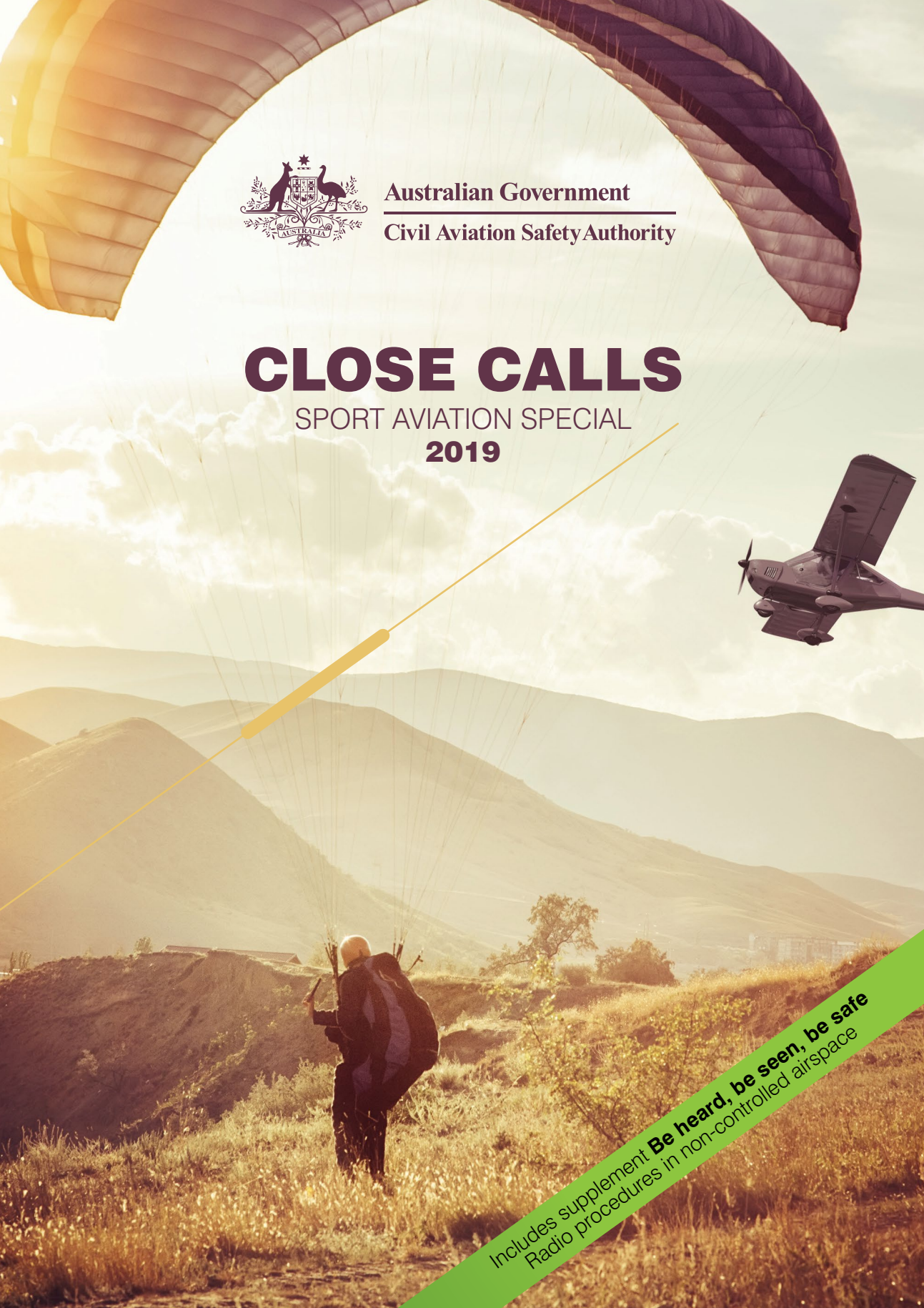
Australian Government
Civil Aviation Safety Authority
CLOSE CALLS
SPORT AVIATION SPECIAL
2019
Includes supplement **Be heard, be seen, be safe**
Radio procedures in non-controlled airspace

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Australian Government
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# CONTENTS



main front cover image: Everste

## Introduction

This is our fourth *Close calls sport aviation special*, and once again members of the sport aviation community have been prepared to share their experiences, regardless of possible embarrassment, to promote openness and safety. As in previous years, there are stories and confessions from high-profile, even renowned, sport aviators. Reporting rates in sport aviation organisations continue to improve significantly, getting the message out that it's not about finger pointing, but about fostering a better safety culture.

These are real-life stories, sent to us in the hope that others will learn from these experiences. They work on the theory that you should 'learn from the mistakes of others, because you can't live long enough to make them all yourself!'

Another way to learn about human error and inoculate yourself against the worst of it is CASA's new, revised and updated *Safety behaviours: human factors for pilots* resource kit, which was launched at Avalon airshow in March 2019.

The kit includes a workbook, ten booklets covering a range of topics with practical exercises, discussion areas and reference material, and a suite of new videos containing interviews with industry experts and practitioners.

It is suited for sport aviation, flying schools, students, general aviation pilots or simply anyone who wants to learn and develop these essential skills.

*Safety behaviours: human factors for pilots* is out now for free on the CASA website: **casa.gov.au/hf** or can be ordered in print and on USB from the CASA online store: **casa.gov.au/onlinestore**

CASA also hosts five human factors e-learning modules to help pilots understand their human performance strengths and weaknesses. The five modules cover:

» introduction to human factors in sport, recreation and general aviation

» information processing—the human factor

» are you fit to fly? Age, stress, fatigue and drugs

» what's really going on? Situational awareness and decision making

» threat and error management.

You will find the modules on the sport aviation homepage of the CASA website: **casa.gov.au/sportaviation**. Each module will take about 20 minutes to complete.

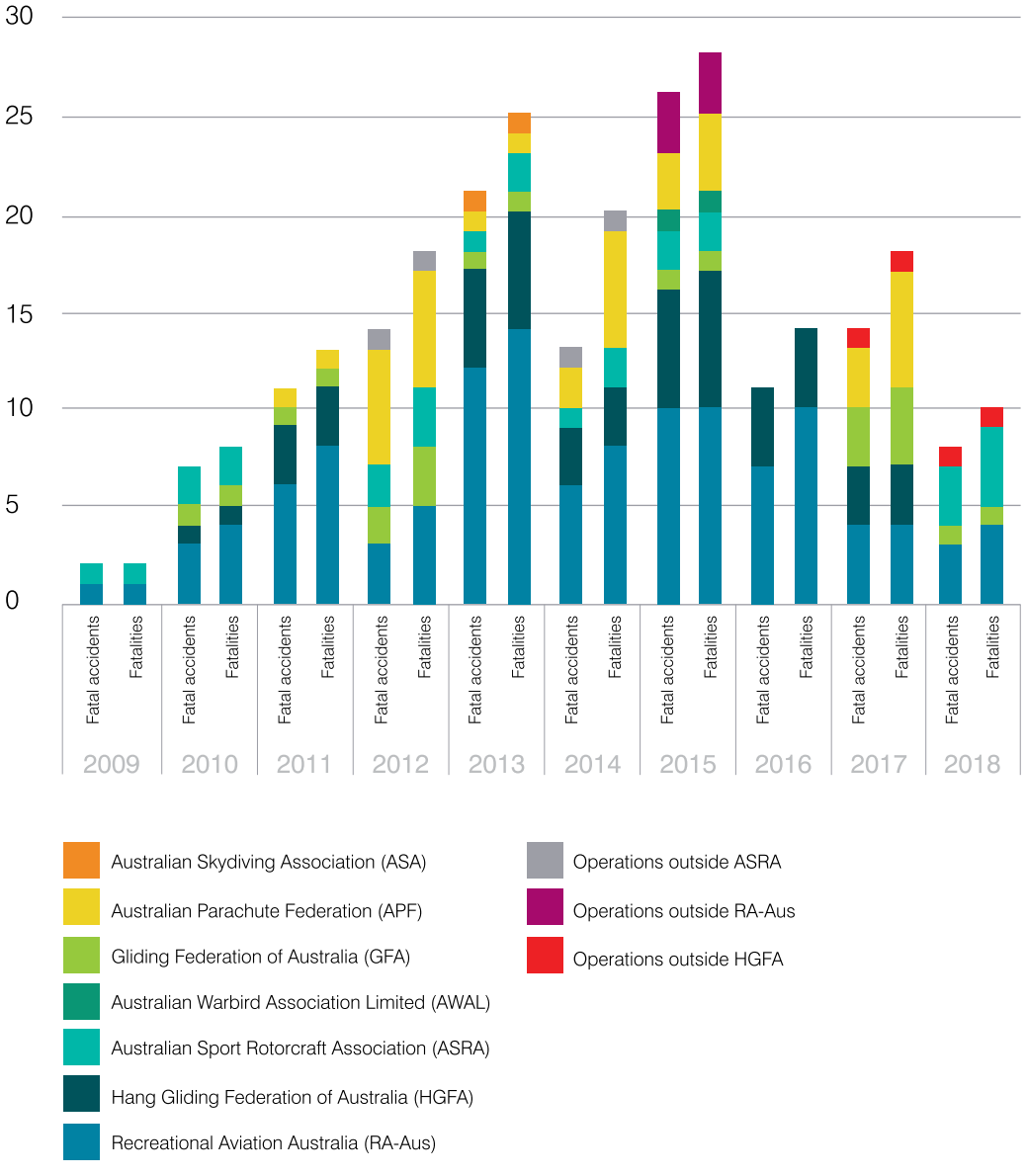
You may also notice that in this year's edition we have included our *Be heard, be seen, be safe* booklet as a supplement. It is a useful guide for radio procedures in non-controlled airspace.

We thank the pilots who have submitted their close calls, taking the first step in making aviation safer. We urge other pilots who have had close calls to share their stories; and as always, if we publish yours, you will receive $500. Email us at **fsa@casa.gov.au**

We hope you enjoy reading this sport aviation close call special.

Fly safe—the Sport Aviation and *Flight Safety Australia* teams.

## Recreational Aviation Administrative Organisation (RAAO) fatal accident statistics (2009–2018)



# What was I thinking?

*by Rick Elliott*

image: SEQ Gyro Pics | CC BY-NC-ND 2.0, clouds: lukaszlada | Unsplash

A few years ago, my wife and I and several other couples decided to embark on an iconic trip to Birdsville from Sydney in our gyrocopters. Our route took us over the Great Dividing Range out through Cameron Corner, Innamincka and on to Birdsville, a fairly uneventful trip but 'bucket list' stuff all the same.

There had been quite a bit of rain about and the roads into Birdsville were closed, which for us was obviously not a problem and we had the place to ourselves. The trip home, however, got a bit tricky as the rain event had made all dirt runways marginal at best with the dirt strip at Betoota being our first challenge.

A couple of bitumen runways later and we decided to stay overnight in Walgett to give the weather time to move to the east and out of our way. The following morning the weather started clearing and after much radar gazing, we finally got airborne around lunchtime and headed for Gunnedah.

I fly a German-made gyro called a Cavalon which is a side by side, fully enclosed machine. It tended to fly marginally quicker than the other gyros on the trip, so I took the lead and headed off to Gunnedah flying parallel to some pretty nasty weather. About 20 nm out of Gunnedah we caught up with the storm cell and I had to decide whether to try and fly around in front of it or slow down and fly around behind it.

I took the first option and after ten minutes or so realised that I was not going to get in front of it and would have to try and find a way through the weather. I radioed my fellow pilots advising them to take the second option and fly around behind the weather on the northern side.

By this stage I was approximately 5 nm west of Gunnedah in low, hilly country with a storm cell between us and Gunnedah. I checked the weather radar on Ozrunways for the best and shortest track through the squall and headed off into a pretty nasty looking scenario. When we flew into what I thought was light rain, the front windscreen soon turned white from the torrential force of the rain hitting it. While I was concerned, I could still see out of the side windows which was comforting, until they too turned white with the force of the rain. Gyrocopters use a yaw string attached to the outside of the windscreen to help you fly the aircraft straight into wind. Due to the heavy rain and turbulence, my wet yaw string was now stuck to the windscreen at an angle of around 45 degrees, rendering it useless.

So, there we were flying along unable to see out of any window not knowing if I was flying straight and doing my best to stay calm for the benefit of my wife who was sitting beside me with a look of absolute horror on her face. Fortunately, the Cavalon flies fairly straight all by itself so I released pressure off the rudder pedals to avoid applying any input. I applied enough power to keep the VSI above zero in a gentle climb as I knew we were barely above the highest terrain in the area and used the track on the GPS to head to some cleared, flat country north-west of Gunnedah.

I learnt to fly in the area and know it quite well, so once we cleared the hills to the north-west of the airport and over relatively flat country, I started a descent that I was hoping would get us out of the weather. We got visibility back about 500 feet above the ground and hightailed it into Gunnedah where our friends were waiting for us. The storm that we had just flown through soon hit Gunnedah airport with a ferocity that was quite staggering.

It's hard to say how long we were flying in zero visibility conditions, but it was probably only a couple of minutes. Those minutes though were the most frightening I have had in my sixty years on Earth.

I regularly reflect on this flight and what I did wrong, what I should have done and what led to the poor decisions I made. All of us should have waited for the weather event to clear on our route and not assume that it would have passed by the time we arrived at our destination. Most importantly, I should have turned back at the first sign of bad weather directly on my track and to this day I don't know why I didn't. The fact that we were only 5 nm out from our destination was probably the key factor encouraging me to 'give it a go', a decision that I could have paid for with mine and my wife's lives.

Not to be deterred, my wife and I have since circumnavigated Australia by gyro and I feel that this potentially catastrophic flight has made me a better and safer aviator.

While I am certainly not proud of this story, I think it is important to pass on these experiences in the hope that my 'close call' will help educate others.

# Look up and live

*name withheld by request*

image: Civil Aviation Safety Authority

It was a warm Thursday morning. Shortly after the daily briefing, the pilots were tending to their gliders and talking about the day's tasks. The 8th FAI World Sailplane Grand Prix was an international gliding competition with the Australian leg held in Horsham. I was assigned with someone else to go and lie the ropes out on the shoulders of runway 17, ready for gridding and launching later that day.

We made it out onto the strip and remembered we should've grabbed a radio. We shrugged it off and continued our work. About 10–15 minutes into laying all of the 14 ropes, we could hear a large aircraft approaching, well, large for Horsham. It was a King Air B200. While standing on the threshold of 17, I looked up to the final leg of the circuit for runway 08, considering 17 was closed via a NOTAM, and no aircraft should be on this circuit.

Upon catching a glimpse of light out of the corner of my eye, I looked up. I was unwelcomely greeted by a large aircraft on short final for 17, where I was. I briefly shouted to the other person helping lay the ropes, 'CLEAR THE RUNWAY!'. He quickly jumped out of the way with milliseconds to spare until touchdown of the King Air. The aircraft continued to taxi up the runway, backtrack, and taxi towards the fuel station. We quickly finished laying all the ropes, then consulted with the event safety official.

Upon investigation, it was discovered that the pilot of the King Air was aware of the NOTAM and had contacted the event manager in regard to it. There was miscommunication and the pilot had deemed runway 17/35 safe for landing.

Luckily, we were able to walk away from the accident scratch-free and much wiser.

## Lessons learnt

Radios save lives. Had we taken a radio instead of 'brushing it off', we would have been able to hear the pilot's announcement on the CTAF and communicate our actions with the pilot, preventing anything like this.

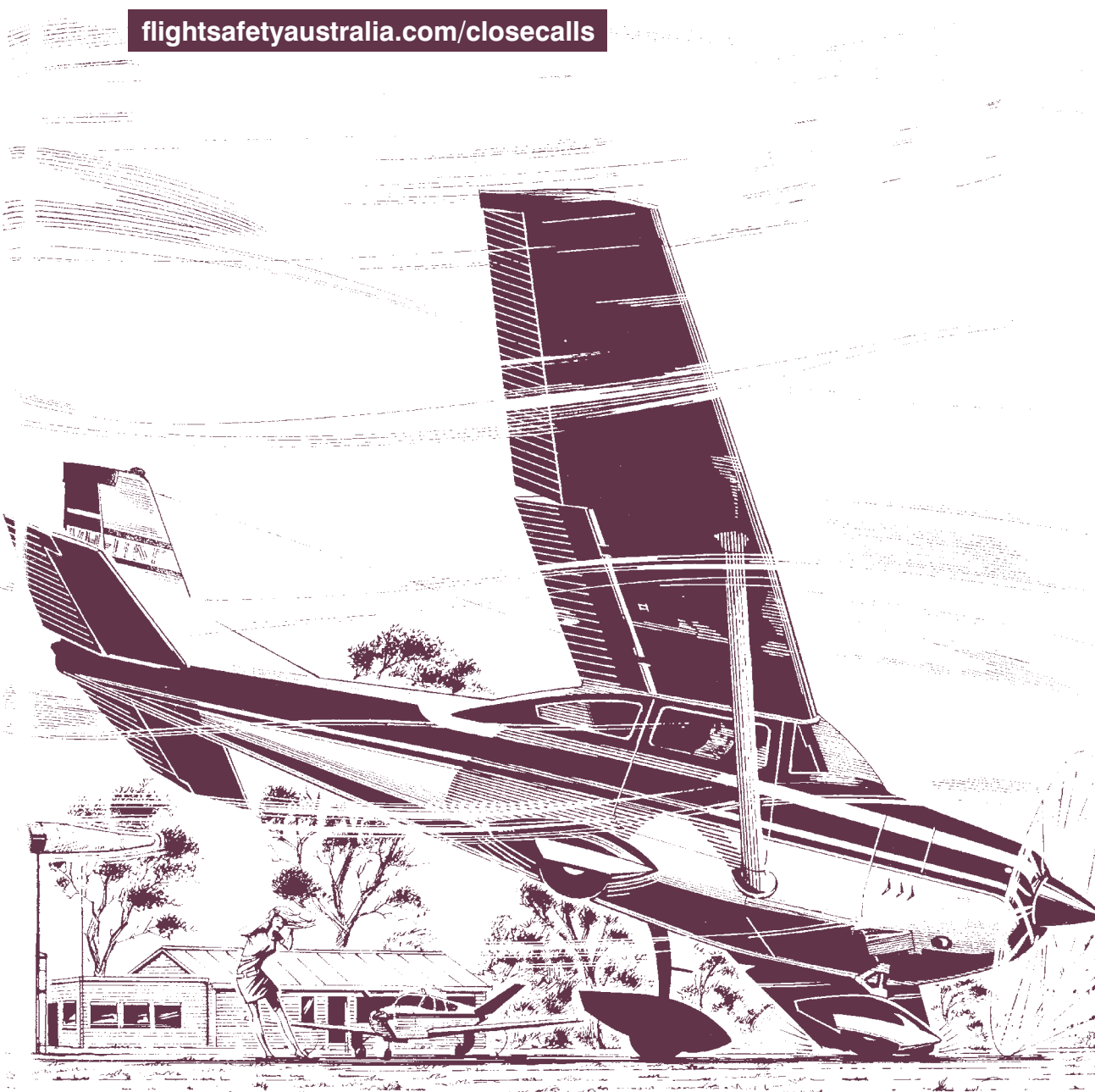
Look up and live. Had I not have looked up, I may not have been here to tell the tale and write this close call. Seeing the aircraft and warning others, had greatly decreased any chances of an accident, though yes, I did notice it quite late in the traffic pattern. When working or moving on or near runways, always check the circuit area, and more than just final. Aircraft can quickly move from downwind to final leg and catch people off guard.

# EVER HAD A CLOSE CALL?

Write to us about an aviation incident or accident that you have been involved in. If we publish your story, you will receive **$500**. Articles should be between 450 and 1400 words. Submit your close call by emailing **fsa@casa.gov.au**

*Please do not submit articles regarding events that are the subject of a current official investigation. Submissions may be edited for clarity, length and reader focus.*

**flightsafetyaustralia.com/closecalls**



# How I learned to say no

*name withheld by request*

image: Michelle Albers | Adobe Stock

The general narrative of a close call story is one of a singular incident, where perhaps one came much closer to clipping the metaphorical (or literal) trees on final than they'd care to admit. Although my story does have an incident that brought things to a head, my real close call was an 18-month long encounter with a culture that discouraged speaking up and allowed boundaries to be pushed.

## That first gig

It was the start of summer and I'd managed to find my first 'gig' in aviation, flying skydivers at a small drop zone. As you might imagine, I was stoked and jumped in with enthusiasm and naivety to boot.

Supervised by the owner of the business (also a pilot), I started learning the ups and downs of playing human darts. Before long, I was good to go on my own and flying skydivers every weekend.

I really loved it but, looking back, red flags started popping up early on. They were individually little things that on their own weren't likely to lead to outright catastrophe—flying when the weather was far from optimal, an unserviceable fuel gauge, rounding down flight times on the maintenance release—things that make that little voice in your head go '*Hey, hold on a minute*.' But drowning out this voice was the genuine fun I was having dropping skydivers.

Dropzones have upbeat and exciting atmospheres, and I was caught up in that.

Initially these minor transgressions were tolerable and in my mind responsibility for them was easily deferred to someone else. After some time, I made attempts to bring up things that needed fixing or improving into conversations. These were met adversarially by the owner, with the '*this is how we've always done it*' and '*we have a fantastic safety record*' being favourite go-to lines for brushing me off.

But as my experience grew, I became emboldened to say a dreaded word: no.

The turning point came about six months in, by which time I was flying the largest aircraft that the aerodrome operated. Attitudes towards maximum take-off weight were a little liberal to say the least, and some quick addition on the calculator drew into question the 'standard weights' used and the officially carried weight and balance sheets. Airvans will carry eight or even nine skydivers … if they're all 75 kg including a parachute and kit. This describes only a handful of the skydivers I know.

I recall a sunny Saturday morning in the middle of winter. The owner sent out a load of eight skydivers, all male and quite solid. Right away I knew we were over maximum take-off weight; a quick calculation confirmed it was by a decent amount—just over 100 kg. Too much over to even entertain going with, and so I explained this to the skydivers, who themselves were surprisingly tolerant that I was offloading someone. One of the larger blokes quickly volunteered to sit out. 'Perfect!' I thought, and I quickly ran over to tell the owner and grab a new manifest ticket.

Firmly, I explained that the load was too heavy, citing the exact weight we were over, but quickly following up with, '*I've already asked the guys and Paul has agreed to sit this one out.*' A borderline irate reaction and heated argument ensued but, resisting pressure to go overweight, I declared, '*No. Either someone sits out or I sit out.*' Unhappy is a sanitised way to describe his response, but, realising that I wasn't backing down, a new manifest ticket was eventually produced and off we went. More words followed post-flight, but I kept my job and flew the rest of that weekend without incident.

Reflecting, I questioned what had been different in this scenario to some of my previously expressed safety concerns. When I raised issues in the past, I tended to raise them all at once, offering almost a shopping list of problems. There were some major items in there, but these got lost in what was a sea of other smaller and comparatively insignificant issues.

The loading situation had forced me to focus on a singular, critical problem. Three themes came out of this.

## Pick your battles

Without trying to downplay the need for minor safety issues to be addressed, make sure you prioritise the major problems. If you can't go flying because the engine is running rough, there and then isn't the time to bring up the door that's been occasionally popping open in flight for more than six months. If there's only one thing stopping you going flying, then focus only on that when explaining the situation to the person that you're saying no to.

On the same tune, make your response proportionate to the issue at hand. Overreacting to a minor issue will detract from your ability to convey concern about a genuinely dangerous issue in the future.

## Say no

The unfortunate reality is that at some point every pilot will have to say no, and after that they'll have to hold their ground. This is hard and uncomfortable, particularly when you're inexperienced or beholden to your employer. It might even be yourself that you're saying no to.

Making the decision to say no has consequences. The consequences most pilots worry about are getting fired, annoying the boss or costing the business money. But, if saying no saves your life or prevents an accident, these consequences quickly fade into insignificance.

## Offer a way to say yes

This is the most important part. One of the reasons people may respond badly to being told no is because it backs them into a corner that they can't escape from. Your refusal to fly an aircraft might mean replanning an entire day, cost a lot of money or simply challenge someone's authority. It's so much easier for that person to accept that you are saying no if you provide them with an alternate plan. That plan offers an easy exit from both the problem and the conversation itself.

Presenting an alternate plan also negates the need to outright say no, which might allow you to still get the job done.

## So how did my story pan out?

The owner eventually accepted that if I said it wasn't happening, well then it wasn't happening. It did take a few more instances of saying no (on various issues), but we got there. I don't think he ever liked it or me for saying no, but that was the way it was.

The skydivers themselves were quite receptive of my pushing back when I felt things were unsafe. The occasional disappointed skydiver was easily offset by their feeling that someone was actively looking out for safety in the flying side of the business.

However, the underlying attitudes toward safety and limits from the business never really improved. My efforts to create change were tolerated but not embraced. I made sure my own flying was safe, but attempts to improve the culture didn't get far. As much as I genuinely enjoyed working there, eventually I made the decision that I had said no one too many times and I moved on.

Since skydiving I have worked for several companies, all of which have had amazing safety cultures. Cultures which praise decisions to say no and make effort not to punish or deter such decisions. Despite what anyone might tell you, positive safety culture should be and is the norm, even in general aviation.

Every company worth working for wants their pilots to say no when it matters most. The saying goes that a good pilot flies a good aeroplane, which by implication means a good pilot says no to a bad aeroplane. Know when to say no. Say it, then offer a path to making that situation safe enough for you to say yes.

# An unplanned outlanding

*name withheld by request*

image: Alf van Beem | Wikimedia Commons CC0 1.0, clouds following page: © Getty Images | Creativemarc

'Well, the weather isn't like last week at all,' I thought to myself as I sat in the cockpit, heart pounding almost as much as the rain on the canopy. All I could see from the cockpit was very tall marsh grass surrounding me and a brooding sky overhead. How did I get here? Well, it all began the previous week.

While it wasn't a beautiful day, it was a good one for gliding. There was plenty of lift to 4500 ft AGL and I flew for 2.5 hours in the club Junior, a fun glider to fly, even if it is at the lower performance end of the single-seater spectrum. By mid-afternoon a few showers had popped up, but it was easy to fly around them and find lift behind them. All in all, a fun day.

Fast forward to the following week—the day of 'the incident'. The weather looked just the same. Plenty of lift around, a defined cloudbase, a few small showers appearing here and there. Off I went in the Junior again, hoping for another good flight.

It started well, plenty of strong lift, but only to about 2500 ft AGL today. As I was soaring close to the airfield I noticed that a small shower was drifting east towards the airfield. I decided that, like last weekend, I could fly around it and get into more lift behind it. I headed south from the airfield to skirt the shower. This took me over higher ground, sparse moorland that was around 600–800 ft above the airfield. Ironically, as I flew over it, I was looking down and thinking

I would not want to get caught out over here as there was nowhere to land … except a small patch of green in the triangle formed by three hills meeting where a stream of water trickled down. The only other options up here would be a track built to facilitate the installation of wind turbines or a long glide down a valley over a very full reservoir.

There was some strong lift around the shower, but it abruptly disappeared as the shower seemed to come to a standstill and then suddenly grow to become a proper rain storm. I continued casting about looking for lift as my escape route back to the airfield began to close off. There I was, in strong sink, over unlandable terrain, in a low-performance glider, with the rain now blocking my way back to the airfield. I was probably only around 6–8 km from the airfield, but it soon became apparent that I may not make it back. The panic was starting to rise almost as fast as the ground, until I decided that I was not going to make the airfield and to discount that as an option. Once I'd done that my mind cleared and focused on the task of getting myself and glider down safely.

The only real option left to me was the triangle of green I had flown over earlier. I headed straight to it and flew around it to have a look. It was sloped and looked boggy, but green and welcoming compared to the rocky moorland surrounding it. Conveniently it also had a narrow track at its base.

After a couple of circuits, I chose to land right in the middle, heading uphill. From somewhere my mind remembered that when landing uphill you need to have a really positive round out to match the slope and avoid arriving heavily. I turned finals in heavy rain and approached at 55 knots. As I rounded out I held off as much as I could in the long marsh grass and tried to keep the wings level to avoid a ground loop. As the glider entered the grass it slowed, then sank into it and stopped quickly.

That's when I got the shakes. I sat in the cockpit for about 10 minutes while it poured with rain, taking stock. I was fine. The glider appeared fine. I'd survived my first outlanding. I was a long way from civilisation and my phone had no reception. I hadn't even had time to radio the club before landing as I was too busy flying. So nobody knew where I was. But I could walk. I climbed out when the rain stopped and started walking. I followed the narrow track at the bottom of the hill for 5 km until it met a road, then walked another 5 km along a lonely road until a farmer gave me a lift to the nearest village. From there a phone call to the club started what became a legendary retrieve involving 10 people, one flat tyre and one burned out clutch.

Interestingly, during the retrieve, quite a few members of the club were inspecting my landing 'field' They were quite impressed with my feat but did point out all these boulders

that were hidden in the grass on either side of my landing run. In choosing to land right down the middle I had avoided them all.

I think there were three factors that came into play to help force my first outlanding, all related to complacency.

Firstly, I was overconfident and eager to get flying. I could see the conditions were decent and I was hoping to get another flight like the one I had the previous week. The conditions looked the same, so I thought I would be fine. I had been gliding for around 10 years at that stage, so I considered myself relatively experienced.

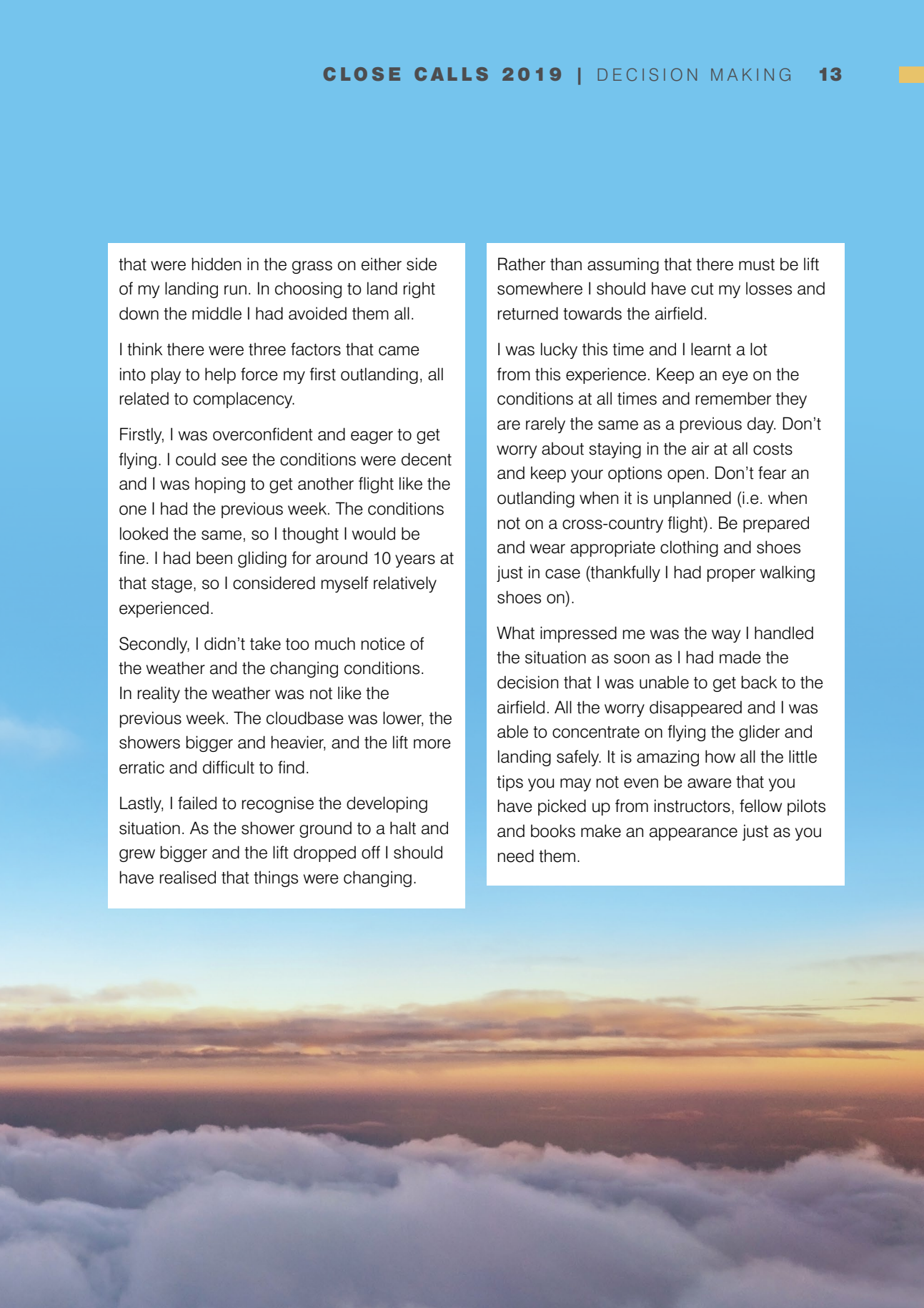
Secondly, I didn't take too much notice of the weather and the changing conditions. In reality the weather was not like the previous week. The cloudbase was lower, the showers bigger and heavier, and the lift more erratic and difficult to find.

Lastly, I failed to recognise the developing situation. As the shower ground to a halt and grew bigger and the lift dropped off I should have realised that things were changing.

Rather than assuming that there must be lift somewhere I should have cut my losses and returned towards the airfield.

I was lucky this time and I learnt a lot from this experience. Keep an eye on the conditions at all times and remember they are rarely the same as a previous day. Don't worry about staying in the air at all costs and keep your options open. Don't fear an outlanding when it is unplanned (i.e. when not on a cross-country flight). Be prepared and wear appropriate clothing and shoes just in case (thankfully I had proper walking shoes on).

What impressed me was the way I handled the situation as soon as I had made the decision that I was unable to get back to the airfield. All the worry disappeared and I was able to concentrate on flying the glider and landing safely. It is amazing how all the little tips you may not even be aware that you have picked up from instructors, fellow pilots and books make an appearance just as you need them.



# Dumped!

*by Andrew Greste*

image: wiltshirespotter | CC BY-SA 2.0, mountains: Civil Aviation Safety Authority

I live in north-west NSW and have built and fly an RV-7. My wife Kylie and I regularly fly to Brisbane from our farm west of Wee Waa. The 100-minute flight certainly beats the drudgery of a seven-hour road trip.

Northbound I track via Moree, Warwick, through the Amberley Military control zone, the Goodna VFA, then into Archerfield.

Most of the flight takes us over the flat north-west plains of NSW. On the morning of our close call we departed from our farm strip, climbed through a scattered layer of cumulus cloud and onto the 'magic carpet'. It was smooth as silk with scattered white puffy clouds below and brilliant blue sky above stretching from horizon to horizon. It was so good I took some video to share with the family.

I decided to climb all the way to 9500 feet as there was an increasing tail wind from the south-west. My EFIS screen has a wind vector indicator on it, which continually calculates wind speed and direction.

Before departure, I had done all the regular pre-flight preparations regarding weather, lodged a flight plan and observed the restricted area briefing (Amberley was not active). I'd taken note of a SIGMET on the PCA, which warned of severe turbulence covering most of the Great Divide in the northern part of NSW and extending into Queensland, however the area stopped just short of our intended track.

Into the flight the cloud disappeared, and the wind continued to become more westerly. Overhead Warwick, the wind was due west adding 35 knots to our ground speed.

We were making great time. I descended to 7500 feet to remain below the Brisbane CTA steps but still had plenty of height to safely clear the mountain range between us and Brisbane.

We cleared the ranges with little turbulence and the Brisbane valley lay before us. I noticed a further increase in the wind speed—we had a GS of 200 knots, some strong sink and then rising air. As I commenced my descent, the speed was now at the top end of the green arc due to some very strong lift and the Brisbane CTA steps were looming.

I disconnected the autopilot because I was continually changing trim with the lift and sink, and my autopilot speaks back to me if it's out of trim. Then at 5000 feet with a 25 nm run to Archerfield, BANG! All hell broke loose. The ground disappeared from the windscreen, both our heads hit the canopy and knocked our headsets off, knees and legs hit the instrument panel, water bottles, phones and a couple of apples went flying around the cockpit then landed on the floor. It was like riding a bucking horse, struggling to get straight and level and mindful of the CTA steps.

I'd experienced significant turbulence in the past but his was extreme—and scary. What was going on!

We'd just been 'dumped' by mountain wave rotor turbulence. Reviewing my flight data logger after the flight, the plane suddenly pitched down 8 degrees then up 20 degrees and rolled 35 degrees right, pulling 5G's, vertical speed of 3000 feet per minute up, all in about a second. There were a few slightly milder aftershocks but the whole ordeal lasted only nine seconds.

Once I'd regained control and straight and level flight, I had to continue the descent. Archerfield control zone was minutes away and I didn't want to hang around where we were for fear of more rotor turbulence, but I was also concerned about all the loose stuff rolling around the cockpit floor. They could get stuck behind or between the rudder pedals. It seemed I still had good authority in pitch and roll with no obvious damage. It took some convincing to get Kylie to take the stick while I slipped off my shoulder straps so I could clean up the cockpit. Every small bump we encountered thereafter made us flinch and jump—we just wanted to get on the ground.

The rest of the flight into Archerfield was uneventful, however my heart was still racing, and the approach and landing was rushed and far from my best.

Thankfully we had altitude and plenty of terrain clearance. On reflection, I should have tuned into the signs of mountain wave rotor turbulence as we approached the range crossing. With strong wind of 30+ knots blowing perpendicular to the ranges with increasing wind speed over the mountains, there was strong sink and lift. I should have slowed the plane back to manoeuvring speed to reduce the risk of airframe damage. Even though the SIGMET for turbulence didn't cover our flight path, that didn't prevent the turbulence from being there.

In hindsight, it also may have been beneficial to orbit outside the Archerfield CTA for a few minutes just to calm down and get my head together before entering a busy airspace.

And I will always now keep my seat belts fastened firm and keep those apples and water bottles stowed securely.

# Crosswind chaos

*name withheld by request*

image: Alan Wilson | CC BY-SA 2.0

Several years ago, my father was visiting from overseas and we were both keen to attend a small fly in and airshow prior to him returning. I booked the Cub for the whole day. The destination was only about one hour away, and the flying display started at 1400. Plenty of time…

We woke up early and set off to the airfield. The weather forecast was for good conditions with a light wind but as we were getting the aircraft ready, the cloud base looked a lot lower than expected. Since we still had time to spare, I decided to wait a bit, hoping the weather would improve. Eventually after several cups of coffee, it looked slightly brighter, so we decided to give it a go as time was ticking on. By now, the wind had picked up quite a bit. It was not as forecast, but it was down the runway. At least the runway of our home airfield anyway!

After a pleasant flight we eventually arrived at the destination and landed just prior to 1400 when the airfield closed for the flying display.

After a nice afternoon watching the display and chatting to a few other owners we slowly got ready to depart. The sky looked fantastic—sunny with a few puffy clouds at about 5000 ft. The wind was however quite strong and at this airfield it was 90° across the runway and gusting.

I started the take-off roll with the stick hard back and slight into wind aileron and smoothly applied full power. The Cub started to roll normally but as soon as the tail began to lift the aircraft began to veer rapidly to the right, into the wind. I fought for all it was worth with full left rudder to prevent a rapidly approaching ground loop.

We departed the sealed runway and ran onto the grass runway which was alongside. Fortunately, there were no runway lights or other obstructions for us to hit. As we bumped across the grass the nose started to pitch forward towards the ground. I just managed to regain control enough to bring the tailwheel back down, albeit with a bump.

Just when I thought I had directional control back the aircraft suddenly began to veer in the other direction. Again, I fought it with all that I had and eventually, after a struggle, the aircraft crossed back onto the hard runway again and finally became airborne. After shakily climbing away we had an uneventful flight home and a smooth landing on a (thankfully) into-the-wind home runway.

So, what had gone wrong and why? I viewed the video footage of the take-off which my passenger had filmed. Hindsight is a wonderful thing. I could already see a few things which I should have done a lot better.

During the taxi the video showed the horizontal windsock, so the wind was at least 15 knots at 90° to the runway and gusting stronger.

The Cub flight manual says max demonstrated crosswind is 10 knots. I've heard many pilots argue that 'max demonstrated' is not an actual limit. Most pilots probably think they can handle stronger crosswinds and I suppose I was one of them. In this case I had exceed the limit of my skill level. I certainly will use 'max demonstrated' as a hard limit now.

In any crosswind you must ensure you use sufficient into-wind aileron. When I watched the video, I realised I probably only had a quarter deflection. It wasn't enough. More aileron means more weight on the into-wind wheel helping keep the aircraft tracking straight on the ground. It also stops the wing from lifting.

If it is all going wrong on a take-off then close the throttle and stop. For some reason stopping never crossed my mind but was probably the safest thing to do.

I suppose the sun and fabulous looking sky had lured me in to thinking it was great conditions for flying. Combined with the fact that we needed to be home, we decided to give it a go.

Get-home-itis. We have all heard about it and like me, most people think they won't succumb to it. I was one of them!

It can creep up on you very easily without you even noticing. Always be aware of it, even on small trips. There is always another day to fly or another way to get home.

# The air was electric

*by Peter Ffrench*

image: supplied by contributor

As a newbie paraglider pilot at Stanwell Park in 2006, a part of my site induction was a story of an incident some years before when a large number of pilots were caught out by a freakish gust front. Several were able to run north up the coast and land on remote beaches while others were blown over the back into tiger country. Three suffered significant back injuries. The instructor's point was that whilst Stanny is a fairly benign coastal site, it can turn nasty at the drop of a hat.

Shortly after listening to this story, I did experience a similar but much weaker front and managed to land my ENA wing on the beach. My situational awareness at this stage was not too well developed and my school glider was a fairly lethargic performer.

Fast forward to February 2018. I have now been flying for 12 years, my situational awareness has improved out of sight and I am how flying a high ENC wing with heaps of performance.

About five pilots including myself had flown north from Stanny but being aware that conditions further south were increasingly stronger we all decided to head back to launch. The wind was 11–12 knots from the south when we got back and having landed in these conditions numerous times before, I attempted a top landing but was a little surprised by the strong lift in front of the landing area.

I flew back out towards the sea with the intention of losing height for another attempt when a mate on the hill called out that it had now increased to 14 knots. It was time to head to the beach, with the other guys a couple of minutes in front of me. At about 180 metres above sea level (ASL) I applied half speed bar and had a ground speed of 10–11 km/hr. As I approached the north end of Stanwell Park beach, I went to big ears to get rid of some height before setting up my approach. At this stage there were very few white caps on the water as would be expected for that wind speed.

Within five seconds or less of going to big ears I was hit by a gust that was estimated at

20–22 knots and was blown up and back to the landing area. I had let off big ears and was on full speed bar but not penetrating at all. Eventually, I was standing on the speed bar and at an altitude of 320 metres. At its peak I was actually drifting back towards the tiger country with wind speed estimated at 30–32 knots.

During lulls I did manage to get some forward penetration but lost it all and ended up back over the landing area when I attempted big ears again. Why? It was a bad move! Needless to say, no more big ears!

My only other options were to turn and go for the tiger country or persist with full speed bar and attempt to get in front of the point and run up the coast as had happened years before. The tiger option was quickly ruled out as, even at 320 metres, I didn't have enough height to get over the back and if I did the rotor would have been horrendous.

I persisted standing on the speed bar and inched closer to the point. Just as I thought I was making progress and preparing to run up the coast I was hit by a strong gust coming up off a gully in the cliff face. I was now over the road behind the launch/carpark area, still standing on the speed bar and attracting quite a crowd of onlookers admiring my flying skills.

For the next few minutes I inched along the road with trees and power lines behind me, about five metres above the ground. Finally, I was getting a little bit of penetration and set my mind to land on either the road or on the large roundabout that was the entry to the public carpark. Other club pilots were preparing to block the road if necessary.

Over the roundabout and about three metres AGL, I went off speed bar and into the hang position in preparation for landing. Instantly I was again blown backwards, and my left-wing tip caught a concrete lamp post. As the right tip came around, I was able to grab a hold of the lamp post and hang on for dear life. Another successful top landing!

Help in the form of a ladder arrived shortly after and a slightly shaken pilot made it back to terra firma, wing intact. It was later pointed out that the lamp post was about four metres in front of a power pole carrying 60,000 volts.

In all, the incident from start to finish was about 20–25 minutes.

I knew I had to get back on the horse so on the next flyable day, I was back in the air.

## Lessons learnt

- Looking back, I don't think my decision to attempt a top landing was wrong as things did not start to unfold until a couple of minutes later. Hindsight says that the time lost would have been better spent heading to the beach.
- White capping is generally a very good indicator of wind strength on the water but can be influenced by other factors, such as wind direction, sea swell and current.
- Big ears is an effective way to wash off height but should only be used in appropriate conditions. In this case, persisting with just full speed bar was the best option. Spiralling was also not an option in this case.
- Finally, I feel my decision to go into the hang position and off speed bar was wrong. I am sure many may disagree, but I think it would have been more prudent to ride the bar all the way to the ground and pull either an A or B line stall on touchdown.
- Try to keep calm and don't panic or over read the situation.

Sometimes you will just be in the wrong place at the wrong time.

# Mountain weather can easily fool you

*by Gilbert Griffith*

image: Civil Aviation Safety Authority

I had taken my ultralight thruster single seat aircraft out for a short trip of less than an hour around the local area. I have been flying here regularly since 1974, starting in hang gliders, then flying trikes, ultralights, gliders, paragliders, GA, and even model helicopters, multicopters (drones) and model aircraft. I got my PPL at 17 years of age at Moorabbin airport in 1968. First solo was in a Victa Airtourer 100 at Civil Flying School in late 1967.

The thruster is aluminium framed with a dacron covered high wing and engine on the front of the single tube fuselage. It has full width ailerons and a normal tail empennage with large control surfaces. Elevator trim is an adjustable bungee cord. I had also made a modification to adjust a small amount of flap by lowering both ailerons with a car handbrake handle.

I had also removed the fibreglass cockpit (after a crash demolished it), so apart from a windscreen attached to two down tubes, everything was open.

The local grass strip is at Porepunkah in north-east Victoria and runs north-south a couple of kilometres east of Mount Buffalo. I was flying about ten kilometres east of the strip, over Wandiligong at 7500 feet when I decided to return to the strip and land.

The weather was overcast with cloud down to about 8500 feet but to the west was a line of darker cloud having a roll shape aligned almost north-south. Nothing particularly unusual and no bad weather was expected.

As I began the return leg I was hit suddenly by strong turbulence and a strong headwind. The turbulence was strong enough to tip my plane well over 90 degrees both ways in roll. I was concerned enough to tighten my full harness lap and shoulder straps, but I let the turbulence do what it wanted without fighting it and maybe over stressing the aircraft. It also started to rain fairly heavily, so my legs, shorts and lower body were soaked in seconds. The windscreen protected my head and face well. I was expecting to be rolled inverted at any moment.

I had to increase power to maintain any sort of headway or ground speed and even with full throttle of the twin carburettor, twin cylinder, 45HP Rotax two stroke engine, I was losing altitude at about 2000 feet per minute. I was worried about running out of fuel. I could not turn far enough around with the harness so tight so I could not see the fuel gauge on the tank behind my seat. At normal cruise power settings there would have been plenty of fuel, but at full throttle the engine was very thirsty.

While I was thinking about whether I would have enough altitude to clear the ridge between me and the airstrip I was still a couple of kilometres from the 1500-foot ridge and down to about

3000 feet myself. The airstrip was a further two kilometres past the ridge. It was still hellishly turbulent, but the rain stopped after a couple of minutes.

I had my eye on an emergency landing area or two in case I ran out of fuel or couldn't make the intervening ridge. There was the Bright golf course, which I had force landed on once before in a different aircraft after the spark plugs had oiled up and the engine stopped. That was the second forced landing in that particular two seat thruster that I had had. Anyway, surprisingly, I observed that there was no sign of wind at ground level. The sewerage farm ponds immediately north of the golf course was dead still. All the surrounding trees were also showing no signs of any wind at all. So, I knew that a landing there would be a non-event.

Fortunately, the engine restored my faith in Rotax, as it didn't even miss a beat with the heavy rain wetting it down (the rear flywheel is open to the elements and the points inside are readily accessible through the holes in the flywheel face). And as I had a plan B in mind for an easy forced landing, the fuel amount ceased to be a worry.

The headwind was slacking off a bit, and it looked like I would easily clear the ridge by a few hundred feet and leave me with a straight run to the airport, but it was still rocking and rolling until I cleared the ridge.

I have spent years flying this particular ridge in hang gliders from about 1974 in the first gliders to be produced in Victoria. I had made hundreds of flights in most conditions and had a few crashes as well, so I knew as much as one could about what the wind could do there.

Once over the ridge everything smoothed out with no turbulence and no headwind.

Conditions were back to what they were just 15 minutes before and just like they had been all morning. Except for the fact that all the hangar doors along the strip were now closed, where they had been fully open with people milling around outside. Now there was no sign of people. It turned out that they had had to rush to close all the hangars as the doors were almost blown off by the gusts estimated to be around 90 to 100 kilometres per hour.

I overflew and joined downwind to the south at about 800 feet which was normal for ultralights. I did a normal base turn and final and rolled to a stop in front of the hangar. People were coming out of the hangars and running towards me as I shut down the engine. As I climbed out a couple of close friends ran up and hugged me with the most common comment being, 'We thought you were dead.'

Quite a few pilots have died in the area over the years, thanks to dodgy weather that can appear suddenly. There is a lot of hang gliding, paragliding, ultralights, a few local GA pilots, and at times many visiting glider pilots. It's a great place for recreational mountain flying, with good thermals and some good take-off sites.

In summary, mountain weather can easily fool you. And at the time there was no internet with access to radar maps that are so useful now. Also, I should have had more fuel on board. The tank holds 80 litres, but I have never filled it completely. Usually I have 20 to 40 litres which is plenty for an hour or two of flight. I had started with just over 25 litres and landed with about 8 litres remaining. On this engine there is a big difference between half throttle cruise and full throttle fuel consumption.

# It's not worth dying for

*by Lea Vesic, Innovation & Improvement Executive, Recreational Aviation Australia*

image: Civil Aviation Safety Authority

It was a cool, calm and cloudy winter's day in Adelaide, but (in hindsight) not the kind of day you wake up to and decide that VFR flying is on the table. Nevertheless, the conditions were docile, there was a horizon and above all, the requirements were legal. The cloud base hung relatively low at 4000 feet but not too low to impede on some basic training area solo flying only a stone's throw from the airfield. I was scheduled to top up my remaining command hours to meet the minimum requirement for my private pilot's licence. It was the day that had been in the making for almost a decade.

I was anxious but eager. The 1.2 hours left to log would be conducted in my single engine trainer—the one that I had accumulated all my hours in, and the one that I was very familiar and comfortable with flying.

As I impatiently greeted my instructor to confirm my interpretations of weather, airspace, TEM and NOTAM information, I could sense my urgency build as this was the last box-ticking exercise to complete before I received my wings, literally and metaphorically. My instructor looked out to the west and dutifully assessed the conditions outside with that written on the TAF and ARFOR. It was pretty much as expected. A chance of increasing showers of rain and a thunderstorm in the afternoon. It was only mid-morning, so I had plenty of time.

With some reservations, my instructor signed me out with the following stipulations: 'the weather is safe, but it can become marginal very quickly in this environment. I want you to decide early on if you don't have adequate

visibility once you get to the outbound VFR waypoint. If you can't see to the end of the training area, I expect you back in the circuit immediately.'

At this point my enthusiasm to get in the aircraft clouded any looming concerns of a change in the weather. I had a determination to complete the flight—rain, hail or shine as they say.

With my charts and headset in hand, I dashed to the aircraft and confidently completed the pre-flight I had perfected throughout my sub 100-hour's experience. And with that manner of youthful exuberance, I closed and latched the door, started the engine and taxied to the holding point for my departure.

As I crossed the VFR waypoint, I changed to area frequency and noticed the mist descending off the clouds in the distance. I could see past the training area—the dials were in the green—as I began conducting airwork and tracked towards the far end of the training field.

I was surprised to see aircraft heading inbound to my left. It's only mid-morning with most aircraft out on navigation exercises. 'Surely, they're not heading back already,' I thought.

I returned to the sortie at hand and continued to track further west. I calculated that a 1.2-hour flight would require a little more time out in the training area than usual, so I continued towards the mist in the distance.

Again, another aircraft passed by my left. Then a third. Only this time, I noticed the wall of dark clouds over the coastline which to my surprise was heading inland towards the training area. I spent a moment reproducing the TAF lines in my head to confirm who had hoodwinked who—those ominous clouds were certainly not forecasted this early in the day.

My instructor's voice echoed in my ears and I dutifully turned back towards the east, to the inbound VFR waypoint. I wondered if the slight rise in my blood pressure was due to the front approaching or my angst that the air switch had barely registered 0.7 of an hour.

As I turned, I looked for traffic and beyond to the horizon, however there wasn't one as the cloud base had lowered further. I felt adrenaline take over and panic set in. How did the weather turn so quickly? This was not the time to philosophise and as I returned to ingrained procedures, it dawned on me. The aircraft en route back to the airfield were indeed navexes that had aborted their sorties and were returning due to the weather.

While tracking back with nerves tempered, I knew the focus was on getting to the inbound point, making my call to tower and joining a downwind circuit. The only problem now was to slot in to the conga line of inbound aircraft that seemed to appear out of thin air. I made a few hasty calls to allow for separation and slotted in, with hesitation knowing that I was now surrounded by aircraft.

I knew I couldn't be certain that we were still using the same runway as departure so the ATIS was my first port of call. I turned down the volume on my comms 1 system to a negligible sound to get maximum clarity of the weather report through the ATIS on comms 2.

As I looked down to jot details on my kneeboard, I became distracted by the sudden loud and alerting beep from the TCAS—a seemingly innocuous device when one is in full visibility. Regrettably, I was not. My panic rose to a higher octave, but I kept my cool and focussed on approaching the control zone and making my inbound call. I knew that as soon as I was identified by the tower that separation would be a joint burden to bare. The TCAS continued to shriek and with little visibility, it became apparent that I was beginning to lose visual reference down to a kilometre or two.

I made my call. No response. 'It's okay,' I thought. 'I know there's a lot of traffic around.' I made my call again. No response. As I approach the boundary zone, I made yet another call. Once again there was no response. I convinced myself the radio had failed.

I began to troubleshoot unplugging and plugging in my headset. The TCAS continued to remind me of my proximity to what felt like the potential of a mid-air collision with virtually no horizon or reference to the airfield.

'ALPHA BRAVO CHARLIE DO YOU COPY?' The loud and resolute voice bellowed over comms 1 as I frantically fidgeted with the volume dial. I had been transmitting but had not heard the response. My overwhelming sense of joy was only dampened slightly by the beating of my heart.

ATC cleared the local airspace to allow for me to join downwind, and as I rapidly descended through the thick mist to the safety of circuit height, I could finally take in some well-deserved oxygen.

It didn't take long for my instructor to be alerted to the event. After all, I was clearly bellowing my radio calls on the inbound frequency which played through the school's operations room. I managed to keep it together until I was on terra firma.

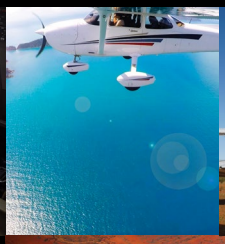
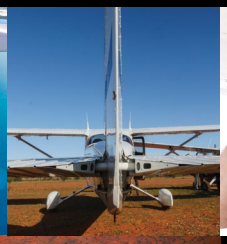
I tried to piece together what had happened and it became obvious that two things had fed the Swiss cheese model of events. I lost my situational awareness and my judgement was (literally) clouded by the impatience of 'get-there-it is' syndrome. I did not take in the warning signs of returning aircraft and didn't observe the changing environment. I remained steadfast on achieving the goal rather than continually assessing the situation.

As aviators, we speak about the skill of decision making and know why it is important, but I failed to recognise that mistakes can happen to the best of us. Situations like mine are a grim reminder (noting the survival rates of a non IFR-rated pilot when entering zero visibility) how quickly a situation and an environment can become volatile. Flying is my life and my love. But it is not worth dying for.

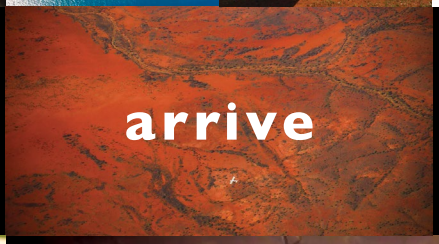
When planning any flight, no matter the frequency or routine nature of it, it is imperative to apply situational awareness well before you're in the air. Ask yourself, what can happen if the environment changes? Do you know when your decision point is going to be? What are your personal minimums? What are your emergency procedures if your radio failures?

These are all questions that should derive from self-interrogation of understanding and appreciating your skills of judgement and decision making and honing the multi-faceted procedures before an emergency occurs.

# OUTN BACK SERIES II

**plan** **arrive** **survive**

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# Once bitten

*by Luke Bayly*

image: Civil Aviation Safety Authority

We all know hand propping an aircraft can be hazardous, but when executed correctly, can be quite safe to do. This is not one of those stories.

In 2017, I bought a project aeroplane for restoration from a deceased estate. The family were very helpful in providing as much information as they could about the construction and operation of the aircraft and while the hand-started Volkswagen engine was not operating, I was given advice on the starting procedure. After conducting extensive repairs to the fuel, electrical and cooling systems, I had eagerly awaited the chance to strap the aircraft onto its trailer and to take it out to the local airfield in order to fire up the engine and test its capabilities. I found a day that lined up with my friend Peter who is experienced in hand starting a similar plane and headed out to Brooklands Airpark in SA to do some ground testing.

My first step was to confirm all of the safety aspects of hand propping an aircraft with Peter since it was my first time learning how to do so and then set to work about getting the engine roaring. After several attempts with some modifications to the priming etc., we finally got the engine to come alive and purr along for several minutes. It was then we discovered that some of the gauges were not working correctly due to wiring faults. My testing and adjusting phase had begun. In hindsight, this was probably the first warning sign that the systems

were either not correct or not as I understood them to be and further inspection should have commenced.

After shutting down the engine, we found that it was much harder to start and that sometimes it would fire early putting a lot of pressure on the top of your fingers as you tried to throw it around. The comment made by my experienced friend was that this seemed more difficult than his engine and this should have been the second clue that something wasn't right. Ignoring these clues and now accepting the current conditions as normal, I went to try it again and that is when the injury occurred.

The throttle body injector had been primed, and as I tried to pull the prop through the on, what I had been told was the magneto circuit, the ignition occurred just before top dead centre (TDC) and sent the prop spinning in the opposite direction. As it had pulled itself away from my hand, the natural direction of my current motion caused my hand to strike the upcoming prop at the base of my thumb on the palm and left a significant dent in the muscle and immediate pain, but luckily no broken bones.

So what had gone wrong I wondered as I drove back home that afternoon? I had carefully listened to the information provided to me when I had purchased the aircraft and was only starting on the primary (magneto) circuit, so why was it firing before TDC?

For the next two days, I spent hours looking through the electrical system confirming the design and intent of every circuit especially around the ignition. What I found rather quickly, to my dismay, is that the information I had been given was wrong and in actual fact I was trying to start the engine on the secondary (capacitor discharge ignition or CDI) circuit. In addition to the electrical issues, in my haste and excitement over the engine's first start I had completely ignored the warning signs to stop, check and confirm my setup.

In terms of the electrical issues, the long story short is that the reason we only use the magneto circuit to hand prop on is that it contains an impulse coupling. This device retards the spark during slow operation until after TDC so that it won't fire backwards when pulling through the prop. Once operational, it then changes the timing back to just before TDC as this is the most efficient for the engine. The secondary CDI circuit does not have any of this functionality and this is why it is left off during starting procedures.

So, after all of this, will I be heading out to buy a starter motor? Surprisingly the answer is 'no'. This is due to a number of reasons:

- the engine setup I am using is designed to be hand propped
- the additional increase in weight of a starting system is significant
- the additional cost to add a starting system is significant
- the level of complexity to install a starting system would require a retrofit of a ring gear to the flywheel and a modification to the airframe.

So, with all that complexity and since the engine is designed for hand propping (if executed correctly), I should have no further troubles with this process. As always, hand propping is more dangerous than pressing a starter button, however if managed correctly, it can be a suitable alternative.

As this injury was sustained during the maintenance and repair of my aircraft and not as part of the flying operations, it was only in a conversation a few days afterwards that I realised I should provide an incident report for this event. I got in touch with my administration organisation (Recreational Aviation Australia) and they advised that even without being the result of a flying operation, this event would need to be recorded.

I entered the relevant details into the online Occurrence Management System and after about 15 minutes of work, pressed the submit button. Although it is just another statistic, it is important to record these types of events so that organisations such as RAAus are able to focus their efforts on safety improvements in the right areas instead of assuming that safety is a flying operation focus only.

After reading every piece of information I could find on hand propping aircraft and discussing this with several pilots who practice this, I have found some key guidelines on ensuring safe operations when propping aircraft. These include:

» have another experienced person available to help you out if possible, with clear communications

» only hand prop aircraft which are designed to be propped

» only start using the magneto with an impulse coupling

» never wrap more than your top finger knuckle around the blade, if at all

» stand close and use a motion that swings your body away from the propeller

» always chock or tie the aircraft down to prevent undesired movement

» always treat a propeller as if it is live

» don't rely on reading about it, go and find someone to teach you properly (no pun intended)

» predetermine your clearance/ pathway away from the propeller after the engine starts.

As mentioned previously, this is not an exhaustive list on how to hand prop an aircraft but are some general principles on which you can build on by seeking out an experienced person to demonstrate and tutor you in. I can honestly report that since I have identified the correct systems, hand propping my aircraft is simply a non-event and very easy to do. It starts almost every time and there is no kickback evident. While the starting has become significantly easier, this also means that I cannot become complacent about the dangers of being in close proximity to the propeller and will continue to maintain caution when conducting this type of task in future.

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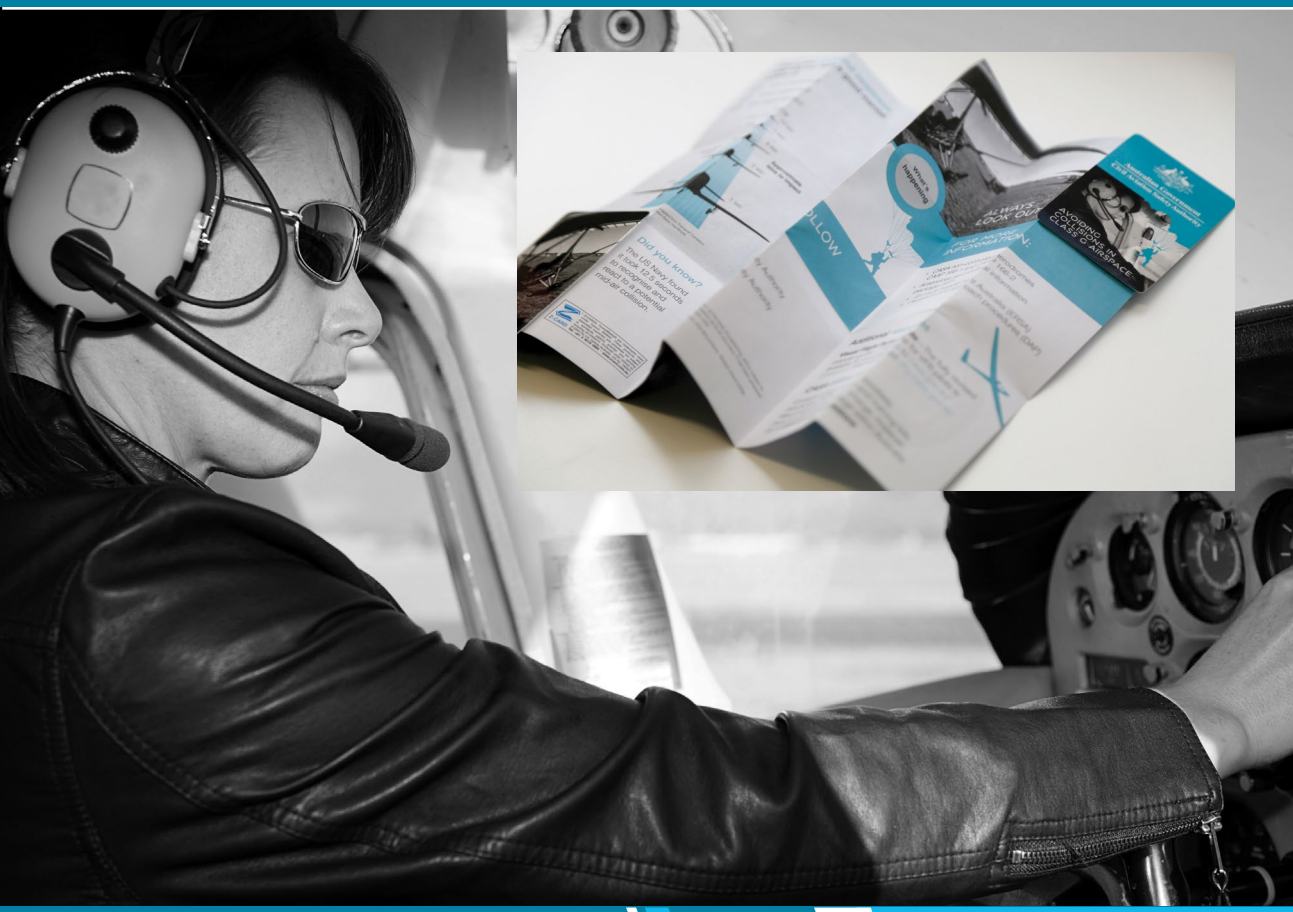

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## Avocado aviator

*name withheld by request*

I had just completed my RA-Aus cross country endorsement when I ventured across the Tasman for my annual visit to catch up with friends and relatives. While staying with my sister I decided to check out the local flying club and organised to go up with the chief flying instructor (CFI). Upon arrival at the club I found a friendly bunch of people and a very relaxed atmosphere. It wasn't long before I was ushered into a Foxbat and following a quick orientation (I had previously only flown Tecnams) we were taxiing out to the crosswind runway. With the CFI doing all the radio calls I could concentrate on getting used to the new aircraft which was just as well because the following hour of flying was the most exciting and challenging I had ever done.

First stop was a club member's house in the hills with a short grass strip (or should I say driveway) which led up to the house. This required a straight and level final approach with good throttle control which was something I wasn't used to. I was given plenty of help from the instructor next to me but despite being a dual control plane there was only one throttle control next to my thigh, which seemed a bit awkward and touchy (this was to be a crucial factor the next time we went flying). Next we headed across the harbour to try some beach landings and after performing a couple of 'beach circuits' we were joined by another club member flying in close proximity along the coast. Next stop was a local farm with a small strip to practice simulated engine failure landings. I noticed the Foxbat was quite sluggish climbing out with two heavy males in the cockpit and I had to pick a good line to avoid the various terrain obstacles which included trees, powerlines and surrounding hills. We finished off with low-level flying at 50 ft over the harbour mangroves and after we landed, I couldn't wait to book another flight.

image: supplied by contributor

Two days later we ventured up again, but little did I know we wouldn't even make it back to the airport this time. It was more of the same including simulated engine failures and a different grass strip in the hills to help me work on my throttle control. The final challenge was to be a makeshift landing strip which was basically an access way inside an avocado orchard, which was owned by a club member who had previously owned the Foxbat. I could hardly see the strip from the air and my instructor advised me that there was no 'going around' as there was a shelter belt of pine trees at the end of the short grass strip, which had a moderate uphill incline and was flanked by trees on either side.

We managed two landings with less help from my instructor on the second one before having a chat to the owner of the property who sounded like an experienced aviator. His advice was do a couple more landings and 'sink in' over the trees on final with full flaperons and no power, then add some power to help bring the nose up just prior to touchdown. I had been taught to use some throttle with a full-flaps approach and then cut it prior to landing, but in theory his technique made sense and we had practised forced landings with full flaperons and no power.

I was given the option to do 'one more' by my instructor and of course I took it. In no time we were making a perfect approach, but my previous training kicked in and I added a bit of throttle, only to be told by my instructor to hold back. It felt like we were definitely 'sinking in'

and once we descended below the pine trees the thing seemed to drop like a stone.

I do remember adding some throttle prior to hitting the ground but it was too little too late and had no real effect on the plane's attitude. The inevitable 'bounce' occurred which may have contributed to my increased throttle application, or maybe it was just a delayed and slightly panicked overreaction on my part using that touchy throttle.

The Foxbat lurched up and became airborne again, heading straight for the trees on the right side of the strip. At this point the instructor took over but, in an effort to avoid the trees we found ourselves in a steep bank to the left with the nose pitched towards the ground. In a split second it became apparent we couldn't regain control and as I came to the realisation we were going to crash, braced for impact.

Luckily for us the left-wing root ploughed into a small avocado tree and significantly softened the impact (and possibly saved our lives). As the left fuel tank ejected out of the crumpled wing, we continued on an airborne trajectory diagonal to the landing strip and straight toward a row of pine trees which formed part of the shelter belt.

Having been incredibly lucky with the first impact it was time to brace for a second impact! Our guardian angel didn't dessert us and as we impacted the pine trees, the nose of the Foxbat went straight in between two tree trunks as the out-of-control plane abruptly came to a somewhat gentle halt. My instructor sat in silence for a moment and I gestured for a quick exit from the cockpit via the right door, as the wing damage prevented me from exiting my side and I could see fuel leaking from the left fuel lines.

Having safely exited the plane I felt stunned, but we were both uninjured and left to contemplate what had happened and what could have happened!

Immediately following the accident, I think we were both just relieved to walk away unscathed, but as a pilot I felt terrible and had to say sorry for what had happened. The last goal you want to achieve as a newly qualified pilot is to crash land and destroy a perfectly good plane. The property owner ushered me into his house for a hot drink and tried to comfort me with a story about his own flying accident which from memory involved a two-stroke engine failure on take-off, but that was different. My accident was purely due to human error.

So, what lessons did I learn? Harness seatbelts fitted to the Foxbat certainly contributed to us walking away from the accident and should probably be fitted to all light aircraft.

Flying with an instructor can give you a false sense of security about what your limitations are as a pilot. While this may be handy when you're first learning to fly, the landing I was performing was at the limit of my capabilities and not something I would have done solo. Obviously the closer you are to your limits (especially with landings where timing is so important) the higher the risk of an accident.

On reflection I believe contributing factors (apart from pilot error) may have been:

1. The aircraft being close to its weight limit.
2. The throttle position and lack of dual throttle control.
3. I was still getting used to the aircraft control column in the left hand (as opposed to a stick in right hand).
4. Possible fatigue as I had already done an hour of challenging flying.
5. The incline of the landing strip made the timing of throttle application and flare even more critical and I was performing an unfamiliar landing technique.
6. Finally, that things can go horribly wrong very quickly in aviation (remember we had done two successful landings prior to the actual crash).

# Phoebus and me

*by Warren Scanlon*

image: Philip | Adobe Stock

Having been a member of Waikerie Gliding Club for about four or five years and flying several types of gliders in that period, I suppose it should not have been a surprise when one busy summer in 1987 I was allocated another glider type.

Management apologised by saying that they had many overseas bookings, but were able to accommodate me as they had hired a glider from Adelaide University to let me fly. I was told that once you find the right number of cushions, it was reasonably comfortable and a very good performer. It was called a Phoebus, and was constructed of marine ply covered with fiberglass; it had a 60 foot wingspan, which was very large for a single seater, the normal span being 50 feet.

It obviously was not new, but had an air about it like a gracious old lady. The CFI was correct about the comfort; it took me at least an hour to find the right combination of cushions before I was able to sit in the beast and close the canopy.

Having organised the cushions, now let's look at the handling notes. Sh**! it's all in German. Some kind soul explains the instrumentation and points out the complicated arrangement for raising and lowering the undercarriage. Cripes it's complicated, and I have to be a contortionist to operate the bloody handle.

Most undercarriage levers on gliders are the same, a simple lever which you push forward or back. Not so on the Phoebus; you had to pull the lever back, then rotate your shoulder and twist your wrist over to move the lever into a slot then wind a knob to tighten the lever. Bloody hell, no wonder they lost the war. And to make matters worse all the markings on the instruments were in German!

Having spent a good hour looking at all the instrumentation in the cockpit, and now feeling comfortable with the 'lid' down, yes let's have a fly of the thing.

As usual with a first solo flight of a new type you are slightly apprehensive as everything is a bit different inside and they all handle slightly differently. Okay, all set … let's go. I wave the wingman and the tug takes up the slack and we are rolling.

Nothing unusual about the take-off, the aircraft behaves itself and actually is very pleasant to fly. Having a long wingspan it has not the greatest rate of roll, but glides much better than most that I have flown to date. Yes I could get to like this glider. Now try a landing. I do the re-entry to the circuit and lower the undercarriage, yes they could have designed it better, but it is down and locked. The approach and landing went off quite well. Okay, I am happy to have the Phoebus for the week. So let's try another launch.

I elect to launch immediately and get organised to take-off. It is quite busy at the pie cart with all the other gliders waiting to get airborne. Someone helps me get strapped in and connects the tow rope. Thank you, and a final wave and we are away.

Being summer there are lots of good thermals close to the aerodrome and I fly around close to the airport, not wanting to venture too far just yet. Practising turns is a good exercise in coordination and I do plenty of turns to the right, then to the left. Once again I feel comfortable with the glider, the German instruments no longer concerning me.

Time to land, the thermals are getting weaker so let's rejoin the circuit downwind and do the checks. I lower the undercarriage and get confused with that blasted lever. What do I have to do, twist the bloody thing up or down to lock it? Sh**, I know the undercarriage is down, but I'm not sure if it is locked. I can't read German, and even if I could, some of the letters of the decals are missing.

Final approach now, let's concentrate on the landing. It glides beautifully and the approach is perfect. Over the threshold, hold back on the stick, fly straight and level, keep the nose on the horizon, hold it there, don't get impatient and … gently down near the pie cart.

Rumble rumble of the main wheel on the grass, then THUD. The nose goes down, tail up … I hit my head on the canopy and am winded by my safety straps. The undercarriage has retracted and the glider is sliding on the grass. It pulls up in about fifty feet. Fortunately no damage to the glider, just damaged ego.

The crowd waiting by the pie cart are there immediately to help me out. I'm okay, just pissed off about the undercarriage lever. Many willing hands lift the nose while I select the 'down' position of the undercarriage lever and the retracted wheel pops out of the fuselage, and I make sure it is in the locked position. Well, now I know how it works let's have another go before I lose my nerve.

The second launch went off without a hitch, in fact I had an hour and a half getting acquainted with the old girl and thoroughly enjoyed her company. I had eight more flights with the Phoebus that week and have fine memories flying her, but as you know … sometimes things go wrong.

# A close shave

*by John Michell*


image: supplied by contributor

The Jodel D9 aeroplane was a very light wood and fabric aircraft that would now easily fit into the RAA aviation field. I had owned this very basic aircraft, powered by a 1200 cubic centimetre converted Volkswagen engine, for about five years and flown nearly three hundred hours in it. My total flying experience was about six hundred hours.

I had decided to take it from Narrabri to Morwell for the Sport Aircraft Association annual Easter fly-in, leaving on the Thursday. The aircraft had no radio, and no brakes. Having refuelled at Dubbo, on departure into wind from the grass cross runway, I was confronted by a Beech Bonanza on a collision course departing the main runway.

I completed a 360-degree low level turn and then continued to a friend's property near Yass for the night. I would later get a 'please explain' letter from the authorities for doing a 180-degree low level turn at Dubbo. On explanation of the facts no further action was taken.

The next day I was refuelling at Albury airport when two young men stepped out of a car and walked over to introduce themselves. They were from South East Queensland and were driving to the Morwell function. During the conversation they asked which way I was tracking to my destination. When I explained I had a direct line drawn on my map, they were quick to explain that that would overfly some of the worst tiger country in Australia.

I had extensive navigation experience in northern Australia but had never ventured south.

I immediately revised my flight plan to track via Lake Eildon, adding about twelve minutes to my flight time. My first navigation experience in Victoria was to find that the railway line on my map did not exist on the ground. Then, South of Wangaratta, the engine suddenly lost ninety per cent of its power! I conducted a successful forced landing into a stubble paddock on a dairy farm—my first experience on Victorian soil!

My landing went unnoticed and on walking a few hundred metres to the farm house, I found the hostess entertaining some neighbours to a morning tea. When she handed me a cup, I had great difficulty in keeping it on the saucer due to my now-shaking hands! A telephone call to Albury Flight Service to cancel SAR and the official formalities were completed.

I managed to locate an engineer in Wangaratta, and we discovered that the recently overhauled magneto (it only had one) had brass bushes which had not been lubricated. One of these had seized and then released, putting the timing out by about forty degrees.

He did the bushes up on his lathe, reinstalled the magneto, timed the engine by ear, and I flew out of the paddock to continue my journey on Easter Saturday, after some extremely friendly hospitality and a ten-dollar engineering bill!

These days it is relatively easy to check the hostility of proposed flight tracks into unfamiliar territory on Google Earth. I was extremely lucky on that occasion that I was afforded the good advice of people who knew the country I was headed over, probably saving my life. A small tracking dog-leg in a flight plan can really be a life saver and usually adds very little time to the trip.

# It's always darker on the ground

*by Simon Bromiley*

images: Civil Aviation Safety Authority

I was an occasional jump pilot for a small skydiving operation in Western Australia. It was one of those perfect spots where the skies were always blue and the views from altitude were fabulous. The 182 I was flying was an older model and a bit skydiver tatty. Normal procedure was to fly with an inch of fuel in each tank and leave the selector to 'both', putting a bit more in for each sortie. Being a bit cautious I usually erred on the side of safety and flew with two inches (5 cm) each side.

The last load of the day was a tandem to 12,000 feet and the solo descent was beautiful as dusk was setting in. As I taxied back to the hanger a group of four fun jumpers ran out kitted up ready and eager—not unusual—sunset jumps are fabulous. This was my first mistake. I opened the door and they climbed in. I knew I had enough fuel and I thought yep, just time for a 10,000 footer before sunset, but I didn't really consider the local conditions including cloud and moon.

The strip was desert dirt scraped out of the rocks and spinifex, oriented north/south between two rows of hills, about 400 feet high. There was a rail depot nearby and high voltage transmission cables at each end. It presented challenges at the best of times.

As we climbed through 3000 feet I started to get a bit edgy. So did the jump master. A quick change of plan and I turned into wind over the strip at 5000 feet and opened the door. Five seconds later they were gone, and I was on my own—normally a wonderful feeling.

I made my usual powered descent to keep the horses hot but spiralling down over the top I realised I couldn't actually see the strip. I could see where it should be but by now everything was in dark shadow and the lower I got the darker it got. By the time I was downwind it was totally dark. Mistake number two—I turned on every light I could find. It made me feel better I suppose but ruined my night vision.

So now I was downwind for a dirt strip I couldn't see, in hilly terrain, with power cables all over the place, in the dark. Oops! I made an approach to where I thought the strip was, not below 500 feet with landing lights on. I could make out a shadow and I could see lights on the club house, but I wasn't sure.

I turned around and had another look from the other direction. I went through the options in my mind. Could I land on a road? No, not without being sure about power cables. Could I make it to the local airport with lighting? Ten miles over water on minimal fuel? No way. I tried lining up on the rail yard signals, knowing the strip was just to the right. Couldn't see a thing and I knew my fuel was now minimal.

Fortunately, the jump master was an older bloke. On my fourth pass I saw a ute with headlights on racing up to where I guessed the strip should be. He reversed into the perimeter fence with headlights full on and I knew I was saved. The old bush pilot's trick of landing over the farm ute worked a treat. I greased it on, taxied up to the hanger and as if nothing unusual had happened, joined the boys for a beer.

What did I learn from that? Don't let non-pilots influence your decision to fly. Better for the jumpers to be disappointed than an aircraft wreckage or worse. Remember it is always dark on the ground sooner than in the air. Don't ruin your night vision, no amount of lights will bring the sun back. Calculate a time to be on the ground and don't let anything change your mind.

# Bang, now decide

*name withheld by request*

image: © Getty Images | Vidas Kaupelis

It looked like a promising day for gliding, with fluffy cu's dotting the sky early. Being an Easter weekend, our club was also host to another gliding club, so the field was a hive of activity.

I'd been flying gliders for several years, and also had 26 years of hang-gliding experience under my belt. Today I was going up in the Pilatus. I did the DI of the Pilatus, got my water and parachute sorted, then it was time to get into the little bird for the winch tow.

Checks completed, radio call made, thumbs up to the ground crew and I was ready. As always during pre-flight, I mentally ran through what I would do if there was a cable break. During my hang-gliding years, I would also mentally rehearse the take-off and landing before the flight, just as top athletes rehearse routines and courses before competing.

The cable tightened and I was into the air like a rocket, with the speed quickly climbing. I signalled with the rudders to the winch operator to back off the speed, but apparently not clearly enough as the speed kept increasing.

Suddenly there was a loud bang—which I assumed was a cable break. The procedure was: safe flying speed, pull cable release twice, land ahead or turn back? My hang-gliding instincts of making fast decisions kicked in and I banked hard and fast to the left.

The CFI for the day back at launch point said, '*Land straight ahead*',—a split second after I'd already initiated the turn. So I knew I was already committed to the reasonably low turn!

The onlookers held their collective breaths as I pulled out from the turn but then also had to steer to the area on the side to avoid the crowd at the end of the runway. The Pilatus rolled to a stop after a perfectly executed landing—which allowed my heart rate time to slow down as club members came over to congratulate me on landing well.

The CFI asked me, '*Why did you release the cable on tow?*'

'*Wasn't it a cable break?*' I replied.

'*No—why did you think that?*' the CFI said.

I explained about the loud bang and then going into emergency mode to land. It seems that the noise probably resulted from the high air speed suddenly making the cable or some other part of the glider 'tighten' (for want of a better word).

**In hindsight:**

1. When I thought there was a cable break, I should have waited slightly longer before reacting to establish it was actually a break.
2. The safer option would have been to land straight ahead (the winch manual states that there are far fewer fatalities with landing ahead as opposed to turning back—so I needed to have that fact more firmly in my mind).
3. Committing to my decision fully was good, as it meant I kept flying the aircraft right through to landing with total focus and meant that I survived to fly another day!

I'm happy that I was also able to call on my extensive hang-gliding experience to help me steel my nerves and successfully execute a low, fast manoeuvre. I flew again that afternoon, to ensure that the experience hadn't negatively affected me.

# BE HEARD, BE SEEN, BE SAFE

## Radio procedures in non-controlled airspace

Australia's non-controlled (or 'Class G') airspace is different to most parts of the world.

Primarily, this is because non-controlled aerodromes in Australia can experience a high volume of traffic and host a huge diversity of aircraft types. At any time, this mix might include larger passenger aircraft, general aviation aircraft and light sport aircraft. This variation can present many challenges to pilots who operate into, or in the vicinity of, these aerodromes.

While the focus of this supplement is on radio procedures in non-controlled airspace, radio must always be used in conjunction with safe 'see-and-avoid' procedures. First and foremost, this means scanning with your eyes, including above you and below you, to look out for aircraft. You must also understand how to operate safely around other aircraft types through safe separation distances and collision avoidance techniques.

Good pilot-to-pilot communication, or 'alerted see-and-avoid', then completes the picture of what is happening around you. To get this right, you must be on the correct frequency, and know when to make radio calls and what to say, to help keep you, and those around you, safe in the sky.

## Carrying a radio in non-controlled airspace AIP Gen 1.5

In Australia, VFR aircraft must carry a radio when you are:

» at or above 5000 feet in Class G airspace

» 'in the vicinity' of aerodromes that are certified, registered or military

» below 3000 feet AMSL or 1000 feet AGL (whichever is higher) in reduced VMC (visibility 5 km and clear of cloud and in sight of ground or water).

**Remember, 'in the vicinity' is within 10 nm, and at a height where your operations could be in the way of other traffic.**

## Radio frequencies for non-controlled airspace

» When operating in the vicinity of an aerodrome published on aeronautical charts, use the CTAF (MULTICOM 126.7 MHz or the discrete frequency) as published.

» Anywhere within a broadcast area, use the dedicated broadcast area CTAF.

» Otherwise, it is recommended pilots use the area VHF. This frequency may provide the best means of gaining assistance from ATC or other pilots in the event of an emergency.

In the vicinity of uncharted aerodromes, pilots have discretion to use the most appropriate frequency that ensures safe operation. This may be MULTICOM 126.7 MHz. However, pilots should be aware that transiting aircraft will be monitoring area VHF. To ensure mutual traffic awareness, it is recommended that pilots using an alternative frequency also monitor area VHF.

## Make your broadcasts count

When it comes to ensuring your radio call is effective, attention to detail is essential. Following this list will help make sure all your broadcasts are clear and can be understood by other pilots.

1. Listen before you broadcast.
2. Check the volume, squelch and frequency are correct.
3. Pause at the beginning and end of a transmission to avoid 'clipping' transmissions.
4. Use standard phraseology and speak slowly and clearly. However, plain language is better than jargon or incorrect phraseology.
5. Avoid clutter: make only appropriate calls. There is usually no need for 'downwind', 'base' and 'finals' unless other aircraft or aerodrome works are affecting your flight and you need to alert them to your position.

## **Standard format** and phraseology

When making a broadcast, it's important to use the standard format and phraseology to ensure your intentions are clear and to help keep radio congestion to a minimum.

The standard broadcast format you should follow for all radio calls is:

**[Location traffic]** (e.g. 'Parkes traffic').

**[Aircraft type]** (e.g. 'Cessna 172').

**[Call sign]** (e.g. 'Zulu Tango Quebec').

**[Position/level/intentions]**
(e.g. 'One zero miles north inbound on descent through 4200, estimating circuit at three six').

**[Location]** (e.g. Parkes).

## When you **must** make a broadcast

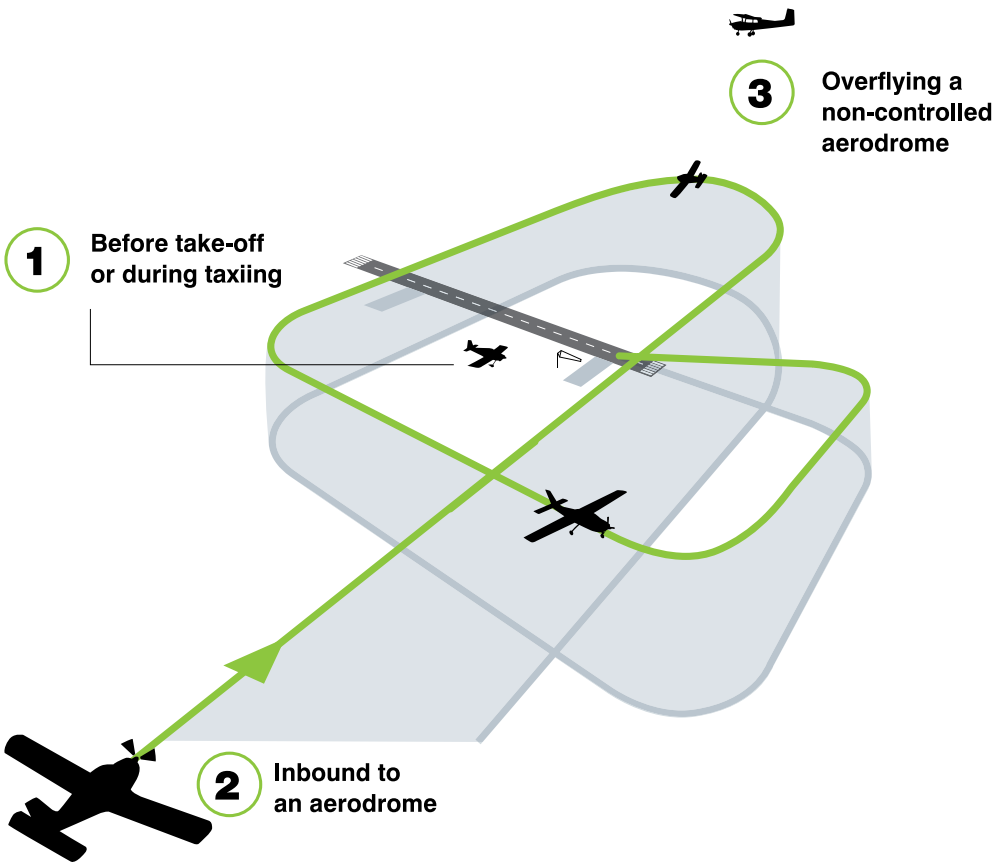
The one time you must make a broadcast is in a situation where you recognise a potential conflict between your aircraft and another in the vicinity of a non-controlled aerodrome. In this case, it is your responsibility to acknowledge the situation by transmitting your callsign and, as appropriate, your aircraft type, position, level and intentions.

## When you **should** make a broadcast

In any non-controlled airspace, when departing, arriving or overflying an aerodrome or switching frequency, you should always let other traffic know you are there by making the recommended calls on the next page.

## Calls recommended **all** the time

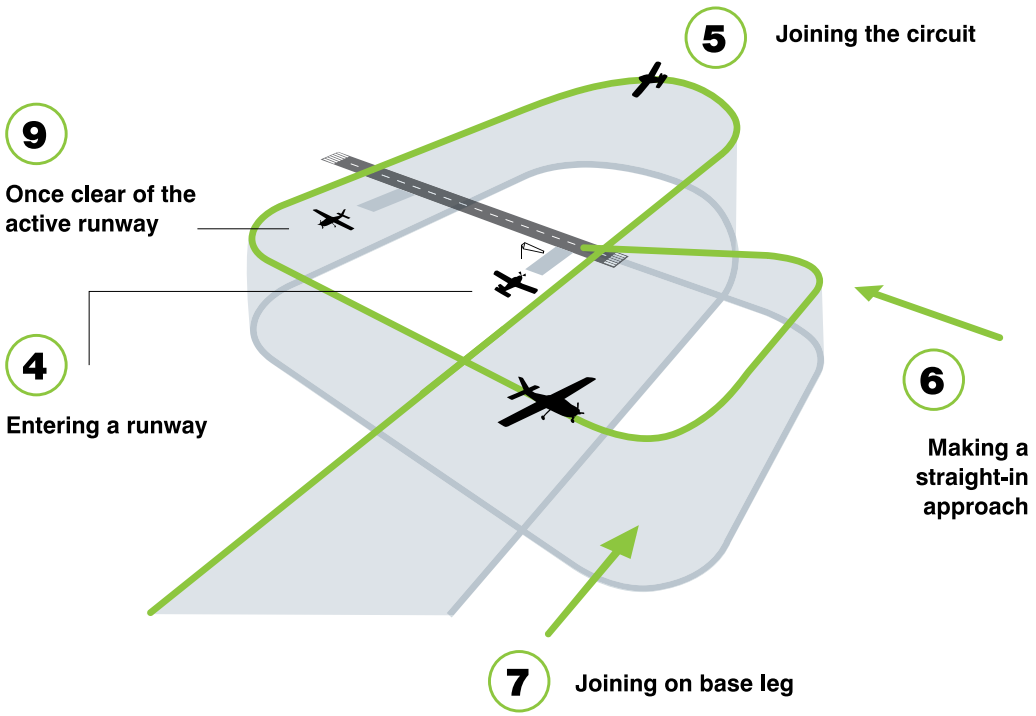
| Situation | Example broadcast |
|---|---|
| 1 Before take-off or during taxiing | Parkes traffic, C172, ZTQ, taxiing runway 30 for circuits, Parkes |
| 2 Inbound to an aerodrome, at least 10 nm from the aerodrome, or further for high-performance aircraft, or busy aerodromes | Parkes traffic, C172, ZTQ, one zero miles north inbound on descent through 4200, estimating circuit at three six, Parkes |
| 3 Overflying or in the vicinity of a non-controlled aerodrome, but not landing at, or further for high-performance aircraft | Parkes traffic, C172, ZTQ, one zero miles north 4500, overflying, estimate overhead two six, Parkes |



## Calls when there is **other traffic**

Other radio calls may be useful at a non-controlled aerodrome, if there is traffic in the area that would benefit from this additional communication.

| Situation | Example broadcast |
|---|---|
| 4 Entering a runway | Parkes traffic, C172, ZTQ, lining up runway 30, Parkes |
| 5 Joining the circuit | Parkes traffic, C172, ZTQ, joining crosswind, runway 30, Parkes |
| 6 Making a straight-in approach, not less than 3 nm from the threshold* | Parkes traffic, C172, ZTQ, joining 3 nm finals, for straight in approach, runway 30, Parkes |
| 7 Joining on base leg | Parkes traffic, C172, ZTQ, joining base, runway 30, Parkes |
| 8 During an instrument approach, either when established at the final approach fix or when commencing the missed approach | Parkes traffic, C172, ZTQ, conducting a missed approach, runway 30, tracking to the west, climbing to 3900 feet, Parkes |
| 9 Once clear of the active runway(s) | Parkes traffic, C172, ZTQ, clear of runway 30, Parkes |




* *Pilots should be aware that a GNSS indication of 3 nm from an aerodrome may not be 3 nm to the runway threshold.*

## IFR aircraft should use terms that will be understood by VFR pilots

**DO** be clear on your intentions using standard phraseology. DON'T use terms such as 'on the RNAV approach' or waypoints.

**INCORRECT**: 'Parkes traffic, C172, Zulu Tango Quebec, IFR joining GNSS approach 04'

**CORRECT**: 'Parkes traffic, C172, Zulu Tango Quebec, IFR, 10 miles north inbound, on descent through 4200 for an instrument approach runway 04, estimating the circuit at three-six, Parkes'

## VFR aircraft should avoid local terminology where IFR aircraft may be overflying

**Local traffic:**
**DO** use official names or significant geographical landmarks or bearing and distance from airfield, for example, '20 nm to the east of Parkes, 4500 feet'

**DON'T** use local names, for example, 'over Delroy Park'

## **Be aware** who else is there

It's important to be aware of the different aircraft and operations, including aerodrome works, that may be happening at non-controlled aerodromes and how these will influence your radio calls and operations.

Pilots of large aircraft flown when nose up in climb or slowing on descent may find it difficult to see other, smaller aircraft below their flight path, particularly on approach. These aircraft will broadcast their intentions, but it is essential that pilots of smaller aircraft also make and respond to broadcasts and not simply assume that the larger aircraft is aware of their position.

Helicopter, weight-shift trikes and gyroplane operations can be varied and flexible and may not follow the same circuit as fixed-wing aircraft at an aerodrome. Pilots need to ensure that they monitor and advise other aircraft of their position and intentions by radio where applicable.

Pilots flying parachuting operations should broadcast on all relevant frequencies. For example, if the jump commences in Class G airspace and will land at a non-controlled aerodrome, the pilot should make advisory calls on both the area frequency and the CTAF. Parachutists in free-free are almost impossible to see, so pilots are advised to avoid overflying an aerodrome with an active drop zone. Communication with the parachuting aircraft is essential to avoid flying into a drop zone area.

Gliders and balloons may not be carrying radios in non-controlled airspace, or may only be able to monitor one frequency. See-and-avoid is essential where these aircraft are operating.

## References

Information about radio operations can be found in the following regulatory material:

» Civil Aviation Advisory Publication CAAP 166-01, **casa.gov.au**

» Aeronautical Information Publication, **airservicesaustralia.com**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