



**Australian Government**

**Australian Transport Safety Bureau**

# Collision with terrain involving Cessna 172N, VH-SQO

near Mulgathing, South Australia, on 27 June 2024



## **ATSB Transport Safety Report**

Aviation Occurrence Investigation (Short)

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#### Addendum

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# Investigation summary

## What happened

On the morning of 27 June 2024, the pilot of a Cessna Aircraft Company 172N, registered VH-SQO, was assisting with mustering sheep at Mulgathing Station, South Australia. At about 0810 local time, a witness on a motorbike about 500 m away observed the aircraft dive down on what they presumed was a flock of sheep to an estimated height of about 50 ft above the ground before climbing rapidly, turning to the left and then descending towards the ground. The aircraft was destroyed, and the pilot who was the sole occupant was fatally injured.

## What the ATSB found

The ATSB found that, while mustering sheep without the appropriate endorsement to do so, the pilot lost control of the aircraft leading to an aerodynamic stall and spin from an altitude that was not recoverable. Although not contributory, it was also found that the upper torso restraint part of the lap-sash seatbelt was not worn at the time of the accident. Further, the pilot was hired for a job advertised as aerial stock mustering but did not require an aerial mustering endorsement as the operator's intention was that the role only involved aerial spotting.

## What has been done as a result

The operator has advised that it is preparing a *Safe Aerial Spotting & General Station Aviation Manual*. It has also implemented a pilot mentoring program and initiated a third-party safety audit. It is also undertaking a review of its operations to ensure compliance with the Civil Aviation Safety Authority regulations as well as the safety and training standards for pilots.

## Safety message

This accident highlights the importance of managing airspeed and bank angle to minimise the risk of an aerodynamic stall. This is particularly important when operating in close proximity to the ground, such as during take-off, landing and when conducting low-level air work, as recovery may not be possible. Low-level flying is a higher risk activity and mustering at low-level adds additional complexity and risk. It is important that pilots operate within the boundaries of their training and qualifications to ensure an adequate margin of safety is maintained.

The ATSB's SafetyWatch initiative highlights broad safety concerns generated by its investigation findings, and from occurrence data reported by industry. One of the safety concerns is [Reducing the severity of injuries in accidents involving small aircraft](#), which includes the appropriate fitment and use of seatbelts. This SafetyWatch notes that in several of its investigations, the ATSB has found injuries to aircraft occupants may have been avoided, or made less severe, through the appropriate use of multi-point harnesses.



# The investigation

Decisions regarding the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation and the associated resources required. For this occurrence, a limited-scope investigation was conducted in order to produce a short investigation report, and allow for greater industry awareness of findings that affect safety and potential learning opportunities.

## The occurrence

On the morning of 27 June 2024, the pilot of a Cessna Aircraft Company 172N, registered VH-SQO, met co-workers for breakfast at about 0630 local time before a morning briefing on the task for the day, which involved mustering sheep at Mulgathing Station (owned by Jumbuck Pastoral (operator)), South Australia. At about 0700, the station manager, assistant manager and 4 station hands set off for a yard about 30 km south-east of the homestead (Figure 1). Meanwhile, the pilot drove to the airstrip about 5 minutes away, took off and flew towards the yard to rendezvous with the other workers.

The station manager and 4 station hands were marking<sup>1</sup> lambs in the yard while the pilot, in the aircraft, and the assistant manager (witness) on a motorbike, were rounding up stray sheep. At about 0810, the witness observed the aircraft flying overhead at about 300 ft above ground level looking for sheep when the pilot radioed to say they had found 2 flocks about 2 km away. The witness converged on one flock and observed the aircraft circling about 500 m away over what was presumed to be the second flock.

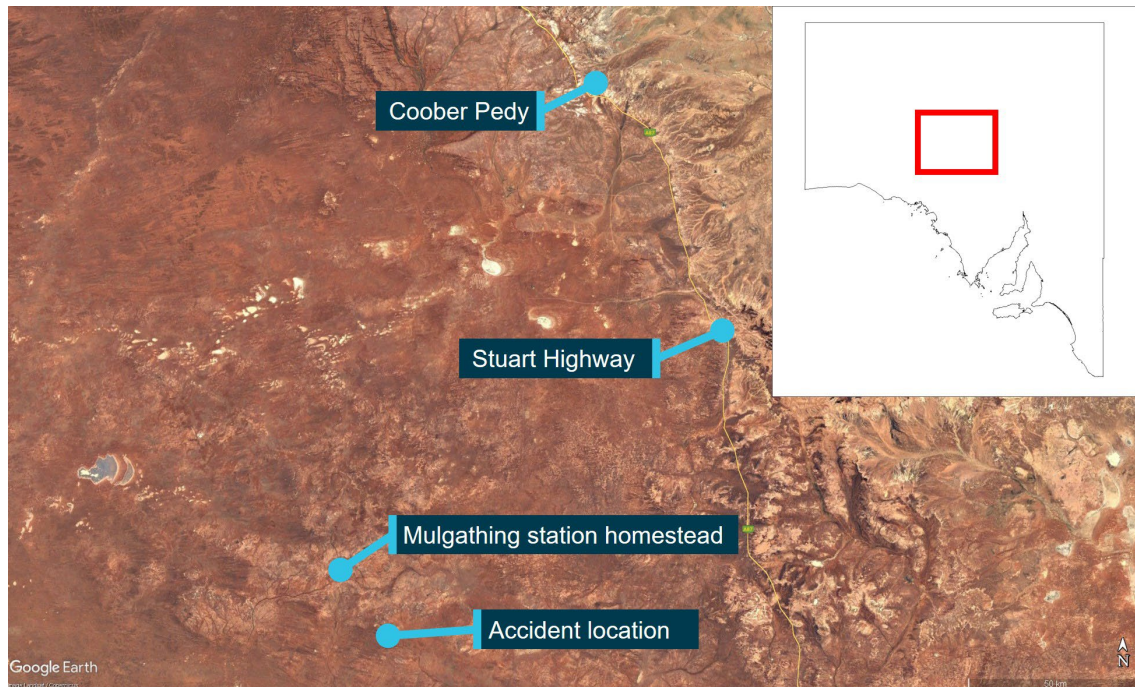
The witness radioed the pilot to ask if they needed help moving the sheep. The pilot responded that they thought they would be able to do it with the aircraft. The aircraft was then observed to continue circling to the left at a height the witness estimated to be 150–200 ft before diving at an angle of about 45° towards what was presumed to be the flock of sheep, to a height of about 50 ft. The witness estimated that the aircraft then climbed out at about a 60° nose-up attitude to a height of about 250–300 ft, rolled to the left and descended nose-down towards the ground and impacted terrain. No bird activity was noted by the witness and they reported not hearing any changes in the engine noise during the accident sequence. While they were not certain of the actual angle of climb, they noted that it was steeper than the descent. The aircraft was destroyed, and the pilot who was the sole occupant was fatally injured.

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<sup>1</sup> Lamb marking refers to husbandry procedures including tail docking, castration of males, ear tagging, mulesing, and vaccination.



**Figure 1: Accident location with reference to Coober Pedy and the Stuart Highway**



Source: Google Earth, annotated by the ATSB

## Context

### **Pilot information**

The pilot, a New Zealand citizen, held a Civil Aviation Safety Authority Part 61 Commercial Pilot Licence (Aeroplane) with a single and multi-engine class rating with endorsements for retractable undercarriage, manual propeller pitch control, and low-level and instrument ratings. They did not hold an aeroplane aerial mustering endorsement. The pilot's commercial licence was issued on 17 August 2023 in accordance with the *Trans-Tasman Mutual Recognition Act 1997*. They had recorded 441.5 total flying hours in their logbook, dated 16 June 2024.

The pilot's low-level training was conducted on 1–3 December 2023 and their low-level rating was issued on 3 December 2023, which was also their last flight review. The flight test was conducted in a Cessna 172 aircraft, with all elements of the low-level rating with a single-engine aeroplane endorsement assessed as satisfactory, including the approach and recovery from a stall in level flight and turning.<sup>2</sup> The instructor who conducted the pilot's low-level training noted that the role was for aerial spotting rather than mustering, therefore, the elements for the aerial mustering endorsement were not tested.

The pilot was employed by Jumbuck Pastoral to work at Mulgathing Station in December 2023. The pilot's logbook showed 70 flights were conducted by the pilot at Mulgathing between January 2024 and the last logbook entry on 16 June 2024. These flights totalled 198.3 hours, all of which were conducted in VH-SQO.

The pilot held a Class 1 Aviation Medical Certificate with no restrictions, valid to 29 November 2024. The pilot's aviation medical examination indicated no reported medical conditions nor prescribed medications. Co-workers reported the pilot was fit, healthy, did not drink alcohol excessively and did not smoke. On the morning of the accident, witnesses stated that the pilot demonstrated no abnormal behaviour.

<sup>2</sup> For training purposes, these manoeuvres were performed above 3,000 ft.

## ***Aircraft information***

VH-SQO was a Cessna Aircraft Company 172N 4-seat, single-engine, high (strut-braced) wing, all metal, unpressurised, fixed (tricycle) undercarriage aircraft. The aircraft was manufactured in the United States in 1978 and assigned serial number 17270255. It was first registered in Australia on 29 August 1978. The operator had been the registered owner of the aircraft since the date of registry.

The current maintenance release was issued on 8 March 2024 and was valid until 8 March 2025 or 14,620.8 hours total time-in-service, whichever came first. At the time of take-off for the accident flight, the aircraft had accumulated 14,602.7 hours. The maintenance release showed that required maintenance had been completed and no defects were recorded.

## ***Meteorological information***

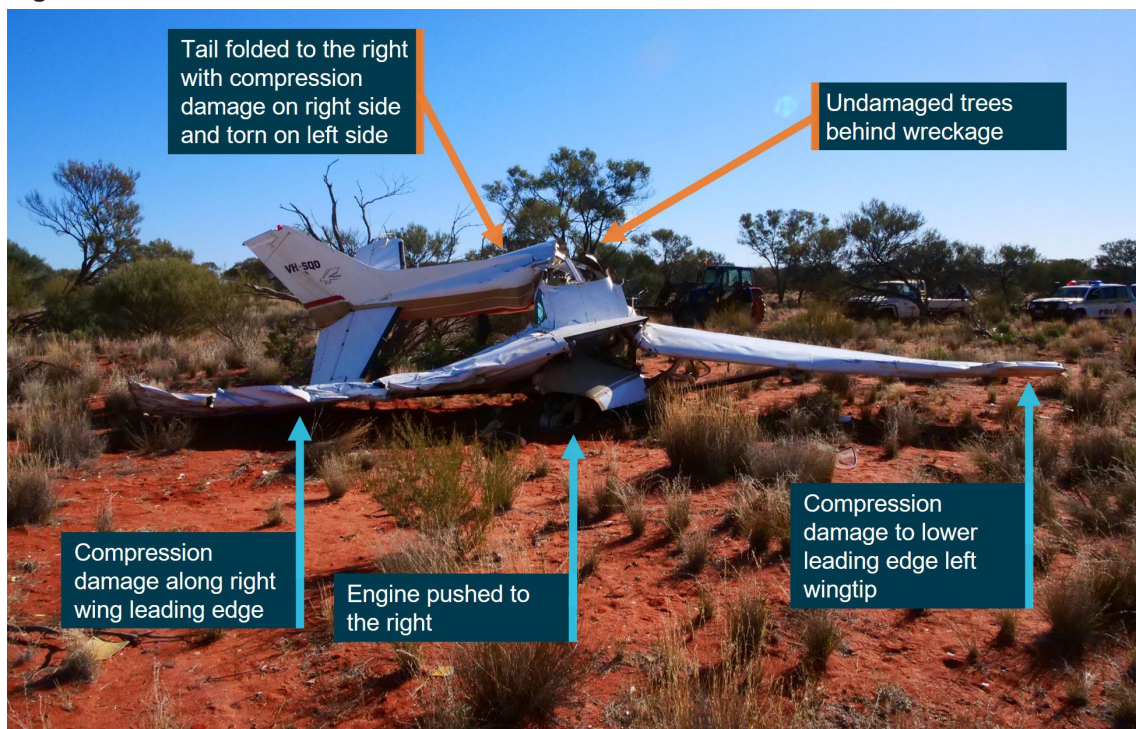
There was no airport forecast for Mulgathing Station, however, the Bureau of Meteorology graphical area forecast issued at 0137 local time and current for the time of the accident forecast no cloud or weather below 5,000 ft and visibility greater than 10 km. This was consistent with witness accounts, which reported that, on the morning of the accident, the weather was fine, clear and the temperature was cool, not cold. No wind or cloud cover was observed, and the conditions were described by a witness as being 'almost perfect for paddock work'.

## ***Wreckage and impact information***

The ATSB's onsite examination found that the aircraft impacted with terrain at about a 70° pitch down attitude with undamaged trees behind the wreckage. Ground impact marks were directly under the wreckage indicating no forward momentum.

The engine was deflected to the right of the longitudinal axis by about 25° (Figure 2). The crank case had fractured in overload, which separated the propeller from the engine. The underside of the left wingtip leading edge exhibited compression damage, which was also evident along the span of the right wing leading edge. The aft fuselage had folded towards the right with compression damage evident on the right side. The flaps were in the full retracted position.

**Figure 2: VH-SQO accident site**



Source: ATSB

The aircraft's flight controls and structure did not identify any pre-existing faults or pre-impact defects or failures, and no evidence of a birdstrike was observed. Additionally, one of the propeller blades showed significant rotational abrasion damage and chord-wise twisting indicating that the engine was driving the propeller under significant power at the time of impact.

Examination of the fuel drum used to refuel the aircraft showed it had a water drain and filter in a clear bowl with uncontaminated fuel evident in the filter bowl. Although the fuel selector was found to be in an undetermined position due to the accident damage, there was a significant amount of fuel remaining in both tanks, a strong smell of fuel around the aircraft, and the fuel tank caps were observed to be locked in place.

### ***Aerodynamic stall and spin***

A wing generates lift as a result of the pressure differential created by airflow over the wing's surface. The angle between the incoming or relative air flow and wing chord is known as the angle of attack (AoA). As the AoA increases, lift increases up to a certain angle, known as the critical AoA. At this point, the airflow over the upper surface of the wing becomes separated. This condition is referred to as an aerodynamic stall (or simply a stall) and results in a significant loss of lift and an increase in drag. Due to the sudden reduction in lift from the wing and rearward movement of the centre of lift, typically an uncommanded aircraft nose-down pitch results. Most general aviation aircraft typically have a critical AoA of around 16°. This critical AoA can be exceeded at any airspeed, any (pitch) attitude and any power setting. However, a high AoA combined with a low airspeed most commonly results in a stall condition.

A spin can result when an aircraft simultaneously stalls and yaws.<sup>3</sup> The yaw can be initiated by rudder application (through manipulation of the rudder pedals) or by yaw effects from a range of factors that include aileron deflection, torque and engine/propeller effects. A spin is characterised by the aircraft following a downward, corkscrew path and requires significantly more altitude for recovery compared to a wings level stall (Federal Aviation Administration, 2021).

The Cessna Aircraft Company Pilot's Operating Handbook stated that the stall recovery height for the Cessna 172N is 180 ft. The handbook also stated that the recovery height for a one-turn spin is 1,000 ft.

Wood and Sweginnis (2006), *Aircraft Accident Investigation – 2nd edition*, provides the following description of the wreckage from an aircraft that had spun into the ground, with reference to Figure 3:

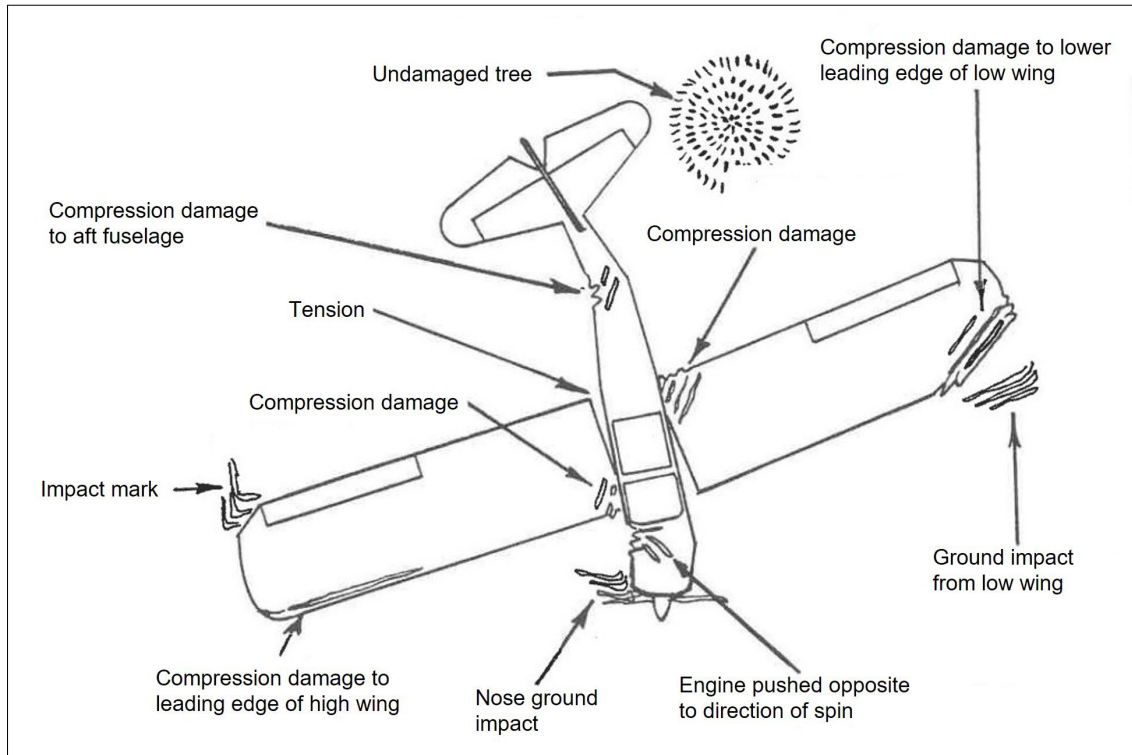
There is little or no evidence of forward motion. Although the fuselage probably impacted at a steep nose down attitude, it is likely that there is evidence of a wing tip striking the ground before the nose. The down-going wing will normally strike the ground before the up-going wing, providing one clue as to the direction of the spin. Both the fuselage and the wings will probably have damage which reflects both a high sink rate and yaw. Tall thin objects on the ground, like trees and fence posts, are likely to penetrate the airplane almost from bottom to top, reflecting the almost vertical trajectory of the airplane. Undamaged objects may be found immediately behind the trailing edges, again indicating the vertical path of the airplane.

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<sup>3</sup> Yaw: the motion of an aircraft about its vertical or normal axis.



**Figure 3: Example wreckage pattern from a spin**



Source: Wood and Sweginnis (2006)

## ***Aerial mustering operations and observations***

### ***General information***

Aerial mustering is defined as the use of an aircraft to locate, direct and concentrate livestock. By definition, it is a hazard-rich activity due to the inherent characteristics of the operation. Such hazards include manoeuvring at low-level, high workload, negative effects from weather, proximity to obstacles and the division of attention between flying and livestock management (Civil Aviation Safety Authority, 2015).

In addition to the aviation-specific definition for aerial mustering described above, in general terms, mustering livestock is usually a collaborative activity involving a ground-based team, typically using vehicles such as motorbikes, as well as personnel in the air, in either aeroplanes or rotorcraft. The role of the pilot in the overall mustering team could either be aerial spotting, or aerial mustering. The spotting role would involve the pilot searching for livestock and communicating their location to the ground team for them to round up. This is generally performed at a higher position and does not require the need to perform dynamic aircraft movements. This is somewhat different to aerial mustering, which, as defined by the Civil Aviation Safety Authority, would involve the intentional use of the aircraft to direct or concentrate the livestock. The ratings and endorsements a pilot had would limit which of these activities they could undertake.

### ***Regulatory requirements***

Since the introduction of Civil Aviation Safety Authority Civil Aviation Safety Regulations 1998 Part 61 in September 2014, an aeroplane aerial mustering endorsement was required to muster livestock with an aeroplane in Australia. Furthermore, an applicant for the aeroplane aerial mustering endorsement was required to hold a low-level rating with an aeroplane low-level



endorsement. The mustering endorsement had additional elements and performance criteria to the low-level rating, which included demonstrating:

- handling of the aeroplane up to the limits of the flight-maneuvring envelope
- coordinating and conducting an aerial mustering operation
- an underpinning knowledge of critical operational conditions including aerodynamic stall and the safety hazards and risks of low-level operations and methods of control.

To conduct aerial spotting a low-level endorsement was required.

All aerial work operations in aeroplanes and rotorcraft are covered by Part 138 of the regulations. This includes operations that require an aerial work certificate as well as those that do not. However, if the aerial work is conducted over land owned or occupied by the person who is the registered operator of the aircraft or otherwise the owner of the aircraft, an aerial work certificate is not required. This is known as limited aerial work operations.

VH-SQO was owned by Jumbuck Pastoral and flying operations were conducted over their land.

### ***Mustering observations***

For the duration of the pilot's time at Mulgathing Station, the pilot was observed by several staff members to have used a 'dive-bombing' technique to muster sheep on multiple occasions. However, all staff members stated that they thought the procedure was normal operations for mustering and that the pilot was qualified to perform the activity. Following the accident, these staff became aware that the pilot was not qualified to conduct these aerial mustering manoeuvres.

### ***Job application and role description***

The pilot originally applied for a job with Jumbuck Pastoral at Bulgunnia Station, about 90 km east of Mulgathing. Although that application was not successful, Jumbuck Pastoral subsequently offered the pilot a similar job at Mulgathing Station. The job advertisement described the position as a pilot/station hand, stating that:

Your main duties while flying will be aerial stock mustering and supporting the crew on the ground during musters along with periodical property and stock inspections.

The qualifications required for the role were described as:

- Australian Commercial Pilots License (essential)
- Minimum 200 hours of total flying time (essential)
- Experience flying a Cessna 172 (essential)
- Low-Level Flying Endorsement (can be obtained if successful)

On 13 February 2025, in response to the draft report, the operator advised that the job description for the role involved aerial spotting only, to assist on-ground mustering teams. It indicated that it had never required its aeroplane pilots to control or manoeuvre livestock directly. Instead, it relied on helicopter pilots for controlling stock movement when motorbikes could not be safely used on the ground for mustering cattle.

The operator also stated that the intention of the role was communicated to the pilot during their engagement with the company and the pilot was provided a copy of the *Mulgathing Station Guide*, which stated that:

Our mustering activities are supported by a Cessna 172 plane, with the pilot coordinating the muster below by relaying the location of stock in the paddocks. For those on 2-wheel motorbikes, stock visibility can be limited for a number of reasons, so having a pilot in the air assisting is an enormous help to ensure we muster paddocks cleanly and don't leave any sheep behind. The terrain around the station can be tricky with a lot of rock, scrub and rough paddocks, so this is an added benefit.

## **Survival aspects**

The aircraft impacted terrain with a 70° nose down attitude, which significantly compressed the liveable space within the cockpit. Injuries observed by first responders were consistent with those typically sustained from an aircraft accident. At the time of publication, the post-mortem report was pending, however, the toxicology report indicated no presence of alcohol or drugs, and carbon monoxide<sup>4</sup> levels were also indicated to be within the normal range.

The pilot was not wearing a helmet at the time of the accident, nor were they required to. The pilot seat remained attached to the seat rails and was locked in a mid-forward position. The pilot's seat was fitted with a 3-point lap-sash belt and shoulder harness (upper torso restraint (UTR)). The pilot's lap belt was reported to have been removed by the first responder to facilitate the pilot's removal. The lap belt and clasp remained anchored to the floor and appeared to be in good condition. Inspection of the cockpit revealed that the UTR was stowed in the roof line.

When correctly worn, UTRs form an important part of the occupant protection system in aircraft, and the benefits in reducing the likelihood and severity of injuries is well established. A significant benefit of correctly fitted UTRs is the minimisation of body movement to prevent the body striking the aircraft structure in lateral and longitudinal impacts (Young, 1967). These findings are supported by research conducted by the United States National Transportation Safety Board (NTSB, 2011), which found that pilots who used lap belts only were nearly 50% more likely to be seriously or fatally injured compared with those who wore lap belts with UTRs.

With regards to the requirement for seatbelt usage in Australia, Civil Aviation Safety Authority Civil Aviation Safety Regulations 1998 Part 91.550 stated the following requirements:

- At all times during the flight, such a pilot must occupy a pilot seat, with the seatbelt [lap-sash belt] securely fastened.
- During take-off, landing or any other period that the pilot in command directs, each flight crew member required for the flight must occupy the flight crew member's crew station with the seatbelt and shoulder harness securely fastened.

## **Safety analysis**

### **Introduction**

While mustering sheep on Mulgathing Station, South Australia, a Cessna Aircraft Corporation 172N, registered VH-SQO, was observed to dive towards a group of sheep before pulling out of the dive, rolling to the left, descending towards the ground and impacting terrain.

The wreckage examination found there were no defects or anomalies with the recovered components of the aircraft that might have contributed to the accident and the damage to the propeller indicated a power-on impact. Additionally, there was no evidence indicating an adverse weather event or fuel issue. Pilot incapacitation was also unlikely given the pilot's age, medical history, reported health prior to the flight and toxicological results.

This analysis will focus on the examination of the factors that led to the pilot losing control of the aircraft at low-level while attempting to muster sheep. It will also consider the job advertisement for the pilot position and the use of upper torso restraints.

### **Loss of control**

The aircraft was observed diving from about 150–200 ft to approximately 50 ft above the ground then pitching up at about a 60° nose-up attitude to about 250–300 ft with no observed change in the engine power setting, before banking to the left and descending to the ground. While there can

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<sup>4</sup> Carbon monoxide is a colourless, odourless, tasteless, and poisonous gas that is produced as a by-product of burnt fuel. Exposure to a leak from the exhaust of an aircraft engine into the cabin can lead to elevated levels of carbon monoxide, which can impair cognitive function.

be limitations to witness recollections, the key points made by the witness were that the angle of climb was steeper than the angle of descent, and that the exit height was greater than the entry. These aspects were consistent with a loss of control during the exit of the dive. The steep climb-out from the dive likely resulted in a rapid decay of airspeed and increase in the angle of attack that made the aircraft susceptible to a power-on stall/spin situation. Furthermore, the onsite examination showed that the aircraft impacted terrain in about a 70° nose-down attitude with no forward momentum with both the engine and tail sections deflected to the right.

Both the observations made by the witness and the condition of the wreckage were consistent with the aircraft stalling and entering a left spin. The Pilot's Operating Handbook indicated that this occurred at a height from which the stall and spin was not recoverable, resulting in the impact with terrain.

### ***Pilot qualifications***

In order to undertake the activity of aerial mustering with an aeroplane, both a low-level rating and aerial mustering endorsement were required, however, the pilot did not possess the latter. During their time at Mulgathing Station, the pilot was observed on several occasions to dive towards sheep in an attempt to move them. This manoeuvre is considered to be aerial mustering. On the day of the accident, the pilot declined assistance from a colleague on a motorbike, stating their intention to move the sheep with the aircraft and they were subsequently observed conducting this manoeuvre.

Low-level flying is a higher risk activity and aerial mustering adds further complexity and risk as the pilot must divide their attention between flying the aircraft, monitoring the livestock on the ground and the effects of their flying on the livestock. Not having the additional training and experience that would have come with the aerial mustering endorsement likely left the pilot ill-equipped to manage the challenges associated with mustering sheep. As they were not instructed in the appropriate techniques for mustering, this placed the pilot at an increased risk of experiencing a loss of control at low-level.

### ***Job application and role***

The pilot applied for, and was awarded, the job described as being a pilot/station hand. The job advertisement stated that the main flying duties would be 'aerial stock mustering'. As mentioned above, from an aviation perspective this meant that the pilot was required to have an aeroplane aerial mustering endorsement. However, the qualifications specified for the role did not include such an endorsement, nor did the pilot have one. Instead, the qualifications listed were consistent with the operator's intention for the role of aerial spotting requiring only a low-level rating, which the pilot had. It was unclear to what extent, if any, the description of 'aerial stock mustering' influenced the pilot's actions.

Despite this, from the time they started the role, up until the day of the accident, they were observed mustering sheep using manoeuvres that were outside the scope of their qualifications and the operator's intentions. Furthermore, although these actions were witnessed by several staff at the station, including the station manager, none of the staff reported being aware that the pilot was not qualified to perform aerial mustering.

### ***Seatbelts***

The onsite inspection found that the upper torso restraint was stowed in the roof line indicating that it was not used by the pilot. Although the pilot was only required to use the lap belt at the time of the accident, the aircraft was fitted with an over the shoulder sash belt and the benefits of using them are well documented. However, in this case, given the extent of damage to the aircraft, it was unlikely the upper torso restraint would have contributed to the survivability of the accident.

## Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include ‘contributing factors’ and ‘other factors that increased risk’ (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition ‘other findings’ may be included to provide important information about topics other than safety factors.

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

From the evidence available, the following findings are made with respect to the collision with terrain involving a Cessna 172N, registered VH-SQO, near Mulgathing, South Australia, on 27 June 2024.

### **Contributing factors**

- While in a steep climb-out after diving towards sheep, control of the aircraft was lost leading to an aerodynamic stall and spin from a height that was not recoverable.
- Although the pilot held a low-level rating, they were conducting aerial mustering operations without the related qualification. Consequently, the pilot was not appropriately experienced to manage the challenges likely encountered during aerial mustering.

### **Other factors that increased risk**

- The operator had advertised for a pilot to conduct ‘aerial stock mustering’ operations, but did not require the qualifications to perform that activity as their expectation was that the role would only involve aerial spotting.
- The upper torso restraint part of the lap-sash seatbelt was not worn on the accident flight.

## Safety actions

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. All of the directly involved parties are invited to provide submissions to this draft report. As part of that process, each organisation is asked to communicate what safety actions, if any, they have carried out to reduce the risk associated with this type of occurrences in the future. The ATSB has so far been advised of the following proactive safety action in response to this occurrence.

### **Safety action by Jumbuck Pastoral**

On 13 February 2025, Jumbuck Pastoral advised the ATSB that it has undertaken the following safety action:

- A *Safe Aerial Spotting & General Station Aviation Manual* is in the process of being prepared.
- Implemented a mentoring program for pilots, particularly at Mulgathing Station.
- A safety audit has been conducted by an external third party. This is currently before the Board.
- It is undertaking a full review of its operations to ensure compliance with the Civil Aviation Regulations 1988 and Civil Aviation Safety Regulations 1998, as well as the safety and training standards for pilots.



# General details

## Occurrence details

Date and time:	27 June 2024 – 0910 CST	
Occurrence class:	Accident	
Occurrence categories:	Collision with terrain	
Location:	near Mulgathing Station, South Australia	
	Latitude: 30.3987° S	Longitude: 134.1315° E

## Aircraft details

Manufacturer and model:	Cessna Aircraft Company 172N	
Registration:	VH-SQO	
Operator:	Mulgathing Proprietary Limited	
Serial number:	17270255	
Type of operation:	Private-Aerial mustering	
Activity:	General aviation/recreational-Aerial work-Agricultural mustering	
Departure:	Mulgathing Station homestead, South Australia	
Destination:	Mulgathing Station homestead, South Australia	
Persons on board:	Crew – 1	Passengers – nil
Injuries:	Crew – 1 (fatal)	Passengers – nil
Aircraft damage:	Destroyed	

# Sources and submissions

## Sources of information

The sources of information during the investigation included the:

- Jumbuck Pastoral
- Civil Aviation Safety Authority
- Bureau of Meteorology
- South Australian Police Service
- aircraft manufacturer
- maintenance organisation for VH-SQO
- accident witnesses.

## References

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## Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section 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 following directly involved parties:

- Civil Aviation Safety Authority
- Jumbuck Pastoral
- South Australian Police Service
- maintenance organisation for VH-SQO
- accident witnesses.

Submissions were received from:

- Civil Aviation Safety Authority
- Jumbuck Pastoral
- South Australian Police Service.

The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.

# Australian Transport Safety Bureau

## About the ATSB

The ATSB is an independent Commonwealth Government statutory agency. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's purpose is to improve the safety of, and public confidence in, aviation, rail and marine transport through:

- 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, as well as participating in overseas investigations involving Australian-registered aircraft and ships. It prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

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

## Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety. This is done through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining 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. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

## Terminology

An explanation of terminology used in ATSB investigation reports is available on the ATSB website. This includes terms such as occurrence, contributing factor, other factor that increased risk, and safety issue.