



NO. 93-015

CESSNA 206

ZK-DOV

TANGAHOE, 22 NM SOUTH-WEST NATIONAL PARK

2 NOVEMBER 1993

ABSTRACT

This report explains the landing accident and subsequent collapse of the nose undercarriage of Cessna 206 ZK-DOV, on landing at Tangahoe private airstrip.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO 93-015

Aircraft Type, Serial Number and Registration:	Cessna U206, 2060248, ZK-DOV
Number and Type of Engines:	One Continental IO-520 A1B
Year of Manufacture:	1964
Date and Time:	2 November 1993, 0945 hours*
Location:	22NM SW National Park Latitude: 39°19'S Longitude: 174°57'E
Type of Flight:	Air Transport, Charter
Persons on Board:	Crew: 1 Passengers: 4
Injuries:	Crew: 1 Nil Passengers: 4 Nil
Nature of Damage:	Substantial
Pilot in Command's Licence:	Commercial Pilot Licence (Aeroplane)
Pilot in Command's Age:	23
Pilot in Command's Total Flying Experience:	332 hours 5 hours on type
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr K A Mathews

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

1. NARRATIVE

1.1 ZK-DOV, a Cessna 206 operated by Mountain Air, was being flown on a charter flight from the Chateau Aerodrome to a private airstrip at Tangahoe 22NM SW of National Park.

1.2 Originally the pilot had planned to use a Cessna 172 for the flight as the booking was for three passengers; also the pilot was more experienced on the Cessna 172.

1.3 At approximately 0920 hours on the day of the accident four passengers arrived for the flight, giving a total POB of five. This required a last minute change for the pilot from the Cessna 172 to the Cessna 206 to accommodate the extra passenger.

1.4 The pilot discussed the change of aircraft and the known weather conditions with the acting Chief Pilot. The acting Chief Pilot gave his approval for the flight as planned and the pilot felt comfortable with this decision.

1.5 The flight departed normally soon after 0930 hours for the 12 minute flight to Tangahoe Airstrip, with no handling or weather problems encountered enroute. The pilot flew the standard route tracking overhead National Park settlement then 227°M to Tangahoe.

1.6 Tangahoe Airstrip was orientated 355°M/175°M at an elevation of 1200 feet. It was 450 m in length, with 4° of upslope towards the north. The surface was short dry grass.

1.7 Upon arrival at Tangahoe the pilot overflew the airstrip and, continuing in a left hand turn, flew along the airstrip to observe its surface, the prevailing wind conditions, and that it was free from any wandering stock.

1.8 The pilot estimated the wind strength as up to 10 knots from the east to south-east as indicated by a miniature windsock positioned at the approach end of the airstrip. The cloud was observed to be four octas with a base of about 3000 feet. Visibility was in excess of 10 km and the sun considered not to be a factor in the approach and landing sequence.

1.9 The pilot, having judged the conditions to be suitable for a landing, recircuited and flew the aircraft to a wide left downwind position. This was to give herself more time to stabilize the approach as the airstrip was one-way,

due to the slope and rising terrain in the overshoot path to the north. The pilot nominated a landing decision point, and a touchdown point just beyond a patch of rough ground adjacent to the threshold.

1.10 The landing approach "felt good" to the pilot with an initial approach speed of 70 KIAS reducing to 63 KIAS on short final and beyond the decision point. Full flap was utilised and the touch down was at the desired position. The throttle was retarded fully and braking applied, but the flaps were not retracted during the rollout.

1.11 As the aircraft encountered the first slight undulation on the rollout it became airborne again. The pilot, aware that there was no "go-around" available checked that the throttle was closed and manipulated the control column to put the aircraft on the ground again.

1.12 Despite the pilot's apprehension about the lack of a go-around, it would have been important to settle the aircraft back on the ground on the mainwheels first, with the appropriate checking forward of the control column, to minimise the lofting, followed by a check back and, if necessary, a "touch" of power to arrest the ensuing sink.

1.13 In the event, the aircraft touched down again nosewheel first and bounced back into the air. By getting out of sequence with the corrective action required, the pilot aggravated the situation and the aircraft bounced three more times, striking the nosewheel first on each occasion. On the fourth strike the nose undercarriage collapsed and the propeller struck the ground. The aircraft then travelled a further 34 m up the airstrip and slewed 180° to the right, coming to rest facing back down the strip.

1.14 The pilot secured the aircraft and spoke with the passengers to check they were uninjured and to reassure them. She then instructed them to vacate the aircraft; this was accomplished without difficulty, and she made a call to base by mobile telephone to ask for assistance. The passengers left the scene to continue with their hunting trip.

1.15 There was no post-impact fire and the damage was confined to the nose undercarriage and supporting structure, nose cowling, and propeller.

1.16 The pilot reported that throughout the flight leading up to the accident there were no handling problems

with the aircraft and that the engine was functioning correctly.

1.17 The pilot had a total flight time of five hours on the Cessna 206 which included a check out at Tangahoe by the Chief Pilot two weeks prior to the accident. Since the check out the pilot had been to the airstrip twice, once as an observer with another company pilot, and once as pilot accompanied by the same pilot as an observer. The day of the accident was the first time the pilot had flown to Tangahoe unsupervised.

1.18 The pilot estimated the prevailing wind at the airstrip prior to landing as up to 10 knots from the east to south-east and fairly steady. As the approach was towards the north, the wind would have been a right cross wind swinging to a quartering tail wind. The pilot made this assessment from the miniature windsock positioned at the approach end of the airstrip, but she had little experience in reading these small windsocks, being used to the standard

type. The wind speed may have been greater than estimated as the miniature windsock was more reliable as a wind direction indicator than as a guide to the wind strength.

1.19 The New Zealand Meteorological Service's aftercast of the weather and prevailing wind conditions at the time of the accident indicated a strong east to south-easterly airflow in the area, with gusts of 25 to 30 knots estimated with associated moderate low level turbulence.

1.20 The pilot appeared to have misjudged the wind strength immediately prior to the accident and experienced a higher than expected touchdown groundspeed due to the quartering tail wind. Gustly wind conditions, the upward momentum of the aircraft during the early stages of the landing roll, and a faster than normal roll out speed with full flap still selected, was sufficient to cause the aircraft to become airborne again. Incorrect recovery technique resulted in the subsequent collapse of the nose undercarriage.

2. FINDINGS

2.1 The pilot was appropriately licensed and authorised for the flight.

2.2 The aircraft had a valid Certificate of Airworthiness and Maintenance Release.

2.3 The aircraft's centre of gravity and operating weight were within limits.

2.4 The pilot was inexperienced on the Cessna 206 type, in operating into one-way airstrips, and in total flying time.

2.5 The pilot had been checked out at the airstrip two weeks prior to the flight and on the day of the accident was on the first unsupervised flight into the strip.

2.6 The miniature wind indicator at the airstrip gave an incorrect impression of wind strength to the inexperienced pilot.

2.7 The strong south-easterly flow prevailing in the area at the time resulted in gusty quartering tail wind conditions for the landing.

2.8 Contributing factors in this accident were: unfamiliarity with the aircraft type, unfamiliarity with strip landings, a non-standard wind sock, and the incorrect recovery actions adopted by the pilot to recover from a series of "bounces" during the landing.

3. SAFETY RECOMMENDATIONS

3.1 It was recommended to the manager of Mountain Air that:

The miniature windsock in use at Tangahoe be replaced by a full size windsock (001/94), and

That a system be implemented whereby pilots gain an appropriate level of experience and expertise before being allowed to operate air transport flights, unsupervised into one-way airstrips such as Tangahoe (002/94).

GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

km	Kilometres
KIAS	Knots Indicated Airspeed
M	Magnetic
m	Metres
NM	Nautical miles
NZDT	New Zealand Daylight Time
POB	Persons on Board
SW	South-west
UTC	Universal Coordinated Time

23 March 1994

M F Dunphy
Chief Commissioner