Australian Government
Australian Transport Safety Bureau

Collision with terrain involving Cessna 172S, VH-CPQ

1.9 NM west of Camden Airport, NSW on 24 January 2024

ATSB Transport Safety Report
Aviation Occurrence Investigation
AO-2024-002
Preliminary – 13 March 2024

Cover photo: Gavan Louis, modified by the ATSB

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Addendum

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Preliminary report

This preliminary report details factual information established in the investigation's early evidence collection phase, and has been prepared to provide timely information to the industry and public. Preliminary reports contain no analysis or findings, which will be detailed in the investigation's final report. The information contained in this preliminary report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

The occurrence

On the afternoon of 24 January 2024, a Cessna 172S, registered VH-CPQ, was being used for pilot training by AltoCap Flight School at Camden Airport, New South Wales.

At 1300 local time the student pilot commenced a lesson with an instructor from the flight school. The instructor conducted a briefing with the student outlining the plan for the lesson. This included outlining the 4 types of landing approaches that would be completed: normal, flapless, glide, and missed approaches.[1] If competent, the student would complete their first solo flight (for that aircraft type).[2]

Before the flights, the instructor obtained the weather and the automatic terminal information service (ATIS)[3] data and asked the student to interpret the weather that would be encountered during flight.[4] The instructor then completed a checklist and risk assessment relating to student solos, which indicated an acceptable risk score, in anticipation that the student would be ready for a solo flight after the flights with the instructor on board.

At approximately 1400, the instructor and student completed a pre-flight inspection of the aircraft and began the lesson.

At 1420 the aircraft was taxied to the run-up bay, where pre-flight checklists and a safety briefing were conducted. At 1431, the student commenced circuits with the instructor on board, completing the normal, flapless, glide and missed approaches as briefed. The student requested to complete a fifth approach as the student was, according to the instructor, 'not happy' with their original attempt of the flapless approach.

Recorded automatic dependent surveillance–broadcast (ADS-B) data and secondary surveillance radar data was not available for these flights due to the aircraft's transponder setting.[5] According to the instructor, the student had not set the transponder to ALT mode prior to the first circuit, which the flight school teaches students to do before beginning lessons, and this was noticed by the instructor prior to the first circuit. After noting the transponder had not been placed in ALT mode, the instructor did not turn on ALT mode and had intended to use it as a discussion point after the pilot's solo flight.

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1 Flapless approach: Landing approach without deploying flaps to simulate a flap failure.
Glide approach: The controlled descent toward a landing area without engine power to simulate engine failure on landing.
Missed approach: A manoeuvre that involves an aircraft discontinuing its approach to the runway when landing.

2 When a student pilot flies an aircraft alone for the first time without an instructor on board. Consists of a single take-off, circuit and a full stop landing.

3 Automatic terminal information service: An automated service that provides current aerodrome information to departing and arriving aircraft.

4 The terminal area forecast wind was from the NNE at 6 kt.

5 In ALT (altitude) or ON mode, a transponder responds to secondary surveillance radar interrogations and broadcasts ADS-B signals. In OFF and STBY (standby) modes no signals are transmitted.

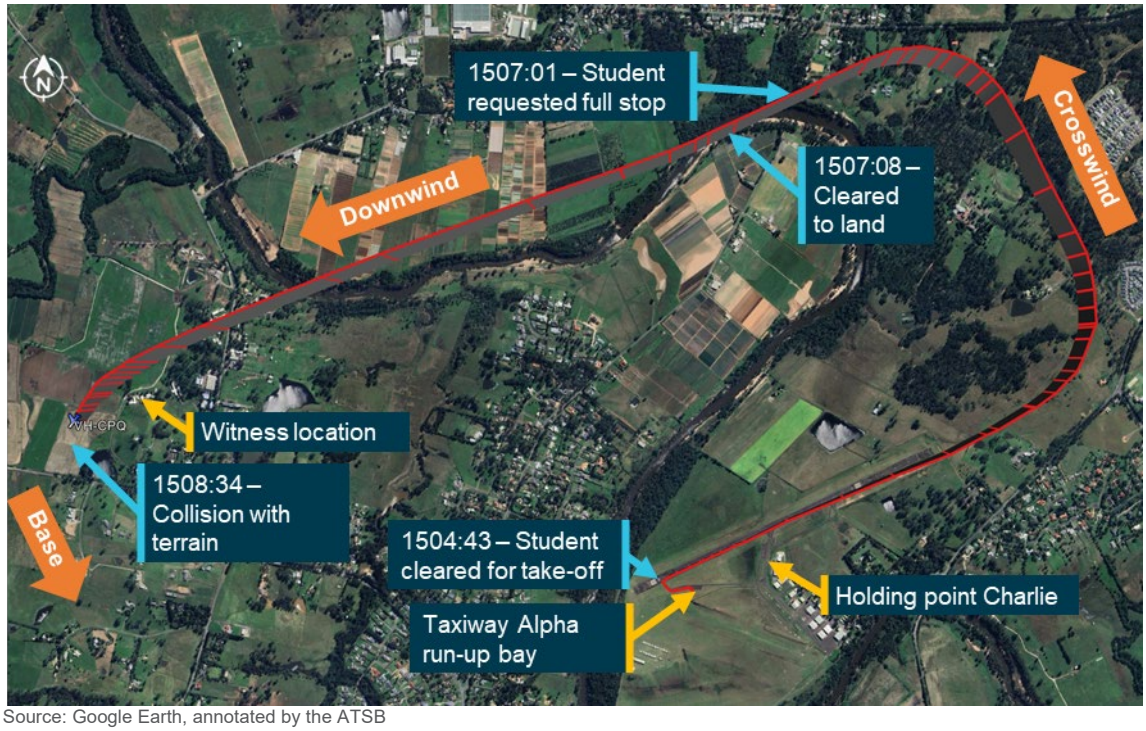
Determining that the student was competent to complete the first solo, the instructor contacted the air traffic control tower stating they would complete ‘a full stop and taxi for a student first solo’ at 1456:50 and this was acknowledged by the controller.

The student landed the aircraft and taxied clear of the runway to the run-up bay just prior to holding point Alpha. The instructor selected the ALT mode on the transponder to allow the instructor to view the flightpath of the aircraft and then exited the aircraft. The instructor informed the student they should complete the take-off checklist again and do everything required to feel comfortable to go solo.

At 1503:41 the student contacted the tower, requesting to taxi to holding point Alpha for runway 06. This was cleared by the tower and the pilot taxied to holding point Alpha. At 1504:39 the student was cleared for take-off.

The instructor recalled watching the student take off, turn onto the crosswind leg of the circuit and then onto the downwind leg (Figure 1). The instructor walked towards holding point Charlie which was the preferred viewpoint for the entire circuit. The student made a radio call stating ‘Charlie Papa Quebec downwind full stop’ and the instructor recalled hearing this before losing sight of the aircraft behind an obstruction. The controller issued the student pilot clearance to land 7 seconds later.

Figure 1: Flight path overview

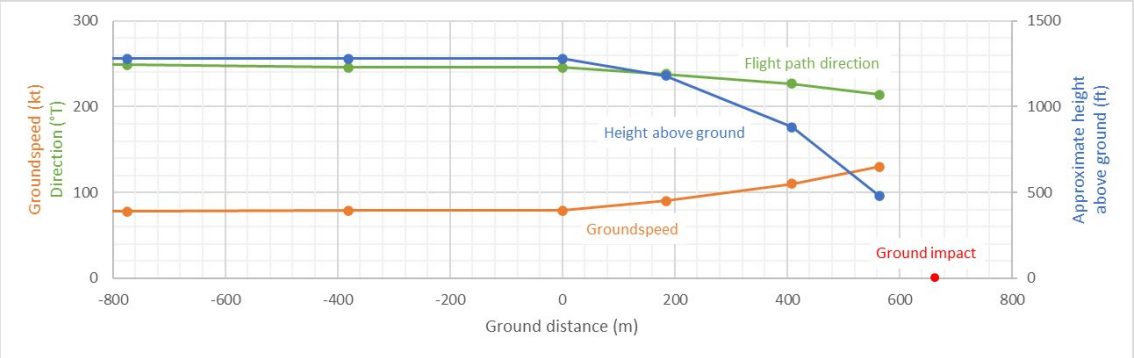


Source: Google Earth, annotated by the ATSB

Upon reaching holding point Charlie, the instructor expected to see the aircraft turning onto the base leg or on base. However, they were unable to see it.

ADS-B data showed the aircraft in level flight at 1,400 ft on the downwind leg. At about the time the aircraft would have been expected to turn onto base, the aircraft descended until it impacted the ground (Figure 2). The last recorded data point transmitted by the ADS-B system indicated a descent rate of about 10,500 ft/min with a groundspeed of 130 kt.

Figure 2: Recorded ADS-B data for the descent



The height and distance axes are scaled 1:1. Ground distance is relative to the last recorded data point before the descent. Recorded altitude has been converted to height above the elevation at the point of ground impact. This was about 10 ft below the airport elevation.
Source: ATSB

Two witnesses near the airport observed the aircraft descending in a nose-down, wings level attitude and described hearing a 'whirring' noise, similar to what they described as an engine over-revving, before losing sight of the aircraft behind a building. CCTV footage showed the aircraft collided with terrain at 1508:34 at high speed and with an attitude of about 60° nose-down. The aircraft was destroyed, and the student pilot was fatally injured.

Context

Pilot information

The student pilot held a Class 2 aviation medical certificate and a Recreational Aviation Australia (RAAus) pilot certificate[6] issued late June 2023.The student pilot had accumulated 51.3 hours experience on this certificate, including 37.1 hours in a Skyfox Gazelle.[7] The pilot had also completed 4.1 hours of solo flight under the RAAus certificate.

The student commenced flying training with AltoCap on 17 December 2023 and completed a written pre-solo flight exam at AltoCap flight school on 20 January 2024. The pilot's usual instructor recalled that they thought the pilot was ready to fly solo after the previous lesson, although the pilot had not demonstrated an adequate glide approach and they provided that information on to the instructor for the pilot's 24 January lesson.

The flights immediately preceding the accident flight was the first time that this instructor had flown with the student. The instructor reported that, during these flights, the student pilot demonstrated exceptional aircraft handling proficiency and the instructor assessed them as competent and ready for their first solo in the Cessna 172.

In addition to the time accumulated on the RAAus certificate, the pilot had 6.1 hours on the Cessna 172.

Aircraft information

The Cessna 172 is a high-wing, 4-seat, all-metal aircraft with fixed landing gear. It is powered by a single 4-cylinder Lycoming IO-360-L2A piston engine driving a fixed-pitch propeller.

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[6] An authorisation for individuals to fly RAAus registered recreational aircraft in Australia under specific regulations set by Recreational Aviation Australia.

[7] A sport aviation aircraft with 2 seats, smaller than a Cessna 172.

VH-CPQ was manufactured in 2000 and first registered in Australia in 2000. The aircraft had been registered with the current operator since January 2023, and at the time of the accident had accumulated 11,342.9 hours total time in service.

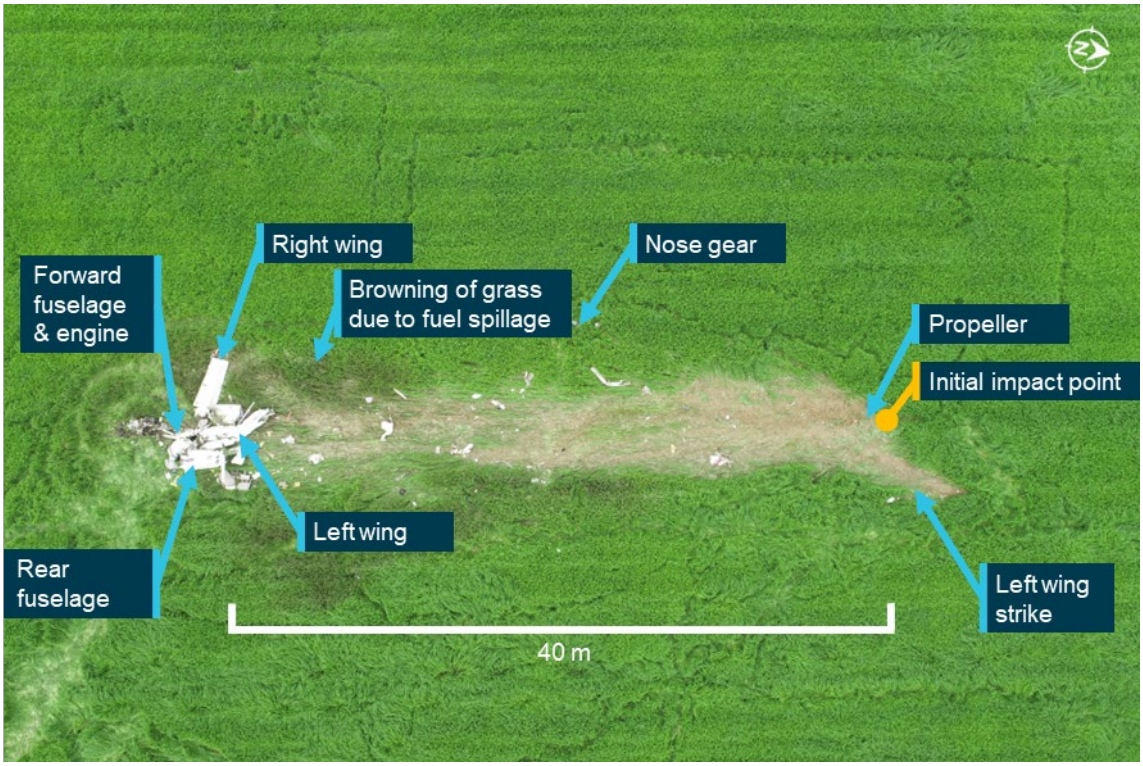
The last periodic inspection was conducted on 15 December 2023. The most recent maintenance was performed on 23 January 2024, to investigate high engine oil temperature indications. This was rectified and the aircraft was released to service.

The aircraft was flown on lessons for other pilots on the day of the accident flight, accumulating about 2.9 hours from the completion of maintenance to the commencement of the accident flight.

Site and wreckage

The ATSB conducted an on-site examination of the aircraft wreckage. The accident site was approximately 1.9 NM west of Camden Airport, in a paddock. The wreckage trail extended in a southerly direction, about 40 m from the initial impact point to where the main wreckage, including the wings, empennage, and engine had come to rest (Figure 3). The propeller detached and was embedded in the soil at the point of initial impact. All components necessary for flight, including all major sections of the aircraft's structure and control surfaces, were accounted for at the accident site.

Figure 3: Overview of VH-CPQ accident site



Source: ATSB

Ground impact marks and damage to the airframe indicated that the aircraft impacted the terrain in a slightly left wing-low, steep nose-down attitude at high speed. The airframe was heavily disrupted. Pre-impact flight control continuity was established and wing flaps[8] were assessed to

[8] A movable surface on the trailing edge of a wing that, when extended, increases both lift and drag and reduces the stall speed. Flaps are extended to improve take-off and landing performance.

have been extended but set at less than 10°[9] at the time of impact. There was no evidence of an in-flight break-up or other pre-impact airframe or control defects.

On-site examination of the engine did not reveal any pre-impact mechanical issues, while damage to the propeller and marks in the soil at the impact indicated that the engine was producing power at impact.

Browning of the grass around the impact site was consistent with burning from contact with fuel. The distribution was consistent with fuel being released during the impact sequence.

Further investigation

To date, the ATSB has:

- examined the wreckage and accident site
- recovered aircraft components and other items for further examination
- interviewed the operator, head of flying operations and the student pilot's instructors
- interviewed the next of kin
- collected aircraft, pilot and operator documentation
- analysed video recordings.

The investigation is continuing and will include:

- review and examination of aircraft components and other items recovered from the accident site
- review of aircraft, pilot and operator documentation
- further analysis of flight path information from CCTV recordings and flight data.

A final report will be released at the conclusion of the investigation. Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

[9] At this point in the circuit a pilot would be expected to be extending the flaps to 10° while setting up the aircraft for landing.

General details

Occurrence details

Date and time:	24 January 2024 – 1508 AEDT	
Occurrence class:	Accident	
Occurrence categories:	Collision with terrain	
Location:	1.9 NM west from Camden Aerodrome	
	Latitude: 34.0347° S	Longitude: 150.6499° E

Aircraft details

Manufacturer and model:	CESSNA AIRCRAFT COMPANY 172S	
Registration:	VH-CPQ	
Operator:	ALTOCAP PTY LTD	
Serial number:	172S8629	
Type of operation:	Part 91 General operating and flight rules-Part 141 - training	
Activity:	General aviation / Recreational-Instructional flying-Instructional flying - solo	
Departure:	Camden Airport, New South Wales	
Destination:	Camden Airport, New South Wales	
Persons on board:	Crew – 1	Passengers – 0
Injuries:	Crew – 1 (fatal)	Passengers – 0
Aircraft damage:	Destroyed	

Australian Transport Safety Bureau

About the ATSB

The ATSB is an independent Commonwealth Government statutory agency. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's purpose is to improve the safety of, and public confidence in, aviation, rail and marine transport through:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia, as well as participating in overseas investigations involving Australian-registered aircraft and ships. It prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, international agreements.

Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety. This is done through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

Terminology

An explanation of terminology used in ATSB investigation reports is available on the ATSB website. This includes terms such as occurrence, contributing factor, other factor that increased risk, and safety issue.