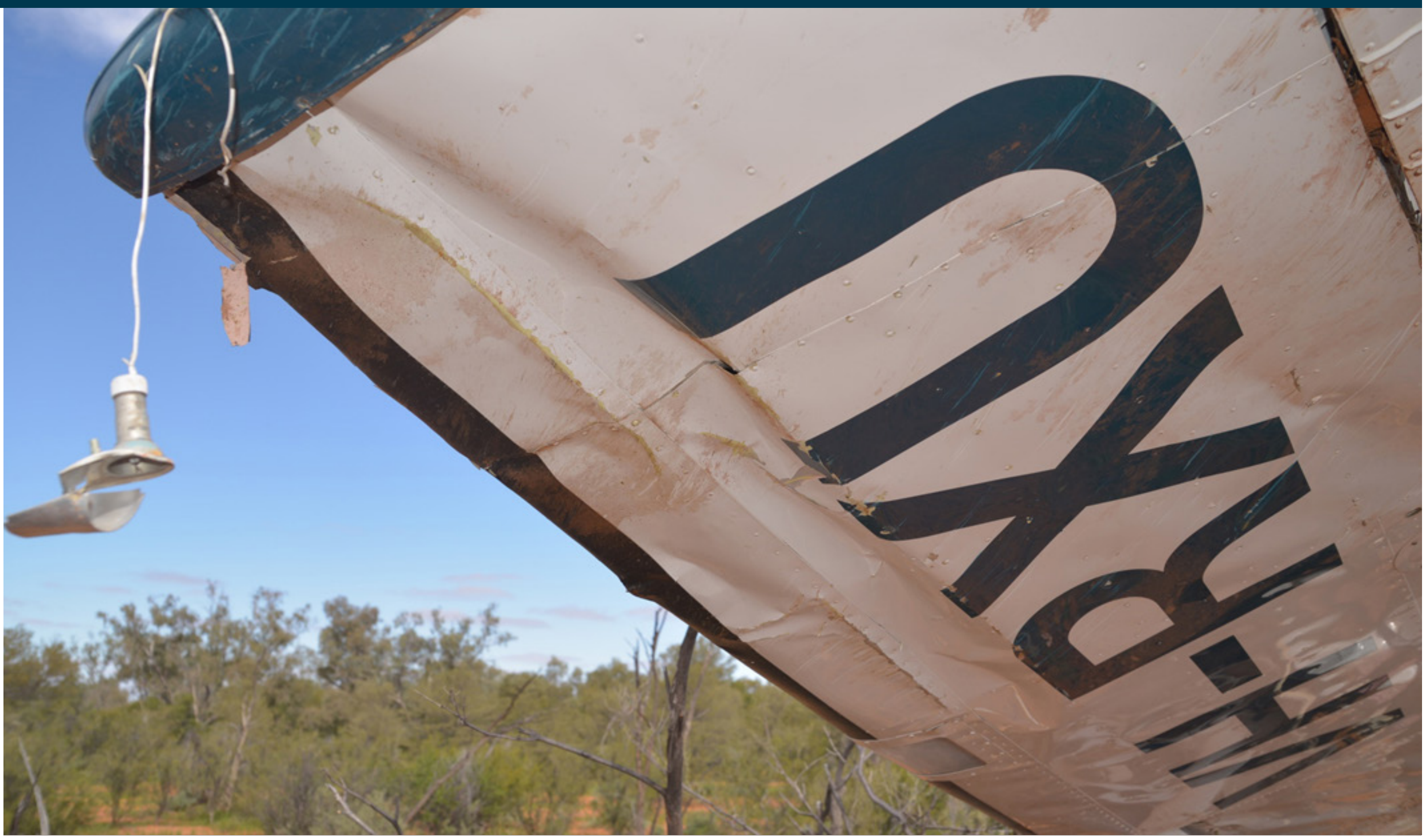
Australian Government
Australian Transport Safety Bureau

Loss of control and collision with terrain, Cessna 150, VH-RXU

270 km SE Alice Springs, Northern Territory | 12 July 2016



Investigation

ATSB Transport Safety Report
Aviation Occurrence Investigation
AO-2016-074
Final – 28 July 2017

Cover photo: SA police

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

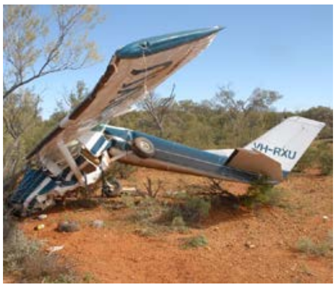
Addendum

Page	Change	Date

Safety summary

What happened

Aircraft wreckage



Source: SA police

On 12 July 2016, the pilot of a Cessna 150 aircraft, registered VH-RXU, was conducting cattle spotting operations at New Crown Station, about 270 km south-east of Alice Springs, Northern Territory. The aircraft was observed conducting turning manoeuvres over the cattle at a reported altitude of about 500 ft.

A stockman recalled that, immediately preceding the accident, the pilot was directing them by radio to a breakaway herd of cattle in a nearby riverbed. The stockman observed the aircraft in a right turn moments before hearing it impact the ground, meters from their position.

For reasons that could not be determined, the pilot lost control of the aircraft and was unable to arrest the descent before the aircraft impacted the ground heavily. The pilot was the sole occupant on-board the aircraft and was fatally injured. The aircraft sustained significant damage.

What the ATSB found

The pilot lost control of the aircraft after commencing a right turn. While the actual events preceding the loss of control could not be concluded, the aircraft was likely operated at a slow airspeed with reduced stall margins. In the absence of other physical evidence, it was possible that control inputs made by the pilot induced a stall and incipient spin at an altitude that was not recoverable.

The pilot was not using the full lap/sash occupant restraint at the time of impact. The extent of injuries sustained by the pilot during the impact probably would have reduced if the sash portion of the restraint were used. This would likely have improved pilot survivability.

The fuel type used by the operator and pilot was not approved for use in VH-RXU. Although probably not contributing to the loss of control, it increased the risk of carburettor icing and formation of vapour in the fuel system.

What's been done as a result

The operator advised that since the accident, only the grade/type of fuel approved for use in the aircraft would be used.

Safety message

Turning manoeuvres at or close to the aircraft's critical angle of attack, if mishandled, can lead to a stall that may result in the aircraft entering a spin. Recovery from this condition will take a considerable amount of altitude, dependant on the speed of response by the pilot and the use of appropriate control inputs.

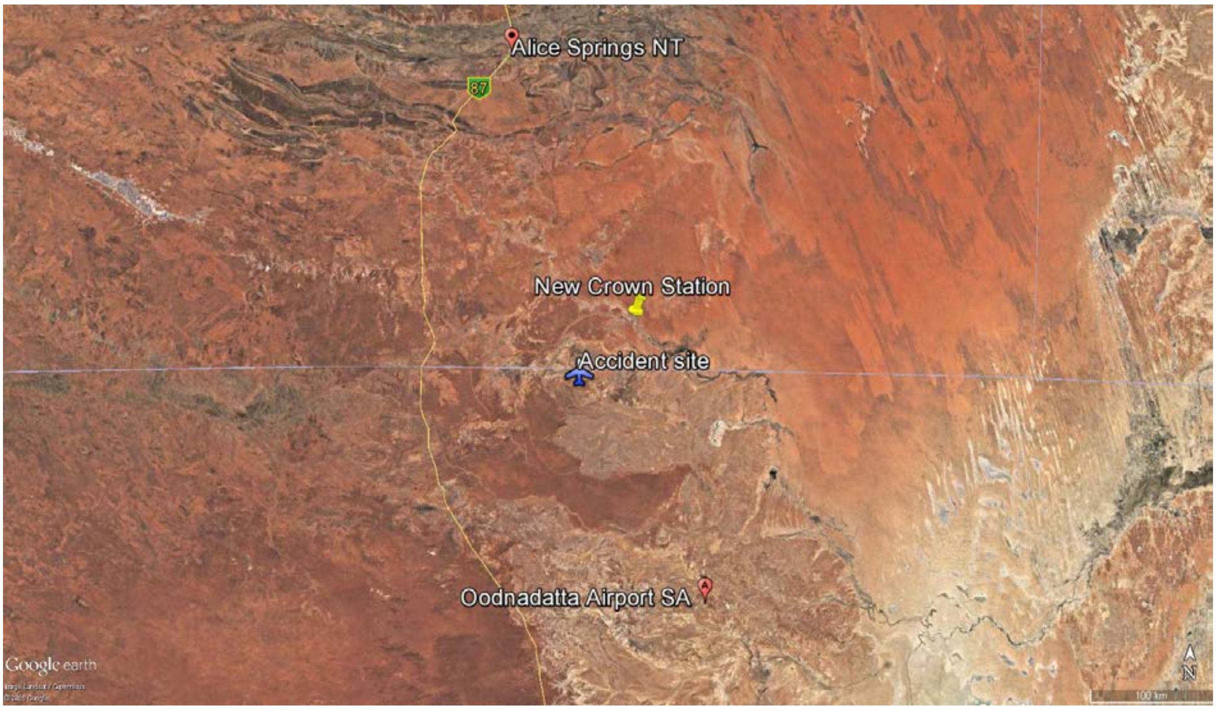
Pilots need to assess the operational risks associated with not using full lap/sash restraints. The appropriate use of these restraints would prevent more serious deceleration injuries in the event of an accident.

To ensure engine performance, pilots and operators must ensure that the fuel used is of the correct grade/type for the aircraft, and is free of contaminants.

The occurrence

On 12 July 2016, the pilot of a Cessna 150 aircraft, registered VH-RXU (RXU), was conducting cattle spotting operations at New Crown Station, about 270 km south-east of Alice Springs, Northern Territory (Figure 1). At about 0700 Central Standard Time,[1] the pilot departed the property to a remote runway called Mosquito airfield, about 60 km to the south. On arrival, the pilot was reported to have discussed the morning's operations with two groups of stockmen.

Figure 1: Accident site location



Source: Google earth modified by ATSB

The stockmen were tasked with conducting ground-based mustering activities using motorbikes. The pilot of RXU was to assist with locating the cattle and directing the two mustering groups toward them. The property owner stated that ground based mustering supported by aerial spotting was preferred, as it did not stress the cattle as much as aerial mustering.

It was reported that the pilot and stockmen commenced mustering/spotting activities a short distance to the north of Mosquito airfield at about 0730. The pilot was reported to have been operating between the two groups for some time before one of the stockmen noted the aircraft leaving the area. The stockman assumed that the pilot departed the area for Mosquito airfield to refuel.

The operator reported that the original plan was to use a Robinson R44 helicopter for the days mustering but it became unserviceable. The drum fuel positioned at Mosquito airfield was intended for use with the Robinson R44. Consequently, the operator expected the pilot would return to New Crown homestead to refuel during the morning. However, it was determined that the pilot refuelled using the drum fuel at Mosquito airfield instead.

The stockmen reported the aircraft appeared to be operating normally on resuming spotting operations. Further, the pilot, who was in frequent radio contact with the stockmen, did not report having trouble with the operation of the aircraft.

---

1 Central Standard Time (CST) was Coordinated Universal Time (UTC) + 9.5 hours.

The pilot continued spotting and directing the stockmen to cattle along a thickly wooded creek bed when some cattle broke away from the main cattle herd. Soon after, the stockman unexpectedly exited the creek bed and sought direction from the pilot back to the cattle. The stockman recalled observing the aircraft flying away from them before it commenced a right turn back toward the cattle herd.

The stockman turned the motorbike around to re-enter the creek bed when seconds later a loud ‘bang’ was heard. The stockman stopped and immediately looked toward the direction of the sound, observing the aircraft to have crashed about 30 m away.

The stockman radioed that the aircraft had crashed and immediately proceeded to the aircraft. The pilot had sustained fatal injuries.

Context

Personnel information

Pilot

The pilot held a Private Pilot (Helicopter) and (Aeroplane) Licence and was qualified to fly the Cessna Aircraft Company C150G (C150) aircraft. The pilot was also endorsed on the Robinson R44 and R22 helicopter.

In 1998, the pilot completed a low-level safety course for which 10 hours flying was completed. The pilot did not hold a low-level flying or mustering endorsement, however, those endorsements were not required unless the aircraft was conducting spotting/mustering activities at an altitude lower than 500ft above ground level.

The pilot's total aeronautical experience at the time of the accident could not be determined as the pilot's logbooks were incomplete. The last recorded entry on 27 June 2016 indicated 2,676 total flying hours, of which 496 hours were on helicopters. The pilot's logbook showed that from 1988, the pilot had predominantly flown single engine Cessna aircraft. The pilot last flew a C150 aircraft on the day prior to the accident, conducting aerial spotting operations.

Since obtaining a helicopter rating in 2014, the Robinson R44 helicopter was the primary aircraft flown. Although the operational characteristics of flying a helicopter would have differed from a fixed wing aircraft, there was no conclusive evidence that this adversely effected the pilot's flying ability on the day of the accident.

A review of the pilot's training records identified that the pilot had satisfactorily completed a biennial aeroplane flight review on 7 April 2014. The review was conducted under Civil Aviation Regulation (CAR) 1988, Part 5 in a Cessna 172 aircraft. Since that flight review, Civil Aviation Safety Regulation (CASR) Part 61 was introduced, and the pilot was overdue for a biennial flight review in accordance with those regulations.

On the day prior to the accident, while flying RXU, the pilot discontinued flying for the day after feeling a degree of motion sickness. The pilot reported this to the operator and discussed being more susceptible to motion sickness after having a medical procedure some years ago. The medical procedure was recorded in the pilot's aviation medical file. A stockman and operator reported the pilot as appearing well on the morning of the accident.

The pilot held a valid Class 2 Aviation Medical Certificate with no restrictions.

Aircraft information

General information

The aircraft, VH-RXU, a C150, serial number 15066748, was manufactured in 1967 and entered the Australian register on 8 August 1968. The C150 is a single engine, all-metal, fixed tricycle-gear aircraft with a seating capacity of two.

Maintenance history

Review of the aircraft's documentation showed it had a valid maintenance release with no open defects.

The aircraft logbooks show the last periodic inspection was conducted on 23 Sept 2015. At that time it had completed 6733.4 hours since manufacture.

The last periodic inspection identified some minor defects, which were rectified. Included in the maintenance tasks carried out during that inspection was the replacement of the seatbelts/lap sash occupant restraints and an airworthiness directive to test the stall warning system for which was certified as having no identified defects.

Meteorological information

Stockmen and ground crew operating in the area recalled the weather conditions as being fine with overcast cloud and a light to moderate breeze with some gusts. There were no ‘dust-devils’ reported in the area of operation.

Recorded meteorological information at Oodnadatta Airport, about 185 km to the south-east, indicated the temperature at 1130 was 13.0 °C. The wind was from the south-west at about 35 km/h and there was no recorded rain for the period. The area was under the influence of a high-pressure system with a recorded barometric pressure of 1023 hPa.

The elevation of the accident site was about 150 to 300 m above mean sea level.

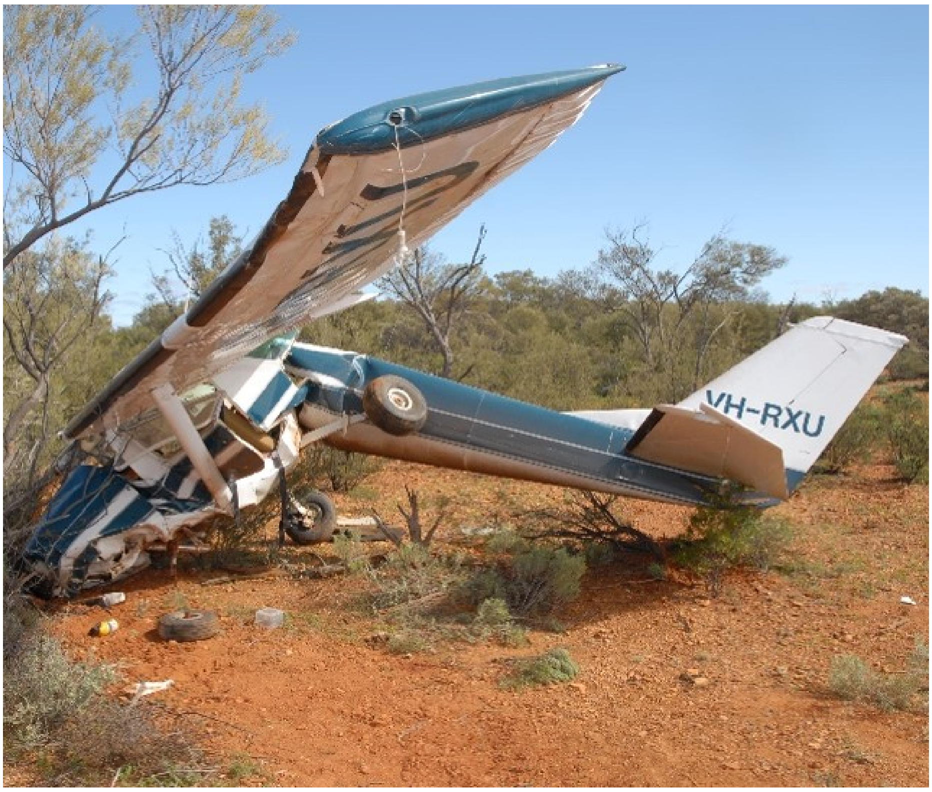
While there were indications of light to moderate south-westerly winds with occasional gusts, the wind conditions were likely consistent with that experienced by the pilot during other in-flight manoeuvres. The wind was considered unlikely to have had an adverse effect the pilot’s ability to maintain control the aircraft during the right turn.

Wreckage information

Accident site

Photographic evidence provided to the ATSB indicated that the aircraft impacted the ground and slid approximately six meters before coming to rest upright, with the right wing tip resting on the ground, and the left wing in the air. Despite significant damage, all major components remained attached to the aircraft, and the wreckage was not subjected to a post impact fire (Figure **2**).

Figure 2: Photograph showing the accident site terrain and impact damage to the aircraft.



Source: SA police

Ground marks consistent with a left wheel and left wing impact and sliding, was observed to the left of the wreckage. As a result of the ground impact, the pilot who was the sole occupant sustained fatal injuries.

There was no evidence of upward movement of the tailplane as would have been expected had the impact angle been steep. This indicates the aircraft's nose impact angle was low (less than 45 degrees).

The left wing displayed a high level of impact damage to the lower outboard surface of the leading edge from the wing tip to approximately 1/3 its length (Figure 2). Crumpling and upward bending of the wing was evident behind the leading edge impact area and toward the wing root. It was probable that the left wing was part of the initial impact sequence of the aircraft. The right wing displayed significantly less damage, which was limited to the wingtip. Both wing fuel caps were in place and fuel seepage was observed from around the over-wing refill points.

Engine and propeller

From the evidence obtained from the accident site, there were no identified mechanical issues with the engine or propeller, that prevented normal operation of the aircraft. Bending and scratch marks on the propeller blades was consistent with the engine producing a level of power on impact.

Flight controls

The South Australia (SA) Police report indicated the control yoke was jammed in position. Operation of the ailerons, elevator, and rudder was not possible due to the impact damage. Continuity of the flight controls was not confirmed on-site. The flaps were in a partially extended position. The flap actuator extension was not measured, however, the flap indicator showed a position close to a 10 degree setting.

Fuel

On-site examination by the SA Police confirmed fuel was present in both aircraft wing tanks; however the quantity could not be ascertained. The fuel appeared straw-coloured, and the samples taken did not show signs of particulate contamination. A combination of automotive unleaded fuel and aviation gasoline (Avgas) was identified in the fuel sample during testing. Traces of petroleum distillate were identified in the fuel samples. The operator indicated that no additives were used in the fuel. As such, the traces of distillate were considered fuel contamination. The fuel sample was identical to a drum fuel sample obtained from Mosquito airfield.

The operator advised that an unleaded fuel bulk storage tank was located at the homestead, and that the drum fuel supply at Mosquito airfield had been mixed with unleaded fuel and avgas in the ratio 2:1, (2 parts unleaded fuel to 1 part Avgas) to create a Mogas[2] variant. The operator advised that an Avgas drum fuel supply was sourced from a fuel distribution facility located at Alice Springs, and was normally used with the fixed wing aircraft.

Mogas utilisation

The operator advised Mogas was primarily used with the Robinson R44 helicopter but had been used in RXU on previous occasions. The C150 was capable of flying on Mogas fuel, with some countries providing approval for its use on the aircraft type. Where an Australian registered aircraft was to use Mogas, individual approval in the form of a supplemental type certificate was required. RXU did not have a supplemental type certificate issued for that purpose.

---

2 Mogas can be any unleaded automotive fuel that has a minimum anti-knock index of 87 - *TP10737, THE USE OF AUTOMOTIVE GASOLINE (MOGAS) IN AVIATION*. Transport Canada.

Due to variability of unleaded fuels used in Mogas, fuel volatility and susceptibility to carburettor icing and vapour locks was different from that of Avgas.

Carburettor icing

Mogas is generally higher in volatility than Avgas and will therefore absorb more heat from the mixing air when vaporising. This results in ice forming at higher ambient temperatures. As a consequence, the likelihood of carburettor icing while using Mogas is increased, with the onset of icing likely to occur at higher ambient temperatures and lower humidity than with Avgas.

Vapour lock

Vapour lock because of vaporisation of fuel is more critical with Mogas due to the increased volatility of the fuel. When engine shut down takes place, the engine compartment increases in temperature due to the sudden loss of cooling air flow and the thermal mass of the hot engine. If the engine is started shortly after, the fuel temperature in the engine compartment may be beyond its boiling point and therefore the risk of vapour lock is high.

A vapour lock in flight would result in an increased exhaust gas temperature, interrupted fuel supply, and rough running of the engine (similar to running too lean).

Survival aspects

In general, survival in the case of an aircraft accident depends on four separate aspects, the:

- impact forces imparted on the aircraft occupants must be within human tolerance
- occupants being restrained to prevent flail-type injuries
- liveable space inside the aircraft being maintained
- occupants having a means of escape.

Occupant restraints

The occupant restraints in RXU consisted of lap sash seatbelts. The seatbelts had a sash (shoulder) portion connected to the lap belt at an attachment buckle. The seatbelts were inspected by the SA police and were determined to be in a serviceable condition. Examination of the on-site evidence and injuries sustained by the pilot indicated the sash portion of the seatbelt harness system was not worn at the time of the accident.

Cessna aircraft information manuals recommended that for normal flight, the occupant adjust the harness tight enough to prevent excessive forward movement and contact with objects in the event of sudden deceleration. However, pilots sometimes disconnect or do not use the sash portion of the seatbelt harness during flight. This meant that the pilot's upper torso was essentially unrestrained in the event of the aircraft decelerating quickly during an off-field forced landing, or impact with terrain.

The US National Transportation Safety Board published research paper SR 85-01 titled *Impact Severity and Potential Injury Prevention in General Aviation Accidents*. The paper highlighted the potential benefits of shoulder harnesses in reducing injury as follows:

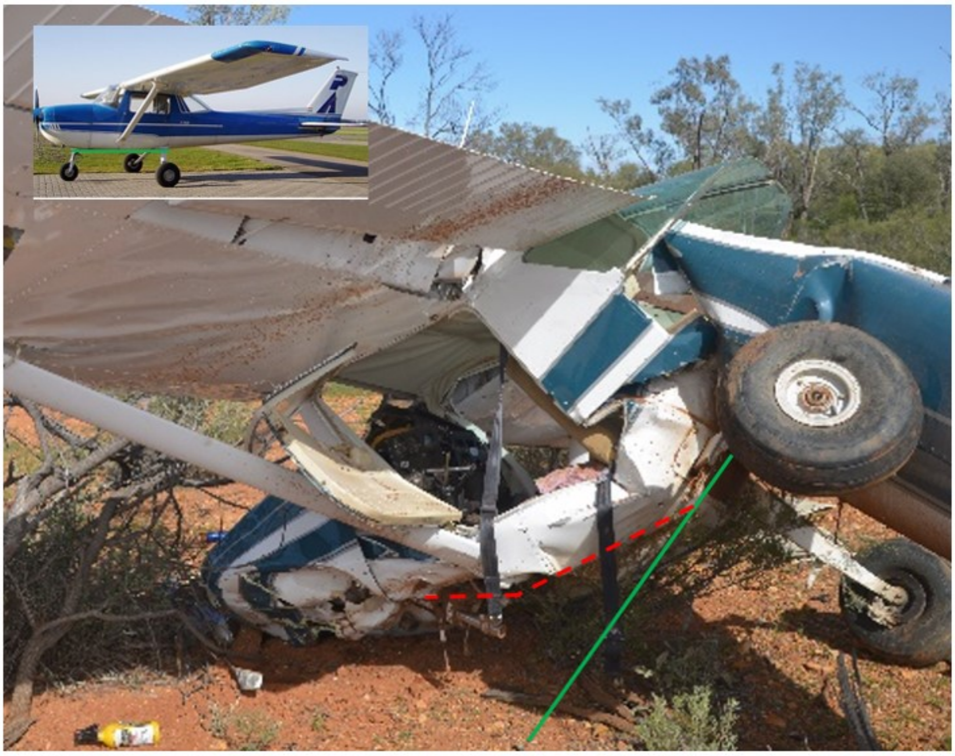
> There were five survivable accidents in which shoulder harnesses were worn by only one of two front-seat occupants. A comparison was made of the relative injuries of each occupant. It was found in each case that injury severity was less for the occupant who wore the shoulder harness.
>
> For example, in one accident each of two occupants sustained serious injuries, but the pilot, wearing a shoulder harness, sustained a broken leg and a slight concussion while the passenger without a shoulder harness sustained severe head injuries. The differences in the injuries in these comparisons were related to head and upper body injuries. Those persons who wore shoulder harnesses had markedly fewer head injuries.

The research also showed that if an aircraft occupant wore a shoulder harness, they increased their chances of survival by 20 per cent. Further, the chance of serious injury decreased by 32 per cent.

Liveable space

From photographs obtained of the wreckage, the occupied cabin area within the fuselage was compromised by the impact sequence. Figure 3 shows how the forward floor of the cabin under the instrument panel was crushed when the nose gear collapsed. The impact had buckled the floor under the seats, and the fuselage was breached behind the rear cabin bulkhead. The instrument panels had become dislodged and pushed rearward as a result of the nose impacting the ground. The cabin roof and wings had moved forward as a result of the nose section of the aircraft impacting the ground, reducing the cabin height. All of this damage reduced the survivable space within the cabin area.

Figure 3: Crush damage to accident aircraft compared to exemplar Cessna 150



Source: SA police modified by ATSB

Impact forces and pilot injury

A number of methods are available for measuring the impact forces an occupant is likely to experience during impact. While the outcome gives an appreciation of whether an accident is potentially survivable, the results should be interpreted with caution, as a number of variables do exist during an accident sequence. From the available data, the pilot would have sustained severe to fatal injuries as a result of the calculated impact forces.

The stall/spin condition

The Aerial Mustering Code of Practice[3] included a discussion on a specific stall/spin type of accident that had been observed in a number of low-level fatal accidents involving mustering operations. The common theme was a stall leading to the aircraft impacting terrain in a steep nose

---

[3] PGA pp 34-35. The Code was sponsored by the Royal Aero Club of WA, and CASA.

down pitch attitude. The sequence of events in these type of accidents followed a similar path to the accident aircraft.

Recovery from these stall/spin conditions required significant altitude. A figure of about 400 ft or more is often quoted. From an accident perspective, the strongest indication of a stall/spin is the steep nose down attitude, particularly when the aircraft was operating at low altitude. Without the spin entry, a Cessna stall typically will not drop the nose to a steep pitch down attitude.

Related/previous occurrences

The ATSB has investigated a number of accidents where a Cessna type aircraft have stalled and impacted terrain. Each of these accidents identify that, while the stalling characteristics of these aircraft types is benign, the stall condition is exacerbated through mishandling of the aircraft during the stall, which can result in entry into a spin. The stall/spin will result in a steep pitch down and rotation towards the stalled wing. Recovery from this condition will take a considerable amount of altitude, the magnitude of which is dependent on the speed of response by the pilot and the use of appropriate control inputs.

AO-2010-047: Cessna 172H, VH-RZV, Loss of control 30 June 2010, 21 km NNW of Cunnamulla, Queensland

While orbiting a water trough at about 500 ft, the pilot lost control of the aircraft. The aircraft impacted the ground and sustained serious damage.

The damage to RZV was consistent with the right wing colliding with a tree branch followed by the aircraft impacting the ground inverted, with a steep nose-down attitude.

The pilot sustained serious injuries as a result of the impact and was unable to clearly recall the accident. The pilot reported that although he does not recall hearing the aircraft’s stall warning system, the most likely reason for the accident was an inadvertent stall. This probably occurred while the pilot was performing a steep turn with his attention divided between flying the aircraft and looking for cattle.

Investigation number 200506306: Cessna 150G, VH-KPQ, Loss of control 6 December 2005, 156 km north of Broken Hill, NSW.

At about 0835 Eastern Daylight-saving Time, the pilot was observed to circle some sheep at about 250 ft above ground level. Shortly after, ground mustering personnel noticed smoke nearby and found that the aircraft had impacted the ground and there was an intense fire. The pilot, who was the sole occupant of the aircraft, was fatally injured.

The aircraft wreckage was found approximately 400 m to the south-east from where the pilot was circling. The aircraft was upright with evidence of severe impact damage to the left wing, nose section and rear fuselage.

Examination of the aircraft, including the flight control systems and engine, did not reveal any evidence of pre-impact defects. Damage to the propeller indicated that the engine was operating at ground impact. The wing flaps observed in the retracted position.

The steepness of the angle of bank and the nose-down pitch attitude at the aircraft's point of ground impact indicated that the aircraft was in a steep left turn at that time. Those indications and the minimal forward movement of the aircraft after ground contact were consistent with the aircraft having stalled and slipped out of the turn. The lack of aircraft rotation at impact indicated that there had been insufficient time for the stall to develop into a spin, consistent with it occurring at low level.

The investigation concluded that the aircraft possibly stalled at a height from which the pilot was unable to recover.

Safety analysis

Introduction

This analysis will examine the operational factors surrounding the accident involving VH-RXU (RXU). Evidence from witnesses and inspection of the aircraft wreckage indicate that the pilot most likely lost control of the aircraft while executing a right turn. A lack of direct evidence needed to determine the aircrafts final stages of flight meant a reliance was placed on examining:

- accident site observations
- witness accounts
- the operation of the aircraft, and
- stall/spin characteristics of Cessna aircraft.

While there was no conclusive evidence that the pilot lost control of the aircraft by aerodynamically stalling during the right turn, the aircraft's nose-down, and left wing low attitude on impact could indicate a partial recovery following a stall or early stages of a spin (incipient spin). The pilot may have attempted to recover from this abnormal flight condition, however the aircraft's altitude was insufficient, and the aircraft impacted terrain. The analysis will consider the circumstances that preceded the event.

Flight during cattle spotting operations

Aircraft handling

The mustering operations required aerial cattle spotting in support of stockmen mustering cattle. Unlike other mustering operations that relied upon aircraft flying at low level (below 500 ft) to herd cattle, aerial spotting did not require the pilot to fly that low. The primary use of the aircraft was to identify cattle and direct the ground based stockmen to them. It was therefore likely that the pilot was flying at about 500 ft before the accident.

Witnesses reported that while spotting, the pilot conducted a series of turns or orbits overhead to locate the cattle and direct the stockmen to them by radio. Moments before the accident the aircraft was observed in a right turn. The stockman considered this a deliberate manoeuvre by the pilot to reposition the aircraft back toward the creek bed, behind the ground mustering crew.

To facilitate the turn, it was likely that the pilot applied flap and increased the aircraft's angle of bank. The application of the observed 10 degrees flap selection would have allowed the pilot to fly the aircraft at a lower airspeed while maintaining a margin above the stall. However, the introduction of bank and/or unbalanced control inputs would have decreased the stall margin. Consequently, an adequate airspeed through appropriate power application during increased bank angles was essential to maintain the stall margin.

Distraction during manoeuvring

It was possible that during the turn the pilot's primary focus was on manoeuvring the aircraft back toward the direction of the creek bed attempting to reacquire the cattle. Research has shown that when a pilot becomes distracted, the tendency for not monitoring the aircrafts energy state and/or adding unbalanced control inputs is increased. This has the potential to induce a stall or entry into a spin from low altitude. In this case, it could have led to the pilot losing control of the aircraft. A review of similar accident investigations highlighted that this was particularly evident when conducting turns during mustering operations or when conducting other tasks that require the pilots attention to ground based activities.

It has been highlighted in other accident investigation reports that Cessna considers that the height required to recover the aircraft from the stall/spin condition is significant, and at least in the order of 400 ft. It was therefore important that the pilot monitors and maintains an appropriate margin above the stall during a turn, be cautious with manoeuvring, and was balanced with control inputs when flying at lower altitudes.

While the degree of manoeuvre that led to the loss of control of the aircraft could not be determined, it was possible that in an attempt to reacquire the cattle, the pilot's control inputs induced a stall leading to a possible incipient spin and collision with terrain. Had a stall/spin condition occurred or been imminent, the aircraft's low impact angle may indicate a partial recovery, or is indicative of the early stages of a spin.

Seatbelt use while conducting in-flight manoeuvres

A number of studies and accident investigations have examined the use and effectiveness of various occupant restraints. The ability for the occupant to sustain less life threatening injuries relied upon the use and appropriate fitment of the seatbelt or harness restraint. Lap/sash or full harness restraints are shown to reduce the incidence of flail type injuries during an accident.

Although in this case, the likelihood of the pilot sustaining flail related injuries would have reduced if the sash portion of the seatbelt restraint had been used, it could not be determined if it would have changed the outcome of the accident.

This accident highlights the importance of the appropriate use of restraints by pilots and passengers during all phases of flight. This is particularly the case during aircraft operations at low altitudes where little time exists to refit the restraint in the event of an abnormal inflight condition or emergency.

The use of unapproved fuel

It was reported by the operator that the fuel primarily used in VH-RXU was Avgas, sourced from an authorised refuelling facility in drums. However, the fuel sample taken from RXU after the accident was identified as a combination of Avgas and unleaded fuel (referred to as Mogas by the operator). This was consistent with the drum contents at Mosquito airfield.

Research has shown that using Mogas can have an effect on the formation of vapour lock in the fuel system, and carburettor icing. Despite this, the pilot successfully climbed the aircraft after refuelling from Mosquito airfield and recommenced spotting operations. There were no reported difficulties with aircraft performance.

It was considered that, despite the known issues with the use of Mogas, it was unlikely that in this case it resulted in poor engine performance or contributed to a loss of aircraft control.

Findings

From the evidence available, the following findings are made with respect to the loss of control and impact with terrain involving the Cessna Aircraft Company 150G, registered VH-RXU, that occurred 270 km SE Alice Springs, Northern Territory on 12 July 2016. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing factors

- While conducting a right turn at low altitude, the pilot lost control of the aircraft and was unable to recover before impacting terrain.

Other factors that increased risk

- The pilot of the aircraft did not use the installed shoulder harness (sash), resulting in a greater risk of injury during the collision with terrain.
- The use of unapproved fuels in aircraft increases the risk of engine performance related issues.

General details

Occurrence details

Date and time:	12 July 2016 – 1130 CST	
Occurrence category:	Accident	
Primary occurrence type:	Loss of control and collision with terrain	
Location:	Approximately 270 km south-east Alice Springs, Northern Territory	
	Latitude: 26° 06.32’ S	Longitude: 134° 33.80’ E

Aircraft details

Manufacturer and model:	Cessna Aircraft Company C150G
Registration:	VH-RXU
Operator:	New Crown Station
Serial number:	15066748
Type of operation:	Private - Aerial spotting/mustering
Persons on board:	Crew – 1
Injuries:	Crew – Fatal
Damage:	Substantial

Sources and submissions

Sources of information

The sources of information during the investigation included the:

- aircraft operator
- Civil Aviation Safety Authority
- South Australia police.

References

Aircraft Owners and Pilots Association 2003, *Stall/Spin: Entry point for crash and burn*? Available at website.

Federal Aviation Administration (FAA) 2004, *Airplane Flying Handbook FAA-H-8083-3A*. Available at website.

Pastoralists & Graziers Association (PGA) of WA (Inc), *Aerial Mustering Code of Practice*, West Perth, Western Australia. Cited in ATSB B2005/0055.

Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003* (the Act), the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the aircraft operator, Civil Aviation Safety Authority and the South Australia police.

Submissions were received from the aircraft operator, Civil Aviation Safety Authority and the South Australia police. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.

Australian Transport Safety Bureau

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; 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.

Purpose of safety investigations

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

Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to initiate proactive safety action that addresses safety issues. Nevertheless, the ATSB may use its power to make a formal safety recommendation either during or at the end of an investigation, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation.

When safety recommendations are issued, they focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on a preferred method of corrective action. As with equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the body to which an ATSB recommendation is directed to assess the costs and benefits of any particular means of addressing a safety issue.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue safety advisory notices suggesting that an organisation or an industry sector consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to an advisory notice, although the ATSB will publish any response it receives.

Australian Transport Safety Bureau

Enquiries 1800 020 616
Notifications 1800 011 034
REPCON 1800 011 034
Web www.atsb.gov.au
Twitter @ATSBinfo
Email atsbinfo@atsb.gov.au
Facebook atsbgovau

Investigation

ATSB Transport Safety Report
Aviation Occurrence Investigation

Loss of control and collision with terrain, Cessna 150, VH-RXU
270 km SE Alice Springs, Northern Territory, on 12 July 2016

AO-2016-074
Final – 28 July 2017