

# SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / MARCH 2017 VOL 67 [3]

**SPECIAL  
SUBSCRIPTION  
OFFER INSIDE**



## **A LEANER ARROW**

JOINS THE TEAM

**OFFER  
FREE  
FLIGHTS**

RRP \$8.80 inc GST



9771839050238

FREE BEER FROM FIVE CORNERS ✕ MAKING THE PERFECT LANDING EVERY TIME ✕ READING THE WIND

# MENDELSSOHN PILOT SUPPLIES



## Dynon SV-HDX1100 10 inch SkyView HDX Display

SkyView HDX SV-HDX800 features an improved display, beautiful design, unrivaled control ergonomics, and an upgraded touch interface. SkyView HDX display is compatible with all existing SkyView components and feature identical mounting profiles and electrical connections.



## Garmin G3X Touch

Built from the ground up with a native touchscreen interface. The G3X Touch is the smartest, most advanced large-format flight display Garmin has ever designed, specifically for experimental, sport and recreational aircraft.



## Trig TT21 Class 2 Mode S Transponder

The Trig TT21 is a two part transponder system, which includes an integrated altitude encoder.



## Trig TY91 8.33 kHz

The Trig TY91 takes up minimal space and weight. Innovative use of a control head and separate radio hardware unit provides more installation options, especially when space is at a premium.

Visit our website to see our full and comprehensive range of aviation products

# OZPILOT.COM.AU

# (03) 9537 3848



Sky Arrow  
Photo: Karin Middleton

## ON THE COVER

23 A leaner Arrow joins the team  
BRIAN BIGG

"Our task was to bring the empty weight down as much as we could from 440 odd kilograms"



Sport Pilot Magazine is an official publication of Recreational Aviation Australia Ltd and is published twelve times a year by Stampils Publishing.

### EDITOR

Brian Bigg  
editor@sportpilot.net.au  
All enquiries 1300 838 416

### ADVERTISING SALES

admin@stampils.com.au

### MAGAZINE SUBSCRIPTIONS

Non-member annual subscription rates - postage included - are \$110 (Australia) and \$500 (international), being for 12 issues. Payments to be made out to Recreational Aviation Australia Ltd, Po Box 1265, Fyshwick, A.C.T, 2609 Australia and related enquires to admin@raa.asn.au.

## REGULARS

- 07 Chairman's report
- 08 Calendar of events
- 10 Letters to the Editor
- 66 Happy Landings

## COLUMNISTS

- 22 Right seat anecdotes  
DAVID P EYRE
- 37 Editor's Choice  
BRIAN BIGG
- 40 Pilot Talk  
THE OPS TEAM
- 51 Home Builder  
DAVE EDMUNDS
- 55 Instructor's Forum  
PROFESSOR AVIUS
- 56 Design Notes  
DAVE DANIEL

## NEWS

- 12 Have your say on medicals
- 12 Competition winners
- 12 New drone App
- 13 Outback strip upgrade
- 13 Weighty Matters
- 13 L1 Maintenance course
- 15 RAAus says WoAW
- 15 Getting it together
- 16 Avoiding landing fees

## READERS' STORIES

- 18 Stimulating simulating  
GEOFF WOOD

## FLY-INS

- 20 Australia Day at The Vale  
OWEN BARTROP

## FEATURES

- 23 A leaner Arrow joins the team  
BRIAN BIGG
- 26 From the back seat  
BRETT SOUTTER
- 29 Free beer from five corners  
RICK FRITH
- 38 Unforgiving  
OWEN ZUPP
- 42 It's SARTIME!  
GEOFF RAEBEL AND  
JEREMY ROBERTSON
- 45 Reading the wind  
ROB KNIGHT
- 52 Airmanship part 5  
OWEN BARTROP

## EXTRAS

- 07 Digital directions
- 14 RAAus 2017 Scholarships now open
- 32 Destination  
Curtin Springs  
Kilcowera Station  
Bendleby Ranges
- 34 Poster Opportunity  
Over the clouds  
GRAHAM PATERSON
- 59 Aviation Classifieds
- 65 Where is CAGIT?





### ONE MAGAZINE TWO FORMATS

RAAus members get *Sport Pilot* free of charge online at [www.raa.asn.au](http://www.raa.asn.au). But if you are not a member or would prefer a hardcopy magazine, here is how you subscribe.

Email RAAus headquarters at [admin@raa.asn.au](mailto:admin@raa.asn.au). Prices include GST.

CATEGORY	6 MONTHS (6 ISSUES)	12 MONTHS (12 ISSUES)	24 MONTHS (24 ISSUES)
Member (flying)	\$49	\$69	\$129
Member (non-flying)	\$49	\$69	\$129
Non-member (Magazine Sub only)	\$53	\$100	\$179

**SPECIAL DEAL! FOR SUBSCRIBERS ONLY!**  
VALID FROM NOVEMBER 1



#### HEAD OFFICE

PO Box 1265 Fyshwick  
ACT 2609 Australia  
Unit 3, 1 Pirie Street  
Fyshwick ACT 2609  
International: +61 (2) 6280 4700  
National: (02) 6280 4700  
Fax: +61 (2) 6280 4775  
Email: [admin@raa.asn.au](mailto:admin@raa.asn.au)  
[www.raa.asn.au](http://www.raa.asn.au)

#### NATIONAL FINANCE AND ADMINISTRATION MANAGER

**Maxine Milera**  
[admin@raa.asn.au](mailto:admin@raa.asn.au)

#### CEO

**Michael Linke**  
[ceo@raa.asn.au](mailto:ceo@raa.asn.au)

#### NATIONAL OPERATIONS MANAGER

**Jill Bailey**  
[ops@raa.asn.au](mailto:ops@raa.asn.au)  
0400 280 087

#### ASSISTANT OPERATIONS MANAGER

**Neil Schaefer**  
[ops@raa.asn.au](mailto:ops@raa.asn.au)  
0428 282 870

#### NATIONAL TECHNICAL MANAGER

**Darren Barnfield**  
[techmgr@raa.asn.au](mailto:techmgr@raa.asn.au)  
0417 942 977

#### ASSISTANT TECHNICAL MANAGER

**Jared Smith**  
[jared.smith@raa.asn.au](mailto:jared.smith@raa.asn.au)  
0418 125 393

#### NATIONAL SAFETY, RISK AND COMPLIANCE MANAGER

**Katie Jenkins**  
[safety@raa.asn.au](mailto:safety@raa.asn.au)  
0418 445 652

#### ENQUIRIES

**General Enquires:**  
[admin@raa.asn.au](mailto:admin@raa.asn.au)  
**Aircraft and Maintenance Enquires:**  
[tech@raa.asn.au](mailto:tech@raa.asn.au)  
**Pilot and Membership Enquires:**  
[members@raa.asn.au](mailto:members@raa.asn.au)  
ACN 070 931 645

#### DIRECTORS

**Michael Monck** (Chairman)  
0419 244 794  
[Michael.Monck@raa.asn.au](mailto:Michael.Monck@raa.asn.au)

**Tony King**  
0400 226 275  
[Tony.King@raa.asn.au](mailto:Tony.King@raa.asn.au)

**Barry Windle**  
0408 842 308  
[Barry.Windle@raa.asn.au](mailto:Barry.Windle@raa.asn.au)

**Trevor Bange**  
0429 378 370  
[Trevor.Bange@raa.asn.au](mailto:Trevor.Bange@raa.asn.au)

**Eugene Reid**  
0428 824 700  
[Eugene.Reid@raa.asn.au](mailto:Eugene.Reid@raa.asn.au)

**Rod Birrell**  
(03) 9744 1305  
[Rod.Birrell@raa.asn.au](mailto:Rod.Birrell@raa.asn.au)

**Luke Bayly**  
0421 463 967  
[Luke.bayly@raa.asn.au](mailto:Luke.bayly@raa.asn.au)

**FIND YOUR NEAREST FLIGHT  
SCHOOL OR CLUB**  
[www.raa.asn.au/schools](http://www.raa.asn.au/schools)



**10% OFF!**

Subscribe or renew before June 30, 2017 and get a 10% discount voucher in the RAAus shop.

**SUBSCRIBE TODAY!**  
Email RAAus  
[admin@raa.asn.au](mailto:admin@raa.asn.au)

#### TERMS AND CONDITIONS

All content in this magazine belongs to Stampils Publishing and is protected by Australian and international copyright and other intellectual property laws. You may not do anything which interferes with or breaches those laws or the intellectual property rights in the content. All rights not expressly granted under these terms of use are reserved by Stampils Publishing. Unless expressly stated otherwise, you are not permitted to copy, or republish anything you find in the magazine without the copyright or trademark owners' permission. The magazine title, as well as the associated logo of Recreational Aviation Australia Ltd, are the property of RAAus. However, Stampils Publishing, Daniella Banco of Spank Design and Karin Middleton, of Cachekat, reserve the right to be acknowledged as the magazine's designers. While every reasonable effort has been made to ensure the accuracy of the content of this magazine, no warrant is given or implied. The content is provided to you on condition that you undertake all responsibility for assessing the accuracy of the content and rely on it at your own risk. Opinions expressed are not necessarily those of people named in this magazine. Recreational Aviation Australia Ltd and Stampils Publishing reserve the right to decline any article, letter or comment deemed unacceptable for whatever reason. No endorsement or responsibility is implied or accepted for any product advertised in this magazine. Advertisers and buyers are each responsible for ensuring products advertised and/or purchased via this magazine meet all appropriate Australian certification and registration requirements, especially those pertaining to CASA and RAAus. **NOTE:** All aircraft featured in the magazine are registered and legally permitted to fly. However, photographs of them may be altered without notice for editorial purposes.

# The Old Station Fly In & Heritage Show

[RAGLAN QLD]

## 27th & 28th May 2017

Camping welcome from 12 noon on 26th of May



**AIR SHOW  
3pm Saturday**



*Proceeds aid*



[www.oldstationflyingclub.com.au](http://www.oldstationflyingclub.com.au)

Find us on Facebook

**STRICTLY  
NO DOGS**

**air creation**  
in Australia

**Clever Reason**  
Safety without Compromise

**Variable Geometry**  
Innovative Variable Wing Configuration

**Reliable Performance**  
Patent Design - Aerospace Technology

**AUSTRALIAN DISTRIBUTOR....since 1994**

www.aircreation.com.au

**SAS**  
Stawell Aviation Services

**STAWELL AVIATION SERVICES**  
*Outback Experience*  
Since 1986

**Fly Australia in our 32nd year of Tag Along Tours**

**Stawell Aviation Services have been leading small groups of light aircraft on tours around this big beautiful country since 1986. Join a group of like-minded aviators, both new and old, on tours through our spectacular Outback.**

**We take care of all the details for you, provide you with detailed flight planning assistance, book all the dinner bed and breakfast accommodation, all transfers to and from airstrips, arrange and check fuel supplies, and arrange ground tours, leaving you to simply enjoy the flying and comradery! You can come as a passenger with us or bring your own aircraft and tag along.....**

**2017 TOUR DEPARTURES**

**GREAT STOCKROUTES OF AUSTRALIA TOUR**  
Dep 14th April and 10th September

**PILBARA - RED CENTRE WA TOUR**  
Dep 5th May

**KIMBERLEY - BROOME TOUR**  
Dep 13th June and 5th July

email: info@stawellaviation.com.au Ph: 03 5358 3822 Mob: 0428 501 600 www.stawellaviation.com.au

# Setting the standard

BY MICHAEL MONCK

**REFORM is an interesting word and one which deserves some thought. In policy circles it is often used with an air of optimism.**

Politicians usually use the word when they're talking about having a positive impact on something. We hear them talk of reforming a sector, an industry or an energy policy. And always, the word is thrown about in a way which has encouraging connotations. But we need to be wary.

There is much talk from official and unofficial aviation cliques about reforming medical standards in Australia. If done right, it is something which can have a positive outcome for aviation. But we also need to consider its unwanted side effects - the negative impact on the freedoms we enjoy if we do not prove we have respect for what we have fought for over the years.

Recently I sat down with Shane Carmody and Rob Walker from CASA. Shane is keeping the seat warm while a permanent Director of Aviation Safety is recruited. Rob has taken on the role of leading the stakeholder engagement group within the regulator. I was quite buoyed about our discussions and walked away feeling a level of optimism that was encouraging. We have developed a very solid relationship with Rob through his association with our GYFTS scholarship. Shane declared a healthy desire to improve our part of the aviation spectrum. It seems to me that, in them, we have people willing to consider what RAAus needs and help us achieve our desired outcomes. At the same time they are opening up opportunities to talk about the aforementioned medical standards.

Some people argue our end of aviation is more risky because we accept the rejects - that is, when someone fails to maintain their GA medical and comes across to RAAus, they are considered sub-standard.

The evidence seems to suggest otherwise. If someone is not fit to fly, it stands to reason we should see a higher than average incidence of medical events affecting RAAus pilots. But I am yet to see this in the statistics. No one has shown me anything which suggests this is the case.

With this in mind, I begin to question the hypothesis RAAus medical standards are insufficient for the types of operations we carry out and so I also question the need to change. I'm not saying there is no need, just that it hasn't been demonstrated to me.

Right now, I am firmly of the view we need to defend our medical standards until they are proven to be wrong.

RAAus simply requires you to get checked out by your local doctor and be given the ok. A pretty reasonable requirement in my view.

But there are people calling for higher standards to be imposed on us. These people often compare our system with those in place elsewhere in the world.

In the US, for some types of aviation which closely resembles what we do in RAAus, pilots don't need to hold a medical at all. All they need is a current driver's licence. This sounds comparable to what we have here and, on the surface, it is. But if you have previously held an FAA medical, and it was suspended for medical reasons, you can't then use a driver's licence medical.

In the UK, similarly, they are relaxing the requirements. But again, if you have a listed condition, you have to go through the rigmarole of getting signed off by a CAA authorised medical examiner. In the recent Eureka report published by AOPA, it clearly states they want a similar system imposed on RAAus pilots.

I downloaded a copy of the Eureka report which contains the quote "In addition, any RAAus pilot who suffers from a condition currently listed under the CASA list of medical condi-

tions must see a Designated Aviation Medical Examiner (DAME) for medical certification." On top of this, the Eureka report calls for CASA to abandon the RAMPC medical in its entirety. From all of this I glean a few things:

1. We have a system which is working and has been for some 30 years. Our accident statistics in recent years appear to be climbing, but this is more indicative of our pilots doing the right thing and reporting more, not that we are getting more dangerous.

2. The suggestion our medical standards are inadequate for the type of operations we undertake is misplaced. Our pilots are not experiencing an abnormally high number of medical events compared to our GA counterparts.

3. There is a clear need to be aware of the unintended consequences of what is being asked for.

If we make the mistake of assuming the other places have better medical certification standards than ours, we risk taking a big step backwards. We are a strong and healthy part of aviation supported by some 10,000 members, most of whom are flying, so we need to use that to our advantage.

The people making decisions at CASA right now seem to have good heads on their shoulders and a desire to help us out if we do the right thing, so let's also use that to our advantage.

If we continue to demonstrate we are responsible and capable aviators, we will continue to strengthen our relationship with the regulator. And as the single largest collective of recreational aviators in this country, we have the opportunity to show the rest of the world how it should be done... that our standards are the ones to be copied, not theirs.

It's up to each of us. If we can be safe and sensible aviators, we'll also remain the freest aviators in the world. In my books that's something worth working hard for. ☺

## DIGITAL DIRECTIONS



**There are many ways to interact with RAAus these days.**

**Website:** www.raa.asn.au

**Member portal:** www.members.raa.asn.au/login

**Lodge an occurrence:** www.oms.raa.asn.au/lodge

**Back issues of Sport Pilot:** www.raa.asn.au/sport-pilot-magazine

**Subscribe to printed Sport Pilot:** www.raa.asn.au/sport-pilot-magazine-application

**RAAus shop:** www.shop.raa.asn.au

**Sport Pilot online:** www.raa.asn.au/sport-pilot-magazine

**ENewsletter:** www.raa.asn.au/become-a-member/member-benefits/e-news



## CALENDAR OF EVENTS



### A. 2 APRIL BAROSSA AIRSHOW

See vintage, old and new aircraft. Three of Australia's top aerobatic champions will perform. Helicopter rides all day. Food, wine, art and craft stalls, sideshows and interesting exhibits. Rowland Flat airfield is privately owned, half-way between Tanunda and Rowland Flat, right next to the famous Jacob's Creek (34 33'S 138 57'E). Runway 08/26 is 600m at an elevation of 800ft. When operating on Rwy 26 use right hand circuits. Under certain conditions wind shear can be experienced on short final to Rwy 08. For more information, [www.barossaairshow.com.au](http://www.barossaairshow.com.au).



### C. 8 APRIL VALLEY VIEW AIR DISPLAY

Valley View Farm, Northern Gully (23kms east of Geraldton Airport). Joy flights, military equipment, skydivers, model aircraft, Light Horse display, 11th Battalion AIF - Leane's Trench Tours, produce, food and drink stalls, bouncy castle and face painting, free camping. For more details, [www.valleyviewvintage.com.au](http://www.valleyviewvintage.com.au) or our Facebook page.

### B. 7-8 APRIL LOXTON AERO CLUB FLY IN

The focus this year is 'Partners of Pilots'. Highlights include hangar dinner, raffles, awards for best presented plane and the pilot who has flown the furthest to attend. Presentation Saturday from Howard Hendrick (WW2 bomber pilot - now 93 years old and still flying). For more information, [www.loxtonaero.com](http://www.loxtonaero.com).

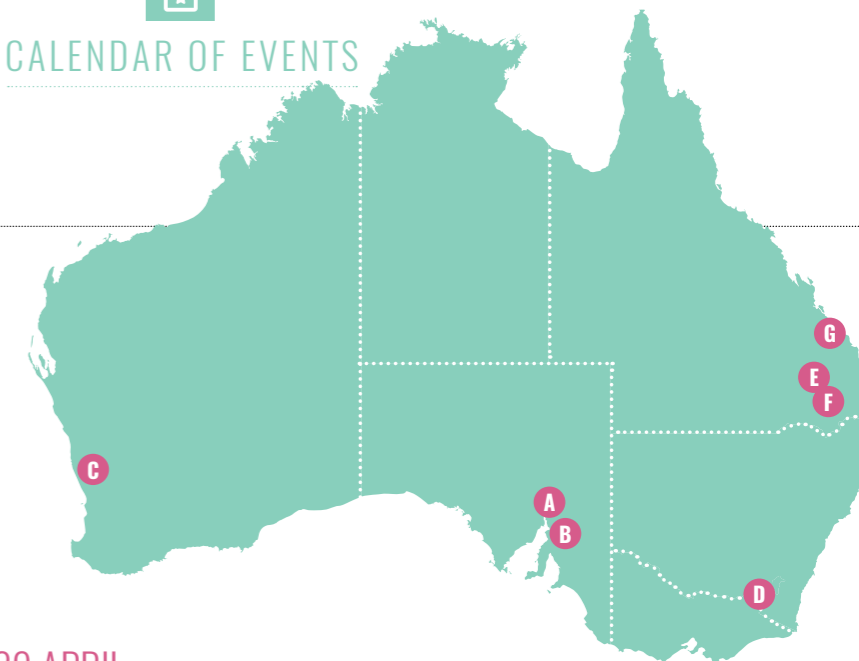


### D. 15-16 APRIL BACK TO HOLBROOK FLY IN

Holbrook Ultralight Club invites ultralight and recreational aircraft owners and pilots to Holbrook airfield for its annual fly-in at Easter. Forums Saturday afternoon will include an RAAus member's forum. Fly-in dinner Saturday night, BBQ breakfast and a local fly-out Sunday morning. Underwing camping and transport to and from the township for accommodation and fuel available. For more information, John Harley 0456 357 735 or visit [www.holbrookultralightclub.asn.au](http://www.holbrookultralightclub.asn.au).



## CALENDAR OF EVENTS



### E. 29 APRIL GAYNDAH ORANGE FESTIVAL BREAKFAST FLY IN

Gayndah Aerodrome 7-10am. Good hearty breakfast and a bottomless cup of coffee. Be part of the big festival to celebrate the Burnett Shire's favourite citrus. For more information, (07) 4168 6248, [www.burnettflyers.org](http://www.burnettflyers.org) or [burnettflyers@yahoo.com.au](mailto:burnettflyers@yahoo.com.au).



### F. 14 MAY GATTON AIRPARK BREAKFAST FLY IN

Join us for our annual Mother's Day breakfast. A hearty country breakfast, chat with friends and see the latest developments at our airpark. From 0700 so you can still get home to visit your mum. Better still, bring her along! Check ERSA for airfield details or Martin 0419 368 696 or [www.gattonairpark.com](http://www.gattonairpark.com).



### G. 27-28 MAY OLD STATION FLY IN AND HERITAGE SHOW

The Old Station Flying Club has staged its unique and very popular fly-in air show from 1989 to 2007. In 2011 the format of the weekend was altered to include tractor pulling and truck show.

Proceeds from the weekend aid the Capricorn Helicopter Rescue Service. Aviators and campers welcome on Friday for an informal meet & greet at The Feed Barn. Warbird joy flights, other aerobatic and general aircraft flights, displays all weekend. Children's entertainment, market stalls, fashion parade, food and drinks. Fireworks. For more information, [flyin@oldstationflyingclub.com.au](http://flyin@oldstationflyingclub.com.au) or [leonie@creedgrazing.com.au](http://leonie@creedgrazing.com.au).





## YASS SUPPORT

I am President of the Illawarra Flyers and I rub shoulders regularly with our many RAAus members.

I understand you have a concern about what is happening to our airfields around the country, and you have a vision that might benefit all sport pilots.

We are also keen to see many such airfields developed, and to that end, one of our members is trying to build an airpark on his property at Yass.

Following is a copy of an email I have just distributed to our members, and I thought you and your members might also like to lend a hand. For more information, please feel free to give Ted a call at one of the numbers in the email below.

### JOHN CLEARY

**President, Illawarra Flyers**

**This is a request for a letter/message of support.**

*As you may know, I've been assisting the owner of a property near Yass (Ted McIntosh) with his quest to set up an airpark. This would be a tremendous asset for the region and will certainly boost the economy of Yass. It will also provide access for emergency service such as providing a base for aerial fire fighting.*

*Ted's plan is to develop the airpark for hangarage, maintenance and other associated services. To that end, he has obtained council approval for an airstrip on the property. However, a further submission is required to allow others to use the strip and to hangar their aircraft. As you could imagine, there are plenty of negative views on GA generally and Ted needs the aviation community to support him.*

*To help Ted with his submission to council, I'm asking you to send him a letter of support, in your own words, expressing why you believe aviation facility near Yass would be of benefit to the district. For example, you might be attracted to the possibility of visiting the region, with its wineries at Murrumbateman, its easy access to Canberra. Or you might be planning to build or base a light sports aircraft near Canberra.*

*Aviation facilities around Australia are under threat and, as a community, we need to support positive moves forward. Here are some suggested benefits to the area;*

- *Tourism for the Yass district;*
- *Boost to Yass economy, improvements in commercial activities in a large rural area;*
- *Ancillary businesses such as car hire, aircraft maintenance;*
- *Easy access to Canberra without class C airspace to worry about;*
- *A VFR alternative to Canberra. Yass is often*

*clear when CB is clouded in.*

- *Emergency services.*

*Jindalee is located on Black Range Rd, north of Yass. It's less than an hour's drive to the Canberra CBD (even less when the Murrumbateman bypass is completed). The strip will be approx 1,100m with lighting and IFR procedures. Jindalee appears in the Canberra VTC. There is also a Facebook page under @yassairport.*

**Please send messages of support to Ted McIntosh**

**1079 Black Range Rd, Yass NSW 2582. email tedann1@hotmail.com**

## L1 QUESTIONS

I am a regular attendee at a weekly fly-in at Childers, near Bundaberg, in Queensland. Typically there are around 10 or so Jabirus and an assortment of other types. We are all mates but anyone can attend. It is one of the few relaxing things I afford myself. Even my 90 year old mother who lives with us and has advanced dementia, says I am always busy. She is right.

Recently the talk at our gathering has centered on the L1 exam. Many of us have expressed concern at failing questions which have no bearing on our chosen areas of expertise. For example, why would a builder, test pilot, maintainer and repairer of multiple Jabirus for around 20 years (and successfully completed Jabiru factory training) need to know what paint should go on rag-and-tube aircraft? This was an actual question. This is my own experience level and I don't know the answer to this question.

My partner contemplates what credits she can get for Recognition of Prior Learning (the other RPL) as part of the process of completing a degree course in her field. Our 21 year old daughter mulls over the work she can avoid doing again, and formally being examined on, using the same principle for her law degree.

Further, when I was a poor, young, hard-working university student, mine and many other universities would confer honorary degrees (same value as one gained through thesis or course work) upon experienced pioneering stalwarts and those with a proven track record of excellence within that industry, in recognition of their efforts over many years. That still occurs today.

That doesn't happen with the RAAus L1 accreditation. To make the situation worse, compare this to L2 accreditation – a supposedly higher accreditation. The holder of a L2 can choose to be 'not competent' on airframes or, alternatively, engines – a restricted L2. Yet a L1 is examined on all of everything!

Has this latest requirement been introduced to keep insurance companies happy? Is there a disproportional number of fatalities in the

over 60 year old age group? If so, do we need to shed RAAus membership of this pesky and problematic group?

I spent much of my professional career managing departments containing a wide cross-section of staff with equally varied personality types. I can confirm that possessing a Pilot Certificate with L1 printed on it has made no difference to the bad decisions pilots made in the past and will continue to make into the future when they choose to fly in suspect circumstances which ultimately leads to their demise. In fact, it will most likely give the capable and experienced (those who have fought hard over the years for the freedoms we currently have) over 60s the impression that the writing is on the wall for them and give away flying earlier than would otherwise be the case. Sadly, maybe that's the objective.

Ironically, when I decide it's all too hard and give up flying, I may end up selling my beloved Jab to a person who has successfully completed the exam on the back of only one day's real experience. This isn't right.

### MARK PEARCE

*From the Tech Dept: The idea and concept around the L1 is to help diversify our membership's knowledge so they can have a universal understanding of all aircraft types, models and appropriate maintenance practices.*

*And this is where your issue lies. We want the exams to draw the attention of members, even those with extensive experience on one type such as you, to areas where they may not be as familiar. We want members to be more receptive to discussing what they don't know and where to seek and find the information. Your feedback has highlighted other areas we can develop to tailor the program to address particular models and types. The fact you and your local members have taken the time to openly discuss areas of concern proves the L1 process is doing what was intended. It's designed to get everyone talking because, after all, no one person knows everything.*

## RISKY BUSINESS

In *Australian Flying* January 2017 there is an article by the CEO of RAAus. The article's definition of risk is a typical text book copy, as is the use of a consequences/liability matrix. It then gives some examples of controls/mitigations that pilots can use.

The article then falls down, because it is about risks in flying, but then becomes head office centric. Head office having a safety, risk, compliance manager, good insurance and becoming incorporated, is of no value to this important subject, if risk management, systems, processes and, most importantly, practical understanding and use (not text book

theories) are not embedded at the club flying operations level.

### GRAHAM G BLACKMAN

*From the CEO: You make a good point. Risk needs to be addressed at all levels from RAAus head office to club level. By demonstrating our commitment to risk at the high level, we create a culture of understanding risk and, over time, practical risk based mitigation solutions will be rolled out to every member. National Safety Month (October every year) provides practical solutions for members and is run through schools. Members need to keep the conversation going with instructors and tap into these local resources. Over the coming 12 months RAAus will roll out a safety toolbox to all schools.*

*The schools, in turn, will work with members. We want to offer a practical suite of tools to help everyone understand risk more clearly.*

## JANUARY BLUES

I wonder, firstly, the point (in the context of RAAus) of articles like: 'A fairly smooth sea' and the one on the Amana? (*Sport Pilot* January 2017)

Secondly, in the ATSB report (from where the story was taken verbatim) the photo of BPQ was clearly labelled as one from the original owner. I think the aircraft in this picture should have been de-identified, and the source of the story attributed. If you have time please give me a call with your thoughts.

### ANDY GIRAULT

*From the Ed – A lot of the regular stuff is held back from January when people are on holidays and not paying close attention. It also allows the magazine to be put together earlier than normal which gives Sport Pilot's staff (and much more importantly, the Editor), some time away from the coalface.*

*During a normal year, a lot of stories come in that don't fit our normal profile but might still be of interest to aviation lovers like me, who will absorb anything about any sort of aviation. On your other question, all reports made public by the ATSB are available for publication.*



## A QUESTION OR TWO

Can you expand on the photograph of the Super Petrel on Page 17 (*Sport Pilot* December 2017)? What caused the issue and what was the outcome? I am interested in purchasing an amphibian for my school. However, there was an unfortunate accident with a Super Petrel on Lake Jindabyne some years ago and so this photograph sparked my interest.

Also please pass on to Professor Avius. Jindabyne Randall Community Aerodrome (JRCA) is situated in the lee of the Snowy Mountains and is tucked in behind some hills. Northerly and nor-west winds in excess of 15kts can cause some very interesting conditions, sometimes with windsocks indicating opposite wind directions at either end of the main runway 12/30. However, the main consideration with the higher wind strengths is the formation of rotors off the mountains, which can cause marked down and up draughts, as well as turbulent conditions on the approach, at times creating similar problems to wind shear.

I operate a flight training facility at Jindabyne with Jabiru aircraft, a 120, a 170 and a 230. When these conditions exist, and they occur frequently, I advise my students to add 5kts to the approach speeds and only use half flap.



My reasoning is that you have better response to control inputs at the higher speed, better acceleration (less drag) if you need to recover from a sudden loss of airspeed, or experience severe sink, and it does not make a lot of difference to your landing attitude/airspeed (as compared to flapless). I would be interested in your views on this approach because my experience in these conditions appears to justify this approach to the problem. And a warning to any aviators planning on flying in to Jindabyne - extreme caution should be exercised if forecast winds are westerly and in excess of 25kts at 5,000ft. But don't let that put you off visiting us (Jindabyne Aero Club) at the JRCA when conditions are suitable.

### MARTIN HUGHES

**Alpine Aviation Australia**

**Jindabyne Randall Community Aerodrome**

*From the Ed – The aircraft ended up nose pitched down in the water briefly as a result of having to turn downwind with a quarterly crosswind to line up with the Catalina ramp in reasonably choppy conditions.*

*The moment captured in the photo was brief and the pilot made a successful exit from the water onto the ramp without further ado.*

## WRITE IN: EDITOR@SPORTPILOT.NET.AU

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.

(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).

# HAVE YOUR SAY ON MEDICALS

**CASA has asked for comments on its discussion paper outlining proposed changes to medical certification.**

Six options are contained in the discussion paper, ranging from continuing the existing requirements, to developing a new medical certificate for the sport and recreational sectors. Other options include re-assessing risk tolerances, streamlining certification practices, aligning sport and recreational standards and mitigating the

risks of any changes through operational restrictions.

The discussion paper also looks at a range of relevant issues such as CASA's approach to aviation medicine, the approach to medical certification in four other nations, pilot incapacitation in Australia, accidents and risks, psychiatric conditions and the protection of third parties.

The discussion paper says: "CASA is aware there is a perception in some elements of the pilot community that it can

take an overly rigorous approach in terms of testing and contesting opinions from other doctors. It is difficult to determine the accuracy of the allegation of 'over regulation' by CASA in aviation medicine when the claims made involve the health of different individuals and the advice of different medical practitioners, some of which may involve competing opinions."

Comment on the medical discussion paper by March 30. For more information, <https://tinyurl.com/jfx4c6v>

## COMPETITION WINNER

BY KATIE JENKINS  
NATIONAL SAFETY MANAGER

One of the aims of National Safety Month each year is to keep the conversation about safety going and to encourage members to talk about and learn from their experiences.

In 2016, we invited members to think about an incident, near miss, or any sort of occurrence where a lesson was learned which could be shared with others.

We made it a competition and offered prizes, including RAAus memberships, 12 month subscriptions to *Sport Pilot*, \$250 in flying lessons at the RAAus school of your choice and RAAus merchandise packs.

Rob's story, call 'The flight that counts' was published in *Sport Pilot* in November 2016.

Another finalist's article will be published in next month's *Sport Pilot*.

**Here is the complete list of winners.**

**First** -Rob Matthews

**Second** -Mirek Generowicz

**Third**- Yanine Hey, Danny Bartels, David Johns, Heather Brennan, James Nation, Mike Clifford, Robert Allcock.



## NEW DRONE APP

**CASA is about to release an app for smartphones and tablets to help drone operators avoid trouble.**

The app, called 'Can I fly there?' will be launched in May.

It will allow people flying drones for fun, or under the new sub-2kg commercial category, to enter a location and the app will flag nearby 'no-drone zones' such as airports, helicopter landing areas and other restricted areas.

It will also flag areas where emergency services, such as firefighters, are operating.

CASA's Group Manager, Aviation, Graeme Crawford, says the app will also educate the drone community on what rules to follow.

"We know people want to have fun with their drones. We want to help them do this safely by reducing the potential for them to fly their drone inadvertently in a way that might cause a threat to aircraft or other people," Graeme says.



## OUTBACK STRIP UPGRADE



Pilots travelling in the outback will get better places to land with the government committing to spend \$3.2 million to upgrade 16 remote airstrips.

The federal funding injection will also improve emergency medical evacuations and provide work and education opportunities.

In January, air food drops struggled to reach remote Aboriginal communities cut off by flooding when heavy rain made many dirt airstrips in the region too wet to use safely.

Senator for the Northern Territory Nigel Scullion said city dwellers took for granted ready access to fresh food and water and the upgrades would better connect people living in remote communities hundreds of kilometres away from each other.

The communities to receive airstrip upgrades are: Jabiru, Milyakburra, South Goulburn Island, Nyirripi, Bathurst Island, Elcho Island, Croker Island, Lake Evella, Palumpa, Peppimenarti, Ramingining, Snake Bay, Wad-eye, Elliot, Hodgson Downs and Robinson River.

## WEIGHTY MATTERS

**More than 290 RAAus members have enrolled already in the beta version of the Weight and Balance online learning course since the course went live in August.**

As a result of additional feedback from CASA, the beta period has been extended to June 30, rather than the original cut-off date of February 1.

It means that while the course remains in testing phase, no feedback will be supplied when you complete the assessment. Of course, once the test period ends, members who complete the assessment will be supplied feedback and allowed three attempts to pass. If you achieve a pass mark of 90% you will have the Qualified Weigher accreditation added to your membership record.

Any member who will weigh and complete a weight and balance report for an RAAus registered aircraft must have the qualification. This includes L2 and L4 maintainers.

Once CASA has approved the course, a paper version will also be available.



## LEVEL 1 MAINTENANCE COURSE

**The Level 1 maintenance course has now been live for more than two years and so far almost 600 RAAus members have completed it.** RAAus estimates approximately 1,500 members will require an L1 endorsement, so we are nearly halfway there.

The course is required if you plan to maintain on your aircraft above a basic level (called Line maintenance). Line maintenance includes such things as changing the

oil, oil filters or air filters, replacing the battery or servicing landing gear wheel bearings etc. The Technical Manual section 12.7 has the full list.

If you have a problem completing the course online, a paper version will soon be made available through the RAAus shop for \$29. A complete package (including the required resources such as the Technical Manual and AC43) will be available for \$159.



# RAAus Scholarships

Apply in March

RAAus is pleased to announce its 2017 Scholarship program will open on March 1 and close on March 31.

Check out the RAAus website from March 1 to find out more and how to apply.

This year scholarships will be available across the whole spectrum of the work RAAus undertakes. From young people getting into flying, to maintainers and, for the first time, instructors and older people who have never flown before.

RAAus also invites members to donate to the Scholarship Fund. Simply donate when you renew or use the slip on this page.

## Donation to the RAAus Scholarship Fund.

Member name \_\_\_\_\_

Member number \_\_\_\_\_

Postal address \_\_\_\_\_

Post Code \_\_\_\_\_

Amount donated \_\_\_\_\_

Name on card (please print) \_\_\_\_\_



Credit card number \_\_\_\_\_

\_\_\_\_\_

Expiry Date \_\_\_\_\_ CCV Number (on the back) \_\_\_\_\_

\_\_\_\_\_

Cheques should be made out to: Recreational Aviation Australia Ltd. Po Box 1265, Fyshwick, A.C.T., 2609



## WOMEN IN AVIATION

# RAAus says WOAW

WOMEN OF AVIATION WEEK 6 - 12 MARCH

To find a Women of Aviation Week event, visit [www.womenofaviationweek.org](http://www.womenofaviationweek.org).



WoAW is a global outreach initiative which takes place every year during the week of March 8, coinciding with International Women's Day. It's designed to raise awareness of aviation opportunities available to girls of all ages, while celebrating the accomplishments of past and present women in aviation.

Throughout the week and across the globe, events and activities will be held to showcase today's women of aviation, as well as extend a warm welcome to newcomers to the community.

At the moment, just under 6% of RAAus members are women and this year we will again be offering any women or girls who join RAAus during the entire month of March the value of their annual membership fee back in flying lessons.

To take advantage of this offer, candidates must be new members and join as a flying member for a minimum of 12 months. Once your membership has been processed, visit your local flying school for a flying lesson up to the value of your annual membership fee (\$215).

A few RAAus affiliated clubs and schools have already jumped on board in Bathurst, Temora, Orange, Clifton and the Sunshine Coast with free flights, competitions and other activities. These will be a great opportunity for girls and women to experience flight in a light aircraft for the first time and consider a journey into aviation.

Anyone can plan an activity during Women of Aviation Week to honour existing contributions to aviation by women as well as engage and introduce girls and women to the opportunities aviation offers to everyone. It's a chance to encourage the women in our community to discover the joys of flying.

Spread the word!

# GETTING IT TOGETHER

If you've ever wished your membership and aircraft registration renewals came due on the same day, you're not alone.

Over the past few months we have received an increasing number of requests from members asking for just that - to align their membership and aircraft registration renewal dates - for a number of reasons, the main one being that they would only have to remember one renewal date.



## IT CAN BE DONE!

But it isn't just about changing the paperwork.

To align your aircraft registration and membership renewals, the price differential, based on the days needed to align both dates, will need to be paid.

## FOR EXAMPLE:

To align an aircraft registration renewal (3 February 2017) with a membership renewal (15 June 2017):

The days between 3 February and 15 June = 133.

\$140 (aircraft registration fee) divided by 133 days as a portion of the year is \$51.

A \$2 charge will also be added to cover the administrative work so the final cost in this scenario = \$53.

This new option is in its early stages, so members wanting to align their membership and aircraft registration dates will need to contact the office directly - this function is not yet available through the member portal.

If you have any other ideas about how else we can make renewing your aircraft registration or membership to simpler, let us know.



# Avoiding landing fees

**A**RCHERFIELD Airport in Brisbane may consider following a precedent set by some other GA airports in Australia and restrict arrivals of light sports aircraft if a new process to gather landing fees is unsuccessful.

Airport General Manager, Heather Mattes, said 15,225 privately-owned light sports aircraft landed at Archerfield Airport in 2016, however only a small percentage of pilots voluntarily paid their landing fee. As a result, Archerfield Airport Corporation incurred extensive cost in sourcing and billing aircraft owners – a cost Mrs Mattes says cannot be sustained.

“In terms of time and resources, Archerfield Airport Corporation pays dearly to allow light sports aircraft to land,” she said. “This is despite a very modest landing fee of \$10.50.”

Mrs Mattes said AAC’s new landing permission and fee process was included in the airport’s ERSa and detailed on the AAC website. Its effectiveness in addressing the issue of non-paying landing fees will be reviewed later in the year before a decision is made regarding the future of light sports aircraft arrivals.

“The issue is not isolated to Archerfield Airport, however it is of concern that the practice of side-stepping landing fees appears to be widespread and may actually jeopardise the movement and flexibility of all light sports aircraft owners in the future,” she says. “AAC encourages recreational flying and would be pleased to see more pilots landing here provided they do the right thing and accept that airport users must pay.”

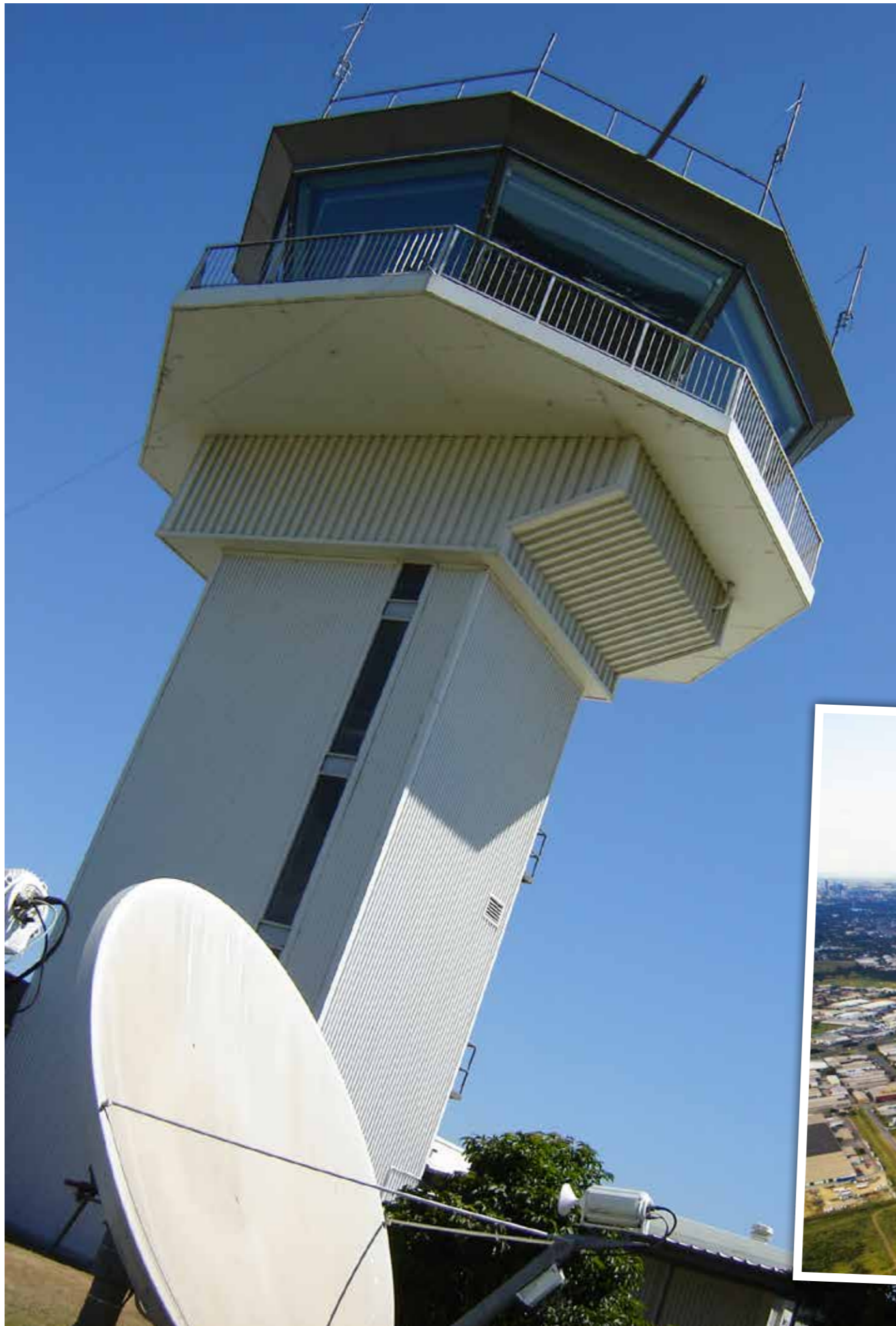
Prior permission is a condition of landing at Archerfield Airport. Pilots are required to read the airport’s section in ERSa and comply with the Prior Permission Required (PPR) provision. The process is straightforward – it involves completing an application form available at [www.archerfieldairport.com.au](http://www.archerfieldairport.com.au), receiving formal approval to land, then paying the landing fee invoice at a later date.

CEO of RAAus Michael Linke urged members to do the right thing when landing at airfields that charge a landing fee.

“RAAus believes in a user pays model and trusts all members to do the right thing when using resources, such as runways, taxi ways and parking bays.

RAAus won’t share members details with third party operators and as such, members should register with AVDATA or whichever provider the airfield in question uses to ensure fees can be paid on time.

As RAAus progresses applications with CASA to increase our weight allowance and gain access to controlled airspace, now more than ever our members need to demonstrate goodwill with other airspace and aviation related infrastructure users.



# Stimulating simulating

BY GEOFF WOOD



"A sim is very a useful aid in teaching someone to fly"



**PROFESSIONAL FLIGHT TRAINING SERVICES PTY LTD**  
 Successfully Operating in Cunnamulla, Outback SW Queensland for the past five years. Sale includes Business, Tecnam Bravo Aircraft 960hrs TTIS, 3 x 3 x 3 lease on hangar, office area and student accommodation. Five bedroom family home with three bathrooms. Ducted air conditioning. Large undercover entertainment area, fully automated watering system. Huge workshop/garage 152 m2, 9.7m x 15.7m, plus mezzanine floor 9.4m x 6.1 m and five bay machinery shed 9.7m x 17.6m.



Offers considered over \$500,000.00 all inclusive. Contact Wayne Dillon 0438 551 198 wayne@proflight-ts.com

## In my opinion (as the CFI of a flight training school) flight simulator training is very worthwhile for RAAus.

But when asked if it should count as hours logged for a Pilot Certificate, where the minimum number of hours required is only 20, I would say no. However, having said that, I have found a reasonable sim, with rudder pedals such as the one installed at Wangaratta, to be a really good time saver for new students. After the Trial Instruction Flight, the next step is to be able to taxi the aircraft and keep it straight on the runway. Most students need a few hours to be able to cope with the torque of the prop. With some aircraft, which have a lot of power, application of a hefty amount of right rudder is needed. Steering needs to be instinctive, to cope with the take-off roll. The same applies in landing (except of course that left rudder is needed because of the power reduction). To help a student become familiar with which pedal to press, I send them to the sim and they get to taxi up and down the Wangaratta runway virtually until they get comfortable with it. There are many aircraft available on the sim. I often use a Tecnam.

Another great advantage to the sim is that it allows the student to practice radio calls and to become familiar where and when to make them. It is so much easier without the worry of saying the wrong thing for real and feeling the world is listening. Right from the start of a sim lesson, the student can do start-up & taxi calls, the entering runway call and circuit calls as required.

The sim can even include traffic and other aircraft making calls, as well as weather, crosswinds and everything to be expected around an airport.

The sim we have has Australian airports installed, so naturally ours has Wangaratta loaded, but we also find it useful to install other airfields for students to practice on.

My first student was Sam who had never flown an aircraft but had over 2,000hrs on his very extensive \$15,000 sim, which he built himself (You read about him in *Sport Pilot* a while back). He turned up and wanted a TIF, which I was happy to organise.

On his first ever flight, Sam taxied right on the line, gave all radio calls, flew the circuit and all I had to do was talk him through the flare on landing (because on the sim you can't get the settling down feeling as you touch down).

I asked Sam to install a basic sim with pedals at the Wangaratta clubhouse. The set up used Microsoft FSX Accelerator which cost about \$50. The aircraft software cost about \$30 each, the monitor \$150, rudder pedals \$210, joystick (Extreme 3D Pro) \$50 and a computer tower for \$800. So the set-up from scratch, even if you start without a computer, was only around \$1,300. As a bonus for fun we can load Airbus, a Texan, a Cub or a glider and get to experience flying something else. The scenery is quite realistic and the towns, trees, hangars etc, are where you expect to find them at your airfield. Sam also upgraded our airfield to show everything in fine detail down to the sweeper at a hangar, the birds flying past, the cars on the road and even the baggage being loaded onto the Airbus. For an extra fee, we even get to experience real time weather.

Yes, I would say a sim is very a useful aid in teaching someone to fly. For more information, contact me at geoffwood@optusnet.com.au.

"Power is better, water temps are fixed." - Lucas Bignon 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.

Inspection of Terry Ryan's cylinder heads:



"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.

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

"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."



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

**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.



Call now: +61 3 9587 9530 or email Sales@RotecAerosport.com For more information visit: www.RotecAerosport.com



# Australia Day at The Vale

BY OWEN BARTROP

**O**N most Australia Days, the Devonport Aero Club holds a fly-in at a nearby airstrip called The Vale. Last year was an exception because the strip was taken over by firefighting aircraft and was closed for public use.

This year, aircraft started to arrive the day before. The day was beautiful and sunny, but unfortunately the blue skies were accompanied by higher than desirable winds.

To some, the strip might appear a bit daunting with hills on three sides and Mt Roland on the fourth, but normal circuit behaviour soon had most of the aircraft safely on the ground. The gusty conditions did force one pilot to abandon efforts to land. He decided to fly to Devonport and drive to the party.

Aircraft came from far and wide. Besides many from Tasmania, there were aircraft from Sydney, Melbourne, Adelaide, the Hunter Valley and Bendigo.

A total of 37 fixed wing aircraft and two helicopters filled the parking areas. The range of aircraft ranged from a small Thruster to a large turboprop Pilatus P12. Among the GA registered aircraft were Cessnas, RVs, Pipers and two warbirds, a Yak and a Winjeel.

There were many RAAUs certified aircraft such as Pipistrels, Foxbats, Jabirus and others too numerous to mention.

As well as pilots and their passengers, some people arrived by motor vehicle and swelled the numbers to about 180.

A nice midday BBQ was provided with drinks available from a counter made of straw bales. Each year we select a worthy cause to support and this year it was the local Mates-for-Mates organisation.

Mates-for-Mates looks after sick, ill or injured defence personnel and currently serving veterans, through rehabilitation, wellness programs and psychological services.

There were several fund raising events including a thong throwing competition for the kids and a total of \$4,364 was raised.

Although the event was organised by the DAC, thanks must go to Barry Bransden and Sandra Southwell who did the brunt of the work. Members of both DAC and the Wynyard Aero Club also pitched in, thank you.

Also, our thanks go out the owner of The Vale for allowing us to hold the event on such a prodigious day at such a beautiful airfield.

We hope to see more aircraft next year, so come and have some fun. ☺



The Pilatus, the largest aircraft on the day



One of the smallest aircraft to attend



“To some, the strip might appear a bit daunting”

The Vale from the air



The gathered crowd with Mt Roland in the background

# Semantics

BY DAVID P. EYRE



“WORDS, WORDS, WORDS - I AM SO SICK OF WORDS”, SO SAID ELIZA DOOLITTLE COMPLAINING ABOUT PROFESSOR HIGGINS IN THE MUSICAL ‘MY FAIR LADY’. WORDS INDEED!

**S**EMANTICS is the study of words, their meaning and their use. As flying instructors we learn to use words which are concise and meaningful in the sometimes difficult environment of a noisy cockpit.

We learn the correct words so there is no confusion or ambiguity. There is, of course, the apocryphal story of the airline captain who, in an emergency and wanting more power, yelled to the co-pilot ‘Take-off power!’ and the co-pilot immediately closed all throttles.

Also, as flying instructors, we should sometimes think of the other person’s sensibilities and think before we open our mouth.

I once had a student who was a catholic priest. I will call him Father Joe. Father Joe was a very typical Irish priest. He had flaming red hair, freckles and spoke with a rich Irish accent.

The time came when I was sending Father Joe off on his first solo navex.

As he was standing on the wing of the aircraft and about to climb into the cockpit, I called up to him ‘Best of British, Father Joe.’

Joe immediately became very angry. His face coloured up nearly as red as his hair and I really thought he would jump off the wing and do me a mischief.

Fortunately I realised what I had said and yelled ‘Best of Irish luck, Father Joe’. Father Joe, somewhat mollified, scrambled into the cockpit, his face lit up with a huge grin and he then went on to complete a satisfactory flight.

At all times then, we should be careful we do not end up with foot in mouth disease but take the advice of the Psalmist ‘Let the words of my mouth,...be always acceptable...’

David welcomes your own aviation anecdotes. Email them to [editor@sportpilot.net.au](mailto:editor@sportpilot.net.au)

# A leaner Arrow joins the team

BY BRIAN BIGG



THE ORIGINAL SKY ARROW WAS A TOUCH TOO HEAVY TO PLAY IN RAAUS. BECAUSE 600KGS IS OUR FIGHTING WEIGHT, THE SKY ARROW COULDN'T FIT IN THE RING WITH OUR LIGHTER MORE AGILE AIRCRAFT.

An advertisement for the Australian Government Civil Aviation Safety Authority's 'Outback Series II'. It features the Australian coat of arms, the text 'Australian Government Civil Aviation Safety Authority', and 'OUTBACK SERIES II' with a propeller icon. Below this is a grid of images illustrating the 'plan', 'arrive', and 'survive' stages of an outback flight. The 'plan' section shows a person in a cockpit and a map. The 'arrive' section shows a person with a dog and a landscape. The 'survive' section shows a person with a plane and a person with a gun. At the bottom, it says 'outnback.casa.gov.au' and includes social media icons for Twitter, Facebook, YouTube, and LinkedIn.

# SKY ARROW

## SPECIFICATIONS

LENGTH	7.6m
HEIGHT	2.6m
WING SPAN	9.7m
WING AREA	13.5m <sup>2</sup>
SEATS	2 TANDEM

## POWERPLANT

ENGINE	ROTAX 912 ULS
PROPELLER	3 BLADE GROUND ADJ

## PERFORMANCE

@MTOW, ISA conditions, sea level

STALL SPEED	38kts (Full Flap)
RATE OF CLIMB	1,100fpm
CRUISE SPEED	108kts @75% power
FUEL CONSUMPTION	18.5l @75% power
TAKE OFF ROLL	143m
LANDING ROLL	210m



## A leaner Arrow joins the team

**I**T had been up in the heavier European weight division at 650kgs, which meant it would require a fairly extensive training program to get a chance to spar in RAAus.

Well, it lost that weight and RAAus finally has one on the register, albeit a slimmer, trimmer version.

The Sky Arrow was never meant to be a plaything for us recreational flyers. This sleek tandem two seater was designed, like several other European ultralight aircraft, to be a tool for the Italian air force.

In the late 1990s, a company called 3i won a tender to supply the Italians with a surveillance and security aircraft. The pilot would sit in the front and, in the back, would be specialised surveillance equipment such as high resolution cameras and forward-looking infrared. The TCNS650, as it was romantically called, found a valuable place above the long and complicated Italian coastline.

The Italians then asked for a change in the design to allow a seat in the rear for an observer or computer operator.

3i discovered when they did the re-design that the TCNS650 now fit under the JAR rules and had, almost incidentally, become an ideal candidate to sell into Europe's GA market. They installed a second set of controls in the rear cockpit, moved a few things around to improve

the C of G and voilà, they had a hit on their hands. The Sky Arrow- a well-constructed, well fitted out carbon fibre ultralight. At the time, it set itself apart by the number of standard features it had, stuff not normally found on ultralights, such as dual alternators and cabin heating.

It proved to be very popular and sold in solid numbers.

Once the Sky Arrow had found its place in the recreational market, 3i set about making variations on the model. They stripped out all the fancy stuff for a 600kgs LSA version and beefed up another version to 750kgs.

This particular Sky Arrow arrived in Australia in 2007 as a GA aircraft, based first in Western Australia and then in Victoria. The current owner bought it last year, still on the GA register, and took it to Queensland. His home base is Gympie

Being a Canadian, he likes amphibians and is a fan of tandem seat aircraft with pusher props. The Sky Arrow ticked all the boxes except for the wet stuff. The next challenge was how to start enjoying this beautiful looking aircraft with the minimum fuss.

There are a lot of sensible reasons to convert an aircraft like this onto the RAAus register.

The owner is an RAAus pilot, but to fly a GA aircraft, he would need to get a GA licence, or

at least an RPL. Like many of us of a certain age, the idea of having to do the CASA dance is not appealing any more, let alone fronting the costs.

Also, as an RAAus aircraft, the Sky Arrow could be maintained by the owner himself, saving him lots of maintenance dollars. Being a factory built, he could also put it on line at a school, offsetting its costs and allowing the school to maintain it to the standard he requires. And quite frankly, the aircraft is more valuable on the RAAus register than it is on GA.

Brett Soutter, who also calls Gympie home, stepped in to help with the conversion, along with an experienced LAME and a CAR 35 engineer.

Brett has 40 years' experience in aviation, much of it in the military. Most of us remember him from when he was the Assistant Ops Manager a while back.

"Our task was to bring the empty weight down as much as we could from 440 odd kilograms," says Brett.

"It could have been registered at that weight, but it would have meant taking out the second seat and seriously reducing the fuel load. Obviously this would have limited its appeal for a school or if the owner wanted to make longer flights.

"Historically RAAus has been a bit leery about approving heavy aircraft like this, even

when owners have promised to remove the seat, and everything else, to bring down the weight. It found some owners had gone and put stuff back in when they thought no one was looking.

"That has obvious impacts on safety and on RAAus' ability to maintain oversight of its register.

"Because of these factors the conversion, which could have been fairly straight forward, took about eight months. In the end it was well worth it. He got the aircraft he wanted and probably increased the value of the Sky Arrow as a result.

"What we did was look at the well-appointed aircraft, which had been kitted out for cooler European conditions and night VFR and worked out what it didn't need for warmer Australian conditions and day VFR. We had to be careful to make sure what we removed did not have an impact on the centre of gravity. Obviously, the heater wasn't required or any of its ducting. Out, too, went one alternator including its control and relay switching systems.

And some instruments, bracketing and wiring servicing a number of other non-essential systems. Finally, we also removed a lot of other unnecessary bits and bobs."

They also did a new C of G calculation to make sure everything was still in trim and con-

cluded with a full Electrical Load Analysis for the CAR 35 requirements.

"Eventually we got it down to a much lighter 401kgs empty weight with 199kgs useful load. At that weight it can now take two people and a decent amount of fuel. That makes it ideal in a training environment and still useful for the pilot who wants to take it on a long distance trip," says Brett.

Obviously a pilot on his own can still load up with full fuel and luggage.

Brett says one of the appeals of the aircraft for him is that the designers set up the cockpit ergonomically like a fighter aircraft. It has the control column on the right and things like the throttle, choke, carburettor heat and flaps on the left. How does it fly? Read Brett's report on these pages

Sky Arrow 24-8719 is now online at Brett's Pro-Sky Flight Training Group in Gympie, the first of its kind on the RAAus register. Perhaps, now the process is completed, the owners of the two other Sky Arrows in Australia still operating under GA rules, might see the light and come over to our side of the playground.

Our Sky Arrow is much slimmer and more agile than they are. It would kick their butts.

# From the back seat BY BRETT SOUTTER



“Once airborne and post a bit of trim you can sit back and relax”

Ease of access

Tandem seating

**A**s you step up to the Sky Arrow in preparation for the Pre-Flight Inspection the first thing you notice is the larger size of this aircraft. Obviously it's high wing, T-tail and high set engine position make you feel like it's looking down on you, but even with those factors considered, this aircraft is just physically a bigger ship than you'd normally find in RAAUs.

How the manufacturer has brought those elements together from a design perspective is just outstanding. Everything seems to flow from one section to the next without error. The tandem cockpit streamlines into the tail with just the right proportions, as does the high mounted engine cowling into trailing edge of the wing. It's nearly impossible to find fault with how the Sky Arrow looks.

When you then begin your pre-flight it becomes apparent the build quality is easily equal to its looks. Carbon fibre throughout, serious precision vacuum moulding, with extra thought given to key issues like the cantilever nose leg system, double T-tail attachment

points, aerodynamic trim. It's quite impressive and evident the Italian Air Force was involved early in its development.

That military influence reappears as you enter the cockpit via the side fuselage flush mounted access step. It springs back into position once you take your seat. I have a little RAAF experience and the first impression I get is 'Mirage'. The cockpit size and layout is not that much different. Maybe the inability to deliver weapons and bolt around at ridiculous speeds is not there, but the ergonomic layout is, which ultimately reduces the workload for the pilot and/or student.

Once strapped in via the five-point harness, everything just seems to fall to hand as you work through the pre-start, post start and pre-take off checks. You may not be airborne yet, but you already feel there's a synergy developing between you and this sweet looking thing.

Taxi to threshold is almost like a regal event. The canopy and hinge system is so well balance and strong you can leave it open, idle the engine for taxi speed, lightly pulse the

brake levers with your fingers for steering - all while feeling a nice breeze and keeping a good lookout.

Once set for take-off, canopy closed and final checks completed, the ground roll to rotation is as smooth as..... with big control inputs required. The tandem-style cockpit, combined with the huge vertical fin makes for good directional stability, with only small rudder inputs required. Elevator authority kicks in at about 40kts and allows easy attitude selection for rotation.

Once airborne and post a bit of trim, you can sit back and relax. The Sky Arrow easily climbs at 800 to 900 feet per minute, all the way to flaps up (very little pitch change) and beyond. It's about now that the visibility really sinks in. The glider boys would be used to it, but in RAAUs it's a rarity these days, particularly from a fully enclosed cockpit.

My first flight was a delight. I knew it was going to handle like most other RAAUs mid-level performance aircraft, but I figured there would be a few differences.

Namely, pitching moments due to the high thrust line, plus possibly a little loss of elevator authority at low speed with the engine at idle. None of these were issues. I had to quite rapidly change throttle positions (idle to full and back) to get any reverse pitching moments at all. Any normal inputs on the throttle had the Sky Arrow behaving like a standard thrust line aircraft. Elevator authority remained positive even at low speed and low power settings.

During the upper air work exercise there was one thing that stood out - the Sky Arrow's continued control harmonics across the entire speed range. Most aircraft in, or entering the LSA category, have reasonable control harmonics at, or close to, the cruise speed. However, once you progress either side of that speed (particularly to either end of the range) you start to find one control, either elevator, aileron or rudder becomes dominate and requires an extra degree of force to achieve the desired outcome.

The Sky Arrow retains the harmonic throughout, being approximately 1-3-5 in our

little jobbies, regardless of the speed.

This demonstrates the excellent design which has gone into the size of control surfaces, the positioning of those surfaces on the airframe and the amount of leverage they provide at the different speeds.

The Sky Arrow continued to shine when you return to the circuit. In particular, the line of sight coming down finals at best glide. The sensation you get is very much like one of the legends of RAAUs, the Drifter. You're sitting up on the top of finals with a birds' eye view, where making early decisions on your approach profile is very easy.

Combine that with the 10, 20 or 30 degree flap selections and it shows the flexibility the Sky Arrow has to nail the approach. When it comes to the landing sequence, the Sky Arrow mirrors the take-off roll without fault. Again its directional stability after the flare is great, due to the keel surfaces around the cockpit and vertical fin. The hold-off can be progressed right down to about 40kts to touch down. If you manage your approach profile for a speed

of 55kts, set 30 degrees of flap and exercise short field techniques, you'll easily land in 150m. Not bad for a bigish bird.

Instructing from this aircraft (rear seat) presents a bit of a challenge because of the poor line-of-sight to the instrumentation in the front. Nevertheless, with some adjustments to scanning, and the fact the rear cockpit has all the necessary controls it doesn't take long to set up a routine.

In fact, it's very enjoyable instructing from the rear seat. You mightn't have a clear view of the front instrument pod, but you still sit higher than the front seat pilot and continue to get that awesome Sky Arrow panorama.

Even if RAAUs goes to a heavier weight limit and we get to see more of the GA aircraft coming across, it will be of no consequence to the Sky Arrow. It's here now, fully operational, and I'd struggle to think of any heavier types which would offer the same view and flying characteristics as this aircraft.

If you then factor in its build quality, well that's another feel good story. ✈

## DENILIQVIN AERO CLUB

# Going Bush

A day in Deniliquin focusing on outback flying  
6th May 2017

Deniliquin being a gateway to the outback, the theme will be planning that outback trip and the challenges of going to isolated aerodromes and using bush strips.

### SATURDAY AFTERNOON PROGRAM SPEAKERS

- Cmdr (ret) Keith Englesman who has extensive operational and test flying experience in military and civilian aircraft.
- Tim Penny, Aviation Safety Advisor CASA
- Jill Bailey National Operation Manager RAAus.
- A discussion session will follow chaired by Nigel Wettenhall CFI and principal Wettenhall Air Services, outback specialist air charter operator for 30years.

### DINNER

Dinner with guest speaker Cmdr (ret) Keith Englesman talking about his Navy and general aviation experience and his test pilot career.

For more details regarding the program accommodation and dinner tickets visit

[www.deniliquinaeroclub.com](http://www.deniliquinaeroclub.com)

DINNER TICKETS WILL BE LIMITED

## NO RUNWAY NO PROBLEM



THE MOST ROBUST SHORT FIELD BACK COUNTRY AIRCRAFT RANGE, THE HIGHLANDER AND FOR THE EXTREME THE SUPERSTOL. 2 SEAT, HUGE STORAGE AMATURE & FACTORY BUILT CALL FOR A DEMO



[www.justaircraft.com.au](http://www.justaircraft.com.au)

**JUST AIRCRAFT**  
Quirindi NSW

M Brett 0488 462 000  
M Coralie 0488 546 200  
E 1superstol@gmail.com

FEATURE



# Free beer from five corners

BY RICK FRITH

HERE is a great question to pose in a pub and score a free beer: If you take a single step across the southern border of the Northern Territory, name all the states you might tread in.

Surveyor General's Corner



Australian Government  
Civil Aviation Safety Authority

## SO YOU'VE HAD A CLOSE CALL?

Why not share your story so that others can learn from it too? If we publish it, we'll give you \$500. Email us at [fsa@casa.gov.au](mailto:fsa@casa.gov.au)

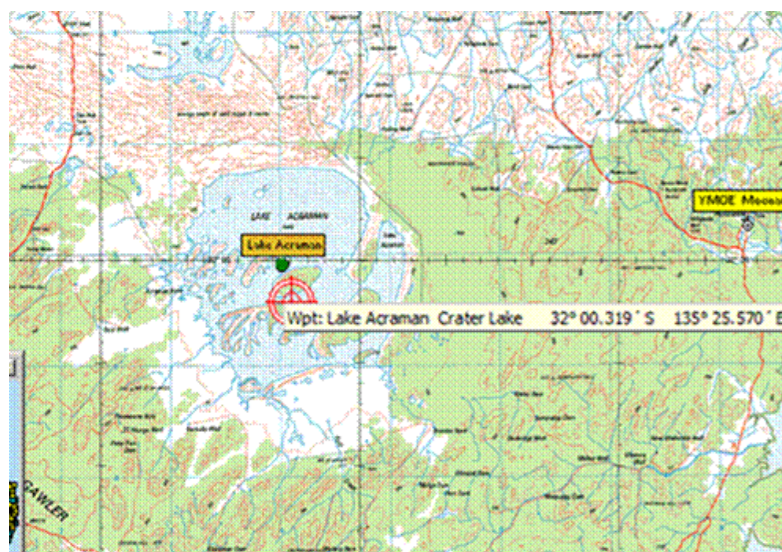
Articles should be between 450 and 1000 words. If preferred, your identity will be kept confidential. If you have video footage, feel free to submit this with your close call.



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



Cameron Corner airstrip



Cameron Corner



Big Red



Poeppel Corner



Cameron Corner airstrip

## Free beer from five corners cont.

**THE answer is South Australia (obviously) and, more surprisingly, Western Australia.**

This is one of the many interesting facts I have learned flying in the outback, visiting the various corners where the states join each other in the deserts of central Australia.

I first passed Haddon Corner without much thought transiting from Windorah to Birdsville, exploring the channel country. It was a visit to Cameron Corner the following year which sparked an interest in me to see all the corners from the air. Cameron Corner has a pub and a 1,200m dirt strip. You should phone beforehand to check the airstrip condition and always make a careful inspection of it from the air before landing. The 'few slight ruts from recent rain' required a very precise touchdown and roll out to avoid the fate of an earlier aircraft. What appeared to be a weathered cow's skull by the side of the runway was found, on closer inspection, to be a broken nose wheel spat from another Jabiru.

The visit was rewarded with a pub lunch, the opportunity to play tri-state golf and the delight of a young lad who got to boast he had thrown a stone from Queensland, all the way across NSW into South Australia.

If you are heading north to Birdsville (where Avgas and accommodation are available) you can travel via Innamincka and the Burke and Wills Dig Tree. Poeppel Corner is only another 70 miles to the west of Birdsville. However, these legs cross the Strzelecki Desert and enter the Simpson Desert, so serious preparation should be made for remote area flying. Before you reach Poeppel Corner, you can also see Big Red, the highest sand dune in Australia.

A long, long way further west is Surveyor Gen-

eral's Corner. Before you arrive there, however, you might pass by Johnston Point, which I should mention in keeping with the surveying theme of this article. This stone cairn is located only three miles north of the NT/SA border, just near the Cavenagh Homestead and was the central reference point for all Australian surveys until quite recently. The nearby Kulgera Roadhouse is a convenient lunch stop.

Folklore claims fewer people have been to Surveyor General's Corner than have visited the South Pole. This may be possible, given its remoteness, the need to obtain an access permit and be accompanied by an indigenous representative. But no such restrictions apply when flying overhead.

Nor is it particularly remote from the air as

"Always make a careful inspection"

accommodation and fuel are available within 60nms at Giles and the potential emergency Wingellina airstrip is only five miles away.

I spent almost 15 minutes circling Surveyor General's Corner, trying to spot the marker post among the confused tracks and collection of vehicles. It was only when examining the photos later and doing some internet research I discovered there were, in fact, two corners, located about 172m apart. The easterly one was named after the three state surveyors present when the obelisk was unveiled in 1968. The westerly corner is unnamed. Historically, the WA border was defined by stone cairns placed near the north coast at Argyle and south coast near Deakin, supposedly representing longitude 129°E. In fact, these markers were wrong, and the error produces a 172 metre dog leg in the WA border. This dog leg can win you the beer.

Oh and another thing. Don't rely on Google Earth to settle the argument... the state borders are wrong. Instead zoom in on Google Maps or try this link: [www.ga.gov.au/scientific-topics/national-location-information/dimensions/border-lengths](http://www.ga.gov.au/scientific-topics/national-location-information/dimensions/border-lengths)



Poeppel Corner



# DESTINATION

## Curtin Springs

Wayside Inn offers a perfect base from which to visit the Uluru and Kings Canyon areas. Enjoy its authentic homestyle meals, lovely gardens and unwind in what visitors refer to as an oasis. The historic Bough Shed offers the perfect place for a cold beer, hot cuppa or a meal. Take the time to explore the history of the pastoral industry, the Severin family and what it takes to live in such a remote place, raise a family and run a business here. There is also a wide range of native birds and parrots in the large aviaries.

### CURTIN SPRINGS PAPER

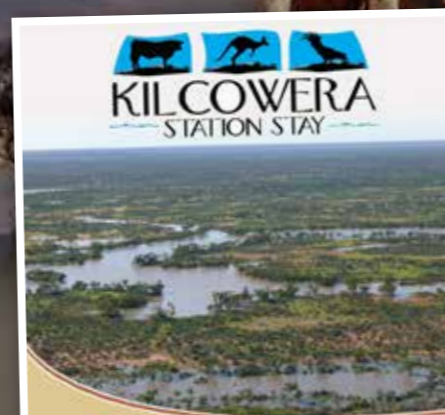
See how the renowned local paper is made from the native grasses on the station. A great gift or memento. One hour tours of the production area run twice a day. Tour participants have exclusive access to the full range of Curtin Springs Paper products and the Gallery.

### ACCOMMODATION

There are 27 accommodation options ranging from budget rooms with shared bathroom facilities to family rooms with disabled bathrooms. There is also a small number of powered sites and unlimited free unpowered sites. Meals vary around the age-old favourite of a good steak. When possible the Wayside Inn uses its own meat in a multitude of delicious home style dishes.

### FLYING IN

The Inn has its own airstrip but its best to call first to make sure it's available. S25 20 00 E131 45 32 Direction 12/30 Length: Up to 1,300m Width: 30m. Surface: Unsealed. Elev 1,620ft. Frequency: CTAF 126.70 mhz. Mobile phones do not work but there is WIFI. ULP available and there are card facilities. For more information, [www.curtinsprings.com](http://www.curtinsprings.com)




**KILCOWERA STATION STAY**

Kilcowera Station is a large organically run cattle property 1200 Kilometres west of Brisbane on the Dowling Track.

A stunning contrast of mulga rangelands and ephemeral wetlands brimming with birdlife and other wildlife and great destination for a week away or as a stopover on your journey through Outback Queensland.

[gtsherwin@bigpond.com](mailto:gtsherwin@bigpond.com)  
 07 4655 4960  
[www.kilcowera.com.au](http://www.kilcowera.com.au)



## Kilcowera Station

Kilcowera Station is a private and remote destination for a week away or as a stopover on your journey through outback Queensland. The property is open from late March through to the end of October. Requests to camp over the summer months will be considered by the owners on a case-by-case basis.

Accommodation is provided in modern and comfortable self-contained Shearer's Quarters which have five twin share bedrooms, one bedroom with three single beds and two bedrooms with queen size beds (17 beds all up). Meals are available if booked in advance for groups of 6 or more guests. There are two camping areas - one at the Shearers Quarters on the large lawn area and the other being at Cardenyabba Lagoon where there is a series of private and secluded campsites along the waterfront. Facilities at the lagoon include a long drop toilet, fireplaces, complimentary use of a kayak, direct water frontage and loads of yabbies.

Kilcowera is a bird-watcher's paradise with over 180 species on the property. Many of the outback's other iconic animals are easily seen, including red kangaroos, eastern greys, emus, lizards and echidnas. Yabbing, canoeing and swimming in the lagoon, dams or waterholes are popular activities as well as bushwalking and stargazing.

Guided tours of the property can be arranged as well.

Kilcowera is ideally situated for day trips to nearby Hungerford, Currawinya National Park and Thargomindah. Other nearby attractions include Bindegolly National Park, opal mines at Yowah and Black Gate and the villages of Eulo, Toompine and Noccundra.

### FLYING IN

The airstrip is located at S28 37 20 E143 51 04, Length 1,300m. Direction 09/27. Elev 180m. The airstrip is part of the road into the station and has a windsock on the southern side with a parking area at either end of the strip. The airstrip is located about 10kms to the northwest of the homestead and permission must be obtained prior to landing. The old airstrips (03/21, 13/31) are decommissioned and are not to be used. Fuel is not available at Kilcowera. Premium unleaded is available at Hungerford - please ring the Royal Mail Hotel to check availability. Avgas available at Thargomindah. For more information visit [www.kilcowera.com.au](http://www.kilcowera.com.au)

## Bendleby Ranges


Bendleby Ranges is an adventure tourism destination, located on a working station in the Flinders Ranges, north of Adelaide. It offers serenity and tranquility in an unspoilt natural environment, with remote campsites nestled among gum lined creeks and set into the hills of the Bendleby Ranges. Private powered or unpowered campsites in the main camp ground are surrounded by native pines and located within walking distance to the camp kitchen. Affordable, well presented, quality accommodation decorated in country inspired styles are Crotta Homestead, Gumdale Cottage, Acacia Cottage and The Shearer's Quarters.

4WD tracks, bush walking, mountain biking and bird watching are among the activities on offer. There are panoramic views from the two rugged mountain ranges and views towards Lake Frome, Wilpena Pound and the surrounding countryside.

Bendleby Ranges won the AdvantageSA Regional Awards Sustainability Award three years in a row and was inducted into the Telstra Hall of Fame in 2011. It has also won various SA Tourism Awards, including a Silver Medal in the Ecotourism category 2013, two awards in the 2013 Flinders & Outback SA Tourism Awards and the Master Farmer Award for 2010.

### FLYING IN

Arrive at Bendleby Ranges, Southern Flinders Ranges in your aeroplane. Then sit back and relax. Enjoy the scenery, or try a guided tour with your host, cycle, take a walk and get close to nature. The airstrip is at S 32 21 432 E 138 47 569. Elev 1,541ft. Length: 900m. Direction: E-W. Surface: Compacted. Avgas is available by prior arrangement. Internet access is available so you can download the latest met. forecasts. For more information, [www.bendlebyranges.com.au](http://www.bendlebyranges.com.au)



GET AWAY FROM IT ALL AT BENDLEBY

Discover first-hand the splendor of Bendleby Ranges

Arrive at Bendleby Ranges, Southern Flinders Ranges in your aeroplane, once here, sit back and relax.

An eco tourism certified experience, choose from our packages: Try a guided tour with host Warren, or the cycling tracks, take a walk and get close to nature.

[bendlebyranges@bigpond.com](mailto:bendlebyranges@bigpond.com)  
[www.bendlebyranges.com.au](http://www.bendlebyranges.com.au)  
 (08) 8658 9064

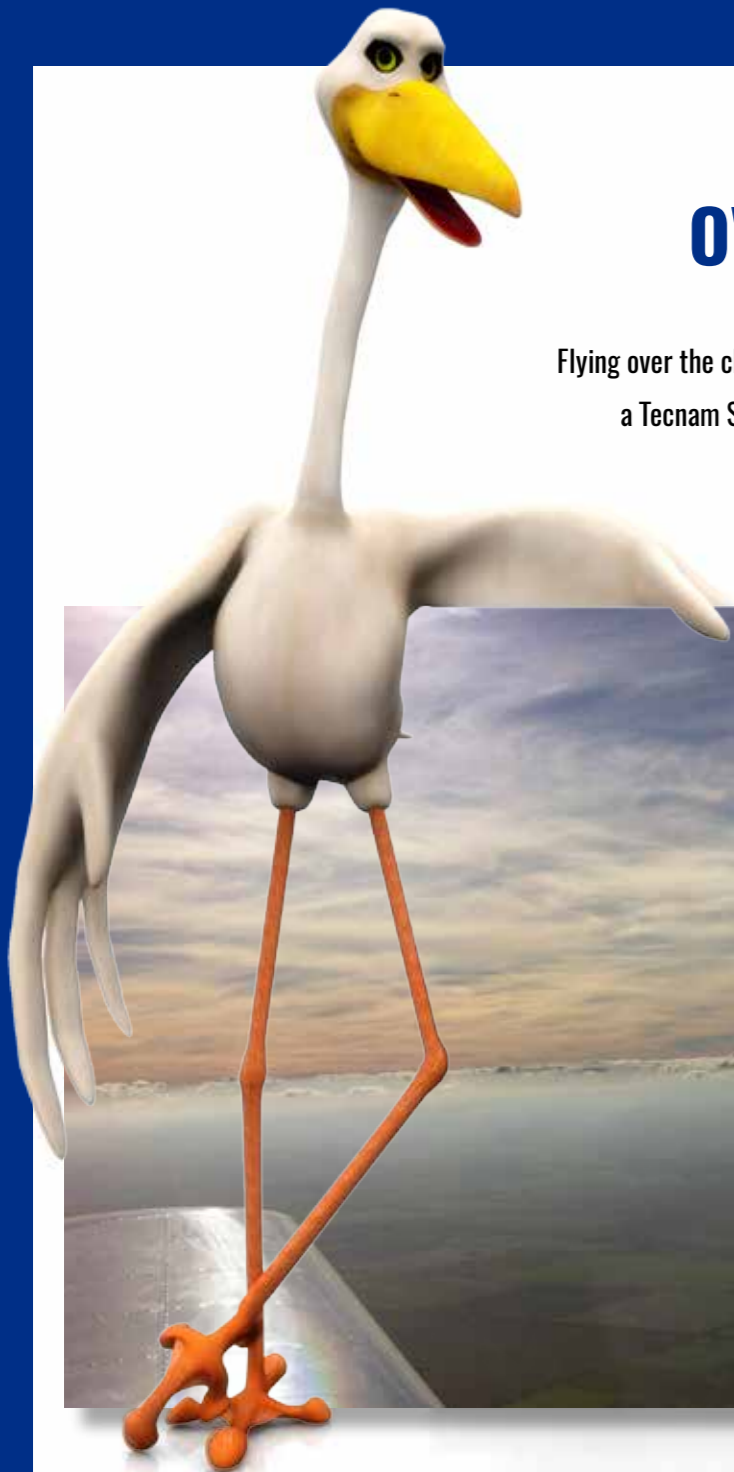


THE WONDERS OF OUR HOME  
**CURTIN SPRINGS**

A very special part of Central Australia, owned by a family who have made this remote place their home. Curtin Springs offers clean, comfortable and affordable accommodation as a perfect base for you to explore the Ayers Rock (Uluru) and Kings Canyon areas. Enjoy our authentic homestyle meals, our lovely gardens and take an opportunity to unwind in what visitors refer to as an oasis.

Curtin Springs, Lasseter Highway NT  
[enquiries@curtinsprings.com](mailto:enquiries@curtinsprings.com)  
[www.curtinsprings.com](http://www.curtinsprings.com)  
 +61 (08) 8956 2906





## OVER THE CLOUDS

GRAHAM PATERSON

Flying over the clouds late in the afternoon near Goolwa South Australia in a Tecnam Sierra owned by James Gardiner. Jim took the photo.

## POSTER OPPORTUNITY

Want to see yourself or your aircraft larger than life on your clubhouse or bedroom wall?

*Sport Pilot* is offering subscribers the chance to show off their favourite aviation photo in this double page centre spread of the magazine each month.

Each edition one photo will be chosen (We will try and make sure every photo sent in gets a run). If you are an aircraft seller, it's a great chance to show off your product.

If you have a fancy paint job, now is the time to show it off. And if you have a great photograph of you and your mates at a fly-in, it will make a good memento.

Send your photos (as separate jpeg attachments) to [editor@sportpilot.net.au](mailto:editor@sportpilot.net.au). It obviously has to be in landscape, not portrait, mode and be as big a file as possible please.



# Trying to be helpful

BY BRIAN BIGG

**I** learned the other day that it doesn't always pay to try and be too helpful. And it could well be an issue when we're scooting around in controlled airspace soon, playing with the big boys and feeling smug.

Here's what happened.

For many years now, I've flown mainly in and out of uncontrolled airports.

At grass strips in remote parts of the country, my radio broadcasts have been along the lines of 'I'm on final, Keith. Going to land just to the left of the mower and park it in the shade behind the shed.'

And Keith would reply something along the lines of 'No worries Brian, I'll follow you in. Watch out for the sheep.'

It communicated both our intentions clearly and, because there was no one else within cooee, the non-standard chatter didn't bother anyone.

At Evans Head or Narromine, change to 'often there are what sounds like 100 aircraft in the circuit, my calls become a lot brisker, '42-27 downwind, following the Jab on base' or 'Ultralight 42-27 entering and rolling 36'.

Brisk and to the point. No time for a long chat.

At Ballina on a busy day with RPT and jump planes in the circuit, if someone called out '42-27 is it okay if I enter and backtrack 06 in front of you?', I might even answer '27 affirm' to keep the chatter to a minimum.

All in the interests of being efficient and brisk on the radio, and not tie up the airwaves.

I loathe the calls I sometimes hear at fly-ins by the bloke who is 20 miles out and doesn't seem to get the fact that he's not on his own in western Queensland any more (Don't get upset. I just picked a remote place at random to make my point). This bloke never seems to care there are 15 aircraft ahead of him trying to work out exactly where we all fit in the circuit picture.

"Ah.....Narromine traffic.....ahh.....Alpha, Bravo,....ah....Charlie, 20 miles out.....ah....inbound.....ah..."

By the time he gets that far into what is shaping up as a two minute long broadcast, I want to strangle him, because I'm usually heading towards the circuit at 100kts and don't have any of the traffic sighted.

"...ah....expect circuit time...ah....two years from now...ah..."

My point is, over the years I've compensated for these long winded lollygaggers by being short and sharp on the radio. I don't want to be that guy. I adjust my radio calls according to how busy the air is over the strip.

But I came unstuck last weekend during a session of circuits. Keen readers might recall I relocated last year to Camden which has a tower.

Up early last weekend, I thought I'd get out and go round and round while it was still calm and cool. But this is Sydney and lots of other pilots had the same thought.

Before I was two laps into my session, the circuit had five of us going

round and round. The tower told anyone else who wanted to dance they had to wait for a space.

The tower guy at Camden is always really helpful, friendly and accommodating, but on this day he was like the Melbourne Cup caller. There were five of us in the 06 circuit, a couple of others on the 10 circuit, and still more asking permission to taxi to and fro.

The tower was a constant stream of words. You had to pay attention for your call sign but you also had to admire how he was able to keep it all separate in his head.

When he told me '42-27 number one, clear 06 for a touch and go', I replied in my most helpful and professional RAAus manner, '42-27' and proceeded to do as I was told. Brisk and to the point, like at Narromine or Evans Head during the busy times. Don't tie up the airwaves.

For the hour I was in the air, the poor bloke didn't shut up and I felt I had done my bit by not being the lollygagger on the radio.

But when I made my final '42-27 downwind for a full stop', he cleared me to land... then chipped me.

"42-27 please be aware you are supposed to repeat my instructions back in full."

My mouth dropped open.

I thought to myself, "you ungrateful bugger! Here I was trying to help you out because I could hear you were really, really busy!"

After landing I rang him just so he would know just why I had made my abbreviated responses.

He kept me on hold for ages, because he was on his own up there and still really, really busy. And when he finally had time to talk to me for a moment, told me it didn't matter how busy he sounded, I had a responsibility to use the correct terminology regardless.

Yes, I knew that. Apparently GA knuckleheads in class C and D airspace can't think for themselves and have to prove to him they understand what they are told. Ok then, I thought, I will be that guy after all.

"Ah...Camden tower.....ah....Ultralight.....ah....42....ah... 27....downwind.....ah....for a....ah... touch and go...ah...estimate downwind ...ah....in a year from now." See if he likes them apples when the circuit is really, really busy.

I cooled down on the drive home. He's a nice bloke, he was very polite and helpful and ultimately, I can't ever escape my responsibility as an RAAus pilot.

The real lesson sank in by the time I got home. Perhaps I can ramble when Keith and I are the only two in the air for miles. And perhaps I have to be short and sharp when dancing with my racy RAAus pals at a busy fly-in.

But when I'm playing with the big boys in their airspace, I have to play by their rules, even if it means I'm not helping them out when they're really, really busy. ☹️



"Apparently GA knuckleheads in class C and D airspace can't think for themselves and have to prove to him they understand what they are told"



# Unforgiving

BY OWEN ZUPP

**O**VER recent times, tragic news seems to have become all too frequent for the aviation community. In recent weeks alone I have known two pilots who have perished and, when I tally the number over my career, the number is confronting. In the cruelest manner, it seems we are all reminded that tragedy is the ever-present companion in the skies we seek to transit. As the son of a former combat fighter pilot, I had grown up around the potentially fatal nature of aviation. As I flicked enthusiastically through fading photographs of fast jets, my father would answer my questions in an even tone. Often my enquiries with reference to the pilots was met with, "He got killed by ground fire near Haeju", or "I think he put a Mirage in off the coast during a training exercise". Their young faces beneath flying helmets still stare back at me so many years later.

My own first encounter with the harsh lessons of aviation started as a student pilot. Still a paramedic by trade, I stood at the Royal Aero Club counter as the airport's crash horn sounded and the ominous black, oily plume rose from beyond the runway's end.

Despite being off duty, I drive my car the short distance around the airfield perimeter and entered the factory where the Piper Cherokee Six had plunged vertically through the roof.

One burnt survivor had been thrown onto the rooftop, while I dragged another from the smoke-filled building. Four remained in the wreck, still strapped into their seats, lifeless. Any complacency about aviation which youth may have been tempted to bestow upon me was banished at that very moment.

In the losses of recent times, as is so often the case, there are not necessarily any common themes. Each was in a different type of aircraft, with the weather varying from despicable to fine and clear. The pilots ranged vastly in experience and their operations covered the spectrum from private flying to commercial aviation.

The only shared trait seemed to be the tragic outcome. I read through the various news reports with a strong dose of suspicion, borne of decades reading of ill-informed, sensationalist reporting. Details seemed to change by the hour and rumours took on the status of fact until the next piece of hearsay could be generated in the public domain.

What could not be disputed was the life-altering impact of these accidents upon so many.

To such a backdrop, one by one I recalled the faces of those I had seen lost at the brutal edge of aviation. As I penned each name, the sobering truth was rammed home to me; no one is immune.

The list of names was far longer than I had anticipated. They ranged from pilots with whom I had shared a meal and conversation, to close friends and work colleagues. Nearly all of them were commercial pilots eking out a living in general aviation, though some had also been lost pursuing their passion just for the love of it. Some were starting their journey, excited at their first gainful employment and some were experienced mentors in the service of the nation's aviation regulator. One by one I recalled their faces. The 'old hand' Bill whose ultimate oversight in 40 years of safe flying was not spotting the glider which sheared off his Bonanza's tailplane. And Brinley, celebrating at a restaurant at the news he'd secured a position with the national carrier, only to perish nights later, circling into a black hole in rural Australia in the foulest of weather. Trevor, whose single-engined fish spotting aircraft had force landed at dusk into the frigid waters, only to survive the impact, but not the swim to shore. Freddo, who'd tried one too many hair-raising flying feats at too low an altitude, only to pancake into the rising terrain. Alan and Peter, who had been searching for another aeroplane when their own Cessna's engine had failed over inhospitable terrain. Fernando, who descended gently into the ground in the wee hours with a full load in his Baron. My fellow freight pilots who had been lost within a couple of months in a bleak, wet winter of low cloud and icing levels. On and on the list continued as face after face stared back at me.

Admittedly, there were those who had been sticking their necks out further than the rules and common sense would advise. But, for most, it was simply a case of the odds stacking up against them in a series of compounding smaller events; the classic 'Swiss Cheese' model of Dr. James Reason. For a few, it was the simple bad luck scenario of wrong place-wrong time. Universally, however, they are all still with me; even though I have not thought of many of them in recent years. They are with me every day. They are with me as I flight plan and as I retract the landing gear. They are with me as the day becomes night and as the weather turns dark and walls of water confront me. They are with me always.

They are not evil spectres awaiting my demise. They are those who have gone before and paid the ultimate price. They paid for their harsh lessons with their lives and I am now the benefactor of their loss. In many ways, I owe them for the joy I have experienced in the skies above. They may have gone before, but they have stayed behind to tell me when enough is enough and when danger is lurking. They are there when the hair stands up on the back of my neck. They level the playing field and stand on the kerb whenever the temptation to cut a corner may exist.

They were acquaintances, colleagues and close friends who lived and breathed for aviation. I count myself fortunate to have thus far safely encountered my way, but this is not an automatic right. It requires an ongoing commitment to safety and discipline at all times and anything less is to dishonour those who have sacrificed so much. We call the skies our home and it is not a dangerous place to encounter. However, as those who have been lost recently and in the distant past can attest, aviation can be very unforgiving.

**"Unforgiving" was originally published in Owen's book '50 Tales of Flight'.**

"They are with me every day"

# Getting ready to get heavy

BY THE OPS TEAM



## WEIGHT AND BALANCE, CENTRE OF GRAVITY, AIRCRAFT LOADING LIMITATIONS, AIRCRAFT PERFORMANCE CONSIDERATIONS, WHAT ARE THEY ALL ABOUT? WHY DO RAAUS PILOTS NEED TO WORRY ABOUT THESE THINGS, WHEN WE ONLY FLY RAAUS AIRCRAFT?

**L**ET'S take these one at a time, work out what they mean, why they are important and the implications for RAAus aircraft and pilots.

### WEIGHT AND BALANCE

This is completely within the expected area of pilot responsibilities. The aircraft manufacturer generally provides either a graph or relevant information in the Pilot Operating Handbook to allow a pilot to manage the MTOW and balance of the aircraft.

Many of the aircraft currently registered RAAus have very simple systems to determine aircraft weight and balance. They may simply state that provided the baggage area is not overloaded past a specified weight and the Maximum Take Off Weight of the aircraft is not exceeded, there are no other weight and balance considerations. An example of this is the Tecnam Sierra which states in the POH that, provided no more than 20kg is placed in the baggage area behind the seats and the aircraft isn't loaded past 600kg MTOW, the aircraft can't be operated outside the weight and balance limitations.

Tandem seat aircraft can present additional challenges. Sometimes they can require the pilot to operate the aircraft from the front seat if alone, or place limitations on how heavy a passenger can be. The POH is the primary source for this sort of information and must always be consulted.

The venerable Austflight Drifter 582 POH provides W&B and loading information in two ways - via loading references and calculations using a datum and moment arms and basic general information about minimum pilot weights for either seat, along with the C of G limits.

But how about all that lovely space in the back of a Jabiru J230? The Jabiru J430 has the same airframe, so why not just throw the golf clubs, bags and other gear into the back and load the J230 to 700kgs?

There are two parts to this question. Firstly, the J230 POH notes two baggage zones, A and B. It requires baggage to be restrained using straps fitted in the baggage area. In Section 6.4 of the POH, information is provided for calculating the aircraft weight and C of G positions. Loading charts in imperial and metric are also provided.

Secondly, this is where the current legislative limitations for RAAus aircraft become relevant. Civil Aviation Order 95.55 currently limits RAAus aircraft to MTOW of 600kgs, (excluding floatplanes which are limited to 650kgs). So even if an aircraft is capable of flying with more than 600kgs MTOW, as an RAAus Pilot Certificate holder, 600kgs is where we have to currently stop loading.

So, what are the potential issues of placing too much baggage too far back or overloading the aircraft past its MTOW?

RAAus has a video explaining W&B issues and how it can affect the performance of the aircraft, which can be found at this link from the member portal. [www.members.raa.asn.au/safety/national-safety-month-2016/resources](http://www.members.raa.asn.au/safety/national-safety-month-2016/resources)

Also, weight, whether it relates to all up MTOW or to W&B and loading considerations, can have a serious effect on the safety of the aircraft.

For the future, W&B will become even more critical when aircraft up to 1,500kgs become eligible for RAAus registration. Anecdotally, pilots sit in bars and tell stories about "whatever you can close the doors on in a Cessna 172, you can fly". The reality is, the heavier the aircraft, the more careful a pilot should be to operate it within the manufacturer's specifications.

But even if a four seat aircraft up to an MTOW of 1,500kgs is approved for RAAus, the intention will always be for RAAus certified pilots only to fly with one passenger, even though the temptation to fill up the two rear seats with gear for a big camping trip will be tremendous. What results could there be if the aircraft is not carefully loaded and the W&B affected as a result?

By the way, we are working closely with CASA on a proposed weight increase for RAAus, but even though there have been positive initial responses, there has been with no slated commencement date as yet. We will keep you informed of our progress.

### CENTRE OF GRAVITY

It is tempting to think that W&B and C of G are similar terms for the same thing, but this is not the case. While W&B is under the control of the pilot, certain C of G limitations are actually built into the aircraft by the designer and can't be changed without modifying the aircraft.

The C of G is generally presented as a range of acceptable limits, both forward and aft. Think about the changes required for an aircraft to convert from a nose wheel or tricycle undercarriage to a tail dragger or conventional undercarriage. An example of this possibility is the Piper Colt, which was designed to convert from one type of undercarriage to the other. The most noticeable change is the position of the undercarriage attachment points relative to the wing attachment points, and therefore the change to the C of G range.

Another example is when an amateur builder decides an engine (say a four cylinder horizontally opposed air cooled engine) could be replaced with a 6 cylinder horizontally opposed liquid cooled engine. The builder might have great hopes for producing more power, or getting better performance, but if no changes are made to the engine mount, a serious change in the C of G of the aircraft will happen. The aircraft might appear to fly acceptably while the engine is operating and airflow is produced over the empennage, but if an engine failure occurs and that airflow stops, the aircraft might actually become uncontrollable.

Again, pilots need to carefully consider the C of G range to ensure the aircraft remains controllable throughout the entire flight, as fuel burns off, or if the pilot drops a passenger off or adds a passenger or baggage.

Another example of a C of G issue occurred recently with an amateur built single seat aircraft, which had its W&B completed by an approved W&B holder. The C of G limitations indicated it was within acceptable C of G range, however when the pilot conducted the first test flight he reported he could not glide the aircraft, but needed power and a much higher approach speed than the POH specified.

The aircraft flew acceptably in every other respect other than running

out of aft trim.

An investigation revealed the W&B had been completed from the reported datum of the front of the propeller, but the aircraft had a spinner fitted, which was used by the W&B assessor.

The resulting 180mm error revealed, on recalculation, that the aircraft was actually at its forward C of G limit. When corrected by moving the battery from the firewall to behind the pilot, a challenging aircraft to land became a pussy cat, with manageable glide approaches, using the approach speed indicated in the POH.

I also recall seeing an aircraft stagger into the air at Natfly one year, simply because the pilot had not considered the effect of moving a tool bag, which weighed 4kgs, from the seat (which was on the C of G central position) to the parcel shelf behind the seats.

The result was an almost uncontrollable aircraft and the serious possibility of a stall/spin at low level on take-off. It was a horrifying thing to watch and I can only imagine what was going through the pilot's mind as he wrestled with the aircraft.

For the future, heavier aircraft up to 1,500kgs might have luggage lockers in aft positions, or the capability of adding much more baggage, all of which will require careful management of the C of G. These changes, and the awareness by the pilot, will form part of any conversion process for those pilots who haven't flown these aircraft.

### PERFORMANCE

Finally, let's consider the different performances of two aircraft. A Foxbat, operating at the MTOW of 600kgs using a 100hp engine, is being flown from a relatively short paddock on a 30° day.

The Foxbat might normally use about 150m of runway, however under these conditions, it might use up to 250m. This is an increase in take-off distance of almost 60%, but the hotter day doesn't appear to make a significant difference to performance, due to Foxbat's power to weight ratio.

If we compare this to a Cessna 172 with a 160hp engine, and MTOW of 1,113kgs. The ground roll and obstacle clearance on a hot day might be increased by 400-500m, a significant difference. A pilot used to the relatively nippy performance of most RAAus aircraft could easily be caught out by the longer ground roll, slower climb and reduced obstacle clearance of the much heavier aircraft.

In summary, pilots must manage and confirm many variables when flying different aircraft, some of which are directly under their control, such as loading, MTOW and assessment of performance on different days, and some of which are built in, such as the C of G range. When the weight increase to 1,500kgs occurs, pilots will need to be even more vigilant, and make sure the POH is used as the only really reliable information source. ☺



## TL-ULTRALIGHT AUSTRALIA PTY LTD

TL 2000 Sting S4  
Max cruise 135knots  
Stall 34knots 300kg payload



Factory built 2 seat carbon composite  
Rocket powered parachute recovery system  
TL 3000 Sirius high wing also available

 [tl-ultralight.com.au](http://tl-ultralight.com.au)  
 [john 0408 529 838](tel:0408529838)

# It's SARTIME!

BY GEOFF RAEBEL AND JEREMY ROBERTSON

A LOT OF RAAUS PILOTS GET NERVOUS WHEN DEALING WITH AIRSERVICES, YET THEY NEED NOT BE. AIRSERVICES CAN BE HELPFUL IN A NUMBER OF WAYS, NOT THE LEAST OF WHICH IS PROVIDING PILOTS WITH A GUARDIAN ANGEL DURING A LONG DISTANCE JOURNEY.

**S**EARCH And Rescue Time (SARTIME) sounds dramatic but it's a relatively simple way to ensure that if you don't turn up where and when you plan to, someone will know and send out the cavalry.

## HERE'S HOW TO DO IT

Go to <http://www.airservicesaustralia.com/naips> and either register (using your RAAus number where it asks for an Aviation Reference Number) or Login if you've registered before.

The left hand panel defaults to Briefing, where you can request Area Forecasts, TAFs, NOTAMs and First/Last Light times. Further down the left hand panel select 'Flight Notification' and then SARTIME.

Then it's a matter of filling out the form.

## AIRCRAFT ID

- You can submit a practice notification by entering NOSEND in this field;
- Otherwise enter your full six digit registration without the dash (eg: 244422 or 245356).

## AIRCRAFT TYPE

- AP22 for a Foxbat;
- LWIN for Lightwing;
- ULAC for an ultralight with no specific code;
- these are the designated ICAO codes which can be found at <http://www.icao.int/publications/DOC8643/Pages/Search.aspx>

## ENDURANCE

- total fuel endurance to dry tanks in hours and minutes (HHMM);
- eg: 0430 for four and a half hours, or 0200 for two hours.

## POB

- total number of people on board the aircraft;
- eg: 1 or 2.

## DEPARTURE POINT

- eg: YOAS (The Oaks).

## ETD

- Estimated date and time of departure in UTC;
- Subtract 10 hours (EST) from local time (11 hours during daylight savings);
- eg: a 9am departure on July 11 is a UTC departure time of 11pm on the July 10 = 1707102300 (format is YYMMDDHHMM);
- The first box is the year/month/day in YYMMDD (click on the calendar icon to autofill this box);
- The second box is the time in HHMM.

## DESTINATION

- eg: YBTH (Bathurst).

## ALTERNATE

- If your destination aerodrome requires an alternate for any reason (usually poor weather), enter your alternate aerodrome;
- eg: YORG (Orange);
- Notes for the departure, destination and alternate fields;
- If you don't know the code, click on the search icon (little magnifying glass) to search for it;
- You can also enter a lat/long if your destination doesn't have a code.

## SIGNIFICANT POINTS

- Turning points on your flight plan (eg: NPBR, YKAT etc);
- These can be any airport/heliport/navaid/waypoint which has a code;
- Or, you can enter a lat/long;
- Even if you don't go exactly over a point, enter something vaguely near where you're going, so people will know where to look for you.

## SARTIME

- DTG stands for date time group;
- Again in UTC in the format YYMMDDHHMM;
- Enter it in the same way you entered your departure time.

## THERE ARE VARIOUS METHODS TO CALCULATE YOUR SARTIME:

- Add your endurance to your departure time. If your fuel tanks are empty, you will very shortly be on the ground. Eg: departure of 2300 + 0430 endurance = SAR of 0330.
- If last light occurs before you will run out of fuel, use last light.
- If your endurance is greater than your flight time, add one hour to your expected arrival time.

Once you've decided on a time, convert it to UTC and compare it to your departure time to make sure you haven't made an error. Set an alarm on your phone for 10 minutes before your SARTIME expires.

## BACK TO THE FORM

- The FOR field should be set to ARRIVAL;
- AT = your destination airfield entered earlier (eg: YBTH).

## CONTACT

- PIC is your name (I always enter my first and last names);
- phone should be your mobile, if they have a query about your SARTIME they'll call you to sort it out.

## RADIOS

- VHF - tick, the aircraft has a VHF radio;
- ELT 406 MHz - tick if you have one.

## REMARKS

- Here it is useful to enter the colour of the aircraft so people know what to look for. Eg: yellow, white and orange;
- For RAAus aircraft it can be useful to enter a statement such as 'CALL-SIGN IS FOXBAT 4422' because air traffic control is not always familiar with our aircraft types. If your SARTIME expires while you are airborne they will try to contact you via the area frequency.

## OTHER CONSIDERATIONS

You can enter a SARTIME the day before you go flying but you can only have one active SARTIME at any time. So if you plan to fly to Bathurst for lunch, then return home, nominate a SARTIME for the leg to Bathurst. Once that SARTIME has been cancelled, you can nominate a SARTIME for the return leg.

If, on the day of the flight, you decide to change your flight route (eg: due weather or you want to divert to look at the something interesting) phone Flight Briefing on 1800 805 150 and tell them you'd like to change the significant points on your SARTIME notification.



They'll look it up using your aircraft ID, which will be all six digits (eg: 244422).

If you decide to change your flight route once airborne, call the area frequency controller and REQUEST them to make the change:

**"Melbourne Centre, Foxbat 4422, request."**

**"Foxbat 4422 go ahead."**

**"Foxbat 4422 request flight plan amendment, my aircraft ID is 244422."**

Similarly, if you realise your SARTIME will expire while you are still airborne, call the area frequency and request them to change your SARTIME.

## CANCELLING

Once you have landed, cancel your SARTIME by one of these methods:

- **Call CENSAR on 1800 814 931. This is the preferred method.**
- **They will want to know your aircraft ID (all six digits eg: 244422), your destination and your nominated SARTIME.**
- **If you know there is no mobile reception or landline at your destination, cancel on the area frequency when you are overhead your destination:**

**"Melbourne Centre, Foxbat 4422, request."**

**"Foxbat 4422 go ahead."**

**"Foxbat 4422 request cancel 0500 SARTIME for arrival Bathurst."**

**(they may need to clarify your aircraft ID)**

If you land and discover there is no mobile reception or landline, hop back in the aircraft and try the area frequency. You might get them on the ground. If not, request a relay from an aircraft that can hear you:

**"Any station on 124.55, this is Foxbat 4422 requesting a relay."**

**"Foxbat 4422 this is Qantas 534, go ahead."**

**"Foxbat 4422, request you cancel my SARTIME with Melbourne Centre. I have an 0500 SARTIME for arrival Bathurst, my aircraft ID is 244422."**

**"Qantas 534, copied, standby."**

**"Foxbat 4422, Qantas 534, Melbourne Centre advises your 0500 Bathurst SARTIME is cancelled."**

**"Foxbat 4422, thank you"**

Pretty cool, you'd agree.

# Reading the wind

BY ROB KNIGHT

**W**IND direction and speed is a factor in all stages of flight. From taxi and take-off, through the climb, cruise and descent then through the approach, landing and further taxi. Wind is air changing its geographic location and pilots need to know about how and why it does that, both its horizontal and vertical motion. Guessing the wind from a weather map is not perfect but it's a very good way to get a good grip on the wind. Around the globe there are considerable variations in atmospheric pressure. You can see them on TV or printed weather map. They are displayed in the shape of isobaric patterns, where the lines that are points of equal barometric air pressure form concentric circles. Such groups of circles will have either an 'L' in the centre to denote a low-pressure area, or an 'H' for a high-pressure one. In the southern hemisphere air will always flow clockwise around a low and anticlockwise around a high. This give rise to their common names - cyclones or cyclonic systems for lows and anti-cyclones or anti-cyclonic systems for highs and the winds (at about 2,000ft AGL) follow quite closely the line of the isobars. Another point to note is that the spacing between the isobars is a good guide to the wind speed. The closer the isobars are together, the stronger will be the wind and vice versa. If you observe the direction of the isobars where your airfield is located, the isobaric pattern will give you a very powerful approximation of the wind direction. Also, keeping in mind that the closer the isobars are together, the stronger the wind, you can get an idea of the potential wind strength.

You can estimate the winds for airfields E and F (see the end of the article for answers). Unless the isobaric charts are completed to scale and the appropriate wind gauge for that scale is available, we can only read the wind speed in general terms. From Fig. 2, the strongest wind speed would be at airfield A in the low, which has the closest isobar lines adjacent to it. The lightest winds could be expected at any of the three airfields under the high. All have wider isobar spacings.

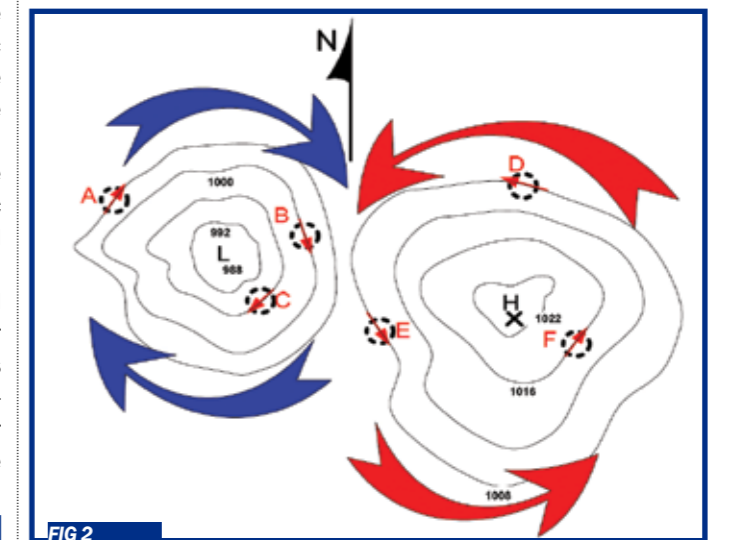
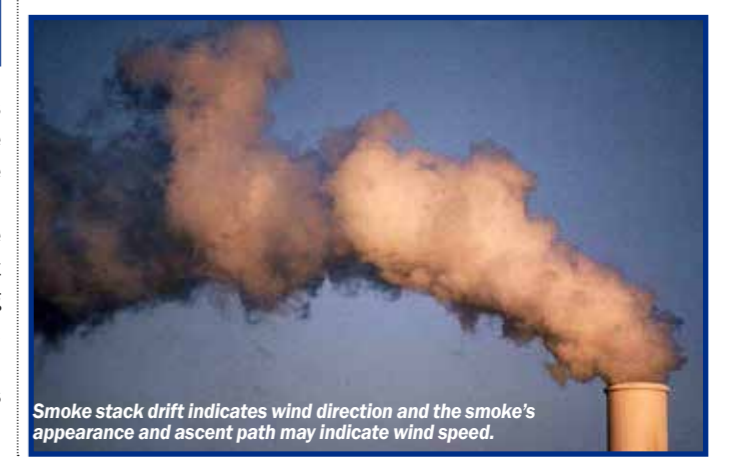


FIG 2

## ON THE GROUND

But all this relates to the wind at 2,000ft AGL. What about the surface wind? At the surface, the wind blows slightly inwards under a low and slightly outwards under a high and in both cases, at a slightly reduced speed. The actual angle change is dependent on the nature of the surface but 10° would be a good average. Thus, my guess at the surface wind direction at airfield A would be  $220+10 = 230^\circ$  true.

I have added the 10° because the surface wind will veer when compared to the 2,000ft wind. The surface wind at airfield D under the high will experience a slight outward flow from the centre of the high compared to the 2,000ft wind above. I guesstimate the surface wind here to be around  $100+10 = 110^\circ$  true.



Smoke stack drift indicates wind direction and the smoke's appearance and ascent path may indicate wind speed.

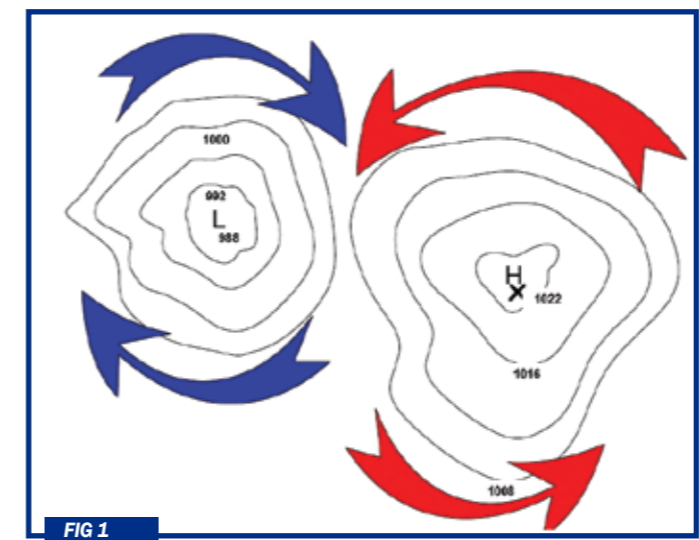


FIG 1

**Fig. 1.** An isobaric pattern showing a high and a low. The circular lines are the isobars themselves and are drawn in MB (or hPa hectopascals). The clockwise wind flow around the low is shown in blue and the anticlockwise flow around the high is shown in red.

**Fig. 2** shows the same isobar pattern as Fig. 1, but now airfields have been placed on it. The isobars show the wind direction around 2,000ft above those airfields. Airfield A is on the edge of a low and is experiencing a south-westerly wind, about  $220^\circ$  true. Airfield B, still within the low, has a north-westerly blowing around  $350^\circ$  true while airfield C is experiencing a north easterly around  $050^\circ$  true. Airfield D, in the clutches of the high, has a south-easterly wind from about  $100^\circ$  true.

**Alpine Aircraft Sales**

Pioneer 200 Hawk - 300 Hawk - 300 Kite - 400

Alpine Aviation srl **P300 Kite**  
Same sleek design with fixed undercarriage.

Alpine Aviation srl **P300 Hawk**  
Retractable undercarriage & CSU for 135 - 140 knot cruise at 20 litres per hour.

Very affordable starting prices with many items included that others consider options.

'Fast, comfortable and economical, it looks great - and actually flies as nicely as it looks'  
Pilot Magazine

'a delight to fly with nippy performance and stylish Italian lines'  
Australian Flying Magazine

Michael Pendergast 0418 521 534 michael@alpineaircraft.com.au  
Jim Rodgers 0457 054 123 jimrogers01@gmail.com Western Australia  
Bob Keen 0429 639 770 smokeysmall@bigpond.com Northern NSW, Qld, NT

[www.alpineaircraft.com.au](http://www.alpineaircraft.com.au)

Fully Built or Kit Aircraft Available

Training, travelling or traversing territory? We've got you covered with style, safety & Australian service

[WWW.LIGHTWING.COM.AU](http://WWW.LIGHTWING.COM.AU)  
fly@lightwing.com.au (02) 6686 8658

## Reading the wind cont.

But what about reading the wind without a chart? What clues exist in the environment to aid our interpretation of the local atmosphere?

We can't see the wind either on the ground or in the air, but we can see its effects. At most airfields a windsock provides wind indications and reading a windsock is an essential part of a pilot's training. But this isn't the only indicator available. We can feel the wind on our faces and body and therefore determine its direction. The wind on our face, gives us an impression of its speed too.



**Drift indicating wind direction.** As the smoke is seen ascending at a shallow angle, the wind speed causing it must be brisk

Both on the ground and when airborne, we can see the direction in which dust or smoke blows. These are good indicators because they each relate directly to the wind direction and speed when taxiing, taking off and landing. Smoke is particularly good because it also indicates changes in direction and speed as it ascends, indicating both wind direction and wind speed changes at varying heights above ground level. This is helpful when approaching and joining the circuit.

Smoke is just as useful when viewed from aloft because it indicates the same movements as when viewed from the ground. Viewing the the image above, the drifting smoke is not rising at the steep angle one would expect and this factor indicates a brisk wind speed. The lighter the wind strength, the steeper or more vertical will be the smoke's angle of ascent. This image also indicates a fairly constant wind direction as the height increases-there are no substantial direction changes in the smoke's path as it ascends.

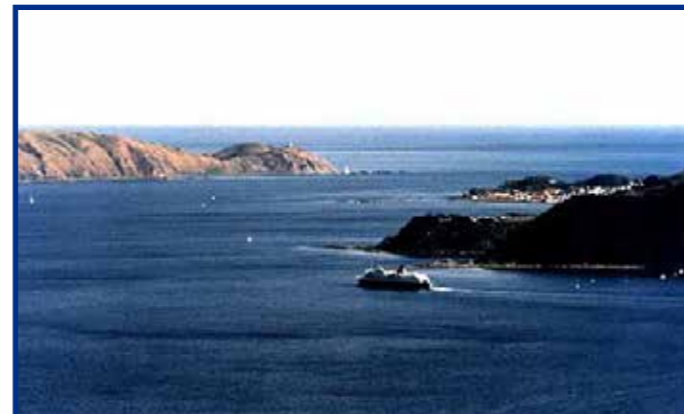


**A clearly visible Mexican wave as the wind progresses**

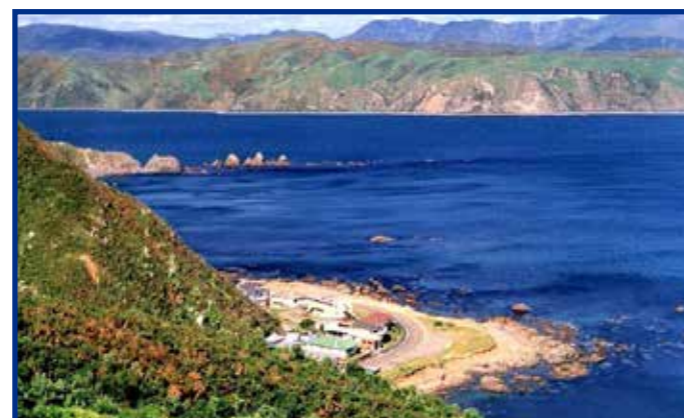
The wind also has other indicators. As it passes across trees and crops it presents a clearly visible Mexican wave as it progresses. The wave gives a good indication of direction, it also lets the viewer gain an appreciation of wind speed and gustiness from watching the wave motion.

The effect of wind blowing across water is also an important source of wind data for pilots. Just like on crops, wind causes waves on the water surface.

The ruffles can be easily seen even from a considerable height if the body of water is big enough.

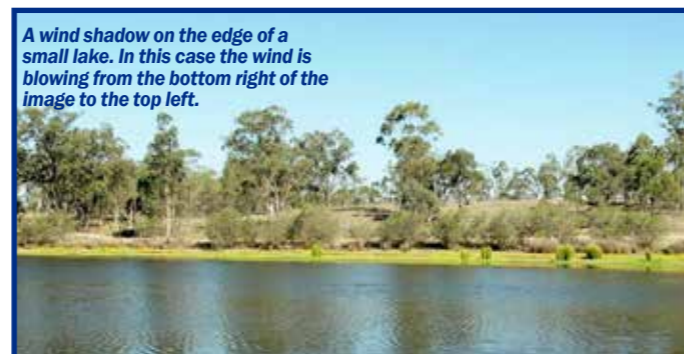


In the image above, dark lines can clearly be seen ruffling the water. These are local gusts giving a good indication of local wind. The image below has darkened patches rather than lines. These are called 'cats paws' and are the visible result of wind tumbling down the steep terrain and forming downdrafts which impact on the water. While good for sailing perhaps, pilots would do best to avoid operations in these areas at low levels. Should such indications be adjacent to an approach path, the discerning pilot who notices such effects, would be alert for downdrafts and wind gradients.



On smaller bodies of water, dams and lakes etc, with no adjacent tall obstacles, the blowing wind ruffles the water on the downwind side while the upwind shore is mirror smooth. Known as wind shadow effect, this visual clue is also a good guide to the wind strength. The greater the proportion of ruffled water, the greater the speed. This clue is evident even in relatively light winds and is commonly used by ag pilots when the windsock is at the top of a sloping strip and there is a dam near the touchdown point.

When subject to stronger winds, the water surface takes on a different



**A wind shadow on the edge of a small lake. In this case the wind is blowing from the bottom right of the image to the top left.**

appearance. Straighter streaks or lines appear, called wind lanes, which are caused by the rising wind flow. Unlike the ruffles which lie across the wind, these run parallel with the direction. Variations in the lines will indicate gusts. Major disruptions in the lanes are likely to be caused by squalls. In such cases, the wind is often strong enough to pick up water from the surface as spray and dampen surfaces downstream.

But the wind also affects another item of consequence to pilots - the clouds. It's no good looking at a cloud to ascertain its movement, but a pilot could see the wind flow by looking at the cloud's shadow moving across the landscape. In light winds, sometimes the movement can be a little difficult to work out but careful persistence will pay off.



The image above shows a crop duster strip with cloud shadows drifting across it. When viewed as movement over the landscape, the shadows indicate a wind from the top right to the bottom left. This was, of course, the wind at the height of the cloud and not at the ground level. In this case the wind indicated by the lonely windsock at the end of the runway was about 120° removed from the direction indicated by cloud's shadow movement, which graphically illustrates the importance of ascertaining the surface wind for landing.

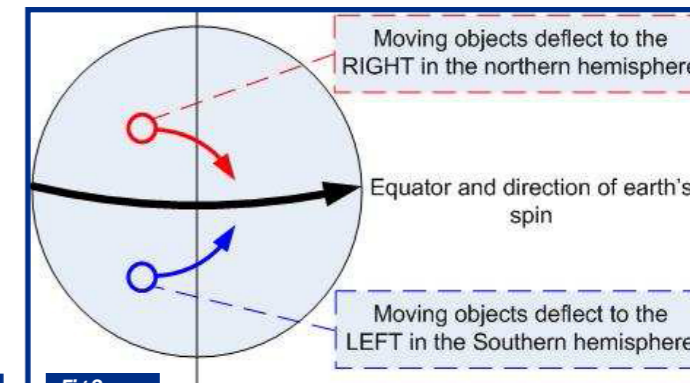
Cloud shadows are great for confirming the forecast wind at altitude but are not always ideal for planning an approach in a forced landing. Also note that clouds at two levels can give conflicting wind indications and care must be taken if this is an important factor.

### CORIOLIS FORCE

There is another factor to consider in any serious discussion on wind direction and wind flows over the landscape. One which is not as obvious. I refer to Coriolis force.

Where other factors have either no influence or little influence, wind direction will change if the wind speed changes. A force called Coriolis force will cause any object moving in the atmosphere in the southern hemisphere to deflect the left. The magnitude of the force is proportional to the object's speed, so any increase in wind speed will see the wind change anticlockwise (back). A decrease in speed will see it swing to the right (veer).

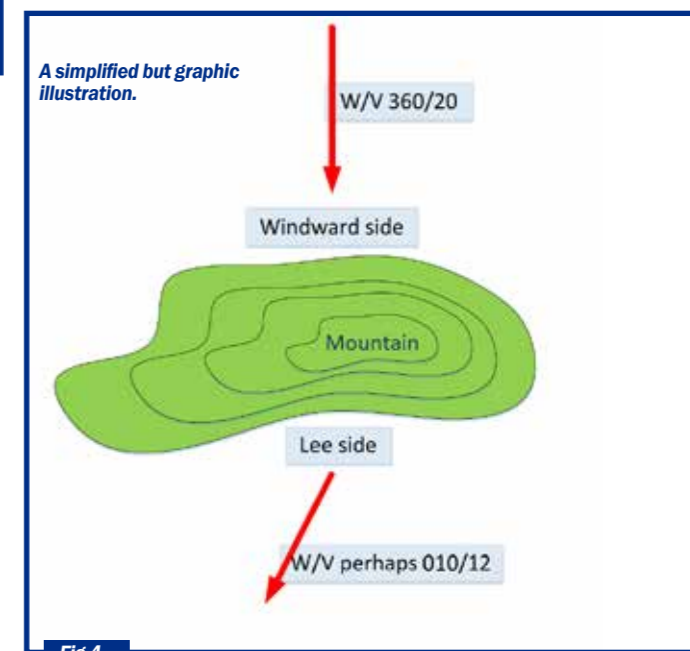
Thus, as an example, if a wind blowing from 360° increases its speed, it will swing and might blow from, say, 350°. If the wind speed diminishes, instead of 360° it might blow from 010°.



**Fig 3**

Coriolis force as it acts on the Earth's surface. A change in wind speed will cause a change in wind direction. The faster it moves, the more it deflects.

We can't see this force, nor can we feel it but it certainly exists and a wind speed change for any reason is also likely to change the direction. In view of this, it is simple to see why the wind velocity usually changes at dusk as night falls. With the setting of the sun, thermal activity reduces or stops. With no thermal activity providing mixing in the lower layers of the atmosphere, the faster blowing wind is not brought down from aloft to energise the surface wind, so it is slowed by friction with the Earth's surface. As the surface wind speed reduces, Coriolis will cause the wind to swing to the right- it will veer. In the morning, the wind usually increases in speed as the sun starts the thermal up again and the surface wind will swing left back - and these two phenomena cause the normal surface wind diurnal variation.



**Fig 4**

In view of Coriolis force, if any ground obstacle or terrain factor slows the wind speed, there is likely to be a resulting change in direction.

Coriolis force is most significant at the poles and doesn't exist at all at the equator, so its magnitude is latitude influenced.

In south-east Queensland where I am, its effects are reduced, but nevertheless Coriolis force can cause significant wind changes at times when there seems to be no rational cause for a wind change.

**Answer - My estimation for the winds at airfield E = 330° and F = 195°.**



# MEMBERS' MARKET CLASSIFIEDS ARE BACK!

SIMPLER, BRIGHTER AND BETTER THAN EVER BEFORE.  
WITHOUT THE CLUTTER AND WITHOUT THE HASSLE.  
CHEAPER THAN EVER!  
COMPLETELY OWNED AND OPERATED BY RAAUS.

RAAus members can now start their listing with the click of a button in the members' portal. What's even more exciting is that members also receive FREE advertising in *Sport Pilot* magazine for every ad placed in the new classifieds.

CEO Michael Linke said, "We are excited to be able to bring our members what they want. We've listened to their feedback and we've built a product we think they'll love. It's clean, it's simple to use, it's linked to our existing systems and it's very affordable. With two clicks of the mouse and your ad can be online and in *Sport Pilot*."

*Sport Pilot* is enjoying tremendous success again. Members and non-members alike are subscribing and our online version is receiving thousands of views per month. If you want to sell your light sport or recreational aircraft or anything at all aviation, Aviation Classifieds, powered by RAAus, is the place to advertise."

Aviation Classifieds is wholly run by RAAus so all revenue stays with RAAus. Aviation Classifieds, [www.aviationclassifieds.com.au](http://www.aviationclassifieds.com.au) is a new, purpose built website seamlessly integrated the with RAAus' database of registered aircraft.

### THREE STEPS TO LIST YOUR AIRCRAFT FOR SALE:

- 1 Once you have logged in to the member portal on the website, navigate to 'Manage your Membership' page.
- 2 Go to 'Your Aircraft' information and click 'Sell My Aircraft'.
- 3 Confirm the details to be placed in your ad and pay the small listing fee of \$33.

It's that simple. Your advertisement will automatically appear on the classifieds website and an ad will also be placed in the next available edition of *Sport Pilot* magazine **AT NO EXTRA COST!**



As an introductory offer, non-members who take out an ad in Aviation Classifieds, will also receive a complimentary aviation classifieds ad in *Sport Pilot*. Hurry, this offer won't last! **TERMS AND CONDITIONS APPLY.**

# Coominya Flight Training



- Pilot training \$155 P/H + gst
- Private Hire \$135 P/H + gst
- Full time & Block training
- Accommodation self contained
- Scholarships available to young pilots

Contact John for free quote on special packages

www.coominyaflytraining.com.au  
CFI John Walmsley 0413452547

## AVIATION INSURANCE

experienced aviation insurance specialists  
Authorised Insurance Representative of Ambro Insurance Brokers Pty. Ltd.  
AFS Licence Number 236675

Stewart & Gladys Smith would like to assist with your RA-Aus or GA aircraft insurance, or hangarkeepers public liability policy needs. The only insurance we handle is aviation, we do it well, and we are both friendly and economical to deal with!

We cover the market for you, obtaining multiple competitive quotes from all appropriate insurers, and then help you pick the best cover and price.

We welcome clients in all parts of Australia, and if you can't catch us at the office on 1300 308 700, we are often available after hours on 0433 278 700.

## AIRCRAFT FINANCE

In affiliation with Linx Finance Australia Pty. Ltd

If you seek aircraft finance, we, via our affiliate Linx Finance, welcome the opportunity to seek to assist if the application is for \$40,000+ and the applicant is in a good financial position. Good bank rates, normally fixed over 5 years. Security is normally over just the plane. Ring Stewart Smith to discuss your needs, and to see if we/Linx can assist.

### AUSTRALIAN COMMERCIAL CREDIT PTY LTD



Ph: (03) 9816 3264 or 1300 308 700  
Fax: (03) 9816 3270  
Website: www.insureplanes.com.au  
Email: stewart.smith@insureplanes.com.au  
A.H: (03) 9857 5963 or 0433 278 700

## HOME BUILDER

# On bathtubs and batteries

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS



**M**Y six-month old microwave broke down. I was bereft, but never mind, I thought. It had additional insurance which promised immediate replacement if anything went wrong. This was added as a sweetener when we purchased it.

This turned out to be wrong. The manufacturer's one-year warranty was valid, and then the additional two-year replacement warranty would kick in. The microwave was repaired under the manufacturer's warranty and the insurance was not activated.

This is an example of the bathtub reliability model kicking in, the model I wrote about a few issues ago.

The way it worked with my microwave is that the high probability of a failure occurs when the item is brand new, and that is covered by the manufacturer's warranty. If the device survives for one year, the probability of failure is very low, in the case of white goods, for perhaps the next 10 years. After that we can expect a gradual rise in the probability of failure. So the business model of the insurer is to take on the risk between the

times of higher risk of failure, when the probability of failure is diminishingly low, and the rising risk many years later.

If I had worked out the insurance model, I would not have accepted that as the sweetener for the deal, and insisted on a cash discount. The insurance is worth very little because the probability of failure at this time in the device's life is very small.

The bathtub model of reliability applies to microwaves and aircraft and everything in between, including the component parts of both microwaves and aircraft.

## GENERAL ELECTRIC

The latest EAA magazine has another feature article on electric aircraft, following its previous feature article in the November magazine on the NASA X-57 electric demonstrator. News on this front is popping up on an almost monthly basis. Many of you will be following the debate in our country on energy generation, and will have noted the dramatic fall in the cost of wind generation. This is a closely-allied technology to motors for electric aircraft. You may also have noted the dramatic fall in the cost of storage batteries, also a pointer to the economic viability of electric aircraft.

The most recent *Sport Pilot* (February 2017) carried an article about a Perth company importing electric aircraft from the US. It should be Australia should be exporting electric aircraft, but our government doesn't believe in light aircraft, is not prepared to invest as the US government does, and perhaps is not sure about electricity either.

## LOW SEASON

As I write this, the temperature in Canberra is 41C, and it is blustery. I read that in the northern and central states of the US, people put their aircraft away for winter. We are lucky that we can fly all year round but, where I am, summer is the low season. Touring is too uncomfortable for me because I don't like flies, or vast turbulence, or a hot aircraft, or standing in the roasting sun prepping and refueling my aircraft.

A few years ago, I was on a late autumn tour in company with occasional writer for this magazine, Rick Frith. We landed at Emu Junction, near where the first atomic tests were carried out. It is remote, a couple of hours flight northwest of Coober Pedy.

The weather was unseasonably warm, perhaps close to 40C. We wandered around for a while, checking out the artifacts, before flying on to Cadney Station on the Stuart Highway. On leaving we climbed up to 8,500ft to get above the turbulence. On arriving at Cadney Station, I found I had no oil in the engine, or at least no oil on the dip stick. I don't know why because I checked it before take-off from Emu junction, but assumed the aircraft heat soaked on the ground, and heated up more on the long climb in hot weather. However, the instruments were in the green zone all the way. Rick suggested I replace the oil and climb back up to 6,500ft above the Cadney Station airstrip, so if anything went wrong I could land safely. Nothing went wrong. No oil was used when I rechecked it on the ground. I decided not to continue that trip, because we had planned to stay in remote areas, and instead turned for home. I was tentative

over the first few legs, but the engine used just the normal 50mls of oil per hour and I gradually relaxed. The engine was not damaged, and this event has never occurred over the years since that trip. I can only assume there was some event in the engine related to the heat. Incidentally, Cadney Station employs backpackers. The lovely German girl we spoke to was unaware there was a large airstrip behind the roadhouse, nor the availability of Avgas there. You may have to insist.

Rick Frith has written extensively in this magazine about the preparation you should do for flying in remote regions. For summer flying, even short trips, at the very least it is essential to carry water. An out landing just an hour from your home airport might mean many hours before help arrives and in the sort of weather we experienced this February, it could lead to trouble. Monday's forecast is for a 25C maximum and light winds, so an early morning flight should be delightful. It is just about picking the opportunities and making sure the aircraft is set up for a good autumn tour.

## AND FINALLY

Careful readers of my previous article will have noticed that I calculated that a \$15,000 engine replacement every 1,500 hours worked out at \$15 per hour. This is incorrect and is obviously the editor's fault. **(Everything always is - Ed)**

## ASIA PACIFIC LIGHT FLYING



### iEFIS Lite

A comprehensive flight, engine & navigation instrument designed for Experimental & LSA aircraft utilising a custom developed, pressure sensitive, sunlight readable touch screen. The iEFIS Lite combines the undeniable advantages of simplified operation of a touch screen with rich, traditional controls which are equally indispensable in the cockpit environment. The pressure sensitive touch screen operates like a tactile button preventing false activation when touching the screen in turbulent conditions. A simple and highly effective solution in 7", 8.5" & 10.4" displays.

Complete iEFIS Lite system from  
**\$6,000**

Including all the features of the preceding Odyssey series systems the 'touch & press' screen modular iEFIS Lite continues the MGL tradition of leading the industry in features, flexibility & innovation.



### The XTreme Mini EFIS

A 4.3" colour display, multifunction EFIS with remarkable functionality at a remarkable price. All Flight and Engine functions\*; Integrated GPS & encoder; Navigation; Flight path (GPS based flight path/attitude\* indication); Artificial horizon.\* Auto pilot\* coming soon (free software upgrade); EFIS fits into std 3.5" instrument cut-out! \*Requires additional equipment.

XTreme Mini EFIS systems starts at

**\$1,430**



### TC-3 (12 Channel EGT & CHT display) - Ideal for Jab's

The TC-3 display unit can be configured to monitor and show up to 12 channels (6 EGT and/or 6 CHT) in an easy to see and understand bar graph format. The unit has an individually programmable EGT and CHT alarm with an output that can trigger an external warning such as a lamp. Maximum temperature for each CHT and EGT is recorded and stored in permanent memory which is also indicated by the appearance of a solid line above the bar graph. The TC-3 also has engine leaning facility and more. Designed for a 3.125" hole.

The TC-3 System starts at **\$395**



Complete range of light, accurate, multi-function, advanced instruments. Straight swap out for standard 2.25" & 3.125" instruments with brilliant one button interface & even more innovative features.

### Delta VHF Antennas

Exclusive Australasian distributor for the highly regarded Delta Pop Aviation range of VHF and transponder antennas.



### MGL VHF COM Radio

New advanced features & design - 2.5", large display, 230 grams. FCC appro ved.

**\$1,460**

For more information on products and pricing visit us at [www.lightflying.com.au](http://www.lightflying.com.au) or Call Us on (02) 6238 3665 or 0419 423 286

## LEADING EDGE AVIATION LIMITED

Why do I need a Whole Aircraft Recovery System? For when circumstances prevent a safe conventional landing

- ✓ Forced landings over hostile terrain, at night or over water
- ✓ Mid-air collision with another aircraft
- ✓ Structural or system failure
- ✓ Loss of control or disorientation - in turbulence, at night or poor visibility
- ✓ Pilot medical issue - non pilot passengers can land the aircraft safely

BRS Authorised Repack centre. Contact us if you have an other brand chute needing service.

Contact us for new systems and all your repack, rocket and other parts requirements.

Leading Edge Aviation Holdings Pty Ltd.

www.LEAV8.com  
info@LEAV8.com  
02 8355 7009  
ABN 51 968 235 650



# A perfect landing

BY OWEN BARTROP

Part 5 of a multi part series on one of the most mysterious aspects of becoming a good pilot



ONE OF THE MOST IMPORTANT PARTS OF FLYING IS MAKING A GOOD LANDING. SOME PILOTS FIND IT DIFFICULT. OTHERS SEEM TO TAKE IT IN THEIR STRIDE. SO LET'S EXAMINE THE TECHNIQUES USED AND SEE IF THERE ARE BENEFITS IN THE WAY YOU DO IT.

**T**HE secret of every good landing (once you are in line with the runway) is to set the correct approach speed and hold the aircraft attitude to maintain that speed. Adjust your rate of descent with throttle (or airbrakes if fitted) instead of raising or lowering the nose. Side slipping, while it does increase the rate of descent, also unbalances the aircraft. If you use side slipping, take special care to resume your original attitude.

As you near the threshold, let the speed bleed back to the correct over-the-fence speed for your aircraft. As you near the ground, aim to level out about 30cm above the ground. As the speed bleeds off, gradually apply back pressure on the stick to keep the aircraft airborne. Be careful not to balloon. If you do it right the aircraft should lower gently onto the ground just as it nears the stall speed.

In windy or turbulent conditions, increase the approach speed by about 10kts, which will mean you will need to hold the flare longer to allow the extra speed to bleed off. Aircraft with tricycle undercarriages touch down on the main wheels, with the nose wheel held up and lowered only at the last minute. Nose wheels are not built to take the full weight of a landing aircraft. But if the nose wheel is needed to control the aircraft on the ground, then lower gently and use it. It is also important to have the rudders centred when you lower the nose wheel. Otherwise you run the risk of running off the runway.

Tail wheel aircraft are generally harder to control in windy conditions than one with a nose wheel. In times gone by, these aircraft did three point landings into wind in a field. These days we normally face landing on a runway with possible crosswinds. The major problem with that is the lack of rudder control due to fuselage shielding. To counter this, land on the main wheels and, only after the aircraft is fully under control, lower the tail wheel. A tail wheel aircraft without differential braking will be difficult to handle in most crosswind or gusty conditions.

The best place to judge 30cm above the run-

way for the flare is when lined up on the runway for take-off. Look out the window and imprint that scene in your brain. 30cm higher than that won't look much different. There is a tendency by many to flare too high, usually caused by a pilot's fear of hitting the ground prematurely.

## CROSSWINDS

There are two techniques which can be used to keep the aircraft on the centreline when coming down final in a crosswind - yawing or dropping a wing. Both work, but one is much easier to do than the other.

Using the rudder only (yawing) is far easier, because it means you can keep the wings level (easier to judge) and you don't end up fighting the aircraft when there is turbulence. Also, it is easy this way to keep the aircraft in line with the runway - it takes the guess work out of the equation.

What you do is change the heading to counter the drift or correct any misalignment.

Apply the appropriate rudder to swing the nose to stop and correct the drift then return the rudder to neutral. It is important to do this immediately the aircraft drifts off course or the correction needed will become too big.

Also, fight the urge to over-control the aircraft. It won't like it and will want to get even with you by becoming a bucking bronco.

Using the rudder eliminates the need to use the ailerons during approach other than to correct any wing drop. Continue applying small touches to the rudder to swing the nose to keep the aircraft on the centreline until you want to flare. In gusty conditions, your feet will be moving like you are in a pedal car.

Remember to centre the rudder after each touch. If you drift off the runway centre line, you will probably have to use aileron to regain it. Be aware that large rudder movements could cause a wing to stall.

Just before touchdown, use the rudder to re-align the aircraft with the runway and centre the rudder pedals again. Be careful not to over-control the aircraft. Just use the rudder in little dabs, returning it to the neutral position each

time. Otherwise you will end up trying to control the over-control. Having said that though, if you need a larger amount of rudder to stay on the runway, use it.

The other approach for a crosswind is to use a wing down. Using this method involves putting the aircraft into a gentle turn into wind in order to remain in line with the runway. The question then arises about what angle should the wing be? That will vary all the way down final because the wind strength and direction will vary as you go. Consequently, the approach becomes a guessing game and often impossible to get it right. Commonly you end up fighting the aircraft unnecessarily. It takes more concentration and, if you do a poor approach, it is all but impossible to do a good landing.

As you approach the touchdown point the aircraft has to be flared - a gradual back stick manoeuvre to halt the rate of descent. This manoeuvre becomes more difficult if your approach speed is incorrect.

Too fast and the aircraft will float or even climb. Too slow and you hit the ground, hard. Both these errors will more than likely cause you to bounce.

If you bounce or find yourself too high and your speed approaching a stall, commit to an overshoot and go round for another try. Never use nose down elevator to correct these problems because, if you do, you will hit the ground nose first and possibly damage your propeller and your reputation.

The longer you float the more likely you are to be blown off the runway. To do a perfect landing it is vital your speed over the fence is correct. And obviously your landing is not completed just because the wheels are on the ground. It's not over until you slow the aircraft to taxi speed.

Crosswinds affect landing aircraft in two ways - before and after touchdown. Before touchdown it will tend to blow the aircraft off the side of the runway.

Counter that in either of the two ways we have discussed above. After touch down the crosswind will try and weathercock your aircraft into the wind.

Your remedy will depend on the type of controls you have available. Tail wheel aircraft have more trouble counteracting this tendency than those with tricycle undercarriage because the rudder on a tail dragger is partially shielded by the fuselage. Aircraft with differential toe braking can apply individual brakes to keep the aircraft running straight.

Aircraft without this or those with hand braking mechanisms, will have time lag before the correct braking action can be taken. That lag can prompt the pilot to apply too much corrective action and even cause the aircraft to ground loop.

It is important to be able to put the aircraft on the ground at a point of your choosing, especially if landing at a short field. That position will depend on where you start to flare and can be calculated by trial and error (practice). As with all landing techniques, it will only work if you have the correct approach speed.

Do some circuits and note the distance from where you start the flare to where you touch down.

Get to know what that distance looks like,

because now you have an aiming point - the flare position. As you fly down final, the aiming point should always remain stationary in your view - neither moving away nor disappearing under your nose. If it does move, hold your attitude and correct using throttle. If that does not work, you may need to change attitude (and speed) or accept you will not touch down at the point you chose.

The ideal situation is to glide the aircraft down final and flare at your selected point. The distance to the touchdown point will decrease and, if your speed and judgment are correct, you should touchdown at the desired spot. A perfect landing.

Once again I will draw to the attention of student pilots. Note what is written, but obey your instructor. He or she knows what is best for you. And remember, do not fly if the crosswind exceeds the maximum for your aircraft or your ability to handle it.

**NEXT MONTH: How airmanship can improve your fuel management skills.**

"Be careful not to overcontrol the aircraft"





Aeroprakt A32 Vixxen

www.foxbat.com.au



Search for Aeroprakt A32

Cruise 115+ knots  
Stall 27 knots  
Carry 210+ kgs after full fuel  
Average under 20 litres an hour  
Believe it!

## Horsham Aviation Services

ABN 63 007 339 451

Australian Agents

Ph: 03 5381 1727

See more of Australia with the visibility of EuroFox by Aeropro coupled with a Dynon Avionics glass panel

### EuroFox

- Folding wings
- Unparalleled visibility
- Rotax 912 ULS engine
- Tricycle or tail dragger
- 3 Blade prop
- Great STOLL and cruise performance
- Strong chrome moly fuselage frame (all sealed)
- Stunning glider tow & training aircraft
- Can tow up to a 750Kg glider



### Dynon

EFIS-D10A, EMS-D10 & SkyView

- Full featured flight or engine monitoring instruments
- Solid State electronics
- Configurable alarms
- Battery backup
- Can be fitted to GA aircraft with CASA21M approval

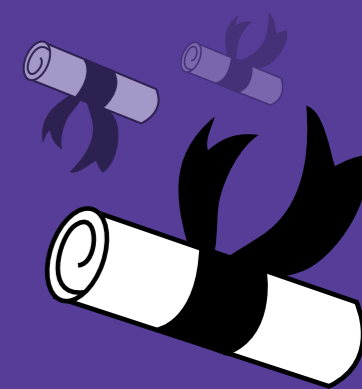
www.horshamaviation.com.au

Email: info@horshamaviation.com.au

## FLIGHT INSTRUCTOR'S FORUM

# Wearing a cap

BY PROFESSOR AVIUS AVIATION GURU



**A**S I write, it's still summer and very hot. But I'm enjoying the air conditioning and, by the time this is distributed, it will be autumn. It's been a hot summer and you should have worn a hat or at least a cap when outside or on the tarmac. But there are caps you wear and some you simply need to be familiar with.

Flying during the heat of summer places additional demand on both pilot and machine. People heed their own warning signs, they hydrate and take the necessary steps to reduce their body temperature. Our flying machines, however, are at the mercy of the operator. Low atmospheric pressure and high temperature results in elevated density altitudes.

### DENSITY ALTITUDE

Recently I was with a student at an airport with an elevation of 500ft AMSL at 7PM (daylight saving) and the density altitude on my EFIS showed 3,350ft (QNH 1005). The ambient temperature was within the manufacturer's maximum permitted and the wind was calm, so some late afternoon refresher circuits were the plan. With a light fuel load, the take-off weight was well below MTOW – if nothing else it was an opportunity to monitor the student's attention to the aircraft performance and engine management, particularly oil temperature.

The extended aircraft take-off run and reduced climb performance were easily identifiable, but the engine temps weren't so obvious. By the time we reached circuit height, the oil temp was only 50°C or so below redline. With a lower than normal downwind power setting, the temps slowly edged back toward the green. We conducted a touch and go and for the next circuit increased the climb speed by five knots in the hope of improving cooling. The result was not much different – so we decided to call it quits, hit the air conditioning and debrief.

The student demonstrated a reasonable appreciation of pressure altitude and density altitude; was very aware of the reduction in performance with altitude, but didn't comprehend or appreciate the impact of the conditions on cooling (or rather the lack of cooling) when elevated temperature combined with high density altitude. Interestingly, the aircraft had no issues in maintaining normal climb RPM.

### THE MESSAGES

- As density altitude increases there is effectively less air mass; and less relative cooling; and
- The air mass available for cooling is hot so the differential between air temperature and engine temperature is reduced –it's a double whammy.

The impact of temperature on cooling needs to be considered in terms of absolute temperature (degrees Kelvin - Ok); hence with an air temperature 36°C (309°K) and an engine temp of 105°C (378°K) the temperature differential is 69°C, but the differential as a percentage absolute (for cooling) is only 18%; not the 66% you might think.

This is the message instructors need to communicate to pilots of all levels. It is not just about the primary controls – elevator, aileron and rudder and control inputs. The fourth control is power. The engine is our best friend, without it we could not have started the flight, but just like humans in adverse weather it needs a little TLC.

When the pilot gets hot he or she needs to reduce their workload and relax in cooler fresh air. When the engine is reaching its limits, the work load similarly needs to be reduced and the cooling improved. Otherwise, just like humans experiencing heat exhaustion, it will ultimately fail.

High density altitude, combined with high temperature and engine mismanagement, has been the death of more than one engine.

### CTAF OPERATIONS

Recently the Prof was awaiting a flight at a regional airport; with my hand held portable radio tuned into CTAF frequency to hear what was happening airside. There was considerable traffic, a mix of RAAus, GA and a couple of light twin charters. What surprised me was the inconsistent content of the radio calls; One or two little pieces of important information missing from most calls, location/distance/height (just one aspect missing) and most calls finished with XYZ traffic.

Also, there seemed to be some sort of unjudged competition to see who could deliver their message (especially call signs) in the shortest possible time, which didn't gain anything because of requests to "say again". In this situation, a response along the lines of "please say again slowly" usually has the desired result.

Overall the RAAus pilots appeared to be no worse than the average, so that is positive.

### CALL SIGNS

More than a few pilots are creative with calls signs. Anecdotally it's about avoiding potential landing fees. As an instructor on an airfield (any airfield) you have a duty to ensure RAAus operations are in accordance with the Ops Manual and this includes the call sign. Some are more/less creative, dropping off numbers or worse, using someone else's numbers. Let's ensure all of our pilot are the professionals the RAAus organisation aspires to be.

**From CAAP 166-1 The standard broadcast format for low and medium performance aircraft is:**

- Location Traffic (e.g. 'Parkes Traffic');
- Aircraft Type (e.g. 'Cessna 172');
- Call sign (e.g. 'Zulu Foxtrot Romeo');
- Flight rules if IFR;
- Position/Intentions (e.g. 'One-zero miles north inbound, on descent through four-thousand-two-hundred, estimating the circuit at three-six');
- Location (e.g. Parkes).

CAAP 166 (Parts 1 & 2) provide a good easy to read information regarding operations in the vicinity of non-controlled aerodromes.

There is a raft of Civil Aviation Advisory Procedures (CAAPs) available. These provide references in simple plain English of various requirements and are available at:

<https://www.casa.gov.au/rules-and-regulations/standard-page/civil-aviation-advisory-publications>

The CAAPs provide guidance and explanatory information about the meaning of certain requirements in the Civil Aviation Regulations 1988 (CAR). They may also describe methods to help you comply with a CAR requirement in a manner which would be acceptable to an authorised person or CASA. CAAPs are advisory; they should always be read in conjunction with the referenced CAR. ✪



# Battle fatigue

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL



**L**AST month we had a look at metal fatigue and why recreational aircraft are not immune to it, despite the low number of hours the average homebuilt acquires. This month we'll get onto more of a design footing and look at how aircraft designers tackle the fatigue problem.

## TAKING A GAMBLE

One of the key challenges when designing for fatigue is the probabilistic nature of fatigue itself. It simply isn't possible to predict failure after an exact number of load cycles. In reality there is a large variation in fatigue life - even for apparently identical parts. All fatigue design ultimately boils down to a gamble, albeit one with the odds heavily stacked in your favour.

If you take a collection of steel samples, all of the same dimensions and polished to the same surface finish, and expose them repeatedly to a loading equivalent to 75% of their ultimate strength, you'll find they break after somewhere between 10,000 and 100,000 cycles. Do the same test at 55% of the ultimate strength and the samples will last somewhere between 250,000 cycles and infinity - that's a fair amount of uncertainty!

Add to the mix real-world loading, which varies considerably in both magnitude and frequency; and then pity the poor engineer who has to answer the superficially simple question, "Will it break?"

Personally, my preferred response to the

above question has always been, "Yes, eventually! How long would you like it to last?" which gets to the crux of the problem, especially when combined with, "...and how confident would you like me to be?"

For a more in depth explanation take a look at Fig. 1. Known as an S-n diagram, it plots max stress against load cycles for a given material. To produce the chart, a large number of identical samples are repeatedly loaded and unloaded at a variety of stress levels and the number of cycles to failure at each level is recorded (on a logarithmic scale, which allows data from 10,000 to 100 million cycles to be shown in one chart). With enough samples, a best-fit curve can be drawn to give an idea of the average life of a sample at any given stress level. This is useful information, but from a design point of view you don't really want to know the stress level at which 50% of your parts have already failed! Instead some clever statistical analysis is required, producing another curve of the stress level or number of cycles at which 99% of parts can be expected to survive. In addition, for some materials an endurance limit can also be determined, giving a stress level below which no fatigue failures should occur irrespective of how many load cycles are experienced.

Armed with this data, plus the desired reliability and predicted loading, and with additional allowances made for effects such as temperature, corrosion, surface finish and stress concentrations (among others!), a designer should

finally have the information required to produce an acceptably durable part... although in a commercial environment analysis alone is not considered enough, the final judgement invariably coming down to testing.

## SO HOW LONG WILL IT LAST?

There is an old adage in motor racing that the perfectly engineered race-car should, break down just as it crosses the finish line, thus demonstrating it has enough durability to finish the race, but is carrying no more weight than the absolute minimum necessary to complete the specified task. Aircraft designers find themselves in a similar situation; there's no question aircraft have to meet their design-life requirements, but any excess strength means excess weight and a corresponding loss of performance, range or payload. This quest for a happy medium has historically led to four different approaches to fatigue design:

**Design for infinite life** - Components are designed to be stressed below their endurance limit, (sometimes called the fatigue limit), plus a margin of safety, the goal being to provide a unlimited fatigue life. In the case of materials such as aluminium, which have no clearly defined endurance limit, a limitless fatigue life is not possible, so an exposure well beyond anything which could be expected in service is selected instead, effectively negating the risk of a fatigue failure.

**Safe-life design** - A finite life is deliberately included in a component's design after which it is required to be replaced. A suitable margin of safety is applied to the required design life of the part; the expected loading and operating conditions; and also to account for the statistical uncertainty of fatigue properties resulting in an acceptably small probability of failure during the part's lifetime. Safe-life design results in 'lived' parts; component required to be replaced during scheduled maintenance prior to reaching a specified number of hours in service.

**Fail-safe design** - Rather than attempting to avoid fatigue failures altogether, fail-safe design accepts that part failures may occur and, instead, focuses on making the system as a whole failure tolerant. Structures are designed with multiple redundant load paths, allowing loads to be safely transferred around a failed part without causing further damage. Of course failed parts still need to be detected and replaced, but in the meantime the aircraft will still be safe to operate, albeit with a reduced margin of safety. As an example, large aircraft skin panels are typically designed with 'crack stoppers' - stiffeners directly attached to the skin, dividing it into 'bays'.

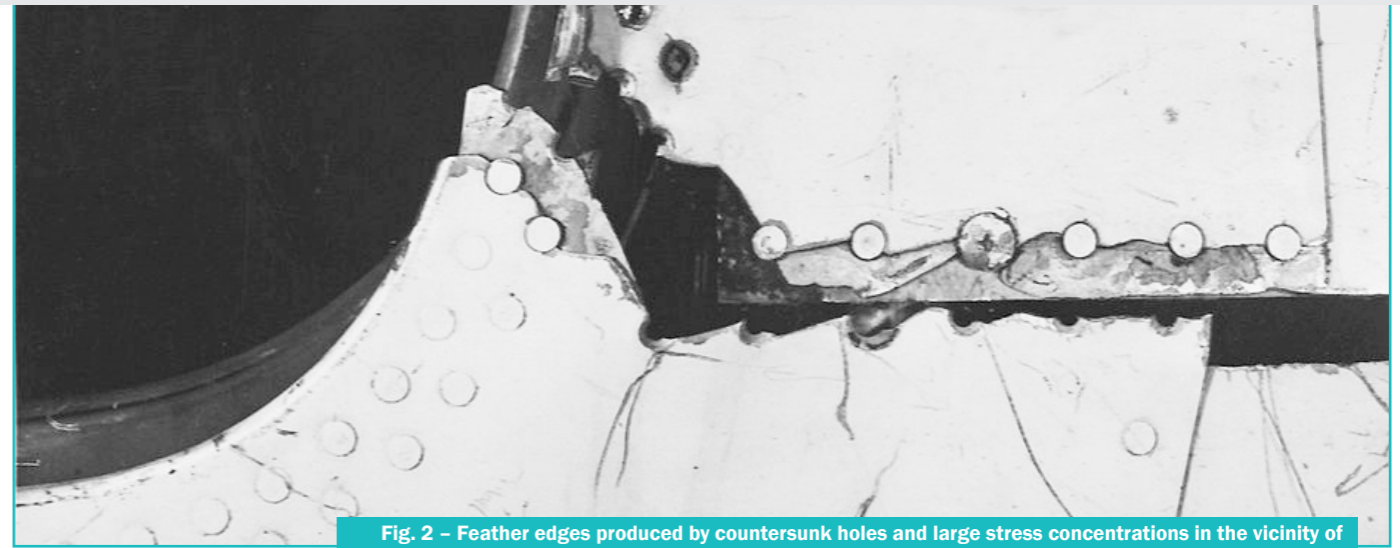


Fig. 2 - Feather edges produced by countersunk holes and large stress concentrations in the vicinity of square windows proved to be fatal flaws in the design of the DeHavilland Comet

If a crack occurs in the skin it will only be able to grow as far as an adjacent stiffener, limiting the maximum crack size to a single fuselage bay. To meet the fail-safe requirement, the skin in the adjacent bays is then designed to be capable of carrying the additional load incurred should a panel fail.

**Damage-tolerant design** - Extends the fail-safe design concept to include capturing fatigue failures before they occur (and thus minimising the demands on the fail-safe structure). Much like fail-safe design, it acknowledges that fatigue cracks will develop but, based on a knowledge of crack growth behaviour, and an ability to reliably detect cracks using non-destructive inspection, the intent is that failing parts will be identified and replaced before they endanger the aircraft. By calculating the predicted rate of crack growth on a component, maintenance intervals can be set such that a crack will be discovered by inspection before the part's residual strength is reduced to a dangerous level.

## WHICH METHOD IS BEST?

None of the above approaches is inherently better than the others. Part of the skill of the designer is the ability to select the most applicable method for the task in hand. All the approaches have their strengths and weaknesses.

Starting with the infinite life approach, the primary drawback is that it produces components which are heavier than is strictly necessary. This is generally not a good thing for an aeroplane, but is certainly a practical solution for engine components such as valve springs which can see billions of load cycles in a lifetime and which don't lend themselves to regular inspection or frequent replacement.

Safe-life design will save weight when compared to the infinite life approach, but an accu-

rate knowledge of both the loading and conditions a part will experience in service is critical if premature failures are to be avoided. Safe-life has a financial impact too, 'lived' parts either need to be economically replaceable (although you wouldn't guess it from the cost of overhauling a TBO expired engine!), or alternatively you have to accept the forced retirement of the aircraft when the hours are up.

Fail-safe design should similarly save some weight when compared to an infinite life approach, although it inherently involves redundant structure and thus extra weight by definition.

Careful analysis on the part of the engineer is also required to ensure all single points of failure have been identified and eradicated from the design - not necessarily a simple task. For example, a wing with multiple spars may have adequate residual strength to accommodate a single spar failure, but the if accompanying reduction in wing stiffness leads to aerostatic problems like flutter, the design may appear to be fail-safe when it actually isn't.

Finally, damage tolerant design has the greatest potential for weight saving, but comes at a heavy price in the form of analysis, testing and especially ongoing non-destructive inspections. For a commercial airliner these costs are easily justified by the lifetime savings in fuel and/or corresponding increase in payload, but this is certainly not the case for your average homebuilt.

## MAKING THE MOST OF IT

We've covered the overall design approach, but achieving the best possible fatigue life on an individual component level is just as critical; so what are the tools available to a designer to really get the best from his parts?

Firstly, surface finish counts. Surface imperfections are just tiny cracks waiting to happen, so

removing them by polishing or grinding can massively improve fatigue life. If there are initially no cracks in a part, they must form at a microscopic level before they can grow.

This crack nucleation process can take a long time and so represents a significant opportunity to extend the total fatigue life of a part. In the same vein, residual compression forces on a part's surface inhibit crack initiation so, even if polishing is impractical, the life of a part can be usefully extended through surface treatments such as shot peening or burnishing, which leave residual surface compression.

Cracking is bad, but once a crack has started, the battle is not entirely lost. A part can have considerable life remaining, providing the crack grows slowly and the critical crack length (beyond which a rapid failure will occur) is not too short. This is where material properties, in particular fracture toughness, become vital. Materials with high fracture toughness are tolerant of cracking, giving slow crack development and long critical crack length.

Now I'm not going to plunge into the details of fracture mechanics here, but it's worth noting this is not a simple case of selecting steel over aluminium or even selecting a particular aluminium alloy. These choices do have an impact, but simply selecting a different type of heat treatment can change the fracture toughness by more than 50%. The devil, as they say, is in the detail.

## SUMMING UP

As a final word of warning, fatigue damage is cumulative and, for the most part, occurs at a microscopic level where it is not readily apparent to a visual inspection. It is a brave (or foolhardy) maintainer who uses a part beyond its stated life, even if it still looks, "As good as new".

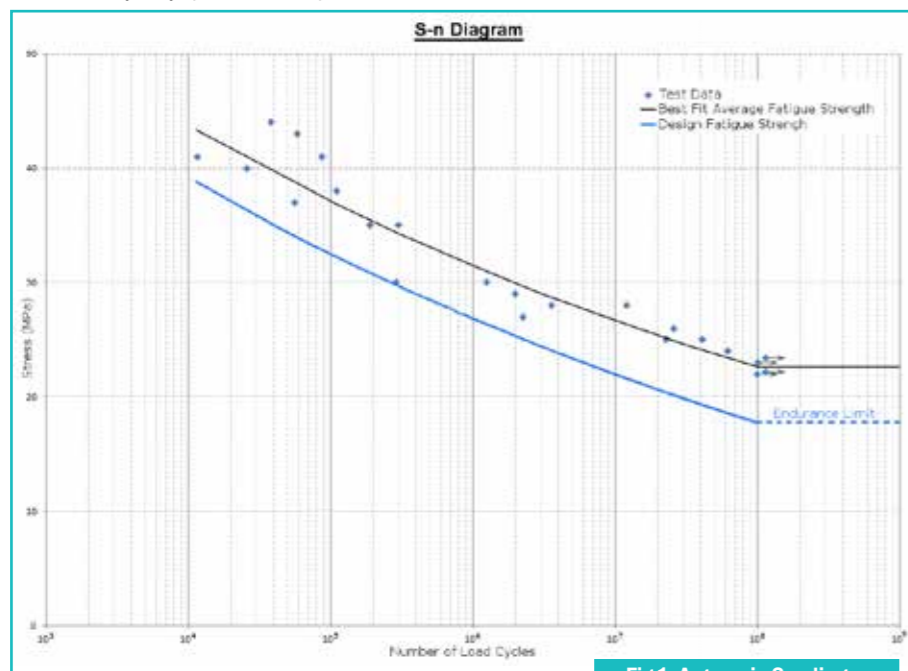


Fig 1 A generic S-n diagram



2000 hrs  
TBO

2000 hrs  
TBO

2000 hrs  
TBO

300 hrs  
TBO

2000 hrs  
TBO

## 912 iS Sport

**STRONGER. FASTER. HIGHER.**

The new Rotax 912 iS Sport aircraft engine is a further improvement of the 912 iS and offers outstanding performance with low fuel consumption. Pilots will appreciate the improved take off performance which results in a better climb rate a shorter take off run and a higher cruise speed.

## 914 F/UL | 115hp

The turbo charged Rotax 914 series offers more performance at high altitudes while keeping weight at a low level.

## 912 S/ULS | 100hp

In comparison to the 80 hp version of the Rotax 912 series the 100 hp product line offers more power while keeping the weight.



582 MOD. 99 | 65hp



912 A/F/UL | 80hp



To advertise online  
and in Sport Pilot  
magazine

www.aviationclassifieds.com.au

(02) 6280 4700

sales@aviationclassifieds.com.au

### 5000 10 X 6 FT BOX TRAILER

10 x 6 ft Box Trailer with 2,000kg GVM. Mechanical override brakes, 50mm towball.  
**PRICE** \$2,000.00  
**CONTACT** Paul 0424 530 225

### 5003 X-AIR HANUMAN

270 Airframe Hours, 1350 Engine Hours, Hanuman X-Air Hanuman. Rotax 912 100hp 80 Litres Fuel @ 15.7 litres per hour. MTOW 544 kgs Cruises 85 knots @ 4800 Rpm Climbs at 1000 fpm at mtow. 270 hours on Airframe  
**PRICE** \$37,500.00  
**CONTACT** Geoff Sheather 0439 131 313

### 5012 FOR SALE JABIRU 1/2 SHARE

300 Airframe Hours, nil Engine Hours, j230  
**PRICE** \$35000.00  
**CONTACT** Graham Barrington 0400 144 282

### 5016 SONEX 3300

5 Airframe Hours, 5 hours Engine Hours, Sonex Sonex taildragger, 3300 jabiru, sensenich prop, MGL velocity avionics, engine management & radio. May be able to arrange delivery.  
**PRICE** \$38,000.00  
**CONTACT** Tony Messenger 0400 610 076

## AVIATION CLASSIFIEDS

### 5017 SAVANNAH VG

62 Airframe Hours, 62 Engine Hours, Savannah Savannah VG, excellent condition, low hours, always hangar'd. (12m x 12m hangar also for sale, \$40,000)  
**PRICE** \$60,000.00  
**CONTACT** Erin James Potter 0427 042 350

### 5023 HOLBROOK AIRPORT BEST BLOCK

22 Airpark Road Holbrook NSW 2644. 25m wide 30m deep Vacant Block. Properties of this nature are extremely rare in Australian. \$89,000 ono Don. 0417 696461 Email: heliine@fastmail.fm Web: holbrook.simdif.com  
**PRICE** \$89,000.00  
**CONTACT** Don Woodward 0417 696 461

### 5024 SKYFOX GAZELLE

980 Airframe Hours, 980 Engine Hours, GAZELLE Skyfox Gazelle three axis light sports aircraft, reg RA-AUS 24-4090 Rotax 912 T/ time engine, airframe 980 hours. Fitted with radio and intercom. Garmin 500 GPS. A delight to learn in and fly, Can be purchased with custom built trailer. 0407 692 299  
**PRICE** \$32,500.00  
**CONTACT** John Smith (08) 8735 7115

### 5026 JABIRU FOR SALE

674 Airframe Hours, 674 Engine Hours, UL500 Jabiru UL500 2200cc Solid lifter LCH conversion A reliable, delightful, simple, no vices aircraft. Long wings with winglets provide stability, reduced take off, approach and stall speeds. Call for a detailed data sheet. 0468931895  
**PRICE** \$40,000.00  
**CONTACT** Daniel Cosgriff 0468 931 895

### 5032 MORGAN CHEETAH

326.2 Airframe Hours, 55 hours Engine Hours, Cheetah Morgan Cheetah, Camit 2200 engine, 55 hours on the motor, 350 airframe, no accidents, 115

KTS cruise, Black.  
**PRICE** \$38,500.00  
**CONTACT** John Terence Murphy 0409 308 232

### 5036 TOPAZ AIRCRAFT

200 Airframe Hours, 200 Engine Hours, TopazThe TOPAZ LSA climbs like a rocket and glides like an angel (17:1), light on the controls, Rotax powered, carbon fibre design with stainless steel fixtures, cruise to 120kts, low fuel use, suit a new buyer - see aircraft at www.flytopaz.com.  
**PRICE** \$95,000.00  
**CONTACT** AirSports 0422 446 622

### 5038 AIRBORNE XT912 TUNDRA ARROW MICRO

313 Airframe Hours, 313 Engine Hours, XT912 Arrow Trike & wing in excellent condition. Kept in darkened hangar. Trike TT 313 hrs. Arrow S wing TT just 40 hrs Flies perfectly, all maintenance recorded. Two yrs rego. 912 freshly reholed. Meticulously cared for. Trike trailer loan by arrangement.  
**PRICE** \$32,000.00  
**CONTACT** Rob Stewart 0438 394 174

### 5039 RANS COYOTE II S6S

260 Airframe Hours, 260 Engine Hours, S-6es Coyote li Registered till June 2017. Rotax 582 UL engine 260hrs. New BRS recovery chute installed December 2015. Large roomy cockpit with sliding seats. Folding wings for easy storage/trailing. All VFR instruments. Search Youtube for "Tuflux RANS Coyote".  
**PRICE** \$27,500.00  
**CONTACT** Gordon James Bailey 0409 348 293

### 5042 X-AIR HANUMAN

200 Airframe Hours, 200 Engine Hours, Hanuman TTIS 200hrs. Factory built ( can be but never has been used for training. ) 80hp Rotax 912, 80ltr fuel tank 15lts / hr MTOW 540kgs 75kts cruise STOL. Quick folding wings for storage 2 headsets with column mounted PTT. Dash mounted Garmin 495 GPS. Always hangared a treat to fly ideal 1st aircraft.  
**PRICE** \$43,000.00  
**CONTACT** Roy Ellis www.aviationclassifieds.com.au

### ENGINES YOU CAN RELY ON.

More than 170 000 units of Rotax aircraft engines have been sold in total. Since 1989 BRP-Powertrain has manufactured more than 40 000 units of the Rotax 912/914 engines family.

Distributed in Australia, New Zealand, South East Asia and Taiwan by:  
**Bert Flood Imports Pty Ltd** 17 - 18 Chris Drive Lilydale Victoria 3140 Australia  
Email: gary@bertfloodimports.com.au Visit us at: www.bertfloodimports.com.au  
Tel: 03 9735 5655 Fax: 03 9735 5699

5046 AEROPUP 19-5206 TAIL DRAGGER



x2 Seater Tandem (5046.png) 475.0 Airframe Hours, 475.0 Engine Hours, Aeropup Aeropup Tail Dragger 475Hrs TT, Jabiru 2200 85hp 475hrs TT (a good one), folding wings, see WWW.aeropup.com , can be registered GA, Stits covered, XCom radio, Miser fuel flow meter, registered trailer, Strobes, wigwags, electric flap, tundra tyres.  
**PRICE** \$36,000.00  
**CONTACT** Tony Peter Loeffel 0432 341 681

5049 JABIRU SK



1217.4 Airframe Hours, 1217.4 Engine Hours, SK Jabiru SK with 2.2 solid lifter motor, complete service history, cabin heater, always hangared, 1000 hour engine rebuild 200 hours ago, 65 lit tank plus 50 lit back up, Garmin GPS AREA 550, new tyres. Flies like a new aircraft.  
**PRICE** \$29,950.00  
**CONTACT** John Frederick Young 0418 855 235

5050 AIRBORNE XT 912 OUTBACK



65 Airframe Hours, 65 Engine Hours, Outback xt 912 trike Outback 912 xt.Very nice condition,always hungared,fully serviced and logged,many extras .65 hrs on base,25hrs on arrow-s wing. .Trailer this unit away at a give away price.  
**PRICE** \$37,000.00  
**CONTACT** JOHN Elcock 0419 793 877

5055 AEROCHUTE DUAL



Aerochute Dual 32 Airframe Hours, 32 Engine Hours, **PRICE** \$17,000.00  
**CONTACT** Ed Herring 0408 787 018

5056 VANS RV3B



61 Airframe Hours, 61 Engine Hours, RV3B Van's RV3B, Better than new,(done 60 hrs and all good) IO320, Catto FP.  
**PRICE** \$95,000.00  
**CONTACT** Peter Pendergast 0418 129 222

5057 RV-3A



286 Airframe Hours, 626 Engine Hours, RV-3A RV performance with Lycoming reliability. Lycoming O-320-A2B 150HP,150-160kt TAS cruise @32lph. New prop, instruments & paint. A/C can be registered VH if aerobatics required, and can be delivered anywhere in Australia for cost.  
**PRICE** \$65,000.00  
**CONTACT** Peter Gilbert 0428 719 639

5058 ULTRALIGHT AIRCRAFT, DRIFTER 503



Registered as 25-0186, so factory built. Instruments include: ASI, VSI , ALT , Turn coordinator , EGT, CHT, RPM, fuel flow gauge , GPS, radio, ELT. Recent 100 hourly completed. Has had new cables, spark plugs, skins, skid, air filter. all ways hange  
**PRICE** \$13,000.00  
**CONTACT** Lachlan McCabe 0420 422 606

5059 CORBY STARLET 19-7015



155 Airframe Hours, 155 Engine Hours, CJ-1 Corby Starlet with 2.2 solid lifter Jabiru engine. Fine finned heads. Brent Thompson prop.. Cruise 110kt @ 2850 rpm. using under 13lph. Climb 1000 + fpm.  
**CONTACT** Colin Gamble 0427 966 150

5063 AIRBORNE TRIKE



205 Airframe Hours, 205 Engine Hours, XT582 2012 airborne trike XT582, cruise wing, adjustable trim, 205hrs wing and base. excellent condition. wing never packed. Easy and a pleasure to fly. Skydat digital display, radio, headsets.\$25000 email ianholmes3@optusnet.com.au. BRS parachute \$2200  
**PRICE** \$25,000.00  
**CONTACT** Ian Holmes 0409 156 931

5071 JABIRU J 230 D



305.5 Airframe Hours, 305.5 Engine Hours, J-230 This plane is in excellent condition and performs great. Always parked in a Hangar and well maintained. Has loads of power for short runway take of and landings.  
**PRICE** \$69,000.00  
**CONTACT** Barry Espinos 0428 216 816

5072 X-AIR F



365 Airframe Hours, 365 Engine Hours, X-Air F X-AIR F, rotax 618, brolga 3 blade prop, micro air 760 VHF, partially dismantled. Phone: 0417 228 671  
**PRICE** \$7,500.00  
**CONTACT** Mike Brady 0417 228 671

5073 JABIRU TAILDRAGGER - 3300



650 Airframe Hours, 650 Engine Hours, SPT-3300 Solid Lifter Engine with fine finned heads, Standard Instruments plus Microair Radio, GTX327 Transponder, Garmin 196 GPS, GT40 Flight Data, Card Compass, Tru Trak Auto Pilot coupled to GPS.Aircraft hangared at YWSL Total time - A/F & bottom end 650hrs, top end 150hrs. **PRICE REDUCED TO \$35000** Contact dghook@gmail.com  
**PRICE** \$35000.00  
**CONTACT** Daryl Hooke 0466 925 474

5075 AIR CREATION TANARG 912 TRIKE



437 Airframe Hours, 670 Engine Hours, Tanarg 912 Bionix 13 Due to recent medical restrictions i need to sell my very safe and comfortable french made TANARG. Very sad.It has the amazing BIONIX 13 WING with in flight adjustable trim giving you easy short landings and a faster cruise speed. Check out the 'SPORT PILOT' May 2015 issue for the write up.  
**PRICE** \$45,000.00  
**CONTACT** Michael Murphy 0488 361 236

5077 JABIRU LSA .3J



620 Airframe Hours, 147 Engine Hours, LSA55:3J Jabiru Factory built Dec 1996 Reg No 55-1846 Total air-frame hrs 615hrs Always housed in Hangar at Wentworth Aerodrome Standard instruments plus vac pump (AH & DG ) full condition report available Offers around \$30,000  
**PRICE** \$27,500.00  
**CONTACT** William Powell 0428 727 152

5078 ROTAX 503 ENGINE AND GEARBOX



Rotax 503 engine ( twin carb / twin ignition) and B "type" gearbox total time 1.5 hours of run in time ,never used to fly an aircraft . Also come with a complete new exhaust system.  
**PRICE** \$5800.00  
**CONTACT** Russell Smith 0428 404 156

5080 JABIRU J120



450 Airframe Hours, 114 since Zero timed Engine Hours, J120 Many new parts used. Crankshaft magnetic particle checked. Aircraft could go back into commercial work with check. 1/2 share in Steel Hangar near Bega/ Merimbula available cheap  
**PRICE** \$45,000.00  
**CONTACT** Neville Jollands (02) 6494 4125

5084 FOXBAT A22LS



120 Airframe Hours, 120 Engine Hours, Foxbat A22LS  
**PRICE** \$97,000.00  
**CONTACT** Warren Mcllwraith 0427 183 232

5086 ROTAX 912A 100HP CRANKCASES FOR SALE



Rotax 912A 100HP crankcases for sale. Year 2011+ improved crankcases, tt 1335, in good condition. Ideal for replacing earlier model flawed cases.  
**PRICE** \$3,850.00  
**CONTACT** Chris 0434 141 377

5087 SHARE IN NEW VIXXEN



50 Airframe Hours, 50 Engine Hours, Vixxen 13th Share in a new Vixxen based at Caboolture (YCAB) The aircraft has 50 hours currently and is operated by a friendly group for the benefit of the members, in the interests of economical flying. Price negotiable.  
**PRICE** \$10,900.00  
**CONTACT** Hugh Douglas 0428 400 737

5088 FLIGHT DESIGN CTLS



588 Airframe Hours, 588 Engine Hours, CTLS Your chance to own a top of the line LSA. 130L fuel giving over 6 hours endurance at 110-115 TAS. Empty weight of 329kg giving useful load of 271kg. This aircraft always hangared and L2 maintained. No accident history. Immaculate condition inside and out. Would suit new aircraft buyer.  
**PRICE** \$137,000.00  
**CONTACT** William Davison 0419 632 477

5089 JABIRU LSA 55-3J



2095 Airframe Hours, 393 Engine Hours, LSA55/3J Built 1993, 2095 hrs. Rebuilt to 3J and repainted 2004, Solid lifter engine with excellent leak downs. TC3 engine monitor, Very good condition with upgraded brakes, bigfoot kit, Transponder plus standard instruments, storm covers, based Wollongong.  
Price \$28,500.00  
Contact John Martin 0422 278 502

5094 PIPER ARCHER II SHARE FOR SALE



Wanting to get your CASA ,Äi RPL/PPL/CPL Or just fly cheaply from Parafield this is the deal for you: PARAFIELD SYNDICATE SHARE (\$5K) ,Äi PIPER ARCHER II. Fly \$150 per hour wet and \$75 per month fixed.See website: www.parair.webs.com  
**PRICE** \$5,000.00  
**CONTACT** Colin Drew 0400 132 138

5095 TOPAZ



250 Airframe Hours, 250 Engine Hours, Topaz Topaz 24-8438 ttis 250 hours. Rotax 912UL cruise 105 kts at 15 lph. Ballistic parachute.Standard analogue gauges, electric flaps, trim on central joystick. Wide cockpit, centre arm rest, leather seats, 40 kg luggage.  
**PRICE** \$90,000.00  
**CONTACT** Bob Meldrum 0400 230 895

HORSHAM AVIATION SERVICES

ABN: 65 007 339 451

Now Importing THE EUROFOX AIRCRAFT:

- Quality Factory Built
- Quick folding wing design
- Glider Tow certified to 750Kg
- Short take-off & landing

And DYNON AVIONICS Products:

- Now with Autopilot capability
- Solid state sensors
- Checklists
- Audible alarm capability

PH: 03 5381 1727

Email: info@horshamaviation.com.au

5096 LIGHTWING AIRCRAFT FOR SALE



436 hours Airframe Hours, 436 hours Engine Hours, Lightwing Gr912s Australian Light wing GR 912s 100hp. Great fun aircraft. New bolly prop. New 18inch tyres. Long range fuel tanks. Very tidy aircraft. Low engine hours. Owner looking to up grade.  
**PRICE** \$45,000.00  
**CONTACT** Joe Stefano 0428 831 400

5098 KARATOO J6



660 Airframe Hours, 385 Engine Hours, J-6 Karatoo Two (2) seat side by side recreational aircraft with Subaru EA81 engine and Warpdrive 3 blade propeller. Two owners only and mine since 2007. This is a stable, reliable, economical aircraft to own and fly.  
**PRICE** \$22,000.00  
**CONTACT** Christopher Robert Stewart  
www.aviationclassifieds.com.au

5099 WANTED

WANTED Enclosed Trailer for Gazelle  
**CONTACT** John Kearney 0448 843 522

5100 SAVANNAH 912 ULS



890 Airframe Hours, 890 Engine Hours, Savannah 912 ULS Savannah 912 ULS well presented and maintained. Always hangared. Located Heckfield Gold Coast. Nil accident history. Inspections welcome anytime.  
**PRICE** \$45,000.00  
**CONTACT** Sean Siegmeier 0458 122 990

5103 ZENITH 750 CRUZER



750 Cruiser This is a brand new fully built kit which only requires a hanger to put wings on. Basic panel with radio. The kit alone is worth 42000 and it is already built  
**PRICE** \$38,000.00  
**CONTACT** Brian Howard 0401 060 613

5104 LIGHTWING TAILDRAGGER



2500 Airframe Hours, 324 approx Engine Hours, Lightwing GR912  
**PRICE** \$18,000.00  
**CONTACT** Kerry Watson 0428 553 190

5107 SONEX 3300



242 Airframe Hours, 242 Engine Hours, Sonex Price reduced. Sonex with Jabiru 3300, Winner of RAAus Best Kit / Amateur built at Ozkosh Narromine 2016. Easily removable long range tank 32L. 97L total. 130kt cruise @ 19LPH, 500nm range. Always hangared, first flown 2010. Engine complies with curr  
**PRICE** \$46,000.00  
**CONTACT** Steven Woodham 0434 727 152

5108 NARCO AT150 MODE C TRANSPONDER



NARCO AT150 mode c transponder This unit has no air time, it has been mounted into a project powered and tested by an avionics technician and found to perform as intended. The unit was removed from the project for an upgrade to mode S. This transponder is supplied with mounting.  
**PRICE** \$450.00  
**CONTACT** Graham Johnston 0417 985 200

5109 EUROFOX 3K 24-8546



1.8 Airframe Hours, nil Engine Hours, 3K 2015. New aircraft with test flight hrs only, conventional instruments with Garmin GTR225 VHF Com and Garmin Aera 500 GPS. Excellent opportunity due to exchange rate and immediate delivery. \$99,588.60 + GST. Ph Tony (03) 5381 1727  
**PRICE** \$99,589.00  
**CONTACT** Anthony Brand 0418 811 737

5111 SLICK MAGNETO AND HARNESS FOR VW

Slick mag impulse coupler, harness and auto plug converters for VW engine. \$400  
**PRICE** \$400.00  
**CONTACT** Alan Hawkins 0400 580 852

5112 JABIRU J160D LSA



650 Airframe Hours, 400 Engine Hours, J160D Jabiru J160D light sports aircraft located in narrogin west Australia may be able to arrange delivery within Australia  
**PRICE** \$48,000.00  
**CONTACT** Tony Messenger 0400 610 076

5117 JABIRU J160



316.7 Airframe Hours, 316.7 Engine Hours, J160 Jabiru J 160 water cooled. No more heating worries. Home built by competent builder Rear door fitted. Always hangared. Low hours. Contact duguidls @ bigpond.com  
**PRICE** \$55,000.00  
**CONTACT** Les Duguid (07) 4126 1280

5119 WANTED

Jabiru J230D factory built with Gen 3 roller cam engine low hours in VG condition.  
Contact Terry Clarke 0418 191 857

5121 JABIRU J170C



1902 Airframe Hours, 140 since overhaul Engine Hours, Jabiru 170C located at Jindabyne in Snowy Mountains. Lives in an excellent NEW hangar owned by Alpine Aviation Australia. The aircraft can remain here and be hired to/maintained by flying school. Great opportunity for a new owner! Great Position!  
**PRICE** \$52,500.00  
**CONTACT** Norman Cooke 0417 876 195

5122 FLY SYNTHESIS STORCH S500



200 Airframe Hours, 200 Engine Hours, Storch S500 100hp Rotax 912 ULS  
Always hangared. Owner Built Kit. Aircraft, good looking and in good condition. Maintained to Fly Synthesis maintenance manual and Rotax schedule. Business and social commitments have necessitated this regrettable sale.  
**PRICE** \$52,000.00  
**CONTACT** Lancelot George Bokay 0416 074 701

5123 QUICKIE Q200 UNSTARTED COMPLETE KIT



Q200 A rare opportunity to purchase an unstarted kit of one of the prettiest light aircraft ever designed. No engine, instruments, prop or paint. Fast, fuel-efficient and fun. Massive builder support on www.quickheads.com.  
**PRICE** \$7,400.00  
**CONTACT** Martin Lang 0409 800 369

5125 TERRIER 200



237.0 Airframe Hours, 261 Engine Hours, Terrier T200 Factory built, composite construction, Registered Dec 2016 - 100 hp Subaru EA 81 engine 261 hours. STOL New prop, new additional oil radiator and pump. EPIRB Headsets, strobe and landing lights, electric trim, Tundra tires. Located Proserpine Qld.  
**PRICE** \$40000.00  
**CONTACT** Rogin Taylor 0417 646 075

5126 HUGHES LIGHT WING



466 Airframe Hours, 466 Engine Hours, 3A Low hours low price. Aging pilot not flown for 6 years. Wings detached for transport. Requires maintenance related work VW engine, converted dual ignition and fuel pumps, well instrumented previous VHF registered now RAAus Condition report by L2 Ex  
**PRICE** \$23,000.00  
**CONTACT** Michael Kulow 08 8668 4227

5129 JABIRU J160C



4600 Airframe Hours, 1130 Engine Hours, J160C Jabiru J160C in good condition inside and out, radio, transponder, flown regularly, good engine compression, 25hr services, Jabiru serviced regularly, Warwick QLD,  
**PRICE** \$38,000.00  
**CONTACT** Kelvin Hutchinson 0407 733 836

5130 WHEEL PANTS



SonexOne set of two Sonex wheel pants fabricated here in Australia, light strong construction, in mould painted, with a high gloss finish. Dimensions= L 750mm x H 250mm x W 150mm. These wheel spats are ready to drill off and fit to your aircraft, no sand  
**PRICE** \$300.00  
**CONTACT** Doug Toppazzini 0410 184 606

5131 SONEX #1237



Sonex airframe professionally built with solid rivets through out. All major airframe work has been carried out. At this price you can have the airframe built for less than the price of a kit, not to mention shipping and taxes.  
**PRICE** \$20,000.00  
**CONTACT** Doug Toppazzini 0410 184 606

5133 SG AVIATION STORM 300



503 Airframe Hours, nil Engine Hours, Storm 300 SG Aviation Storm 300 Easy to handle and easy to fly. Cruises around 90-100 knots. \$45,000 ONO Please call after 6pm  
**PRICE** \$45,000.00  
**CONTACT** Sydney Barker 0423 407 998

5134 JABIRU J230 D



911.1 Airframe Hours, 173.2 Engine Hours, J230 D Jabiru 230 D Sept 2009, Glass cockpit, Dynon 100, Avmap EKP4, Digital CHT, LOW fuel warning, Dynon AP74 Autopilot, Micrair VHF radio and transponder, Turn coordinator, Cold start, TTIS 911.9 TETIS 173.2 (series 3 engine) Damage history 2012, Prop and wing tip and new engine, unrecorded of hard landing, now noted in log book. Approved modification  
**PRICE** \$68,000.00  
**CONTACT** Peter Nocker 0403 279 587

TERMS AND CONDITIONS FOR ADVERTISING ONLINE AND IN THE MAGAZINE

To advertise online and in Sport Pilot magazine

Visit: [www.aviationclassifieds.com.au](http://www.aviationclassifieds.com.au)

Call: (02) 6280 4700

Email: [sales@aviationclassifieds.com.au](mailto:sales@aviationclassifieds.com.au)

Advertising rates start at \$33 (incl GST) per month for online advertising. Online, you can include up to five photos and 1,000 words of text online. The cost includes an ad in Sport Pilot Magazine, which is limited to one photo and 50 words. Advertisers are responsible for cancelling their ad. No refunds will be issued for ads where the advertiser sells a product and fails to cancel their ad. The deadline for ads to appear in Sport Pilot is the first of the month prior to the cover date of the issue. The deadline for cancelling ads is the 20th of each month. Ads not cancelled by the 20th of the month will incur an additional month's advertising charges.

The Aviation Classifieds section in Sport Pilot is subsidised by RAAus and its members and is for non-commercial sales only. As such, even though your ad is guaranteed to be online, inclusion in the magazine will be at the discretion of the Editor.

Before purchasing any aircraft/engines/equipment which appears in the Aviation Classifieds, make sure the technical details and registration information is correct for that type and model of aircraft/engine/equipment. RAAus and Stampils P/L take NO responsibility for the technical accuracy of the details and information attached to each ad online and in Sport Pilot magazine and may not be able to transfer the aircraft purchase. RAAus also reserves the right to edit or delete advertisements deemed inappropriate or misleading. RAAus and Stampils P/L reserve the right to withdraw from publication, without refund, any ad deemed unsuitable, including low quality or faulty images. Neither RAAus nor Stampils P/L accepts responsibility for advertising errors or omissions. Advertisers are also responsible for assessing both the integrity of potential buyers and the risks which attend online transactions. The long standing principle of caveat emptor ([https://en.wikipedia.org/wiki/Caveat\\_emptor](https://en.wikipedia.org/wiki/Caveat_emptor)) applies. Since phishing scammers may contact advertisers using the RAAus website, you are strongly encouraged to familiarise yourself with the ACCC's guidelines for recognising and guarding against online scammers (<https://www.accc.gov.au/consumers/consumer-protection/protecting-yourself-from-scams>).





**ATEC**

*Introducing* the all NEW **FAETA NG**  
All Carbon Fibre - Factory Built LSA

STOL Performance with 132kt cruise / 37kt stall at MTOW

**600kg MTOW**  
Almost 300kg load capacity depending on configuration!

Powered by the ROTAX 912 range

100L Wing Tanks - Over 1000nm range

PO Box 30 DENMAN NSW 2328  
Dexter Burkill — 0428 686 396 (Denman)  
Sean Griffin — 0499 030 659 (The Oaks)

email: atecplanes@bigpond.com  
www.atecplanes.com.au

**ATEC AIRCRAFT SALES**  
**AUSTRALASIA**  
AUS 55 957 477 389



**Call C&H Freight First!**

**PAIN-FREE IMPORTING FOR HOMEBUILDERS**

Almost 20 years experience freighting aircraft and aircraft parts

- Convenient door to door service (if required)
- Weekly departures for consolidated cargo & full containers
- Flexible part container and full container services
- Convenient door to door service (if required)
- Honest advice
- Competitive costing
- Personal, friendly service

**CH Freight**  
**03 9330 0800**

For a quote email [christine@chfreight.com.au](mailto:christine@chfreight.com.au)  
or [shelly@chfreight.com.au](mailto:shelly@chfreight.com.au) with supplier details, weights & dimensions – that's all we need.

Unit 3, 4-8 Mareno Rd  
Tullamarine Vic 3043  
Fax: 03 9330 0811  
[www.chfreight.com.au](http://www.chfreight.com.au)

100% Australian owned



75 Knot Cruise

Rotax 912 (80hp)

**FOX V6 Super**

**STARFOX**  
AIRCRAFT AUSTRALIA

Call Bert  
**0418 440575**

See the full range of STARFOX aircraft on the website.

[info@starfoxaircraft.com.au](mailto:info@starfoxaircraft.com.au)  
[www.starfoxaircraft.com.au](http://www.starfoxaircraft.com.au)

LSA - Ready to fly



WHERE IS CAGIT?  
CAGIT LODGED IN THE WEST

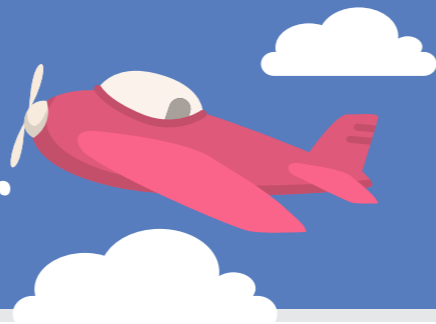
DAVID and Jen Ford from Esperance were on the east coast in October for Oz-Kosh in their Brumby 610. Taking their opportunity, they went a little bit further, lifted the Come and Get It Trophy from Glencoe, where it had paused only briefly, took it back to Narromine and then home where it will no doubt bounce around the west coast for a while.

If you or your crew are contemplating a high speed heist of recreational aviation's most coveted prize, its best to keep up-to-date with its latest location by checking the CAGIT Hunters Facebook page, administered by Dexter Burkill, Peter Zweck & David Carroll [www.facebook.com/CagitHunters/](http://www.facebook.com/CagitHunters/).

ADVERTISERS INDEX

Air Creation	6	Coominya Flight Training	50	Old Station	5
Alpine Aircraft	44	Curtin Springs	32	Professional Flight Training Services	18
Asia Pacific Light Flying	50	Deniliquin Aero Club	28	Starfox Aircraft	64
Atec Aircraft Sales - Zephyr	64	D-MOTOR AUSTRALIA	67	Recreational Flying Co Gympie	67
Australian Commercial Credit	50, 67	Foxbat Australia	54	ROTEC	19
Australian Lightwing	44	Horsham Aviation	54, 60	SEQFTA	67
Bert Flood Imports (Rotax)	58	Jabiru Aircraft	68	Sport Aviation Tocumwal	67
Bolly Props	67	Just Aircraft	28	Stawell Aviation Services	6
Bundleby Ranges	33	Kilcowera Station	33	TL-Ultralight Australia	41
C & H Freight	64	Leading Edge Aviation	51		
CASA	22, 28	Mendelssohn Pilot Supplies	2		

# Uber hails a flying car



**T**HERE have been a number of attempts over the years to launch a flying alternative to cars. And they have all fallen over for the same reasons. It's way too hard to develop and the costs are astronomical.

What keeps driving the ambition to create an airborne commuter vehicle are the extraordinary profits to be made if someone can pull it off.

Now, for the first time, the horizon for such vehicles has moved from the unlikely to possibly.

Uber, the giant ride sharing company which has disrupted the world's taxi industry, has published a white paper outlining its plans for Uber Elevate, a network of on-demand electric aircraft.

The white paper outlines the familiar problem - we spend way too long in our cars commuting each day - millions of hours wasted worldwide. It thinks the solution is to go vertical.

Just as skyscrapers allowed cities to use limited land more efficiently, urban air transportation will use three-dimensional airspace to alleviate transportation congestion on the ground. A network of small, electric aircraft that take off and land vertically (called VTOL aircraft), will enable rapid, reliable transportation between suburbs and cities and, ultimately, within cities.

The development of infrastructure to support an urban VTOL network will likely have significant cost advantages over heavy-infrastructure approaches such as roads, rail, bridges and tunnels. It has been proposed that the repurposed tops of parking garages, existing helipads, and even unused land surrounding highway interchanges could form the basis of an extensive, distributed network of 'vertiports' (VTOL hubs with multiple takeoff and landing pads, as well as charging infrastructure) or single-aircraft 'vertistops' (a single VTOL pad with minimal infrastructure).

Recently, technology advances have made it practical to build this new class of aircraft. Over a dozen companies, with as many different design approaches, are passionately working to make VTOLs a reality."

It acknowledges the main barriers to the success of VTOLs are the certification process, battery technology (and battery charge rates), vehicle efficiency, vehicle performance and reliability, Air Traffic Control, cost and affordability, safety, noise, emissions, infrastructure and pilot training.

Uber admits its vision is ambitious, but it believes VTOLs are achievable in the coming decade if all the key actors in the ecosystem—regulators, vehicle designers, communities, cities, and network operators—collaborate effectively.

Good luck with that.✈

**For more information,**  
[www.uber.com/elevate.pdf](http://www.uber.com/elevate.pdf).



## SEND IN YOUR STORIES

Got an aviation moment you'd love to share? Your kids or maybe your club get together? Send a photo as a jpeg attachment and a short explanation to [editor@sportpilot.net.au](mailto:editor@sportpilot.net.au)



**BOLLY**  
Popular Choice for over 21 years

**THE PROPELLER SPECIALIST**

**2 Blade \$755.00inc**

**3 Blade \$990.00inc**

**4 Blade \$1225.00inc**

**The all new Brolga Sport & Magnum series**

- 2,3 or 4 Blade
- Pitch Adjustable
- Carbon/glass Blades
- Alloy Hub
- Hard ware kit
- Full warranty

Call Peter on 08 8380 8396  
[www.bollyaviation.com.au](http://www.bollyaviation.com.au)

**BOLLY**  
Popular Choice for over 21 years

**D-Motor Australia**

Will Keep Your Prop Spinning

**D-Motor LF 26 4 Cylinder Engine**

Water Cooling  
Direct Drive  
92hp @ 3000rpm  
57kg Installed  
EFI  
1500hrs TBO  
€12600 + Shipping + GST

CALL ADAM 0403 485 400  
[info@d-motor.com.au](mailto:info@d-motor.com.au)  
[www.d-motor.com.au](http://www.d-motor.com.au)

**SportAviation TOCUMWAL**

Experience the thrill of Flying.

Euro Fox K2 Abinitio and X-Country Training, Solo Training, Tail Wheel Endorsement.  
Contact Eddie Madden C.F.I.

DISCOVER THE WORLD ABOVE - EUROFOX  
Onsite Caravan Park NOW OPEN

[flying@sportaviation.com.au](mailto:flying@sportaviation.com.au)  
[www.sportaviation.com.au](http://www.sportaviation.com.au)

Gate 10 Babingtons Rd  
PO Box 44, Tocumwal, NSW, 2714, Australia.  
Tel: 03 5874 2734 Mob: 0427 534 122

**AVIATION INSURANCE**  
experienced aviation insurance specialists

Authorised Insurance Representative of Ambro Insurance Brokers Pty. Ltd. AFS Licence Number 236675

Stewart & Gladys Smith would like to assist with your RA-Aus or GA aircraft insurance, or hangarkeepers public liability policy needs. The only insurance we handle is aviation, we do it well, and we are both friendly and economical to deal with!

We cover the market for you, obtaining multiple competitive quotes from all appropriate insurers, and then help you pick the best cover/price.

We welcome clients in all parts of Australia, and if you can't catch us at the office on 1300 308 700, we are often available after hours on 0433 278 700.

**AIRCRAFT FINANCE**  
In affiliation with Linx Finance Australia Pty. Ltd

If you seek aircraft finance, we, via our affiliate Linx Finance, welcome the opportunity to seek to assist if the application is for \$40,000+ and the applicant is in a good financial position. Good bank rates, normally fixed over 5 years. Security is normally over just the plane. Ring Stewart Smith to discuss your needs, and to see if we/Linx can assist.

**AUSTRALIAN COMMERCIAL CREDIT PTY LTD**

Ph: (03) 9816 3264 or 1300 308 700  
Fax: (03) 9816 3270  
Website: [www.insureplanes.com.au](http://www.insureplanes.com.au)  
E: [stewart.smith@insureplanes.com.au](mailto:stewart.smith@insureplanes.com.au)  
AH: (03) 9857 5963 or 0433 278 700

**PILOT TRAINING**

South East Queensland Flying Training Academy | Wondi Airport

FULL-TIME COURSES WITH ACCOMMODATION SUPPLIED

Advanced Theory Training  
RA-Aus pilot certificate training  
Flight Reviews  
L2 Jabiru maintenance facility

RA-Aus certified flying instructor  
WAYNE JENKINSON  
07 5641 1699 or 0434 581 910  
[wayneflying@hotmail.com](mailto:wayneflying@hotmail.com)  
[www.seqfta.com.au](http://www.seqfta.com.au)

**The Recreational Flying Co Pty Ltd**

**The Spirit of flying**

- ✓ Stick & Rudder Specialists!
- ✓ Two-Week full time certificate courses!
- ✓ Part 141 Approval RAAus, RPL, PPL, CPL!
- ✓ Aerobatics, E.M.T., Instructor Training!
- ✓ Low and High Performance!
- ✓ Caring, skilled, professional staff!
- ✓ Accommodation and courtesy car available

**Gympie Queensland**  
0407 086 152  
[recreationalflyingco.com](http://recreationalflyingco.com)

JOIN THE FLEET OF 1,000 JABIRU FLYING IN AUSTRALIA (AS MANY AS CESSNA 172) AND 2,000 IN TOTAL AROUND THE WORLD

# DEAR FELLOW AVIATORS YOU WANT TO FLY WE'RE HERE TO HELP

We know you all want to fly and with a country as big as Australia to explore, Jabiru is leading the way. In an era where every dollar counts, we know you need to fly even smarter than before. Jabiru can help you do just that.

**Jabiru leads the way with Australia's first composite aircraft, stronger and safer with over 2,000 around the world.**

Deciding which aircraft to buy shouldn't mean a compromise on the performance you need to enjoy flying. Jabiru delivers a superior combination of safety, reliability, performance and price. With fuel consumption a fraction of bigger aircraft you can make your dollars stretch further. Robust and reliable with a safety record we are proud of. Why fly anything else!

**NOW IS THE TIME TO PLAN YOUR NEXT ADVENTURE IN A SHINY NEW JABIRU**

Sincerely,  
Rodney Stiff  
Managing Director

