now approximately 600 feet agl and at an approximate groundspeed of 50 knots.
- 1.1.6 A witness saw the glider cross a line of trees on the landing approach then suddenly saw the nose pitch down and described it as if the aircraft just fell out of

the sky. He then went to some neighbours and they went to the accident site to render assistance to the pilot, but there were no signs of life. Emergency services were then called.

- 1.1.7 The accident occurred in daylight, at approximately 1323 hours NZDT, at Manawaru, at an elevation of approximately 130 feet. Latitude: S 37° 40.03', longitude: E 175° 47.39'. Grid reference 260-T14-563890.

## 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 destroyed.

## 1.4 Other damage

- 1.4.1 Nil.

## 1.5 Personnel information

- 1.5.1 The pilot held an FAI Gliding Certificate and Silver Badge. The requirements for the award of a Silver Badge are a straight course distance flight of at least 50km, a five hour endurance flight and a height gain of at least 1000 metres.
- 1.5.2 On 20 May 2001 the pilot was issued an A Category Gliding Instructor Rating, this was issued in accordance with New Zealand Civil Aviation Rule Part 149 and the Gliding New Zealand Manual of Approved Procedures.
- 1.5.3 The pilot's flight experience consisted of 1972 hours total flight time which included 1907 on gliders. He had 85 hours on glider type, and 65 hours on microlight aircraft.
- 1.5.4 In the previous 90 days the pilot had flown 18.6 hours which included 6.7 hours on microlight aircraft and 4.10 hours in ZK-GRE.
- 1.5.5 The pilot's last Biennial Flight Review was on 16 August 2003 and this flight was conducted by the gliding club's Chief Flying Instructor. The pilot had omitted to record this flight in his logbook.

## 1.6 Aircraft information

- 1.6.1 Alexander Schleicher GmbH & Co ASW 27 glider serial number 27026 was constructed in Germany in 1996 and exported new to New Zealand, where it was

first registered as ZK-GRZ. A new non terminating Airworthiness Certificate was issued by the CAA on 12 May 1997. In 1999 the aircraft registration was changed to ZK-GRE and another non terminating Airworthiness Certificate was issued on the 28 June 1999.

- 1.6.2 The aircraft was a high performance single seat shoulder wing glider constructed using advanced carbon, aramid (Kevlar) and polyethylene fibre technology. It had a fixed horizontal T-tail (stabilizer and elevator) and retractable landing gear. The wing was equipped with ailerons, trailing edge flaps extending over the full span, and spoilers on the upper wing surfaces. Detachable winglets were mounted on each of the wingtips.
- 1.6.3 The aircraft had completed approximately 711 hours flight time since new and had an Annual Review of Airworthiness inspection on 13 May 2003. Minor maintenance was also carried out on the aircraft at this time and included the fitting of a new nose tow release, fuselage gelcoat repairs and the replacement of Mylar seals on the upper surface of both wings.
- 1.6.4 On the day of the accident the pilot completed a pre-flight inspection of the glider, he signed and dated the Daily Inspection and Technical Log book as confirmation that a daily inspection of the aircraft had been carried out. He had inadvertently written the inspection date as 16 December 2003 in the Technical Logbook. The previous time the glider flew was 4 December 2003; there was no record of any defects or faults recorded in the Technical Logbook.

## **1.7 Meteorological information**

- 1.7.1 A high pressure system covered the whole country with southeasterly winds over most of the North Island. Visibility was greater than 50 kilometres and light cloud (one to two eighths) was observed between 5000 and 6000 feet. The automatic weather station at Paeroa recorded the wind as southeasterlies between four and five knots.
- 1.7.2 The weather was not a factor in this accident.

## **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 The aircraft was not equipped with a flight recorder but was fitted with a Cambridge Aero Instruments Global Positioning System (GPS). The data from this instrument was downloaded and provided a detailed history of the flight in both plan and vertical profiles from take off to the accident site.

## **1.12 Wreckage and impact information**

- 1.12.1 The accident site was located in a grassed paddock adjacent to Manawaru Road approximately 150 metres to the south of the McLaren Road intersection. The aircraft had struck the ground in a nose down attitude approximately 85° from the horizontal on a heading of approximately 292° magnetic. At the point of impact the ground slope was negligible and it would appear that the pilot was in a left base position, turning onto final for a paddock that was approximately 50 metres away, about 200 metres in length and orientated in a south west direction.
- 1.12.2 The nose section of the glider was buried in the ground to a depth of approximately one metre. A clear imprint of both right and left wing leading edges along with fragments of the leading edge gelcoat were found on the grassed surface; each wing tip was approximately one and a half metres above the surface. The rear fuselage was broken half way along its length and folded towards the front of the aircraft. It was also broken where the tail empennage was attached; the only components holding the tail section in place were control cables.
- 1.12.3 The flaps were found in the landing position and the airbrakes were in the full open position, the landing gear was in the extended and locked position. All parts of the aircraft were accounted for at the site. Pre impact control integrity was established at the initial examination and confirmed at subsequent specialist examination once the wreckage had been retrieved to Matamata aerodrome.
- 1.12.4 The right hand shoulder harness attachment point showed evidence of considerable force being applied consistent with deceleration along the aircraft longitudinal axis, confirming that, at least in the early stages of the impact sequence the pilot's harness was securely fastened.

## **1.13 Medical and pathological information**

- 1.13.1 Post-mortem examination showed that the pilot died of multiple injuries consistent with a high speed impact. The pathologist commented that although these injuries were the final cause of death there was a lesion present on the brain that may have contributed to loss of control of the aircraft.
- 1.13.2 The pathologist further stated in the Summary section of his report "histology has revealed a benign haemangioblastoma in the cerebellum. There are no acute changes related to this and in the absence of these I cannot unequivocally state that the lesion is related to loss of control of the aircraft. However, tumours in the

posterior cranial fossa are associated with the development of vertigo and it is a very real possibility that such an event may well have happened here leading to loss of control of the aircraft. The cause of death however is the multiple injuries received in the crash as stated above.”

- 1.13.3 Toxicological tests disclosed no evidence of alcohol, medicinal or recreational drugs; however the analyses detected the therapeutic use of ibuprofen (Nurofen).
- 1.13.4 The last recorded medical examination and Medical Declaration and Certificate completed by the pilot was on 3 July 2002. The pilot declared as part of the examination process that he did not suffer from any periodic disturbances of consciousness or giddiness.
- 1.13.5 The medical validity period for a qualified glider pilot is non-terminating unless the pilot is exercising the privileges of a passenger rating or a gliding instructor rating.
- 1.13.6 The pilot had visited his general practitioner within a few weeks prior to the accident, seeking medical treatment for headaches.

#### **1.14 Fire**

- 1.14.1 Fire did not occur.

#### **1.15 Survival aspects**

- 1.15.1 The accident was not survivable, owing to the high decelerative forces involved. Although the pilot was restrained (at least in the early stages of the impact sequence) by a combination lap and shoulder harness, 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 The pilot was an experienced cross country glider pilot and advanced instructor as evidenced by his Silver Badge and A Category Gliding Instructor qualifications. A local soaring flight with an outlanding was well within his experience and abilities.
- 2.2 The pilot gave no reason for his initial decision to return to Matamata aerodrome and then decide on an outlanding. The GPS data retrieved from the aircraft indicates that the pilot was manoeuvring in the Kaimai Range area in an effort to locate thermalling conditions. He then descended to an altitude where a return to the aerodrome was impossible and an outlanding became necessary.
- 2.3 The witness observation of the aircraft coming into land and the sudden pitch down suggests a loss of control particularly as there was no apparent attempt at recovery.
- 2.4 The possibility of an aircraft control malfunction was eliminated by both site and subsequent detailed examination.
- 2.5 The sequence of events together with post mortem evidence and pathologist's requested histology indicates a strong probability of in flight incapacitation. The pathologists summary that tumours in the posterior cranial fossa are associated with the development of vertigo and that it was a very real possibility that such an event may well have happened in this accident leading to loss of control of the aircraft.
- 2.6 In view of the circumstances in which the glider struck the ground, and the evidence presented through the post mortem, the most likely cause was in-flight incapacitation of the pilot.

## **3. Conclusions**

- 3.1 The pilot was appropriately qualified and experienced for the flight.
- 3.2 The aircraft had a valid airworthiness certificate and had been maintained in accordance with relevant requirements.
- 3.3 No pre accident aircraft defect was found.
- 3.4 The pilot had been assessed as medically fit.
- 3.5 The pilot's Medical Declaration and Certificate did not disclose any medical history that would be likely to affect his ability to fly a glider safely.
- 3.6 The pilot probably suffered in-flight incapacitation, which rendered him incapable of further controlled flight.

Report written by:

Authorised by:

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Date 9 May 2006

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