



Aviation Safety Investigation Report - Interim Factual

Collision with trees, Cessna U206 VH-UYB at Willowbank, Qld

Occurrence Details

Occurrence Number:	200600001	Location:	Willowbank, (ALA)
Occurrence Date:	02 January 2006	State:	QLD
Occurrence Time:	1045 EST	Highest Injury Level:	Fatal
Occurrence Category:	Accident	Investigation Type:	
Occurrence Class:		Investigation Status:	
Occurrence Type:		Release Date:	25 May 2006

Injuries:	Crew	Passenger	Ground	Total
Fatal	1	4	0	5
Serious	0	2	0	2
Total	1	6	0	7

Aircraft Details

Aircraft Manufacturer:	Cessna Aircraft Company	Aircraft Model:	U206
Aircraft Registration:	VH-UYB	Serial Number:	
Type of Operation:	Private		
Damage to Aircraft:	Destroyed		
Departure Point:	Willowbank QLD	Departure Time:	
Destination:	Willowbank QLD		

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At about 1040 Australian Eastern Standard Time on 2 January 2006, the pilot of a Cessna Airplane Company U206 aircraft, registered VH-UYB, took off from the parachuting centre at Willowbank, QLD. The aircraft was being flown by one pilot as a private flight, carrying three sport parachutists (jump masters) and three passengers who had paid for the proposed tandem parachute jump. Witnesses reported that during the initial climb, the aircraft did not gain height as expected. It impacted a 23 m (75 ft) high tree approximately 1,200 m from the end of the runway before descending from view. Of the seven persons on board, all but two were fatally injured.

FACTUAL INFORMATION

History of the flight

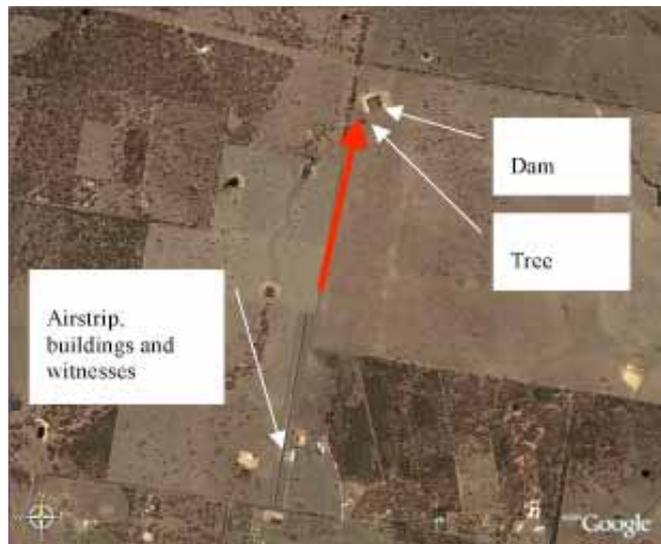
At about 1040 Eastern Standard Time¹ on 2 January 2006, the pilot of a Cessna Airplane Company U206 (Cessna 206) aircraft, registered VH-UYB, took off from the parachuting centre at Willowbank, Qld. The aircraft was being flown by one pilot as a private flight, carrying three sport parachutists (jump masters) and three passengers/students who had paid for the proposed tandem parachute jump. Witnesses reported that during the initial climb, the aircraft did not gain height as expected. It impacted a 23 m (75 ft) high tree approximately 1,200 m from the end of the runway before descending from view.

Another of the operator's pilots conducted an aerial search in the other company aircraft in an attempt to locate the missing

aircraft. The aircraft was eventually located in the water of a small 2 m deep dam, located about 85 m from the tree it had impacted. Of the seven persons on board, all but two were fatally injured. The two survivors were severely injured.

The Willowbank airstrip and the dam location is displayed in Figure 1. The estimated flight path is indicated by the red arrow.

Figure 1: Willowbank airstrip²



Radar information

The flight was the second of the day by the pilot in the Cessna 206, with both flights involving parachute operations. Radar information indicated that the aircraft departed the airstrip at Willowbank for the first flight at about 1004 and returned at about 1030. According to radar data, the aircraft departed the airstrip on the accident flight at about 1045.

Damage to the airframe structure

The wreckage was recovered from the dam (see Figure 2) and moved to a secure location for further examination by the Australian Transport Safety Bureau (ATSB). That examination revealed that the aircraft had impacted in a nose-down, left wing-low attitude. The forward section of the cabin was extensively damaged by impact forces, but the aft cabin section remained relatively intact. The right wingtip was separated by the initial impact with the tree and was located nearby. The right wing outboard spar was heavily damaged. A number of components from the aircraft, including the propeller and engine, were removed for further technical examination.

Figure 2: Recovered wreckage



Pilot qualification and experience

The pilot was appropriately licensed and qualified to conduct the flight. His total flying experience was 401.7 hours, with a total time on type of 49.5 hours. His Cessna 206 experience was solely on the Lycoming TIO-540-J2BD powered aircraft.

The pilot flew for the operator as a non-employee pilot³. A review of the pilot's logbook indicated that his last recorded flying was on 30 December 2005. That included 0.7 hours flying parachuting operations in the Cessna 206, and 4.2 hours in the operator's Cessna 182F.

Aircraft information

The aircraft, serial number U206-00314, was manufactured in the US in 1965 and subsequently operated in New Zealand, before being registered in Australia. On 23 August 2002, an Australian Civil Aviation Safety Authority Certificate of Airworthiness was issued for the aircraft under the NORMAL category.

In April 2004, at 10,958.3 hours total time in service (TTIS) the aircraft was modified by the installation of a 350 hp Lycoming TIO-540 J2BD engine in accordance with US Federal Aviation Administration approved Supplemental Type Certificate number SA2123NM. The Lycoming engine, serial number L-4336-61A, replaced a 300 hp Continental (TCM) IO-520F engine. At the time of the accident, the aircraft had accrued 11,426.7 hours TTIS and the engine 468.4 hours time since overhaul (TSO).

The last maintenance carried out on the aircraft was on 22 September 2005, when the requirements of a 100-hourly inspection were completed at an aircraft TTIS of 11,363.8 hours, and engine hours of 405.5 TSO.

Witness reports

Several witnesses to the accident were standing in the area of the airstrip buildings during the time between the flights. According to witnesses, the aircraft's engine had not been shut down following the first flight and was at idle RPM on the ground over a period of about 10 minutes. Witnesses reported that the engine appeared to be idling erratically⁴ while the pilot was waiting for the parachutists to board the aircraft. Witnesses also reported black smoke coming from the engine's exhaust, both while on the ground idling and during the take-off roll.

The witnesses reported that the pilot backtracked⁵, down the runway turned the aircraft around and immediately accelerated the aircraft for takeoff. The witness reports included that the aircraft used about two-thirds of the runway before rotation⁶, did not appear to climb after takeoff as expected, and then drifted right until it impacted the trees.

Fuel

Both of the operator's aircraft were fuelled on the previous night by the owner from drum fuel stock. The fuel on board the aircraft was contaminated by water from the dam and was not able to be tested. A sample taken from the fuel drum used to fuel the aircraft was subsequently tested at a National Association of Testing Authority approved laboratory. The results of that test indicated:

- high amounts of visible solid matter
- an excessive boiling point (distillation) value of the fuel
- high levels of existent gum.

Insufficient fuel remained in the operator's drum stock to allow further testing.

Engine, fuel system and turbo charger examination

The disassembly, examination and testing of the engine and fuel system components did not reveal any anomalies that would have catastrophically affected engine performance, and the crankshaft was confirmed as serviceable. The disassembly, examination and testing of the turbo charger did not reveal any anomalies that would have affected engine performance. Further testing of the turbo charger system controllers was accomplished on a test engine. The results of that test indicated no anomalies with the turbo charger controllers.

Communications with Air Traffic Control

Following the accident, a review of the recorded audio files was completed for both the relevant Airservices Australia and Amberley Air Force Base radio frequencies. The results of that review indicated that:

- during the previous flight, the pilot of the aircraft made some standard broadcasts to Air Traffic Control and
- there were no standard or emergency broadcasts recorded on the frequencies during the accident flight.

Camcorder video recovery

Two Sony model DCR-PC109E digital video camera recorders were recovered from the wreckage and secured by the ATSB. The information from the recorders was downloaded into a useable audio and visual format. Initial analysis of the downloaded audio and visual information revealed that several other flights were recorded, along with only momentary phases of the accident flight

and pre-flight activities.

On-going investigation issues

The investigation is continuing and will include further analysis of the:

- fuel test results and any possible influence on engine performance
- aircraft performance during the initial climb after takeoff
- recovered camcorder video and audio information
- pilot training
- surveillance of the sports parachuting operations.

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1. The 24-hour clock is used in this report to describe the local time of day, Eastern Standard Time (EST), as particular events occurred. Eastern Standard Time was Coordinated Universal Time (UTC)+ 10 hours.
 2. Aerial photo sourced from Google Earth.
 3. The pilot was not financially compensated for his flying.
 4. Varying from high to low RPM.
 5. Having landed on a runway in use, to turn through 180° and proceed along a runway in reverse direction.
 6. Positive, ie nose-up rotation of the aeroplane about its lateral (pitch) axis immediately before becoming airborne.
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