



**AIRCRAFT ACCIDENT REPORT  
OCCURRENCE NUMBER 98/247  
CESSNA 172I SKYHAWK  
ZK-CXD  
13 NM WNW FROM TAKAKA  
11 FEBRUARY 1998**

## AIRCRAFT ACCIDENT REPORT

**Occurrence Number:** 98 / 247

**Aircraft - Make and model:** Cessna 172I Skyhawk  
**Serial Number:** 17256521  
**Registration:** ZK-CXD  
**Year of manufacture:** 1968

**Engines - Make and model:** Lycoming O-320-E2D  
**Number:** One

**Date and time\* of accident:** 11 February 1998 2040 hours approx.

**Location - Name:** 13 nm WNW from Takaka  
Latitude: 40 degrees 42 minutes South  
Longitude: 172 degrees 31 minutes East

**Type of Flight:** Private - other

**Persons on Board:** Crew: One  
Passengers: Nil

**Injuries:** Crew: One fatal  
Passengers: Not applicable

**Nature of Damage:** Aircraft destroyed by impact forces and subsequent fire; bush land burnt

**Pilot-in-Command's Licence** Private Pilot Licence (Aeroplane)

**Pilot-in-Command's Age** 50

**Pilot-in-Command's Total Flying Experience:** 1700 (estimated from past records)

**Information Sources:** On site investigation; NZ Police

**Investigator in Charge:** Harvey R Ritchie

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

## Synopsis

The Civil Aviation Authority (CAA) was notified of this accident by the New Zealand Police, Motueka, on the night of 11 February 1998. The Transport Accident Investigation Commission (TAIC) was advised of the accident by the CAA but decided not to investigate. Mr Harvey R Ritchie, Safety Investigator Flight Operations of the CAA Safety Investigation Unit (SIU) was appointed Investigator-in-Charge (IIC) assisted by Mr Steven Walker, Safety Investigator Airworthiness. The investigators proceeded to Motueka on 12 February to commence the investigation. This included inspecting the accident site and examining the aircraft wreckage (accessible only by helicopter), and obtaining photographic and other records. Subsequently, further reports and information were obtained from various sources.

The pilot was apparently going to fly his aircraft to Karamea from his farm airstrip at Puponga to collect two friends who had completed tramping the Heaphy Track. It was uncertain whether the return flight was to be made to the property or to another airstrip in the Bainham area.

About 40 minutes before the accident, the aircraft was seen to take-off from the airstrip then land again. After a few minutes, it took off again and headed towards the south-west. Several witnesses saw the aircraft heading along the normal track towards Karamea.

A short while later, there was an explosion or fireball seen in the hills to the south-east of Paturau River and a subsequent search by helicopter confirmed that the aircraft had impacted a rocky bluff and burned. It was subsequently established that only the pilot was on board and that he had been killed in the accident.

## **Factual Information**

### **History of the flight**

The deceased pilot leased a farm property at the Puponga (south-west) end of Farewell Spit. There was an airstrip on the property and the pilot farmed and lived at the property, as well as keeping his Cessna 172 aircraft, ZK-CXD, there. He was also involved in running the Information Centre at Farewell Spit.

It was reported that, at some time prior to the day of the accident, arrangements had been made with the pilot by telephone that he would fly to Karamea and collect two friends after they had completed tramping the Heaphy Track. It was unclear from the evidence obtained as to where he expected to drop them but various references included Puponga, Bainham and Rockville / Kaituna.

The pilot had apparently asked these friends to write to him with the details. This was done but he had lost the letter. On the day of the accident, he had indicated to a number of people some confusion about the actual pick up date. Several witnesses reported that the pilot had been expecting a telephone call from the intended passengers but there was no evidence that he had received such a call.

At about 1400 hours on the afternoon of 11 February, the pilot had visited a neighbour and asked him to help him destroy a deer which had been causing some problems. After this was completed, the pilot had invited the neighbour and two other persons to have some beer at his farm but he did not drink any because he was going to fly to Karamea. These persons left the farm about 1630-1700 hours.

During the day, the pilot and an employee had worked around the farm. In discussion, the employee had confirmed that the pilot was going to fly to Karamea that evening and was expecting to land at Kaituna on the return flight, to drop off his passengers. The employee had left the farm about 1630 hours.

At about 1800 hours, a commercial pilot who flew for a local operator arrived at the farm, looking for a location to fly his model glider. He spoke for about five minutes to the owner of the Cessna who asked if the commercial pilot would like to fly to Karamea and collect the two passengers. This offer was declined. They also discussed returning the passengers to Bainham. Some twenty minutes later, the commercial pilot saw the aircraft being made ready for the flight. At about 1830 hours, as the commercial pilot drove past the farm on his way home, he saw the other pilot on the telephone.

About this time, the pilot went to the Information Centre to check about any telephone calls from the people that he was expecting to collect from Karamea. A person from the Centre went back to the farm with the pilot, had a cup of tea and left there just after 1900 hours. At about the same time, another person visited the pilot at the farm and left him about 1950 hours.

At about 1900 hours, a business person had telephoned the pilot and, during their conversation, the pilot had indicated that he was unsure if he was supposed to collect his friends from Karamea on that day or the next. At the time, he was still waiting for a telephone call from them.

Information provided by several witnesses indicated that it was most likely that the accident flight originated from Puponga. The aircraft was seen to take off from the property at about 2000 hours and return a few minutes later for a landing. After a further few minutes on the ground, it took off again and headed towards the south-west. No witnesses were located with whom the pilot made contact during this time on the ground between landing and the second take-off.

At about 1900 hours, after having a meal at his home, the pilot's employee had gone fishing at Muddy Creek on the Whanganui Inlet. At about 2020 hours, the employee had seen the Cessna flying in a southerly direction, along the western side of the Burnett Range. He had checked with his binoculars and confirmed that the aircraft was ZK-CXD, which had distinctive, drooped wing tips. When the aircraft was to the south of him, he saw it turn to the left as if heading towards Kaituna.

A witness who lived near Managarakau heard and then saw a light aircraft fly overhead at about 2030 hours. He reported that it was on the normal track towards Karamea. About 10 minutes later he looked towards the hills and saw a plume of smoke. Another witness closer to the Paturau River area saw an explosion or fireball followed by a fire in the hills to the east. These witnesses reported their sightings to the Police at Motueka.

A search and rescue (SAR) helicopter was despatched to the accident area and confirmed that an aircraft had crashed. At first it was thought that there were three persons on board but the SAR team established that there was only the pilot.

The accident site was approximately mid-way between Paturau River and Rockville but to the south of the direct track. There were river valleys at each end of this track, the Paturau and Kaituna Rivers, that formed a natural crossing of the high ground in between. The impact point was a rocky bluff on the eastern side of the valley system that led down to the mouth of the Paturau River.

Two other witnesses reported seeing the aircraft land at Ferry Point airstrip near Collingwood at about 2030 hours, drop off some people, then take-off and head towards Takaka.

No persons were found subsequent to the accident who had been expecting the pilot to collect them from Karamea or any other location.

## Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Others</i>
Fatal	1	0	0
Serious	0	0	0
Minor/None	0	0	

## Damage to aircraft

The aircraft was destroyed by impact forces and subsequent fire.

## Other damage

Bush land around the wreckage was burnt in the post-impact fire.

## Personnel information

The deceased pilot was 50 years of age and held an active Private Pilot Licence (Aeroplane), first issued on 14 August 1980, with a Flight Radio Telephone Operator rating. This was the highest level of licence and the only rating ever held by the pilot. He also had a current Class 2 medical certificate, valid until 12 December 1998, with an endorsement requiring half spectacles to be readily available.

At his last medical renewal on 5 December 1996, the pilot claimed 1480 total flying hours, with 36 hours in the previous six months.

On 6 July 1994, the pilot was issued with a lifetime pilot licence. At the same time, he was issued with a log book endorsement form which included the following limitation, "Restricted to student pilot licence privileges by night".

It was reported that the pilot usually carried his personal log book and other documents with him on the aircraft. These documents were not found after the accident and were probably destroyed in the post-impact fire.

Several witnesses reported that, on the day of the accident, the pilot was in good spirits, perhaps a little tired and certainly a little confused about the intended flight. However, none of these factors were considered by them to be anything extraordinary.

## **Aircraft information**

The aircraft was manufactured in 1968 and was imported into New Zealand as a new aircraft. It was first registered in New Zealand in August 1968, as ZK-CXD.

The aircraft apparently first passed into the ownership of the deceased pilot, representing the "CXD Syndicate", in February 1992. At about this time the aircraft was being operated by Golden Bay Aviation Ltd based at Nelson, a company of which the deceased pilot was the Chief Executive. The company held approvals as an air service and aerial work operator but these certificates expired on 20 October 1996.

The aircraft registration was transferred in July 1993 to another company that had no obvious links with this pilot or his associated activities.

The deceased pilot had owned the aircraft, registered in his own name, since May 1994.

In March 1995, the aircraft underwent an inspection for the renewal of its Certificate of Airworthiness. The application for renewal included a reference that the aircraft would subsequently be used in air transport operations.

It was reported that the pilot routinely carried the aircraft log books and other documents on board the aircraft. These were not found following the accident and, if they were on board the aircraft, were probably destroyed in the post-impact fire. Some older log books were obtained from a maintenance organisation which had worked on the aircraft but the last entries were made in mid-1997.

## **Meteorological information**

Various witnesses reported that conditions on the evening of the accident were generally good for flying. There was some light cloud out to sea but clear inland; the wind was light and variable with little, if any, turbulence; cloud was building up to the south of Bainham and it became dark at about 2100 hours.

## **Aids to navigation**

Because of the aircraft damage sustained in the accident and the unavailability of any current maintenance documentation, it was not possible to determine what navigation aids were fitted to the aircraft and of those fitted, which were serviceable and may have been in use at the time of the accident. It was determined that the pilot owned a Global Positioning System (GPS) receiver but it was not determined if it was on board the aircraft and, if so, whether it was in use at the time of the accident.

It was established that the pilot also owned and carried a mobile telephone, which he was known to use in the aircraft. No records were available to indicate if any calls were made to or from the pilot's mobile telephone during the accident flight.

The pilot was reputed to have had good knowledge of the local terrain as he had done a lot of flying in the area. The track along which the aircraft was flying at the time of impact apparently was regularly used by local pilots to cross the mountain range under certain weather conditions when other crossing points were less suitable.

### **Communications**

There was no evidence discovered that the pilot had been in communication with any other airborne or ground stations. Another pilot reported hearing a radio call from an aircraft on the area frequency at about 2040 hours but he did not hear the identity of the other aircraft. There was no recording available of that frequency.

### **Aerodrome information**

The aircraft had taken off from the owner's farm at Puponga. The strip there had been equipped with a battery-powered strobe light that, when switched on, illuminated automatically at dark. On the day following the accident, a witness who had helped install the light observed that it was operating and removed it from the strip.

There was no entry found in the Karamea aerodrome book to indicate that the aircraft had landed there on the day of the accident.

No other information was received which indicated that the aircraft had made any previous flights during the day or that it had landed at any aerodrome other than the owner's home strip, shortly before the accident flight began.

### **Wreckage and impact information**

The aircraft had impacted at the top of the north-western face of a near vertical, rocky bluff. The top of the bluff was approximately 1000 feet above sea level. On top of the bluff there were many small pieces of unburnt wreckage, which included broken windscreen perspex, broken red glass from the anti-collision light and broken clear glass from the wing-mounted landing light. As well, there were some small pieces of metal from various places on the upper part of the aircraft and many shards of white paint from the wing surfaces.

After impact with the top of the bluff, the wreckage had fallen vertically about 20-30 metres, to its final resting place. All the aircraft structure was located in the immediate vicinity of the impact point and final resting place. The aircraft had impacted with considerable force and the wings were crumpled chord-wise virtually across the full span. Vertical inspection of the wreckage from the top of the bluff showed matching impact distortion consistent with the shape of the bluff top.

The engine and propeller had been broken and grossly distorted by impact then melted in the fire. A section of one propeller blade, 270 mm long, was found a short distance from the main wreckage and had not been as severely affected by fire as the main part of the blade. The other end of the propeller had been melted in the main fire.



The forward section of the aircraft back to and including the cabin was grossly disrupted and crushed by the impact. This area was then consumed by an intense fire. The fire affected the greater majority of the aircraft leaving only an area of the rear fuselage and tail assembly less burnt than the remainder.

### **Medical and pathological information**

Post mortem examination did not reveal any pre-existing conditions that may have contributed to the cause of the accident.

### **Fire**

On impact, an intense fire erupted. This was described by witnesses as an explosion or fireball, which resulted in a mushroom-shaped pall of dark smoke. The surrounding bushland caught fire but this did not spread far beyond the immediate vicinity of the wreckage. The fire was of such intensity that most of the cockpit structure was completely consumed.

### **Survival aspects**

The impact forces and post-impact fire made this a non-survivable accident.

### **Organisational and management information**

Nil factors established

### **Additional information**

It was noted during the investigation that, when approaching the bluff which the aircraft had impacted on the south-east bound track, the outline of the distant ridge was similar to the outline of the impacted bluff.

### **Useful or effective investigating techniques**

Nil

\*\*\*\*\*

## Analysis

**History of the Flight.** From various reports obtained during the investigation, the deceased pilot apparently initiated the accident flight with the intention of flying to Karamea. The pilot had previously indicated that the purpose of the flight was to collect two persons, reported to be friends of his, who were going to tramp the Heaphy Track. The pilot had indicated uncertainty about when the pick up was due to be made. However, since the accident, which has been widely publicised, no persons have come forward to indicate they were the intended passengers.

There was further uncertainty from the evidence obtained as to where the pilot would have landed on the return flight. Various places were mentioned but no conclusive evidence was established.

No reason was established for the landing and second take-off made at the farm strip.

There is considerable uncertainty as to the movements of the aircraft after the second take-off from the farm. From the telephone records of one of the eye witnesses to the take-offs, the time of the second take-off was fairly accurately determined as within a few minutes after 2000 hours. After take-off, the aircraft was seen heading towards the south-west – this would be the normal way for the pilot to fly to Karamea. However, his employee who watched the aircraft fly past where he was fishing reported the time of sighting as about 2020 hours. His location was only about 6-7 nautical miles (nm) and about five minutes flying time from the farm.

The witness near Managarakau who reported the aircraft flying at about 2030 hours and subsequently saw the fire was only about 10 minutes flying time from the farm. The impact site was only about 3-4 minutes flying time away from the location of this witness.

The expected flight time from Puponga to Karamea, a distance of about 60 nm, would have been about 40 minutes flying time at normal cruise speed, in the light wind conditions pertaining. From Karamea back to Paturau River and then to the accident site was another 45 nm or 30 minutes flying time.

From Puponga to Paturau River to the accident site, was only about 20 nm or 15 minutes.

It is possible that, after passing Paturau River, the pilot proceeded some distance towards Karamea then turned around and headed back over the ranges towards Rockville / Bainham, along the Paturau / Kaituna river valleys.

Regarding the reported sighting on the aircraft at the Ferry Point airstrip, the lack of other witnesses and other evidence, particularly the reported timing, suggests that this was probably a different aircraft.

No positive conclusion could be reached as to the flight path of the aircraft from leaving the owner's property until it impacted at the accident site.

**Personnel information.** From CAA medical category renewal records, it was estimated that the pilot had about 1700 hours flying experience, mostly on this type of aircraft. Apparently, he had a good knowledge of the area. He was reported to be in good spirits on the day of the accident and was not considered to be the sort of person who may take some precipitous action to solve any problems he may have been facing, in his personal or business life. The fact that the aircraft would have missed the bluff with only a few metres more height would suggest that the impact was not an intentional action.

When his lifetime licence was issued in 1994, the pilot was not approved to conduct night flying except as a student pilot for training. Any change to this restriction would have only been recorded in his personal log book. Without access to the log book, it was not possible to determine if this restriction had been removed.

Unless approved for night flying, a pilot should plan to complete flying at or before the end of evening civil twilight (ECT). On the day of the accident, ECT was about 2110 hours or about 30 minutes after the accident occurred. Obviously this flight could have ended before ECT depending on where the pilot was heading for a landing. However, it was unlikely that the proposed flight from Puponga to Karamea and return, either to Puponga or Bainham, could have been completed before the end of ECT.

**Aircraft information.** In the absence of any current maintenance records and the degree of damaged suffered in the accident, it was not possible to determine the aircraft's legal or actual airworthiness status. However, from the assessed aircraft attitude and speed at impact it is concluded that the impact was not the result of any mechanical malfunction or defect. The aircraft was apparently flying in a normal attitude, at a reasonable speed, with plenty of power available.

**Meteorological information.** The weather conditions did not appear to be a factor in the accident itself although developing cloud south of Paturau River and the onset of night time may have caused the pilot to cancel the flight to Karamea and turn around. No positive conclusion could be reached in respect of this possibility.

**Aids to navigation.** The closest ground based radio navigation aids were at Nelson, about 45 nautical miles from the accident site. Given the location and altitude of the aircraft at impact, it is unlikely that the pilot was using or relying upon any such ground based radio aids. He may have been using his GPS but with his local knowledge, this would seem unnecessary and unlikely.

**Aerodrome information.** The dimensions and condition of the departure aerodrome were not factors in the accident.

The investigation failed to positively determine the planned destination aerodrome associated with the accident flight.

**Wreckage and impact information.** Examination of the wreckage and the site suggested that the aircraft had impacted in a near wings-level, nose-level attitude. It was concluded from the degree of damage to the aircraft and the condition of the wreckage that the aircraft had impacted the bluff at or near cruise speed with the engine developing a lot of power, probably around the normal cruise setting.

If the aircraft had been about five metres higher or 20 metres to the right, it would have missed the bluff.

**Fire.** The probable cause of the fire was the rupturing of the wing fuel tank on impact and the ignition of the fuel from one or more of the sources that would have been available, eg, electrical sparks. On impact, there would have been an almost instantaneous release of all the fuel in the tanks, which would have fallen towards the ground until ignition occurred. This would explain the apparent explosion or fireball seen by at least one eye witness.

**Cause of the accident.** The reason for the aircraft being in the area of the accident at the time and altitude it was flying was not determined. However, the aircraft was apparently flying normally. It is believed that the impact was not due to any deliberate action on the part of the pilot.

It is possible that, given the lateness of the day with fading light and reducing visibility, the pilot may not have seen the rocky bluff because it blended into the background terrain. Alternately, if the pilot was aware of the bluff, he may have misjudged his height and believed that he was above it.

No positive conclusions have been reached as to why the accident occurred.

\*\*\*\*\*

## **Conclusions**

### **Findings and causal factors**

The cause of the accident was not determined.

## **Safety Recommendations**

Nil

## **Appendices**

Nil



Richard White

Acting Assistant Director Safety Investigation and Analysis

6 July 1998