



NO. 93-022

BANTAM B22

ZK-FWC

MATAKANA ISLAND NEAR WAIHI

19 DECEMBER 1993

ABSTRACT

This report relates to the loss of control over Matakana Island of Bantam B22 microlight aircraft ZK-FWC on 19 December 1993. The safety issue identified was the risk of flying a limit manoeuvre in a microlight aircraft in moderate turbulence.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO. 93-022

Aircraft Type, Serial Number and Registration:	Micro Aviation (NZ) Limited, Bantam B22, 0093, ZK-FWC
Number and Type of Engines:	One Bombardier-Rotax 582 LC
Year of Manufacture:	1990
Date and Time:	19 December 1993, approximately 1110 hours*
Location:	Matakana Island 7 km south-east of Waihi Aerodrome. Latitude: 37°29'S Longitude: 176°00'E
Type of Flight:	Private
Persons on Board:	Crew: 1 Passenger: 1
Injuries:	Crew: 1 Fatal Passenger: 1 Fatal
Nature of Damage:	Destroyed
Pilot in Command's Licence:	Microlight Aircraft Association of New Zealand "Advanced" Certificate
Pilot in Command's Age:	20
Pilot in Command's Total Flying Experience:	53.5 hours (all on type) including 15.2 hours dual
Information Source:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	R Chippindale

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

1. NARRATIVE

1.1 At about 0915 hours the pilot had arrived at the Waihi Beach Aerodrome to carry out a pre-booked flight in ZK-FWC, a Bantam B22 aircraft owned by the Waihi Beach Microlight Flying Club. He arrived with two friends one of whom went flying with him for a 42 minute flight. When he returned the club's Chief Flying Instructor (CFI) advised him not to continue with his intention to take the second friend for a flight owing to an increase in the local wind strength to about 15 knots.

1.2 About an hour later the wind dropped and the CFI made a short flight after which he considered conditions suitable for the pilot to take the second friend for a flight. He briefed him to stay in the local area and clear of the plantations on Matakana Island because of the likelihood of turbulence in that area.

1.3 The CFI assisted the pilot to mix sufficient fuel to refill the microlight's fuel tank and saw him complete a refuel and pre-flight inspection of the aircraft before taking off at approximately 1100 hours.

1.4 At 1117 hours the Police received a "111" emergency service telephone call reporting the sighting of an aircraft descending in a spin into the trees on the northern end of Matakana Island.

1.5 The pilot had demonstrated steep turns to the passenger during the earlier flight. The aircraft was seen completing a series of steep turns immediately prior to the accident. While the height of these turns was not established his earlier flight was in the vicinity of 600 feet agl and the CFI saw the pilot depart at a similar height on the last flight.

1.6 The Waihi Coastguard and a helicopter in the area responded to the accident by 1127 hours and found the aircraft involved in a fire with the two occupants beyond assistance.

1.7 The fire initiated by the accident consumed approximately two hectares of pine forest before it was brought under control.

1.8 The pilot's flying training and subsequent experience had been conducted in Bantam B22 aircraft at the Waihi Beach Microlight Flying Club. He started flying on 6 February 1991 but did not start flying regularly until

2 February 1993 after which he flew several flights a month. His first solo flight was on 22 May 1993 and he obtained his Novice Certificate on 29 September. This was followed, on 15 November, by qualifying for his Advanced Certificate and authorization to carry passengers. His Type Rating Certificate for the Bantam B22 aircraft was dated 15 November 1993. The CFI assessed his flying as "well above average".

1.9 The tendency of the aircraft to drop a wing during a stall, in straight and level flight, had been demonstrated to the pilot. He had been given the opportunity to experience this and perform the necessary recovery action. The CFI had discussed the action to be taken if the aircraft entered a spin but the spin and the recovery from a spin could not be demonstrated in the Bantam aircraft.

1.10 The pilot held a valid MAANZ Medical Certificate and Declaration which showed him as fit for the flight in question and the post mortem examination disclosed no evidence to indicate that he was unfit.

1.11 The weather over Matakana Island was similar to that recorded at Tauranga Aerodrome, the Metars for which were:

1100 hours: wind 250/14, visibility 50 km and 4 octas of stratocumulus with a base of 4000 feet.

1200 hours: wind 220/15, visibility 50 km and 3 octas of stratocumulus with a base of 4000 feet.

The pilots of aircraft flying in the area immediately after the accident occurred reported moderate turbulence over Matakana Island at the time. Local wind effects were known to cause funnelling in the vicinity of the island in the conditions prevailing on the day. At the time of the accident local yachts had been affected by a sudden increase in wind strength in an adjacent area.

1.12 The aircraft wreckage was affected by a fire which melted most of the components and structure in the cockpit area. Nevertheless sufficient of the structure remained to confirm that no in-flight failure had occurred. The pre-impact integrity of the control runs was confirmed. The outline of the wreckage showed evidence that the aircraft had been rotating to the left and impacted in a steep nose down attitude. The propeller exhibited signs of being

driven by the engine when the aircraft collided with the ground.

1.13 There was no evidence of significant damage to the trees which were adjacent to the accident site. Due to the proximity and height of the trees this supported the indications on the wreckage of a steep flight path prior to impact.

1.14 The aircraft had approximately 30 litres of fuel in a tank located behind the occupants' seats. In the cockpit was a lead acid battery to power the intercom system and an electric fuel pump. Although the engine was mounted above the wing the impact angle was such that the fuel tank and/or its contents travelled toward the engine during the impact sequence. Smoke was seen to rise from the accident site immediately after the aircraft descended

into the plantation. It is probable that fuel misting occurred during the impact from ruptured or broken fuel system components. Potential ignition sources for the fuel fire included; a spark from the electrical system, a hot engine component or backfire from the engine, a static electricity spark or sparking from interference between metal components.

1.15 Each of the occupants was wearing a protective helmet and was secured by a lap strap. The buckles of the straps survived the fire and were still locked after the accident. The angle of impact and the position of the victims indicated that the occupants would have jack-knifed about their lap strap restraint and been incapacitated in the accident.

2. FINDINGS

2.1 The pilot was qualified for the flight and for the carriage of a passenger.

2.2 The aircraft was serviceable and there was no evidence of a pre-accident failure or malfunction.

2.3 The aircraft was capable of flying in the turbulent conditions encountered if manoeuvred with caution.

2.4 The loss of control witnessed may have been due to the pilot's inability to recover from a wing drop, during a steep turn, which was aggravated by an encounter with moderate turbulence.

2.5 The failure of the pilot to recover control may have been influenced by the pilot's lack of training in recovery from stalls in which a wing drop occurred during a steep turn.

2.6 The height at which the flight was conducted made the encounter with turbulence more likely and reduced the opportunity for the pilot to recover control of the aircraft.

2.7 The response to the emergency call to the Police was dealt with promptly and efficiently despite the difficulty of access to the island location.

2.8 The accident was unsurvivable.

2.9 The Microlight Aircraft Association of New Zealand have responded responsibly to a former recommendation by the Transport Accident Investigation Commission that the dangers of flying in turbulence in microlight aircraft be publicised. The CFI had also emphasised the hazards and counselled the pilot to remain clear of an area known for such conditions.

2.10 The accident was caused by the pilot's decision to conduct a limit flying sequence in an area where moderate to severe turbulence could be anticipated in the prevailing weather situation.

23 March 1994

M F Dunphy
Chief Commissioner