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*For recreational pilots* FEBRUARY 2015 VOL 42 (2)

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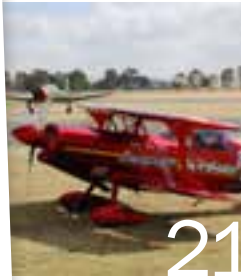
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Paul Murray's 1946 Luscombe 8A Silvaire, photographed over the Darling Downs. Photo: Ellis Clayton



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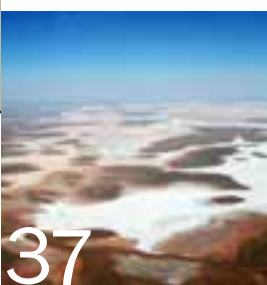
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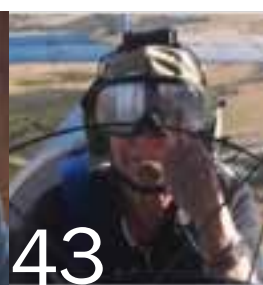
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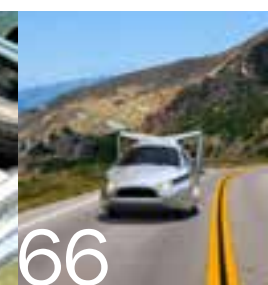
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# President's Report

**MICHAEL MONCK**

## A new year

AT the end of 2014 we faced dilemmas with the regulator placing restrictions on the operation of Jabiru engines and, at the time of writing, these have not yet been fully worked through. We remain disappointed there is still no transparency with the process, the data or the analysis used to justify this decision and will continue to press the relevant parties in relation to these concerns. That said, 2015 brings with it a range of challenges and opportunities.

We're well progressed in developing an overall strategic direction for RA-Aus. This is something which has been lacking for some time and will help shape our future. Already we have some direction for the coming months and the board will focus on refining this direction while the management team begins to put things into place.

### NEW COMPETITION

Over the next year we will work to address increased competition in our sector arising out of the regulator's decision to enter into our market by introducing a new product which directly competes with our Pilot Certificate – the Recreational Pilot's Licence. Some 30 odd years ago this sector of the aviation market was ignored by CASA and the Australian Ultralight Federation was formed to provide services to this group. Over time, this sector has become the fastest growing part of Australian aviation and the AUF evolved into RA-Aus and here we are today.

Despite some shortcomings, this part of the industry has, by and large, been well administered. In statistical terms, our sport is getting safer and the number of hours flown has doubled over the past decade or so. It seems the industry has recognised CASA's offerings failed to meet the market's requirements. Now CASA has decided to put the government into the business of competing with a self-funded private sector organisation. One has to wonder about this.

Firstly, is it really the prerogative of a government funded agency to compete with the private sector? The government would ordinarily restrict itself to interfering in the free market only when a market failure of some sort exists. In our market there is no such failure. There are several self-administered organisations which oversee different parts of the aviation sector and they are working well. These organisations grew from the need to address gaps created by the government in the first place and eliminated the market failure created by the very body which today wants to intervene.

To me it seems as though the bureaucracy of government wants a piece of our market because it is one of the few parts of the aviation sector growing strongly. We all know GA activity has declined in recent decades to the point today it is almost a protected species. Unfortunately, unlike other protected species, it is seemingly under attack on a daily basis from overzealous regulation and restrictive practices put in place by the same body which is now entering our sector. The regulator has never, I repeat, never been involved in licencing at our end of the aviation spectrum but, now GA is dying off, it has begun directly licencing the same group we have overseen for many decades.

The heavy handed regulation stifling GA is like a doctor prescribing a poison for a medical affliction. Sure, the affliction is no longer an issue but when the patient is dead you have to ask the question – was that really the best treatment? And what is the affliction in aviation anyway? What problem is CASA trying to solve by entering into this market?

CASA argues that the RPL is intended to make it easier for pilots who want to fly recreationally but are not interested in obtaining a private pilot licence. But our Pilot Certificate already does this. The requirements for the RPL are basically the same as those for our Pilot Certificate, except now there are more onerous obligations around proving identities, medical checks, flight reviews and so forth. Is it really making life easier or is it simply to ensure CASA has something to regulate? One really has to wonder.

Imagine if it started competing in other sectors. Perhaps CASA will open its own flying schools. Or compete with the local fruit seller! To me it is akin to the Australian Energy Regulator buying a power station and regulating itself to the detriment of other market participants. Or the Australian Prudential Regulation Authority opening a bank to compete in the financial sector. If those things happened there'd be uproar. So why is it different in aviation? I haven't got the answers to these questions but we will be sure to seek them in coming months.

The second issue is the introduction of this new system. I'll be the first to admit our failings over time and we have worked extremely hard to address them. We'll never be faultless, but

we will always work hard to be better. Can we say the same for CASA? People have flocked to our part of the market because we offer value. People can fly under a simple set of rules and we have proven ourselves over a period of 30+ years. CASA, on the other hand, has botched the introduction of the new licence so one can only wonder if they will administer it any better going forward. And how will they address their shortcomings (if at all)? Or will they simply alter the rules to make it easier for themselves? Or will they actually better themselves to the benefit of the industry? The Forsyth Report suggests a lot of the latter but that is over half a year old now and there has been no movement.

So how will we compete with the government? It's kind of a simple answer but there are some complexities.

For a start the CASA website states in no uncertain terms that 'A Pilot Certificate is equivalent to an RPL'. In other words they recognise our training, our syllabus, our flight time, etc. This makes perfect sense when you consider they approve everything we do. So they can't really refuse to recognise it, otherwise they'd be admitting their approvals are flawed. Having said this, they also state that you must

conduct a flight review before you can exercise the privileges of your licence should you choose to obtain an RPL. It's not clear what is required in this review so that's one complexity. You also have to obtain a more onerous medical when compared to the RA-Aus requirements, another complexity. There are also other complications like proving your identity, providing photographs, etc.

All that aside, this clear and transparent endorsement of our training is beneficial to us. CASA has essentially said our training is adequate to allow safe flight of aircraft up to 1500kg MTOW. So that's the first part of the answer as to how will we compete – we will seek to expand the privileges for our pilots to include the same privileges that CASA will grant under the RPL scheme. Should they refuse it will become a competition matter. That is, the regulator is favouring its own licencing scheme over ours - to the detriment of the private sector - despite its own admission that our qualification is adequate.

It seems to me it is not a favourable position for CASA to take to introduce a licencing

*“We have some exciting times coming up”*

regime which recognises the training of the private sector, but then implements a regime to disadvantage the very organisation which has propped up aviation in this country.

The second part of our response is to pursue controlled airspace privileges. For many years we have operated under exemptions which allow flying schools to conduct their activities inside controlled airspace of different sorts. These activities have proven that we can do it safely and yet, once qualified, the very same pilots who have trained in this airspace are then refused entry to it. This is a system which refuses to recognise a proven track record and is bizarre.

Furthermore, RA-Aus trained pilots who convert to RPL will be allowed to access these types of airspace. If we provide the training there should be no reason to prevent RA-Aus pilots entry to the same airspace. If CASA does prevent us, it creates yet another situation where the regulator favours itself over a private sector participant with a solid track record.

We are also investigating simpler qualifications for those of you who don't want all the

bells and whistles. What this will look like is not clear at this stage but it will be communicated over time.

We will discuss all of these things with CASA over the next twelve months with a view to improving our member benefits. In fact, by the time you read this, we will have already held discussions directly with the new Director of Aviation Safety, Mark Skidmore.

## OPS MANUAL

I also constantly get queried about the process behind the recent update to the Ops Manual and agree that it was less than ideal. When I, and many of the current board members, came onto the board this process was already well under way and it would have been detrimental to stop it and start over. For this reason we were not afforded the much desired opportunity to properly consult with members. The Tech Manual is, in some ways, in the same boat. Having said this, it is not as far down the track as the Ops Manual so there will be opportunities to distribute the changes prior to its implementation. A fuller, more consultative process will be employed for all future revisions

of these documents to prevent the same problems from arising again.

Member benefits will also be improved by investing in modern systems to streamline our core activities of membership renewal and aircraft registrations. Not only will this reduce the time required for these activities, it will also reduce the error rate in processing, thus avoiding the compliance problems of the past. Furthermore, it will free up resources in the office which can then be dedicated to other value-adding tasks.

On top of this we will also be undertaking some activities demanded by members on an almost daily basis. We continually receive calls for a reduction in the size of the board. There have been many emails and letters asking for a review of the make-up of the board. The list goes on and will require a full review of the constitution. This will be a big focus of this year and will, of course, be put to a vote on as soon as all the challenges can be resolved.

So, stay tuned and keep your ear to the ground. We have some exciting times coming up and I'm sure there'll be news to tell shortly.

In the meantime, fly safe. 🇺🇸



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# Calendar of events



Debra waiting to hear from you

## 28 FEBRUARY

### Cranbourn Fly-In Fun Day

Cranbourn Airfield in Launceston, Tasmania is a small airfield compared to most, but 30 pilots fly from there and the same number of planes, gyro's, etc, are hangared there. This will be the 26th anniversary of the Fly-In Fun Day. All pilots welcome for a sausage and a chat. A wide variety of displays, vintage cars and bikes, helicopter rides, model planes and helicopters, as well as a jumping castle for the kids. Food and drink supplied.

For more information, Debra Stewart (03) 6326 2898 (before 6pm).

A poster for a summer concert and air display. It features illustrations of various aircraft, including a biplane and a propeller plane. The text is in various colors and fonts, with a large '2015' at the bottom. The background is a light, textured color.

**Valley View Summer Concert & Air Display**  
Aerobatics and Fly Pasts  
Saturday, 11th of April  
FEATURING:  
The Moresby Rangers  
Shane Dickson  
Tickets: \$50  
Queens Park Theatre  
Bennett's on The Mall  
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www.valleyviewvintage.com.au  
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## 25-26 APRIL

### Lake Barambah Fly-In Splash-In

The Burnett Flyers will celebrate Anzac weekend again at Lake Barambah. Last year was a big hit because of the fishing, watersports, aviation quizzes and the relaxation. Cost of \$70 includes three meals and camping.

For more information, Deb Percy at burnettflyers.org and facebook.

## 6-7 MARCH

### Wagin Woolorama

WA's largest regional agricultural show. Over 350 commercial exhibitors; over 1,000 sheep, cattle, horses and chooks in competition; working sheep dogs; hourly fashion parades; art, photography and crafts in competition; education options; side shows; free entertainment; lifestyle displays; wool handling and shearing competitions; markets; current and future rural industry products and services; travel products; smoke free environment; indoor and outdoor displays; 20,000 visitors; massive local community effort; family friendly. For more information, www.woolorama.com.au.

## 15 MARCH

### Darling Downs Fly-In

The Clifton Airfield (Bange's) fly-in has become an iconic event in the region and is the premier attraction for all types of aviation in southern Queensland. Come late pm Saturday 14th for BBQ, drinks. Fly or drive in, see ERSA. On field camping, bring your swag. Advise for catering.

For more information, Trevor Bange 0429 378 370, (07) 4695 8541 or trevorbange@bigpond.com.



## 18 APRIL

### Loxton Aero Club Fly-In

The theme this year is Women in Aviation. Guest Speaker for the Hangar Dinner will be iconic pilot, poet and performer, Marion McCall. The club's oldest member, Howard Hendrick (Lancaster Pilot WW2) will present an afternoon session on his experiences. A trio of DH82s will be on display on Saturday. TIFs. Accommodation available. Food and refreshment available.

Electronic registration on the website <http://loxtonaero.com/dinner.html> (click on Biennial Fly-in). This year we will again support Angel Flight (last fly-in we were able to give them almost \$1,000).

For more information, Kerrie Palamountain [palark@tpg.com.au](mailto:palark@tpg.com.au) or <http://loxtonaero.com>.

## 12 SEPTEMBER

### Wings Over Warwick

Queensland Recreational Aircraft Assn incorporating Warwick Aero Club ([www.qraa.info](http://www.qraa.info)) invites pilots and enthusiasts to the 2015 fly-in at Warwick Aerodrome (YWCK). The strip is 1600m all bitumen with no landing fees ([www.warwickaerodrome.com](http://www.warwickaerodrome.com)). Includes model plane display. Food and drinks available.

For more information, Events Co-ordinator Graham Hawthorne 0427 377 603, President Kelvin Hutchinson 0407 733 836 or Secretary Phil Goyne 0417 761 584.

## 4-5 APRIL

### Back to Holbrook Fly-In

Holbrook Ultralight Club invites aircraft owners and pilots to its annual fly-in, now at Easter 2015. This will be the 25th anniversary of the first AUF (RA-Aus) national fly-in held at Holbrook Airfield. So come back and help us celebrate. Forums on Saturday afternoon and a planned local fly-out on Sunday morning. Fly-in dinner Saturday night and a hot breakfast Sunday morning. Fly-in trophies awarded at the dinner. Underwing camping. Transport to and from Holbrook township for accommodation and fuel available.

For more information, Bryan Gabriel (02) 6036 2601 or [www.holbrookultralightclub.asn.au](http://www.holbrookultralightclub.asn.au).

## 12 APRIL

### Barossa Airshow

The Airshow / fly-in, now in its 11th year, is a family fun day with rides, amusements, static displays, stalls, food and wine. 10am-5pm. Includes aerobatic displays and helicopter joy flights. All pilots are welcome to fly in for the day or stay overnight. Anyone not familiar with the 600m strip at Rowland Flat should contact Steve Ahrens for a briefing.

For more information <http://www.barossaairshow.com.au>.





# LETTERS TO THE EDITOR

## Slings go

Myself and a few other Sling pilots are planning a round Australia trip in June 2015 and I would welcome advice from other readers on locations where Mogas and accommodation can be found and a route outside controlled airspace can be established for recreational aircraft.

There are lots of articles about flights around Australia but most of them find themselves in major airfields at some time or another. While our trip hopes to fly roughly Brisbane, Horn Is, Darwin, Broome, Perth, Adelaide, Melbourne, Sydney and back to Brisbane, we need to establish routes around CTA. Some areas, such as Townsville, have very narrow corridors of opportunity between civilian and military airspace and I wonder if it is better to tackle the fine line between CTAs or fly a long way inland around the congested areas.

I think the establishment of such a recreational friendly route might encourage more of us to see the country and perhaps even mark the beginning of an annual RA-Aus pilgrimage. The alternate could be to find more pilots completing a Recreational Pilot's Licence with a controlled airspace endorsement.

Advice and/or encouragement please.  
**Michael Lawrence**

## How safe we are

In the Letters to the Editor (*Sport Pilot* October 2014), David Houston compares the dangers of flying an RA-Aus aircraft with those of driving the family car. The more commercially oriented side of our association may not have liked David's simple ballpark analysis, but I think these matters should be discussed front and centre by everyone already in the sport or contemplating it.

Using the back of his envelope, David came up with a ratio of 38 to 2 (19 to 1) for respective flying and driving fatality rates.

After reading David's letter, I did my own calculation based on the number of cars versus the number of planes. There are about 700 cars per thousand Australians and the annual road toll is approximately 1,200 per year (including pedestrians and cyclists). So the fatality rate (per 100,000 cars) =  $(1,200 \times 100,000) / (22,000,000 \times .7) = 7.8$  per annum.

RA-Aus has approximately 3,500 registered aircraft. Tragically, there have been about 20 fatalities over the past two years (10 per year), so the annual fatality rate (per 100,000 aircraft) =  $(10 \times 100,000) / 3,500 = 286$ . True, the long term average is closer to 6.5 fatalities per

annum, which brings the rate down to 186, but this still means our aircraft are 24 times more dangerous than cars.

These figures, of course, make no account of usage, distance travelled, etc. Also, despite the marked difference between flying and driving, fatal accidents in both environments remain statistically rare events. However, the comparison is still a valid one, with the cockpit of an RA-Aus aircraft being a far more dangerous place to be than the seat of a family car. We should all bear this in mind, not so much when we assume the risk ourselves, but when we take other people for a spin. We have a moral obligation to at least present our trusting passengers with the full facts. Indeed, some of us might even choose to only ever fly single seat aircraft.

David finished his letter by referring to RA-Aus President, Mick Monck's, constant remarks about improving our safety record. I can only agree. Adherence to the hard learnt rules of flight safety and airmanship is definitely the best way to achieve this.

**Arthur Marcel**

## Brain power

Regarding the article 'Keeping it simple doesn't mean you're stupid' (*Sport Pilot* November 2014).

As a recreational pilot who recently received his cross country endorsement, I have found myself in a difficult dilemma when contemplating the use of electronic flight bags. While I can understand the argument that it takes the skill out of navigation, I believe it is important for the recreational aviation industry to remain current with respect to technology trends, regardless of our divided opinions.

As an undergraduate avionics engineer, it is my observation about the aerospace industry that there is a shift towards using an aircraft's computational power as opposed to a pilot's brain power - consider the spike in unmanned aerial vehicle (UAV) research as an example. This is an unfortunate truth, but a natural evolution of aerospace. It is not purely disadvantageous however. By the use of smart systems, pilot workload and error is reduced and costs plummet. Similar advantages could translate into the recreational aviation sector.

I for one would appreciate the cost savings - there is a shelf in my room filled with redundant ERSAs.

I agree that the use of technology is at the cost of pilot expertise, but at the end of the day, recreational pilots fly for the thrill, not the workload.

**David Crofts**

## EFB winner

I am a student pilot. On one of my last Navex's before my test flight, my instructor tutored me in the use of his EFB. After struggling with maps and ERSAs and ERC lows and PCAs in very limited cabin space, I found using the EFB so much easier to follow and use. It was a dream.

Your articles over a number of issues have made it much easier to understand what's out there and the applications of those various EFB's. Simple to understand, simple to follow, simple to use and a plus for safety. Got to be a winner!

**Chris Palmer**

**From the Ed** - Chris and David both win subscriptions to AvPlan LITE's Android version. We still have others to give away. Simply email [editor@sportpilot.net.au](mailto:editor@sportpilot.net.au) and tell me how EFBs have changed the way you fly.

## Too many people

David Packham (Letters to the Editor, *Sport Pilot* October 2014) is worried about reduced hours flown in GA and RA-Aus.

To me this looks like a good thing. The world population has tripled since I was born and so have bureaucracy and traffic jams. Do we need overcrowded skies for recreation too?

I take lots of people on free joy flights in my aircraft, but I never encourage anyone to take up flying. If people really want to, they will find a way and they will be more likely to accept the risks involved, without pushing for more and more regulation and litigation, which is inevitable with a growing RA-Aus sector.

Regarding Michael Baker's BRS Warning (*Sport Pilot* August 2014). The manual for my GRS states that, with a traction propeller, the chute can be deployed without shutting down the engine (if that is not the problem of the emergency) to still have some control over where the landing happens. It can also be deployed at a height of one metre at the beginning of a very short emergency landing site to stop the

aircraft within about 30m. Isn't it good to have a safety blanket?

**Henry Schneebeil**





## Mechanics mistakes

I write in regard to the article 'Why mechanics make mistakes' (*Sport Pilot* October 2014). While I appreciate the intent of the article, it has problems that render it less than useful to your readers. Its overall context is obviously aimed at the US RPT and GA environment and, as such, bears little relevance for our Level 1 and 2 inspectors.

The section titled 'Slips, Mistakes and Violations' can only cause confusion to our inspectors. Annual pitot/static checks are a part of the RA-Aus generic inspection schedule. The static system failure, as described in the article, is simply not possible. As this information touches on an already difficult aspect of maintenance for many inspectors, it should be at least technically correct.

I feel that with the wealth of informative and well written technical articles that are available, pages 41 and 42 of the magazine were a waste.  
**Gary Chadwick**

**From the Ed - Gary, as stated, the article was reprinted from AvWeb, so it was obviously from the US. It was put into the magazine at the request of the Technical Manager, who felt it contained lessons for all members who do some or all of their own mechanical repairs.**

## AGM in SEQ?

In relation to the poor attendance at the last AGM ('What a Laugh!' - Barry Wrenford, *Sport Pilot* November 2014), this is nothing new. Attendance has always been hamstrung by the tyranny of distance, even though we fly aircraft. The risk of bad weather during either leg of the trip is also a factor.

Given that the region with the largest concentration of our members is South-East Queensland and the postcode with the most members is 4670 ( Bundaberg) it would be logical to have AGMs held in this part of the world most of the time. Certainly, Bundaberg, Maryborough and other aero clubs in the area have facilities which could easily accommodate an expected larger crowd for the meeting and afterwards for those who want to make a holiday of it. Instead, the last AGM was held at the opposite end of the eastern seaboard! No wonder attendance was poor.

Further south from Bundaberg, all the way down to Brisbane, there are many airfields with conference facilities and longer term accommodation that could also suffice. Redcliffe, Caboolture, Gympie to name a few more and all with the added advantage of being close to a capital city. If fact, Brisbane is Australia's capital city best served by secondary/satellite airfields.

It costs the Association substantially to transport staff and board members anywhere for a one-off meeting, not much different if congregating in SEQ. However, this would also afford an opportunity to gauge the feeling for an eventual permanent relocation of head

office. This item must surely still be on the agenda given the massive costs associated with conducting business in Canberra would not have lessened much, if at all, since our financial plight surfaced.

As for flying ourselves to and around SEQ, weather is important. Queensland Tourism summed this up admirably with their catch-cry 'beautiful one day, perfect the next!'.

It makes sense.

**Mark Pearce**

**From the CEO - To give some perspective, we have 2,520 members located in Queensland, 53 of those in Bundaberg (114 in the 4670 postcode). We have 2,470 members in NSW, 2,213 in Victoria. SA boasts 1,088 members, WA 701, NT 102, ACT 208, Tasmania 248 and the remainder are located overseas. In all a little over 9,500 flying members. See the news article 'Where are we' for a more detailed breakdown.**

**I disagree that distance is the factor effecting attendance at AGMs. In a prior role I had 4,000 members located within a 20 minute drive of the head office and fewer than 50 would attend an AGM.**

**We will be meeting the call of members to make our AGMs (and general meetings) more accessible. Our next general meeting will be webcast live and we are exploring a variety of locations to host these meetings.**

**Re moving the RA-Aus office. There are no plans to relocate the office. Aside from the large cost such a relocation would incur, we have a number of loyal, skilled staff who would not be able to move and we would lose them. As we embrace technology, more to engage with our members across the country, the tyranny of distance will diminish.**

## Topaz defence

Topaz critics (Letter to the Editor *Sport Pilot* December 2014) seem to think you can design the one perfect aircraft for everyone. Not possible. Too many variables. All aircraft are a compromise. You have to pick the features best suited for your needs when you buy an aircraft.

In defence of the Topaz, it really only has one fault and this applies to all LSA factory built aircraft -they are too expensive.

Engine size, 80hp, is quite suitable for the performance, especially as it is a very aerodynamically clean aircraft.

Some pilots don't seem to understand that lots of power costs lots of money in the beginning and forever after in operating costs. The 80hp Rotax 912 will save in fuel cost alone about \$15 to \$20,000 in the 2,000 hrs TBO life, compared to the 912's 100hp. That saving will pay for your engine overhaul. And it has proven to be the most reliable engine in the light aircraft group

we are mostly flying. 100hp will climb faster, but it won't go much faster.

Another error in the original article was to state that negative flap reduced the wing area and this accounted for the faster speed. The real advantage in negative flap is reduced induced drag at the rear of the wing, around the fuselage and the empennage and this is why negative flap works so well on many clean aerodynamic light aircraft such as CT, Pipistrel and gliders. Generally negative flap will give you increased cruise speed, a better glide and more fuel efficiency, than any bigger engine will.



Topaz appears to me to be an excellent design with some interesting features, it has steerable nose wheel and an AH can be fitted to any aircraft, but is seldom a standard fit. A handbrake is more than adequate for a lightweight LSA, in fact preferable to toe brakes for a lot of pilots (I have seen a lot of dumb things done with toe brakes).

The biggest problem we all have is we don't know what we don't know. The best advice is keep on learning - don't just say it's no good because you don't like it.

**Jim Crocker**

## Raising standards

In the recent article 'Questions about pilot training' (*Sport Pilot* October 2014) some valid points were raised about the airmanship of current RA-Aus pilots. However there are more than a few subtle differences between RA-Aus and GA/military activities.

For example, RA-Aus pilots do not fly every day. This alone prohibits the habits that GA and military pilots develop. They fly all the time, drumming in those vital reflexes and habits that they take for granted but must be reinforced for an RA-Aus pilot every flight.

As an example - at our local flying field, the strip was closed for resurfacing. A NOTAM was issued and big XXXs were placed at each end of the strip. It didn't stop the local GA flying school coming from another airfield and conducting touch and goes on the unfinished and unsealed surface. The ruts they made were 15cms deep! I have personally had a GA aircraft turn inside me on a final, force me to overshoot and call a missed approach. I have also had a GA aircraft fly under me on final because he was doing a straight in approach. So much for aircraft in the circuit having right of way!

So who is getting the better training?

You're absolutely correct that instruction differs from institution to institution. Maybe making sure instructors have a minimum certificate 4 in Training and Assessment (TAE10) would be beneficial.

But making them have 1,000 hours? Did you win the lotto? That is absolutely pie-in-the-sky thinking and would mean no instructors, because most pilots only fly 25-50 hours a year.

# TECNAM

AUSTRALIA



## RELENTLESS INNOVATION



**ASTORE**



**P92 EAGLET G5**



**P92 ECHO CLASSIC**



**P92 TAIL DRAGGER**



**P2008**



**P2010**



**P92 SEASKY**



**P2002 JR / SIERRA RG**



**SNAP**



**P2006T**



**P2006T MMA/MRI**



**P2012 TRAVELLER**

## UNRIVALLED SUPPORT



Be realistic and maybe 200-250 hours would be the correct number. Angelflight use these figures for its criteria. And why is 1,000 hours and five years minimum a good idea? I know many pilots in the RAAF who should never have been at the controls, yet they were given instructors jobs because of rank and time served. Military pilots study combat all the time to get an advantage against a target, whether it's moving or stationary. It's called combat for a reason.

There is also the technical change that is constant in military aircraft, weapons and weapons delivery. In RA-Aus there may be a regulation change but it will be mostly gradual and affect general flying (height and weight limitations, no fly zones, weather etc).

Aircraft will stay the same for most operators. Not only that, the BFR is to assess pilot's ability to fly safely. Getting in and out of difficult situations, such as flying into cloud for example, is setting a bad precedent for the student to try something stupid because an instructor showed him how to.

We are not in the military and have independence of flying movement that the military and GA pilots do not. Herding cats comes to mind.

In closing I would just like to remind readers that we do this for love of flying and assisting our fellow aviators. It is not the military or a job. It's fun and it should be treated that way.

Our airmanship, our integrity and honesty to each other should be the hallmark of our aviation spirit.

**Mike Swan**

## Jabiru vs CASA

I have just read the advertisement from CASA in our magazine titled 'So you've had a close call. We will pay you \$500 if we publish your story'. Taxpayer's money.

After the treatment Jabiru Aircraft has received, I think CASA should add to that: 'And anything you say can and probably will be used in evidence against you or someone else'.

I thought the saying 'to give someone a fair go' originated in Australia. If it did, CASA has never heard of it. They published their proposed limitations on Jabiru engines with little warning to Jabiru. So even if these restrictions were not implemented, this has caused a lot of damage to the Jabiru Company both in Australia and its overseas markets. Or was this the intention?

This is the problem with CASA. It appears to be responsible to no one for its actions. I bet it would not have taken this action against any of the large aircraft engine manufacturing companies. Years ago, when I started flying, an instructor gave me some advice - "Give CASA as little information as possible". I think that was good advice.

**Jabiru owner (Name withheld by request)**

*From the Ed - For the latest on the Jabiru issues see page 24 this edition.*

## More Jabiru woes

I am a private owner and operator of a certified Jabiru aircraft, which I bought new in April 1995 - that is nearly twenty years and over 1,000 hours ago (serial number 0064 of more than 1,000). I have had the engine replaced and/or upgraded in this time. I am active in the maintenance of this aircraft and take reliability very seriously. I have found the support from Jabiru Aircraft excellent. I would rate them ten out of ten and one of the best businesses I deal with, even in my normal line of work.

When I have dealt with Jabiru about my engine, I have found them honest and factual on faults and failures and helpful on the best way forward. I don't always wait for statutory replacement times on components, but choose to replace or upgrade early if needed. This is based on my operation and research, other operator's experiences and advice from the factory. I find the cost of Jabiru parts reasonable and affordable in achieving this standard.

I was trained as an ultralight pilot under the AUF, now RA-Aus. Most of my flying training came from an instructor with a gliding background who thought real aircraft didn't need a motor. This has left me both comfortable and proficient in operating my aircraft without powered thrust. I fly and plan my flights accordingly because the early AUF aircraft and Rotax two stroke motors had a high engine failure rate. The introduction of the early Jabiru four stroke motors was a great improvement on the first two strokes and, though not without problems, the Jabiru aircraft motor of today is, in my opinion, even more reliable.

I am astounded at the new restrictions CASA has placed on all Jabiru powered aircraft and don't know what facts or individual problems they have used to justify the action. Jabiru motors come in many variants and, to my knowledge, comply with all the necessary legalities.

CASA needs urgently to please explain.

This comes on the back of a year in which my flying and proficiency is at an all-time low because of red tape.

My particular aircraft was out of service for many months due to registration renewal delays, based on the wording of one of the original certified placards. And also not getting my ASIC card (Airport ID) renewed because I subsidised my driving licence with a C class firearm's licence, and then couldn't get the same JP to sign my driving licence when reproving my identity.

All these problems are supposedly a requirement of CASA and the delays are because it is waiting for a CASA auditor. I have had very little personal contact with CASA and, in fact, was first alerted of the Jabiru engine restrictions by Jabiru itself.

Upon searching for the proper notice, I found it difficult to find and am still not sure if I have the correct information. I will comply immediately, however my flying plans this week have again

been shelved and some of my skills and proficiency are becoming ever more rusty. Safe flying is regular flying.

**Terry Schmucker**

## Medical question

I have just received in the mail my annual student pilot renewal notice. Since my first steps skyward in the pursuit of gaining my wings, I have declared my medical illness as schizophrenia. This year I noticed the bullet beside mental illness is to be declared. In previous years this was not the case. Mental illness did not have a mention at all. I would like to know why this is the case. I hope the reason is that RA-Aus as a whole recognises there are some in the ranks who have a mental illness; yet they fly as anyone else in the flying fraternity.

Does this mean they need to declare in the future, as I have done for the past eleven years, the medical diagnosis of mental illness whatever it may be?

**Neil Granger**

*From the CEO - RA-Aus contacted Neil and spoke to him about his particular case. The identification of illnesses, including mental illness, has always been a requirement of our Operations Manual. Recently we reviewed our forms and noted the omission on the form and adjusted it. It's great to see members out there flying overcoming a variety of ailments and conditions. As our new vision statement says: Safe, accessible, enjoyable aviation.*

## Got something to say?

*The state of the organisation is reflected in the Letters to the Editor columns.*

*The more letters – the healthier the organisation. So don't just sit there – get involved. Your contributions are always welcome, even if no one else agrees with your opinion.*

**The Editor makes every effort to run all letters, even if the queue gets long at certain times of the year.**

**editor@sportpilot.net.au**

(By the way – the Editor reserves the right to edit Letters to the Editor to shorten them to fit the space available, to improve the clarity of the letter or to prevent libel. The opinions and views expressed in the Letters to the Editor are those of the individual writer and neither RA-Aus or *Sport Pilot* magazine endorses or supports the views expressed within them).



# STRATEGIC DIRECTION

**F**OLLOWING a member's survey (to which members can still contribute) and a strategy planning day involving board members and senior staff, Recreational Aviation Australia is pleased to announce we are well on track to delivering a 2014 to 2017 strategic plan.

We expect the plan to be finalised in the first quarter of 2015 and delivered to members in April.

The planning process has involved taking a close look at who we are, what we want to be and what factors, internally and

externally, are affecting our performance. We'd like to thank members for their input, to date almost 400 have contributed information.

Five themes have shone through as priorities for us. These themes will be further developed.

- Marketing
- Membership
- Modernisation
- Alliances
- Governance

While we continue to modernise our

operation, we are also very mindful of staying true to our roots and reason for being. We are today much bigger than 30 years ago, but our membership remains strong because we service a diverse range of aviation interests. It is this diversity which defines our uniqueness.

We will remain true to our humble beginnings and it is our collective unity which helps us generate value for members.

To take part in the survey, go to <https://www.surveymonkey.com/s/MYL2WD6>.

## WHO & WHERE ARE WE?

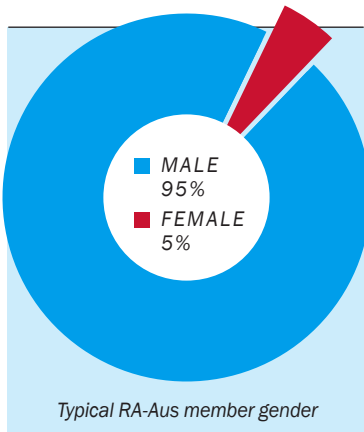
### WHO ARE WE?

A TYPICAL member at Recreational Aviation Australia is male (95% male, 5% female) and was born in 1964 (average age 51). Members stay with RA-Aus for an average of seven and a half years and will fly around 100 hours per year.

### WHERE ARE WE?

As of January 1, 2015 we have 9,550 Australian based flying members. This breakdown as follows (right):

QLD	2520
NSW	2470
VIC	2213
SA	1088
WA	701
TAS	248
ACT	208
NT	102
<b>TOTAL OF ID</b>	<b>9550</b>



Typical RA-Aus member gender

More than 2,600 suburbs in Australia have just a single member. Places as remote as Noonamah, Parap, Lebrina and Paraburdoo have been touched by Recreational Aviation Australia and a loyal member.

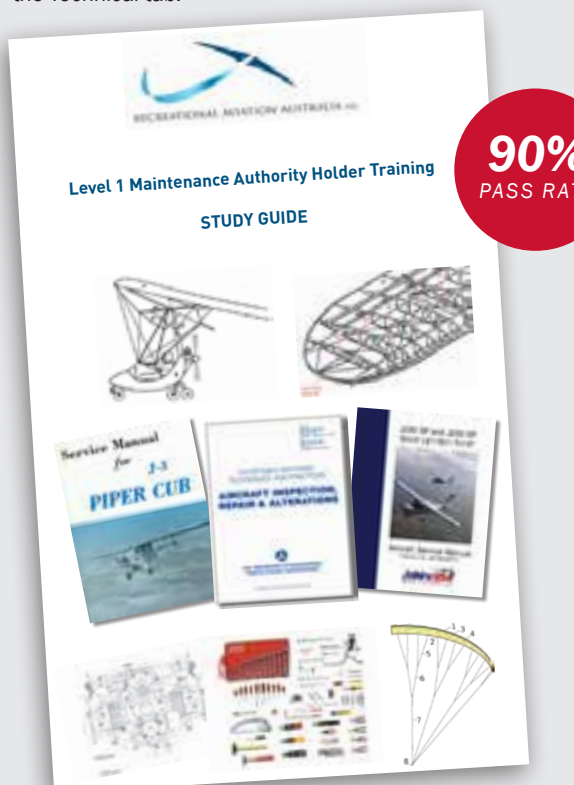
We will continue to review our membership demographics. It will aid us in making decisions about where to hold meetings and also provides valuable information for lobbying.

SUBURB	POSTCODE	STATE	TOTAL MEMBERS
BUNDEBERG	4670	QLD	53
WAGGA WAGGA	2650	NSW	49
PORT MACQUARIE	2444	NSW	44
ORANGE	2800	NSW	43
EMERALD	4720	QLD	42
FYSHWICK	2609	ACT	39
BROKEN HILL	2880	NSW	37
MOREE	2400	NSW	32
TEMORA	2666	NSW	32
DENILQUIN	2710	NSW	32
GYMPIE	4570	QLD	31
SWAN HILL	3585	VIC	29
BATHURST	2795	NSW	27
DUBBO	2830	NSW	26
SALE	3850	VIC	26
LOXTON	5333	SA	24
PORT LINCOLN	5606	SA	24
YARRAWONGA	3730	VIC	23
TRARALGON	3844	VIC	23
BUDERIM	4556	QLD	23

## L1 UPDATE

THE L1 Maintainer Training and Assessment site was launched on December 1. During the first month, almost 100 members completed the assessment with a very impressive 90% pass rate and equally impressive average pass mark of 87%. The majority of members completing the assessment have supplied constructive feedback, including many positive comments about the system, for which RA-Aus is grateful. Your feedback during the three-month beta testing phase will form the basis for improvements to content and delivery.

To access the site, go to the website and look under the Technical tab.



## CALL FOR AGENDA ITEMS

THE Secretary of RA-Aus, Tony King, hereby calls for agenda items for a General Meeting of members to be held in Autumn 2015.

Agenda items are to be forwarded to the CEO at the following address:

**Email: CEO@raa.asn.au**

**Mail: CEO, Recreational Aviation Australia.**

**Unit 3, 1 Pirie Street**

**FYSHWICK. ACT. 2609**

No later than February 23, 2015.

This timing will allow for agenda items to be posted in the March edition of *Sport Pilot* to ensure all members are fully aware of items on notice.

RA-Aus is currently exploring dates and venues for the forthcoming general meeting of members. The date and venue will be published in the March edition of *Sport Pilot* as well as on the RA-Aus website and electronic news.

To subscribe to the electronic newsletter, visit the member's area of the website.

"Power & belief, water tems are fixed."  
Lucas Signon of France, flying with his liquid cooled Jabiru 2200.

# 83 Jabiru owners switch to liquid cooling. Problem solved.

When your Jabiru is liquid cooled, you don't worry about CHTs. You feel **relaxed** knowing you're operating at safe temperatures, all year round.

"At cruise, CHTs barely go beyond 100°C," explains Kai Lyche of Norway. "**They just work!**" In fact, liquid cooling is working so well for Kai, it's allowing him to turbocharge his Jabiru 2200.

"It's nice being able to fly home in the summer," says pilot Terry Ryan of rural Victoria, Australia (upgraded Jabiru 3300 engine featured below). "Before liquid cooling, the Jabiru engine had all sorts of heat related problems."

### Jabiru Super Special:

It is now cheaper to replace your standard air cooled heads with liquid cooling. Prices have been reduced by **20%**. The time to buy is **NOW**. 2200 owners save **\$650**. Jabiru 3300 owners save **\$950**. There are packages to suit any Jabiru engine, hydraulic or solid lifter. But only while stocks lasts. So act fast.

Join the liquid cooled club. **Stop the risk.** Fly without a CHT worry in the world.

Inspection of Terry Ryan's cylinder heads:



**Air cooled:** 25 hour inspection, dangerous detonation & leaks from overheating.



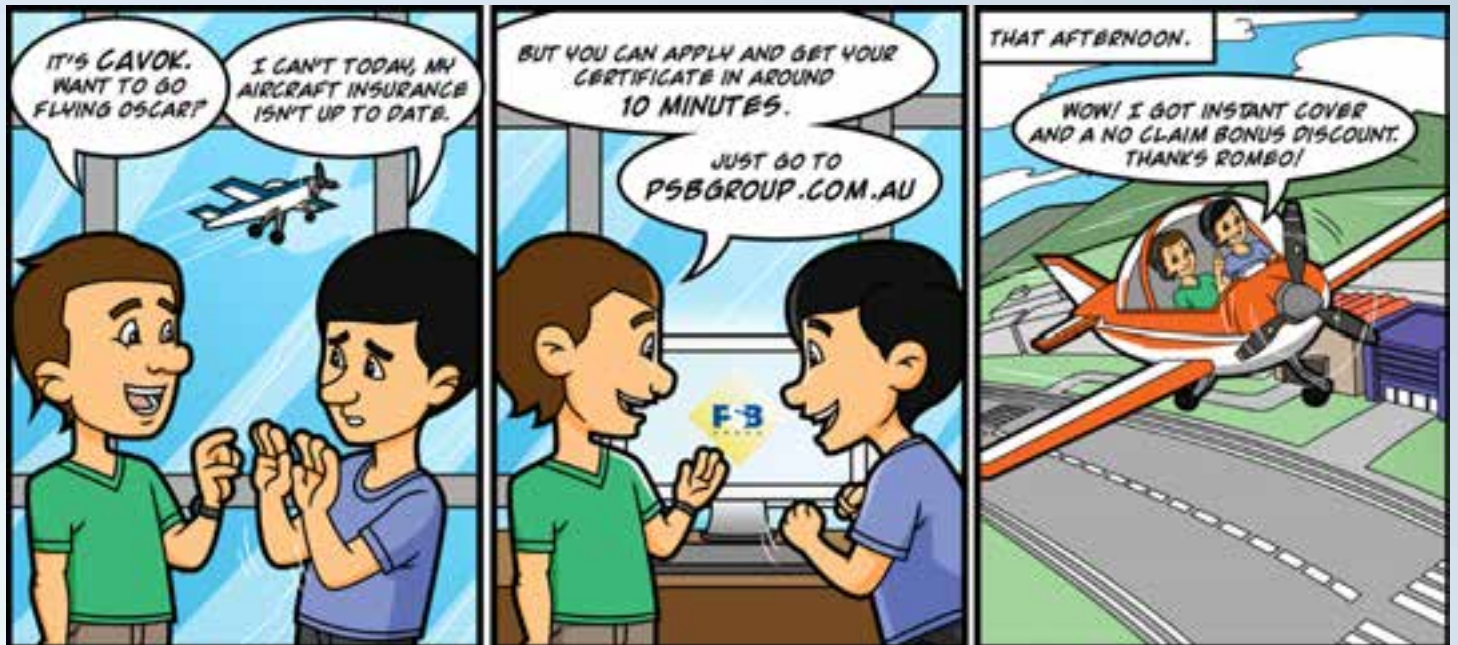
**Liquid Cooled:** 120 hour inspection, all heat related issues are resolved. Detonation is eliminated.



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# You and the Aviation Regulations

BY BOARD AND MANAGEMENT OF RA-AUS

**A**n opinion piece published in *Sport Pilot* (December 2014) sought to make the argument that the Australian aviation regulations permit the holder of a CASA licence (e.g. PPL, CPL, etc.) to operate a RA-Aus registered aircraft without an RA-Aus Pilot Certificate. RA-Aus has heard this opinion expressed before by a variety of people and in May 2014 approached CASA for a definitive position on the matter. That advice was received in July 2014 (see below) and confirmed the position RA-Aus has always adopted - that in order to operate a RA-Aus registered aircraft the pilot must have a valid and current RA-Aus Pilot Certificate.

RA-Aus members regularly question the application of the regulations to their specific situation and frequently come up with novel interpretations of the regulations to suit their point of view. Those interpretations are often inconsistent with the position of the regulator.

A lawyer might advise that, while CASA may have a particular interpretation of the regulations, a judge might be persuaded to accept an alternative interpretation. But such advice is no guarantee the alternative interpretation is valid. All RA-Aus can do is communicate the official interpretation of the regulations.

It is a matter for individual members whether they choose to follow the regulations as interpreted by CASA and communicated by RA-Aus or follow some other path. However members choosing to follow their own path need to ensure they understand the potential consequences of that decision.

## RAMP CHECK

CASA has the authority to conduct a ramp check anywhere and anytime a CASA officer sees someone at the controls of an aircraft. Although the chances of a ramp check other than at major flying events may seem small, if you are selected for a ramp check how far do you think you'll get with an argument that you don't need a RA-Aus Pilot Certificate because you have a PPL? The likely outcome is that you'll be on the receiving end of enforcement action and may find yourself needing to convince a judge your interpretation of the regulations is valid.

## INSURANCE

Aviation insurance, like any other insurance, is based on a requirement to operate within the applicable regulations. Insurers are highly likely to consider the regulator's view of the world as the authoritative view. You might be able to present an alternative interpretation of the regulations in the event you need to make a claim. You might even be able to persuade the insurer to accept your interpretation. But would you bet the financial well-being of yourself and your family on succeeding with that? That's what you'd be doing if you

choose to follow a non-standard interpretation of the regulations.

## ACCIDENTS

Closely related to insurance is the question of what happens in the event of an accident. An element of every accident investigation is the question "was the activity which resulted in the accident being conducted in accordance with the applicable regulations". If the answer is "no", the insurer may well deny any claim and the regulator will likely take an interest as well. Worse still, in the event the accident damaged other people or property and you didn't survive, do you really want your loved ones to have to argue for your interpretation of the regulations in order to avoid losing the house? We all think an accident won't happen to us, but the sad fact is on average six or seven of us are fatally wrong about that every year.

## IMPACT ON OTHER FLYERS

Ever since its inception, RA-Aus has worked to combat the perception that its members are undisciplined cowboys. Members who choose to disregard the regulations, or who invent their own interpretations of the regulations, reinforce this perception and motivate the regulator to introduce ever more restrictive regulations. This makes life (or flying at least) more difficult for all of us and risks the privileges RA-Aus has gained for its members over time.

## IMPACT ON RA-AUS

RA-Aus relies on the continued support of members to fund its activities. These include compliance checks on Flight Training Facilities and aircraft maintainers, administration of Pilot Certificates, endorsements and maintenance authorities, aircraft registration, development of training and assessment materials, as well as representing the interests of members and aircraft owners to the regulator, other government bodies, industry and the Minister for Transport. If that support is lost RA-Aus will be weakened. In the extreme, RA-Aus may no longer be viable. Should that occur something unique in the world will disappear, along with the number of privileges currently available only to RA-Aus members. Those privileges are reliant on our members complying with our Operations and Technical Manual requirements as well as the CASA regulations.

Understanding the aviation regulations in Australia can be a complex and at times frustrating exercise - even more so when the official interpretation of the regulations doesn't appear to support an action the individual may wish to take. At such times the temptation can be strong to rationalise an action by adopting an unconventional interpretation of the regulations. Many times, probably most times, there are no apparent consequences

to getting it wrong - just like most times when you speed you don't get caught. But sometimes there are consequences and they can put you or your loved ones in a difficult position.

At the end of the day, each pilot must decide for themselves the manner in which they follow the regulations as they prepare for and undertake each flight. Make sure you understand what's at stake before you decide to follow a path other than that laid down by the regulator.

## CASA ADVICE


### [Extract] on the requirements to hold a RA-Aus Pilot Certificate

"Paragraph 5.1 of Civil Aviation Order (CAO) 95.55 authorises a person who does not hold a flight crew licence to perform a duty essential to the operation of an aeroplane to which CAO 95.55 applies, if that person complies with conditions set out in subsections 6 and 7. You have asked whether those conditions also apply to the holder of a Private Pilot (Aeroplane) Licence (PPL) who wishes to take advantage of the exemptions granted under CAO 95.5.

The Explanatory Statement to Civil Aviation Order 95.55 Instrument 2011, which made the current CAO 95.55, also states that "[t]he previous CAO 95.55 contained exemptions to allow the operation of aeroplanes that complied with criteria set out in subsection 1, subject to compliance with the mentioned conditions." The current CAO 95.55 continues to operate such that the exemptions are still subject to compliance with the specified conditions.

Notably, subparagraph 6.1 (b) of CAO 95.55 is a condition that states that a person must not operate an aeroplane as pilot in command without a valid pilot certificate, issued by Recreational Aviation Australia Incorporated (RAA). Holders and non-holders of flight crew licences are therefore required to separately hold a valid pilot certificate issued by RAA in order to take advantage of the exemptions provided under CAO 95.55.

In CASA's view, paragraph 5.1 of CAO 95.55 is read subject to subsections 6 and 7, but subsections 6 and 7 may be read independently of paragraph 5.1. In short, as required by paragraph 3.1 of CAO 95.55, the exemptions set out in subsection 3 only apply if the conditions of CAO 95.55 are complied with, including the conditions set out in subsections 6 and 7. Consequently, subsections 6 and 7 apply to any person seeking to rely on the exemptions provided by CAO 95.55, regardless of whether that person holds a flight crew licence.

CASA considers that the conditions set out in subsections 6 and 7 of CAO 95.55 apply to all persons who wish to take advantage of the exemptions provided by CAO 95.55. This includes non-holders of flight crew licences as required under paragraph 5.1 of CAO 95.55, and holders of PPLs, or any other form of flight crew licence." 

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# Chinese whispers

BY MICHAEL MONCK **PRESIDENT**

**W**E all recall the game we played as kids called Chinese Whispers. The game itself was simple enough, but sometimes the outcomes were astounding.

A group of us would sit in a circle or a line and the game would begin with the person at one end whispering something in the next kid's ear. By the time the last kid got to hear the whisper, the story had lost details or even changed completely.

It's a fun game to play, but it is also illustrative of the difficulties we face as an organisation. I often receive phone calls from members who have a problem or question they would like someone to look into. Sometimes these calls are made on behalf of a third person. Rarely do I (or any other board member for that matter) have ready access to the information required to address the problem. Mostly we refer it to someone in the office.

I contact our CEO and have a discussion. He will then take it up with one of the managers who may delegate some part of the investigation to another staff member. Later the results get fed back up the line.

So the process involves the member, me, the CEO, a manager and a staff member. Five people. I think you can see where I am going with this.

The problem is then further compounded because, as I get the information given to me, I communicate it to the concerned member who may then have another question or require further details. And so it goes.

Our current system is a bit like Chinese Whispers. It is inefficient and ineffective. With around 10,000 members and over 3,000 aircraft it creates the potential to have anywhere up to 13,000 games of Chinese Whispers every year.

That's a little bit of an exaggeration but let's look at this way. We have about 250 working days in the year (give or take). It's not uncommon to deal with five or more enquiries on any given day (as I write this, I have already

had two calls today and I am just one of 13 board members) so that means around 1,250 enquiries over the course of a year. That's a lot of work.

In most cases you can reduce the workload on staff and board members by simply calling the office. This means that you, as a member, can have the opportunity to talk directly to the person most likely able to solve your problem. No more Chinese Whispers.

It also means that the service to members becomes more efficient and more accurate. We don't get wrong answers because facts are lost in translation, the response times are quicker and the problem can often be solved in one interaction.

Of course, there will be times when your issues are not solved to your satisfaction on the first go. Like any organisation which deals with thousands of transactions, we will make mistakes. If you do find yourself in this situation, feel free to drop us an email or call and ask to speak directly to the CEO. And if you still can't get a satisfactory resolution then fall back on the board. The board shares the view that members are central to everything we do.

The board should be focusing on high level strategy, policy and governance to guide us to the future. In the past, this hasn't happened and we've failed in a number of areas. But by handing day-to-day responsibilities for dealing with member requests to our team of dedicated staff we can finally turn our attention to the longer term outlook for Recreational Aviation Australia.

So help us to serve your needs better by cutting out the middle man and contacting the office directly. I think you'll be pleasantly surprised by the willingness of our staff to help you and their level of professionalism.

And you will get the answers you need without the risk of getting a Chinese Whisper. 🗣️

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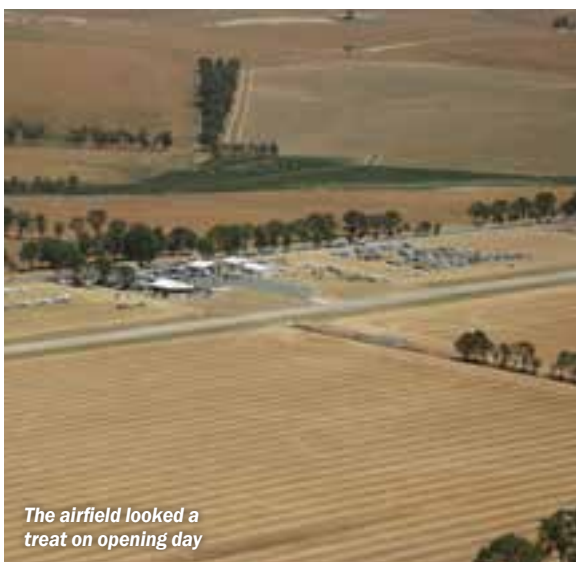
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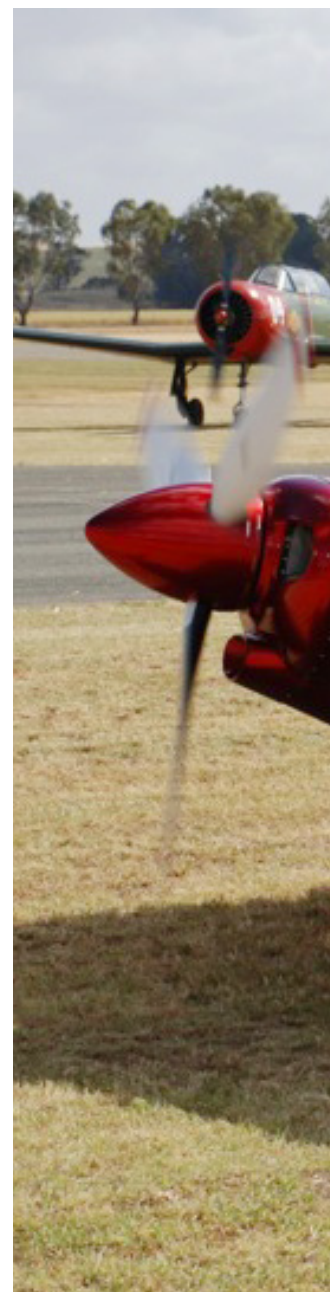
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The airfield looked a treat on opening day



Richard Champion de Crespigny

## Clare Valley opens for business

BY TONY SMITH

**T**HE Clare Valley Aerodrome opening in November was a huge success.

A large crowd attended. The wind was relentless but the day was fantastic.

The crowd was treated to aerobatic displays by Chris Sperou, Warren Stewart and local, Stewart Michael, from Snowtown.

Local helicopter business, County Helicopters, had their tourist arm, Helivista helicopters, out doing joy flights around the aerodrome.

Adelaide Warbirds was also busy taking people for aerobatic and joy flights over the Clare Valley.

There was a line-up of interesting and vintage aircraft, as well as vintage cars from the local Northern Automotive Restoration Club.

RFDS simulator attended and their simulator

was available to walk through, and Simon Hackett also made his Pilatus PC12NG available for the public to look through.

Children were not forgotten - a bouncing castle kept them amused, as did the face painting, both of which were free.

The aerodrome was officially opened by Richard and Peter Champion de Crespigny who said "We are privileged to join with you all to celebrate your remarkable efforts to build only the second private aerodrome in Australia in the past 50 years.

"You have created a strategic asset that is the foundation for growth in health services, commerce, travel and tourism. This is an asset that will reward future generations."

A special mention must go to Mike and Rose

Chigwidden who, at the opening dinner, announced that their land which is currently leased by the Clare Valley Flying Group, will be donated to the Flying Group - a truly generous gesture.

A huge thank you also to Ketraah Eaton, the event planner, ably assisted by her father, Peter (Moth) Eaton and all the CVFG Inc. Committee who put in a huge effort, not only on the day, but in the preceding weeks to make the event such an outstanding success.

Finally thank you to Adrian Smith, the founding president of the Clare Valley Flying Group. Because of his vision and passion we now have an aerodrome in the Clare Valley, a community asset for all to use and enjoy into the future.

For more information [www.clarevalleyaerodrome.com.au](http://www.clarevalleyaerodrome.com.au).



# FLY-INS

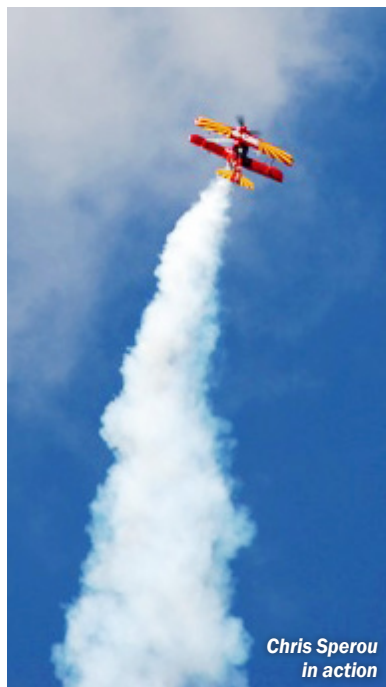
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# High time in Holbrook

BY JOHN HARLEY

**W**HAT a difference a day makes! With excellent flying weather across southern NSW and Victoria in the week leading up to the first weekend in November, spirits were high within the ranks of the Holbrook Ultralight Club members that we were in for another very successful fly-in. With new facilities completed since last year's fly-in the members were keen to put them to good use.

This was the ninth annual fly-in at Holbrook, so the members and their partners had the preparations in place in short order. By early afternoon on Friday everything was in place. However, by this time the weather had also taken a turn for the worse and the skies over southern NSW and Victoria looked rather unfriendly. Only one aircraft arrived on Friday and all we could do was hope for a marked improvement on Saturday.

It was not to be, with rain and strong winds throughout the whole area. Not the sort of conditions to encourage anyone to go flying, let alone do so to attend a fly-in.

But while the activity in the sky on Saturday morning was less than we'd hoped for, the activity on the ground certainly made up for it. By early afternoon the car park was full of cars, caravans and motorhomes and the HULC crew was busy with the BBQ and providing sandwiches, cakes, tea and coffee to the increasing number of visitors who just kept coming.

By early afternoon the rain cleared which heralded the arrival of club members, Don Shaw and John Lindner in Don's new Savannah. Don and John had left Heck Field in Queensland at first light and managed to dodge the bad weather, including a layover of a couple of hours to wait it out. This was fortuitous for Don because he took out both the Longest Distance and best RA-Aus registered aircraft trophies at the fly-in dinner on Saturday night.

With the visitors fed and watered, Graham Planck (ex-RAAF) kicked off the afternoon's forums with a hands-on sheet metal workshop. Graham is an advocate of solid rivets (as opposed to the current trend of using pull rivets). He explained all the tools you need to get the job done and how to use them. Graham has a wealth of practical knowledge about sheet metal work and soon had the participants all out of their seats, drilling metal and setting rivets.

The second forum of the afternoon was by Tom Moxie and Rob Musgrave who explained the process of fitting a Rotax engine to their respective Jabiru aircraft – a Rotax 914 in the case of Tom's J400 and a 912 for Rob's J170.



Don Shaw's Savannah



Ken Woodham's  
Aerochute



Graham Planck sheet metal workshop

Unfortunately Tom's aircraft was still in its hangar at Tumut due to the weather, but Rob had flown up from Lethbridge on Friday. As soon as the forum was finished, it was off with the cowls of the J170 for a close examination of his handiwork, which was very impressive.

The fly-in dinner in the club's decked out hangar was attended by about 45 people. All agreed it was up to its usual high standard. The fly-in trophies are regular feature and other winners included Ken McClosely – best rag and tube two seat (Bantam B22), Rob Musgrave – best Jabiru (J170), Graham Planck - best VH registered aircraft (C172) and Doug Elliott – people's choice (Skyranger).

By contrast, Sunday morning dawned fine with only a light breeze and while most enjoyed

a leisurely BBQ hangar breakfast, Aerochuters, Ken Woodham (Barossa Birdmen) and Graham Tarbutt (Leeton), made the most of the pleasant conditions and set about exploring the Holbrook countryside.

With Natfly moving away from Easter this year, HULC members have decided to hold the 2015 Back to Holbrook fly-in on Easter Saturday and Sunday (4-5 April). The first AUF (RA-Aus) national fly-in was held at Holbrook in 1990, so 2015 will mark the 25th anniversary of this event.

If you'd like to help us celebrate, come back to Holbrook at Easter.

For more information, [www.holbrookultralightclub.asn.au](http://www.holbrookultralightclub.asn.au).

## VIEW FROM CASA

BY PETER GIBSON  
**CASA'S CORPORATE  
COMMUNICATION  
MANAGER**

**O**N November 13, in response to an apparently high and increasing rate of engine-related problems involving engines manufactured by Jabiru Aircraft Pty Ltd including complete and partial power losses, CASA proposed that certain operational limitations be introduced, as a precautionary measure, until the causes of these problems could be identified and rectified.

CASA acted with particular regard for the safety of passengers, student pilots and people on the ground. CASA considers these people may generally be expected to have little - and in some cases no - knowledge of, or effective control over, the risks to which they may be exposed.

CASA sought public comment on the proposed limitations in a consultation process that closed on November 27. During that period, CASA received over 630 responses.

CASA then revised the proposed limitations, relaxing them considerably in relation to the carriage of passengers and the conduct of solo training flights by student pilots.

Both of these activities were initially to be prohibited entirely. Under the revised limitations, however, these activities may be conducted, as long as passengers and solo student pilots acknowledge receipt of advice about the potentially heightened risk of an engine failure and indicate that they accept that risk. In the case of solo flights by student pilots, the CFI and the student pilot must additionally confirm that the student has recently demonstrated competence in engine failure exercises.

Precautionary limitations will remain in relation to flights at night, flights under other than the Visual Flight Rules and flights over populous areas.

The full list of revised operational limitations can be accessed at <http://www.comlaw.gov.au/Details/F2014L01806>.

Where the location of an aircraft prevents compliance with the limitation on flights over populous areas, owners had until January 31 to relocate their aircraft.

Passengers and trainee pilots who wish to fly solo in Jabiru-powered aircraft must now sign a statement to ensure they have a reasonable understanding of the risks of the flight. If the passenger or trainee pilot is under 18 years of age, a parent or legal guardian must sign the statement. The same is true for a passenger who has a mental impairment.

The restrictions have a validity to June 30.



## CASA vs Jabiru

On November 13, CASA shocked the RA-Aus world by announcing it was planning to impose operating restrictions on Jabiru aircraft, effectively grounding the fleet. The restrictions would have a major impact on the thousands of people who fly Jabirus and the businesses which rely on the aircraft for income. Here is a summary of the controversy as it now stands.





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## RA-AUS RESPONSE

**C**ASA'S draft instrument published on November 13 restricted the operations of more than 1,000 RA-Aus registered aircraft and had an adverse impact on some two thirds of our flight training facilities.

Since the publication of the draft instrument RA-Aus has been working hard to understand the justification for these restrictions. We have, for some time, known that Jabiru engines have a higher tendency for failure than their Rotax counterpart and welcome any appropriate changes that would improve their reliability. We would also welcome any measures which improves the reliability and safety of any aspect of our fleet. Having said this, we have been troubled by the process employed by CASA and especially the lack of transparency in terms of the implementation of the proposed measures.

RA-Aus asked for the data used by CASA to justify its statements that the failure rate is increasing. We also requested CASA's analysis of the data so we could assess the claims ourselves.

On December 17, almost five weeks after the draft instrument was published, RA-Aus received the data and was provided one, yes one, working day to respond. As you might expect we would have liked more time to assess the data, understand the analysis and then form an opinion on the suitability of the proposed measures.

Despite this, RA-Aus was able to note that the data provided to CASA on Jabiru engine failures only covered one partial year. The only time-series data made available to us (although not actually provided to us) was via the ATSB. That is, no engine failure data beyond the beginning of 2014 was used by CASA to justify its position and it left us to infer what data the ATSB had provided.

With reference to the latter, RA-Aus has contested the validity of the ATSB data on the basis that it shows a decline in the hours flown by the RA-Aus fleet. This is in direct contrast to government published figures which show a doubling in the number of hours flown since 2000.

This led us to a simple conclusion – CASA has not undertaken robust analysis on reliable data to establish with any degree of accuracy that the

failure rate of Jabiru engines is increasing over time. This is despite their statement that they had found statistically significant evidence in support of their claims.

RA-Aus' position remains, as stated above, that the failure rate of Jabiru engines is greater than that of Rotax engines, but that it is not worsening.

In light of this, RA-Aus opposed CASA's draft instrument and suggested an alternative approach to addressing the real concerns. CASA acknowledged that our response had merit but 24 hours later it had proceeded with the restrictions.

While the final restrictions imposed on our members are less stringent than those originally proposed, our opinion is that they are still inappropriate.

Furthermore, CASA has remained evasive in terms of providing information relating to just what rate of failures it would deem acceptable. We don't know when the restrictions will be lifted, other than the statement on the CASA website about a review early in the new year and the six month validity of the proposed Instrument. We will continue to work with CASA and Jabiru in an attempt to address these issues.

RA-Aus is extremely worried what these actions may mean for private aviation in Australia. Being the fastest growing sector of aviation, it concerns us that unilateral action has been taken by the regulator not backed up by robust evidence. It worries us this precedent has the potential for further restrictions that may not be warranted based on incomplete data, deficient analysis and/or misleading claims. We also have concerns about the implications of CASA's decision and what it means for all self-administered aviation organisations as Part 149 is implemented.

RA-Aus will focus our efforts on improving safety in our sector by reviewing training methods and practices, improving our education programs, communicating safety findings (where permitted by law) and so forth. We will also remain very focussed on the outcomes of CASA's recent actions, the government's recent announcements about the recommendations of the ASRR report and continue to hold CASA to the same high standards that it demands of the aviation industry. 🌐



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# VIEW FROM JABIRU

BY SUE WOODS JABIRU BUSINESS MANAGER

**T**HE basis of CASA's decision to impose limitations on Jabiru aircraft was based mainly on incidences reported to RA-Aus, but not investigated.

CASA refused to recognise our overall safety in regard to the very low numbers of fatalities and serious injuries, where we have an outstanding record. We tabled statistics from the US which showed us to be the safest LSA aircraft in that country. This was also disregarded.

See these statistics for yourself at: <http://flightdesign.com/files/Media/The%20Aviation%20Consumer%20-%20LSA%20Accidents.pdf>. Similar statistics are not collated in Australia or are not released publicly.

CASA admitted it had not researched Jabiru's engine failure rate in any detail to determine if the failures were the result of operational, maintenance or design related factors. There is no international standard for the reliability of piston aero engines and to compare one manufacturer with another is without precedent.

CASA also stated there had been a spike in the incident rates on Jabiru engines. This statement was refuted by the RA-Aus which had data showing there was no spike.

Our own research indicates through-bolt failures and stuck valves have been the major contributors to the statistics. Our research and statistics also show most of these failures occurred in hard working flying schools in Australia which use 2200 engines, though there are schools which have done thousands of hours without these failures. According to our records, engines used for private applications have had virtually no through-bolt failures.

Our latest statistics tell us the introduction of roller cams has, to date, eliminated valve train failures.

The introduction of 7/16 through-bolts in production engines has eliminated through-bolt failures. We have also introduced valve relief pistons, which save a stuck valve from impacting with a piston. These pistons are now standard and are used on all overhauls and repairs. We are also upgrading engines to the current specification at owner's request at major service intervals.

We have invited CASA to come to Bundaberg to review our engineering development and we have provided an external CASA approved aeronautical design engineer to help with communications and explanation our engine devel-

opment. This approach has been seen by CASA to be a positive step. As usual, we have many projects underway to improve our products. We are also focusing on development of maintenance training and accreditation for those who service our fleet and more regular communication with our fleet owners.

It should be put in to perspective that the incident rate quoted by the RA-Aus has been 0.03% in 90,000 movements of Jabiru aircraft - which is a very low number and translates to 1 in 3,300 take-offs.

Jabiru has started 2015, its 27th year, with a positive and constructive approach. Recreational aviators and designers for the industry are driven by passion and, although they meet many challengers from those who would like to clip their wings, they persevere.

We tried everything we could at the end of last year, to have the CASA instrument not imposed, but it now is clear there was nothing we could have done that would have diverted CASA from its mission to implement the instrument before the end of the year.

This setback is just one of many in the history of Jabiru and, like those before, Jabiru is confident it will be overcome. 🍷

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# What a Privilege

BY IAN MCDONALD

**I**'M sure there are few pilots who can remember a time when they weren't flying.

Dreams are the things which motivate many of us to learn to fly. I was no exception. From the age of four, I had vivid memories of flying, all of which were deeply embedded in my dreams. Sitting in the window seat in line with the trailing wing edge, watching the flaps and slats at work. Smelling the jet fuel as I walked across the tarmac. And, because they were the good old days, being invited up front to visit the flight crew. Pure magic!

My flying pursuits were always postponed, somewhere to the back of mind. Too expensive, too dangerous or the emerging family needed to be fed. It's so easy to let life get in the way.

But dreams can always come true.

About seven years ago, a good flying instructor mate of mine put me in the right seat for a formation flight to a fly-in at Goolwa in South Australia. That was it. Formation flying with other recreational aircraft up close and personal was my undoing. I was immediately on my way to what has turned out to be one of the better parts of my life so far. Eventually I found myself at 61 in command of an aircraft. Me!

As many RA-Aus pilots would understand aviation is a never-ending process. Next stop was the purchase of my own aircraft. A great little Jabiru LSA. She's 20+ years old now, has done many 1000s of hours but still looks like a spring chicken. My wife had her named and sign written "The Mistress". Says it all really.

What a privilege to be able to fly around 95% of the Australian continent with very little in the way of red tape and regulation. Wonderful freedom with great responsibility.

About three years ago, with numerous endorsements under my belt (yes including formation) I reflected on the fact that I had been very fortunate to have been exposed to some of the best flying instructors in Australia. Most were long time pilots with many years' GA and later RA-Aus experience. They had taught me well; they gave of themselves over and above the syllabus and were keen to make sure I was safe. Years later they still sit on my right shoulder giving me flying tips.

It was then I felt my hidden teaching desire was seeking an outlet. I had retired. I had the



time. I had always wanted to teach something, but throughout my life had never quite found it. Maybe I could become an Instructor and pass on the wonderful expertise I had been given?

A lot of time and effort goes into becoming an Instructor, not to mention Senior Instructor. But it's amazing how desires can become reality. After dedicating myself for 12 months, I was able to recommend the requisite three students to the CFI to go solo (now that's a great feeling of accomplishment, let me tell you). Senior Instructor achieved.

Now, some years later I'm still happily instructing trainees from a variety of backgrounds to become pilots.

I must say, for me, it's the best part of flying. To meet a person who has never touched an aircraft and just a relatively short time later confidently send them off alone into the special place in the sky. It's a great privilege and huge responsibility.

Up until recently my trainee pilots had all been adults.

But within a three week period, I found I had three young wannabes on my training schedule. And all three are 14 years old. What a hoot. I must admit one is my grandson, Zac,

who once having flown internationally on holidays, decided those heavies are to be his career choice and his grandfather is to help him get there.

These three young men are just amazing. They are confident without being cocky. They are respectful of the instructing process, they love to learn, have amazing touch and I'm sure all will all make great pilots.

What a privilege to be given three young guns to take through to their Pilot's Certificates and set them up for a career. They will be flying a year before they can even drive a motor vehicle.

Most importantly, I have come to realise just how valuable it was to me to have received good instruction from the outset. It's one thing to be a good pilot, but the skill to impart that accumulated knowledge to a trainee is quite rewarding and challenging. To find meaningful examples relevant to the skill level and background of the trainee is also exciting. To explain foreign concepts in ways that can be absorbed and put into action is a skill.

To my three young amigos, you have started on a wonderful life changing experience. The skills you are gaining right now will be the basis for your flying life. What a privilege. 🇺🇸





*“How valuable to receive good instruction from the outset”*

I passed!



Formation flying



Three amigos

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INCIDENTS	20	39	21	28	108
DEFECTS	6	8	3	1	18
HAZARDS	0	0	0	0	0
<b>TOTAL</b>	<b>30</b>	<b>52</b>	<b>37</b>	<b>66</b>	<b>185</b>
FATAL ACCIDENTS	7	2	0	2	11
FATALITIES	9	2	0	2	13

	JAN-MAR 14	APR-JUN 14	JUL-SEP 14	OCT-DEC 14	TOTAL
ACCIDENTS	29	32	23	17	101
INCIDENTS	16	25	32	23	96
DEFECTS	5	5	12	5	27
HAZARDS	0	8	0	1	9
<b>TOTAL</b>	<b>50</b>	<b>70</b>	<b>67</b>	<b>46</b>	<b>233</b>
FATAL ACCIDENTS	0	3	1	2	6
FATALITIES	0	4	2	2	8

*\*Definitions of accidents, incidents and defects have been used from the Operations Manual V7 and Technical Manual V3*

## The culture is improving

BY KATIE JENKINS NATIONAL SAFETY MANAGER

WHEN beginning a new year it is always good to reflect on the previous one and see how we can improve. The table is an overview of the reporting comparison for 2013 and 2014 and one standout is the substantial number of reports received in the past twelve months compared to previous years.

This increase could theoretically have occurred for any number of reasons. The employment of a Safety Manager has meant accountability for the first time to those required to submit reports. Also RA-Aus has been able to carefully manage these reports and will use them for future analysis. And most likely, the increase could be viewed as a shift in the reporting culture of the organisation, which is a great positive.

Obviously, the more reporting we receive, the more analysis we can conduct to highlight areas of concern. This then enables us to focus on efficient allocation of resources. The aim is to provide safety assurance to every member.

So we have set some goals this year. One is implementing online reporting. An Occurrence Management System (OMS), when it becomes active, will allow staff to effectively investigate any incident or accident as it occurs and provide timely analysis of hazards which may require additional risk mitigation.

Additionally, we plan on being more proactive, focusing on fixing hazards before they cause problems, rather than only reacting to accidents or incidents. The defect reporting (required in accordance with the Technical Manual V3 Section 4.3) is one way you can point out to us potential issues, especially in regard to aircraft airworthiness. These have been hugely beneficial in the past twelve months and led to the issuing of several Airworthiness Bulletins.

In the next few months, a Hazard Report will also be introduced which will allow you to highlight areas of concern within the organisation itself. When we investigate hazards like these we are likely to find issues about conditions, work practices, lack of training, outdated procedures or maybe even if someone is cutting corners and other things which may need additional risk mitigation.

The reporting from 2014 has already been able to identify previously unknown trends and highlighted concerns in areas such as pilot training

and airworthiness. From this we have been able to create strategies and plans for training courses, Airworthiness notices and Safety Bulletins.

It also allows us to assure you and the regulator that RA-Aus is continuing to improve its safety culture.

### HAVE YOU REGISTERED YOUR PLB?

In accordance with the requirements in CAR 1988 252A there is a requirement for aircraft, travelling more than 25 nm, to carry a Personal Locator Beacon.

The new distress beacons operate on 406MHz frequency. Some provide an encoded GPS location and some don't. They have been designed so satellites can calculate their location using a unique code.

To register a distress beacon is free. As well as allowing the Maritime Safety Authority's (AMSA) Rescue Coordinator Centre (RCC) to find you faster, if you are registered they will have your contact details and the details of up to three nominated emergency contacts.

To register is easy and can be completed online at <https://www.beacons.amsa.gov.au>.

The AMSA website even lets you register your trip itinerary so they will be in an even better position to find you if your beacon activates. If your beacon is lost or stolen, AMSA can also let you know if someone else tries to use it.

Recently, there have been reports of distress beacons being activated but, due to a lack of accurate updated or registered information, the owner could not be contacted immediately. In these cases the entire rescue infrastructure, involving AMSA, the ATSB and RA-Aus has had to swing into expensive action to ensure the owner was safe.

With accurate registration details AMSA is usually able to detect a distress signal within a matter of minutes. It could mean the difference between timely medical attention and not.

If you accidentally activate your beacon, notify the RCC as soon as possible (1800 815 257). There is no penalty for inadvertent activation.

Visit <http://beacons.amsa.gov.au> for more information regarding emergency beacons.



# PILOT TALK

## The Ops team

# What goes up

A RECENT article from the US has focussed on light sport aircraft accident statistics with some interesting, if not obvious, findings.

The seven year analysis, while only formative in terms of statistical data, gives an insight into the good and not so good elements of our aviation segment.

The report by Aviation Consumer magazine looked at 1,440 aircraft over the period with approximately 960,000 hours; yes close to a million hours of light sport flying. The report cautions that the data does not provide conclusive findings, but it is a significant chunk of real data to review.

The study shows a rate of 1.4 fatalities per 100,000 hours flown - a standard normalisation applied to accident data. This figure compares very closely to the GA rate of 1.2/100,000 and the difference was highlighted as statistically insignificant. No single factor in the fatalities stood out as significant.

Where the parallels start to divide is in non-fatal accidents and one area in particular is pertinent to us. The data shows a clear bias towards the type of accident affectionately known as an R-LOC or Runway Loss Of Control event. Just what we need - another aviation acronym! But in this case one worthy of a classification which identifies accidents in the landing phase of flight.

The US report identifies R-LOCs as the primary cause of 65% of LSA accidents compared to 49% in GA. In review of 233 accidents reported to RA-Aus last year, 111 related to operation of the aircraft and 62% of these accidents could have been considered to be R-LOCs. Typical explanations given were of a "sudden gust of wind" or "unexpected sink" or "wing dropped after bouncing". The implications for continued safety, cost, exposure and embarrassment are clear. The saying that "any landing you can walk away from is a good one" loses its relevance very quickly when the wreckage and resultant cost, inconvenience and dreaded paperwork envelope the pilot involved. The upside to these accidents is that due to the generally lower speeds involved and quality construction techniques now commonplace in sport aviation, very few result in serious injury or death.

So it appears if we are going to break or bend our aircraft, it's almost certain to happen during the landing.

So what we can do?

In your early training, your instructor spent time with you explaining the various primary, secondary and further effects of controls and the effect of airspeed on these controls.

Over time, you practiced and developed a deep-seated understanding of those effects and brought that understanding together when practicing slow flight and stalling, where you and the ground were at a respectable distance from one another. But in the landing all of these, as well as proximity to the ground, all come together in a dance where the aircraft and the ground need to kiss and make up.

Light sport aircraft perform all of this at significantly slower speeds than GA aircraft - under 45kts by the book - so we truly are low and slow and lighter. But our controls take on a constantly changing feel throughout the landing phase and, as we know, not all in the same way. Lacking the inertia of heavier aircraft, our aircraft don't plough through the changing air near the ground. This adds to a unique dilemma for the recreational pilot. Without the weight we have only airspeed to maintain the inertia.

At the same time, the lighter controls of our lighter aircraft call for a much finer hand to manage this transitional phase of flight. The balloon, the bounce or a misaligned approach potentially places the aircraft in increased danger of damage or potential injury for the pilot. The landing is all about an energy trade-off. We normally don't start the process with a lot of either, so the stakes are raised the lighter we are. For powered chutes and trikes, the different control dynamics associated with their own unique considerations, can be added to this cocktail.

Clearly when governed by the weight limit in the recreational category, designers are constantly playing a game of trade-off involving weight, design strength, serviceability and cost. It's the price to be paid for our end of affordable aviation. This is fortunately offset by the increased control authority to move the lower mass, which allows very fine

control. As any of us knows this is a double edged sword in turbulence.

The undercarriage is parasitic to the flight characteristics and performance of all aircraft, but necessary all the same so begrudgingly this has to be factored into the designer's brief. But a quick look at most ultralights will reveal an undercarriage assembly more akin to a Mini than a Mack truck. Clearly the ingredients are all there for increased risk in the landing phase.

So if our aircraft require more attention and mastery in the landing phase, what can we do? There really is no surprise.

### UNDERSTANDING and PRACTICE

Understanding is a shared responsibility between the instructor and student, whether the student is ab-Initio or a seasoned expert converting to RA-Aus - we can never master what we don't understand. Operations has investigated numerous landing accidents where lack of familiarity or understanding of the aircraft's behaviour in the landing was a significant contributor to the eventual accident, coupled with an often unstable, poorly planned or executed approach.

Practice is often something we neglect once we get our wings, but is equally important to a veteran as it is for a newbie. Instructors likewise should never rush to get a student into circuit, where workload and unfamiliarity compete with loosely cemented flying skills for attention.

So next time you're out, why not polish a few landings as part of your Saturday morning sortie, or seek the assistance of your local instructor if you can't just seem to get it down sweetly? If coming to terms with a new type, spend the time with competent advice and controlled practice before challenging yourself at unfamiliar airfields or in adverse conditions.

After all, take-offs are optional but landings are mandatory. 🛩️

*"If we are going to bend our aircraft, it's almost certain to happen during landing"*

**References:** Aviation Consumer Nov 2012 and RA-Aus 2014 accident data.

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# Going remote

BY RICK FRITH



Rick is a Jabiru160 owner who has spent the past few years touring the more remote parts of Australia. In *Sport Pilot* November 2014 Rick discussed the importance of route planning, particularly to avoid tiger country and to ensure position fixes. In December he dealt with communications and coping with unknown airstrips. This is part three.

**R**EMOTE is a relative term. I mean flying in designated remote areas described in ERSA GEN FIS 7. These include extremely rugged areas like south west Tasmania and the Kimberley plateau, and isolated areas like the Tanami or Gibson deserts, where people, airstrips and navigation features are few and far between.

Thorough preparation is the key to success; a three week trip may take months of detailed planning. Here are more tips I learned from about a dozen trips over the past few years, taking my Jabiru J160 from Sydney to Horn Island, Kakadu, the Kimberley, Ayres Rock, the Pilbara, the Canning Stock Route, south west Tasmania and most places in between.

## FLIGHT MANAGEMENT

**PILOTAGE** - This is the navigation technique of continuously tracing your progress on the map from a known position. IFR and commercial pilots call it track crawling, with distain. It is a perfectly valid VFR navigation technique. If you knew where you were five minutes ago, you are not lost. It is amazing how many tiny features are shown on the WAC charts in remote and desolate areas which can be read by pilotage, referring from map to ground, and cross checking against time (e.g 15 mile marks = 10 minutes) or your moving map GPS package.

The only problem with track crawling (or following the GPS pink line) is

that you may not get an accurate estimate of wind direction, because you don't record cross track error. This can present unknowns when diverting. One solution is to regularly log your ground speed and heading. Along with true airspeed and track, these provide the data to estimate wind speed and direction if required for diverting. (Remember how to estimate winds aloft with an E6B wheel? If not, revise before you leave or download one of the many apps). If your EFIS calculates a wind vector for you, ensure you keep a log of it for diversion planning.

Expect unplanned diversions due to thunderstorms, dust storms or smoke haze across your track. I have only ever done one tour where no diversions were required. Never be reluctant to divert and always divert early, when you have the most fuel and options because there are very few options in remote areas.

In flight, I use a paper map marked up (and cross checked before departure against a GPS) for miles to run and cross track error. I also carry two moving map displays, running on different operating systems, one showing the WAC and one showing the 250k topo and I record winds aloft every 20 minutes on a long leg. Overkill perhaps, but better than being caught out.

Just as you practice forced landings, try flying some remote legs without your GPS equipment... it sharpens the skills.

Simpson Desert



Turning Final at Cape Leveque



**FUEL MANAGEMENT, PNR AND LPSD** - For long, remote area legs there may be very few diversion options. I define long as when you have less than 30 minutes fuel margin in excess of fixed plus variable reserves.

Don't wait for the next waypoint before doing a CLEAROF check. It may be two hours away. Assess forecast and actual fuel consumption against time and distance every 10 or 15 minutes and at the 30 minute visual fixes. I installed a fuel flow meter which takes route data from the GPS and forecasts fuel consumption and reserves throughout the flight. The paper version of this equipment is the Howgozit chart. Prepare one or a fuel/time log sheet for long remote legs before the flight and mark it up as you go.

Calculate your Point of No Return and update it in flight once the winds aloft are confirmed. Some navigation software will pre-compute this for you, but it must be updated en-route. If there are some viable diversion options which are significantly off track, also consider calculating the Latest Point for Safe Diversion, which is part of trans-oceanic flight planning.

**UNCHARTED AIRSTRIPS** - You will see many airstrips not marked on the WAC. Draw them in by hand or add them as a user waypoint if using a tablet. When you start to lose oil pressure you will feel better having recorded all your options.

**THERMAL TURBULENCE** - Take off early when the air is still. As the heat and turbulence develops, climb higher to stay above the worst. It is often necessary to climb to 9,500ft, before descending later in the day as the air calms. However, for navigation purposes 4,000 to 6,000ft agl is optimal, because roads are difficult to spot and differentiate from fence lines when you are higher. Too low and it is hard to spot distant salt lakes/ range of hills etc.

**SUNSET ARRIVALS** - Operating out of dirt strips, with long legs and multiple insect impacts, mean

your windscreen may be very dirty at the end of the day. Beware if your destination runway is 09/27 or thereabouts and your planned arrival is within an hour of sunset. It may be impossible to clearly see the runway on final approach as you fly into the sun, especially because it will probably be an unfamiliar airstrip. Your options are to circle until the sun is below the horizon, but before last light (assuming you have the fuel) or land on a cross runway, or even downwind if the wind and runway lengths are suitable.

Always clean your windscreen before the last leg of the day.

**CROSSWIND LANDINGS** - Ensure you are current doing crosswind landings. It is almost certain you will encounter some remote strip where, despite the best forecasts for all the other places in the ARFOR area, the wind is close to your aircraft's demonstrated maximum. Practice, practice, practice before you go. Unfamiliar strips can be challenging enough without adding the stress of being rusty in crosswind technique.

**AMSA WEBSITE TRIP DETAILS** - You will be carrying an emergency satellite beacon registered with AMSA. Before you leave, log onto your account on the AMSA website and enter a brief itinerary and approximate timing in the comments box provided, or upload a trip file. If you trigger the beacon, this is the first information consulted and all corroborating detail will hasten the dispatch of assistance. Incidentally, if you need to talk to rescue aircraft overhead, use area frequency, as your beacon will be transmitting a homing signal on 121.5 MHz.

**TAKING PHOTOS** - Can't open the window for photos? Minimise internal reflections from the windows by wearing dark clothing. Put away maps temporarily. Drape a dark cloth (a sheet of soft felt from a sewing shop works well) over internal shiny items to reduce reflections. Hide the white iPad charger lead or paint it black.

Enhance the contrast of the photo in an editing software package and adjust the colour balance to remove the blue tint of the perspex.

**CRITICAL LOCALITIES** - If flying into Sydney or Melbourne in marginal weather, note the critical localities Mt Boyce, Murrurundi, Moss Vale and Kilmore Gap. These locations have AWIS cloud height (agl), visibility and wind observations available by voice. Unlike METARS which can be 30 minutes old, the voice service is real time. The phone numbers are available here: <http://reg.bom.gov.au/aviation/location-info/>

**WHERE TO GO** - You may have a single destination in mind, but the journey can be just as interesting with careful planning. Research worthwhile places enroute. Unless you know Australia really well (and who does?), check out the flying magazines, state and town tourist bureaus, scenic flight and tour operators and the motoring organisations. File away interesting destinations as you find them. If you meet a scenic flight operator





**Horizontal Waterfalls**  
- The Kimberley



**Lake Disappointment**



**Salt Manufacture near Steep Point- most westerly point of the mainland**



**Atomic Bomb Test - From the Air (After the plutonium cleanup operation)**



during your trip, ask them what is worth visiting. Some great local knowledge is often available.

Apart from well known places like Uluru, the Bungle Bungles, the Flinders Ranges or Kakadu, you could ferret out spectacular sites such as the horizontal waterfalls, Wolf Creek Crater, Lake Frome, the Dig Tree, Undarra lava tubes or Tasman Island.

Time available for the trip and hours flying each day will limit your destinations. I find three or four legs totaling about five hours a day is a good rule of thumb for travel days. Comfort stops every two hours should be considered and it may be necessary to track down a private airstrip for such a stop. For really long legs (my longest is 5.5 hours), carry Travel Johns and practice using it before you need it urgently!

**WHEN TO TRAVEL** - Go south in summer to avoid the worst of the winter storms and frigid water around Tasmania. Visit the red centre and northern areas in winter to avoid the wet season and the summer heat. Note, however, there is exten-

sive burning off in the northern parts of Australia starting late April until about September. This can severely reduce visibility and often produces IMC, so be prepared to alter plans on the day.

The Bureau of Meteorology has a series of brochures on the weather affecting different parts of Australia : <http://www.bom.gov.au/aviation/knowledge-centre/products-hazards/>.

**PRE-BOOKING ACCOMMODATION** - Some people like the certainty of pre-booked accommodation. If you prefer to avoid any chance of get-there-itis, never pre-book anything. Carry basic light weight camping gear as insurance against a full house. If in mobile coverage, or carrying a sat phone, you can call ahead early afternoon, when you know you will make the day's destination, to book before the evening rush.

Beware that some of the mining boom towns have almost no accommodation or have exorbitant rates (like \$280 for a single bed dongal!).

If you must book ahead, schedule one free day every few days to provide some float. You don't want to lose your deposits, just because you are running a day behind schedule.

**AIRCRAFT SERVICING AND TACHO TIME** - Don't spend one or two days of your holiday having the annual service done on the aircraft. Ensure there are plenty of hours remaining on the clock before you leave, even if it means doing an annual before it's due.

Tacho time may be significantly more than predicted by some flight planning software which simply adds up all the ETEs between waypoints. You must make appropriate allowances for taxiing, climb, sightseeing and photo taking. A two week tour will probably involve over 40 landings, so 15 minutes extra for taxi and climb each time adds up over the trip. Make a generous allowance for orbits over spectacular sights. Calibrate estimated tacho time against actual for a few flights before you leave.

This will also determine how much oil to carry, as most people probably track oil usage against

tacho time, not flight time. Carry all the oil you will need with you. Very few airfields carry oil and those which do have a limited range of types.

## FINAL THOUGHT

### Have a back up for everything

**NAVIGATION** - Mark up and carry paper maps. You will drop your tablet and smash the screen. Carry a spare GPS unit, preloaded with all your routes and waypoints. If using an electronic mapping package, double check the data is all pre-loaded. Be especially careful if an update to maps, ERSA or airspace is due when you are in remote areas, with patchy mobile coverage. Your expired maps may be locked out and it can take a lot of time and data allowance to get new maps, even if you have a phone signal (which I didn't when delayed on the Canning Stock Route and used the paper ERSA to fly into Jigalong and Newman before the tablet updated).

**COMMUNICATION** - The 38 degree heat soak on the ground at Cape Leveque will cause instabilities in your radio. There are no radio techs at remote strips. Carry a handheld backup, which is also useful when the alternator fails and you need to kill the master switch and preserve battery power for the flaps and transponder on arrival. Ensure the hand held couples with your headset.

**RESCUE** - I consider a spare 406 beacon to be cheap insurance and carry an EPIRB in my life raft. Not only do beacons occasionally fail, a second activated beacon will confirm to AMSA that the first is not a false alarm. Spend the extra \$100 for a GPS beacon to give your position within a few metres, rather than a few miles. Check the battery expiry date and do a beacon self-test before you leave. If not carrying a second beacon, hire a satellite phone or buy a SPOT tracker as your Hail Mary backup.

**REMEMBER** - Thorough preparation is the key to success. 🚀



# READER STORY



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Test Flight  
(Germany)



## Nick gets Xcited

BY ROBIN LOWE

**X**CITMENT had already spread from Germany to Victoria. Now it has also crossed the nation from Victoria to Perth.

Nick Buri from Perth had been on the internet for some time checking out the Fresh Breeze, XCitor Paratrike (XC). When he discovered there was a type certified XC already in the country, he could hardly wait to check it out. Nick had planned to travel to Victoria to take a test flight before making a final decision on whether or not to make the XC his next aircraft. But after much research he could wait no longer and went ahead and placed an order. Nick ordered an XC sight unseen (Something I would never do. Actually; yes I did). Sure, 1,000 hours of Youtube does count for something but you can't beat sitting your bum in one.

I had been very satisfied when I bought my XC and relieved when it finally achieved registration as a Type Certified aircraft in Australia. Nick didn't have to worry about the second part. The XC was already on the Australian register.

Nick wanted an XC with the lot and a colour scheme of his choosing. He also wanted it yesterday. I completely understood. I'd been there.

You can never quite predict with 100% surety what another person might think, but I was certain the odds were stacked in favor of Nick, (who is an enthusiastic powered parachute pilot), being happy with his purchase.

It was several weeks after he had placed his order when Nick contacted me about the prospect of coming to Victoria to see the XC with his own eyes.

I had not yet taken up a passenger in my XC and I made it clear to Nick I was a cautious pilot. While I would be happy to show him the aircraft, I would only take him up for a flight if I was completely comfortable with the weather conditions. Nick understood and made the journey regardless.

On the appointed day, Nick arrived at Melbourne Airport in the early afternoon, jumped into a hire car and drove to his accommodation at San Remo near Phillip Island, which is only a 10 minute drive from my home. The weather the next day was looking good for an early morning flight, so I was keen to get Nick to my place that evening. It would give

me a chance to check to ensure the attitude of the XC with a tank of fuel and Nick in the back seat would comply with factory requirements. This would be easily accomplished via a hang test using a cheap engine crane I had picked up from a local auto parts shop. My XC had been test flown in Germany with a passenger on board prior to shipment, but because Nick would be my first passenger and the first passenger to fly the skies of Australia in an XC, I wanted to ensure everything was just right.

Nick got lost getting to my place, but when he eventually arrived he was anxious to check out the XC.

I pointed him in the direction of the shed where the XC was housed and he quickly headed there to see it for himself. I was happy to hear his first comment as he sighted the XC. "It looks even better than I expected."

Before I knew it, he was all over the XC and the smile on his face seemed to grow bigger.

OK, so he liked the look of it but would he be as impressed as I was after having flown in it?

I hoped so, because he had high expectations and, anyway his XC was already under construction.

The next morning the weather was good so we took to the skies, flying above the sand dunes where Bass Strait meets the Victorian shoreline.

I was impressed with the way my XC climbed out and flew with a passenger on board and thankfully, Nick was equally impressed. Nick returned to WA satisfied he had committed to buying the world's best paratrike.

Nick has now taken delivery of his XC and I understand he will soon qualify as an instructor with Powered Parachute Perth. So if you're in the Perth area with some time on your hands, I'm sure he would be only too happy to and take you up for a trial instruction flight.

In Australia, the Fresh Breeze XCitor paratrike falls under the category of Powered Parachute and requires a Powered Parachute Pilot Certificate in order to fly one. Powered Parachute Pilot Certificates are administered by RA-Aus.

For more information, [www.loweflight.com](http://www.loweflight.com).



Nick in his new XCitor Paratrike



Back on the ground after flight test

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# New CASA boss

BY BRIAN BIGG EDITOR

**I**'VE just spoken to the new boss of CASA and can report there is still hope for our section of aviation.

Mark Skidmore was appointed the new Director of Aviation Safety at CASA in November, to replace John McCormick.

Mark has more than 30 years' experience in both civilian and military aviation. He's worked as a test pilot, a business development manager and company director.

His main career, however was in the RAAF where he rose to the rank of Air Vice Marshal before he retired in 2012.

He's the third boss of CASA I've had dealings with and he's different from the previous two. Over the phone he was cheery and approachable and was happy to talk about anything I wanted. You expect the boss of the dark and threatening regulator to be somehow like Lord Sauron, with a booming, deep, threatening voice full of terror. But Mark seems to be a regular bloke and it will be interesting to see how the heavy mantle of CASA sits on his shoulders over the next few years. The job has a tendency to wear down the most ardent optimist.

I started by telling Mark that his predecessor, John McCormick told me when he took over CASA that "Aviation is an expensive business, Brian. If you can't afford it, don't do it", which was a bit scary at the time. Certainly CASA under McCormick reflected that view. The big end of town got all the attention and we seemed to get all the kicks.

Did the new boss agree with the old boss' view?

"I would like to see as many people involved in aviation as possible," Mark told me.

"There have to be ways to encourage more people to get into aviation. My view is that CASA should be involved in establishing the framework, to give the industry the boundaries, then letting everyone get on with it within those boundaries."

What about cost of that framework and those boundaries?

"What I plan to tell my people, is that whenever we think about doing something, we need to think of the cost to community. What impact will our decision have on costs, so people can aviate but do it safely and affordably."

According to CASA's news release announcing his appointment, Mark is committed to working with the industry and the aviation community to achieve the best possible safety outcomes.

"Everything we do is risky," he says. "Walking across the road is risky. You can't remove all risk. But that doesn't mean you can't be safe or take safety into consideration. We will encourage everyone to make sure there are systems in place to ensure safety is a priority.

"But I want to get away from enforcement being the first approach. Rather we should be asking 'why has the mistake occurred?' Is it because of training and education? I would rather we were supportive of people."

"Of course, if there is negligence, we need to take steps, but I want to get a just culture going, focussing on training and education.

"The four C's are the major items on my 'to do' list at CASA - costs, communication, consistency and complexity.

"I believe in the KISS principal. We need to make sure we have a good and consistent approach across CASA, not inflexible and understanding of the impact of our regulation on the industry."

Even though he had just sat down at the desk in November, Mark insists CASA acted appropriately regarding the questions around Jabiru.

"We consulted, came up with limitations, consulted again, then amended our proposal and came out with something which addressed the problems but still allowed people to fly and train in Jabiru aircraft with some restrictions, until the issues are resolved.

"It is a good template for how we should be communicating and regulating."

And what about ramp checks, which recreational aviators bitch and moan about endlessly and many believe are leading to the death of fly-ins in this country. Pilots, I tell him, hate the assumption that they are law



Mark Skidmore, CASA's new Director of Aviation Safety



breakers and are forced to prove themselves otherwise.

"Car drivers get pulled over to be checked if they have been drink driving. No one likes getting pulled over, but everyone feels good when they get the all clear and can drive on.

"A ramp check is an opportunity to show us you are a responsible pilot, doing the right thing. If there is something you are doing wrong, you get to find out why and how to improve your skills. Ramp checks are primarily educational.

"If pilots don't like them, it may have something to do with consistency and communications and we'll certainly work on that from our end."

By the time this edition comes out, Mark is expected to have already held his first official meeting with the executive of RA-Aus. We should get more of an indication of how he plans to address the many other areas criss-crossing CASA and recreational fliers.

But he is already making nice noises about us, which should give us some hope.

Mark credits his own love of aviation to the day man landed on the moon.

"I was 10 and decided then and there I wanted to be part of that."

These days he flies a 1946 Globe Swift (it's in the shop at the moment), so there's a chance you will see him at a fly-in or two across the country over the next few years. If you do run into him, offer him a ride in your ultralight. Mark has had very little to do with our end of the aviation spectrum but he told me he would be keen to go for a ride in one. It might be nice to win him over to the good side. 🍷



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# A Lifetime of Flight

## GRAHAM HEWITT

BY MIKE HOUSE



*Graham's RV6 / Mike's Spacewalker II RR project / Graham on the way to Aerofest 2014 / The Pietyenpol being prepped for Bussleton Aerofest*

**T**HERE are few people who can lay claim to a lifelong passion - a passion which defines much of their existence, creating their income, their hobbies and introducing them to many people.

When you find such a person, it is one of life's great pleasures, for such a person has youthful energy and enthusiasm, coupled with timeless depth of wisdom and knowledge that only come from a lifetime in pursuit of one's dreams.

It is said that it requires 10,000 hours to be considered an expert in a field. A master has many, many more.

Graham Hewitt was such a master. He had over 20,000 hours of flying to his name, in over 100 types, spanning almost the full history of powered flight. He had flown Tiger Moths as a young man, clipping the trees with the wing tips in the name of youthful 'precision'. He had flown DC3 mail planes into the remote Western Australian desert. And he had spent time pushing tin as an airline captain.

At his 80th birthday he flew a low-level aerobatics routine in the RV6 he had built. The same aircraft he had flown single handedly from Perth to New Zealand when he was well into his 70's.

He held his low level aero endorsement a while longer. In his birthday speech, Graham claimed aerobatics were the reason for his long and healthy life. He said, "People have told me my body is made up of millions of cells. Subjecting those cells to 20 minutes of aerobatics at least once a week ensures the little bastards fly in formation".

Around his 82nd birthday, he launched and test flew a Pietyenpol Air-camper, which he had built from scratch. It was one of the more regularly flown aircraft at Serpentine Airfield where Graham was a regular member and character.

His experience as a test pilot of home built aircraft made him an invaluable resource to home builders. His steady hand and keen observations led to significant improvements in designs and saw the ironing out of issues which might have killed lesser pilots.

I spent many hours in his shed assisting with bringing the Pietyenpol to life and deciding if I wanted to move from dreaming about aircraft building, to actually doing it. He told many stories of his memorable flights. Each contained important lessons and observations about building and flying safely.

There was the time that a Jodel D18, fresh off the builder's table showed no pre-stall signs before it stalled and snap rolled to an inverted spin. No problem for Graham. He returned to straight and level and repeated the performance to see if he could work out why it was happening. The end result was two short triangles of spruce added to the leading edge. The aircraft now has a positive buffet and benign nose drop at the point of stall.

Another incident saw him in a vertical dive with the aircraft not responding to elevator inputs. Losing height fast and rapidly nearing VNE,

Graham tried every trick he could think of to pull the aircraft out of its earthward plunge. As he worked through the range of possibilities, he reversed his last action before the descent, which was to select full flap. As soon as the flaps were retracted the plane returned to straight and level. A test showed the flaps had been set up with too much angle. Fully deployed, they blanked the airflow over the tail surfaces, resulting in the alarming plummet.

He had some practical wisdom on C of G and loading too. On a routine mail run in the DC3, he was called upon to deliver a 200 litre drum of oil. Graham was concerned that it might come flying forward in turbulence or on landing and kill him in the cockpit. With rope and a bit of ingenuity he spent a good bit of time roping the drum into place to ensure there was no way it could move forward. Trouble was, he had done nothing about it moving backwards.

As he rotated for takeoff, the drum slid all the way to the back of the aircraft. The aircraft pitched violently upward, threatening to stall on takeoff. With considerable effort, full forward stick and full power the aircraft resumed climbing. After experimenting with trim, power and control settings, he worked out he could get the aircraft to maintain a three point attitude. He began to think a landing might be possible. The problem was the three point attitude was accompanied by almost full throttle and close to cruise speed. After trying a few things at altitude he eventually wrestled it onto a strip at speed and managed to pull up before the trees - no damage to him, the plane or the oil and some big lessons learned.

Flying with him was always a pleasure. His enthusiasm for flight, for sharing his passion and his impeccable landings in all conditions were all lessons in airmanship and camaraderie.

The day before his stroke he flew in full command of his Pietyenpol. No doubt the landing was spot on. He spent the last few months in full care in the aftermath of the stroke. No way for a bloke used to the freedom of the skies to live.

I visited him the week before he died. He didn't talk much but smiled at the recollection of a few of his stories. I showed him my phone with a photo of my own aircraft under construction. He took it from me and held it close to his face. I like to imagine he was breathing life into the project. The literal meaning of "inspire" is to breathe life into something, and there's no doubt that Graham is the inspiration for many builders out there.

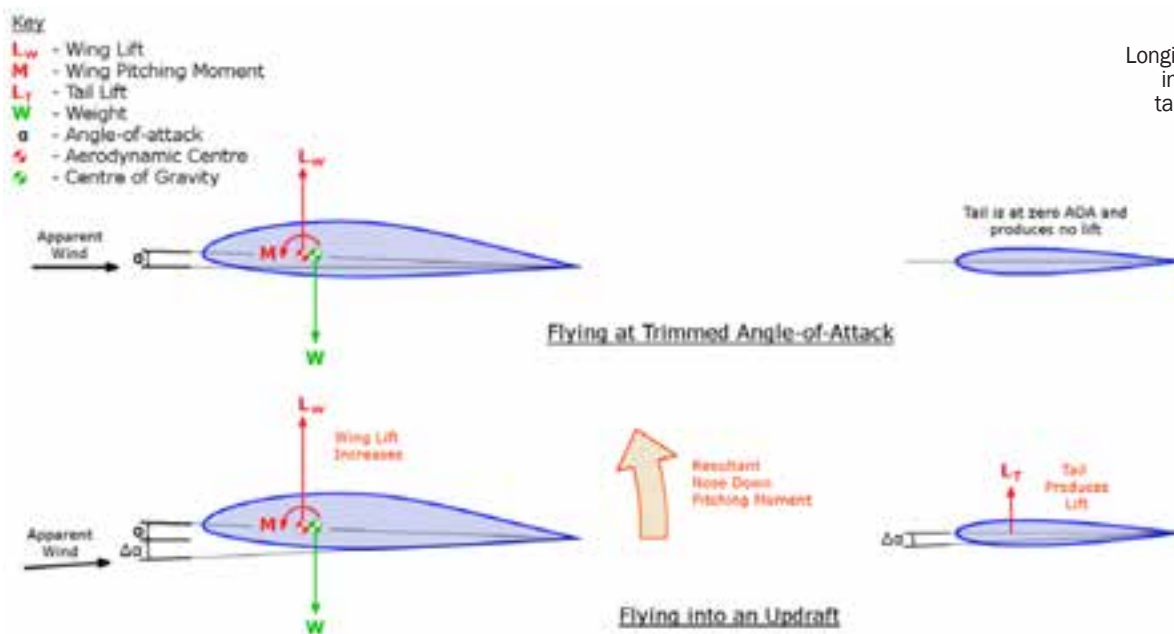
When I left, his typically firm handshake was firmer and longer than usual. Maybe he knew we wouldn't be talking again.

Graham often used to say, "Think hard about every takeoff, no one ever stayed up there!"

Chocks away old mate, maybe today those rules have changed for you - endless unlimited aerobatics, with no need for refueling or landing. I'll certainly miss you. 🍷

# DESIGNNOT

DAVE DANIEL



**FIGURE 1**  
Longitudinal Stability  
in a conventional  
tail-aft aeroplane.

## Perfect pitch?

**L**AST edition we looked at the basics of stability and also what kinds of stability behaviours are considered desirable. Sticking with the stability theme, this edition we're going to look at the methods used to achieve longitudinal stability and why weight and balance are so important.

Probably the easiest way to visualise longitudinal stability is to imagine the aircraft as a seesaw with its pivot at the aeroplane's centre-of-gravity. Acting on this seesaw are all the aerodynamic and inertial forces to which the plane is exposed. When an aircraft flies at its trimmed angle-of-attack the combined forces acting on the aircraft will be in equilibrium, meaning they cancel each other out, keeping the seesaw in balance. This equilibrium is a good start, but to achieve stability there is an additional requirement: If the aeroplane is deflected from its trimmed AoA, a force must be generated which acts to return the plane to its trimmed condition. There are multiple ways of achieving this, but for conventional aeroplanes the usual solution is to install a horizontal tail which flies at a lower AoA than the main wing - a feature called either 'décalage' or 'longitudinal dihedral' depending on which part of the world you hail from.

Let's see how this works, starting with the top half of Figure 1, which shows an aircraft

with décalage flying in a trimmed condition. The main wing is cambered and so generates both a nose down pitching moment and a lift force, shown acting at the wing's aerodynamic centre (a.c.). These aerodynamic forces are balanced by the weight of the aircraft which acts through the Centre of Gravity (C of G) and which, in this particular case, just happens to be exactly the right distance behind the a.c. of the wing to balance the aircraft (how convenient). The horizontal tail has a symmetrical aerofoil (i.e. one with no camber) and is flying at zero AoA, so it produces no lift.

The situation described above is very much an ideal one, because the tail is not producing lift and thus generates no trim drag. However if the C of G was located elsewhere, the aircraft could still be trimmed but the tail would have to be generating some lift. In order to keep things simple I've disregarded the fact that the tail actually flies in the downwash from the main wing - lowering the tail's AoA and diminishing its effectiveness. In the real world, this effect reduces the stabilising effect of the tail; however it doesn't change the basic stability principle so I've ignored it here.

We now have an aircraft which is flying in balance. But this does not mean it possesses positive stability. So next we'll examine the

lower part of Figure 1 and see what happens when we fly through an updraft.

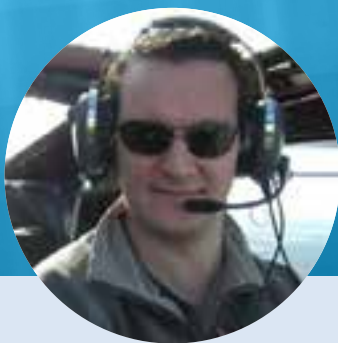
All aircraft have mass and therefore inertia, which means they don't instantly change their direction or speed of movement in response to a gust (one of the reasons heavy aircraft ride through turbulence better). So from a plane's point-of-view a sudden updraft is initially only seen as a change in the apparent wind direction, giving an increase in the AoA at both the wing and the tail (shown as  $\Delta\alpha$ ). This AoA increase has two immediate effects:

**1)** The main wing produces an increased lift force as its CL has increased due to the increase in AoA, but its speed had not changed (yet).

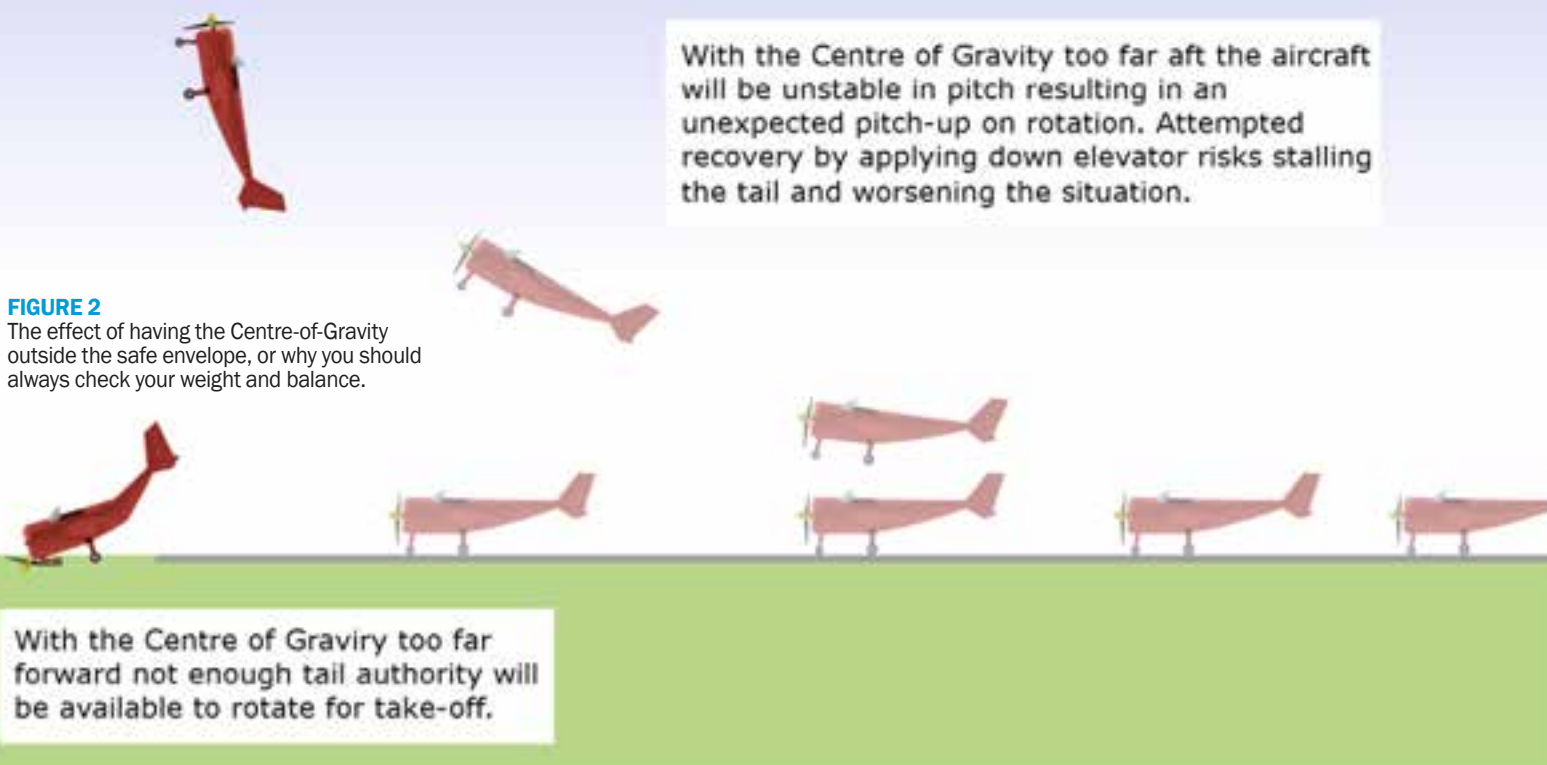
**2)** The horizontal tail now has some AoA and so starts producing lift. If we now revisit the balance situation: As the wing has a larger area and usually a higher aspect ratio than the tail, its lift force will have increased by more than the tail's, but the distance from the wing's aerodynamic centre to the C of G is short so the increase in nose-up pitching moment produced is only slight. In comparison, the tail's lift force is small compared to the increase in wing lift, but the tail has a much longer lever-arm to the C of G and so generates a larger nose-down pitching moment.

"But what about the wing's pitching mo-





From a plane's point-of-view a sudden updraft is initially only seen as a change in the apparent wind direction



**FIGURE 2**  
The effect of having the Centre-of-Gravity outside the safe envelope, or why you should always check your weight and balance.

With the Centre of Gravity too far aft the aircraft will be unstable in pitch resulting in an unexpected pitch-up on rotation. Attempted recovery by applying down elevator risks stalling the tail and worsening the situation.

With the Centre of Gravity too far forward not enough tail authority will be available to rotate for take-off.

ment?" I hear you cry. "Surely that has changed too?"

Because the aircraft speed has not yet changed, the pitching moment of the main wing about its a.c. will also not have changed. This seems counterintuitive to a lot of people, but is a direct result of measuring the wing's pitching moment at the aerodynamic centre where it is by definition, independent of the AoA - this is precisely why the a.c. is such a useful concept.

The end result of all this is that we now have an unbalanced nose-down pitching moment acting to align the aircraft with the apparent wind... in other words positive longitudinal stability. As a quick, 'what happens next', the plane as a whole will accelerate upwards (both the wing and the tail are generating more lift, but the weight hasn't changed), and the nose will pitch down due to the unbalanced pitching moment. Both of these actions will act to move the apparent wind back to the trimmed AoA at which point the plane will be back in equilibrium.

It is important to note that the above description is greatly simplified; in a real aircraft downwash, engine thrust, propeller effects and the aerodynamics of fuselages, control surfaces and flaps all exert their influence and need to be accounted for in the overall stabil-

ity picture. This makes for a complex situation and even with extensive wind tunnel testing and computer modelling, test flying a new design will often still discover unexpected stability behaviour, especially at the extremes of the flight envelope.

### A WEIGHTY ISSUE

We've all had the importance of Weight & Balance drummed into us, but let's take a look at what happens when we ignore all the good advice and progressively fill the baggage compartment with bowling balls and anvils, shifting the C of G aft. What we're effectively doing is moving the pivot point on the seesaw. As the C of G moves aft, the lever arm of the tail reduces, decreasing the tail's effectiveness while simultaneously increasing the lever arm of the main wing's destabilising lift force. As a result longitudinal stability will progressively decrease until it reaches what's called the Neutral Point; the point at which longitudinal stability has decreased to zero. Now, without intervention, even a tiny momentary pull back on the stick will result in the aircraft pitching up until it stalls. Moving the C of G behind the Neutral Point will be even worse. Not only will the plane now be actively unstable, but the horizontal tail will also be working really hard, producing a lot of lift just to maintain a level

attitude. Pushing the stick forward in this situation will further increase the tail's AoA, potentially stalling the tail and causing an unrecoverable pitch up. This is not a situation you want to discover at the moment of lift-off.

The other extreme doesn't initially look so bad, moving the C of G forward increases the stability, so at least the plane won't develop a mind of its own. Once again however the difficulty - for nose wheel aircraft at least - is that you probably won't realise you have a problem until you rotate for take-off. Or, more accurately, don't rotate for take-off. The forward C of G location will require a large down-force at the tail to get the nose up, but at lower take-off speeds that may well be more force than the tail can provide. If you instantly make the right decision, and there is enough runway remaining to stop, you may get away with it. Alternatively, you may hope a little more speed will fix the problem and find yourself still on the ground travelling at 70kts and about to discover the joys of off-roading at 130km/h in a half tonne top heavy three wheeled go-cart!

Hopefully I've now scared you in to checking your weight and balance.

**NEXT EDITION: Roll and yaw. Why coordinated turns are easier in some planes than others.**

# FLIGHT INSTRUCTOR'S FORUM



Facilitated by the aviation guru Professor Avius

## Not every circuit 'join' is created equal

JOINING the circuit is statistically one of the most dangerous things we can do in a recreational aircraft.

The ATSB, in its recently released Aviation Occurrence Statistics report, highlighted aircraft separation as the biggest threat (as opposed to error) to recreational flying operations at non-controlled aerodromes.

The report details a period of 10 years worth of stats which show an alarming number of separation accidents or serious incidents. After terrain collisions and aircraft control accidents, separation problems came in at number three and accounted for 28 serious accidents or incidents in the period.

The problem area seems to be the 'join'.

At busy airfields pilots seem to be conflicting with other traffic as they try and squeeze back into the circuit. So what are we teaching? What is the preferred method to get back into a circuit at a busy aerodrome?

As always, there is more than one way to skin a cat, but a good place to start looking for the answers is the regulations.

CAAP 166 covers operations in the vicinity of non-controlled aerodromes and has some useful tools which can help us come up with safe ways to join the circuit.

While it is legal to join any leg of the circuit, part 166 recommends the use of the overfly and midfield crosswind join. This method sees the pilot fly the aircraft at a safe height (at least 500ft above circuit) over the airfield and letting down to circuit height on the dead side of the active runway.

However lots of instructors teach the mid-downwind join, which, while perfectly legal, can be fraught with danger.

Think about this. How big is your circuit compared to the school up the road which likes to practice navigation (it seems) while doing circuits so far out you can barely see them?

When you attempt to join at the recommended 45 degree angle, you could be (and often are) flying directly through someone else's circuit. You are flying at an angle to the traffic's flight path so visibility is compro-

mised. The other aircraft could very well be climbing on a crosswind leg with the nose high which reduces their visibility, further adding to the threat.

While tracking Inbound to join the circuit from the live side, you are limiting your chances of seeing other circuit traffic because it will generally be below the horizon.

Joining the base leg has its own set of challenges, not least of which is that because it is a short leg, close to final, your chances of spotting other traffic are also markedly reduced.

---

**▼ Lots of instructors teach the mid-downwind join, which, while perfectly legal, can be fraught with danger**

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Further, you can't possibly have seen the windsock and checked the runway from that position, so it could be considered poor airmanship to approach and land without getting all the information. Remember, we are teaching pilots how to think and behave. We should be teaching and flying in a manner which encourages the safest option available, always.

If a pilot is trained from the start, to arrive over the top, assess the runway, the wind, the movement areas, the traffic and the conditions, then that pilot has a solid foundation on which to build skills and experience safely and can adapt his techniques later on as he gains confidence and experience. He/ she will approach the most critical phase of the flight with the greatest safety buffer, while also arming him/herself with all the information possible. The key here is vertical separa-

tion. Keeping the aircraft at a different level to circuit traffic until its safe to descend. When teaching arrivals at a CTAF aerodrome we should encourage:

- Good listening watch- paint a mental picture of what's happening around the aerodrome;
- Encourage the student to make decisions based on their situational awareness, don't do it for them. It's a skill which needs to be practiced;
- Good lookout, never assume radio silence means no traffic;
- Get checks done before joining (free up brain space);
- Never be in a rush to descend to circuit height and join;
- Overfly to assess all the conditions and traffic;
- Make a plan- fly the plan, but be adaptable and plan your escape should you need to bug out;
- Make all turns (even while descending on the dead side) in the same direction as the circuit;
- Visually spot all traffic before crossing the runway and joining mid field crosswind.

Many small and regional airfields now days have a mix of traffic types, RPT, skydiving, GA, training, trikes etc. So a one arrival fits all (as far as possible) type of thinking needs to be applied to the arrival procedure.

Recreational by definition means an activity done for enjoyment when one is not working.

We fly for fun and enjoyment. We have no need to rush the most critical phases of flight - take your time, get over the top and teach pilots to join safely.

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**References:** ATSB Transport Safety Report; Aviation Occurrence Statistics; Research ATSB Transport Safety Report; Aviation Research Statistics; AR-2014-084; Final - 5 November 2014; CAAP 166-1 (3)





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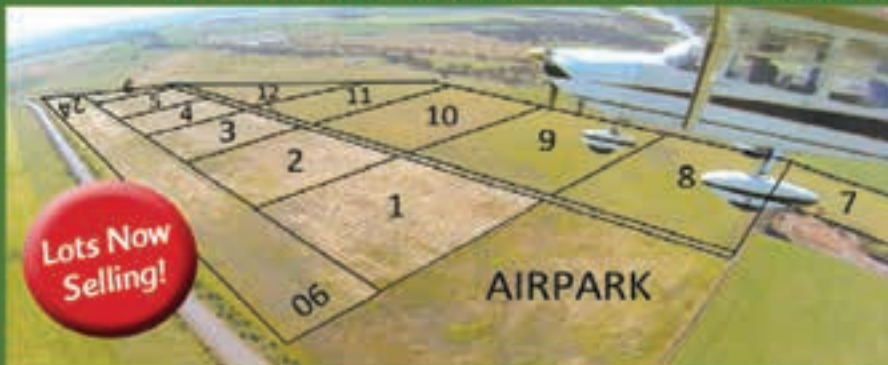
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# L EARNING TO FLY

SHANNON LEGUISE

## Straight and level

ONCE I knew how all the controls worked, it was time to put them to use. Into the briefing room we went for my third lesson.

We moved onto straight and level flight. My instructor, Liz, explained to me about the lift formula, rolling the plane around the skid ball, as well as slow and fast flight.

The first part of the lesson focussed on the 'straight' bit. Here we talked a lot about the rudder and aileron coordination. I was told if I kept the skid ball in the middle, the plane would be flying nice and straight.

Building on the previous lesson we reviewed the primary and secondary effects of both control surfaces. There is a nice symmetry to it all. The primary effect of aileron is roll and the secondary effect is yaw. The primary effect of rudder is yaw and its secondary effect is roll. To remain straight, the two must be coordinated.

We then went to the second part of the lesson, which was about 'level'.

This is where I was introduced to the lift formula. Not being very mathematically minded it took me some time before it clicked in my brain. But when it did click, it all made perfect sense. In simple terms what the formula was explaining was that for straight and level flight, lift must be equal to weight.

If lift becomes more than weight, the plane will climb. And if lift is less than weight, the aircraft will descend.

Working through the formula, Liz explained to me the different symbols and what they all meant. The formula she wrote states that weight equals the coefficients of lift, which are angle of attack and camber of the wing, times half the air density times velocity squared times wing surface. If one of these variables change so must another if the aircraft is to remain level.

I also got a briefing on angle-of-attack. I learned that the angle of attack is the angle made between the relative airflow, always

$$L = (1/2) d v^2 s CL$$

**L = Lift**, which must equal the airplane's weight in pounds

**d = Density of the air.** This will change due to altitude. These values can be found in a I.C.A.O. Standard Atmosphere Table.

**v = Velocity** of an aircraft expressed in feet per second

**s = The wing area** of an aircraft in square feet

**CL = Coefficient of lift**, which is determined by the type of airfoil and angle of attack.

opposite to the direction of travel, and the chord line. Liz explained the chord line of the wing by drawing an aerofoil to begin with. She then drew a line between the leading edge of the wing and the trailing edge. That line was the chord line.

For the purpose of this lesson, the only variables which were changed were the speed and the lift coefficient. Therefore if the speed was to change, by slowing down, so would the coefficient of lift need to be changed to equal weight and the angle of attack must change. This is where Liz introduced another equation. Power + attitude = performance. Therefore at low airspeed and power there must be a higher angle of attack if the aircraft is to remain level and vice versa.

It was then time to jump in the plane and have a go. Every time I get into one, I am still always surprised at how amazing these machines are.

We first worked on maintaining a straight line. Using rudder and aileron together, we pointed the plane in one direction and I got to play with keeping the plane tracking straight. Playing with the slipstream effect, we also tried it at different power settings. It took some time getting my feet to connect with my hands and be coordinated, but it all worked out in

the end.

We then moved onto the level part. Liz demonstrated the power - attitude - trim sequence and showed me how to hold off the secondary effects of the throttle. As the power was reduced, slight back pressure was applied as the nose started to drop, to keep us flying at the same altitude. Likewise when the power was increased and the nose started to rise, slight forward pressure was applied to prevent the plane from climbing.

When it was my turn, I started out maintaining level at one power setting. A helpful hint was to find where the horizon cut through the windscreen and keep it there. Then we played with the power. Keeping the sequence in mind, we reduced the power. At first I raised the nose too soon and we climbed. Too much, too quick, too soon. But that's ok it was my first go. I was a bit more aware when we increased the power. As I felt the nose start to rise I held it off. Success!

After a few more goes, it was sadly time to head home. In the circuit Liz kept explaining what she was doing and how this lesson and the previous lessons all came into play. Paying close attention I watched everything she did, when she did it and how it was done.

I'm still going strong with three hours in my logbook. I am keen for my next lesson. But not so keen to wait.

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## Corvair conversion

**I**n an earlier article I threatened to return to the Chevrolet Corvair, one of the few automobile engines which has been successfully adapted to aircraft use.

In 1965 Ralph Nader published his famous expose of the US car industry 'Unsafe at any Speed'. This has long been considered a critique of the Corvair, but was actually directed at the US car industry more widely - just one chapter described the suspension design faults in early Corvairs.

The Corvair was a design exercise by General Motors, with a goal to produce a US car analogous to the Volkswagen. So, in its early and not safe incarnation, it had a swing-arm rear suspension like the Volkswagen - the fault described by Ralph Nader - as well as an air-cooled, six-cylinder, rear, horizontally-opposed engine. The Nader critique forever tainted the Corvair.

General Motors produced 1.8 million Corvairs between 1960 and 1969. The Corvair was a big-deal project for General Motors and the company spent a great deal of money developing the engine. It is a very high quality piece of equipment.

There are some obvious important attributes when considering possible automobile engines for aircraft use. 100Hp appears to be a sweet spot for engine power for our sort of aircraft.

The engine should be light, so all things being equal, air-cooled alloy engines are most likely to meet this criterion. The production run of the engine should be very large and spare parts readily available. The engine should not be highly stressed. The engine should come from an ordinary car, that is, not from a Porsche or Rolls Royce, because of price.

Perhaps most importantly is a long history of aviation development, with the bits and pieces required for the conversion readily available and tested.

I do not want to go into a debate about air-cooled versus liquid cooled engines, except to say that a liquid-cooled engine, despite its obvious better temperature control, is inevitably heavier and has another set of systems to go wrong.

One other limiting criteria is the problem of speed-reduction units. Almost all modern car engines develop maximum power at around 6,000rpm, while we need a maximum of around 3,000rpm for a propeller, so an engine-speed reduction unit is more or less mandatory for any conversion of a modern car engine. That is why these older designs make good conversion candidates.

Further, car engines are not designed to

handle the gyroscopic forces transmitted to the crankshaft by the propeller, so this force has to be handled either by an additional bearing on a direct-drive engine or designed into the speed reduction unit.

Even if a modern car engine can be coaxied into a direct drive configuration, the layout with the crankshaft at the bottom of the engine would not allow sufficient clearance for the propeller, so some power transfer device would be necessary anyway. Of course, Subaru Boxer engines, like Corvairs and VWs, do not have this particular problem and for this reason have been popular candidates for conversion. The Viking company converts Honda engines and turns them on their side, but they still require a speed reduction unit and would need some sort



A Corvair engine in its natural habitat. Picture: Wikipedia

of transfer to bring the drive back to the centre line of the aircraft.

Many older conversions did not have the additional bearing to take the propeller loads, but the current good ones do.

The Corvair and VW engines are standouts for conversion and by far have most of the market. There are a number of VW conversions available, the best known ones come from Great Planes, Revmaster, Hummel and Aero-conversions - all US companies. Much of what I say in this article applies to these conversions as well as the Corvair.

While most VW conversions are limited to 80Hp, the Corvair with its larger displacement can easily be converted to a 100Hp engine.

As a direct drive engine is realistically limited to around 3,300rpm, power is directly related to engine displacement and the Corvair, in its original form, had a larger displacement than VW engines.

Over the past twenty years there has been a vast amount of work done on developing the Corvair aircraft conversion. The principal developer is William Wynne of AirCorvair. He main-

tains a pretty comprehensive website.

It is worth considering the major changes required to convert this engine and most of these apply to the better VW conversions as well.

Only certain engine variants are deemed suitable for conversion. Having found a suitable engine, only certain parts such as particular camshafts and pistons are suitable. The automotive tinware and cooling fan have to be stripped off and some of the mounting hardware replaced. The crankshaft has to be nitrided to avoid cracking. Apparently no Corvair nitrided crankshaft has been known to crack. Oil circuits and manifolds need to be re-engineered. Many of these engines have been flown without an additional bearing to take the propeller loads, but it is very good practice to fit one, because the engine was never designed to take this particular load. Dual ignition can be fitted, working through the one sparkplug. Of course, a propeller hub has to be fitted to the crankshaft.

Most of these companies have taken advantage of the revolution in computer-controlled machining to produce very high quality parts in the small quantities required to further develop their engines.

One characteristic of the companies which have endured in the automotive-to-aviation conversion business is their meticulous commitment to tested engineering solutions, fleet monitoring and customer liaison implicit in that commitment.

In the US, it is also possible to attend a 'Corvair college' where you can build your own engine. This seems like a great idea.

Price should not be the only driver when considering such an engine, but the cost of a 100Hp Corvair engine is around half of the cost of a 100Hp Rotax. 80Hp VW conversions are even cheaper when compared with equivalent aircraft engines.

While the Corvair conversion weighs more than the Rotax, AirCorvair claims it can be fitted to pretty much any aircraft which requires a Continental O200.

If you are a homebuilder you will inevitably be attracted to automotive engine conversions, hopefully because you want to build it yourself. The message is that you need to be very brave to take on a conversion which has not been on the market for very long. You need even more courage to design your own fittings for your particular project. There are many companies which have come and gone, selling conversions which were technically deficient and then disappearing, leaving stranded customers.

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Economical factory built LSA55 licensed for training. Motor removed. Transponder. 100kn cruise. Spats fitted 2009. New prop 2010. Repainted 2011. Comes with good carby, ignition system, sump & box of assorted engine parts. Nearly full 65L tank of fuel. Ready for transport on any car trailer. \$20000ono lincpike@gmail.com 0402385554

### 4173 JABIRU J230-D



Factory built June 2010, 392 hours, Hydraulic engine, Through bolts upgrade, Option two panel, dual GPS Systems. Too much to list. Serviced every 25 hours, Only used for long trips, bitumen strips only flown by owner/pilot. This aircraft is as brand new and meticulously maintained, Nil incidences. 0400713996 - \$82,000

### 4174 SUPA PUP MK4



Supa Pup Mk4 30 hours TTIS . 80 Hp Jabiru Engine , \$18,000 + GST any reasonable offer considered . Located Port Augusta SA area . nonning@bigpond.com . 0428 481814 4175 rotax 582 model 90 Rotax 582 Model 90 c/w C 3:1 gearbox. Total Hrs not known, 3hrs since decoke, Bore & rings, compression check, crank bearings all checked out good . New water pump impeller , seals, and thermostat. Still on aircraft, you give it any test \$2500 other details Lloyd 0438884343

### 4176 ROTAX 582

120 hour Rotax 582 UL long motor kept as a spare. Checked out by LAME to show insignificant wear. fully serviced Including new plugs.. C box and pull start other parts available. bargain @ \$3200 information call Lloyd 0438884343

### 4180 TL CARBON STING



Flight hours 600 Hobbs 700hours Rotax. 912 100 HP. SR3000 Woodcomp propellor. Manifold pressure gauge. Garmin296 Garmin SL40. Garmin GTX327 Dynon D10A, OAT, ASI. Rev counter. Oil temp, pressure, fuel pressure and water temp gauges. Standby fuel pump. Strobes, nav lights. Lame maintained, always hangared. \$83,000 Graham Trehwella 0428230750/(03)54288124

### 4184 HANGAR PARKING AVAILABLE BENDIGO VIC.



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### 4187 THRUSTER T500



Thruster T500 2 seat aircraft side by side, 582 water cooled dual carby duel ignition, 65hp 2cyl 2 stroke engine. 70ltr fuel tank, carbon fibre 3 blade propeller. All ad's complete and up to date. All flight instruments radio headsets in good condition. Philip 0407 851 963 \$11,200

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### 4191 LOHLE P5151 MUSTANG KIT

Complete kit registered with RAA, including Suzuki geo 3 cyl engine, Raven redrive. Airframe mostly completed with retracts installed. I have finally admitted to myself that I will never finish this aircraft, and it needs a new home. Located Avalon Victoria.\$25,000 Ph Richard 0427 737 787

### 4201 JABIRU LSA



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factory made in Kevlar & Glass, Rotax 912 80HP. Fantastic climb, 90Knot cruise. ASI, VSI, EngMgmt, Radio, Transponder, AH, Variometer, Feathering prop. Converts in 5 mins from 11 to 13 meter glider for higher L/D. Electric Flaps. Maintained like new. Call Roy, 0404756407 02 0242943900

**4226 503 ROTAX AEROCHUTE**



Great con, many extras, tacho, foot webbing & floor front, solo weight, flying suit x2, stone guard, wind sock & pole, air filter and prop cover, rectifier/regulator, wide top plate, fuel sep funnel, microtrim altimeter, all manuals, option to buy lynx

headsets x2 @ 5 hours use. Great entry level buyer will be happy. 14000ono Negotiable 0412700369

**4229 EUROPA MONOWHEEL**



EUROPA MONOWHEEL Brand new aircraft. 25 total time. Flies beautifully. 130 kts cruise @ 17 lt/hr. Rotax 912 with Airmaster AP332 propeller. Dynon Skyview panel. XCOM radio. 2K professional paint work. Selling because builder has lost medical. Test flying by RAAUS certified instructor. \$85000 ono Contact Drew Done 0427316524 dj.done@bigpond.net.au

**4230 AUSTRALIAN LIGHTWING SPEED**



316hrs.TT. Rotax 912ULS Hughes/Bolly inflight variable pitch prop. All flight and engine gauges, GPS, Mountainscope Nav.System & Xcom radio. 120 litres fuel, 105-115 kts. Hangared at Tumut. \$65,000 must see to realise good value. George will meet you at Tumut with prior appointment on 02 6291 9912. Info from snowman@snowmaking.com.au

**4234 SKY FOX GAZELLE CA25N**



Lame maintained, 80HP Rotax powered, Bolly 3 bladed propeller, folding wings, GPS factory fitted, flies well, 1919 hours, all Ads up to date. Hangared at Tyabb, Vic \$33,000 contact Roger 0419 891 431.

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**4236 JABIRU 230D**



Factory built 2009. Airframe 1452hrs & Engine 1118hrs. Engine rebuilt 1084hrs by Jabiru. Was GA now RAA reg. Jabiru option 5 night VFR dash, strobes, landing lights, leather seats, 2 coms. Repainted Leisure Build, refitted Jabiru. Immaculate, everything up to date, always hangared. \$78000ono Contact Cameron 0437388453 or email cscheuber@gmail.com

**4240 SAVANNAH XL 600KG MTOW**



Savannah XL 2011 19-7675.(Exp Oct 2015) TT 86Hrs. 912 Rotax 100Hp, 2000 TBO. STOL. 80 Kts. cruise. Conventional instruments, GARMIN Aera 500 GPS, VHF & UHF. L/R tanks. Nav/Hazard Lights.

Always hangared, cockpit cover. MTOW 600Kg. No accident damage. Excellent condition. At YNTM deliverable.. \$65,000 Bruce. glion@iinet.net.au, Mob 0427917541.

**4243 JABIRU J230D**



Jabiru J230D Reg 24-7492, Factory built end 2010, 160 hours, MGL Extreme EFIS, Garmin 495 GPS, Microair Radio & Transponder, Grey leather seats, Set of Covers (Brand new, never used) Always Hangared from new. One owner, never hired, no training, null accidents. Ben 0459 320 386

**4248 EAGLE X-TS 150**



Factory built, 2 place carbon, electric flaps, trim / pedal adjustments, microvision digital display, Bendix king coms, 125HP fuel injected engine, 25Lph, 100L range, 1000 km, 120kts, 1000 ft/min, fighter style joystick controls, very responsive thou forgiving a real pilots aircraft an absolute joy and pleasure to fly. libertyandassociates@gmail.com

**4256 ZENAIR 701 STOL \$38,000**



Excellent condition. No expense has been spared. Total time 630 hours. 80 ltr fuel, 12.1 ltr per hour, 75 knot cruise. Rotax 912. Take off 60ft (single) 115ft (Dual). Tundra tires, electric trim, flaps, landing light, strobe lights Intercom, all metal, Hangared at Lakeside (Whitsundays) Only \$38,000 phone 0417 646075

**4259 REVO 912 MINT CONDITION**



The very best trike money can buy, custom designed and manufactured by Larry Mednick, every conceivable extra. Replacement cost over \$90,000. Wife keen to do more motor homing around Australia so price reduced to \$75,000, also custom designed tandem fully enclosed trailer 7 metre internal length \$18,000. gary@eldering.net.au Mob 0411550280

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### 4260 FOXBAT A22 LS



Excellent condition, L2 maintained. 100hp Rotax, Warp Drive Prop. Complete with Dynon Skyview panel including transponder, Analogue ASI and Altimeter, tundra tyres and spats, long range tanks, centre joystick, strobes, cabin heat, EQ1 Wireless Headset System and PLB. Hangered in York, WA. \$99,500. Andrew Cotterell 0400 246 906 andrew@thecotterells.com

### 4266 RV3 KIT

RV3 Fast Build Kit complete, wings factory built, tail feathers done, At Gympie, \$22000 ono. EA81 Turbo Subaru engine with a spare block. Rob 0417833648 or rob27954@hotmail.com

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Head covers and stone guard and ballistic chute fitted. All manuals and log books Raa registered. Genuine reason for selling inspection invited, will deliver \$47500. Ph 0428456728

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### 4274 JABIRU SK2200



Winner best Jabiru Natfly 2013 Great reliable plane now for sale. 110 knot cruise @ 14L/hr. 140 hrs since 1000 hr TBO Brent Thompson 44/60 prop fitted with Jabiru 42/60 spare. Icom A200 radio, Peltor headsets, aircraft cover, Garmin 96 GPS always hangered, no accidents. \$35,000 ono. Peter 0429694459

### 4288 SEA CHANGE - FLYING SCHOOL FOR SALE S'QLD



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an hour's drive of Brisbane. Around 700 hours flown in 13/14 FY. Good student base, and forward bookings includes building, website, booking system, database, and cross hired aircraft. CFI will remain for 3 months, longer if required. Offers over \$40,000 0418 182 288

### 4291 CARBON CUB SS 180HP



Carbon Cub SS 180 hp come and have a fly you will be amazed. 0414444971

### 4292 CORBY STARLET

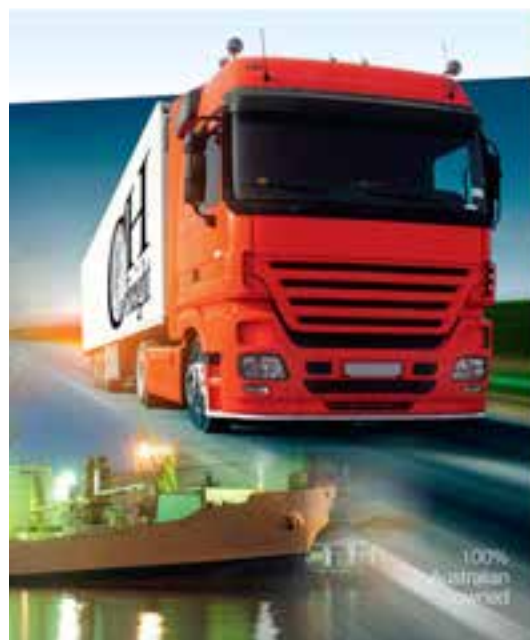


28-0902 Built by K Jarvis and R Dunn in 1988. Ex VH-JCE. Last flew Dec 2010. Engine is a VW 1600 and has been run regularly since 2010. TTIS 267. asking \$12000 ONO. David on 0447 470 747

### 4299 AIRBORNE TRIKE XT 912 TOURA STREAK III



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**4311 JABIRU J230C**

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Engine for Sale: Rotax 912ULS 100HP 2012 Engine. 1500/2000 hrs 500 legal hours remaining. Full service history. Maintained by Rotax Specialist. No incidents. \$14,000 Phn Glenn 0438192656

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Lea Kestrel registration 10-1364 with new skins, Sweetapple prop, wheels with aluminium hubs, U/C springs, instrument panel and wiring. Electric start Rotax 503 with 549 hours. Enclosed trailer with ramps and winch. Asking \$8500 o.n.o. Location western Sydney near M7. Email zodiacsolar@gmail.com Phone or SMS Tony 0412 285 828

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**4317 KESTREL**

95/10 Lea Kestrel powered by rotax 503 can be flown with or without doors comes complete with its own purpose built trailer for transport or storage. The Kestrel was designed to be transported in its trailer so no undue stresses are placed on the aircraft in transit. Keith 0427687001

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Aerobungee dual Rotax 503 great condition, well maintained, 176 hrs from new. Very safe and reliable. Comes complete with custom-made trailer with everything you need to go flying including headsets, intercom, flying suits and more. \$11,000 Contact Tom on 0417803020. SA

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Immaculate VG Savannah, 2006 TT 320hrs MTOW540 Price:\$49,000 Rotax 100HP, Keiv Prop, X Com Radio, Trimble GPS, Built by LAME, aircraft builder and Wayne Fisher Large Tyres, elect flaps comes with spats and a large assortment of spares Included is 3 hours of cross training by CFI. Delivery and Hangarage negotiable. 0437004225

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Delivered Oct 2007, 1020 TT A&E. One owner aircraft well maintained by LAME/L2. 105 kts on 20lt./hr, slow cruise 50 kts on 12 litre. STOL performance. XCOM VHF, GME UHF CB, Garmin 320A XPDR. Leatherette seating, good condition. \$95,000 + GST. Bruce Stark, Tecnam Australia 0416 083 800

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Ah, if only it was here already. For more information, [terrafugia.com](http://terrafugia.com).



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