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What happened

On 11 November 2014, the pilot of a Cessna 210 aircraft, registered VH-MCE (MCE), conducted a charter flight from Numbulwar to Gove, Northern Territory, with five passengers on board. During the engine start, taxi, take-off and climb, the aircraft performed normally and all engine, electrical system and landing gear indications were normal.

During the cruise, about 60 NM from Gove, the ammeter gauge indicated a discharge. The pilot contacted a company pilot at Gove by mobile phone who advised to continue to monitor the ammeter, reduce the electrical load and to complete the checklist for electrical failure. The pilot switched off all electrics and checked the circuit breakers, none of which had popped. About 5 minutes after completing the checks, the pilot selected the alternator master switch back to ON and the gauge indicated a positive charge.

About 10-15 NM from Gove, the ammeter again indicated a discharge. The pilot switched all electrics off including the aircraft avionics and again contacted a company pilot on the ground at Gove. The company pilot then broadcast the base and final radio calls on the common traffic advisory frequency (CTAF) on behalf of MCE.

When at about 4 NM from Gove and 1,500 ft, the pilot selected the landing gear lever to the extended position. He heard the landing gear motor activate, so assumed the gear had fully extended. As the pilot reduced the engine power, the engine ran roughly and backfired loudly. An eyewitness on the ground at Gove Airport heard the engine backfire. The pilot observed the oil pressure gauge reading zero and the cylinder head temperature (CHT) decreasing. The passengers became unsettled hearing the loud backfiring, and the pilot asked them to remain calm and briefed the passengers for an emergency landing. The pilot observed that the flaps had not extended, but due to the distraction of the engine malfunction, did not look outside to confirm visually whether the landing gear was extended. The pilot carried out the engine trouble checks, and as the engine problem ruled out the option to go around, committed to landing the aircraft.

The aircraft landed just beyond the threshold and on the centreline of runway 31 with the wheels retracted. When the pilot realised the wheels were retracted, he immediately selected the fuel to OFF. The aircraft sustained substantial damage and the pilot and passengers were uninjured (Figure 1).

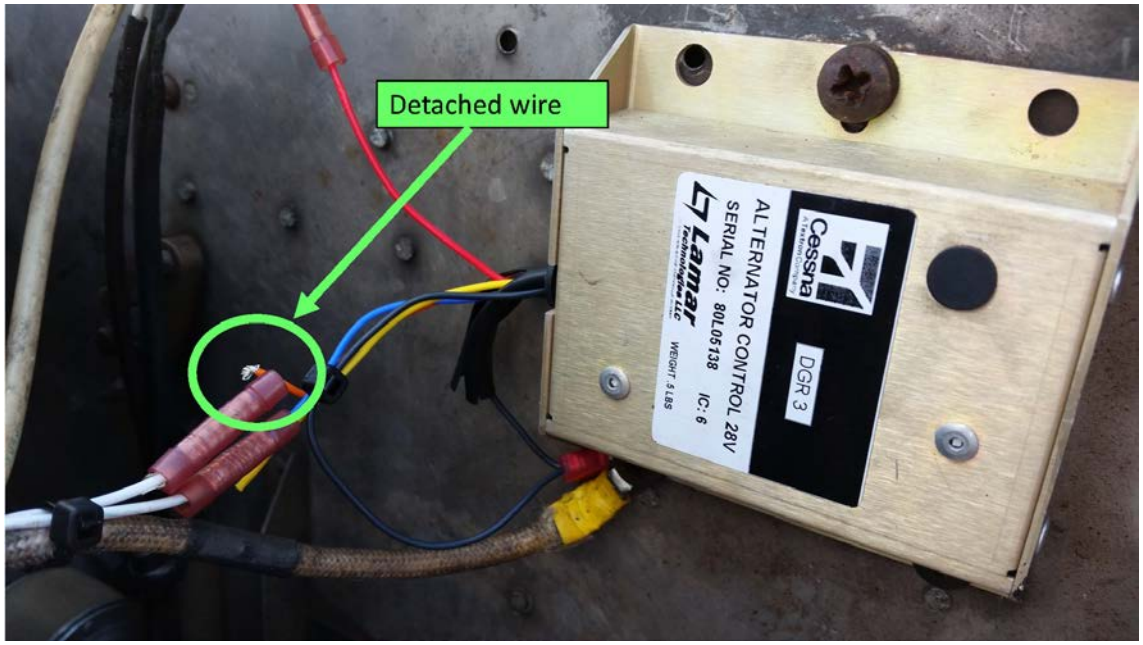
Figure 1: Wheels-up landing

Source: Operator

Engineering inspection

A detached electrical cable was found to have caused the alternator to stop charging the battery (Figure 2). The engine had not been inspected before the completion of the ATSB report and the cause of the engine issues were unknown.

Figure 2: Detached alternator wire



Source: Operator

Safety message

The pilot was aware that the flaps had not fully extended but was unware that the landing gear had not fully extended. Due to the distraction of the engine issues and passengers' reactions, the pilot omitted the external visual check of the landing gear. The pilot reported that even if he had observed the state of the landing gear prior to landing, he had already decided that there was no option to conduct a go-around due to the engine issues.

This incident highlights the impact distractions can have on aircraft operations, particularly during a critical phase of flight. Research conducted by the ATSB found that distractions were a normal part of everyday flying and that pilots generally responded to distractions quickly and efficiently. It also revealed that 13 per cent of accidents and incidents associated with pilot distraction between January 1997 and September 2004 occurred during the approach phase of flight. The study also identified four occurrences associated with checklists and suggested that, if a checklist is interrupted, pilots should consider returning to the beginning of the checklist to reduce the potential for error.

The Flight Safety Foundation suggests that, after a distraction source has been recognised and identified, the next priority is to re-establish situation awareness by conducting the following:

- *Identify*: What was I doing?
- *Ask*: Where was I distracted?
- *Decide/act*: What decision or action shall I take to get back on track?

The following provide additional information on pilot distraction:

- Dangerous Distraction: An examination of accidents and incidents involving pilot distraction in Australia between 1997 and 2004: www.atsb.gov.au/publications/2005/distraction_report.aspx
- Flight Safety Foundation Approach-and-landing Briefing Note 2.4 – Interruptions/Distractions: http://flightsafety.org/files/alar_bn2-4-distractions.pdf
- The United States Federal Aviation Administration (FAA) On Landings Part III pamphlet: www.faasafety.gov/files/gslac/library/documents/2011/Aug/56411/FAA%20P-8740-50%20OnLandingsPart%20III%20%5Bhi-res%5D%20branded.pdf www.faasafety.gov/files/gslac/library/documents/2011/Aug/56411/FAA P-8740-50 OnLandingsPart III %5Bhi-res%5D branded.pdf

General details

Occurrence details

Date and time:	11 November 2014 – 1050 CST	
Occurrence category:	Accident	
Primary occurrence type:	Wheels-up landing	
Location:	Gove Aerodrome, Northern Territory	
	Latitude: 12° 16.17' S	Longitude: 136° 49.10' E

Aircraft details

Manufacturer and model:	Cessna Aircraft Company 210M	
Registration:	VH-MCE	
Serial number:	21062633	
Type of operation:	Charter - passenger	
Persons on board:	Crew – 1	Passengers – 5
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Wheels-up landing involving a Cessna 310, VH-TBE

What happened

VH-TBE on side of runway

On 12 December 2014, the pilot of a Cessna 310 (C-310) aircraft, registered VH-TBE (TBE), was completing a charter flight from Oenpelli to Jabiru, Northern Territory. On board were the pilot, two adults and three children.

TBE was one of several aircraft operating multiple flights between the two communities, and this was the fourth and final flight for the pilot that day. Due to the late arrival of a passenger on one of his earlier runs, the pilot had been delayed throughout the morning.

After departing Oenpelli, he made a left turn, and continued climbing to 2,000[1] ft for the short flight. An agreed local procedure between operators in this area was that flights from Oenpelli to Jabiru operated at 2,000 ft, and flights in the opposite direction at 1,500 ft.

The pilot reported that the three children on board were excited and a little disruptive, and he had kept a close watch on their activities. Concurrently, the passenger seated in the front seat coughed incessantly through the headset, which distracted him. Once he had the aircraft stable, he reached over and unplugged the passenger's headset.

After the completion of the top of descent (TOPD) checks, he manoeuvred to join a late downwind for a right circuit onto runway 27 at Jabiru. He commenced the pre-landing checks and reported verbalising "undercarriage down", but made a decision to leave this particular action until later on final approach. He elected to keep the aircraft speed slightly higher than normal; and as per the company procedures, kept a stable power setting and profile and only made small adjustments when needed at around 300 ft. He was also mindful of a Cessna 210 aircraft close behind TBE.

He then focussed on the passengers, especially the children, and made sure that they all had their seatbelts correctly fastened prior to landing. The children were still highly excited. He normally completed the remaining memory-recall PUFF[2] check on final approach, but on this occasion he did not.

The pilot flared the aircraft in preparation for landing. He became aware that the undercarriage remained retracted when TBE touched down on the runway centreline and he heard the propellers contacting the ground.

Mindful there was an aircraft in the circuit behind him, he used the remaining rudder effectiveness to move the aircraft slightly to the left of the runway. When the aircraft came to a stop, he checked on the welfare of his passengers and opened the door for them to exit, directing them to assemble in a safe area. After completing shutting down, he also exited the aircraft. There were no injuries to either the pilot or passengers; however, the aircraft was substantially damaged.

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1 Above mean sea level.

2 A personal mnemonic applied by the pilot to check completion of the actions necessary to confirm the aircraft was in the landing configuration, including: set propeller pitch, undercarriage down, and flaps full down.

Figure 1: VH-TBE damage

Source: Grant Hampton

Pilot experience and comments

The pilot had about 1,739 hours total flying time, with around 335 of those on twin engine aircraft. He had about 12 hours on C-310 aircraft, having conducted his endorsement on a different company C-310R aircraft.

As he was relatively new to the C-310, he spent time preparing and refreshing himself on the performance data prior to the flight. Although TBE was the same model aircraft as he had been endorsed on, this particular aircraft differed slightly by having a vortex generator kit fitted.

The pilot reported it had been a busy, but fairly typical work day. For the first flight of the morning he had to remove several aircraft seats to fit and secure a cage suitable for transporting a dog. This had taken some time and he reported that in the heat and humidity it had been taxing. He always carried water when on duty, but had consumed all of his supply during this first activity and with a passenger arriving late for his flight, he had elected to wait until he had finished duty to re-hydrate.

He also reported that at no time during the approach did he hear TBE's gear warning horn[3] activate. He was not aware if the gear horn was operational or set differently to the endorsement C-310, which he reported had a loud warning system. There is no procedure available to check the horn serviceability during the pre-flight check.

In hindsight, he felt it would have been beneficial to have been familiarised with all the annunciators on TBE prior to flying the aircraft.

He also confirmed the importance of using flow checks, backed up by a written checklist.

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[3] An audible intermittent horn warning

Landing gear warning horn on VH-TBE

The landing gear warning horn was controlled by the throttles and the flap preselect handle. Normally the warning horn sounds an intermittent note if either throttle is retarded below approximately 12 in of manifold pressure with the landing gear retracted, or if the flap handle is lowered past the 15° setting.

Safety Action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aircraft operator

As a result of the accident, the operator of VH-TBE sent a memo to all company pilots reminding them that:

- There is a requirement to use the checklist correctly. Do not skip any item with the intention to come back to it, as you may not remember to do so. The checklist is the final action to be taken during any stage of flight that requires checks to be completed.
- The intention of the checklist is to capture items missed during the systems flow.

Safety message

This incident highlights the impact a combination of distractions can have on aircraft operations.

Research conducted by the ATSB found that distractions were a normal part of everyday flying, and generally pilots respond to them fairly and efficiently. It also revealed that 13 per cent of accidents and incidents associated with pilot distraction between January 1997 and September 2004 occurred during the approach phase of flight.

The Flight Safety Foundation suggests that after a distraction source has been recognised, the next priority is to re-establish situation awareness by conducting the following:

- *Identify*: What was I doing?
- *Ask*: Where was I distracted?
- *Decide/act*: What decision or action do I need to take to get back on track?

Further reading is available at:

Dangerous Distraction: An examination of accidents and incidents involving pilot distraction in Australia between 1997 and 2004: www.atsb.gov.au/publications/2005/distraction_report/aspx

Flight Safety Foundation Approach-and-landing Briefing Note 2.4 – Interruptions/Distractions:

http://flightsafety.org/files/alar_bn2-4-distractions.pdf

General details

Occurrence details

Date and time:	12 December 2014	
Occurrence category:	Accident	
Primary occurrence type:	Wheels up landing	
Location:	Jabiru Airport, Northern Territory	
	Latitude: 12° 39.50’ S	Longitude: 132° 53.58’ E

Aircraft details

Manufacturer and model:	Cessna 310R	
Registration:	VH-TBE	
Serial number:	310R2119	
Type of operation:	Charter - passenger	
Persons on board:	Crew – 1	Passengers – 5
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Near collision involving a Cessna 152, VH-NKL and a Starduster SA300, VH-XRS

What happened

On 2 January 2015, at about 1400 Eastern Daylight-saving Time, the pilot of a Starduster SA300 aircraft, registered VH-XRS (XRS), commenced pre-flight preparations for a local private flight at Tyabb Airport, Victoria (Figure 1). The pilot of XRS observed the windsock indicating calm conditions. The pilot elected to follow the airport operator's procedures for nil wind, and use the preferred runway, runway 17. During the next 30 minutes, no aircraft operated in the circuit. The pilot did not hear any broadcasts on the common traffic advisory frequency (CTAF) during that time.

Figure 1: VH-XRS

Source: Aircraft owner

At about 1430, a Cessna 152 aircraft, registered VH-NKL (NKL), conducted pre-taxi checks prior to a dual training flight. The instructor and student pilot planned to conduct circuits at Tyabb. During the pre-taxi checks, the student pilot selected Tyabb common traffic advisory frequency (CTAF) on the radio, and checked the squelch,[1] to verify that the radio was operating. The instructor reported that the wind was less than 5 kt and from the east-northeast. Although the preferred runway in those conditions was runway 17, they elected to use runway 35. This runway selection provided an opportunity for the student to practice backtracking on the runway. The student pilot broadcast taxiing for runway 35 and commenced taxiing south from the apron towards the threshold of runway 35.

The pilot of XRS did not hear the taxi broadcast from the pilot of NKL, or sight NKL at that time, and commenced taxiing from the hangar to the apron area. At the apron, the pilot of XRS conducted engine run-ups, then broadcast taxiing for runway 17 and commenced taxiing north towards the threshold of runway 17. Neither the student pilot nor instructor of NKL heard the taxi broadcast from the pilot of XRS.

[1] Pilot control of volume or signal/noise ratio.

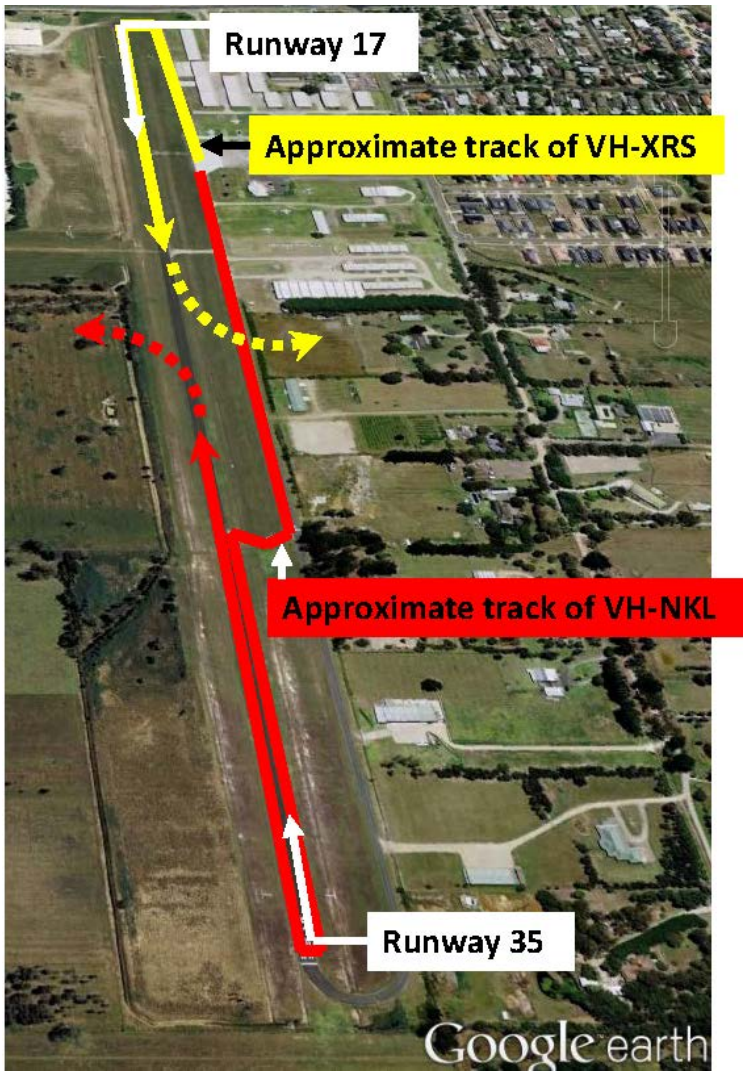
The student pilot of NKL then broadcast entering and backtracking runway 35, and NKL entered the runway and taxied to the southern threshold. After reaching the threshold, the student pilot turned the aircraft, broadcast lining up and departing runway 35 for circuits. The pilot of XRS did not hear that broadcast, but was by then at the threshold of runway 17 and broadcast lining up and departing runway 17. The pilots of NKL did not hear that broadcast.

The pilot of another Cessna aircraft, then at the apron, heard both 'lining up' broadcasts on the CTAF. This pilot immediately attempted to broadcast a conflict alert, to advise the pilots that the aircraft were on opposing runways. The pilots of XRS and NKL did not hear that broadcast. The student pilot of NKL broadcast 'rolling runway 35' at the same time, which may have over-transmitted the other call.

When about 500 m along the runway and at rotate speed, the instructor of NKL pointed out the airspeed to the student and the aircraft lifted off. The instructor then sighted XRS in the take-off run on the opposite runway. The instructor immediately took control of the aircraft from the student and commenced a left climbing turn, while keeping XRS in sight (Figure 2).

When about 300 m along the runway, XRS lifted off. When at about 10 ft above ground level, the pilot of XRS sighted NKL, about 300 m ahead and banking to the left. He also commenced a left turn to increase separation between the two aircraft, which then passed about 50 m from each other, with NKL slightly higher than XRS. The pilot of XRS then joined the circuit for runway 35 on the crosswind leg, and broadcast that he was joining the circuit to return to land at Tyabb.

Figure 2: Tyabb Airport and aircraft tracks



Source: Google earth

The instructor of NKL then requested a radio check, which the pilot of the other Cessna operating in the area heard and responded to.

Radio broadcasts

The CTAF at Tyabb was not recorded and the ATSB was unable to verify broadcasts made, other than those reported by the pilot of another aircraft operating at the airport at the time. The CTAF did not have an aerodrome frequency response unit (AFRU). An AFRU assists in indicating selection of the correct VHF frequency at non-towered aerodromes, by automatically responding with either a pre-recorded voice message, if no transmission has been received in the last five minutes or otherwise a 'beep-back', on the CTAF.

Preferred runway in nil wind conditions

The En Route Supplement Australia (ERSA) for Tyabb,[2] indicated under noise abatement procedures, that the preferred runway was 35/17 and that runway 08/26 was only to be used when operationally required. The page layout may have been considered to be misleading with 35 printed above 17, but that was not designed to imply that runway 35 was the preferred runway in the event the wind did not favour either direction.

The Chief Flying Instructor at Tyabb provided the ATSB with a copy of the runway diagram and local instructions. He reported that this was issued to pilots operating at the airfield. In the notes section, it stated 'Preferred runway in nil wind conditions, Runway 17'. Both the pilot of XRS and the instructor of NKL were local pilots and aware of the local instruction for the preferred runway in nil- or cross-wind conditions.

Pilot comments

Pilot of XRS

After the incident, as XRS was returning to land, the pilot of XRS heard the second Cessna aircraft pilot broadcast lining up and departing. He was able to hear broadcasts from aircraft on the ground while XRS was in the air, but is unsure whether an aircraft at one end of the runway could hear a broadcast from an aircraft at the opposite end. The VHF radio requires line-of-sight, and a pilot in an aircraft at the threshold at one end of the runway is unable to see an aircraft at the opposite threshold, due to a slope in the runway.

Pilot of other Cessna

The pilot of the Cessna at the apron reported that the radio transmissions from XRS were of poor quality.

Instructor of NKL

The instructor provided the following comments:

- He held a formation endorsement, and during formation flying there was an emphasis on keeping the other aircraft in sight. When he sighted XRS, he conducted a left turn to maintain visual contact with XRS.
- He did not hear any broadcasts from the pilot of XRS. After the incident, he heard the pilot of the other Cessna make the standard broadcasts.

[2] www.airservicesaustralia.com/aip/current/ersa/FAC_YTYA_13-Nov-2014.pdf

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aero club

As a result of this occurrence, the local aero club has advised the ATSB that they are taking the following safety actions:

Communication

The incident will be discussed at a monthly meeting, emphasising the use of the preferred runway in nil wind conditions. Pilots and instructors will be reminded that operating outside of the normal and expected procedures, requires higher levels of alertness.

ERSA

The ERSA entry for Tyabb will be amended as the layout may have been misleading.

AFRU

They will review the installation of an AFRU and possible means of recording the CTAF.

Accident emergency plan

The emergency management plan will also be reviewed.

Safety message

The ATSB SafetyWatch highlights the broad safety concerns that come out of our investigation findings and from the occurrence data reported to us by industry. One of the safety concerns is safety around non-towered aerodromes www.atsb.gov.au/safetywatch/safety-around-aeros.aspx.

As detailed in the booklet *A pilot's guide to staying safe in the vicinity of non-towered aerodromes*, available at www.atsb.gov.au/publications/2008/ar-2008-044(1).aspx, ATSB research found that, between 2003 and 2008, there were 709 airspace-related events at, or in the vicinity of non-towered aerodromes. This included 60 serious incidents and six accidents (mid-air and ground collisions). Most of the 60 serious incidents were near mid-air collisions.

Issues associated with unalerted see-and-avoid have been detailed in the ATSB research report Limitations of the See-and-Avoid Principle. The report highlights that unalerted see-and-avoid relies entirely on the pilot's ability to sight other aircraft. Broadcasting on the CTAF is known as radio-alerted see-and-avoid, and assists by supporting a pilot's visual lookout for traffic. An alerted search is more likely to be successful as knowing where to look greatly increases the chances of sighting traffic. The report is available at www.atsb.gov.au/publications/2009/see-and-avoid.aspx.

Civil Aviation Advisory Publication (CAAP) 166-2(1), www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-2.pdf, stated:

> *11.5 Pilots should be mindful that transmission of information by radio does not guarantee receipt and complete understanding of that information. Many of the worst aviation accidents in history have their genesis in misunderstanding of radio calls, over-transmissions, or poor language/phraseology which undermined the value of the information being transmitted.*
>
> *11.6 Without understanding and confirmation of the transmitted information, the potential for alerted see-and-avoid is reduced to the less safe situation of unalerted see-and-avoid.*

In this incident, the instructor of NKL diverged left on sighting XRS. When the pilot of XRS sighted NKL, it was already banking to the left and therefore he was able to also conduct a left turn to

increase separation. However, the Civil Aviation Regulations 1988 – Reg162, *Rules for prevention of collision*,[3] stated:

> *When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.*

The risk of reduced separation events can be minimised through good communication by pilots. Most importantly, a good visual lookout should be maintained at all times, particularly when operating at aerodromes where the carriage of a radio is not mandatory.

A local procedure that improves safety, such as a preferred runway, should be well-documented, and communicated to all pilots operating at the aerodrome.

General details

Occurrence details

Date and time:	2 January 2015 – 1440 EDT	
Occurrence category:	Serious incident	
Primary occurrence type:	Near collision	
Location:	Tyabb (ALA), Victoria	
	Latitude: 38° 16.00' S	Longitude: 145° 10.50' E

Aircraft details: VH-NKL

Manufacturer and model:	Cessna Aircraft Company, 152	
Registration:	VH-NKL	
Serial number:	15280119	
Type of operation:	Flying training – dual	
Persons on board:	Crew – 2	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

Aircraft details: VH-XRS

Manufacturer and model:	Amateur Built Aircraft, Starduster SA300	
Registration:	VH-XRS	
Serial number:	2620	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

[3] www.austlii.edu.au/au/legis/cth/consol_reg/car1988263/s162.html

Wheels-up approach and go-around involving Piper PA-31-350, VH-TXK

What happened

On 9 January 2015, a pilot in-command-under-supervision (ICUS), and a supervising pilot, operated a Piper PA-31-350 aircraft, registered VH-TXK, on a charter flight from Palm Island to Townsville, Queensland, with seven passengers on board. At about 1630 Eastern Standard Time (EST), air traffic control (ATC) cleared the aircraft to conduct a visual approach via a left base, to runway 07 at Townsville Airport.

When about 4 NM from the runway, the pilot ICUS performed the pre-landing checks, but omitted to extend the landing gear. The supervising pilot confirmed the mixture, fuel pumps and landing lights had been set correctly, and assumed the rest of the checks had been similarly completed. As the aircraft turned from base to final for runway 07, the supervising pilot alerted the pilot ICUS that the aircraft was too high, which the pilot ICUS immediately corrected by selecting full flap and a lower nose attitude. As the aircraft was then slightly higher and faster than for a normal approach, the pilot ICUS reduced the throttle to idle slighter earlier than normal. As he flared the aircraft to land, he anticipated the landing gear touching down on the runway, but as it did not occur when he expected, he commenced a go-around. At the same time, the supervising pilot expected the landing gear to touch down and called ‘go around’. Neither of the pilots heard an aural gear warning horn sound.

As the pilot ICUS commenced the go-around, a VHF antenna fitted to the underside of the aircraft fuselage contacted the runway and both pilots heard a scraping sound. The pilots broadcast ‘going around’ and did not receive a response. After a second call to ATC also did not elicit a response, the supervising pilot selected the second VHF radio (COMM2) and was then able to communicate with ATC. When at about 50 ft above ground level (AGL), the pilot ICUS observed the landing gear lever in the UP position, and was then unsure whether he had omitted to select the landing gear DOWN during the pre-landing checks, or whether a technical fault had occurred.

The supervising pilot assumed that there was a technical fault with the landing gear and prepared to perform a manual gear extension. The pilot ICUS established the aircraft in a slow cruise configuration at about 1,400 ft (AGL), extended flap and, when the aircraft was below the maximum gear extension speed, selected the landing gear lever to the extended position. The landing gear extended and locked and three green lights indicated a safe extension. The pilot ICUS confirmed visually that the nose landing gear was extended. The pilots discussed the option of conducting a fly-by to verify the landing gear had extended fully, but elected to return for a landing. The aircraft subsequently landed on runway 07 without further incident.

The VHF antenna was found on the runway, having broken off from the underside of the aircraft after striking the runway (Figures 1 and 2). Two aerodynamic fins also sustained minor scrapes from the runway. The pilots and passengers were uninjured in the occurrence and a subsequent engineering inspection found that the landing gear warning horn was serviceable.

Figure 1: Broken antenna

Source: Aircraft operator

Figure 2: Photo of new antenna fitted to VH-TXK

Source: Aircraft operator

Pilot comments

The pilots provided the following comments:

- The pre-landing and finals checks were conducted from memory, rather than a written checklist. With a pilot ICUS and supervising pilot, the pilot may have vocalised the checks as they were being performed, but on this flight the pilot ICUS could not recall vocalising the checks and the supervising pilot did not recall hearing them. The company did not have standard procedures for ICUS flights.
- Neither pilot completed checks when on final to confirm the landing gear indicated three green lights. The supervising pilot reported that when landing on runway 07 late in the afternoon, the position of the sun often made the cockpit display, including the landing gear indication, appear to be illuminated.
- The stall warning would normally sound during the landing phase in that aircraft. Neither pilot recalled hearing the aural stall warning or landing gear warning horn. As the aircraft was on a slightly higher and faster approach than normal, the pilot ICUS reduced the throttle to idle earlier than for a normal landing. This should have activated the landing gear warning, unless the throttle levers were not retarded to a position fully against the idle stops.
- The pilot ICUS had used written checklists when operating other aircraft, but had been trained to perform checks from memory for the PA-31.

Aircraft operator comments

The pilot ICUS held the appropriate endorsements for the aircraft and had 47.7 hours experience on the aircraft type. His total flying time was 319.5 hours. The aircraft insurer required a pilot to hold a minimum of 600 hours total time to operate the aircraft as pilot in command, hence the pilot was operating under supervision.

As they do not normally conduct two-pilot operations, they did not have a training program in place for such operations.

Department of Defence investigation

The Department of Defence conducted an internal investigation into the incident and reported that, during normal operations, the Tower controller was required to scan an aircraft during critical stages of flight. This included monitoring that the aircraft was on the appropriate track, level and positioned for the correct runway. They were also required to scan for any abnormalities with the aircraft. It was normal process for all Townsville air traffic controllers to visually scan the undercarriage status of all aircraft on final approach.

The Tower controller could not recall specifically observing the position of the aircraft's landing gear when scanning the aircraft on final approach, but the position of the sun at the time of the incident may have affected the Tower controller's ability to observe the aircraft's landing gear.

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aircraft operator

As a result of this occurrence, the aircraft operator has advised the ATSB that pilots will henceforth require a minimum of 600 hours total aeronautical experience prior to operating that aircraft type. Company pilots will receive additional experience and training prior to operating as supervising pilots.

Department of Defence

As a result of this occurrence, the Department of Defence has advised the ATSB that they are taking the following safety actions:

- A safety awareness poster was created and displayed in prominent locations for Townsville based controllers to view, describing an 'effective scan'.
- Townsville controllers were briefed on the importance of proper scan technique during the critical stages of an aircraft's flight. Particular mention was made of the importance of checking the status of the landing gear when an aircraft is cleared to land.

Safety message

This incident is a reminder for pilots and operators of the limitations of human performance and highlights the need to follow procedures and complete checklists diligently.

General details

Occurrence details

Date and time:	9 January 2015 – 1635 EST	
Occurrence category:	Serious incident	
Primary occurrence type:	Wheels up landing	
Location:	Townsville Airport, Queensland	
	Latitude: 19° 15.15' S	Longitude: 146° 45.92' E

Aircraft details

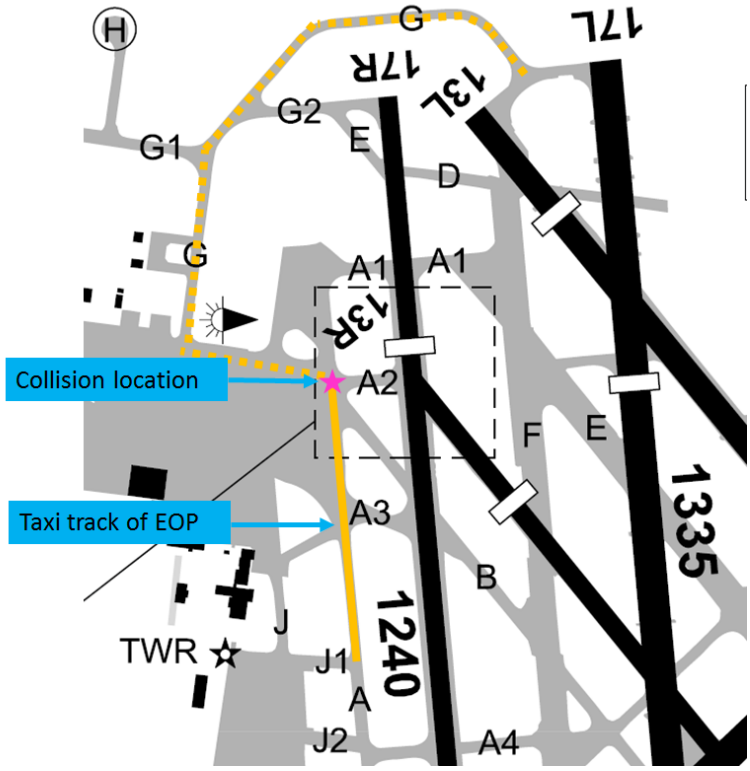
Manufacturer and model:	Piper Aircraft Corporation, PA-31-350	
Registration:	VH-TXK	
Serial number:	31-7405189	
Type of operation:	Charter – passenger	
Persons on board:	Crew – 2	Passengers – 7
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

Taxiing collision involving a Cessna 172S, VH-EOT and a Cessna 172S, VH-EOP

What happened

On 29 January 2015, the student pilot of a Cessna 172S aircraft, registered VH-EOP, taxied for a solo training flight at Moorabbin Airport, Victoria. The student was cleared by air traffic control (ATC) to taxi via taxiway 'A' (Figure 1) to the holding point on taxiway 'G' for a departure from runway 13 Left (13L).

Figure 1: Extract of Moorabbin Airport En Route Supplement Australia entry



Source: Airservices Australia

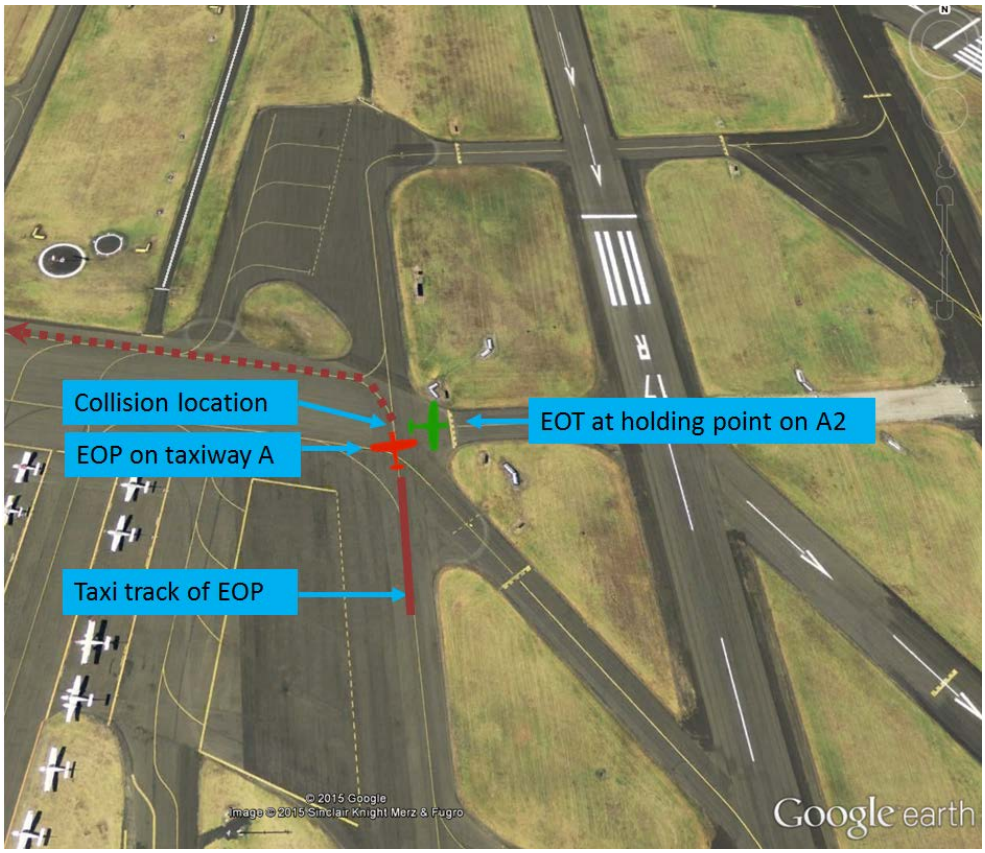
As EOP passed the 'A2' taxiway, the right wingtip struck the rudder of another Cessna 172S aircraft, registered VH-EOT, which was stationary at the holding point for runway 13 Right (13R) on the 'A2' taxiway, and less than half a metre behind the marked holding line (Figure 2). The student pilot of EOP was unaware of the collision and continued to taxi to the holding point for runway 13L. A flight instructor on board EOT advised ATC of the collision and the controller directed the pilot of EOP to taxi back to the run-up bay. He was then advised of the collision and the instructor of EOT inspected both aircraft for damage. EOP was undamaged and EOT sustained minor damage to the rudder.

Pilot comments

The student pilot of EOP reported that he taxied on the yellow marked taxi line and assumed that this would provide adequate clearance from the stationary aircraft.

He subsequently had a taxi lesson focused on maintaining adequate clearance from other aircraft and obstacles, which he believed would be valuable training for all student pilots.

Figure 2: Moorabbin Airport, EOP taxi route and location of EOT



Source: Google earth

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Moorabbin Airport operator

As a result of this occurrence, the airport operator is taking the following safety actions:

Taxi line repaint

A work order has been raised to extend the left turn taxiway line to join the northern apron right side taxi line (Figure 3). This will increase the distance between an aircraft taxiing via taxiways 'A' and 'G' and an aircraft holding at the 'A2' holding point.

Figure 3: Taxiway line to be extended

Source: Google earth

Safety message

This incident highlights the importance of maintaining a good lookout when taxiing. Practice in taxiing an aircraft assists pilots to develop an awareness of where the extremities of the aircraft structure are going to track during ground manoeuvring.

General details

Occurrence details

Date and time:	29 January 2015 – 1232 EST	
Occurrence category:	Incident	
Primary occurrence type:	Taxiing collision	
Location:	Moorabbin Airport, Victoria	
	Latitude: 37° 58.55' S	Longitude: 145° 06.13' E

Aircraft details: VH-EOP

Manufacturer and model:	Cessna Aircraft Company, 172S	
Registration:	VH-EOP	
Serial number:	172S10022	
Type of operation:	Flying training - solo	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Nil	

Aircraft details: VH-EOT

Manufacturer and model:	Cessna Aircraft Company, 172S	
Registration:	VH-EOT	
Serial number:	172S10317	
Type of operation:	Flying training – dual	
Persons on board:	Crew – 2	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Minor	

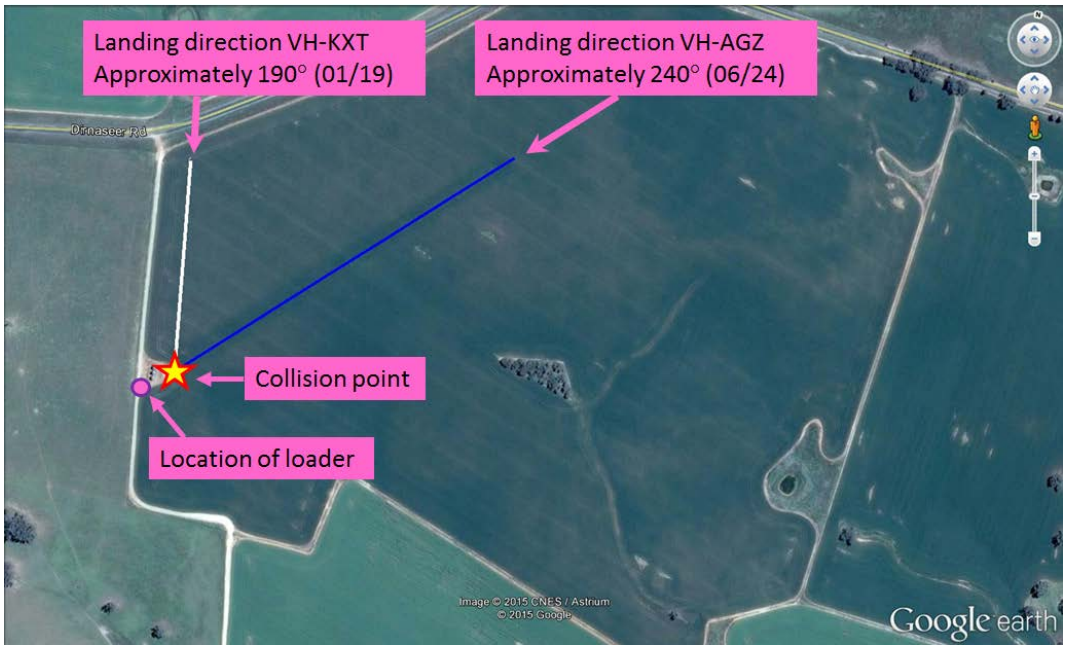
Collision after landing involving a Fletcher FU-24, VH-KXT and a Gippsland GA-200, VH-AGZ

What happened

On 27 February 2015, the pilot of a Fletcher FU-24 aircraft, registered VH-KXT (KXT), and the pilot of a Gippsland GA-200 aircraft, registered VH-AGZ (AGZ), were conducting aerial agricultural operations on a property 13 km south-west of Cootamundra, New South Wales.

The pilots commenced spreading fertilizer at about 0730 Eastern Daylight-saving Time (EDT) using two runways, one aligned in approximately the 01/19 direction, and the other 06/24 (Figure 1). Both of the aircraft were taking off from runway 06, however, AGZ was landing on runway 24, and KXT was landing on runway 19. Each load took about 6 minutes to spread. During about 90 minutes of flying operations, the pilot of AGZ had not seen KXT landing, but had observed it being loaded and taking off from runway 06. With both aircraft taking a similar amount of time to spread their load, they were in an alternating sequence and so did not need to hold and wait for the other aircraft to be loaded.

Figure 1: Accident location



Source: Google earth with details added by ATSB

At about 0900, the pilots shut the aircraft down, refuelled and had a break of about 30 minutes. During the break, the pilot of KXT reminded the pilot of AGZ that the loaded aircraft always had right of way over the landing aircraft. He also stated that KXT would remain to the west of AGZ and conduct all procedure turns to the west, AGZ was to remain east and conduct all turns to the east, to ensure separation between the two aircraft.

After resuming flying, the pilot of AGZ completed spreading on an area south-east of the landing area. He then reloaded the aircraft and departed, to locate the next paddock to be spread, which was about 1.5 NM to the north-east. It took about 5 minutes for the pilot of AGZ to determine the boundaries of the paddock and commence spreading. During this time, the pilot of KXT had returned, reloaded the aircraft and spread another load on an area about 2 NM to the north-west.

At about 1015, as KXT was on final approach for runway 19, the pilot looked towards the north-east to see whether he could sight AGZ on approach to runway 24, but did not see the aircraft. He then assumed that AGZ was still in the spreading area. At about the same time, AGZ was on approach to land on runway 24 and the pilot looked to see whether he could sight KXT approaching or on the runway, but did not sight that aircraft. He assumed that KXT was then out spreading and not in the vicinity of the landing area.

As KXT landed, the pilot observed the loader truck near the fence, which was not the normal loading position. He was momentarily distracted, as he became concerned that the truck had broken down. The loader driver had observed both aircraft approaching on different runways and had moved to a position from which he could load whichever aircraft arrived first. AGZ was in the landing roll on runway 24, and about 50 m from the loader truck when the pilot sighted KXT about 10 m from his right wing. KXT was then in the landing roll on runway 19 and the pilot of KXT returned his gaze from the loader to the front of the aircraft, just as the propeller collided with the right wingtip and then the tail of AGZ (Figure 2).

Both aircraft sustained substantial damage and the pilots were not injured.

Pilot comments

The pilots observed that the aircraft blended in with the brown countryside and were difficult to sight. The landing lights of both aircraft were on at the time of the collision. The pilot of AGZ reported that he had forgotten that KXT was landing on a different runway and assumed he was also landing on 24. The pilots had the aircraft radios switched off to reduce the likelihood of distraction.

Figure 2: Damage to VH-AGZ

Source: Aircraft owner

Safety message

The pilot of KXT commented that this incident highlights the importance of a thorough briefing between pilots prior to commencing operations. He also suggested that fitting aircraft with strobes or other light reflectors may improve the ability of pilots of other aircraft to sight them.

Operating without the use of radios for communication is known as unalerted see-and-avoid, and separation then depends on the pilot's ability to sight other aircraft. Limitations of the see-and-avoid principle are highlighted in the ATSB research report available at www.atsb.gov.au/publications/2009/see-and-avoid.aspx.

General details

Occurrence details

Date and time:	27 February 2015 – 1015 EDT	
Occurrence category:	Accident	
Primary occurrence type:	Taxiing Collision	
Location:	13 km SW Cootamundra Aerodrome, New South Wales	
	Latitude: 34° 41.28' S	Longitude: 147° 55.10' E

Aircraft details: VH-KXT

Manufacturer and model:	Airparts NZ FU-24A-950	
Registration:	VH-KXT	
Serial number:	178	
Type of operation:	Aerial work	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Aircraft details: VH-AGZ

Manufacturer and model:	Gippsland Aeronautics GA-200	
Registration:	VH-AGZ	
Serial number:	2009722	
Type of operation:	Aerial work	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Collision with terrain involving a Liberty XL-2, VH-CZT

What happened

Damage to VH-CZT

Source: Airport operator

On 27 February 2015, the pilot of a Liberty XL-2 aircraft, registered VH-CZT, conducted a private flight to practice circuits at Moorabbin Airport, Victoria. At the completion of the first circuit, the pilot flared the aircraft to land on runway 17 Left (17L). The main landing gear contacted the runway and the aircraft bounced into the air. The pilot immediately applied full power and conducted a go-around.

The pilot then conducted a second circuit and established the aircraft on final approach to the runway about 3-4 kt slower than the previous approach. The aircraft touched down normally and the pilot then performed a touch-and-go and continued the circuit.

At about 1236 Eastern Daylight-saving Time (EDT), the pilot conducted a third approach to runway 17L. He reported closely monitoring the airspeed during the approach. As he attempted to flare the aircraft for the landing, it collided with the runway. The aircraft then bounced into the air and the pilot initiated a go-around by applying full power and slight forward pressure on the control stick. Instead of climbing away, the aircraft struck the runway again and veered to the left. The pilot applied right rudder in an attempt to counteract the left yaw and the aircraft again became airborne before colliding with the runway and skidding towards the grass to the left of the runway. The pilot felt something contact the left main landing gear. He then reduced the throttle to idle, selected the fuel, master, magnetos and avionics switches to OFF and exited the aircraft.

During the accident sequence, the main landing gear collapsed and the propeller and left wingtip struck the runway, resulting in substantial damage (Figure 1). The pilot was not injured.

Figure 1: Damage to VH-CZT

Source: Airport operator

Pilot comments

The pilot reported that he had completed most of his flying in high-wing aircraft and the XL-2, as a low-wing aircraft, behaved differently when close to the ground. It was also lighter and required more gentle control inputs than aircraft he had flown previously. It was the first time he had flown that aircraft without a passenger or second pilot on board.

Weather

The Aerodrome Terminal Information Service (ATIS)[1] current at the time of the incident indicated that the wind was from 180-250° at up to 15 kt, with a crosswind up to 15 kt on the runways in use (17 Left and 17 Right).

Safety message

This incident highlights how different aircraft types and configurations can affect the approach profile and landing characteristics. The visual cues and the control inputs required to conduct safe landings vary depending on many factors including aircraft design and performance, weight and balance, and environmental conditions including wind strength and direction.

General details

Occurrence details

Date and time:	27 February 2015 – 1236 EDT	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	Moorabbin Airport, Victoria	
	Latitude: 37° 58.55' S	Longitude: 145° 06.13' E

Aircraft details: VH-CZT

Manufacturer and model:	Liberty Aerospace XL-2	
Registration:	VH-CZT	
Serial number:	0101	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

[1] An automated pre-recorded transmission indicating the prevailing weather conditions at the aerodrome and other relevant operational information for arriving and departing aircraft.

Helicopters

Collision with terrain involving a Robinson R22, VH-SSD

What happened

On 16 January 2015, at about 0930 Eastern Standard Time (EST), the pilot of a Robinson R22 helicopter, registered VH-SSD, was conducting aerial mustering operations on a property 23 km north-east of Roma, Queensland.

The helicopter was about 100 ft above ground level (AGL), with a low forward airspeed of about 5-10 kt and the cattle moving slowly uphill, when the pilot observed the cattle start to move back down the side of the hill towards a creek. The wind was light and blowing across the path of the helicopter from the left. The pilot elected to descend along the side of the cattle and turned the helicopter towards the right.

As he did that, the helicopter turned downwind with a high power setting and low forward speed. The pilot realised he had turned downwind and started to raise the nose of the helicopter and raise collective.[1] He then detected a high rate of descent and an incipient vortex ring state, as the helicopter started to settle into its own downwash. He attempted to fly out of the situation, lowered the collective and wound the throttle on, but had insufficient forward speed and low rotor rpm. The low rotor rpm horn sounded at about 15-20 ft AGL. The pilot tried to regain rotor rpm but the helicopter sank quickly.

The pilot then ensured the skids were level and the helicopter collided with the ground. Due to the rough surface, the helicopter bounced into the air. The pilot pulled back on the cyclic[2] control, which resulted in the tail of the helicopter being chopped off by the main rotor. The helicopter then spun around and came to rest on its side (Figure 1). The helicopter was substantially damaged and the pilot was uninjured.

Figure 1: Damage to VH-SSD

Source: Operator

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1 A primary helicopter flight control that simultaneously affects the pitch of all blades of a lifting rotor. Collective input is the main control for vertical velocity.

2 A primary helicopter flight control that is similar to an aircraft control column. Cyclic input tilts the main rotor disc varying the attitude of the helicopter and hence the lateral direction.

Vortex ring state

The United States Federal Aviation Administration (FAA) handbook www.faa.gov/regulations_policies/handbooks_manuals/ describes the vortex ring state or settling with power, as an aerodynamic condition in which a helicopter may be in a vertical descent with 20% to maximum power applied and little or no climb performance.

The following combination of conditions is likely to cause settling in a vortex ring state in any helicopter:

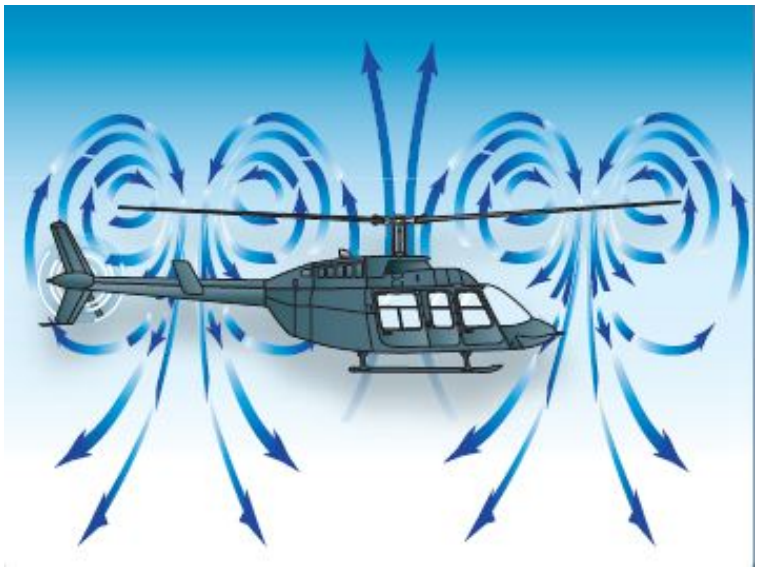
1. A vertical or nearly vertical descent of at least 300 feet per minute (fpm). The actual critical rate depends on the gross weight, rpm, density altitude, and other pertinent factors.

2. The rotor system must be using some of the available engine power, between 20-100%.

3. The horizontal velocity must be slower than effective translational lift.

A fully developed vortex ring state is characterized by an unstable condition in which the helicopter has uncommanded pitch and roll oscillations, little or no collective authority, and a descent rate that may approach 6,000 fpm, if allowed to develop (Figure 2).

Figure 2: Vortex ring state



Source: FAA

Safety message

The pilot involved in this incident was highly experienced, with over 10,000 hours total flying (helicopter) time and over 6,000 hours in Robinson R22 aircraft. He stated that the fundamental message was to always have forward airspeed before turning downwind.

This incident highlights the importance of continually assessing and reassessing the prevailing conditions and their effect on aircraft performance. The Airbus Helicopters (formerly Eurocopter) publication, Decision Making for Single-Pilot Helicopter Operations, www.airbushelicopters.com/site/docs_wsw/RUB_36/EHEST4_Single-Pilot-Decision-Making-v1.pdf, explains some of the factors that affect pilots' decision making.

In the ATSB investigation AO-2013-099, the pilot of the helicopter lost situational awareness during a night approach and the helicopter developed a high rate of descent with a low forward airspeed. This resulted in the onset of an incipient vortex ring state in the final stages of flight. The investigation report is available at:

www.atsb.gov.au/publications/investigation_reports/2013/aair/ao-2013-099.aspx

General details

Occurrence details

Date and time:	16 January 2015 – 0900 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	23 km NE Roma, Queensland	
	Latitude: 26° 23.02' S	Longitude: 148° 55.48' E

Helicopter details

Manufacturer and model:	Robinson Helicopter Company	
Registration:	VH-SSD	
Serial number:	4636	
Type of operation:	Aerial work – Aerial mustering	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Collision with terrain involving a Robinson R22, VH-ZBH

What happened

On 23 January 2015, the pilot of a Robinson R22 helicopter, registered VH-ZBH, prepared for a private flight to inspect a property at Herbertvale, Queensland, with one passenger on board. Nothing abnormal was found during the pre-flight inspection of the helicopter. About 35 L of fuel was on board the helicopter, and the pilot conducted a fuel drain with nil contaminants found. At about 0600 Eastern Standard Time (EST), the pilot started the engine. All indications were normal throughout the run-up checks.

The pilot then increased the power to 104% for take-off and the helicopter lifted off into a low hover. The pilot reported that the helicopter responded normally and he turned the helicopter 90° to the north to depart. The helicopter transitioned from the hover to forward flight, moving about 10 m forwards and climbed to about 20 ft above ground level. The engine then lost power and the pilot detected vibration. He observed the rotor rpm decreasing and the low rotor rpm warning sounded.

The pilot immediately wound on throttle and lowered the collective[1] in an attempt to increase the rotor rpm and to ensure the helicopter cleared a fence. He then prepared for an emergency landing. The rear of the skids touched down first and the helicopter skidded forwards. As the helicopter still had forward momentum, the pilot then pulled back on the cyclic[2] to prevent the helicopter rolling over forwards, and it became airborne, moved forwards and yawed right, and bounced again before coming to rest upright (Figure 1).

The helicopter was substantially damaged due to the impact on the skids, and the pilot and passenger were uninjured.

Engineering inspection

A post-accident engineering inspection did not reveal any cause of the engine loss of power.

Figure 1: Damage to VH-ZBH

Source: Owner

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1 A primary helicopter flight control that simultaneously affects the pitch of all blades of a lifting rotor. Collective input is the main control for vertical velocity.

2 A primary helicopter flight control that is similar to an aircraft control column. Cyclic input tilts the main rotor disc varying the attitude of the helicopter and hence the lateral direction.

Safety message

The pilot in this incident had recently completed a check flight including practice autorotations. The avoidance of injury and handling of the autorotation highlights the benefits of practice. The following links provide information regarding practice autorotations:

• www.ainonline.com/aviation-news/hai-convention-news/2012-02-13/instructor-pilots-give-guidance-autorotation-training

• www.ainonline.com/aviation-news/aviation-international-news/2013-05-01/astar-accident-shines-light-autorotation-training

• www.aviationtoday.com/rw/training/specialty/Flight-Training-Tips-Dancing-With-the-Devil_13632.html

• www.faa.gov/documentLibrary/media/Advisory_Circular/AC_61-140.pdf

• www.faasafety.gov/files/gslac/library/documents/2011/Aug/56414/FAA%20P-8740-71%20Planning%20Autorotations%20[hi-res]%20branded.pdf

General details

Occurrence details

Date and time:	23 January 2015 – 0600 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	Herbertvale Cattleyard (ALA), Queensland	
	Latitude: 18° 57.52' S	Longitude: 138° 03.73' E

Helicopter details

Manufacturer and model:	Robinson Helicopter Company, R22	
Registration:	VH-ZBH	
Serial number:	4520	
Type of operation:	Aerial work	
Persons on board:	Crew – 1	Passengers – 1
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Collision with terrain involving a Robinson R44, VH-YYF

What happened

On 1 February 2015, the pilot of a Robinson R44 helicopter, registered VH-YYF, prepared for a local flight at Warwombie Station, near Hughenden, Queensland. The pilot did not observe any abnormalities during the pre-flight inspection, with oil quantity within the normal range, about 80 L of fuel on board, and no water or other contaminants found during a fuel drain and check. The helicopter was loaded within the normal operating weight and balance limitations. The temperature was 20 °C, the sky clear of cloud and the wind was calm.

At about 0800 Eastern Standard Time (EST), the helicopter lifted off normally. At about 20 ft above ground level, the pilot lowered the nose of the helicopter in attempt to gain forward speed and transition from hover to forward flight. The helicopter then sank quickly and the rotor rpm decayed. The pilot pulled back on the cyclic[1] control in an attempt to flare and reduce the rate of descent, prior to contacting the ground. The left skid contacted the ground first and then the helicopter spun to the right. The rear of the right skid dug into the ground and the helicopter rolled onto the right side. The pilot selected the master switch off before exiting the helicopter uninjured. The helicopter sustained substantial damage (Figure 1).

Pilot comments

The pilot had about 9,000 hours total helicopter aeronautical experience. He had practiced autorotations often and believed that his experience enabled him to escape uninjured. The incident had happened very quickly and he was unsure what had caused the helicopter to sink and lose rotor rpm.

Figure 1: Damage to VH-YYF

Source: Daniel Cook

[1] A primary helicopter flight control that is similar to an aircraft control column. Cyclic input tilts the main rotor disc varying the attitude of the helicopter and hence the lateral direction.

Safety message

The Robinson Helicopter Company Safety Notice SN-24 stated that rotor stall due to low RPM causes a very high percentage of helicopter accidents. These mostly occur close to the ground during take-off and landing. Safety Notice SN-10 reminds pilots to have their 'reflexes conditioned so they will instantly add throttle and lower collective to maintain RPM in any emergency'.

The pilot in this incident had completed significant number of practice autorotations. The avoidance of injury highlights the benefits of practice. The following links provide information regarding practice autorotations:

• www.ainonline.com/aviation-news/hai-convention-news/2012-02-13/instructor-pilots-give-guidance-autorotation-training

• www.ainonline.com/aviation-news/aviation-international-news/2013-05-01/astar-accident-shines-light-autorotation-training

• www.aviationtoday.com/rw/training/specialty/Flight-Training-Tips-Dancing-With-the-Devil_13632.html

• www.faa.gov/documentLibrary/media/Advisory_Circular/AC_61-140.pdf

• www.faasafety.gov/files/gslac/library/documents/2011/Aug/56414/FAA%20P-8740-71%20Planning%20Autorotations%20[hi-res]%20branded.pdf

General details

Occurrence details

Date and time:	1 February 2015 – 0800 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	near Hughenden Aerodrome (Warwombie Station), Queensland	
	Latitude: 20° 48.90' S	Longitude: 144° 13.52' E

Helicopter details

Manufacturer and model:	Robinson Helicopter Company	
Registration:	VH-YYF	
Serial number:	2090	
Type of operation:	Private	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The Bureau 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 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.

Purpose of safety investigations

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. The terms the ATSB uses to refer to key safety and risk concepts are set out in the next section: Terminology Used in this Report.

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 Bulletin

The ATSB receives around 15,000 notifications of Aviation occurrences each year, 8,000 of which are accidents, serious incidents and incidents. It also receives a lesser number of similar occurrences in the Rail and Marine transport sectors. It is from the information provided in these notifications that the ATSB makes a decision on whether or not to investigate. While some further information is sought in some cases to assist in making those decisions, resource constraints dictate that a significant amount of professional judgement is needed to be exercised.

There are times when more detailed information about the circumstances of the occurrence allows the ATSB to make a more informed decision both about whether to investigate at all and, if so, what necessary resources are required (investigation level). In addition, further publically available information on accidents and serious incidents increases safety awareness in the industry and enables improved research activities and analysis of safety trends, leading to more targeted safety education.

The Short Investigation Team gathers additional factual information on aviation accidents and serious incidents (with the exception of 'high risk operations), and similar Rail and Marine occurrences, where the initial decision has been not to commence a 'full' (level 1 to 4) investigation.

The primary objective of the team is to undertake limited-scope, fact gathering investigations, which result in a short summary report. The summary report is a compilation of the information the ATSB has gathered, sourced from individuals or organisations involved in the occurrences, on the circumstances surrounding the occurrence and what safety action may have been taken or identified as a result of the occurrence.

These reports are released publically. In the aviation transport context, the reports are released periodically in a Bulletin format.

Conducting these Short investigations has a number of benefits:

- Publication of the circumstances surrounding a larger number of occurrences enables greater industry awareness of potential safety issues and possible safety action.
- The additional information gathered results in a richer source of information for research and statistical analysis purposes that can be used both by ATSB research staff as well as other stakeholders, including the portfolio agencies and research institutions.
- Reviewing the additional information serves as a screening process to allow decisions to be made about whether a full investigation is warranted. This addresses the issue of 'not knowing what we don't know' and ensures that the ATSB does not miss opportunities to identify safety issues and facilitate safety action.
- In cases where the initial decision was to conduct a full investigation, but which, after the preliminary evidence collection and review phase, later suggested that further resources are not warranted, the investigation may be finalised with a short factual report.
- It assists Australia to more fully comply with its obligations under ICAO Annex 13 to investigate all aviation accidents and serious incidents.
- Publicises ***Safety Messages*** aimed at improving awareness of issues and good safety practices to both the transport industries and the travelling public.

Australian Transport Safety Bureau

Enquiries 1800 020 616
Notifications 1800 011 034
REPCON 1800 011 034
Web www.atsb.gov.au
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Investigation

ATSB Transport Safety Report
Aviation Short Investigations
Aviation Short Investigations Bulletin Issue 40
AB-2015-034
Final – 22 April 2015