TRANSPORT ACCIDENT INVESTIGATION COMMISSION
TE KOMIHANA TIROTIRO AITUA WAKA

AIRCRAFT ACCIDENT REPORT

No. 92-001

MICRO AVIATION B22 BANTAM
ZK-TKH

NEAR TAKAKA, NELSON

2 JANUARY 1992

Transport Accident Investigation Commission
Wellington · New Zealand

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO. 92-001

Aircraft Type, Serial Number and Registration:	Micro Aviation B22 Bantam 0045 ZK-TKH
Number and Type of Engines:	1 Rotax Bombardier 532 LC
Year of Manufacture:	1986
Date and Time:	2 January 1992, 1105 hours NZDT
Location:	Wainui Hill, Nr Takaka. Latitude 40°48.5'S Longitude 172°55.3'E
Type of Flight:	Private
Persons on Board:	Crew: 1 Passengers: 1
Injuries:	Crew: 1S Passengers: 1F
Nature of Damage:	Substantial
Pilot in Command's Licence:	Novice Microlight Pilot Certificate
Pilot in Command's Age:	46
Pilot in Command's Total	Approximately 180 (of which some 170 hours were on type)
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr R Chippindale

1. NARRATIVE

1.1 The aircraft was based at Takaka. On the morning of the accident the pilot spent some time cleaning the aircraft and completing a pre-flight inspection. He then flew one circuit on his own. Later, at approximately 1035 hours, he took off for a cross-country flight, intending to visit either Totaranui or Awaroa. He was accompanied by a passenger.

1.2 The route, which he had flown several times before, took the aircraft from Takaka Aerodrome, eastwards along the coast over Pohara Beach, Ligar Bay and Tata Beach thence across the crest of a ridge to the west of Wainui Inlet, some 12 km to the east of the aerodrome.

1.3 The aircraft was observed by a number of pilots and other witnesses as it proceeded across the beaches towards the ridge which was some 350 feet amsl and aligned north-west / south-east. Two pilots in particular watched with interest and concern as it climbed towards the crest as, in the north-easterly wind conditions which prevailed, they expected the aircraft to encounter a rotor or a downdraft and moderate turbulence in the lee of the crest.

1.4 As the aircraft approached the vicinity of the expected turbulence it was seen to drop its right wing, pitch nose downwards and continue in a steep spiral to the ground. One witness believed it may have stopped rotating briefly then entered a similar turn in the opposite direction.

1.5 The pilot did not notice any evidence of a wind on the sea, nor did the aircraft encounter any turbulence, as he flew it along the beaches towards Wainui Bay. He climbed up the left side of the valley towards the top of the ridge and just as he neared the top he "kicked right rudder" to turn the aircraft round to the right. He used rudder because he believed more lift would be obtained from the updraft off the ridge if the aircraft encountered it with the wings level.

1.6 As he applied the rudder the aircraft entered some moderate turbulence and the right wing dropped violently. The aircraft began to rotate and the pilot believed it may have entered a spin, so concentrated on applying opposite rudder in an attempt to stop the rotation. He did not detect any improvement in the situation before the aircraft collided with the ground.

1.7 The pilot estimated that ZK-TKH usually stalled at between 36 and 37 miles per hour with two occupants. The aircraft was climbing at approximately 50 mph when it encountered the turbulence and the wing dropped. The captured indication on the aircraft's air speed indicator, when the instrument was located in the wreckage, was 42 mph.

1.8 The ground impact occurred across a scrub covered slope with an aircraft attitude of some 35° nose down while descending at an angle in the vicinity of 65 to 80°.

1.9 The aircraft's engine was delivering power during the descent and the pilot did not remember consciously attempting to reduce the throttle setting.

1.10 In the Takaka/Wainui Inlet area the surface winds were light or calm at first, but a north to north-easterly sea breeze of 5 to 10 knots developed between 1000 and 1100 hours with winds in the "free" air at 1000 feet

probably south-easterly at 20 to 25 knots. This wind would have been reinforced across the tops of the hills to the west of Wainui Bay. There was thus considerable shear between the surface and 1000 feet near the hills and considerable turbulence near and to the west of the hill.

1.11 The topography of the area in which the accident occurred was conducive, in the prevailing wind conditions, to the production of local rotor effects and severe turbulence. This was attested to by a hang glider pilot who watched the accident sequence and who often launched from the north-eastern side of the ridge.

1.12 Some of the witnesses had observed the aircraft being "bounced around" at the time of the right wing drop and entry into the descent. The engine appeared to be running normally up until this time. Each of the witnesses were sure the aircraft suffered no obvious structural failure prior to the impact and the pilot confirmed this opinion.

1.13 Examination of the wreckage revealed that both wings had remained in their correct position until the impact with the trees. The right wing had been penetrated by trees from below just prior to the main impact. The right hand side of the cockpit which collided first due to the cross-slope impact had been compressed by a substantial gorse "tree".

1.14 The aircraft had been involved in a substantial landing accident twelve months earlier and the subsequent repairs had been carried out by the manufacturer.

1.15 Each of the structural failures at the accident site was consistent with damage sustained in the impact.

1.16 The pilot had flown "sufficient hours to go solo" in a Cessna 150 aircraft 18 years earlier.

1.17 The pilot had flown 13 hours of dual flying in ZK-TKH with the previous owner of this aircraft who was a flying instructor. However, as he still held a Novice Microlight pilot certificate he was not permitted by Civil Aviation Safety Order (CASO) 19 to carry a passenger. He was also required to be under the supervision of an instructor for all solo flying and to have specific authorisation from an instructor for any cross country flight he wished to make. No such supervision was being exercised at the time of the flight.

1.18 The pilot was posted copies of the MAANZ pilot certificate requirements and privileges and a copy of CASO 19 by the Secretary of his club when he was accepted as a member. In November 1991 he had sat and passed the written examination to upgrade his pilot certificate to an Intermediate Pilot Certificate, but at the time of the accident had not undertaken the required Flight Test.

1.19 The pilot was under the impression, that due to the number of hours he had flown, he could exercise the privileges of an Advanced pilot and carry a passenger after his pass in the written examination was confirmed.

1.20 This was a misconception, however, as even a pilot holding an Advanced Certificate still required a separate flight test and authorisation to carry a passenger. The literature which had been provided to the pilot contained this information.

1.21 The MAANZ had no record of having received any application for the pilot to have his Certificate upgraded from Novice. The pilot assumed the application to sit the written examination in November 1991 and his success in this examination served as the required application.

2. FINDINGS

2.1 The aircraft held a valid permit to fly.

2.2 The pilot was not appropriately certificated to carry a passenger.

2.3 The pilot believed that he was qualified to carry a passenger and the delay in issuing his MAANZ Pilot's Certificate was an administrative matter.

2.4 The prevailing weather conditions were likely to have produced moderate turbulence and rotor conditions in the area of the accident.

2.5 The pilot's action in attempting to turn the aircraft on this occasion using considerable rudder in advance of applying aileron may have initiated the loss of control which led to the accident.

2.6 Although the pilot endeavoured to initiate a spin recovery he probably became disoriented and was unable to coordinate the recovery sequence.

2.8 Although the pilot climbed the aircraft toward the crest of the ridge it was unlikely that he was 500 feet above ground level when he encountered the turbulence.

2.9 Because of disorientation and the lack of any practical experience in spin recovery it was unlikely that the pilot would have been able to recover from a spin even if the aircraft had been well above the minimum height above ground level.

2.10 The accident was unsurvivable for the passenger due to the nature of the impact.

3. SAFETY RECOMMENDATIONS

3.1 As a result of the investigation of this accident it was recommended to MAANZ that:

> They take immediate steps to promulgate information on the anticipation and avoidance of low level turbulence to their members and,
>
> They warn microlight pilots of the dangers inherent in unbalanced turns.

3.2 MAANZ subsequently published an extensive article on turbulence for the attention of their members.

4. REGULATORY

4.1 The pilot was invited to comment on a draft of the above report.

4.2 As a result of representations received the report was amended and amplified to clarify some of the points raised.

4.3 The representations made to the undersigned are not to be taken as an admission of liability on the part of the pilot concerned and his statement is without prejudice to his right to act in any way he may consider fit in any proceedings or action which may be based on the events to which this report refers.

19 May 1992

M F DUNPHY
Chief Commissioner