



Australian Government

Australian Transport Safety Bureau

Collision with terrain during landing, involving a PA32 aircraft, VH-BDG

Lakeside Airpark, Queensland, 26 July 2015

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Addendum

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Collision with terrain during landing, involving a PA32 aircraft, VH-BDG

What happened

On the afternoon of 26 July 2015, the pilot prepared a PA32-300 (Cherokee Six) aircraft, VH-BDG (BDG), for a private joy flight around the Whitsunday Islands off the Queensland coast, (Figure 1) departing from the Lakeside Airpark. The pilot had arranged for five acquaintances to come on the flight as passengers.

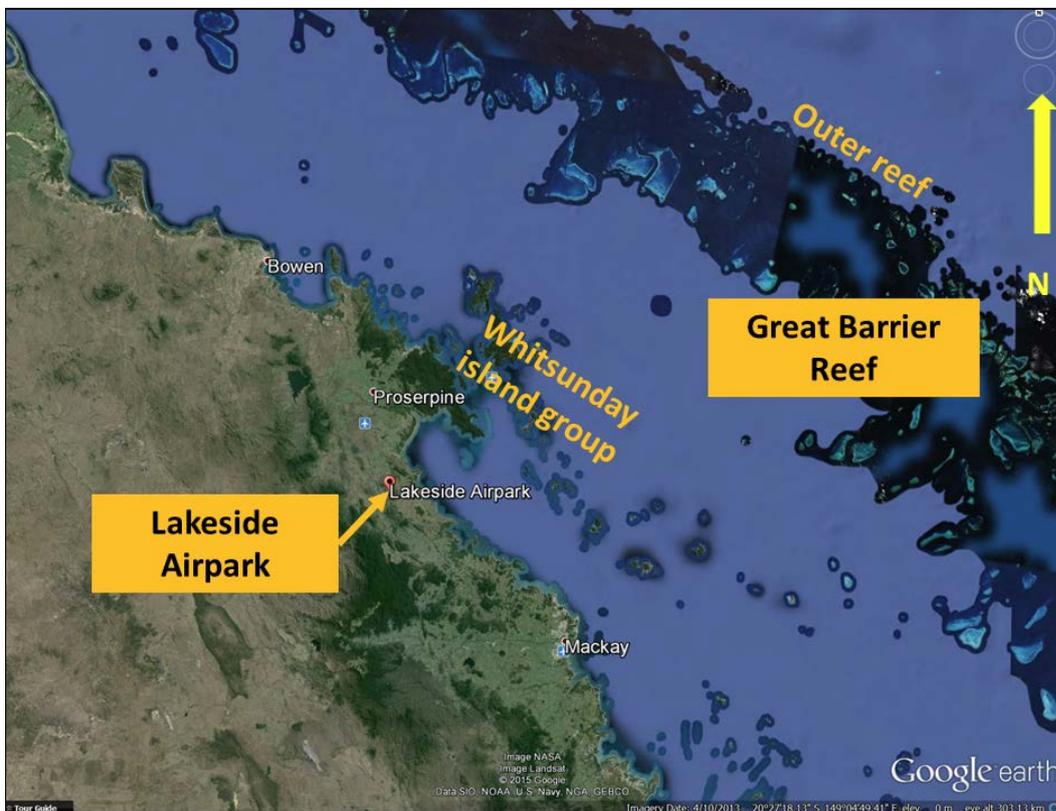
About a week earlier, the pilot, who had an injured right foot at the time, organised another pilot to fly BDG on a re-positioning flight to the Lakeside Airpark. Due to being unable to fly the re-positioning flight, the accident flight became the pilot’s first time operating from the Airpark.

Pilot recollections

The pilot reported that they delivered a safety brief outlining the relevant safety features of the aircraft, just prior to loading the passengers. After loading the four rear passengers, the pilot secured the left rear cargo door, and then entered the cockpit through the front right door, followed by the front seat passenger.

The flight departed at about 1400 Eastern Standard Time (EST), and remained outside controlled airspace. The flight overflew some of the Whitsunday island group as well as the outer reef area of the Great Barrier Reef, prior to setting a return course to the Airpark about one and half hours later (Figure 1).

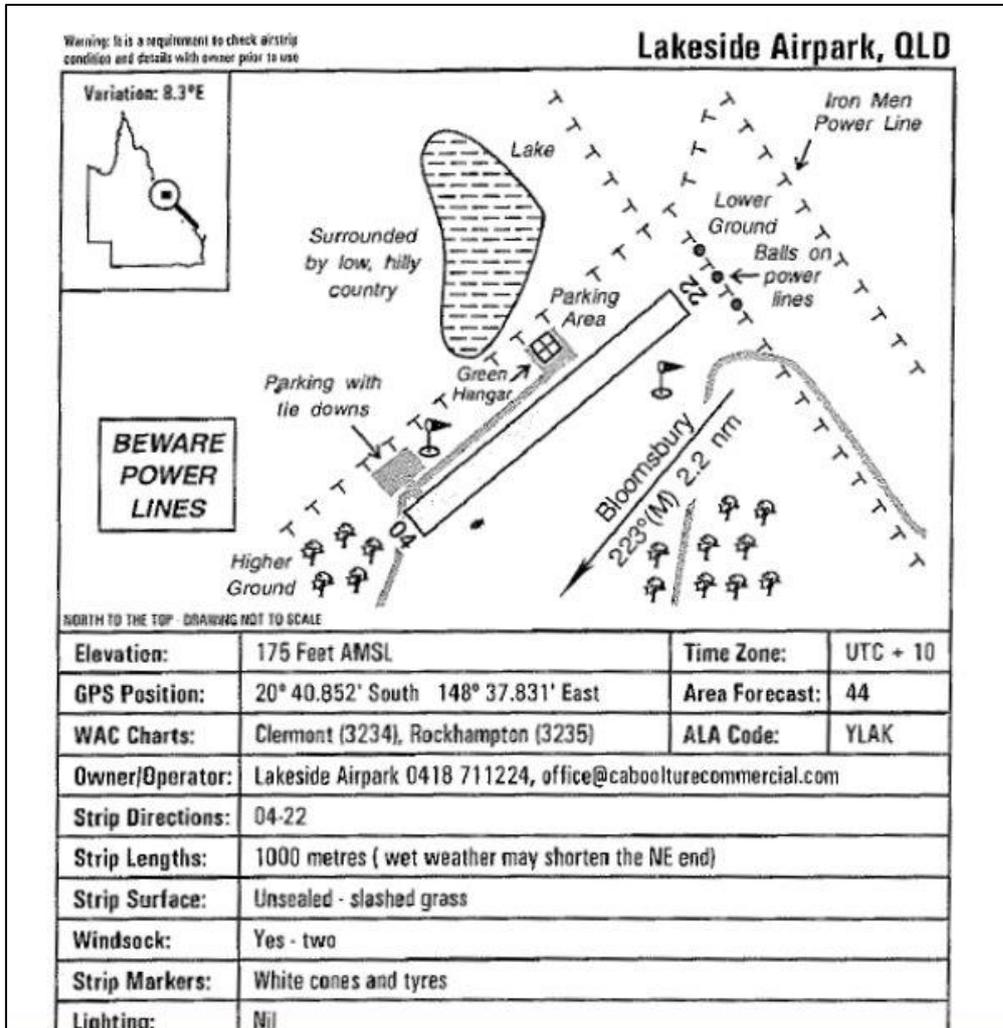
Figure 1: A google earth extract showing the general area where the joyflight was conducted.



Source: Google earth, annotated by the ATSB

The pilot approached the extended centreline at an oblique angle and conducted a straight in approach to runway 22 (Figures 2 and 3). When about 6 NM from the airfield, at about 2,300 ft above mean sea level, the aircraft was configured for descent. After reducing the airspeed from about 135 to about 100 kt, and with 10° of flap selected, the aircraft descended to about 1,800 ft.

Figure 2: An extract from the Queensland Country Airstrip Guide. Diagrammatic representation of Lakeside Airpark and local hazards



Source: Queensland Country Airstrip Guide, 2012 edition

Figure 3: Approach to runway 22 at Lakeside Airpark. Note the unsealed and sealed portion of the runway. Also, note the difficulty in detecting the power lines on approach. Photo taken about a week prior to the accident



Source: Barry Dionysius

In order to maintain sufficient clearance over the two rows of power lines, and still land near the threshold, well before the sealed section of the runway, the pilot planned a steeper approach than normal. The flap was set to 40° (full flap) and the rate of descent increased to about 500-600 feet per minute.

On short final, the aircraft suddenly began to sink rapidly, and the pilot recalled seeing a tree pass close by the left window. Judging that the aircraft was now too low; the pilot applied full power, held the aircraft nose in a raised position, turned the aircraft left toward lower ground, and initiated a go-around.

However, the aircraft continued to sink throughout this manoeuvre, and the tail struck the runway about 20 m in from the threshold. Throughout this attempt to go-around, the tail continued to drag along the gravelled section of the runway, leaving a mark about 30-35° to the left of the runway direction for about 18m.

Although not yet showing a positive rate of climb, the aircraft seemed to be flying. The pilot reported that the stall warning had not sounded, so assessed there was a choice between removing the power and attempting to land back on the runway, or continuing with the go-around. The pilot elected to continue with the go-around and continued toward the lower ground.

A witness mark made by the right wheel, commenced at about the same spot where the mark made by the tail stopped. The wheel mark continued for about 35m into the grassed area beside the runway.

Once into the grassed area, and with the aircraft most probably airborne, it struck a wire fence (Figure 4) then the raised embankment of the dam, which ran perpendicular to the runway. The pilot reported that the left wing tip struck the water and the aircraft spun around and entered the water. At some point throughout this sequence, the main wheels detached from the aircraft. The pilot reported continuing to battle for control of the aircraft, up until it arrived in the water.

Figure 4: Looking along runway 22 taken a few days after the accident



Source: Pilot

Post water impact

When the aircraft settled on the surface of the water, the pilot reported yelling to the passengers to ‘get out’. The pilot then opened the front right door, pushed the passenger occupying the front right seat out, and then exited. The opening of the door resulted in the muddy water gushing inside and rapidly filling the aircraft. The passengers seated in the rear of the aircraft were unable to open the rear door. The water almost filled the entire cabin during this time.

The pilot was eventually able to get the rear door open from outside the aircraft and assisted some of the passengers out. The remaining passengers either made their own way out, or were assisted by other passengers.

One of the passengers sustained serious injuries, and the pilot and another passenger, minor injuries. The aircraft was almost completely submerged resulting in substantial damage (Figures 5 and 6).

Figure 5: Post accident showing VH-BDG partially submerged in the dam.



Source: Airpark operator

Figure 6: VH-BDG after retrieval from the lake. Passenger 2 (below) reported that the left wing crumpled during the ‘cartwheeling’ toward the lake. Note: Significant damage occurred during the retrieval process



Source: Pilot

Pilot experience and comments

The pilot had approximately 581 total flying hours with about 112 of these on Cherokee Six type aircraft. The pilot made the following points:

- the hazard briefing conducted by the airpark operator some weeks earlier, included a request to land on the gravel area of the runway, as the seal was recently laid but had proved to be quite soft
- both weight and balance, and performance calculations were conducted for the flight, however these documents were damaged when the aircraft became submerged
- there may have been some wind shear or a down draft which contributed to the aircraft sinking on the approach
- the tail scraping along the gravel and over the fence during the attempted go-around added extra drag, which detracted from the aircraft's performance

Passenger comments

Three of the five passengers elected to provide their accounts of what happened.

Passenger one recalled:

- there was no pre-flight safety briefing; the pilot just indicated where each of them should sit
- during the landing approach, this passenger recalled thinking how low they were, when still some distance from touchdown
- the tail struck the ground, and recalls power being applied after that
- the aircraft flipping over and 'cartwheeling' toward the lake

Passenger two recalled:

- there was no pre-flight safety briefing
- during the approach to land they heard the pilot verbalising that the aircraft needed to slow down, and noted a significant decrease in speed
- the aircraft tail dragging along the ground, and the pilot calling out for assistance
- the left wing striking the ground and instantly crumpling (Figure 6)
- the aircraft then 'cartwheeled' ending up in the lake
- the water rose quickly in the aircraft when the front door was opened, leaving a very small pocket of air for the rear passengers
- they were rescued by the pilot through the rear door

Passenger three recalled:

- there was no pre-flight safety briefing
- the aircraft struck the ground prior to the runway
- the pilot shouted for assistance as the aircraft "went out of control during the approach"
- the aircraft 'cartwheeled' before arriving in the dam

Meteorological data

The ATSB obtained the Bureau of Meteorology weather report for area 44 covering the time of the accident. Area 44 was in two divisions that day and the southern division, which applied to the area south of Proserpine, including Lakeside Airpark, forecast variable winds of about 10 knots.

Lakeside Airpark landing area

Lakeside Airpark Landing area was identified in Enroute Supplement Australia (ERSA) (28 May 2015 version) as "UNCR" meaning it is both uncertified and unregistered.

As per the requirement for operations at this aerodrome, the pilot sought prior permission to operate there and a briefing on local hazards from the aerodrome operator. This onsite briefing by the aerodrome operator pointed out local hazards such as the power-lines in the vicinity and the preferred protocol of taking-off on runway 04, and landing uphill on runway 22, wind permitting. There was no hazard map available as mentioned in the ERSA.

Advisory material

The Civil Aviation Advisory Publication (CAAP) 89O-1 (2) “*Published aerodrome information and reporting changes (November 2000)*” is available on the [CASA website](#). This publication provides advisory material for publishing aerodrome information and reporting changes in respect of both licenced and unlicensed aerodromes that are included in the (ERSA).

Unlicensed aerodromes:

Unlicensed aerodromes are not required, under the regulations, to provide aerodrome information to [Aeronautical Information Service] (AIS) or the [Civil Aviation Safety Authority] (CASA) and to have their aerodromes included in ERSA.

...unlicensed aerodromes may also be included in ERSA, on request of the aerodrome operators. However, the aerodrome information published will be of limited format, being of a non-operational nature...”

CASA is conducting a post-implementation review of CASR Part 139 – Aerodromes. As part of this project, this CAAP and other Part 139 CAAPs and ACs will be reviewed. Additionally, CASR Part 175, which regulates the publication of aeronautical information, commenced on 5 March 2015 and the contents of CAAP 89O-1 (2) will be reviewed, to be consistent with this new regulation.

ATSB comment

The ATSB did not undertake an onsite investigation into this accident, but were provided with information through telephone interviews, reports, and detailed photographs.

The ATSB was unable to reconcile the differences evident between the recollections of the pilot and those of the three passengers who provided information.

Safety message

This accident highlights the importance of thorough pre-flight planning and preparation to minimise safety critical decisions in flight.

CASA have an online kit ‘CASA Flight Planning Always Thinking Ahead’ available from the downloaded from the [CASA website](#).

This tool kit addresses the three levels of flight planning (the straightforward elements, unusual situations and whether to go) and their application over eight stages of flight.

The ATSB research report, *Improving the odds: Trends in fatal and non-fatal accident in private flying operations* (AR-2008-045) is available from the [ATSB website](#).

This report encourages pilots to make decisions before the flight, continually assess the flight conditions, evaluate the effectiveness of their plans, set personal minimums, assess their fitness to fly, and to seek local knowledge (and if necessary a check flight) on the route and / or destination as part of the pre-flight planning process.

Also on the [ATSB website](#), is a copy of the investigation (199804109) into a fatal accident involving another Cherokee Six aircraft (VH-POW). The pilot attempted to conduct a go-around from a degraded performance configuration with full flap extended and a nose-high attitude. The ATSB found that the aircraft’s climb performance would have been substantially degraded with this configuration. The aircraft’s nose-high attitude during the climb would have obstructed the

pilot's forward vision and he may have been unaware that the aircraft had diverged from the extended centreline of the airstrip.

Occurrence details

Date and time:	26 July 2015 – 1550 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	Lakeside Airpark, Queensland	
	Latitude: 20°41.10' S	Longitude: 148° 37.50' E

Aircraft details

Manufacturer and model:	Piper Aircraft Corporation PA 32-300	
Registration:	VH-BDG	
Serial number:	32-7740092	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – 5
Injuries:	Crew – Minor	Passengers – 1 serious, 1 minor
Damage:	Substantial	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and 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 that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

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

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine 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.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.