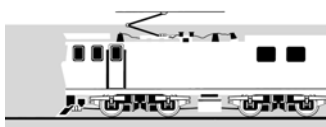
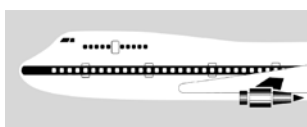


AVIATION OCCURRENCE REPORT

02-004

Cessna 210N Centurion ZK-TWA, collision with terrain, Conical Peak area 34 km southwest of Oamaru,

10 April 2002



The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Accordingly it is inappropriate that reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

The Commission may make recommendations to improve transport safety. The cost of implementing any recommendation must always be balanced against its benefits. Such analysis is a matter for the regulator and the industry.

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Report 02-004

Cessna 210N Centurion

ZK-TWA

collision with terrain

Conical Peak area 34 km southwest of Oamaru

10 April 2002

Abstract

On Wednesday 10 April 2002 at about 1435, Cessna 210N Centurion ZK-TWA departed from Dunedin bound for Masterton. The aircraft did not arrive at Masterton, but was not reported overdue until the next day. After a search the aircraft was found on the Friday morning near Conical Peak, 34 km southwest of Oamaru. The aircraft was destroyed and the pilot did not survive.

The aircraft had struck the side of a ridge in an upright attitude, having descended as it approached the ridge, due either to pilot inattention or incapacitation.

A safety issue identified was the late notification of the overdue aircraft because the pilot had not filed a flight plan or organised appropriate flight following. Frequent and recent publicity on the utility of organising adequate flight follow had been made available to all licensed pilots and, consequently, no new safety recommendations were proposed to address this issue.



**Cessna 210N Centurion ZK-TWA after the accident
(looking in direction of travel)**

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Abbreviations

ADF	automatic direction finder
amsl	above mean sea level
ATS	air traffic services
CAA	Civil Aviation Authority of New Zealand
ELT	emergency locator transmitter
GPS	global positioning system
IFR	instrument flight rules
km	kilometre(s)
kts	knots
m	metre(s)
MHz	megahertz
NDB	non-directional beacon
nm	nautical mile(s)
UTC	coordinated universal time
VFR	visual flight rules
VHF	very high frequency
VOR/DME	VHF omni-directional radio range/distance measuring equipment
VSI	vertical speed indicator

Data Summary

Aircraft registration:	ZK-TWA
Type and serial number:	Cessna 210N Centurion, 21063347
Number, type and serial number of engines:	one Teledyne Continental IO-520-L, 294804R
Year of manufacture:	1979
Operator:	Private
Date and time:	10 April 2002, 1451 ¹
Location:	Conical Peak area 34 km southwest of Oamaru latitude: 45° 16.51' south longitude: 170° 36.04' east
Type of flight:	private, ferry flight
Persons on board:	crew: 1 passengers: nil
Injuries:	crew: 1 fatal passengers: nil
Nature of damage:	aircraft destroyed
Pilot's licence:	Commercial Pilot Licence (Aeroplane)
Pilot's age:	60
Pilot's total flying experience:	3525 hours (2115 on type)
Investigator-in-charge:	I R M ^c Clelland

¹ Times in this report are New Zealand Standard Time (UTC + 12 hours) and are expressed in the 24-hour mode.

1. Factual Information

1.1 History of the flight

- 1.1.1 On Wednesday 10 April 2002 at about 1435, Cessna 210N Centurion ZK-TWA departed from Dunedin Aerodrome bound for Masterton Aerodrome, under a special flight permit. The pilot was the only person on board. The flight was expected to take some 3 hours, but the aircraft did not arrive at Masterton.
- 1.1.2 On 15 January 2002 the pilot flew ZK-TWA from Palmerston North to Dunedin, where he left it for maintenance work on the right wing, engine and horizontal stabilizer. An annual inspection was also to be completed. After the inspection and work on the engine and horizontal stabilizer was completed, the pilot planned to take the aircraft to Masterton for further work on the wing.
- 1.1.3 The pilot returned to Dunedin on Tuesday 9 April to prepare ZK-TWA for the flight north. After engine ground runs were completed, the pilot and an engineer who had worked on ZK-TWA, test flew the aircraft. Because of time restraints and the need to fully check the performance of newly installed engine components, a second test flight was planned for the next day.
- 1.1.4 On the morning of Wednesday 10 April the pilot obtained local weather reports, plus those for Timaru, Christchurch, Woodbourne and Wellington Aerodromes. Dunedin Aerodrome and the local area remained covered in low cloud for most of the day, preventing any flying during the morning. At about midday the pilot and a different engineer got airborne in ZK-TWA and completed the second test flight. The flight was flown in clear weather to the west of the aerodrome. During the flight the engine oil temperature was observed to be near the low end of the normal operating range. All other aspects of the flight were reported to be satisfactory. Returning to the aerodrome, the pilot flew an instrument approach for practice, breaking clear of the cloud at about 500 feet. The engineer later stated that he thought the approach was competently flown.
- 1.1.5 At the engineering company the aircraft was refuelled and the valve regulating the engine oil temperature was replaced. The removed valve was found to be sticking open, accounting for the low oil temperature readings. The pilot and engineer agreed that a third test flight was not warranted, rather the pilot would call the engineer while en-route to Masterton and inform him of the oil temperature reading. The pilot was instructed to use specific high power settings to help “bed-in” the newly installed engine components during the flight to Masterton.
- 1.1.6 At about 1430 the pilot called Dunedin Tower (Tower) and requested taxi instructions to “vacate to the north”. Tower cleared ZK-TWA to taxi for runway 03 and advised “wind presently 060° at 4 knots (kts), the QNH² 1028”. The Tower gave ZK-TWA an instrument flight rules (IFR) departure clearance as it taxied for take-off. The departure instructions were for ZK-TWA to leave Dunedin controlled airspace at 4000 feet or below, via the Swampy VOR/DME (very high frequency omni-directional radio range/distance measuring equipment) beacon.³ The pilot read back the clearance correctly.
- 1.1.7 At about 1435 ZK-TWA took off from runway 03 and tracked to the Swampy VOR/DME. At about 1440 the pilot reported at the Swampy VOR/DME, “maintaining 3000 feet on top”. Tower acknowledged the pilot’s call and requested him to advise when able to “cancel IFR and proceed VFR (visual flight rules) clear of the control zone”. The pilot acknowledged the request.

² An altimeter subscale setting to obtain height above mean sea level (amsl).

³ The Swampy VOR/DME was located 14 nautical miles north-east of Dunedin Aerodrome.

- 1.1.8 At 1442 the pilot reported “coming up 6 miles to the northeast of Swampy, 3000 feet and [can] carry on VFR now, thanks”.⁴ Tower replied and cancelled the IFR flight plan. Soon after, Tower requested that ZK-TWA report 20 nautical miles (nm) north of Swampy, or through 3500 feet. The pilot confirmed the request and advised that he would be maintaining 3000 feet.
- 1.1.9 At about 1449 the pilot reported 21 nm from Swampy. Tower acknowledged the call and farewelled the pilot. The pilot responded accordingly. This was the last transmission heard from ZK-TWA.
- 1.1.10 Several witnesses, including 2 inland from Palmerston township, reported seeing or hearing a light aircraft matching the description and time of ZK-TWA flying north from Swampy. They reported no unusual noises as the aircraft flew steadily northward.

1.2 Injuries to persons

- 1.2.1 The pilot received fatal injuries as a result of the accident.

1.3 Damage to aircraft

- 1.3.1 ZK-TWA was destroyed.

1.4 Personnel information

- 1.4.1 Pilot: aged 60 years
- Licence: Commercial Pilot Licence (Aeroplane)
- Aeroplane type ratings (current): Cessna 182 and 210, Beech 58, Consolidated Vultee PBV-5A
- Medical certificates: Class 1, valid to 19 September 2001
Class 2, valid to 28 March 2002
- Last annual instrument check: 12 June 2001
- Last biennial flight review: 12 May 2000
- Flying experience: 3525 hours total
2115 hours on type
- 1.4.2 Through his company the pilot was the owner of ZK-TWA, and first flew the aircraft in May 1979. The pilot also owned a twin engine Beech 58 Baron and he regularly flew both aircraft, which were based at Palmerston North or Fielding Aerodromes. For several years the pilot leased his aircraft to a local pilot training and charter company and occasionally flew air transport flights for it.
- 1.4.3 An enthusiastic aviator, the pilot had participated in several air races, and in 1995 started flying the PBV Catalina, a vintage World War II flying boat. The pilot was known to often fly ZK-TWA without filing a flight plan with air traffic services (ATS), but would inform relatives or others of his intentions.

⁴ For VFR operations in uncontrolled airspace, when flying at or below 3000 feet or 1000 feet above the terrain, whichever is the higher, pilots were required to remain clear of cloud, in sight of the surface and have a visibility of at least 5 km.

- 1.4.4 The pilot was current in instrument flying, reportedly last completing an IFR flight while returning from the ‘Warbirds over Wanaka’ airshow, about one week before the accident flight. An instrument rating examiner reported the pilot to have been competent and operated well in the “instrument environment”.

1.5 Aircraft information

- 1.5.1 ZK-TWA was a Cessna 210N Centurion, serial number 21063347, manufactured in April 1979. The aircraft was a 6-seat, high-wing aeroplane with retractable undercarriage, powered by a single Teledyne Continental IO-520-L8BR engine, driving a 3-bladed McCauley propeller. Cruise speed was typically about 165 kts.
- 1.5.2 The pilot imported the aircraft into New Zealand in about May 1979, and it was issued with a non-terminating Certificate of Airworthiness in the standard category.
- 1.5.3 On 11 January 2002 a scheduled 200-hour inspection was completed on the airframe, engine and propeller, by the regular maintainer of the aircraft. During the inspection the maintainer noted some deformation in the area of the right fuel tank. After closer inspection the maintainer completed the aircraft logbook entry for the aircraft as “not fit for release to service”. On 14 January 2002 the maintainer obtained, from the Civil Aviation Authority (CAA), a special flight permit to ferry the aircraft to Dunedin for repairs.
- 1.5.4 In Dunedin, work on the engine and horizontal stabilizer was completed and an Annual Review of Airworthiness performed on the aircraft on 9 April 2002. Because the pilot had sourced an alternative means of completing the repairs on the right wing, another special flight permit was requested for the ferry flight to Masterton. The CAA issued the second permit on 9 April 2002.
- 1.5.5 ZK-TWA had accrued about 2655 hours at the time of the accident and had some 45 hours to fly before the next scheduled inspection.
- 1.5.6 ZK-TWA was IFR capable and, in addition to standard flight instruments and navigation aids, was fitted with an autopilot and global positioning system (GPS) for navigation. The aircraft was not required to carry any flight recorders and no such equipment was fitted to the aircraft.

1.6 Meteorological information

- 1.6.1 A large anti-cyclone covered the country, with a weak occluded front to the north-east of North Island. Meteorological forecasts for Wednesday 10 April 2002 predicted areas of fog and low cloud in the morning, but otherwise mostly fine weather with light on-shore breezes along the east coast of South Island.
- 1.6.2 An amended meteorological forecast for Dunedin Aerodrome, issued at 1431 and valid for the time of the flight, was for a surface wind of variable direction at 3 kts, visibility reducing to 6000 m in drizzle, broken cloud at 800 feet, and a 2000 foot wind of variable direction at 5 kts. A special weather observation issued at 1501 reported the visibility as 10 km, a cloud base of 1100 feet, and conditions improving.
- 1.6.3 A hunter, located about 8 km to the north-west of the accident site, reported that during the early afternoon the sky was clear, “but with a band of coastal fog visible in the distant coastal areas around Palmerston and Hampden. There was almost no wind present in the area at the time...”. The hunter further commented that the fog bank then “travelled a considerable distance inland”, enveloping features as far west as about Conical Peak. Another pilot, who over-flew the general area about 5 minutes before the accident, made similar weather observations.
- 1.6.4 Several witnesses, located along the approximate route flown by ZK-TWA, reported they were able to see blue sky through the broken low cloud.

1.7 Aids to navigation

- 1.7.1 The Commission obtained a print-out of the ATS radar data for the time of the flight. The radar recordings showed that ZK-TWA over-flew Swampy VOR/DME at an altitude of 3100 feet above mean sea level (amsl).⁵ The recordings further indicated that ZK-TWA flew a steady track of about 345° magnetic from Swampy, maintaining 3100 feet. Ground speed was steady at 167 kts, until the last radar return was received at 1451:37, 32 nm (59 km) from Swampy.

1.8 Communications

- 1.8.1 ZK-TWA was fitted with a very high frequency (VHF) transceiver for normal air-to-air and air-to-ground communications. The Commission later analysed the recording of all VHF transmissions made between the pilot and Dunedin Tower.
- 1.8.2 The aircraft was fitted with a cellular telephone, which was linked to the pilot's personal cellular telephone, enabling him to receive calls made to either telephone. A record of telephone calls between 1400 and 1500 was obtained. The record included telephone numbers, the commencement time to the last whole minute of any connection, and the duration of any connection to the second.
- 1.8.3 The pilot received a telephone call at about the time ZK-TWA was taxiing for take-off. The call lasted for 2 minutes and 59 seconds. The caller reported that the pilot sounded in good spirits and communications were very clear. At some time during minute 1451, the pilot made a telephone call to the engineering company in Dunedin. The call lasted 13 seconds before being disconnected. No-one at the company remembered receiving the call. The company reported that it was common to receive telephone calls made from aircraft, some of which were unintelligible due to background noise. An unidentified and uncompleted call would, therefore, not have raised any concerns with company staff.
- 1.8.4 There were no reported emergency locator transmitter (ELT) signals from ZK-TWA.

1.9 Wreckage and impact information

- 1.9.1 The accident site was about 2 km east of Conical Peak, 34 km southwest of Oamaru, and about 59 km north of Swampy VOR/DME. ZK-TWA had struck the southern slope of a ridgeline that ran south-eastward from Conical Peak. The accident site elevation was about 2700 feet. Conical Peak has an elevation of 3100 feet.
- 1.9.2 ZK-TWA had struck the hillside some 100 feet below the ridgeline, on a heading between about 350° and 360° magnetic, upright and in about a wings-level attitude. The hillside sloped at an angle of between 30° and 35°. Ground marks and damage to the leading edges of both wings were consistent with the aircraft striking the ground in a slight to moderate nose-low attitude. Fragmentation of the aircraft indicated that it had struck the hillside at high speed: cruise speed or higher.
- 1.9.3 After striking the hillside the aircraft had slid up the slope for some 25 m, rotating to the left through about 90°, before coming to rest. The aircraft broke apart as it did so.
- 1.9.4 Two of the aircraft's 3 propeller blades were found at the initial impact point. They displayed evidence of rotational scoring and tip damage associated with high power.

⁵ A radar altitude transponder reading was permitted to be within about 150 feet of the aircraft's altimeter reading. A further ±100 feet could be included to obtain the aircraft's height above mean sea level.

- 1.9.5 All major components of the aircraft, with the exception of the engine, were accounted for in the area of the main wreckage. A trail of engine accessories, including the propeller hub, a magneto and generator, were found along a trail of engine oil that led directly up the slope and over the ridge. The engine was eventually found about 850 m from the aircraft, having clipped a rock outcrop near the crest of the ridge, and then bouncing down the northern side of the slope.
- 1.9.6 The aircraft flaps were in the retracted position, and the fuel filler caps for both wing tanks were in place. There was a strong smell of fuel present at the site.
- 1.9.7 Local area topographical and radio navigation charts, used for visual and instrument flying, were found open and near the main wreckage.
- 1.9.8 The engine control quadrant, comprising the throttle control, propeller control and mixture control, was found with the main wreckage. All 3 controls were in a position consistent with the application of nearly full power.
- 1.9.9 Several flight instruments were found about the main wreckage site. The following readings or settings could be identified: the automatic direction finder (ADF) was tuned to 202 or 302 – the Oamaru non-directional beacon (NDB) transmitted on 302 MHz, the 2 heading indicators were both “bugged”⁶ on 340°, the needles for the 2 altimeters had broken off, but the sub scales were set to 1025 and 1029⁷ millibars, the vertical speed indicator (VSI) needle was stuck at a 100 feet per minute rate of descent, and the turn indicator was stuck at rate “a half” to the right⁸.
- 1.9.10 The ELT, mounted in the rear of the fuselage, was found in the armed position. However, the ELT had been damaged during the accident sequence and the aerial attachment had separated. The level of damage would have prevented the transmission of an alerting signal.
- 1.9.11 No fire occurred.

1.10 Medical and pathological information

- 1.10.1 The pilot’s last aviation medical examination was on 14 February 2001. His medical certificate had expired 13 days before the accident. The pilot’s medical records contained nothing of note that would indicate any likelihood of sudden medical incapacitation. The medical doctor who completed the last examination expressed no undue concerns about the pilot’s health. Why the pilot had not renewed the certificate was not established.
- 1.10.2 The severity of the pilot’s injuries limited the post mortem examination. There was no evidence of any condition likely to cause pilot incapacitation. Toxicological tests revealed no evidence of anything that may have affected the pilot’s performance.
- 1.10.3 The extensive injuries prevented any conclusion being reached about whether the pilot was operating the controls normally at the time of impact. However, the nature of the injuries, when matched with the damage to the aircraft, indicated that the pilot was positioned in the pilot’s seat at the time of impact.

1.11 Survival aspects

- 1.11.1 On Thursday 11 April 2002 relatives and friends of the pilot had become concerned about the non-arrival of ZK-TWA at Masterton Aerodrome, and so contacted ATS staff to determine the location of the aircraft. ATS confirmed ZK-TWA had departed from Dunedin Aerodrome the

⁶ A small pointer that can be set to a specified reading to remind the pilot of the required heading to fly or track to follow.

⁷ A pilot will normally set the local area QNH reading to obtain the altitude of the aircraft amsl.

⁸ For an aircraft cruising at 150 kts, rate “a half” would be equivalent to turning at 1½° per second at an angle of bank of about 7°.

previous afternoon and no contact had been made with any other ATS unit along the presumed track to be flown. No VFR flight plan had been filed, or search and rescue time organised with ATS. At 1400 ATS advised the National Rescue Coordination Centre, and a search for ZK-TWA was commenced.

1.11.2 The Police, after obtaining radar information and contacting local search and rescue organisations, dispatched a helicopter from Dunedin to the Conical Peak area at about 1700. A second helicopter flew to nearby Herbert township, to provide assistance if required. The Conical Peak area remained covered in low cloud and, at about 1835, the search was called off owing to the weather conditions and fading light.

1.11.3 On Friday 12 April 2002 the search was resumed, and at 0735 the wreckage of ZK-TWA was located. The area was still partly covered in cloud, but the helicopter was able to land and offload Police, who confirmed the pilot had not survived.

1.11.4 The impact forces and degree of destruction of ZK-TWA rendered the accident unsurvivable.

1.12 Test and research

1.12.1 The engine was removed from the accident site for examination. It was identified as a Teledyne Continental Motors IO-520-L8, serial number 294804-R. The engine was manufactured in May 1997 and had accumulated some 472 hours at the time of the accident.

1.12.2 The engine displayed no evidence of pre-impact damage or failure. The break at the propeller shaft was indicative of the engine driving the propeller under power at the time of impact.

1.13 Other information

1.13.1 On 24 January 2002 a new flight planning system was introduced for VFR flights within New Zealand. The new planning system allowed for a simplified means of providing flight following at a reduced cost. The introduction of the new flight plan was accompanied by information about the benefits of filing VFR flight plans. This information was contained in several issues of the CAA's complimentary safety magazine, Vector, and was sent to all licensed pilots.

2. Analysis

2.1 The flight was a maintenance ferry flight from Dunedin Aerodrome to Masterton Aerodrome, in accordance with the special flight permit issued by CAA. There were no eyewitnesses to the accident. The analysis of the accident was, therefore, based on supporting information, including the known history of the flight, radar data, recorded communications, telephone records, site examination and the Commission's experience of accidents and incidents of this type.

2.2 Although the pilot may have been keen to depart from Dunedin, having stayed an extra day to complete the second test flight, there was no indication that he was rushed or acted inappropriately during either the preparation for his departure or the early stages of the flight.

2.3 From the weather reports and his observations during the second test flight, the pilot would have been aware of the improved weather conditions to the north of Dunedin. The use of an IFR departure procedure to get clear of the low level cloud around Dunedin Aerodrome was, therefore, a reasonable decision to make.

2.4 Once past Swampy VOR/DME, the pilot probably wished to remain clear of controlled airspace, by remaining below 3500 feet, and continuing north under VFR. This assumption is supported by the comments made by the pilot shortly after 1442, in which he advised Tower that he would carry on under VFR and remain at 3000 feet.

- 2.5 The pilot was experienced and current in instrument flying, so why he chose to cancel his IFR plan and continue on to Masterton under VFR, is unclear. The additional, minor cost of an IFR flight should not have been a consideration. The pilot may have wished to remain in uncontrolled airspace for the flight north, to ensure that he could fully focus on the performance of the engine and hold a steady, high power setting, at a lower altitude, in accordance with the instructions from the maintenance engineers.
- 2.6 The pilot's radio-telephone transmissions were clear and correct, indicating nothing untoward with either the aircraft or the pilot, as he vacated Dunedin Aerodrome and controlled airspace to the north.
- 2.7 The cellular telephone call made to the engineering company may have been an attempt to report the engine oil temperature reading, which could be assumed to have been satisfactory. If the reading was not satisfactory, it could be expected that the pilot would have either initiated a return to Dunedin, diverted right towards Oamaru Aerodrome, or informed ATS of a problem.
- 2.8 Why the pilot did not speak to anyone during his telephone call to the engineering company is unknown. The previous telephone conversation with the pilot was reported as being very clear and understandable, although the aircraft was on the ground at that time. The lack of conversation could indicate that the pilot was either distracted or unable to communicate for some reason after the call had been initiated. The cellular telephone was fitted to the aircraft and operated through the pilot's headset. He could, therefore, have communicated "hands free" after the call was connected.
- 2.9 Impact damage, ground marks and distribution of wreckage indicated that the aircraft struck the side of the hill in a wings-level and upright attitude, at cruise speed or higher. The engine control settings are consistent with this analysis, however, the controls could have moved as the aircraft struck the hillside and broke apart, and so their positions could not be relied on as evidence of pre-impact settings. The location of the wreckage and available radar information confirm that the aircraft had not altered heading after departing north from Swampy VOR/DME. Aircraft damage, ground marks and the stuck VSI indicator needle would indicate that the aircraft was in a slight to moderate descent when it struck the slope.
- 2.10 The distance from Swampy to the last radar return for ZK-TWA received at 1451:37, was some 59 km and took about 11 minutes to cover. The last radio transmission, occurring about 20 km south of the accident site, was completed about 2 minutes before impact. The accident site was close to the position of the last radar return.
- 2.11 In comparing the elevation of the accident site and radar altitude information as ZK-TWA flew north from Swampy, and allowing for radar and aircraft instrument tolerances, the aircraft must have descended between about 200 and 600 feet as it approached the ridgeline. By comparing the location of the accident site, the recorded ground speed of ZK-TWA, and the time and location of the last positive radar return, the descent from 3100 feet would have taken less than 10 seconds. The approximate time of the impact probably coincided with the ending of the cellular telephone call to the engineering company.
- 2.12 Conical Peak, and some of the ridgeline 2 km west of the track flown by ZK-TWA, would have been visible above the cloud. Also, the coastline and terrain north of Oamaru should have been visible. The rising terrain to the south of the ridge, and possibly the ridgeline above the accident site, would have been covered in low cloud as the pilot approached the area. The pilot, nevertheless, should have been aware of the terrain around him. The open topographical map found at the accident site would indicate that he was monitoring, or attempting to monitor, his progress.

- 2.13 Witness reports identified nothing unusual as ZK-TWA flew steadily northward. The condition of the engine, the damage to the propeller blades and hub, and the speed of the impact showed that the aircraft was under power at the time of impact. Had the aircraft suffered some sort of power loss, it would be expected that the pilot would have reduced airspeed towards the best gliding speed, turned away from the rising terrain, and possibly transmitted some form of distress call using either the radio or cellular telephone. The impact angle, damage sustained, and lack of radio transmissions would also indicate that a power loss did not occur.
- 2.14 The steady heading and altitude after crossing Swampy VOR/DME would indicate that the aircraft was trimmed and possibly being flown on autopilot. The Commission was not aware of any previous incidents where the use of the cellular telephone on board ZK-TWA, had affected the operation of the autopilot. The cellular telephone was recorded as being correctly installed a number of years beforehand, and the pilot would probably have made numerous calls while the autopilot was connected. Nevertheless, if there had been a sudden failure of the altitude hold function of the autopilot as the aircraft approached the ridgeline at 3100 feet, the pilot should have had sufficient time to disconnect the autopilot and remain clear of the terrain. Therefore, the possibility of autopilot failure causing the accident was considered unlikely.
- 2.15 The possibility that the pilot may have dived down to fly underneath the cloud was considered unlikely. The pilot was operating in clear air and should have been able to see well ahead to the north. Further, the pilot was aware, from his departure out of Dunedin, that the cloud would have probably covered the hilly terrain along his flight path north. Also, the pilot was probably holding a steady power setting and would have been unlikely to place himself in a position where he may have needed to vary his power to help manoeuvre around low cloud and terrain.
- 2.16 Two possible scenarios remained. ZK-TWA entered a descent as a result of the pilot becoming either distracted or incapacitated. While there was no medical evidence, either in the pilot's records or the post mortem, to support the theory of incapacitation, the possibility could not be excluded. Incapacitation, with the pilot pushing forward on the flying controls shortly before impact, would account for the unexplained loss in aircraft height as it approached the ridgeline, and the absence of any recognised communications on the cellular telephone.
- 2.17 Alternatively, the pilot may have been distracted as he initiated the cellular telephone call, for example, dropping the topographical map or attempting to read the oil temperature gauge. The pilot, unaware of the proximity of the terrain below the cloud, did not detect the aircraft entering a descent.

Survivability

- 2.18 The accident was not survivable. However, had it been survivable, any potential rescue was unnecessarily delayed by the lack of any flight following. This, in turn, delayed the initiation of any search. Why the pilot did not file a flight plan with ATS was not determined. The small cost of filing a VFR flight plan, either before take-off or while airborne, was unlikely to have been a factor. However, the pilot was known to occasionally fly without filing a flight plan or organising backup should an accident occur. This practice may have become a habit, perhaps combined with a belief that a serious accident would never occur.
- 2.19 A flight plan, or a request for an ATS initiated search and rescue time, does not need to be filed for VFR flights planning to operate without ATS support⁹. However, other options are available to pilots. A pilot could organise regular progress calls with a suitable person, or agree on a time to initiate search action should they fail to check-in after landing at the destination. The reporting of the route to be flown would also assist in any subsequent search.

⁹ Except for flights proceeding more than 10 nm from land or single-engined, non-radio equipped aircraft crossing Cook Strait.

3. Findings

Findings are listed in order of development and not in order of priority.

- 3.1 The pilot held a commercial pilot's licence, but his medical certificate had expired.
- 3.2 The aircraft, flying under a special flight permit, was airworthy at the time of the accident.
- 3.3 The pilot was conscious and the aircraft in stable flight, possibly as little as 15 seconds before the aircraft struck the hillside.
- 3.4 The aircraft was operating under nearly full power when it collided with terrain.
- 3.5 The descent from level flight was sudden and rapid.
- 3.6 The reason for the descent and subsequent accident could not be determined.
- 3.7 The locating of the accident site was delayed by the lack of appropriate flight follow. This did not, however, affect the survivability of the accident.

Approved for publication 02 October 2002

Hon. W P Jeffries
Chief Commissioner



**Recent Aviation Occurrence Reports published by
the Transport Accident Investigation Commission**

- 00-014** Piper PA23 Aztec, ZK-DIR, nose undercarriage collapse after landing, Gisborne Aerodrome, 14 December 2000
- 00-015** Piper PA28-140, ZK-CIK, loss of control and impact with terrain, Amuri Range, near Hamner Springs, 19 December 2000
- 01-002** Fairchild SA227-AC Metro III, ZK-RCA, bird strike and loss of both engines, Tauranga Aerodrome, 9 March 2001
- 01-003** Hughes 369D ZK-HMN, in-flight engine flameout, 12.5km northwest of Milford Sound, 23 March 2001
- 01-005** Bell UH-1H Iroquois ZK-HJH, tail rotor failure and in-flight break-up, Taumarunui, 4 June 2001
- 01-007** P-68B Partenavia ZK-DMA, double engine power loss, North Shore Aerodrome, 20 July 2001
- 95-008** Addendum to Report 95-008, Piper PA 28-161, ZK-MBI, missing after departing from Gisborne, 21 May 1995
- 01-004** B767-300 ZK-NCH, in-flight loss of flap component, Auckland, 19 May 2001
- 01-009** Bell 206B Jetranger, ZK-HWI, perceived engine power loss and heavy landing after takeoff, Mt Pisa Station, Cromwell, 11 September 2001
- 01-010** Embraer EMB-820C Chieftain ZK-RDT, door open in flight, near Auckland, 31 October 2001
- 01-011** Cessna A185E Skywagon, ZK-JGI, forced landing following power loss after take-off, near Motueka, 29 November 2001
- 02-001** Cessna 207, ZK-SEV, collision with terrain, Gertrude Saddle area 11 km southeast of Milford Sound, 19 January 2002
- 01-012** Robinson R44 Astro, ZK-HTK, collision with terrain, Urewera National Park, 3 December 2001
- 02-002** Piper PA34-200T Seneca SK-SFC, undercarriage failure and subsequent wheels-up landing, Gisborne and Hastings Aerodromes, 25 January 2002

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