CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

AIRCRAFT ACCIDENT REPORT

OCCURRENCE NUMBER 09/323

AIRBORNE WINDSPORTS EDGE XT-912

ZK-DGZ

IN-FLIGHT BREAKUP

GIBBS HILL, ABEL TASMAN NATIONAL PARK

9 FEBRUARY 2009

Photo courtesy of Airborne Australia

Foreword

As a signatory to the Convention on International Civil Aviation 1944 ("the Chicago Convention") New Zealand has international obligations in respect of the investigation of accidents and incidents. Pursuant to Articles 26 and 37 of the Chicago Convention, the International Civil Aviation Organisation ("ICAO") issued Annex 13 to the Convention setting out International Standards and Recommended Practices in respect of the investigation of aircraft accidents and incidents.

New Zealand's international obligations are reflected in the Civil Aviation Act 1990 ("the Act") and the Transport Accident Investigation Commission Act 1990 ("the TAIC Act").

Section 72B(2)(d) and (e) of the Civil Aviation Act 1990 Act also provides:

> **72B Functions of Authority**
>
> (2) The Authority has the following functions:
>
> (d) To investigate and review civil aviation accidents and incidents in its capacity as the responsible safety and security authority, subject to the limitations set out in section 14(3) of the Transport Accident Investigation Commission Act 1990:
>
> (e) To notify the Transport Accident Investigation Commission in accordance with section 27 of this Act of accidents and incidents notified to the Authority:

Following notification to the Transport Accident Investigation Commission ("the Commission") of any accident or incident which is notified to the Authority, an investigation may be conducted by the Commission in accordance with the TAIC Act. CAA may also investigate subject to the requirements of the TAIC Act.

The purpose of an investigation by the Commission is to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person.

CAA however investigates aviation accidents and incidents for a range of purposes under the Act. Investigations are primarily conducted for the purpose of preventing future accidents by determining the contributing factors or causes and then implementing appropriate preventive measures - in other words to restore safety margins to provide an acceptable level of risk. The focus of CAA safety investigations is therefore to establish the causes of the accident on the balance of probability.

Accident investigations do not always identify one dominant or 'proximate' cause. Often, an aviation accident is the last event in a chain of several events or factors, each of which may contribute to a greater or lesser degree, to the final outcome.

CAA investigations may also inform other regulatory-safety decision making or enforcement action by the Director.

In the case of a fatal aviation accident, the final CAA investigation report will generally be highly relevant to an inquiry, and in some circumstances, an inquest, conducted by a Coroner. CAA investigations are not however done for, or on behalf of, a Coroner.

Acknowledgement

The Civil Aviation Authority of New Zealand gratefully acknowledges the assistance of Recreational Aviation Australia, Civil Aviation Safety Authority of Australia and the Australian Transport Safety Bureau with the investigation of this accident.

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Glossary of abbreviations:

agl	above ground level
amsl	above mean sea level
ARFOR	Area Forecast (from NZ Meteorological Service)
ATSB	Australian Transport Safety Bureau
BCAR(S) Section	British Civil Airworthiness Requirements, S – Small Light Aeroplanes
CAA	Civil Aviation Authority of New Zealand
CAR	Civil Aviation Rule(s)
CASA	Civil Aviation Safety Authority of Australia
CPL (A)	Commercial Pilot Licence (Aeroplane)
ELT	Emergency Locator Transmitter
ft	foot or feet
mph	miles per hour
NZDT	New Zealand Daylight Time
RAANZ	Recreational Aircraft Association of New Zealand
RA-Aus	Recreational Aviation of Australia
SOPs	Standard Operating Procedure(s)
UTC	Coordinated Universal Time
VHF	very high frequency

AIRCRAFT ACCIDENT REPORT

Data summary

Aircraft type, serial number and registration:	Airborne Windsport Edge XT-912, XT-912-0243, ZK-DGZ
Number and type of engines:	One Rotax 912 UL
Year of manufacture:	2008
Date and time:	9 February 2009, 1358 hours[1] (approximately)
Location:	Gibbs Hill, Abel Tasman National Park Latitude[2]: S 40° 48' 40.53” Longitude: E 172° 58’ 55.66”
Type of flight:	Commercial scenic flight
Persons on board:	Crew: 1 Passengers: 1
Injuries:	Crew: 1 (Fatal) Passengers: 1 (Fatal)
Nature of damage:	Aircraft destroyed
Pilot-in-command’s licence:	Commercial Pilot Licence (Aeroplane)
Pilot-in-command’s age:	44 years
Pilot-in-command’s total flying experience:	855 hours total, 460 on type
Information sources:	Civil Aviation Authority Field Investigation
Investigator in Charge:	Mr P Stevenson-Wright

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

2 WGS84 co-ordinates

Synopsis

At 1322 hours on 9 February 2009, microlight ZK-DGZ departed Motueka Aerodrome on a one hour scenic flight which included the Abel Tasman National Park with the pilot and one passenger on board. At approximately 1545 hours the microlight was noted as being overdue. Local inquiries were made and a search operation was started. The wing structure of the microlight was found on the south-eastern slope of Gibbs Hill later that evening. The pod of the microlight and the two occupants were located the following morning. The accident was not survivable.

The Civil Aviation Authority (CAA) was notified of the accident at 1959 hours on 9 February 2009. The Transport Accident Investigation Commission was in turn notified shortly thereafter, but declined to investigate. A CAA field investigation was commenced on Tuesday 10 February 2009.

1. Factual information

1.1 History of the flight

1.1.1 On the day of the accident the pilot commenced work at approximately 0830 hours. He had completed three flights by lunchtime, including two scenic flights over the southern area of the Abel Tasman National Park.

1.1.2 At an unknown time, a ‘walk-in’ customer arrived and chose the companies ‘Grand Tour’ scenic flight which included the Abel Tasman National Park.

1.1.3 The microlight was known to have departed Motueka Aerodrome at 1322 hours, based on the digital time-stamp of a photograph taken by the passenger.

1.1.4 The standard route for the ‘Grand Tour’ flight was west to the saddle of the Takaka Hill road, then north to Harwoods Hole, before proceeding to Abel Tasman National Park via Gibbs Hill or Separation Point and then south along the coast back to Motueka, as shown in Figure 1.

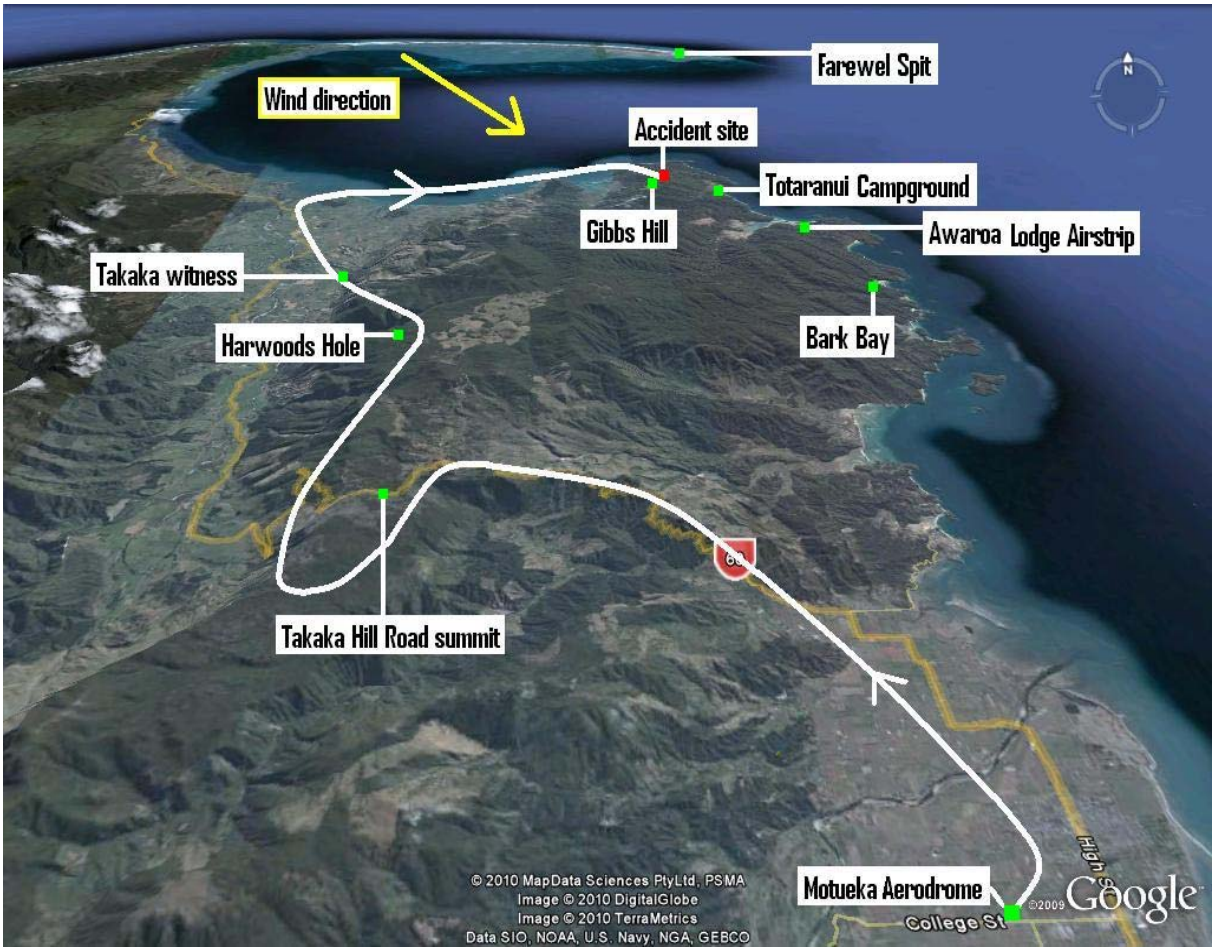

Figure 1: Map of flight route (Google Earth)

1.1.5 During the flight the passenger took a number of digital photographs which helped to establish the route flown. The flight approached Gibbs Hill at approximately 1356 hours approaching from the north-west at an altitude of 2000 ft amsl, and at an indicated airspeed of 65 mph. This information was obtained from a digital inspection of the photograph and its digital properties (see Figure 2). This photograph also shows a wind lane[3] east of Totaranui Bay, which indicates choppy sea conditions off the coast and calm seas within the bay itself.

[3] A wind lane is a visible indication of wind movement that can be seen, in this case on water.

Figure 2: Passenger's photograph from ZK-DGZ approaching Gibbs Hill.

1.1.6 At approximately 1545 hours the operator realised that the microlight was overdue and commenced their overdue flight procedure. At 1715 hours the microlight was reported as missing to the Motueka Police and they in turn advised the Rescue Coordination Centre of New Zealand which took over coordinating the search. The microlight's wing was located at 1815 hours in bush on the eastern slope of Gibbs Hill. The pod, engine and the deceased occupants were located the following morning in dense bush approximately 90 metres to the north-west of the wing.

1.1.7 The accident occurred in daylight, at approximately 1358 hours, near Gibbs Hill, Abel Tasman National Park, at an elevation of 822 ft. The main wreckage was located at Latitude S 40° 48' 40.53", Longitude E 172° 58' 55.66".

1.2 Injuries to persons

Injuries	*Crew*	*Passengers*	*Other*
Fatal	1	1	0
Serious	0	0	0
Minor/None	0	0	

Table 1: Injuries to persons

1.3 Damage to aircraft

1.3.1 The microlight was destroyed.

1.4 Other damage

1.4.1 Nil.

1.5 Personnel information

1.5.1 The male pilot, aged 44 years, held a valid Commercial Pilots Licence (Aeroplane) issued on 20 December 2006. In addition he held a Recreation Aircraft Association of New Zealand Certificate, and Membership Validation as a Microlight Instructor, issued on 4 April 2008.

1.5.2 As of 9 February 2009, his flying experience consisted of approximately 855 hours total flight time, including approximately 643 hours on microlight aircraft. He had flown 195 hours in the past 90 days and 21 hours in the past seven days.

1.5.3 His last rest day was the day prior to the day of the accident.

1.5.4 The pilot held a current Class 1 Medical Certificate issued on 23 December 2008. It was valid until 28 June 2009.

1.5.5 The pilot commenced fixed wing pilot training at Motueka on 15 August 2005 and gained a Private Pilot Licence (Aeroplane) on 20 October 2005. He then commenced training for a Commercial Pilot Licence (Aeroplane) and microlight flight training.

1.5.6 The pilot had been operating microlight aircraft in the Motueka and Abel Tasman National Park areas since 2006.

1.6 Aircraft information

1.6.1 The Airborne Windsports Edge XT 912, registration ZK-DGZ, serial number XT-912-0243, is a two seat weight-shift controlled microlight fitted with a Streak 3 wing.

1.6.2 The microlight was manufactured in Australia in January 2008, shipped to New Zealand and issued with a CAA non-terminating Flight Permit on 18 March 2008.

1.6.3 It had accrued 220 hours in service at the time of the accident.

1.6.4 The microlight was fitted with a ROTAX 912 UL engine and a Bolly 3 blade composite propeller since new.

1.6.5 The weight and balance of the microlight was calculated to be below its maximum take-off weight and within the allowable centre of gravity limits.

1.6.6 The most recent airframe maintenance was a 200 hour service that had been completed on 28 January 2009, however, there was no record of the following maintenance items being signed off by the operator:

- Replacement of the heart bolt[4].
- Bettsometer testing[5].
- However, it was concluded that neither of these items were contributing factors in this accident.

1.7 Meteorological information

1.7.1 At midday on 9 February 2009 a slow moving ridge of high pressure lay to the north-east of the North Island, and a trough of low pressure and associated cold front lay across the south of the South Island moving north-east. A west to north-west airstream flowed over central New Zealand (see Figure 3).

1.7.2 The main air stream affecting the north of the South Island was attributed to a west to north-west air stream moving around the north of the Nelson region towards the Cook Strait area.

1.7.3 The Tasman area forecast (ARFOR) issued at 0525 hours forecast occasional moderate turbulence and downdrafts about and east of the ranges that may become severe. The forecast wind at 1000 ft was from 320 degrees at 15 knots and at 3000 ft from 290 degrees at 20 knots.

1.7.4 The co-owner of the company obtained the forecast for the area at approximately 0530 hours that morning, and later reviewed it with the pilot. The remarks about turbulence and downdraughts were noted and it was agreed that if there were any signs of these conditions that operations would not continue.

1.7.5 The next issued ARFOR at 1105 hours, forecast decreasing winds at 1000 and 3000 ft, but the remarks about turbulence and downdraughts remained in effect. The safety investigation could not determine if the pilot had seen this forecast.

1.7.6 Choppy seas were apparent in a photograph taken as the aircraft flew east along the coast towards Gibbs Hill (see figure 3).

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[4] The heart bolt connects the vertical main mast pole to the wing structure via a flexible coupling.

[5] A Bettsometer test is a strength test designed to determine the strength of the wing material, which can degrade due to exposure to sunlight (ultra-violet light).

Figure 3: Choppy sea conditions - flying east.

1.7.7 Post-accident Meteorological Service analysis of the wind at approximately 1400 hours in the vicinity of Gibbs Hill, estimated it to have been 35 knots to 40 knots with a localised rotor zone of permanent and intermittent rotor winds[6].

6 A rotor zone is an area of severe rotating turbulent winds found in the lee of a mountain range under certain adverse conditions. In the absence of cloud there is nothing to indicate the presence of a rotor zone.

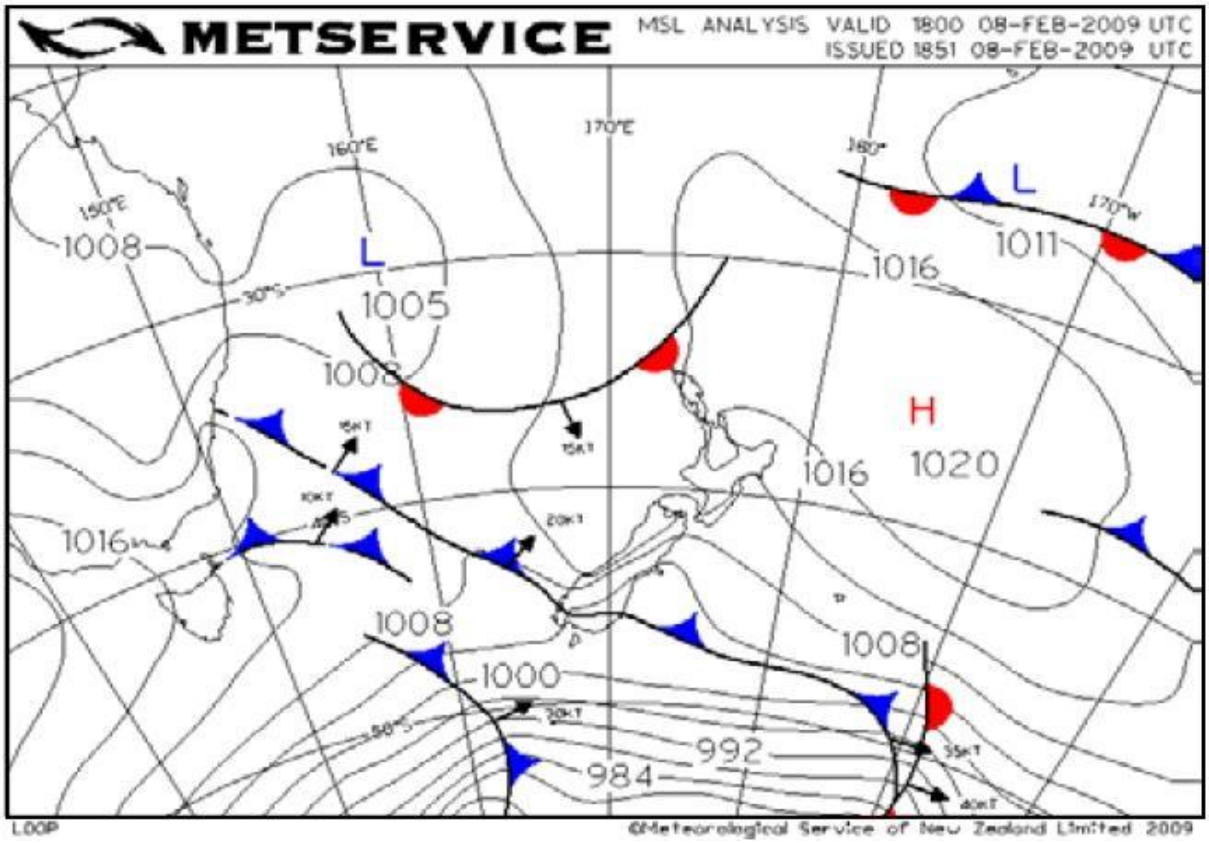

Figure 4: Meteorological Mean Sea Level Analysis Chart

1.7.8 Comments on the weather conditions in the vicinity of the Abel Tasman National Park at various times of the day of the accident were obtained from witnesses as follows:

- The passenger on the flight in ZK-DGZ just prior to the accident flight described his flight as being uneventful with only, "a mild bit of lift off a ridge" at one stage near Bark Bay. This flight departed Motueka at approximately 1100 hours and flew over the southern part of the Abel Tasman National Park, before returning to Motueka at approximately 1200 hours (refer to figure 1).

- A witness at the Totaranui Camp Ground described the winds as, "increasing and gusty after lunchtime". The wind was so strong that it tore his caravan's awning partially off. He described this as having never happened in 25 years of holidaying at the camp site. He also indicated the wind direction as, "coming over Gibbs Hill from a north to north-westerly direction" (refer to figure 1).

- A Commercial pilot who flew into Awaroa Lodge airstrip from Nelson Aerodrome at approximately 1340 hours described flying across a very clear demarcation line on the sea near Bark Bay which was accompanied by moderate turbulence. Prior to departing Awaroa Lodge at approximately 1400 hours he described the wind conditions on the ground as 10 to 20 knots with moderate turbulence and a gusty north-westerly wind. By the time he departed he felt that the conditions had become

worse (refer to figure 1).

- A retired pilot and yachtsman reported seeing the microlight fly over his house on the western slopes of the Takaka hills about 2.5 km south-east of Takaka township at approximately 1345 hours. He observed the microlight flying in a north-westerly direction towards Takaka Aerodrome and added that conditions in his opinion, "were terrible with the wind blowing from the north to north-west in excess of 25-30 knots and gusting higher" (refer to figure 1).

- A helicopter pilot involved in the search and rescue operation that evening estimated the wind to be 15 - 20 knots with a strong downdraft to the east of Gibbs Hill. He described conditions as "violent" while hovering about 200 ft (agl) above the accident site.

1.8 Aids to navigation

1.8.1 Not applicable.

1.9 Communications

1.9.1 The microlight was fitted with a VHF transceiver. However, there is no evidence that a distress transmission was made by the pilot.

1.10 Aerodrome information

1.10.1 Not applicable.

1.11 Flight recorders

1.11.1 Not applicable.

1.12 Wreckage and impact information

1.12.1 The microlight wreckage was located in two areas approximately 90 metres apart on the eastern side of Gibbs Hill.

1.12.2 The microlight's pod and engine were located in dense bush where they had struck the ground in a vertical or near vertical attitude and slid approximately 15 metres down a steep slope.

1.12.3 Two propeller blades had been sheared from the propeller hub. The third blade, although still attached to the hub, had split transversely down the length of the blade.

1.12.4 The fuel tank remained intact. A visual assessment of the fuel remaining in the tank indicated approximately 25 to 30 litres. This equated to approximately 2.5 hours of flight time remaining.

1.12.5 The wing, mast, and front pole landed in a small tree in a near vertical attitude with the nose of the wing pointing down.

1.12.6 The wing was largely intact, however, the left Rear Leading-Edge Wing Spar had suffered a downwards failure 1.43 metres from the wing-tip (see Figure 5).

1.12.7 The wing keel extension had been sheared from the keel tube assembly and was not found. The remaining portion of the keel assembly revealed impact damage consistent with having been severed by the rotating propeller.

1.12.8 The front pole and the mast assembly, which connect the wing to the pod, had both failed close to their lowest attachment points.

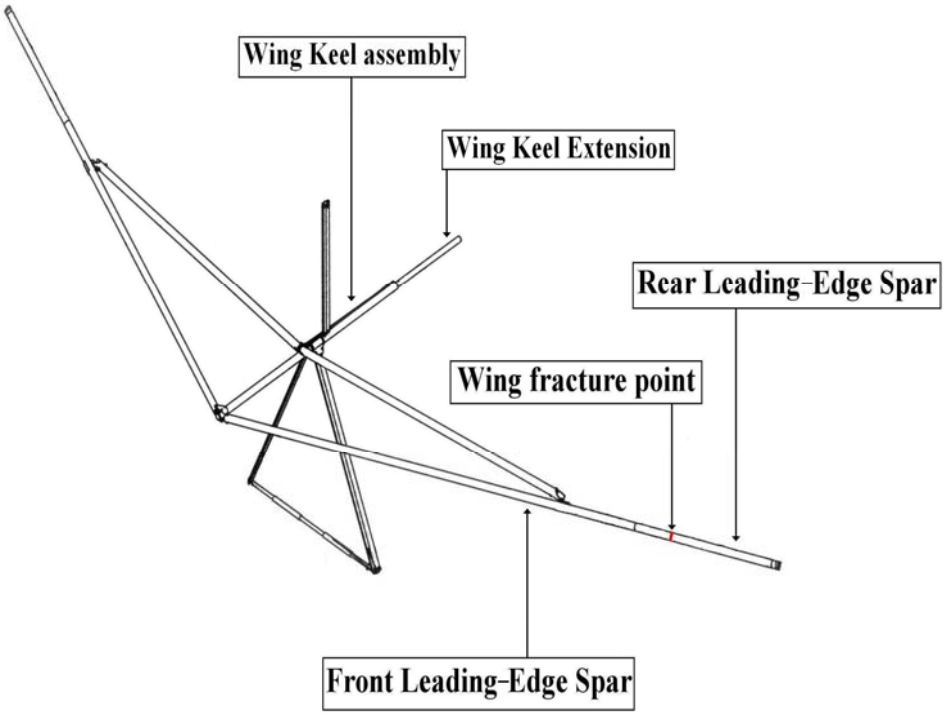

Figure 5: Diagram of wing frame

1.13 Medical and pathological information

1.13.1 Post-mortem examination showed that the pilot and passenger died as a result of traumatic injuries consistent with the aircraft's impact with terrain.

1.13.2 There was no pathological evidence of any significant natural disease or toxic substance that might have impaired the pilot's ability to control the microlight.

1.14 Fire

1.14.1 There was no fire.

1.15 Survival aspects

1.15.1 The pilot had annotated on the operator's flight-following board a return time of 1415 hours. The microlight was not noticed to be overdue until 1545 hours, as there was no monitored flight-following in place. The current Civil Aviation Rules (CAR's) do not require a flight following system for this type of flying activity.

1.15.2 The passenger was found wearing his seat lap belt while the pilot's lap belt was found unfastened but resting on his torso. It was determined that his lap belt had most likely become undone at the end of the accident sequence.

1.15.3 The microlight was also fitted with diagonal inertia reel shoulder belts, however, they were not in use at the time of the accident. It was considered likely that the passenger had started the flight with the shoulder belts in use but at some stage the lap belt may have come undone. This would have allowed the shoulder belts to retract. If that happened the passenger would have been advised by the pilot to re-fasten his lap belt.

1.15.4 Both occupants were wearing helmets which allowed intercom communications. However the accident forces were such that the design limits of the helmets were exceeded.

1.15.5 The microlight carried a portable ELT in the under-seat stowage bag.

1.15.6 Notwithstanding 1.15.1 – 1.15.4, the accident was not survivable.

1.16 Tests and research

1.16.1 Metallurgical examination of the failed wing components found that they had all failed due to overload (the wing spar in a downward direction, the mast and front pole in a rearward direction). There was no evidence of fatigue or substantial corrosion observed.

1.16.2 Metallurgical testing of the aluminium wing spar in New Zealand determined that the tensile strength of the aluminium alloy was up to 29% lower than the reported manufacturer's Mill Certificate and 10% lower than the requirements of AS1866-1997. However it was noticed that this was not the correct standard to use for this type of extrusion process. The correct standard should have been AS1867-1997[7] and the tensile strength against this standard was found to be 21% lower than what was required.

1.16.3 The microlight manufacturer was advised of these issues and two sections of the Rear Leading-Edge Wing Spar (one from each wing) were sent to Australia for further testing. Their tests were conducted by an independent laboratory and the results of those tests confirmed the reduced tensile strength of the material.

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[7] AS1867-1987 is the Australian Standard to American Society for Testing and Material (ASTM) B210-00 to which the aluminium alloy should be manufactured.

1.16.4 The microlight manufacturer carried out further tests on a new wing spar from the same batch and found that, despite the reduced ultimate tensile strength of the Rear Leading-Edge Wing Spar tube, "the reserve margins on the Streak 3 wing are such that failure in flight can only occur if the microlight departs the design envelope". This result was communicated to the Civil Aviation Safety Authority of Australia (CASA), as the regulatory body responsible for the issuance of the type certificate for the aircraft type (refer to 1.18.2), which reviewed the tests conducted by the manufacturer.

1.16.5 CASA and the microlight manufacturer held a meeting in early August 2009. The manufacturer presented "credible engineering data which indicated that the reserve margin on the failed component, even with the reduced ultimate tensile strength determined by CAA, was well over 200%. CASA is therefore of the opinion that it is very unlikely that the reduced strength material was a causal factor in the NZ accident".

1.16.6 In early October 2009 CASA further stated to the manufacturer; "CASA concurs with your conclusion that there is a high reserve margin at the location of the outboard leading edge failure of the NZ accident. CASA therefore agrees with your conclusion that this failure was caused by aerodynamic loads in excess of the normal design envelope loads. CASA therefore propose no further action at this stage, in relation to the airworthiness of the Airborne fleet.

1.16.7 An engine strip and inspection was completed by an approved Rotax Service Agent under the supervision of CAA Safety Investigators.

1.16.8 Damage to the engine was consistent with a ground impact and no internal defect or damage was detected.

1.16.9 Wood and leaf material was discovered in the inlet manifolds of the number 1 cylinder and material was found compressed in the number 4 cylinder head, indicating that the engine was operating at the time of the ground impact.

1.16.10 Research revealed three other accidents involving Airborne Windsports Edge microlight types in Australia. In all three accidents the Rear Leading-Edge Wing Spar failed under negative G loading near their wing tips, resulting in a loss of control. "Such loading was likely if the aircraft entered or encountered flight conditions outside of the manufacturer's specified flight envelope[8]".

1.17 Organisational and management information

1.17.1 The operator undertakes tandem hang-gliding flights, scenic microlight flights, hang-glider and microlight training flights using weight-shift and 3-axis microlight aircraft as well as tandem and solo hang-gliders.

8 ATSB Technical Analysis Occurrence Report 200601173

1.17.2 The operator had identified flying in difficult or dangerous weather as a risk in their Hazards Register and Risk Analysis document.

1.17.3 Flying operations are conducted in accordance with their published Standard Operating Procedures (SOP). Section 3 of the SOP details scenic microlight flight operations. Paragraph 3.3, 'Microlight Checks – Decision to Fly', requires '*weather conditions should be assessed each day and during the day before each flight. Wind conditions in particular need to be monitored*'.

1.17.4 The operator has also developed a Hazards Register and Risk Analysis document. Section 4.4 of the document identified:
'Flying in difficult or dangerous weather' as a risk, stating: 'Weather situation can change rapidly. Upper level winds can behave in an unpredictable way. Microlights are vulnerable to excessive wind and turbulence'.

The register outlines the following preventative and contingency actions:

1. *Check the weather forecast for the day.*
2. *Pilot in charge to assess conditions are safe prior to each flight. Know your limitations.*
3. *Cut flight short and return to nearest safe landing if weather is deemed dangerous.*

1.18 Additional information

1.18.1 The Airborne Windsports Edge XT-912 microlight is manufactured in Australia and designed to British Civil Airworthiness Requirements Section S – Small Light Aeroplanes (BCAR-S).

1.18.2 The microlight type was issued with a Type Certificate, Number VA513, by the Australian Civil Aviation Safety Authority on 16 December 2004.

1.18.3 Currently there is no regulatory oversight of commercial microlight operations in New Zealand.

1.18.4 A new Civil Aviation Rule (CAR) is being developed by the Civil Aviation Authority and is known as Part 115 – *Adventure Aviation Operations*. It is intended to provide regulation, entry control and ongoing monitoring of operators wishing to conduct operations for hire or reward with any persons seeking an adventure flight experience.

1.18.5 This rule project is currently in the development stage as a draft NPRM[9]. It was sent to the Ministry of Transport in July 2010 and after they have considered it, it will be released to the public for further consultation.

1.19 Useful or effective investigation techniques

Nil.

9 NPRM. Notice of Proposed Rulemaking. The consultation phase of the CAA Rule making process.

2. Analysis

2.1.1 Evidence gathered during the safety investigation indicated that the microlight most likely entered a localised region of severe turbulence, rotor winds, and downdraughts after it crossed Gibbs Hill, which resulted in an in-flight failure and subsequent breakup.

2.1.2 It could not be established why the pilot continued to fly the route over Gibbs Hill, however it is likely that he did not interpret the cues associated with the changing weather conditions. These being:

- The choppy seas along the northern and eastern coastlines (see figures 2 and 3).
- The aircraft's apparent ground speed and drift[10] near the coastline.
- Wind lanes on the water east of Totaranui Bay in the lee of Gibbs Hill (see figure 2).

2.1.3 If the pilot had interpreted the above conditions he would have flown the company's agreed alternative route around Separation Point, thus avoiding flight into the lee side of any high terrain.

2.1.4 Although the pilot was aware that the ARFOR indicated possible severe turbulence, it is likely that this was not considered as he had already completed three uneventful flights earlier that day, including two in the southern region of the Abel Tasman National Park. This train of thought is a human factors trait referred to as 'confirmation bias[11]'.

2.1.5 The initial conditions during the accident flight would have been very similar to what the pilot had experienced earlier in the day and it was most likely that he was not anticipating any change in those conditions.

2.1.6 Subsequent post-accident analysis of wind conditions by the New Zealand Meteorological Service in the vicinity of Gibbs Hill indicates that there were most likely severe turbulence and rotor winds present at the time of the accident.

2.1.7 While operating in these conditions an in-flight event led to a subsequent departure from controlled flight. The investigation could not determine if the left Rear Leading-Edge Wing Spar failed first resulting in a loss of control, or if the pilot lost control in the conditions and the left Rear Leading-Edge Wing Spar then failed.

2.1.8 The separation of the wing assembly from the pod probably occurred after the failure of the left Rear Leading-Edge Wing Spar.

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[10] Groundspeed is the speed of the aircraft plus or minus the wind speed component. Drift is the difference between the intended and actual flight path.

[11] Confirmation bias. An expectation of an event may diminish an individual's ability to recognise evidence that events are not developing as anticipated.

3.0 Conclusion

3.1 The pilot was appropriately licensed to carry out the flight.

3.2 There is no evidence that the pilot or passenger suffered any medical incapacity in flight.

3.3 There was no evidence that the accident was caused by any mechanical component failure on the microlight.

3.4 The weather forecast expressed the possibility of occasional moderate turbulence and downdrafts about and east of the ranges that may become severe.

3.5 It was likely that the microlight was inadvertently flown into a localised zone of turbulent conditions and rotor winds.

3.6 The breakup of the microlight was consistent with it being subjected to aerodynamic forces that exceeded its structural design limitations.

4. Safety actions

4.1 The Operator has corrected the issues identified during the course of this investigation with regard to maintenance practices, and record keeping.

4.2 The Operator has amended their flight following procedure and they now use text messaging as a means of 'flight-following' when their office is unattended so any overdue aircraft are noted immediately and their Overdue Flight Procedure is started.

4.3 CAR Part 115 *Adventure Aviation - Certification and Operations*, in its current draft form intends to:

- define a new category of aviation activity within the general aviation sector to be called "adventure aviation",
- regulate the various activities that make up the adventure aviation sector,
- create a set of general requirements that are applicable to all adventure aviation operators along with separate requirements that are specific to the individual activities,
- include, as a key element of the proposed Rule Part, a requirement for individual operators to hold an aviation document.
- in summary the objective of Part 115 is to provide an appropriate framework for the regulation of adventure aviation to achieve an acceptable level of safety for adventure aviation activities.

4.4 A Good Aviation Practice (GAP) booklet titled VFR Met (Meteorology) has been produced. It was revised in March 2010 and is free to pilots and available on the CAA website.

4.5 A GAP booklet titled Mountain Flying has also been produced. It was revised in June 2006 and is available from the CAA and is free to pilots and available on the CAA website.

4.6 The CAA completed a nationwide series of AvKiwi seminars on Mountain Flying in June 2010. The seminars discussed the various hazards associated with flying around New Zealand in those environments. It was attended by almost 2500 pilots nationwide.

4.7 The CAA has recently released a Mountain Flying DVD which discusses and shows the hazards of mountain flying in New Zealand. This was given away free to attendees at the recent AvKiwi seminars.

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10 April 2012

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Addendum to ZK-DGZ Final Accident report.

11 April 2012

This addendum describes minor changes and factual information made to this report since the final report was sent to specific interested parties on 17 March 2011.

These changes are described below.

- Document formatting.
- 1.15 Survival aspects. Some changes were made in this section to better describe why the pilot and passenger were not wearing their diagonal belts at the time of the accident. Information was also added to reflect that both occupants were wearing safety helmets at the time and these had an intercom capability for in-flight communications.
- Part 115 Adventure Aviation – Certification and Operations that is referred to in the report has since completed the Rules process and became effective on 10 November 2011. Operators of Microlight aircraft have until 1 November 2012 to apply for certification.