

AIRCRAFT ACCIDENT REPORT
OCCURRENCE NUMBER 06/4214
POWERED SAILPLANE, STEMME S10-V
G-OJTA
MOUNT PROSPECT, CENTRAL OTAGO
15 NOVEMBER 2006



Glossary of abbreviations used in this report:

AMSL	above mean seal level
BCAR	British Civil Airworthiness Requirements
CAA	Civil Aviation Authority
CAR	Civil Aviation Rules
GPS	Global Positioning System
JAA	Joint Aviation Authorities
NZDT	New Zealand Daylight Time
PPL	Private Pilot Licence
SIGMET	Significant Meteorological Information
TAF	Terminal Aerodrome Forecast
UK	United Kingdom

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Aircraft type, serial number and registration:	Powered Sailplane Stemme S10-V, 14-018, G-OJTA
Number and type of engines:	1 Limbach L2400 EB1.AD
Year of manufacture:	1995
Date and time:	15 November 2006, 1801 hours ¹ (approx)
Location:	Mount Prospect, Central Otago Latitude ² : S 44° 29.47' Longitude: E 169° 31.70'
Type of flight:	Private
Persons on board:	Crew: 1 Passengers: 1
Injuries:	Crew: 1 fatal Passengers: 1 fatal
Nature of damage:	Aircraft destroyed
Pilot-in-command's licence:	Private Pilot Licence (Aeroplane)
Pilot-in-command's age:	69 years
Pilot-in-command's total flying experience:	1130 hours (approx) 640 on type (approx)
Information sources:	Civil Aviation Authority field investigation
Investigator in Charge:	Mr A M Moselen

¹ All times in this report are NZDT (UTC + 13 hours)

² WGS 84 co-ordinates

Synopsis

At approximately 2056 NZDT on 15 November 2006, the Civil Aviation Authority was notified that a glider was overdue in the Central Otago Ranges. On 16 November 2006, wreckage of the aircraft was located on the northern face of Mount Prospect. The Transport Accident Investigation Commission was notified shortly after, but declined to investigate. A CAA site investigation, hampered initially by unfavourable weather conditions, commenced on 19 November 2006.

The pilot had been competing in the South Island Regional Gliding Championships. During a reversal turn, away from a ridge, the right wing of the glider struck terrain. Consequently, the glider was destroyed and both occupants were killed in the accident.

1. Factual information

1.1 History of the flight

- 1.1.1 On 15 November 2006, the pilot and twelve other participants had received a briefing from competition officials for a speed task that would require soaring about a multiple-legged course. It was the third day of the South Island Regional Gliding Championships at Omarama and the competition assignment consisted of five turn-points. Initially tracking to the “Dingle” (near Lake Hawea), Cromwell, and then north to the Macaulay River, east into the Hakataramea Valley and back to Omarama. The pilot took off from Omarama airfield in G-OJTA at 1508 hours with his son accompanying him.
- 1.1.2 For competition grading purposes, G-OJTA was fitted with a data recorder (Volkslogger GPS). This unit was recovered from the wreckage and the data successfully downloaded. In addition, the passenger had videotaped parts of the flight and the footage was retrieved intact from the accident site.
- 1.1.3 Once airborne, the glider had initially turned north toward the Benmore Range and over a period of one hour soared to approximately 7000 feet AMSL. The glider had then turned south passing overhead Omarama Aerodrome at 1606 hours. Competition officials at Omarama recorded that the pilot had commenced the task assignment at this point. The flight is then shown to have continued south-west toward the Lindis Ranges at 5400 feet AMSL.
- 1.1.4 At 1632 hours the pilot made an “operations normal” radio call to Omarama. At that time the Volkslogger data depicted that the pilot had been operating the glider over ridges east and west of the Lindis Pass up to an altitude of 8500 feet AMSL. The next report from the pilot was at 1730 hours, and again included an operations normal call. At that time, and up until 1740 hours, the glider had remained in the Lindis Pass area after which the Volkslogger data indicated a course change toward ridges lying north-west of the Lindis area.
- 1.1.5 At 1745 hours the data showed the glider was over ridges east of Mount Melina (6316 feet) at an altitude of 6500 feet AMSL. At 1752 hours, a westerly heading change occurred and the glider is shown to have tracked toward the southern face of Mount Melina. That particular phase of the flight had progressed at a relatively

constant rate of descent, with one circling attempt made to gain higher altitude. During this circling manoeuvre the glider reaching approximately 6200 feet AMSL before making another course change and a further constant descent to 5200 feet AMSL, south-west toward the north face of Mount Prospect.

- 1.1.6 Twenty seconds prior to the end of data recording at 1800:28 hours, the glider is depicted tracking in a westerly direction at 5000 feet AMSL and at a groundspeed of 65 knots towards a ridge saddle (approximate elevation 4960 feet), aligned approximately ninety degrees to the northern face of Mount Prospect (5807 feet). Ten seconds prior to the end of the recording, the glider is shown to have climbed 100 feet and then appears to have entered a descent with the groundspeed remaining at approximately 64 knots. Data readouts then become unrealistic and the recording ceases at 1800:48 hours.
- 1.1.7 A review of the video tape just prior to the end of the recording portrays the passenger videoing the pilot manoeuvring the glider in turbulent conditions. The gliders position was directly alongside and below the peak of Mount Prospect tracking toward the ridge saddle.
- 1.1.8 With no further communications heard from the glider, competition officials became concerned and announced later that evening that the glider was overdue. Considerable resources were used in the search for the aircraft, and wreckage of the glider was found on the afternoon of 16 November where it was established that the occupants had died from injuries received in the accident.
- 1.1.9 The accident occurred in daylight, at approximately 1801 hours NZDT, on the northern face of Mount Prospect at an elevation of 4740 feet. Grid reference 260-G39-339294, latitude S 44° 29.47', longitude E 169° 31.70'.

1.2 Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Other</i>
Fatal	1	1	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 male pilot, aged 69 years, held a Private Pilot Licence (Aeroplane), and a current JAA Class 2 Medical Certificate. He also held a Gold C gliding badge, 2 Diamonds and a B Category glider instructor rating.
- 1.5.2 Up until the accident, the pilot had recorded approximately 1130 total flying hours. His total time on the Stemme S10-V type glider was approximately 640 hours. The hours are approximate because the pilot had two logbooks and the hours recorded did not balance. In addition, there were a number of hours recorded in the Aircraft Logbook that had not been transferred into the pilot's logbook. However, the amounts concerned were not significant. The last Biennial Flight Review was completed in New Zealand on 17 February 2006.
- 1.5.3 In September 2004, the pilot flew G-OJTA from Cornwall, England to New Zealand. Described as the first solo flight in a motor glider to New Zealand, the epic voyage included 48 stopovers. Some of the places transited were; Switzerland, Romania, Pakistan, Saudi Arabia, India, Malaysia and Australia. The pilot arrived in Whangarei, New Zealand in November 2004.
- 1.5.4 In 2005, the pilot became President of the Omarama Gliding Club and flew regularly in the region. His New Zealand mountain flying experience in the Stemme was approximately 100 hours. According to sources within the Omarama Gliding Club the pilot had intended to take the specific mountain flying course available at Omarama but had not done so.
- 1.5.5 The pilot's progress during the Southern Regional Gliding Championships was reviewed. On the first day, he did not finish the assigned task. The pilot stated in his debrief that he opted out on safety reasons rather than take an unnecessary risk. On the second day, he finished down the list of competitors.
- 1.5.6 On the third day of the contest, the pilot's demeanour was described as relaxed and in good spirits. Review of the video recording made by the passenger showed that the conversation held between them was jovial and non-threatening. The pilot looked at ease during the recorded sections of the accident flight.

1.6 Aircraft information

- 1.6.1 Powered Sailplane, Stemme S10-V, serial number 14-018, was constructed by Stemme GmbH and Co. KG, Strausberg Germany in 1995. The same year the glider was exported to England where it was registered G-OJTA and issued with an Airworthiness Certificate by the UK CAA in accordance with BCAR's.
- 1.6.2 Up until the 11 November 2006 the glider had accrued 609 hours since manufacture and had been regularly maintained by the pilot/owner, who held a Maintenance Authorisation Certificate, I/C/1330, issued by the British Gliding Association. The last maintenance check on the glider was an annual inspection during March 2006.
- 1.6.3 The power plant, fitted new, was a Limbach L2400 EB1.AD driving a Stemme 10 AP-V propeller via a carbon fibre shaft. Up until 11 November 2006, the engine had been run for a total of 438 hours since new. The last maintenance check on

the engine and propeller occurred in March 2006 where an annual inspection was performed and the propeller overhauled and refitted for the second time since manufacture. The last maintenance log entry recorded that during an air test after the maintenance inspection, the propeller would not go into cruise. This aspect did not affect the glider's airworthiness.

- 1.6.4 The glider was capable of unassisted take-off. With the nose cone in the extended position the engine could be started at any time. The propeller blades extended automatically by centrifugal force as the engine started. When the engine stopped, an internal brake was used to stop the windmilling propeller, the blades then folded inwards automatically by spring loading.
- 1.6.5 The glider also featured retractable undercarriage, two side-by-side seats and was expected to perform up to a glide ratio of 50:1. However in comparison with high performance gliders the Stemme was known to be heavier and less responsive, particularly in roll control. When not in use, the 75.5 ft wing span could be reduced by folding back the wings into a triangular formation providing for convenient hangar storage.

1.7 Meteorological information

- 1.7.1 The general weather situation on Friday 15 November 2006 was for a strengthening north-westerly flow to cover New Zealand ahead of a cold front in the South Tasman Sea. This front was progressing slowly towards southern New Zealand. The area forecast for the Alps Region predicted north-westerly winds strengthening as the day progressed. In addition, occasional moderate to possibly severe turbulence was forecast for the afternoon and the issue of a SIGMET was considered by the Meteorological Service. However, no SIGMET was generated for the times covering the accident flight.
- 1.7.2 TAF's for Queenstown and Alexandra for the time spanning the accident flight forecast a strengthening 2000 foot wind from the north west at 25 knots. The Glide Omarama weather briefing for the day's competition described the weather similarly.
- 1.7.3 The recorded video footage from the accident flight indicated that the weather was fine with good visibility prevailing and little to no cloud cover. The Volkslogger data retrieved from the glider indicated that during the flight, there had been light to moderate north-westerly winds.

1.8 Aids to navigation

- 1.8.1 Not applicable.

1.9 Communications

- 1.9.1 The pilot made two “operations normal” calls to the Omarama Glider Competition Base. The only other communications were the video recording conversations between the pilot and passenger.

1.10 Aerodrome information

- 1.10.1 Not applicable.

1.11 Flight recorders

- 1.11.1 The glider had a Volkslogger GPS temporarily fitted for the competition. The data from this instrument was downloaded providing a history of the flight.

1.12 Wreckage and impact information

- 1.12.1 The accident site was located on the northern side of Mount Prospect at an elevation of 4740 feet. Wreckage distribution indicated that the glider had been travelling in an easterly direction when it struck the mountain face. In conjunction with the video footage and GPS data, it was determined that shortly before the accident occurred the pilot had conducted a right-hand reversal turn away from the northern face of the mountain.
- 1.12.2 Initial impact occurred where the right hand wingtip struck the mountain slope. Carbon fibre material from the right wing spar was found imbedded in scree at an angle that indicated the glider had been slightly right wing low at the time. The glider had then rolled clockwise to an inverted attitude and was destroyed as it slid across the mountain face.
- 1.12.3 All parts of the glider were located at the site. The left and right wings had detached from their fuselage attachment points and were located in two main sections along the debris trail. The folding sections were inspected and it was determined that they had not “folded” in flight. The main fuselage was found further down and across the mountain slope in a creek bed, some 100 metres from the initial impact point.
- 1.12.4 The propeller was found stowed in the nose section of the glider, and it was determined that the engine had not been operating other than for takeoff and initial climb for a duration of 13 minutes and 23 seconds. Flight control integrity was established as far as practicable. The airbrakes were found in the closed position and the landing gear was up and locked.

1.13 Medical and pathological information

- 1.13.1 Post-mortem examination showed that the pilot and passenger died from severe head injuries.
- 1.13.2 The pilot had evidence of atherosclerosis of the coronary arteries (narrowing of the arteries) but there was no evidence of a recent or old heart attack.
- 1.13.3 Toxicological tests found nothing of significance.

1.14 Fire

1.14.1 Fire did not occur.

1.15 Survival aspects

1.15.1 In an inverted situation, there was little protection available for the glider's occupants. Accordingly, the accident was deemed not survivable.

1.15.2 The glider was not fitted with an emergency locator transmitter and it is not a requirement under current CAA Rules. The pilot was carrying a personal emergency locator device but this needed to be activated manually. There were a large number of aircraft and personnel assigned to the search and rescue effort and it took considerable time to locate the glider.

1.16 Tests and research

1.16.1 Volkslogger GPS data for the accident flight and from other gliders involved in the competition were made available to the investigation. In addition, the video recording by the passenger was also available.

1.16.2 The GPS data for a number of flights were compared. Where other gliders crossed ranges to complete the assigned point "Dingle", their altitudes were substantially higher than that of G-OJTA in every case. The majority crossed in the "wave"³, the highest being 12000 feet and the lowest 7800 feet. G-OJTA arrived at the same line of ranges at 5100 feet.

1.16.3 The majority of competitors in the Lindis area reached the higher altitudes and spent less time there before progressing towards the "Dingle". The pilot of G-OJTA spent more than an hour in the Lindis area, reaching 8500 feet AMSL for two brief periods but then the glider steadily lost height. When the pilot flew to an area north-west of the Lindis, the height gained was to an approximate altitude of 6500 feet AMSL, but the glider again steadily lost height as it soared south-west towards Mount Prospect.

1.17 Organisational and management information

1.17.1 In 2006, the Omarama Soaring Centre (Inc) hosted the Southern Regional Gliding Championships. On the day of the accident, all competitors attended the assigned task briefing. The competition officials alerted emergency services when it became clear that the elapsed time from the start of G-OJTA's assignment reached a point of concern and no communications had been heard from the aircraft.

1.17.2 In the interim of the accident and issue of this report, the Omarama Soaring Centre (Inc) has carried out significant work in improving Search and Rescue effectiveness. Refer to the safety recommendation in section five.

³ With respect to this accident report "wave" is the term for a series of vertical oscillations in horizontal airflows, formed in the lee of the Southern Alps during north-westerly winds.

1.18 Additional information

- 1.18.1 On the day of the accident, five of the 13 competitors did not complete their assigned task for various reasons. In one particular case a pilot commented that conditions (turbulence) were the worst he had encountered in his 30 year flying career. Yet others commented that conditions were unremarkable. However, some competitors that crossed to the “Dingle” remarked that they experienced “sink” on both sides of the ridge and that the north-west wind flow appeared to have created unusual conditions in the area.

1.19 Useful or effective investigation techniques

- 1.19.1 Nil

2. Analysis

- 2.1 There were no defects found with the glider that could have contributed to the accident. As the engine was not used after takeoff, the pre-existing propeller defect was likewise dismissed as a causal factor.
- 2.2 Given the evidence, it would appear the glider struck the mountain face when the pilot was carrying out a right-hand reversal turn away from the ridge saddle. The embedded carbon fibre from the wing spar indicated that the right wingtip struck the mountain slope with considerable force. The wreckage dispersal pattern ruled out a stall/spin accident.
- 2.3 Prior to the last data trace, the glider was flown directly toward Mount Prospect at a relatively constant rate of descent. Then, when abeam the northern face of Mount Prospect, data showed that, the glider had slowed and commenced a positive rate of climb for a brief period. At this point and well advanced toward the ridge saddle at 5000 feet AMSL, it would have been apparent to the pilot that he was unlikely to cross it with any degree of safety margin. The pilot’s only option was an escape turn on to the glider’s reciprocal heading.
- 2.4 Physical evidence gained from the accident site indicated that drift back toward the face of Mount Prospect and height loss occurred during the turn. Given the prevailing wind conditions and glider roll rate the amount of drift would not be unexpected. The height loss probably occurred from a combination of factors, primarily the presence of downdrafts in the area and from the downwind turn.
- 2.5 During the early stages of the flight, the pilot spent considerable time in the Lindis Region, and was probably searching for an area that provided the best height gain. However, this eventually did not meet with success and he flew to another area only to continue to struggle with gaining height.
- 2.6 Why the pilot continued toward the saddle adjacent to Mount Prospect in the conditions as they were, and as far as he did, could not be fully determined. He may have been influenced by his lack of success during the competition, but to counter this there was evidence of the pilot’s reticence to push on during the first two days of the contest.

- 2.7 One explanation was that he might have been optimistic of gaining sufficient height to cross the saddle adjacent to Mount Prospect from updrafts produced by the north-west wind. Unfortunately, when it became obvious that he was not going to be high enough he found himself with limited choices from which to recover from the situation.
- 2.8 Gliding in the New Zealand Southern Alps is not without risk. The pilot did not have a wealth of experience of gliding in New Zealand conditions, particularly in competitions, but he was far from a complete novice as a glider pilot. Given the pilots overall knowledge on gliding he should have been aware of the risks. However, given the evidence and circumstances of this accident, Gliding New Zealand should encourage mentoring of pilots who have limited knowledge of the area and conditions by using experienced club members.

3. Conclusions

- 3.1 The pilot was appropriately licensed, rated, and medically fit for the task.
- 3.2 The glider had been subjected to the appropriate levels of regular maintenance.
- 3.3 During a reversal turn away from a ridge saddle, the glider struck terrain.
- 3.4 The impact was not survivable.

4. Safety recommendations

- 4.1 A recommendation was made to, and accepted by Gliding New Zealand that they encourage gliding clubs to mentor visiting pilots and pilots with limited experience on gliding in the New Zealand Southern Alps during a contest environment.

5. Safety actions

- 5.1 The Omarama Soaring Centre has amended their exposition to include the requirement for a more stringent response whenever a report of an overdue aircraft is received.

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08 May 2008

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