



Australian Government
Australian Transport Safety Bureau

Collision with terrain involving a Jabiru J170-C, 24-5215

Yarram aerodrome, Victoria | 7 September 2016



Investigation

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Aviation Occurrence Investigation
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Addendum

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Safety summary

What happened

On 7 September 2016, the pilot of a Jabiru J170-C aircraft, registered 24-5215, approached to land, or perform a 'touch-and-go' manoeuvre, on runway 09 at Yarram aerodrome, Victoria, as part of a solo training flight. The pilot mishandled the landing attempt and lifted off to perform a go-around. The aircraft was observed at 50 to 100 ft above the aerodrome in a left wing down 30° angle of bank prior to it entering a steep descent consistent with an aerodynamic stall. The aircraft collided with the terrain and the pilot was fatally injured.

What the ATSB found

The ATSB found that the aircraft was likely subject to mechanical turbulence at the threshold of runway 09 at Yarram aerodrome. Trees and hangars on the north-eastern perimeter of the aerodrome were known locally to cause turbulence in the last 50 ft of the approach when the wind gusted out of the east-northeast. This information was not published in the Airservices Australia En Route Supplement Australia entry for Yarram aerodrome. The pilot was also likely affected by physical and mental fatigue given their age, medical history and recent physical labour. Fatigue's effect on attention, reaction time, and vigilance likely exacerbated the pilot's mishandling of the landing attempt and the subsequent go-around.

Safety message

Pilots and flying school operators should ensure they have thorough knowledge of the effects of weather on the pilot's destinations and plan accordingly prior to flight. They should also remain cognisant of the effects of fatigue on the individual at different stages of their life. All pilots need to take into account how lifestyle changes, age, medical history, and medication may affect their fatigue.

The occurrence

At about 1333 Eastern Standard Time on 7 September 2016, a Jabiru Aircraft Pty Ltd J170-C, registered by Recreational Aviation Australia (RAAus) as 24-5215, departed from Tooradin aerodrome, Victoria. The aircraft contained the pilot only.

The pilot planned to fly from Tooradin to the Latrobe Valley airport, Fish Creek, Yarram, Foster and then back to Tooradin as part of obtaining an RAAus solo cross-country navigation certificate endorsement. The endorsement syllabus required that the pilot perform either a full stop landing or conduct a 'touch-and-go'¹ manoeuvre at Latrobe Valley airport and Yarram aerodrome. The pilot landed at Latrobe Valley at 1421 and stayed on the ground for about 25 minutes before proceeding with the flight.

At about 1544, the aircraft approached runway 09² at Yarram aerodrome, Victoria. A witness, who was also the Yarram Aerodrome Reporting Officer (ARO) and a pilot, was positioned about 0.7 km west of the accident site. The witness first heard and then saw the aircraft on final approach to runway 09 when it was about 500 m from the runway and at a height of about 300 ft. The witness stated that at this point, the aircraft and engine were both operating normally.

At that time, the witness was outside of their house in front of a machinery shed and adjacent to a shearing shed. The witness then walked into the shearing shed and, approximately 20 seconds later, heard a short application of power from the aircraft, like a 'quick burst'. The witness thought that the pilot was possibly having some issues at the runway threshold as easterly and northerly winds may result in mechanical turbulence (refer to section titled *Yarram aerodrome – Mechanical turbulence*). On hearing the throttle 'ease up', the witness thought that the pilot must have decided to land further along the runway.

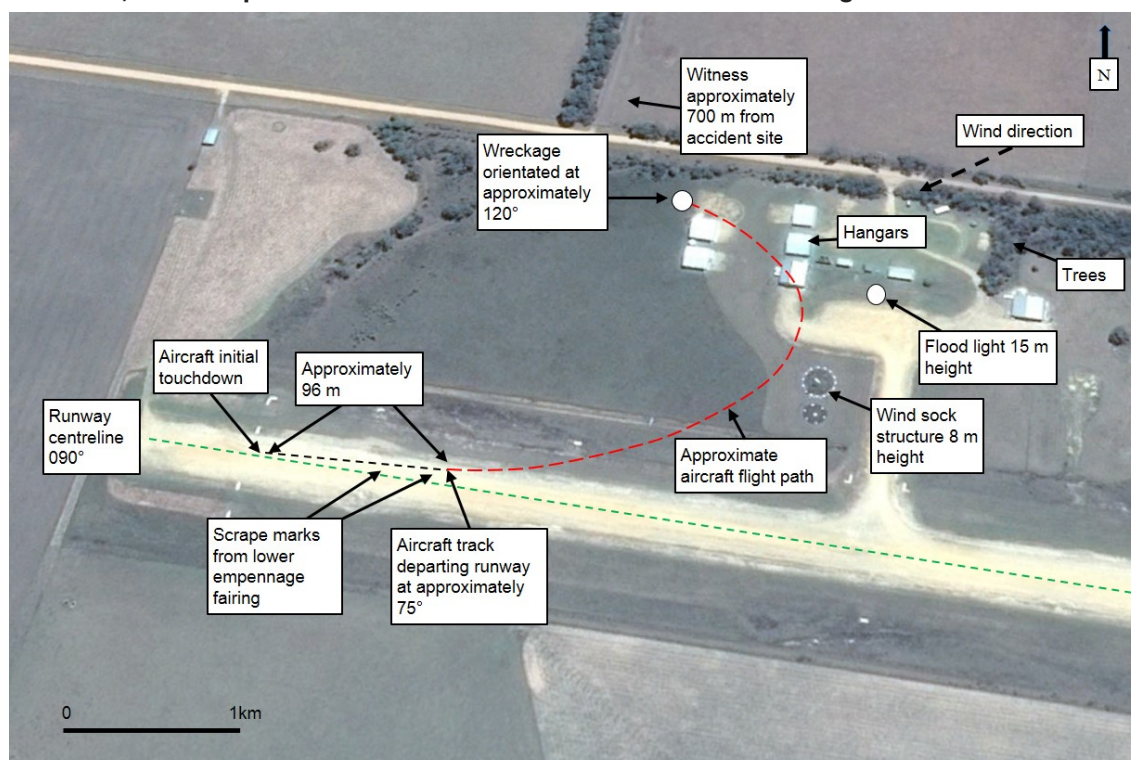
Subsequent examination of the dirt runway 09/27 showed marks where the aircraft attempted to either land or perform a 'touch-and-go'. The first marks showed that both main wheels touched down about the same time, about 4 m to the left of the centre line. The aircraft then travelled on the right main wheel for about 54 m bouncing from the runway three times, missing runway cones and lights denoting the beginning of the landing area. The aircraft then rolled left and travelled on the left main wheel for 1.4 m before levelling out onto both main wheels, again bouncing, and then striking the lower empennage fairing once. The aircraft rolled right and travelled on the right main wheel for about 3.7 m, again striking the lower empennage prior to lifting off. During that sequence, the aircraft travelled about 96 m and about 15° to the left of the runway centre line. Neither wing tip nor nose wheel contacted the runway. In total, the aircraft bounced about eight times.

Following the quick power burst, the witness then looked out of the shed window and observed the aircraft in the air, away from the runway centreline in a 30° left angle of bank. The witness estimated the aircraft to be 50-100 ft above the ground. The aircraft continued to the left and the bank angle increased. The lower wing then dropped and the aircraft descended in a near to vertical attitude. The aircraft had turned 180° from the original flight path. The witness then lost sight of the aircraft as it went behind the trees at the western end of the aerodrome boundary, but they heard the aircraft impact the ground (Figure 1).

¹ Practice landing in which the aircraft is permitted to touch the runway briefly; in many cases, flaps are moved to the take-off setting while the aircraft's weight is on the wheels.

² Runways are named by a number representing the magnetic heading of the runway.

Figure 1: Overhead view of Yarram aerodrome incorporating runway 09/27 with the ATSB assessment of post lift-off flight path, runway markings, pertinent landmarks, wind direction, barriers pertinent to mechanical turbulence and wreckage site



Source: Google earth, modified by the ATSB

The witness called out to their spouse, a registered nurse, and they drove to the aerodrome. The witness rang the emergency services on the way. Once at the site, they removed the pilot from the aircraft and began providing medical assistance while waiting for the emergency services to arrive. The pilot died from the injuries sustained in the accident. The aircraft was destroyed.

Personnel information

General information

The pilot held a valid RAAus Pilot Certificate, issued on 21 May 2013, and maintained the required medical standard. The pilot's logbook included the following endorsements: human factors, high performance, nose wheel, passenger carrying, and RAAus flight radio.

The pilot's logbook showed a total flying experience of 191.4 hours to the last recorded flight on 4 July 2016. The pilot's total flying experience on the Jabiru J160 and J170 was 75.5 hours and 102.8 hours respectively. In the previous 90 days, the pilot had flown a total of 10.3 hours. The logbook also recorded 174 landings since July 2013.

Pilot training and experience

The pilot's initial training took longer than the minimum 20 hours required, however, the pilot was reported as being conscientious and passionate. The pilot's instructors stated that the pilot had been focussed on the cross-country endorsement for the previous two months and had successfully completed two navigation flights with an instructor. The pilot was considered competent to conduct the solo navigation flight and was reportedly very good at self-assessment and aware of their capabilities.

Two years prior to the occurrence, the pilot was involved in a landing accident at Tooradin aerodrome. When on final approach to runway 22, the Jabiru J170's airspeed decayed and the aircraft stalled from a height of about 20 ft above ground level. The aircraft descended and when

contacting the ground, the pilot applied full power and the aircraft bounced. The aircraft then yawed left and the left wing contacted the ground. It then rolled right, the nose contacted the ground, and continued rolling onto the right wing. The aircraft settled down onto the nose. The aircraft sustained substantial damage to the wings and fuselage. At that time, the wind was from the south-west at 5 kt and the pilot's total flying experience was 125.2 hours, of which 100 hrs was on the Jabiru.

Go-arounds and turbulence

The pilot had conducted a considerable number of go-arounds and was considered 'pretty good'. The instructor was confident that the pilot would make the appropriate decisions if an approach was unsuitable. The instructor also noted that when close to the runway, the Jabiru, like any high wing aircraft of a similar design, had a tendency to pitch-up when full flap and throttle were applied. Forward pressure on the control stick would have to be used to counteract this tendency. The pilot had practiced go-arounds in this configuration, and had also practiced cross-wind circuits and go-arounds. Crosswinds at Tooradin were commonly experienced. The instructor reported that they had not experienced much turbulence at Yarram, but had so at Tooradin. After practice, the pilot handled the turbulent conditions well and had done a considerable number of circuits at Tooradin.

Recent history

On 4 September and 5 September, the pilot had slept from about 2100 until 0700, however, the sleep was reportedly disrupted due to the pilot being sore and tired due to physical labour. On 6 September, the pilot rested for the navigation endorsement flight the next day. The pilot reportedly went to bed at about 2100 and woke at 0700 on 7 September having slept well.

Medical information

Upon initial application as a student pilot with RAAus, the pilot signed the annual medical declaration on 3 December 2011. By signing the form, the pilot was affirming that their health was of a standard equivalent to that required for the issue of a private motor vehicle. On the date of the accident, the pilot held a current and appropriate medical authorisation.

The pilot had reportedly suffered from chronic pain and sleep issues for a number of years, including sleep apnoea. The pilot had had a major illness in the past and, at the time of the accident, was 72 years of age.

Aircraft information

The Jabiru Aircraft Pty. Ltd. J170-C is a two-seater, fibre-reinforced, light sport aircraft with a high wing and tricycle undercarriage. The aircraft was first registered on the RAAus aircraft register on 11 January 2007 and at the time of the occurrence, was fitted with a Jabiru 2200B 4-cylinder engine.

Meteorological information

The Bureau of Meteorology provided data recorded by the automatic weather station at Yarram. At the time of the occurrence (1544), the wind was from 080° at 13 kt gusting to 18 kt. This would have resulted in about a 5-7 kt left crosswind and a 12-17 kt headwind.³

³ The Jabiru J170-C pilot operating handbook (Section 3.3) stated that the maximum allowable crosswind velocity was dependant on pilot capability and aircraft limitations. With average pilot technique, direct crosswinds of 14 kt could be handled safely.

Yarram aerodrome

Yarram was a registered aerodrome⁴ maintained by the Wellington Shire Council. The aerodrome had two runways, runway 05/23 and runway 09/27. Runway 09/27 was constructed of yellow granitic sand and was 756 m in length. At the time of the accident, runway 05/23, a grass runway, was not in use due to surface water.

Mechanical turbulence

Any obstruction to the wind flow, including buildings and trees, can produce disturbed air that can manifest as mechanical turbulence. The intensity of mechanical turbulence is largely dependent on the wind speed, surface roughness, and atmospheric stability. The intensity increases as the wind speed and surface roughness increases, and when the airflow is forced by obstacles to diverge around, or converge through, gaps in barriers. For example, the Bureau of Meteorology (1988) stated that large scale disturbances to airflow may occur when strong winds strike a mountain range or large hill. Likewise, sometimes moderate winds of 15-20 kt may significantly disturb the airflow.

It was reported that mechanical turbulence due to trees and hangars on the north-eastern perimeter of the aerodrome could be experienced when operating on runway 09 (Figure 1). This occurred when there was a north-easterly wind, and could catch pilots by surprise, particularly if they were not expecting it.

A representative from the Yarram Aero Club stated that when landing on runway 09, turbulence could be experienced from about 50 ft and then, when at 10 ft, 'things would be moving around quite a bit'. The representative also recommended that new users to the aerodrome should contact the ARO to ascertain the conditions. They also suggested a note in the Airservices Australia En Route Supplement Australia (ERSA) may bring attention to this phenomenon.

Radio broadcasts

The pilot had been trained on the use of the radio and was aware of the inbound and circuit broadcasts required when approaching an aerodrome. When departing from Tooradin, the pilot broadcast a departure call. However, the pilot did not make the required calls on the Yarram common traffic advisory frequency.⁵ Examination of the aircraft post-accident found 'post-it' notes on the pilot's flight plan with a script of the call and the required frequency showing the pilot had intended to make the calls.

Operational information

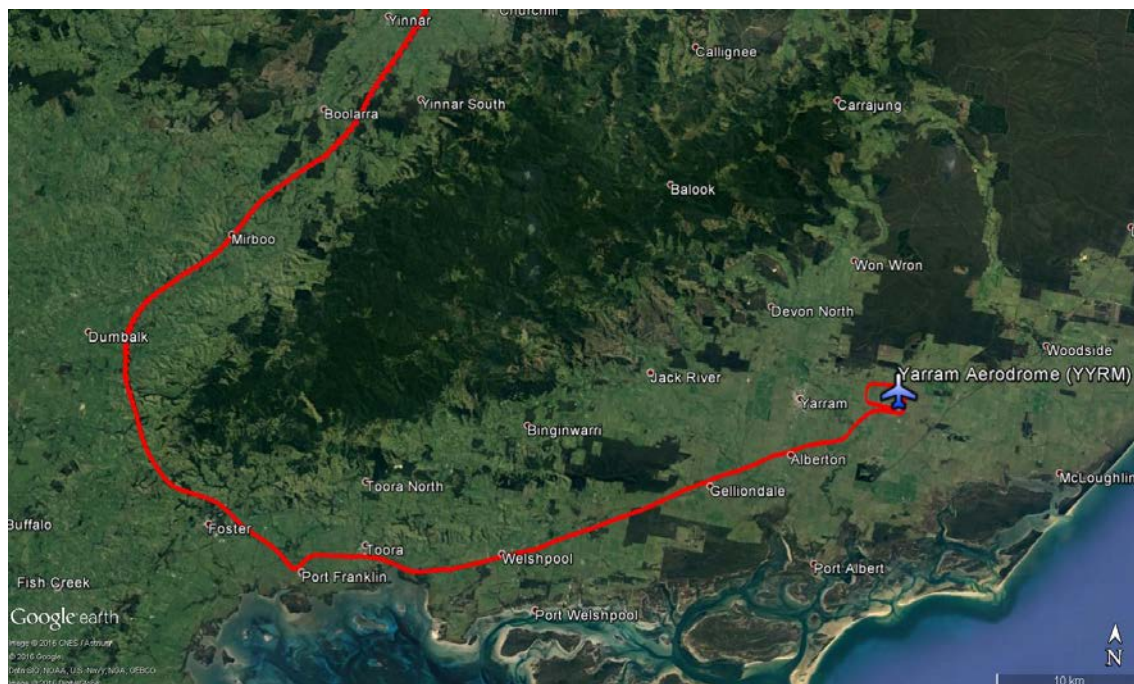
Flight route

The pilot was conducting a solo navigation exercise from Tooradin to the Latrobe Valley airport, Fish Creek, Yarram, Foster and return to Tooradin requiring that they conduct either a full stop landing or a 'touch-and-go' manoeuvre at Latrobe Valley airport and Yarram aerodrome. A review of the data from a hand held GPS device recovered from the aircraft showed that the actual flight route was similar to that planned. However, the track from Latrobe Valley was more consistent with overflying Foster Township rather than Fish Creek Township (Figure 2). The aircraft then tracked around the mountain ranges to Yarram.

⁴ www.casa.gov.au/aerodromes/standard-page/aerodrome-categories-under-casr-part-139

⁵ A common traffic advisory frequency is the frequency on which pilots operating at a non-controlled aerodrome should make positional radio broadcasts.

Figure 2: Google earth image overlayed with the aircraft's actual flight route on the leg from Latrobe Valley to Yarram downloaded from the recovered hand held GPS unit bypassing Fish Creek – a required navigation point for the solo navigation exercise.



Source: Google earth, modified by the ATSB

Wreckage examination

On-site examination of the wreckage found that:

- the aircraft travelled about 200 m from the lift-off point on the runway to where it came to rest
- the aircraft collided with terrain in a left wing and nose down attitude
- the wreckage trail was relatively short signifying a low speed, high angle of attack impact into soft muddy terrain
- the wing flaps were in the full down position (as appropriate for landing or for a go-around from final approach)
- the fuel quantity at the time of the accident could not be established due to the left wing and left wing fuel cap being separated from the fuselage, however, the aircraft had a significant quantity of fuel in the right wing
- debris was identified in the throat of the engine's carburettor venturi, but these substances may have been sucked into the venturi during the accident sequence
- fragments of the propeller were found displaced radially about 10-15 m either side of the wreckage.

The debris in the venturi, radial distribution of propeller fragments, as well as the distance the aircraft travelled after becoming airborne from the runway were all consistent with an engine producing thrust prior to the aircraft colliding with terrain.

Subsequent engine and instrumentation examination performed by the ATSB found no evidence of an engine, airframe or mechanical failure that may have contributed to the accident.

During the engine examination, the ATSB found that the aircraft's engine had been replaced and had recently had an overhaul completed. However, the aircraft's maintenance logbook did not state when the engine was certified and installed into the aircraft.

The aircraft maintenance logbook's instruction page stated that where components were installed, removed, or replaced, complete details were to be recorded in *Part 3 – modification and component change* record. The RAAus technical manual stated that component changes must be

recorded in the maintenance logbook and the logbook must have a section for this record titled 'Modification and Components Record'. The logbook did have the appropriate section, however, a sheet for recording weight and balance changes had been pasted over it and component changes could not be recorded in this part.

The ATSB also found anomalies with the manufacturer's instructions regarding certain aspects of the engine overhaul in their overhaul manual. These were subsequently identified and rectified by the manufacturer and no further action has been deemed necessary by the ATSB.

Safety analysis

Introduction

While landing on runway 09 at Yarram aerodrome, the pilot of Jabiru Aircraft Pty Ltd J170-C, 24-5215, was unable to effect a safe landing, or 'touch-and-go' manoeuvre. The pilot then attempted to go-around but was unable to prevent a departure from controlled flight at low altitude. The departure from controlled flight was consistent with the aircraft entering an aerodynamic stall prior to colliding with terrain. This analysis will consider factors that potentially contributed to the accident.

Mishandled landing, go-around and subsequent aerodynamic stall

Examination of runway 09/27 shortly after the accident revealed aircraft tyre and empennage strike markings that indicated that the pilot had inadvertently mishandled an attempt to either land the aircraft or perform a 'touch-and-go' manoeuvre. The aircraft initially touched down on both main wheels but was 4 m to the left of the runway centreline, at a heading of 15° into the wind. The aircraft bounced and rolled on either one or both main wheels for approximately 96 m incurring two rear empennage strikes prior to lifting off. It is likely that the pilot was initially attempting to correct the landing or 'touch-and-go' attempt but then decided to lift off and go-around.

About this time, the witness heard the pilot apply a brief 'burst' of power and then saw the aircraft airborne at 50-100 ft height and in a left wing down 30° angle of bank. The aircraft continued to bank to the left prior to the left wing dropping, with the aircraft entering a nose down steep descent and then colliding with terrain.

Mechanical turbulence

The witness and other pilots with experience of the conditions at Yarram stated that, when approaching runway 09 with the wind from the north-east at between 10-15 kts, the final 10 ft prior to landing could be quite turbulent and become 'a handful' for an unaware or inexperienced pilot. It is likely that, given the conditions on the day, the aircraft was subject to mechanical turbulence at the threshold of runway 09. In addition to the pilot's fatigue and level of experience (see below), it is likely this has resulted in the mishandled landing or 'touch-and-go' attempt.

At the time of the occurrence, the Airservices Australia's En Route Supplement Australia did not indicate that a hazard such as mechanical turbulence could be experienced at Yarram aerodrome. Other locations such as Katoomba and Canberra specifically mention 'turbulence and wind shear during winds above 15 kt' and 'during strong westerly winds TURB may be experienced in touch down area LDG RWY 35' in the 'Additional information' sections. Highlighting the risk of an aircraft encountering mechanical turbulence during times when gusty north-easterly wind conditions are present could reduce the risk of a mishandling event during a critical phase of flight. It was unknown if the pilot was aware that these conditions could exist at Yarram.

Fatigue and experience

Researchers have stated that fatigue leads to lapses in attention, slowed reaction times, and reduced vigilance that can result in individuals overlooking or skipping tasks or parts of tasks. Researchers have also stated that older individuals still require the same amount of sleep as younger individuals but tend to get less due to increased nighttime awakenings. The decline in nightly sleep is accompanied by increased daytime fatigue (Battelle Memorial Institute, 1998). Researchers have also found that chronic pain is biologically linked to fatigue and 75 per cent of people with chronic musculoskeletal pain report having fatigue (University of Iowa, 2008).

The pilot was past retirement age and had a history of health and chronic pain issues including sleep apnoea. It was reported that the pilot had slept well leading up to the accident flight but had been physically fatigued through outdoor labour two days prior. There were a number of indicators of fatigue affecting the pilot's performance, including not continuing to the Fish Creek navigational point, as well as neglecting to make a radio call on approaching Yarram aerodrome despite reminders in the cockpit to make the call and of the appropriate radio frequency.

Researchers have stated that experienced individuals will often make better decisions than inexperienced individuals due to their ability to recognise similar situations they have been in before and diagnose appropriate actions required to overcome problems quicker. They also state that an experienced individual will often be able to expend less cognitive effort in decision making as they do not need to do as much option evaluation as a novice, and thus will not experience as much decision, or cognitive, fatigue. The higher cognitive effort an inexperienced individual needs to solve a problem may further exacerbate the effects of any fatigue they may be experiencing (Wickens, Hollands, Banbury and Parasuraman, 2013).

The pilot did not have a great deal of flying experience given that they had recorded 191 hours total flying over a five-year period. This was their first solo cross-country navigation flight and the pilot had experienced an accident in a landing situation two years prior. It is likely that the pilot's inexperience would have exacerbated the effects of the fatigue felt as discussed.

It is likely that, once the aircraft had been affected by mechanical turbulence, fatigue and experience level have led to the pilot's inability to correct the aircraft's departure from a controlled landing and controlled flight in time to prevent an aerodynamic stall and collision with terrain.

Aircraft maintenance logbook

During the engine examination, it could not be established when the accident aircraft's engine had been certified and installed into the aircraft as this component change had not been recorded in the aircraft maintenance logbook. This action, while not contributing to the accident, increased safety risk as not recording component changes (such as the removal and installation of an engine) can result in an inability to trace changes to an aircraft's life-limited components.

Findings

From the evidence available, the following findings are made with respect to the collision with terrain involving a Jabiru Aircraft Pty. Ltd. J170-C, Recreational Aviation Australia aeroplane, registered 24-5215, at Yarram aerodrome, Victoria on 7 September 2016. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing factors

- Upon reaching the threshold of runway 09 at Yarram aerodrome, the aircraft was likely subject to mechanical turbulence resulting in the mishandling of the landing or 'touch-and-go' attempt.
- The pilot inadvertently mishandled the subsequent go-around leading to the aircraft's low altitude aerodynamic stall and collision with terrain.

Other factors that increased risk

- Fatigue and level of experience likely affected the pilot's ability to respond to the demands required to correct the aircraft's departure from controlled flight during the landing attempt and subsequent go-around.
- While locally known, the En Route Supplement Australia entry for Yarram aerodrome did not highlight the risk of an aircraft encountering mechanical turbulence on runway 09 during the gusty wind conditions present on the day, increasing the risk of a mishandling event during a critical phase of flight.
- The aircraft's maintenance logbook did not state when the engine was certified and installed into the aircraft resulting in an inability to trace changes to its life-limited components.

General details

Occurrence details

Date and time:	7 September 2016 – 1544 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with terrain	
Location:	Yarram aerodrome, Victoria	
	Latitude: 38° 34.05' S	Longitude: 146° 45.27' E

Pilot details

Licence details:	Recreational Aviation Australia (RAAus) Pilot Certificate issued May 2013
Endorsements:	Human factors, high performance, nose wheel, passenger carrying and RAAus flight radio
Ratings:	Nil
Medical certificate:	Medical declaration, valid to 7 June 2017
Aeronautical experience:	191.4 hours flying experience
Last flight review:	7 June 2015

Aircraft details

Manufacturer and model:	Jabiru Aircraft Pty Ltd J170-C	
Year of manufacture:	2007	
Registration:	24-5215	
Operator:	Tooradin Flying School, Tooradin, Victoria	
Serial number:	177	
Total Time In Service	3,248 hrs	
Type of operation:	Flying training - solo	
Persons on board:	Crew – 1	Passengers – 0
Injuries:	Crew – 1 (fatal)	Passengers – 0
Damage:	Destroyed	

Safety issues and actions

Proactive 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.

The Wellington Shire Council, as the operator of the Yarram Aerodrome, initiated an entry into the En Route Supplement Australia entry for Yarram aerodrome highlighting the risk of an aircraft encountering mechanical turbulence on runway 09 during the gusty wind conditions present on the day of the accident. In a letter dated 29 June 2017, Wellington Shire Council informed the ATSB that:

The draft report has identified mechanical turbulence as a risk factor which Council was not previously aware existed at Yarram Aerodrome. Council has initiated a new entry in ERSA in line with the draft report.

Processes for updating aeronautical information publications have also been examined and changes made whereby the aviation community will be formally consulted in the review and amendment of publications.

Sources and submissions

Sources of information

The sources of information during the investigation included the:

- Yarram aerodrome reporting officer
- Vice President Yarram Aero Club
- Wellington Shire Council
- Tooradin Flying School
- Jabiru Aircraft Pty Ltd
- Latrobe Valley Aero Club and Flying School
- Civil Aviation Safety Authority
- Recreational Aviation Australia
- Victorian Police Coronial Support Unit
- Victorian Police Force
- Bureau of Meteorology
- Directorate of Defence Aviation and Air Force Safety.

References

Battelle Memorial Institute (1998). *An Overview of the scientific literature concerning fatigue, sleep, and the circadian cycle*. Report prepared for the Office of the Chief Scientific and Technical Advisor for Human Factors, US Federal Aviation Administration.

Bureau of Meteorology. (1988). *Manual of meteorology, part 2: Aviation meteorology*. Canberra: Department of Administrative Services.

University of Iowa. (2008). Biological link between pain and fatigue discovered. *ScienceDaily*. Retrieved January 17, 2017 from www.sciencedaily.com/releases/2008/04/080407153037.htm

Wickens, C.D., Hollands, J.G., Banbury, S. and Parasuraman, R. (2013). *Engineering psychology and human performance (4th Edition)*. Abingdon, UK: Routledge.

Submissions

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

A draft of this report was provided to the next of kin, the Yarram aerodrome reporting officer, chief flying instructor, flying instructor and Level 2 maintainer at Tooradin Flying School, Wellington Shire Council, the aircraft manufacturer, the coroner's representative, Recreational Aviation Australia and the Civil Aviation Safety Authority.

Submissions were received from the next of kin, the Yarram aerodrome reporting officer, Wellington Shire Council, the aircraft manufacturer, Recreational Aviation Australia and the Civil Aviation Safety Authority. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.

Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to operations involving the travelling public.

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

Purpose of safety investigations

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

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Developing safety action

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

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

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

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

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Investigation

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