Australian Government
Australian Transport Safety Bureau

Incorrect configuration resulting in a collision with terrain involving Cessna R182, VH- PFZ

58 km SW of Ingham ALA, Queensland, 14 February 2016

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Aviation Occurrence Investigation
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Addendum

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What happened

On 14 February 2016, at about 0945 Eastern Standard Time (EST), the pilot of a Cessna R182 aeroplane, registered VH-PFZ, was returning to a private airstrip near Ingham aircraft landing area (ALA), Queensland. The pilot, who was the only person on board, had just completed a routine one-hour property inspection and decided to complete the flight with some practice touch and go circuits.

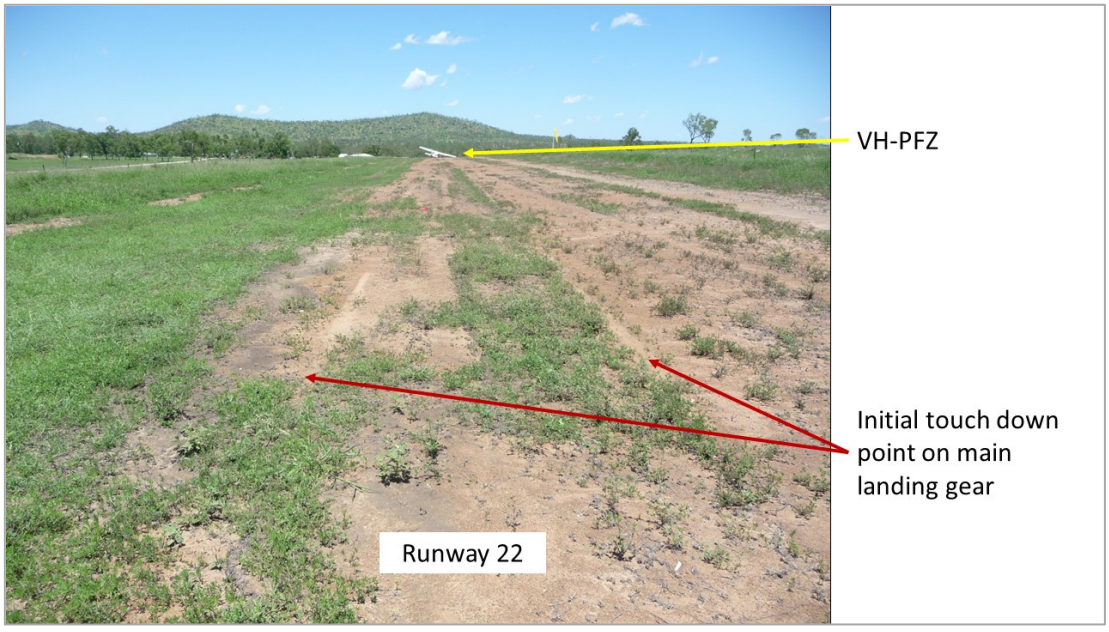
The pilot reported that the weather was fine, with minimal wind and a temperature of about 30 °C.

The pilot approached the circuit with the aircraft in the same configuration used for the inspection flight. This was with 20 inches of manifold pressure, the propeller set at 2,000 revolutions per minute (RPM), and the landing gear retracted.

The pilot joined downwind for runway 22 as per their normal procedure, and conducted their downwind checks. However, they inadvertently omitted one of the checks. Although they extended the landing gear, they did not return the pitch control to the HIGH RPM (full fine) position. The pilot continued with the approach, and selected full flap, but again omitted the pre-landing checks on final approach. This oversight left the pitch control lever at about 2,000 RPM.[1]

The pilot described the approach and initial touchdown as a little faster and higher than normal, with the touchdown point about 300 m into the 1,100 m airstrip (Figure 1).The aircraft ballooned slightly. At about 10-15 ft above ground level, the pilot commenced a go-around and applied full throttle, with the propeller remaining at 2,000 RPM. With an airspeed of 64 kt, the pilot assessed there was sufficient airspeed to climb out, so retracted all of the flap and then the landing gear.

Figure 1: Initial touchdown point on runway 22, and VH-PFZ (far end)



Source: Pilot

[1] High RPM (full fine) was 2,400 RPM for that aircraft.

However, the aircraft began to sink, and the nose dropped. Moments later, the main landing gear struck the ground. This second 'touchdown' was about 265 m beyond the first, (about 565 m along the airstrip). The pilot attempted to keep the nose of the aircraft raised. However, the propeller struck the ground and the pilot realised that the nose wheel had retracted, so closed the throttle. The aircraft continued to skid along the runway. The propeller stopped rotating when the aircraft had travelled about another 77 m. The aircraft then continued to slide sideways, and the right main landing gear retracted (Figure 2). The pilot was not injured, but the aircraft sustained substantial damage.

Figure 2: VH-PFZ showing retracted nose wheel and right landing gear, and damaged propeller

Source: Pilot

Pilot experience and comments

The pilot had attained almost 4,000 hours of flight experience, 2,800 of which were in VH-PFZ.

The pilot reported that there had been no particular issues affecting the flight on the day, the weather was good, and the inspection flight had been enjoyable. However, the temperature was 30 °C, which increased the density altitude.[2] The pilot could not attribute any particular reason for the checklist oversight.

The pilot reported that during their early flying training, when they had been training for a go-round, they had been instructed to retract all the flap with their right hand, then immediately move their right hand onto the landing gear selector, and retract the landing gear. The pilot commented that 'the flap travelling up reduced the lift being produced, and the landing gear retracting reduced the drag. These two actions balance out each other.' The pilot qualified this statement by stating that this technique should only be attempted once a positive rate of climb has been achieved. On this occasion this had not occurred.

The pilot consulted the aircraft's performance charts post-accident. With the correct propeller (2,400 RPM) and manifold pressure settings, the aircraft delivers the maximum brake horsepower

[2] An increased density altitude would have increased the power required and decreased the power available.

(BHP).[3] For any of the take-off configurations (see POH data below), it is a requirement to have the propeller in the full fine position of 2,400 RPM. The charts do not cater for propeller settings of 2,000 RPM. The pilot reasoned that landing further along the runway than normal may have contributed to a slight rushing of the go-round sequence. It is possible, that this mindset also contributed to retracting the flap and landing gear prior to achieving a positive rate of climb.

The pilot also reported that possibly being too comfortable in the aircraft, and the reliance on its performance, had created an expectation that all would be well.

The pilot summarised that engine RPM was insufficient to produce enough thrust to maintain altitude and climb at the critical point of change in aircraft configuration, while retracting the flap and landing gear.

Cessna R182 Pilot operating handbook (POH)

Information from a generic 1981 Cessna R182 pilot operating handbook stated that the propeller control should be moved to HIGH RPM (full fine) prior to landing.

The Normal Take-off checklist included:

- Propeller HIGH RPM (2,400 RPM)
- Climb speed 70 kt indicated airspeed (KIAS) (Flaps 20°)
- Climb speed 80 KIAS (Flaps UP).
- Brakes – APPLY momentarily when airborne
- Landing gear – RETRACT in climb out
- Wing Flaps – RETRACT

The Short Field Take-off technique included:

- Propeller HIGH RPM (2,400 RPM)
- Climb speed – 59 KIAS until all obstacles are cleared.
- Landing gear – RETRACT after obstacles are cleared
- Wing Flaps – RETRACT slowly after reaching 70 KIAS.

ATSB comment

The pilot could not recall any particular reason as to why the pre-landing check (propeller control to HIGH RPM (full fine)) was overlooked on two occasions in the circuit.

Although the aircraft could have landed safely in this configuration, attempting to climb with the propeller still at 2,000 RPM created a chain of events from which the pilot did not recover.

The pilot's decision to retract the flaps all at once, followed immediately by the landing gear, prior to obtaining a positive rate of climb at a low altitude also decreased the aircraft's performance. The elevation of the airport was 1,100 ft above mean sea level. This, coupled with a warm day of around 30 °C, translated to a higher density altitude,[2] resulting in reduced performance.

Safety Message

Although the pilot did not recall any distraction which could have led to the omission of the checklist item on both the downwind and final approach checklists, this omission fits a familiar pattern.

Any change of routine or even cognitive thoughts can distract a pilot from an essential checklist item. Research conducted by the ATSB found that distractions, or a change in routine, were an everyday part of flying, and that pilots generally responded quickly and efficiently. The report,

[3] BHP is the power developed by the engine

Dangerous Distraction: An examination of accidents and incidents involving pilot distraction in Australia between 1997 and 2004 speaks to these issues.

This research commented that pilot distractions in the study did not always occur in response to non-normal tasks. In fact, the research indicated that distraction can occur when pilots are conducting normal routine tasks.

General details

Occurrence details

Date and time:	14 February, 2016 at 1215 EST	
Occurrence category:	Accident	
Primary occurrence type:	Incorrect configuration	
Location:	58 km SW Ingham ALA, Queensland	
	Latitude: 18° 55.40 S	Longitude: 145° 40.28 E

Aircraft details

Manufacturer and model:	Cessna R182	
Registration:	VH-PFZ	
Serial number:	R18201731	
Type of operation:	Private	
Persons on board:	Crew - 1	Passengers - Nil
Injuries:	Crew - Nil	Passengers - Nil
Damage to aircraft:	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 operations involving the travelling public.

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.