



# AIRCRAFT ACCIDENT REPORT

**No. 92-020**

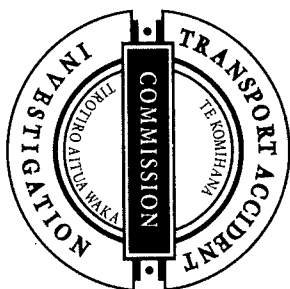
**ProTech PT2**

**ZK-PTS**

**Kaweka State Forest Park**

**20 November 1992**

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



TRANSPORT ACCIDENT INVESTIGATION COMMISSION

# ERRATUM SLIP

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Page 3, Location: Please amend latitude to 39°12'

# TRANSPORT ACCIDENT INVESTIGATION COMMISSION

## AIRCRAFT ACCIDENT REPORT No. 92-020

<b>Aircraft Type, Serial Number and Registration:</b>	ProTech PT2, AACA/1089-1, ZK-PTS
<b>Number and Type of Engines:</b>	One Rolls-Royce Continental O-200-A
<b>Year of Manufacture:</b>	1990
<b>Date and Time:</b>	20 November 1992, 1045 hours NZDT (approximately)
<b>Location:</b>	Kaweka State Forest Park Latitude: 38°12'S Longitude: 176°25'E
<b>Type of Flight:</b>	Private
<b>Persons on Board:</b>	Crew: 1 Passengers: 1
<b>Injuries:</b>	Crew: 1 Fatal Passengers: 1 Fatal
<b>Nature of Damage:</b>	Destroyed
<b>Pilot in Command's Licence:</b>	Private Pilot Licence (Aeroplane)
<b>Pilot in Command's Age:</b>	44
<b>Pilot in Command's Total</b>	335 hours
<b>Flying Experience:</b>	231 on type
<b>Information Sources:</b>	Transport Accident Investigation Commission field investigation
<b>Investigator in Charge:</b>	Mr Alister Buckingham

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

## 1. NARRATIVE

1.1 ZK-PTS was owned and operated by the pilot, and was on a private flight from Hastings to Ardmore via Hamilton. It was the pilot's intention to attend "Air Expo 92" at Auckland International Airport the following day.

1.2 The aircraft, in company with another of the same type, had departed Hastings Aerodrome shortly after 1000 hours. The pilots of both aircraft had obtained a weather and Notam briefing, and had filed a VFR (Visual Flight Rules) flight plan, intending to fly direct to Hamilton.

1.3 The weather on and to the east of the ranges between Hawkes Bay and Taupo was overcast with a variable base, with scattered rain showers. In the vicinity of Puketitiri, about 19 nautical miles north-west of Napier, the pilots of both aircraft encountered a large hole in the cloud layer, but found that their intended route via the Ripia Valley was obscured by a rain shower. After holding in the clear area for some minutes, the pilot of ZK-PTS declared his intention to climb above the cloud, while his colleague elected to continue circling, awaiting an improvement in the weather. After only a few minutes, the rain shower moved on, revealing a clear route through the Ripia Valley.

1.4 At 1038 hours, in response to a position request from Napier Tower, the pilot of ZK-PTS reported at 24 nm from Napier on the 283 radial (i.e. bearing 283° magnetic from Napier), at 5800 feet and climbing. No further transmissions were heard from the aircraft.

1.5 The aircraft accompanying ZK-PTS continued towards Hamilton via the Ripia Valley, beneath the cloud layer. To the west of the ranges, clear conditions were encountered. On arrival at Hamilton, the pilot learned that ZK-PTS was overdue, and that SAR (Search and Rescue) action had been initiated.

1.6 The pilot of a searching helicopter heard weak ELT (emergency locator transmitter) signals to the south-east of Taupo, but the signals faded early in the search. The helicopter pilot reported that he had climbed to 9000 feet to clear the cloud tops, and a report from the pilot of a light twin-engined aeroplane who flew over the area some 3 hours after the estimated time of the accident, indicated that he was "in and out" of the tops whilst cruising at 9000 feet. The latter also reported moderate icing in cloud.

1.7 As part of the SAR effort, the Air Traffic Control radar tapes at Auckland were replayed, and these showed a target to the north-west of Napier at a position and time corresponding to the pilot's report that he was climbing "on top". The target was an SSR (secondary surveillance radar) target, displaying unverified altitude information. ZK-PTS was equipped with a transponder and an altitude encoder. The target was observed to climb to a height of 6100 ft and almost immediately commence a spiral descent, disappearing from radar coverage as it descended through 5600 feet.

1.8 Later in the afternoon, the search helicopter located the wreckage of ZK-PTS on a ridge in the northern Kaweka Range at an elevation of approximately 2900 ft. Both occupants were found to have been fatally injured.

1.9 Examination of the accident site found that the aircraft had impacted at a steep descent angle, in a nose-down attitude while banked to the right. The aircraft had struck in a downhill direction on a 25° slope, and had ploughed a 16 m swath through the light manuka scrub cover, on a track of 290° magnetic. The steep descent angle, low forward speed and the attitude were consistent with the aircraft spinning to the right at the moment of impact.

1.10 There were indications of propeller rotation at impact. The engine was only lightly damaged and its operating capability was confirmed by a subsequent test run. Engine control positions as noted in the investigation were considered unreliable owing to impact damage. The carburettor air changeover valve was, however, determined to have been in the "cold" position at impact. Pre-accident integrity of the flight controls was established.

1.11 The wings had been dislocated from the fuselage during the accident sequence, rupturing the fuel hoses and allowing the contents of the four wing tanks to drain away. A noticeable smell of fuel was present during the site examination. A sample of fuel obtained from the firewall fuel strainer was uncontaminated.

1.12 The weather forecast obtained by the pilots of ZK-PTS and the accompanying aircraft indicated, for the Hawkes Bay area, a light south-easterly airflow over the area, with broken (i.e. 5/8 to 7/8 sky cover) stratocumulus cloud at 4000 feet, tops 6000; and areas of broken cumulus, base 2000, tops 9000, with some showers. The forecast freezing level was 5000 feet. The conditions encountered by both aircraft were generally consistent with the forecast conditions.

1.13 ZK-PTS was equipped with an attitude indicator and a turn and slip indicator, both of which were air-driven by suction from an externally-mounted venturi. As well as the transponder and altitude encoder, the aircraft was fitted with a GPS (Global Positioning System) satellite navigation receiver. The latter enabled the pilot to report his last position so precisely. This relatively comprehensive fit of flight and navigation instruments may well have influenced the pilot's decision to climb above the cloud layer. The aircraft was normally capable of doing so, and the length of the "over-the-top" phase would have been short (20 nm or less).

1.14 It is likely that, at some stage in the climb or the subsequent descent, the aircraft entered cloud. This could have occurred for a number of reasons, including the closing up of the gap through which the aircraft was climbing, or a reduction in climb performance due to carburettor icing. Entry into cloud above the freezing level was likely to result in airframe icing, including icing of the unheated pitot head and the venturi. The latter could lead to loss of airspeed and attitude indications, with the potential for loss of control if visual conditions were not regained quickly.

1.15 In addition to the possibility of loss of instrument indications, the pilot's instrument experience comprised only 5.7 hours, of which 3.9 hours was instrument flight time. Proficiency in instrument flight was unlikely to have been gained in so little time.

1.16 The pilot's decision to fly over top of the cloud could only have been reasonable if he was satisfied that he could:

- (a) glide clear of cloud to a suitable forced landing area in the event of engine failure; or
- (b) maintain control in the event of entering cloud inadvertently, or by necessity in the case of an engine failure.

The latter case would also require sufficient space beneath the cloud layer for a suitable forced landing area to be located.

1.17 With hilltops in the vicinity up to about 5600 feet, even if the aircraft was gliding from 10,000 feet the aircraft would only cover about 6 nm before being at risk of striking the ground, in the event of engine failure. Since the forecast was for broken stratocumulus at 4000 feet and areas of broken cumulus, base 2000 feet, the pilot could not have been satisfied that he could glide to a suitable forced landing area.

1.18 With less than 4 hours instrument flight experience, the pilot could not have been satisfied that he could maintain control in the event of entry into cloud, particularly considering the near-certainty that the gyroscopic flight instruments would lose power if the external venturi iced up.

1.19 In summary, the pilot appears to have lost control of the aircraft while attempting to climb through a hole in the cloud layer, and the aircraft entered a spin to the right, from which it was not recovered before it hit the ground.

## 2. FINDINGS

2.1 The pilot was appropriately licensed and rated for the VFR flight.

2.2 The aircraft was airworthy and appeared to be capable of normal operation up to the time of the accident.

2.3 The aircraft struck the ground while in a right-hand spin.

2.4 The reason for the aircraft's entry into the spin was probably pilot disorientation and loss of control following inadvertent entry into cloud.

2.5 Icing conditions would probably have been encountered if the cloud was entered above 5000 feet.

2.7 Icing of the pitot head or venturi, or both, could have deprived the pilot of critical instrument indications.

2.8 The pilot was not experienced in instrument flight.

15 April 1993

M F DUNPHY  
Chief Commissioner