



# AIRCRAFT ACCIDENT REPORT

**No. 89-076**

**Cessna 152**

**ZK-FT0**

**D'Urville Island, Marlborough**

**28 September 1989**

**Transport Accident Investigation Commission  
Wellington • New Zealand**

Transport Accident Investigation Commission  
Wellington

Chief Commissioner  
Transport Accident Investigation Commission

The attached report summarises the circumstances surrounding the accident involving Cessna 152 aircraft ZK-FTO at D'Urville Island, Marlborough on 28 September 1989 and includes suggested findings.

This report is submitted pursuant to Section 8(2) of the Transport Accident Investigation Commission Act 1990 for the Commission to review the facts and endorse or amend the findings as to the contributing factors and causes of the accident.

4 March 1992

R CHIPPINDALE  
Acting Chief Executive

APPROVED FOR RELEASE AS A PUBLIC DOCUMENT

12 March 1992

M F DUNPHY  
Chief Commissioner

# TRANSPORT ACCIDENT INVESTIGATION COMMISSION

## AIRCRAFT ACCIDENT REPORT NO. 89-076

<b>Aircraft Type, Serial Number and Registration:</b>	Cessna 152; 82787 ZK-FTO
<b>Number and Type of Engines:</b>	One Lycoming O-235-L2C
<b>Year of Manufacture:</b>	1979
<b>Date and Time (NZST):</b>	1255 NZST, 28 September 1989
<b>Location:</b>	1 km north of Kupe Bay, D'Urville Island Latitude: 40°52.7'S Longitude: 173°48.1'E
<b>Type of Flight:</b>	Flying School
<b>Persons on Board:</b>	Crew: 1      Passenger: 1
<b>Injuries:</b>	Crew: 1Fatal    Passenger: 1Fatal
<b>Nature of Damage:</b>	Destroyed
<b>Pilot in Command's Licence:</b>	Private Pilot Licence — Aeroplane
<b>Pilot in Command's Age:</b>	35
<b>Pilot in Command's Total Flying Experience:</b>	104 hours 97 hours on type
<b>Information Sources:</b>	Office of Air Accidents Investigation field investigation
<b>Investigator in Charge:</b>	Mr J J Goddard

## 1. NARRATIVE

1.1 The pilot, who had done all her training at the Flying School in the previous 2 years, arranged to hire the aircraft for a day trip, accompanied by her husband. They planned to fly from Paraparaumu to Nelson, with about 2½ hours on the ground before returning.

1.2 A weather briefing was obtained by computer at the flying school. The pilot then filed a flight plan for the round trip with Paraparaumu Flight Service, where her route and knowledge of relevant Air Traffic Control procedures was checked. An instructor at the school authorised her hire of the aircraft, but not the specific details of her cross-country flight. The route was discussed, however, as were the weather forecasts and reports for Nelson and Paraparaumu. The instructor advised her that the reported Nelson weather at 1100 hours was suitable, but that if she encountered problems she should turn back or divert somewhere else.

1.3 She had previously flown the route, via French Pass, once each way during her training. Her total cross-country experience was 20.7 hours. The most recent cross-country, to the Marlborough Sounds area, had been on 11 May 1989.

1.4 The aircraft took off from Paraparaumu at 1156 hours, and departed normally towards Nelson. A radio telephone (RTF) position report was received by Wellington Information at 1204 hours; "Foxtrot Tango Oscar, just south of Kapiti Island at 1600 feet, flying VFR (visual flight rules) to Nelson; ETA 1254".

1.5 At 1237 a broken transmission was received; "Foxtrot Tango Oscar, just north of French.....". Wellington Information replied, asking the aircraft to standby. A call to ZK-FTO, 30 seconds later, produced no response however.

1.6 At 1240 ZK-FTO called Nelson Tower and reported; "Just crossed through French Pass.....". This transmission was broken and no further RTF contact was achieved.

1.7 A witness on the beach at French Pass saw a single engined Cessna, of the same colours as ZK-FTO, fly through French Pass to the south-west, reportedly at 1229 hours. It was at an estimated 150 feet amsl, just beneath the overcast low cloud. Only the nearest part of D'Urville Island was visible, suggesting a visibility of about 2000m. The power lines across French Pass, between 250 and 545 feet amsl, were in cloud and not visible. No other aircraft was seen at French Pass during the next hour. The weather had been foggy and drizzling, but had lifted to low stratus at 150 to 200 feet after about 1200 hours.

1.8 ZK-FTO was next seen as it flew at low height over a promontory on the west coast of D'Urville Island, about 7 km north of the southern tip of the island. It was heading south-east, towards Kupe Bay, at about 500 feet amsl and just beneath the cloud. It was heard flying locally for several minutes but not seen again.

1.9 Another witness at Cherry Bay, south of Kupe Bay, next saw the aircraft fly past from the north, over the sea at a low height. It circled out to sea and returned a few times over about five minutes. It was being manoeuvred abruptly and erratically as it avoided high offshore rocks and coastal headlands. It then flew away to the north. Weather at the time was overcast low cloud, with an estimated 200 foot ceiling.

1.10 Witnesses at Kupe Bay heard the aircraft flying nearby, apparently low, but were unable to see it because of the low cloud and reduced visibility. It was heard to circle out to sea a couple of times, then flew directly over them to the east and up a valley towards rising terrain. They heard the engine note rise and the aircraft turn to fly back to the west. It was then on the north side of their valley and apparently climbing. When the sound was nearly abeam them they heard the engine note rise again as though the aircraft was making another turn. This was interrupted by a loud bang and the sound of cracking timber. No further sound was heard.

1.11 The alarm was raised immediately and a local ground search started. Police ground parties and helicopters searched from 1500 hours, but were unable to locate the aircraft in the prevailing low cloud and poor visibility.

1.12 The search was resumed on the following morning, in improved weather. The burnt-out wreckage of ZK-FTO was found at 0640 hours at an elevation of 1500 feet amsl in dense bush, in the location indicated by the ear witnesses. Neither occupant had survived.

1.13 Examination of the accident site showed that the aircraft had collided with a substantial tree some 30 feet above the hillside, while on a heading of 030° magnetic, and banked about 60° to the right. It had bounced back to fall to the ground inverted. An intense fire had consumed much of the fuselage.

1.14 The completeness of the wreckage at the site was established. Both wings and the nose of the aircraft had sustained heavy collisions with tree limbs. The rear fuselage and empennage had broken downwards, probably at ground impact. While control system integrity could not be fully established in the cabin area because of fire damage, no defect was evident elsewhere. No significant evidence was available from the instruments.

1.15 Propeller damage was consistent with appreciable engine power at tree impact. The left fuel tank remained about 1/3 full; the contents resembled Avgas. The right tank had ruptured, allowing its contents to fuel the fire.

1.16 The flap actuating jack was partially extended, to a position consistent with about 10° of flap. The elevator trim jack was in a mid position.

1.17 Post-mortem and toxicological examinations showed that pilot incapacitation was unlikely.

1.18 Although both occupants were restrained by lap/diagonal harnesses, the severity of the impact caused major incapacitating injuries which precluded escape and made the accident unsurvivable.

1.19 The emergency locator transmitter (ELT) was burnt out by the fire, but had become detached from its mounting and from the aerial connection during the impact.

1.20 The flight path of the aircraft between the sighting at French Pass and the next on the west coast of the island was not established, but the time lapse of about 10 minutes suggested that it had been flown under low cloud and in poor visibility towards Tasman Bay, along the coast to about Croiselles Harbour before it was turned back towards French Pass. It would have been possible in these conditions for the pilot to miss the entrance to the pass, and inadvertently continue to the west coast of D'Urville Island.

1.21 Reports from pilots who flew to the area later, and from people on the east side of the island indicated that the area of low cloud extended from Cape Soucis (just south of Croiselles Harbour) to the north, and from French Pass westward. The east coast of D'Urville Island and Cook Strait remained clear of low cloud, while Nelson weather did not start to deteriorate until 1600 hours.

1.22 ZK-FTO probably was flown under low cloud and in poor visibility for a total of about 15 minutes. This would have caused navigational difficulty for an experienced pilot who was familiar with the area. An inexperienced pilot who did not know the area would have been likely to become geographically disoriented over this time; the witnesses' description of the aircraft circling near Cherry Bay suggested that the pilot no longer knew her position.

1.23 The final climb through cloud may have been undertaken deliberately, or the pilot may have lost visual contact with the surface and then decided that a climb was the only remaining option. This course of action could have provided an escape from the predicament she was in, but it did require the aircraft to be flown on a safe heading to take it clear of high terrain; in this case to the west.

1.24 The choice of a safe heading in this situation did depend essentially on the pilot knowing her position in relation to the terrain. It was probable that she did not know which way to go, and therefore the successful outcome of the emergency climb depended largely on chance, as well as being able to maintain control while flying in cloud on instruments.

1.25 She had received 5.1 hours of basic instrument flying during her PPL training some 15 months earlier. While this would not have provided much proficiency, it did mean that a climb through cloud was a possible option for her.

1.26 The aircraft flight instruments included an artificial horizon and a gyro direction indicator. It did not have, nor was required to have any radio navigation aids.

1.27 There was no evidence that the pilot had lost control of the aircraft before the collision. While the final turn could have been the start of a spiral descent, equally it could have been her reaction to a momentary glimpse of something while in cloud.

1.28 The predicament started when the pilot did not turn back on encountering low cloud near French Pass. The cloud was so low, and the deterioration from the conditions earlier in the flight so marked, that a decision to turn back should have been clearly advisable. Her failure to turn back, however, could have occurred as a result of not making any decision at all, rather than of deliberately deciding to carry on into bad weather. It was not possible to assess what influence her passenger might have had on any decision making by the pilot.

1.29 While the terminal forecasts for Nelson and Paraparaumu were satisfactory for commencing a VFR flight, the South Island General Aviation Forecast, which the pilot had before departure and discussed with the instructor did include:

"Nelson, Northern Marlborough, Buller, Westland, Fiordland: scattered rain with areas of broken stratus at 600 (feet). Areas of broken cumulus/stratocumulus at 2000, tops 8000. Areas of broken altostratus/altocumulus above 9000.

Visibility: 50 km, down to 4000 m in drizzle and 6000 m in rain."

1.30 This forecast did predict broadly the nature of the bad weather encountered, if not its specific extent or location. With the generally moist north-north-west airflow prevailing, the exposed north-western side of high terrain such as D'Urville Island could have been expected to produce more extensive and lower areas of orographic cloud, while Paraparaumu and to a lesser extent Nelson might be less affected as they were sheltered to some extent by land areas upwind.

1.31 Given the non-specific information available, it was reasonable for this VFR flight to be commenced. The instructor had advised a return or diversion if weather problems were encountered.

1.32 The pilot was expected by the Flying School to be able to make in-flight decisions on whether to proceed or turn back when encountering a deterioration in the weather. The expected criteria were the regulatory VFR minima of 500 feet agl and a flight visibility of 5000 m.

1.33 Weather which required flight down to these minima might have been acceptable for an experienced pilot over familiar territory, but represented difficult conditions for an inexperienced pilot.

1.34 It was evident, however, that the aircraft had been flown from good weather into weather conditions much worse than the VFR minima, from the approach to French Pass and for some minutes before any attempt to turn back was made. Because of this, it was not obvious that a more stringent requirement by the Flying School for an inexperienced pilot to observe higher minima would have affected the events in this accident.

1.35 It was commonly accepted practice by many flying organisations to specify graded operating minima for pilots, according to their relevant experience, with the lowest minima specified generally higher than the regulatory VFR minima.

## 2. FINDINGS

2.1 The pilot was qualified to make the VFR cross-country flight.

2.2 The pilot was not experienced, but had flown the route before.

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

2.4 The aircraft was properly loaded and fuelled for the flight.

2.5 The weather forecast was for generally suitable conditions for the flight, but included limited and non-specific information on areas of unsuitable conditions.

2.6 While en-route, the aircraft was flown from good weather conditions into an area of very low cloud and poor visibility.

2.7 The weather conditions were broadly as forecast.

2.8 The aircraft was not turned back in good time when the bad weather was encountered.

2.9 The aircraft was flown at very low level under low cloud for some minutes before a turn back was made.

2.10 After the turn the aircraft was flown mistakenly to the west coast of D'Urville Island.

2.11 The pilot had probably lost track of her position and become unable to navigate in the bad weather.

2.12 The aircraft was being climbed through cloud when it collided with high terrain.

### **3. REGULATORY**

3.1 Pursuant to Section 14(5) of the Transport Accident Investigation Commission Act 1990 the legal personal representatives of the pilot were invited to avail themselves of the opportunities afforded to them thereunder.

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

3.3 The representations made to the undersigned are not to be taken as an admission of liability on the part of the parties concerned and their statements are without prejudice to their right to act in any way they may consider fit in any proceedings or action which may be based on the events to which this report refers.

12 March 1992

M F DUNPHY  
Chief Commissioner