AIRCRAFT ACCIDENT REPORT

No. 91-020

BANTAM B22
ZK-TKJ

KAURI, 8km NORTH OF WHANGAREI

28 SEPTEMBER 1991

Transport Accident Investigation Commission
Wellington · New Zealand

Price $10.35 (including G.S.T.)

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TRANSPORT ACCIDENT INVESTIGATION COMMISSION

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Aircraft Type, Serial Number and Registration:	Bantam B22, 0047 ZK-TKJ
Number and Type of Engines:	1 Rotax Bombardier 582
Year of Manufacture:	1986
Date and Time:	28 September 1991, 1648 hours NZST
Location:	Kauri, 8 km north of Whangarei Latitude: 35°39'S Longitude: 174°18'E
Type of Flight:	Private
Persons on Board:	Crew: 1 Passengers: 1
Injuries:	Crew: 1F Passengers: 1F
Nature of Damage:	Destroyed
Pilot in Command's Licence:	Microlight Advanced Pilot's Certificate
Pilot in Command's Age:	48
Pilot in Command's Total Flying Experience:	Approximately 275 Approximately 200 on type
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr R Chippindale

1. NARRATIVE

1.1 The aircraft was heard to take off from its usual base of operations and a short time later was seen climbing away in a northerly direction. About one nautical mile (nm) from the point of departure it made a level right turn through approximately 180° and soon after completion of the turn, the aircraft's wings were seen to "fold". The aircraft dived to the ground, fatally injuring both occupants.

1.2 The weather conditions at the time were described by witnesses as blustery, with a strong westerly wind, passing rain showers and low cloud. A number of the witnesses recalled expressing astonishment at seeing the aircraft flying, as they had been accustomed to seeing it only in fine, calm conditions.

1.3 The surface wind at Kaitaia, 60 nm north-east of the accident site was westerly, gusting to 47 knots. The automatic weather station at Whangarei Airport recorded a mean wind between 1600 and 1700 of 15 knots, but recorded a peak gust of 34 knots between 1700 and 1800. A resident at Manganese Point, some 4 nm south-east of Whangarei Airport commented that the wind in that area had been "a good 35 knots all afternoon".

1.4 The pilot of a rescue helicopter which was in the area shortly after the accident reported a "fair amount" of turbulence and a cloudbase of about 1200 feet. The helicopter had been forced by low cloud and rain to abandon an attempt to reach Kaitaia.

1.5 The topography of the area in which the accident occurred was conducive, in the prevailing wind conditions, to the production of local funnelling effects and severe turbulence. Of particular significance was the presence of a 1283 foot hill, about one nautical mile west of the take-off site, which itself was on the crest of a knoll of some 650 feet in elevation. The elevation of the accident site was about 200 feet lower.

1.6 Some of the witnesses had observed the aircraft being "bounced around" in flight, one noting that the nose appeared to drop just before the wings failed. The engine appeared to be running normally up until this time. Although some witnesses were sure the wings had failed upwards, another was equally sure the direction of failure was downwards.

1.7 Examination of the wreckage revealed that both wings had failed under negative loading. The failures occurred at the same station on each wing, (approximately 1750 mm outboard of the root) and in both front and rear spar tubes, just outboard of the compression strut attachments. Both wings had been fitted new to the aircraft, some 11 months earlier, as part of a major rebuild by the manufacturer.

1.8 The manufacturer advised that the limit load factors for the B22 were +4 and -2, the ultimate load factors being 1.5 times these values. In fact, a specimen wing had been tested to +6g with no visible distress, but at the time of writing, the negative proof load test had not been carried out.

1.9 The passenger had been involved in paragliding for a number of years. The possibility that he had interfered with the controls of the aircraft during the flight was investigated by the Commission's Aviation Medical Advisor. In the circumstances surrounding the accident this possibility could not be entirely eliminated.

2. FINDINGS

2.1 The aircraft held a valid permit to fly.

2.2 The pilot was appropriately certificated and experienced.

2.3 The prevailing weather conditions were likely to have produced severe turbulence in the area of the accident.

2.4 The aircraft probably encountered gust loads in which its ultimate load factors were exceeded.

2.5 Both wings failed in negative-g overload.

2.6 The accident was unsurvivable.

2.7 The possibility that the passenger interfered with the controls could not be eliminated.

3. SAFETY RECOMMENDATIONS

3.1 As a result of the investigation of this accident and another subsequent microlight accident (report number 92-001) in which turbulence was a contributing factor, it was recommended to MAANZ that:

> They take immediate steps to promulgate information on the prediction and avoidance of low level turbulence to their members, and
>
> Continue to stress the dangers involved in operating in conditions of turbulence in microlight aircraft.

19 May 1992

M F DUNPHY
Chief Commissioner