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For recreational pilots
AUGUST 2014 VOL 37 (8)

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News

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Features

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SPORT PILOT

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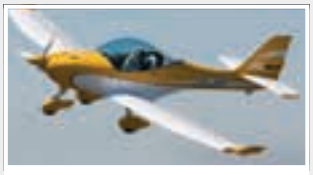

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President's Report

MICHAEL MONCK

Our own worst enemy

I had prepared some thoughts for this month's column, but of late it has become apparent that my earlier ideas were flawed. So I have changed the topic from my original one. It's not a topic I like to write about but it would be remiss of me on this occasion to ignore the elephant in the room.

Safety

On the first weekend of July I lost a friend. He was someone who I held in extremely high regard and who taught me a lot. I flew a fair bit with him and, every time I had the privilege to do so, I walked away a better pilot. Even before the wheel chocks were pulled out I had generally become a little wiser. But I didn't get to do as much flying with him as I would have liked and, now that opportunity won't arise, I'll just have fond memories.

A few weeks before that someone else lost a friend, a husband, a father. And a few weeks before that someone else also lost a friend, a husband, a father. A little girl was also severely injured.

Our accident record is working against us. We have so much more work to do.

Against our interests

I've heard the Minister's office has asked if our members are happy with RA-Aus' services. Given our many recent meetings with the Minister I find this somewhat puzzling, but what is more concerning is that the email petition which triggered the Minister's interest is based on misleading information.

I received an email recently which contained the following statements:

'The above mentioned company (ELAAA), which will be situated at Hangar 161, Bundaberg Airport QLD 4670, is to operate in the place of RA-Aus. As of the 17/01/2014 there were 9,423 RA-Aus members from a total of 10,000. That is a total loss of 577 members and as of this date, 18/06/2014, there has been a further reduction of 2,700 being 27% of members that have failed to renew their membership with the said RA-Aus and thus becoming unlicensed and unregistered'.

This so called Experimental Light Aircraft Association of Australia (which claims to be a proprietary limited company yet does not exist according to any government register) has asked for government funding to replace RA-Aus. I find it hard to believe the government would fund a non-existent company with no track record, no governance, no board, etc. but nonetheless I find it equally important to correct the big inaccuracies in the document.

> *Our accident record is working against us*

The yet-to-be registered company claims RA-Aus has lost more than 3,000 members, 2,700 of whom have left this year alone. The numbers don't appear to be based on anything official. We used to report to CASA the total of all our membership, including temporary members, non-flying members, affiliated clubs etc.

In 2012 that was around 10,900. But in that year CASA told us it only wanted to know about our flying members, so we revised the membership total to what it is today 9,447 (at the time of writing). It may appear we lost 1,500 members all at once, but we didn't. The non-flying members are still here, we just don't report them to CASA any more. We've never had 10,000 flying members and to present this as a real decline is disingenuous.

And what's more, since I came on to the board late last year the number of aircraft registered by RA-Aus has actually grown from 3,085 (as at September 30, 2013) to 3,110 (as at June 30, 2014), a modest increase but a starkly different story to that being told elsewhere. When I consider that my main motivation for nominating for the board was on the back of aircraft registration problems, I am comforted our fleet is growing.

The important thing to note, however, besides the fact that misleading information is being put about by individuals for their own ends, is that it does our cause no good. As an organisation we have had problems, including the present delay in registrations. We are addressing these and have taken significant steps in the past couple of months to develop solutions.

These include new staff, revised processes and the consideration of longer periods of registration and membership. We are also looking at automating some of the processes to speed things along.

It seems strange to me that people would actively bring our organisation into disrepute and act against the interests of our members. Again, we have had our problems but we are undoubtedly in a better position today compared to what we faced 12 months ago.

While ever we actively work against our own interests (our safety record is also working against us) we will continue to face challenges. But if we pull together and protect what has been built over the past 30 years, from rag and tube through to plastic fantastic privileges, we can make the future even brighter. And to the individuals publicly embarrassing our organisation by entertaining the idea we are better off without RA-Aus, it's not a good message to be sending to CASA or the public at large. The next time you are asked to sign a petition, ask yourself about the real reason behind the request – is it genuine concern or is it simply someone grinding an axe?

Calendar of events

16-17 August

AOPA Safety Seminar

Bankstown Airport (passenger terminal building). Will include aircraft displays, exhibitors, presenters from government bodies and private organisations. 9am-3pm each day. BBQ lunch. RVSP required.For more information 0417 292 209 or aaron.stephenson@aopa.com.au.

23–24 August

Port Pirie Fly-In

Helicopter rides, food and craft stalls, live entertainment Saturday afternoon. An alcohol free event. Supported by Lions, Rotary, RSL and Port Pirie Regional Council. For more information, 0402 274 214.

31 August

Harley Ride and Fly Brown Ribbon Day

Skythrills, Golden Plains Aviation, Geelong Harley Davidson, Geelong Sports Aviators Club and Lethbridge Airport will put on a show with big bikes and beautiful aircraft to raise money for the EJ Whitten Foundation and Andrew Love Cancer Centre to help in their fight against prostate cancer. Harley rides, joy flights/TIFs, and a free BBQ lunch. For more information, contact Daphne Gibbs 0420 985 931

30-31 August

Tumut Aero Club Fly-In

Come to Tumut Aerodrome and enjoy the spectacular scenery of the South West Slopes and Snowy Mountains region. As well as planes, we hope to have hot air balloons, the Canberra Model Airplane Club and Doug Martin's amazing collection of Mini's.
A special invitation to all seaplane aviators to bring their planes and demonstrate on our surrounding waterways. For more information, flyin@tumutaeroclub.org.au or www.tumutaeroclub.org.au/flyin.html.

31 August

Grafton Wings and Wheels Open Day

At South Grafton Airstrip. CEX Sports Touring and Classic Car club machines, vintage motorcycle club, the Stationery Engine group and Model Aircraft club will all be on display. All aviators welcome from 10am. The clubhouse has been refurbished and looks a million bucks. For more information, Col Redding 0428 664 985 or colinhredding@gmail.com.

6 September

Wings over Warwick

Queensland Recreational Aircraft Assn. incorporating Warwick Aero Club (www.qraa.info) invites all pilots and enthusiasts to the Warwick Aerodrome (YWCK). The 1,600m strip is all bitumen with no landing fees (www.warwickaerodrome.com). Day will Include a display of model planes. Food and drink available from 8am. For more information, Kelvin Hutchinson 0407 733 836, Phil Goyne 0417 761 584 or Graham Hawthorne 0427 377 603.

14 September

RVAC Dawn Patrol

This will be the 74th anniversary of the Battle of Britain and the 35th Royal Victorian Aero Club Dawn Patrol. 45 aircraft will depart Moorabbin Airport at first light in stream formation at 30 second intervals. The planned route will be over the Shrine of Remembrance, Point Cook Aerodrome (the birthplace of the RAAF) and Avalon Airport, returning to Moorabbin Airport via Port Phillip Heads. After the flight a World War II veteran will recount his war-time experiences and pay tribute to fallen comrades. For more information (03) 8586 7777 or flying@rvac.com.au.

1-2 November

Back to Holbrook Fly-In

Holbrook Ultralight Club invites aircraft owners and pilots to Holbrook Airpark for its annual Fly-in. Forums Saturday afternoon, fly-in dinner Saturday night and a hot breakfast Sunday morning. Trophies awarded at the dinner. Underwing camping and transport to and from Holbrook township for accommodation and fuel available. For more information, www.holbrookultralightclub.asn.au or Bryan Gabriel (02) 6036 2601.

15 March 2015

Darling Downs Fly-In

The Clifton Airfield (Bange's) fly-in has become an iconic event in the region and is the premier attraction for all types of aviation in southern Queensland. Come late pm Saturday 14th for BBQ, drinks. Fly or drive in, see ERSA. On field camping, bring your swag. Advise for catering. For more information, Trevor Bange 0429 378 370, (07) 4695 8541 or trevorbange@bigpond.com.

APOLOGY TO BOB WALSH

In the Letters to the Editor of *Sport Pilot* (November 2013) Bob Walsh wrote about his experience with an unattached oil cap.

The letter was offered and printed under the principle of 'good citizenship' to share learning. It is critical for recreational pilots to have the opportunity to learn from the experiences of others and such letters are part of 'Sport Pilot's' brief.

The exact facts were not clearly stated but the letter generated three robust replies.

Sport Pilot accepts the good-will in Bob Walsh's letter and apologises to him for any hurt the responses may have caused to him.

LETTERS TO THE EDITOR

A member's view 1

I have been taking a keen interest in the goings-on at RA-Aus. I feel what I have to say could very well be in the thoughts of a good majority of our members.

Beginning at the February 2013 meeting at Queanbeyan, it was quite evident there were many problems internally for one reason or another. At that meeting there were people who stood up and basically commanded the attention of the meeting.

A few of those people made sense and were placed on subcommittees. This is not angled at them. I believe these committees got off the ground and started to do business, but all of a sudden things seemed to blow apart.

As we all know, there has been an exodus of people - presidents, now another GM, a multitude of Tech Managers and a large number of board and executive positions shuffled around.

This leads to one conclusion - there is a fundamental problem within the board of management, who were lucky to escape a vote of no confidence at the Queanbeyan meeting. Am I right or wrong?

There is no doubt in my mind a high percentage of members believes the board is too large. But all the talk within the executive side of things, including the board, is not to change.

The biggest problem about changing the size of the board is the large number of Constitutional changes required. But common sense is needed. Based on the last Treasurer's report, it's time to act or we will lose it.

I was at NATFLY trying to introduce something new by offering a Dynamic Prop Balancing solution for people. I wouldn't want to rely on it for my evening meal, but it is something a lot of people need. I'm grateful to those who took the opportunity. I'll be back (I hope).

As members, we need to open our eyes and mouths, or we know what the result may be. I remain a loyal member.

-Keith Baker

A member's view 2

Regarding the downturn to the annual NATFLY event. Without going into costings, the first three things I would question are;

1. Location - Distance and ease of access from major transport hubs and surrounding population. Have other locations been investigated?

2. The name NATFLY - To the general public, it sounds more like a topical disease than anything associated with aircraft.

3. What had RA-Aus expected regarding attendance by both the general public and RA-Aus members?

Having been involved with Airshows Downunder over eight years (operational, not marketing) I know it needs a lot of research, time, effort and support from the industry to obtain results. Either you are fully committed or you are wasting your time and money.

Now to the on-going train wreck. Apart from the fact we have more on the board than BHP, it appears from the outside, (i.e members) to be never ending.

Another member of the new management team has fallen over. May I suggest you all go out and buy a big mirror, sit down and take a good look at yourselves. If it was a private company it would have rolled over and died by now. So I will give you some credit that the doors are still open, for now. I just hope CASA doesn't slam them shut.

-Barry King

More calendar girl

I want to add my support to Nathan Carruthers' letter about the August page of the 2014 calendar (*Sport Pilot* July 2014). I proudly hang each year's calendar in my office and it regularly creates opportunities for discussion about aviation - "Are you a pilot?" Several people have even taken me up on the idea of trying a TIF, so it definitely has real publicity benefits. In the past I have laminated many of the best pages to decorate our flying school's hangar so students can see and discuss the wide variety of RA-Aus aircraft.

This year my wife actually put it up in the usual spot when we returned from summer holidays and I hadn't turned through all the pages, nor had she. Having seen Nathan's letter and turning the page over from July to August I took it off the wall and binned it, as every one of you ought to. In this age of awareness about the abuse of women, girls and boys by churches, state institutions, celebrities and sports coaches, anything which presents a woman in a meaningless, gratuitously sexual pose should be roundly condemned. If I had used the calendar to advertise my business I would feel humiliated having to share the publication as though I was complicit somehow.

Sure, I hear you say, the model has a free choice, but if vendors stopped demanding ridiculous marketing ploys unconnected to their product, the model wouldn't be offered the choice in the first place. I'm no prude and have travelled widely enough to have seen some beautiful artwork and photography to be admired in the right context. But respect and dignity for all our flying family must be the rule.

A naked male in the same pose might have raised even more eyebrows and illustrates how silly the graphic really is. I would encourage the publishers, RA-Aus and vendors to be more sensitive in future to avoid such crass advertising.

-Paul Smith

Band aids

After reading Nathan Carruthers' letter (*Sport Pilot* July 2014) regarding the calendar, I had to have another look at that August page. I doubt his students would have noticed anything untoward, until he stuck the bandaid onto the picture.

Like Nathan, I imagine the young woman has a body of ideal physical perfection. But even using a magnifying glass, it is not possible to tell, as there is not enough evidence showing. She might have faults like anybody else.

One thing is certain. She is not fat, which is something one should encourage in all young pilots, male or female. It makes them healthier and therefore safer. With ultralights, it even improves the performance of their aircraft.

-Henry Schneebeli

Ed – *Henry, I put the band aid on the picture so as not to reoffend Nathan.*

No luck required

In response to Anonymous (Letter to the Editor 'Training standards' *Sport Pilot* June 2014), I am very concerned about the number of accidents appearing on the nightly TV news. RA-Aus' response to "be more careful" and dob in the sub-standard schools is not much of a check and training system.

Any instructor trained under the GA system undergoes significantly more training. To me the best course would be to make those who trained outside the GA system be re-tested. Alternatively do nothing until CASA comes knocking on the door.

The article on short field landings (*Sport Pilot* March 2014) bothers me. Quoting "learned mostly by luck" and "fly five knots above the stall" etc. To me such articles have no place in a safety conscious organisation.

The techniques I have always taught are not difficult and easily taught to a low hours student in one or two hours - no luck required. Approach speed to be a minimum 1.3VS with an add-on for conditions. If, by using aileron and rudder, you have trouble keeping the aircraft aligned with the runway, try another approach using half flap and an extra five knots. If the field is too short then you are in the wrong place at the wrong time. Beware of that well known psychological disorder called get-home-it is.

-Steve Smith

Lithium battery

The photo is of a Braille Green-Lite Lithium battery which caused the immediate forced landing of a Coominya aircraft this week.

The two occupants were lucky to escape injury. The website for these batteries is: http://www.braillebattery.com/index.php/braille/product_series/green_lite. They are simply described as Lithium-ion type, but this description encompasses various chemistries.

They are further described as RoHS compliant, environmentally friendly and D.O.T. approved. In certain situations, though, it seems they may be dangerous.

To quote the pilot: "When you are coughing on smoke, there isn't much you can do." Luckily the aircraft was at low altitude and the pilot found a suitable field.

For a weight saving of less than four kilos, why take the risk?

-Arthur Marcel

Tech dept: *See the RA-Aus website for a safety notice regarding appropriate installation and charging systems for lithium batteries in aircraft.*

Picking up a wing

The recent Learn to Fly column by Anthony Sibary (*Sport Pilot* June 2014) made for interesting reading. His instructor, John, explained that "many students try and use aileron to correct a dropped wing, when the correct technique if this occurred was opposite rudder".

Current GA aircraft, including LSA, are designed so the ailerons are effective below the stall.


LEARNING TO FLY

BY ANTHONY SIBARY

From the left seat

I am learning that subtle control inputs are what's needed

Providing the aircraft is correctly rigged and the aircraft is unstalled by reducing the angle of attack, the ailerons can be used to level the wings if for some reason a wing drop has occurred. Even today, the myth is still perpetuated that a dropped wing should be picked up by rudder while keeping the ailerons neutral.

To attempt to level the wings by skidding the aircraft with rudder until the wings are level, (hence the term 'picking up the wing with rudder') can lead to an incipient spin if the aircraft is stalled at the time. If an aircraft is known to have a markedly dropped wing characteristic at the point of a normal wings-level stall, then the pilot must report it as unairworthy in the appropriate maintenance document and it should not be flown unto the defect is rectified.

The correct technique for stall recovery if a wing has dropped markedly at the point of stall, is to unstall the wings by lowering the nose (reduce the angle of attack) while simultaneously applying sufficient rudder to prevent the down going wing from dropping any further and, at the same time, apply full power and level the wings with aileron. The ailerons are instantly effective once the angle of attack is reduced and can be used to level the wings normally.

Exactly the same technique was used in

wartime aircraft where certification standards were far less stringent than today. Modern LSA aircraft have benign stalling characteristics and are designed that way. They will not drop a wing at the stall providing the aircraft is not deliberately forced into extreme nose high attitudes which would never even occur accidently.

Some LSA instructors even deliberately apply rudder to force a wing drop in an aircraft like the Jabiru. This is not good airmanship and can cause undue stress on the airframe and fin and may eventually lead to structural failure.

-John Laming

Ops team: *The important point here is the correct recovery technique as stated by John. Neutral control column to recover from the stall, which means the aircraft is now flying, rudder as required to prevent further wing drop, permitting ailerons to be used to correct wing position. However if the aircraft is in a fully developed spin (not permissible under RA-Aus), part of the recovery technique includes use of opposite rudder to stop the spin, after elevator neutral. If the pilot recovers from the stall early enough, opposite rudder is usually not required. Inducing a wing drop at the point of stall by using rudder is certainly not to be attempted unless the pilot and aircraft are aerobatic rated.*

Facebook page

After chatting with numerous people before and during NATFLY 2014 an idea that I and another RA-Aus pilot had been throwing about for some time came to fruition with the creation of a Facebook Group called 'Let's Fly Australia'. The aim is to promote Recreational Aviation in Australia.

So far, we have over 200 members. We'd like to promote flying events, spare seats and anything aviation related, in a non-biased manner. Anything is welcome – RA-Aus, GA, HGFA etc. For us, it's about doing anything we can to help aviation in Australia prosper and thrive.

There is a calendar available on the group to which any member can create an event. Feel free to join up.

-Brett Vaughan

Dangerous mission

I would love to come to NATFLY, but I think I might drive rather than fly.

It will take much longer to drive and costs will be comparable but the risk of flying is much lower. I submit the figures below from the Australian Bureau of Statistics. The question is, why would I make such a risk laden, life threatening choice?

DEATHS FROM TRANSPORT ACCIDENTS

2006

car accident deaths - 1,137

air accident deaths - 36

2007

car accident deaths - 986

air accident deaths - 36

The answer is in the latest edition (Pilot Talk, *Sport Pilot* July 2014). It's A.W.A.Y.

When I park my car in the car park at Temora there will be no person to harass me with stupid questions as to whether I was properly prepared for the life threatening, high risk journey in my car. Any sane individual would, and does, assume that as an adult with a driver's licence, I am capable of safely organising this high risk task and that my safe arrival at my destination is all the proof needed that I am indeed competent to undertake such a journey.

Now I ask why do I need to carry all A.W.A.Y's costly devices and useless documents to undertake the far less risk laden journey in my aircraft.

Please save me the stupid motherhood statements like, 'you can't just pull over to the side of the road if you have issues in your aircraft'. Yes, and I know the figures do not show an accurate picture, as they do not show deaths in relation to distance travelled.

The truth still remains that we regulate aviation on the basis of media sensationalism and the needs of CASA's political dictates, not on proper risk assessment.

Ramp inspections merely collect statistics proving that, no matter what the level of regulatory compliance, all those inspected arrived safely and completed their mission successfully, regardless of compliance with onerous regulatory requirements. Ramp inspections are surely closing the stable door after the horse has bolted. Ah, I hear you say, but next time due to inspection, the less prepared will be better prepared to face the mission challenges. Bull, they will stay away.

On second thoughts, I think I will just stay home. All the people I want to commune with won't be there.

-Paul Woods

Fuel colour

Just read "Dry and not so high" ('Flying taught me this today' *Sport Pilot* July 2014). Great article.

However, there could be dire consequences for anyone thinking they can put red coloured fuel into a Jabiru aircraft.

The Australian Institute of Petroleum indicated in 2012 that red petrol dye would now be reserved for low octane fuels ie. 91 octane and E10. Leaded MOGAS was phased out many years earlier, which freed up the colour.

This new colour code came into effect in 2013. Neither is suitable for a Jabiru engine with factory set timing. In fact, alcohol fortified fuels will also eat your older (most common) Jabiru fuel tanks from the inside out.

Not a great way to produce that jet-like con trail.

I can confirm personally, as I regularly use jerry cans to siphon fuel, that both 95 and 98 octane fuels are now dyed yellow.

-Mark Pearce

Dry and not so high

Regarding 'Flying taught me this today' article (*Sport Pilot* July 2014). A few tips.

Use a daily flight log sheet, log hours flown, fuel usage, oil usage, coolant usage, temperatures etc. This allows you to analyse the performance of your aircraft over time.

Know your aircraft, fly it regularly from start up to shut down and confirm the fuel usage.

Fuel consumption is relative to engine run time, not flight time. Filling your tank is the only way you can tell exactly how much fuel is on board (gauges don't help). Know your max weight and don't overload (although I would rather a slight overload to a dry tank).

Set a personal safety margin of one hour fuel minimum – this is final destination time. At one hour's fuel remaining you should be in the CTAF. (At 17L for the Jabiru, colour of fuel should not matter).

Flying is all to do with time, time to run. You should know your ground speed and distance to go; when you get to the last hour of fuel it's your last chance to decide-destination or alternate.

Don't forget aircraft engines use different rates of fuel consumption with different power settings and density altitudes, so add a couple of litres to your POH consumption for planning purposes.

If you have planned for a flight of 2.9 hours when you reach that time you should be in the CTAF. If not, check fuel-one hour or more. It's crunch time; make a decision-destination or alternate. In reality you should have been monitoring the situation well before this and updating your decision processes to suit.

On my estimate, comfortable flight time for the aircraft in question is 2.7 hours + 1 hour personal reserve with full tank.

These are the tools that I have come to use over time and I am sure there are plenty of others you can use depending on the level of equipment in your aircraft. Please don't frighten your passenger by asking them to check the fuel level in an empty tank and remember the saying 'there are those that have and them that will'.

Thanks to the writer of 'Dry and not so high' for reminding us how easy it is to get caught short when we add a few mistakes together.

-Jim Crocker

Jabiru fuel

Just a note in response to this month's 'Flying taught me this today' article (*Sport Pilot* July 2014) which might be worth printing. I am a friend of a pilot who ran out of fuel in a similar aircraft.

The Jabiru LSAs and SK2200 series have the semi opaque fuel tank behind the seat. Yes, it's very hard to read, particularly when the levels drop below half way.

The solution is simple and works. Buy some 12v automotive LED strip lights (Maybe on EBay). Buy about half a meter of them and tape them to the outside of the tank, set in some simple aluminium channel with the lights facing inwards to the fuel.

Have the lights wired directly to the electric fuel pump so whenever you need to check the fuel, turn on the fuel pump and it lights up like a Christmas tree. Yes it does flicker in sync with the fuel pump but does allow accurate fuel observation.

We are lucky in these early Jabirus that we are able to see the fuel quantity available. I also had a fuel flow meter installed. It's a brilliant idea because it allows me to see exactly what rate of fuel I am burning. One of the best additions I have made.

-Ian McDonald

Cut your costs

I have been a member of RA-Aus since I became the owner of my flying machine and I have received and read the magazine published by the organisation.

Most of the articles and letters are sensible and offer good advice, based on personal experience. However, some articles and opinions make me wonder at the author's intelligence and purpose. I also question the Editor's reason for allowing such articles to be printed. For example, the number of opinions offered on the subject of fuel and its additives etc. should not be published, other than to advise the use of fuel recommended by the engine manufacturer.

The recent turmoil which has resulted in a large number of aircraft being grounded, including mine, is clearly a direct result of the calibre of the board members.

An article which appeared in the last publication about carriage of passengers, written by the Operations Manager, means she has taken up valuable time which I am sure could have been spent in fixing the mess the organisation is in. Not her brief? Nor is it the brief of the volunteers you have had to use to clean up the mess. Not one member needs to be advised on how to behave when carrying a passenger aloft!

The cost of owning and operating an ultralight machine has ballooned out to an unsustainable level. Licence and airplane renewal should be lengthened to at least two years and I see no reason for it to be compulsory to be a member of RA-Aus. Cut your costs, spend only what you earn and pass the savings to your members.

-Giancarlo Bertelli

Places to stay

Jan and I bought our 55 registered Jab in 1996 and now have over 1500hrs up. Basically I've had the wheels down in many ERSA pages.

One of the things which struck us has been that there are many places out there, just waiting for someone to drop in and say "G'day" (not listed in ERSA). Some charge for overnight, some are willing to let you camp under wing for free. Some even have Avgas. It's been a while since we did much of this, but it seems there is no good directory of such places (probably because they change every so often).

I wonder if a few flyers from each state might like to do a search and investigate facilities at many of these places. We could certainly do Western Victoria and South Australia over a few months, perhaps when it's a bit warmer.

The info derived from this could be made available online and be searched, or even published as a book. A pastoral map is a good start, as many are just farmers able to put visitors up for a night or two and provide meals and etc. Local knowledge is also good - If you can access it. There are a few outback motels with an attached airstrip too, which are fabulous to stay at - like Lake Mungo.

-John Dods

Am I safe to fly?

The President's Report (*Sport Pilot* June 2014) draws attention to the number of deaths in recent times. Statistics that are used by CASA to threaten our privileges and the right to fly and operate our aircraft.The legal requirement of an investigation into an aircraft crash precludes speculation of the cause and until such time the accident is publicly documented, we should not allow CASA, or any other authority, to simply blame our organisation, administration and members.


President's Report

Change is coming

Michael has asked "am I safe to fly, is my aircraft safe to fly?" Is this the same as discipline and Airmanship or lack of it?

David Huett (Letters to the Editor *Sport Pilot* June 2014) brings to our attention a basic accident statistic with 90% attributed to pilot error. If the fatal accident is due to pilot error, because of a lack of discipline in Airmanship and maintenance, are we all to blame?

We are behind with our effort to defend our safety record, both with the Transport Minister and CASA. Our inability to stand up to CASA has affected stability of our administration, which in turn is making our due diligence and fiscal policy difficult. With membership trending down, we should look again at the possibility to join forces with other similar organisations.

-Gerald Banak

BRS warning

In June I visited the site in Lawson, in the Blue Mountains, where a month earlier, a Cirrus SR 22 had come to rest after its pilot successfully deployed a ballistic parachute system following engine failure. I don't know whether it has been reported elsewhere but the final resting place of the plane was less than 30 metres from 132 kva high tension wires.

Might I suggest that any pilot tempted in emergency to deploy his ballistic chute system consider carefully the proximity of such a peril. Once the chute is deployed, he loses effective control of the plane. This event had a happy ending. It might so easily have been a tragic one.

-Michael Baker

Got something to say?

The state of the organisation is reflected in the Letters to the Editor columns. The more letters – the healthier the organisation. So don't just sit there – get involved. Your contributions are always welcome, even if no one else agrees with your opinion.

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

editor@sportpilot.net.au

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

DO I EVEN NEED A PILOT CERTIFICATE?

By Michael Monck

In recent times we have had a few questions around the topic of licensing and whether the holder of a CASA issued licence is permitted to fly an RA-Aus registered aircraft. To clarify the views of the regulator on this subject we consulted with them directly.

Their response was simple – no.

The holder of a CASA issued licence cannot legally operate an RA-Aus registered aircraft without holding the appropriate RA-Aus qualifications and membership.

This is based on the relevant clauses of the CAOs under which we operate (95.10, 95.32 and 95.55). One of these clauses states clearly that you do not have to hold a licence in order to conduct operations in an RA-Aus registered aircraft – see the sections titled 'Licence not required' in each of the CAOs. This allows RA-Aus to issue a Pilot Certificate to someone who does not hold a PPL, CPL or ATPL as issued by CASA (and soon to include RPL) but still remain within the confines of the law. It does not, however, cover the situation where someone already holds a licence.

This latter scenario is covered in a separate part of the CAOs which states that a person who operates an RA-Aus registered aircraft must do so in accordance with the RA-Aus Operations Manual and maintain that aircraft in accordance with the RA-Aus Technical Manual, among other things. It also stipulates the person must hold an 'appropriate Pilot Certificate'. Thus, if you do hold a PPL or higher, you must still hold a Pilot Certificate as issued by RA-Aus in order to operate legally.

RA-Aus does not have jurisdiction to take action against a person who does not hold a Pilot Certificate but CASA does. They have further indicated that they will pursue anyone found in breach of these rules and take appropriate action against them. That action is outside the control of RA-Aus but the penalties include up to two years in gaol.

I would urge all RA-Aus aircraft operators to keep their Pilot Certificate and aircraft registrations current.

Amelia completes the journey

American Aviatrix, Amelia Earhart completed a memorable round-the-world flight in July.

Not Amelia Mary Earhart who set out in 1937 and disappeared over the South Pacific, becoming one of history's greatest mysteries.

This time it was Amelia Rose Earhart, a US pilot and journalist who just happens to have the same name.

Amelia Rose set out from Denver in the US in late June in a Pilatus PC-12. She completed the journey in mid-July after 17 stops and approximately 24,300nm.

Amelia Rose is an accomplished pilot who also reads the news and presents the weather in Denver.

She says her trip to complete Amelia Mary's unfinished circumnavigation was to honour her namesake's tenacity and love for aviation.

Amelia Rose' Foundation 'Fly with Amelia' also awards scholarships to young female pilots. Amelia Rose became be the youngest woman to circumnavigate the globe in a single-engine aircraft.

For more information, www.ameliaearhartproject.com.

MAC AIR RACE REMEMBERED

By Michael Thomas,
Albury and District Aero Club

A series of events around Albury will commemorate the 80th Anniversary of the 1934 MacRobertson Air Race in October.

The race to mark Melbourne's centenary was billed at the time as the 'World's Greatest Air Race'. Competitors departed Mildenhall in the UK for the long journey round the world to Melbourne.

On arrival in Australia, the DC-2 'Uiver' was in the lead, despite being a commercial passenger-carrying operation with regular stops. After departing Charleville in Queensland, however, the pilots got lost during a fierce electrical storm. The radios were so crackly they couldn't communicate with the Australian race co-ordination centre in Melbourne. The DC-2 was unable to track east to the coast, because of low cloud and the rising Great Dividing Range, so the pilots were forced to turn and head south. 'Uiver' finally made contact again when it was somewhere near Albury in the dark.

People in Albury tried to help the pilots by flashing the town lights in Morse code and a local radio announcer appealed for people to take their cars to the local racecourse to light up the ground with their headlights. With all this help, 'Uiver' found the area and, after making a couple of low passes and dropping a flare, it safely landed on the racecourse in the early hours of the morning and got stuck in the mud.

Later that same morning the aircraft was pulled free by local residents hauling on ropes and departed for Melbourne. Remarkably, it still managed to finish second place outright and first on handicap!

To celebrate the remarkable rescue there will be a series of events over the weekend of October 25. A vintage car rally (which will include two of the cars which were at the rescue), an airport family Open Day, the Albury Racing Club's Cox Plate race day (with an Aero Club fly-over), a dinner featuring Captain Richard de Crespigny, of QF-32 fame and the local model plane club's amphibious flying event at the weir.

There are no flying DC-2s in Australia any more but the organisers have invited some DC-3 owners to bring their aircraft along as stand-ins for the 'Uiver'.

RA-Aus members are also welcome to fly in for the weekend, remembering it is Class D controlled airspace.

Brisbane to be locked down in November

Strict air control measures have been put in place for the Group of 20 Leader's Summit in Brisbane on November 15 and 16.

All aircraft users planning to conduct operations within 90nm of Brisbane Airport between November 11 - 18 will be required to comply with regulations detailed in AIP Supplement H62/14.

Temporary Restricted Areas R900AB (Brisbane CBD), R900C (Brisbane Inner) and R900D (Brisbane Outer) and Air Defence Identification Zone ALPHA and BRAVO will be activated for periods of between 4 and 6 hours on November 11 -12 and then H24 commencing November 14 through until November 18. These times will be confirmed by NOTAM.

According to Airservices Australia, the procedures have been designed to be as permissive to civil aircraft operations as the security situation allows but access to TRAs will be restricted during NOTAM timings.

Police may be present at airports in the Brisbane Basin to monitor compliance. Pilots not complying can expect heavy penalties. Military aircraft will also operate in the airspace above Brisbane, clear of civilian traffic under normal air traffic rules, except when the security situation warrants intervention.

Any aircraft unable to comply with the requirements in the AIP Supplement will not be permitted to operate within the TRAs. Any aircraft which does not comply with the requirements of the ADIZ may be subject to intercept by a military aircraft.

For a complete briefing - AIP Supplement H62/14 on the RA-Aus website. For more information, RA-Aus Operations at aomgr@raa.asn.au.


AUSTRALIA
AIP SUPPLEMENT (SUP)
H62/14
DATE: 11 NOV 14
THE GROUP OF TWENTY (G20) 2014 LEADER'S SUMMIT AIRSPACE PROCEDURES - BRISBANE

FLYING TAUGHT ME THIS TODAY

The dangers of rushing

I was an RA-Aus Senior Instructor, early in my career. The pilot, who had his own aircraft, wanted to fly from our home airfield to Bundaberg for the Wide Bay International air show and use the flight as an opportunity to gain valuable training for his Cross Country endorsement.

We planned all the way up the NSW south coast, past Sydney via Victor One and had a number of refuelling stops along the way. We were travelling in company with another aircraft and looked forward to the experiences of the trip and the air show.

Along the way, as often happens on these trips, we kept meeting up with a group of five warbirds, which were flying in formation to Bundaberg to provide a display at the air show. Because we all had a similar fuel range and airspeed, we met up with the group at every fuel stop, creating the occasional circuit congestion, but nothing unmanageable. Until Caloundra.

Not only were the five Yak and Nanchang aircraft in the circuit, but there were also a number of helicopters and other RA-Aus aircraft, which made the airport a hive of activity.

We all quite safely eased our way into the circuit and both our aircraft landed and taxied to the fuel bowser where the Yaks and Nanchangs were just completing their own refuelling.

After we had refuelled, we noticed the other group hadn't left yet. We were anxious to avoid more congestion in the circuit, so we took off first and tracked onward to Bundaberg. But the rush to get airborne meant our cockpit was not as organised as it had been on previous legs. Before I knew it, in horror, I was looking down at Maroochydore airport, which was in controlled airspace! We had allowed ourselves to become so distracted by trying to leave ahead of the other aircraft that we hadn't followed our flight plan, which called for a crosswind departure on 05 (a left turn) which would have taken us safely away from the CTA around Maroochydore!

After frantically checking the ERSA, I dialled up the Maroochydore tower frequency and heard the words all pilots dread "Unidentified aircraft 8 miles south west of Maroochydore, please contact Maroochydore." I radioed the tower, provided our call sign and was asked to contact the tower on arrival at my next destination. Once on the ground, I made the dreaded call. The person on the phone was very calm and matter of fact. He advised me there had been no conflict, but he wanted to know why we had flown into his airspace. I apologised and told him about the distraction we had faced. He told me that, as part of his protocol, he had to submit an Electronic Safety Incident Report. I knew I also had to advise RA-Aus, so I contacted Mick Poole, the Operations Manager at the time, and confessed my sins. He was also calm. He informed me that, because he was at the Bundaberg air show already, he would suspend my Instructor rating until we could discuss CTA avoidance and planning requirements, do a flight review and I could assure him of my competency.

At Bundaberg, I completed the flight review to Mick's satisfaction and we turned for home, this time via the inland route to avoid CTA and enjoy the trip.

What did this teach me?

Never rush a departure, particularly at a strange airfield and with extra factors such a high traffic workload and the extra consideration of an inexperienced pilot aboard, who was unfamiliar with the area.

I had loaded myself up unnecessarily, when the better solution would have been to wait 15 minutes for the other traffic to depart and use that time to sort out the next heading, assess the chart and familiarise myself with the airspace. I probably would have avoided CTA altogether.

Do you have a story about a near miss or an accident which gave you grey hair but taught you something about flying? The RA-Aus Safety team wants to hear about it. Every story printed in *Sport Pilot* will earn its author a range of RA-Aus merchandise. Email editor@sportpilot.net.au and clearly label your email "Flying taught me this today".

>> Fletcher and Eli Grabbe sitting in a Skyleader 500

Breakfast at Tiffany's Childers

Words and photos by Karin Leask

> *Beautiful one day, perfect the next*

THE catchphrase so often used to describe Queensland's weather - beautiful one day, perfect the next – proved to be right on the money in May for the Childers fly-in. Apart from the moderate crosswind, that is.

From early morning, the airfield was alive with the sound of aircraft, classic cars and motorbikes which had gathered for the annual Wings and Wheels Breakfast. A total of 27 aircraft made the journey, some travelling from as far afield as Gladstone in the north and Caboolture in the south.

Isis Flying Club members, as always, were in full swing keeping the visitors fed and watered during the event. The club's volunteers provided breakfast, lunch and light refreshments throughout the day. A few market stall holders, selling a variety of goods, also reported brisk business.

On field there was a lot of entertainment to be had for the spectators throughout the day watching the aircraft landing and taking off in the challenging crosswind conditions. Few things are as scary as having to do it all before an appreciative crowd.

There was a good mix of aircraft, with Savannahs and Jabirus dominating the numbers.

Bob Russell's tiny Hummelbird proved to be of great interest to everyone. Bob has spent the past two years building the little Hummelbird, which was designed by Morris Hummel in Canada and is powered by a half VW engine.

Bob Pavan, from Gympie, arrived in his Bush Boar taildragger, another two year project. The Bush Boar has Savannah wings, a Jabiru engine, a Skyfox fuselage and Highlander tail feathers.

Pro-Sky Childers Flying School was also kept busy during the day providing trial instructional flights to potential new pilots. There was also the occasional photo opportunity for young ones to sit in the cockpit of the Skyleader 500 and have a look at the controls.

A great plus for me as the event's official photographer, was to be offered a flight in Mark Redfearn's French built, Cabri G2 helicopter. What an exciting experience especially with the door off.

The Isis Flying Club would like to thank all the club members who volunteered their time to make the day a great success. See you all again next year.

>> Russell and Sandy Walker

>> Hummelbird

>> Cabri G2

>> Bush Boar

>>Damon Scheuber with his instructor, Peter Regan

YAYR
the best laid plans

by Steve McGuire

The weather gods weren't smiling on our well-planned fly-in over the weekend of June 14 - 15 at YAYR.

Saturday dawned wet, cold and miserable. A real stay-in-the-hangar sort of day. The Jabiru factory representative got as far as Rockhampton before calling it a day and returning to Bundaberg. Other pilots had similar experiences.

For those who had arrived before the rain or who had driven down from Townsville, the day was saved by a couple of stranded GA aircraft whose crews helped to turn the soggy day into a social one.

And we had a great dinner Saturday night.

Sunday was a big improvement. There was a gentle southerly blowing straight down runway19 and a high overcast. It wasn't long before aircraft began to arrive from Mackay, Proserpine and around the local area.

A very sophisticated Steel Breeze aerochute also came by road from Charters Towers. We were visited by a couple of Savannahs, a Foxbat, a Carbon Cub, a Pelican, an autogyro and a couple of Jabirus. If you include our resident Jabirus, there were six of the type lined up on the field. Our resident Liberty and Tiger Moth also attracted quite a bit of attention from the crowd who turned up on Sunday.

Despite the weather the weekend was generally successful and will likely be repeated in the future. The interest in recreational aviation shown by a number of our young visitors makes that aim worthwhile.

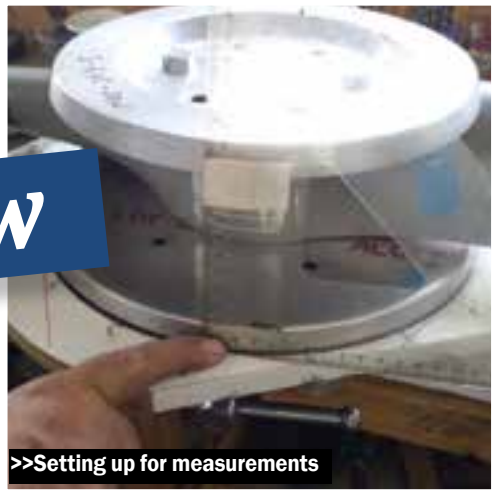
>>Eric de Charlain and Marty Wheeler with Eric's Wittman Tailwind

>>Saturday was a hangar sort of day

>>Sunday was a lot better

A shiny new NOSE

By Eddie Seve


>>Setting up for measurements


>> Removing the spinner

"I had been applying gentle pressure on Allan to produce a spinner for an RV

Easter every year for me translates into a one hour flight (give or take a bit) from my home base at Wedderburn to Temora in my Vans RV-7.

Several years ago, when I was still flying my Zenith 601 XLB, I purchased a beautiful aluminium spinner from Allan at Cummins Spinners. I flew my Zenith for four years before building my RV-7.

This year I attended NATFLY for the second time in my RV and was again looking to see if a spinner was available to suite my engine and propeller combination.

Over the past few years I had been applying gentle pressure on Allan to produce a spinner for an RV.

When we caught up this year for breakfast, he invited me to Bendigo to have one fitted. He'd built a prototype and wanted to know if I was willing to test it.

So late on Monday I filed a flight plan with AirServices, refuelled, did my pre-flight and launched into scattered cloud.

My flight time down was 2.5 hours, with a TAS of 165-170kts, giving me an average ground speed of 142kts and a fuel burn of 32


>> Drilling the spinner


>> Polishing the spinner


>> Spinner fitted to RV7

litres per hour. Not too shabby for an airplane I built in my garage.

Turning off the main runway, I taxied up to Allan's hangar, shut the engine down and was warmly welcomed. Allan had already made room for me in his hangar and in no time the RV was safely installed.

Allan first removed the RV's fibreglass spinner, propeller and spacer and walked me around the corner to his workshop.

His combined workshop/office is a Pandora's Box of aircraft spinners. The most recent additions to this collection are spinners to suite the Hartzel and Sensenich propellers for the RV series of aircraft. Allan sells the spinners as a kit to make them cheaper.

Then he took me through the process.

I marked the hole locations for the screws on the spinner, then drilled screw holes through the spinner - front and back plates (Allan supplies a template to make this easier) then I installed the supplied nut plates using standard aircraft construction procedures.

With a little help from Allan I had the spinner drilled and nut plates installed in a little over two hours.

The spinners are supplied unpolished, again to make them cheaper, but because I wanted mine polished, Allan was nice enough to give me a quick lesson on how to use the polishing wheels and cutting compounds.

Interestingly enough you can buy all of this from your local Bunnings store; an 8" bench grinder; 8" x 1" stitched cotton first polishing wheel (using a brown/Tripoli buffing bar polishing compound) and a 8" x 1" loose calico second polishing wheel (using a green/stainless steel buffing bar compound).

Final cleaning was done by hand using Silvo Silver polish.

It took about 1.5 to 2 hours for this uninitiated to make a beautiful product look even more stunning.

To say I am a happy customer is an understatement. You'll be pleasantly surprised at how fitting an aluminium spinner will change the look of your pride and joy.

Departing Bendigo, my initial ground speed was 205kts at 7,500ft which slowly decreased to 180kts as I approached Wedderburn. Flight time Bendigo to Wedderburn was two hours.

You'll have to forgive me. I love my RV. It's like a magic carpet and now she has a beautiful shiny new nose.

Another Airfield CLOSES

By John and Lyn Dunn

Lake Bolac Air Field was on private property situated on the Glenelg Highway, half way between Ballarat and Hamilton. It is owned by Peter O'Rorke and family.

Peter served as an Ararat councillor for 30 years. He also gave 50 years of service to the bush fire brigades as a pilot and fire spotter. Peter also volunteered his field as a nav-ex destination for Caribou aircraft out of Laverton.

Peter was also a life member of Warrnambool Life Saving Club, where he started, and the Life Saving Club at Port Campbell.

Peter died in a car crash in 2010. He was 70 years old. His wife, Margaret, kept the strip open to any pilot who wished to use it free of charge. She knew Peter would have wanted it that way. Sadly, the time has come to sell the valuable land as she moves into retirement.

An enthusiastic group of Aerochuters has held a fly-in at Peter and Margaret's field for the past five years, camping by the side of the strip under a 100 year old gum tree windbreak every Labour Day long weekend.

The T intersection of the north - south and east - west strips was so large, it was perfect for powered parachutes to launch, regardless of wind direction.

Knowing the airfield was closing, we all had our last fly around the very picturesque Lake Bolac.

With the small town nestled to one side of the lake, there were also many campers around the edge, together with powerboats, skiers, jet skis and swimmers. It all looked fantastic from 1,500ft.

The friendly property manager, Paul, dropped in at least three times to see how we were getting on. During one visit he asked where we would go once the airfield was turned back into cropping land. We answered we would have to move away from the area.

"Don't be too hasty", he replied. "The townspeople really enjoy seeing your colourful parachutes in the sky. We would like you to keep coming here. I will be back."

Three hours later he returned with the news he had located a 34ha site, only three kilometres away, which would be available if we wanted to use it for future fly-ins.

"Wow!"

We were very surprised.

"You guys bring something special to the town," Paul told us. "And Peter would have wanted it this way."

The community lost a great man when Peter O'Rorke passed.

PILOT TALK

The Ops team

The lost art of Airmanship

The term Airmanship is one of the most commonly used around airfields and in pilot conversations. It has been discussed, enforced and argued over since Pontius was a pilot. It seems everyone has an opinion about it and most of us are quick to point out when we see bad examples of it. But how do we incorporate whatever Airmanship is into our daily flying lives and make it a mark of our own flying?

The Operations team continues to receive a significant number of incident reports and complaints where the core element can be traced back to poor Airmanship. So we should all ask ourselves the question - Do I demonstrate good Airmanship?

Tony Kern, in his publication '*Redefining Airmanship*', alludes to the elusive nature of the definition "How can we train to become what we cannot define and might not understand?"

Wikipedia defines Airmanship as "skill and knowledge applied to aerial navigation, similar to seamanship in maritime navigation. Airmanship covers a broad range of desirable behaviours and abilities in an aviator. It is not simply a measure of skill or technique, but also a measure of a pilot's awareness of the aircraft, the environment in which it operates and of his own capabilities."

ICAO defines Airmanship as "the consistent use of good judgement and well developed skills to accomplish flight objectives".

So there's a starting point, but how can we embrace and develop this mystical philosophy into practical application and habit, as Tony has alluded?

Let's start with a simple defining point - Flying is a privilege not a right.

This idea is well referenced in most aviation law and associated documentation. And it logically follows that if we are granted a privilege, we should respect it. So now we have a notional concept of what Airmanship is and, more importantly, a way in which to deliver it.

Do we respect the fact that aviation is inherently dangerous? Do we respect the fact that other aviation users are human, just like us? Do we respect the fact that, if we are inflexible in our own opinions or understanding of a rule or an action, the price for being right may end up with us being dead right?

Do we acknowledge that as Pilot in Command we are solely responsible for our actions and the safety of those around us? This acceptance is fundamental for good Airmanship to exist.

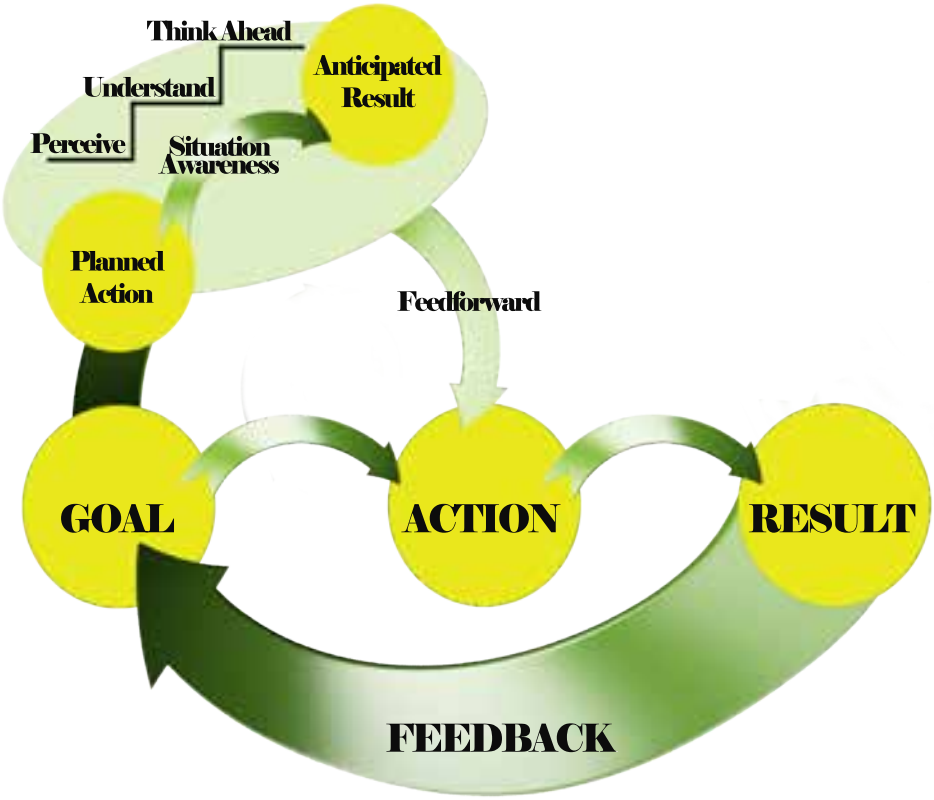
An example to ponder was recently presented to Operations.

An inexperienced pilot planned to conduct a flight to an airfield more than 25nm away. He was not endorsed to fly that far, so he asked a pilot with a high level of experience to go with him. The trip there was fine but on departure from the unfamiliar airfield for the trip back, the aircraft failed to reach a suitable take-off speed. Rather than abort the take-off, the pilot decided to continue and the aircraft hit trees at the upwind end of the strip, resulting in substantial damage to the aircraft and minor injuries to both pilots.

In many ways this flight appears to have been destined to fail. While neither pilot intended to blatantly break the rules, a clear lack of planning, communication and in-flight decision making created the alignment of events which led to the accident.

Coupled with a limited understanding of the correct take-off configuration for the aircraft or consideration of atmospheric conditions and aircraft performance, the accident was almost a foregone conclusion. Lack of appropriate planning, cockpit management, applied knowledge, skills and judgement all contributed to the outcome.

Flying is a privilege not a right



To complete the picture, neither pilot possessed the appropriate flight review currency or endorsements to legally make the flight and neither confirmed with the other that they were current!

As with most accidents, the dominoes started to fall during planning. But better Airmanship could have saved the day. The senior pilot later lamented that on the first departure of the day he had been concerned about the take-off attitude, but said nothing. So it is clear a truly effective human factor decision could have be made early in the situation. Pilots should constantly re-assess their situational awareness - as the diagram above clearly demonstrates.

In the formative years of flight, much of this Airmanship stuff was initiated and shared by veteran pilots at aero clubs. Eager young pilots would loiter around the clubhouse, immersing themselves in Airmanship by listening to the pearls of wisdom. Not only did they learn to become pilots but they absorbed the far greater qualification of being an 'Airman' (the term applies equally to men and women). The learning was absorbed out of respect for both aviation itself and the aviator imparting the knowledge. In the cut and thrust of our times has this learning been lost?

Set of Standards

CASA was one of the first aviation organisations in the world to identify these issues formally with the introduction of CAAP 5.59-1. Effectively CASA linked Airmanship with Human Factors and Threat and Error Management and, in doing so, created a measurable set of standards which could be taught, reinforced and assessed.

This effectively moved understanding and delivery beyond just psychobabble. RA-Aus has included similar training methods in our syllabus, including the following key elements;

- Maintain effective lookout;
- Maintain situational awareness;
- Assess situations and make decisions;
- Set priorities and manage tasks;
- Apply appropriate judgement and decision making.

Recreational flying gives us a simpler and less expensive way to become airborne, but that's where the difference ends. Even before the wheels leave the ground, we share the same operational environment as all airspace users.

So there should be no difference in Airmanship - it must always be at the highest level we can strive for.

Perhaps rather than trying to define Airmanship, we should just ask ourselves two simple questions with respect to our actions, abilities, knowledge, judgement and consideration of fellow aviators and the public.

Was I the best pilot I could be today? What can I do better next time?

FLIGHT INSTRUCTOR'S FORUM

Facilitated by the aviation guru Professor Avius

Under Pressure?

When a student asks questions such as 'What are QNH, QFE and QNE?' or 'What is Pressure Altitude (or Pressure Height- it's the same thing)?' it's handy to have some simple, clear explanations.

The Q code is a standardised collection of three-letter encodings developed in 1909 for radiotelegraph communication. The Q codes were first used by Morse code operators but continued even after the introduction of voice transmissions. The codes in the range QAA–QNZ are reserved for aeronautical use, QOA–QQZ for maritime use and QRA–QUZ for all other services. Some of the aviation ones have gone out of use, such as QAU (I am about to jettison fuel) and QAZ (I am flying in a storm).

It's not really clear, but QNH is often thought to be an acronym for Question Nil Height or Query Newlyn Harbour, home to the National Tidal and Sea Level Facility in the UK. QNH stands for the pressure of the air within a regional area. Setting QNH in the altimeter subscale indicates height above mean sea level.

QFE may be an acronym for Question Field Elevation. It indicates the atmospheric pressure at the aerodrome elevation. The altimeter reads at zero feet on the ground.

QNE may be an acronym for Question Nautical Elevation. It reads the pressure above or below the International Standard Atmosphere Pressure of 1013. It is gained by setting 1013 in the altimeter subscale. It is the same as Pressure Altitude.

PRESSURE ALTITUDE

Pressure Altitude is the preliminary starting point to determine how the aircraft will perform (climb and maintain height) within a block of regional air (QNH).

As we all learned in training, aircraft performance is heavily dependent on the characteristics of the air in which it operates. Air is made up of a number of molecules per cubic volume. Any change in the volume of air will lead to a change in performance. In simple terms the more air, or the larger the volume of air, the better aircraft performance.

The weight of air above any point on the earth presses down and causes a given Air Pressure. For example, on top of a high mountain where there is less air pushing down and around you, the pressure will be lower. At sea level, where there is more air pressing down, the air pressure will be higher. As high and low pressure weather systems move across the land, they cause rising or descending air movement. This also causes air pressure to change.

Pilots and Meteorologists use a common reference point to compare air pressures. International Standard Atmosphere (ISA) states that "at Sea Level in a standard atmosphere, the pressure of the air will be 1013.25 Hectopascals (hPa), with pressure changing at a rate of 1hPa for each 30 feet of vertical change in height (at lower levels)".

So Pressure Altitude relates to our height above or below the pressure of 1013.25hPa. By setting 1013 in the aircraft altimeter, it will indicate the Pressure Altitude for that specific QNH location.
We can work out Pressure Altitude mathematically; using the following formulae:

Pressure Height = Airfield Elevation (i.e height above Sea Level) + (1013 – QNH) x 30
Example 1: at Darwin (elevation 30ft) with a QNH of 1023:
Pressure Altitude = 30 + (1013 – 1023) x 30 = 30 + (-10 x 30) = minus 270ft.

Example 2: at Mt Hotham (elevation 4,260ft) with a QNH of 1001:
Pressure Altitude = 4,260 + (1013 – 1001) x 30 = 4,260 + (12 x 30) = 4,620ft.

But Pressure Altitude is only the beginning. It is the preliminary information required to determine how our aircraft will perform in the block of air in which it flies.

The full story is further complicated by a thickening (or thinning) plot of Density Altitude.

NEXT TIME: Density Altitude.

References and further reading:
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www.askcaptainlim.com
www.wikipedia/QNH,QNE,QFE
Youtube: AVS260HeliCFI/Pressure Altitude
Youtube: kingsaviationschool/PH
www.aeropowerflightschool.com.au/howtocalculatePA

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Ekolot TOPAZ

A sparkling jewel

by Brian Bigg

I wanted a well put together cross country tourer, with high wings and something easy and cheap to maintain

Poland is one of those countries you don't hear too much about.

It's only been a democracy for the past 25years (its longest ever period as a democracy was only 27 years). As a country, Poland has blinked in and out of existence pretty regularly since recorded history began. Its borders expand and contract like a Biggest Loser contestant's waistline. It appears that if, for some reason, Poland wasn't being invaded one year, its rulers would often turn around and invade their neighbours, perhaps just to keep their hand in or for a bit of a lark.

I love Poland and have spent a lot of time there over the years. There are more beautiful women in the capital, Warsaw, than in any other single city in the world - I kid you not. And its people are incredibly friendly.

The local food is gut wrenchingly awful, the weather most of the year is severe enough to kill a brown dog and vodka is cheaper to buy than water and sold at petrol stations.

The one good thing the Soviets did during the 45 years they ran the place was to encourage Poland to be an aviation centre of excellence. The country doesn't have as many airfields as we do, but on the fields they do have, there are lots of hangars filled with a staggering variety of old Soviet flying machines – aircraft you've never heard of and will never see again. The appallingly named PZL 101 Gawron, the hugely successful Wilga or the bewildering, Kruk, to name just three.

I often use the Polish version of the ASIC card, a 50 Zloty note, to convince the crusty old blokes sitting at the hangar doors to let me in to wander around the strange collections. I recommend it.

>> Continued P32

EKOLOT TOPAZ

A sparkling jewel cont.

So the Poles know aircraft design and manufacturing. They are very good at it indeed.

And from a factory in the very south of this most interesting and creative country comes the newest kid on Australia's recreational block, the Topaz Light Sport Aircraft. Carbon fibre wings, Rotax engine, leather seats, tinted windows, perfect.

If you were one of the select few at NATFLY this year, you would have seen the only two Topaz in Australia so far. A red one and a blue one. It is expected two more will arrive later this year.

The aircraft is being distributed here and in New Zealand by Airsports Flying School at Sunbury, Victoria. Airsports Chief Flying Instructor, Rod Birrell, says he was looking around for an aircraft for his school fleet to supplement the Fly Synthesis Texan and the Storch.

"I went to the Friedrichshafen Airshow in Germany to check out a dozen or so aircraft coming onto the market," reports Rod. "I wanted a well put together cross country tourer, with high wings and something easy and cheap to maintain. The Topaz stood out.

"After the airshow, I went to the Topaz dealer in France for a test flight and I was sold.

"The factory has been great. I asked for improvements and they made them. The aircraft has been finished to such a high standard everyone comments on it.

"It took another two years -six months to build the aircraft and 18 months for the paperwork to go through-until I got to the point of flying the Topaz in Australia for the first time", says Rod.

Of course, I didn't have to wait for a ride at NATFLY. I had my choice – the red one, which Rod usually has online at his school, or the blue one, which is owned by Bob Meldrum, one of Airsports' former students. They are identical other than the placement of the switches and the fitting of a ballistic parachute system to the blue one. I chose the red. What does that tell you? Instructor, Tony Curzon, was tagged to take me up.

The first thing you notice are the huge wings, all 10.58m (35ft) of them. This is a wing you could play cricket on. Ekolot's glider heritage is there for all to see. I love big wings. They make for a spectacular glide rate if if you are powering down for fun or if the Rotax ever stops. In mine, the big wings mean I need to pay attention to turbulence, but in the Topaz I didn't notice the bumps at all (it was one of the beautiful days we got at NATFLY this year so maybe it doesn't count). Or maybe the clever airfoil design and negative flap setting for cruise means the manufactures have solved this potential problem.

Built in wingtip LED nav lights are standard, as are the composite propeller, cabin heat, leather seats, electric trim, electric flaps and full panel.

The seats turn out not to be seats at all. They Velcro directly onto the floor of the cockpit. The factory custom makes each one depending on the owner's height. It is surprisingly comfortable.

Behind the seats, the baggage area won't take your skis, but is more than enough for 20kg per side of bags, coats and sleeping bags.

I climbed in bum first and had no problems. Without wing struts to get in the way the open door gives you heaps of room to get in and out. The throttle sits low on the pilot's left side as you climb in, but it's tucked out of the way and doesn't snag the trousers.

Once seated, the pilot's view is positively regal. The good visibility out and the shape and height of the panel makes it feel like the cockpit of a jet. Someone has put a lot of effort and thinking into making sure the seating position is ergonomic. You are upright, not laid back, and every dial and switch falls easily to hand. Rod says it stays comfortable even over a long journey but my back will be the judge of that.

Tony pointed out that the panel comes away if you just unscrew two plugs, easy for maintenance.

The control stick is in the centre. I thought being a leftie, I might struggle to fly with the right hand, but after a few minutes I didn't even think about it. Amazing what the mind will accommodate. It's better for me because I could write without having to change hands.

The interior finish is classy. Most metal things are stainless steel, including the door latches and even the rudder pedals. The woodgrain style panel is lovely to look at.

The control stick has a lot of buttons, which reinforces the big aircraft feel. Electric trim and flaps are standard. When the flaps are up, they actually sit at minus five degrees. That reduces the wing area and makes the aircraft go faster. The flaps go to 40 degrees.

Taxi and take-off were almost non-events. One stage of flap and at 40kts the nose wanted to go up. Climbing out with full fuel, two big blokes and a warm day we still managed 700fpm. On your own, that number would almost double.

Rod says the 80hp Rotax is ideal for training, although he predicts many owners will opt for 100hp. The aircraft doesn't seem to mind which it has. At 5,000rpm it cruised comfortably at 105kts.

At one stage, we took it up high in smooth air towards its VNE to test its high speed characteristics. The 80hp did it without breathing heavily. Why would you need the 100hp engine if most of your flying is around your local patch? The 80hp is cheaper and does a great job.

Left and right turns were easy to co-ordinate. At full flap the stall was more of a wallow than a plunge. With no flap it will drop a wing, but recovery is standard. Crisp enough for training students without terrifying them.

At one stage we throttled back to 50kts and made the aircraft gyrate. There was a ton of control in the stick even at that speed. Slow flight shouldn't make you sweat.

But it's in cruise where you can see why this aircraft will be popular. It has a big deck feel and the view out is expansive.

Heading back to the field I opted for a wide downwind and base, mainly to give myself more time to get ready. For aircraft with big wings, you need precise speed control in the circuit or you risk ending up in that field beyond the airfield. But I'm used to that so, apart from needing a bit more power on final, it was just as I do it in my own aircraft and the landing was a surprising squeaker. I always feel kindly towards an aeroplane which make me feel like an expert by making my first landing a good one.

Rod says there's been a favourable reaction from pilots to the Topaz.

"It's a great all-rounder, gentle in the circuit with good low speed handling yet fast enough to leave the local area if you want a comfortable ride to get you there," he says.

The Topaz certainly is a lovely aeroplane. At EUR 75,000 (landed) including lots of extras plus GST for the base model it's definitely going to find a market here.

Rod says the factory has not been rushing to expand its output, despite the popularity of the Topaz and its younger brother, the Junior.

A lot of the aviation companies which did expand rapidly a few years back got crunched in the GFC. Instead, the Topaz factory keeps busy making gliders and parts for other light sport aircraft. It turns out just one Topaz a week.

What that means is if you buy one, you will have to wait six months to fly it. But what beautiful Polish jewel is not worth waiting for?

For more information, airsports.net.

TECHNICAL DATA	
Wingspan	10.58m
Wing Surface	10.1m2
Length	5.95m
Empty weight	290kg basic
LSA Takeoff Mass	560kg
Cruise speed	105kts
Maximum speed	122kts
Minimum speed	55km/h
Vertical Speed	8m/s
Take-off run	80m
Landing run	100m
Engine	Rotax 912UL
Engine Power	80 HP
Fuel Tank Cap	84Lt
Fuel Consumption	10L/h Minimum

What am

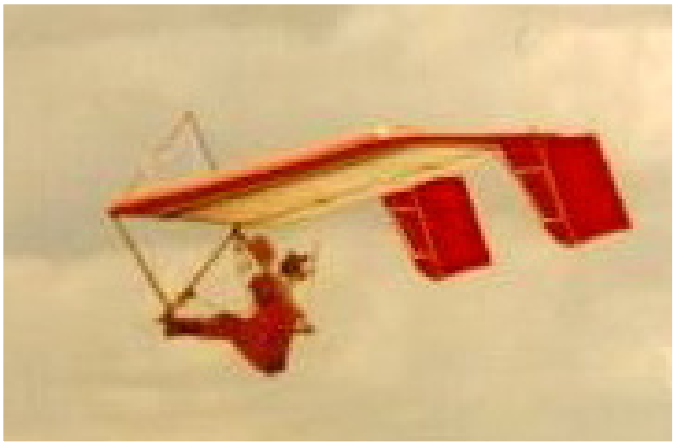
by Larry Jones, Adelaide Airsports

I started flying hang gliders back in the mid 70's and was sold from my very first run down the training hill - low and slow, feet off the ground, wind in my hair and yes, I had hair back then.

It was a great time. I'd just left school was doing a trade apprenticeship. I had a car, a surfboard, a hang glider and a girlfriend - what more could a man want?

I continued to fly hang gliders at every opportunity and soon wanted more and more airtime as flying became an obsession. Sitting on the hill waiting for the wind to pick up, drop off or change direction, a few of us discussed the possibility of adding a motor to our hang gliders and before long, a couple of us were trying to do just that.

We used hand carved wooden propellers directly bolted to modified chainsaw and lawn mower engines - all crudely mounted. If we managed to get the engine started, we would pick up our hang gliders and run, each step taking our feet frightening close to the madly spinning propeller producing incredible noise but very little in the way of thrust. We had varying degrees of success, but to us success was measured by the smiles on our faces rather than how far or how high we flew.



>>Powered Icarus 5

Lessons were learned and, with the combined knowledge of a small but keen network of like-minded pilots scattered around the country, we slowly improved our machines. News trickled in from Europe of a machine with one seat, three wheels and a motor, all suspended from a hang glider and flown with great success. We rushed to the shed and with little more than a hacksaw and drill we began building our own trikes.

We soon realised the value of wheels for powered flight; indeed the tricycle undercarriage turned out to be the answer to many of our problems. We no longer needed to balance the hang glider and run like a madman while biting down on a mouth throttle. We could sit in comfort, throttle on while both hands remained on the control bar and roll on down the runway - luxury.

I flying now?

>>Early trike

The 80's saw some rapid advancement in hang glider design; combine this with purpose built motors, reduction drive units and well-matched propellers and the powered hang glider came of age. By the early 80's it began leaving the hands of eccentric homebuilders and moved towards purpose designed factory built aircraft. Yes, the name changed from powered hang glider to microlight aircraft, but for those of us involved from the beginning, we still call them trikes.

>> XT582/Merlin

To me the best thing about the current trike-flying scene is the variety of quality aircraft available. Yes, we have the top end trikes and they are sleek, fast and sexy, but there are a lot of other great choices out there. For pure, simple fun it is hard to go past the new breed of single seaters like the Flylight Dragonfly or the Airborne V-Lite and T-Lite. These trikes are so affordable to own, so easy to maintain, so cheap to fly and so, so much fun to fly. For smiles per dollar these trikes win hands down.

So, what am I flying now?

I still love to get out to the hill with the hang gliding crew and mostly fly a floater style hang glider like the Moyes Malibu. I very much enjoy flying the single seat trikes every chance I get. For basic training, I am more than happy teaching in an Airborne XT-582 Outback with Merlin wing. It is a great training aircraft and I find students progress quickly in this style of trike. My latest love, though, is the Cygnet.

>>Cygnet flying

With my flight training facility situated just five miles from Lake Alexandrina, the lower lakes and the Coorong, it has been a goal of mine for a long time to include an amphibian into our line up.

The Cygnet is an amphibian trike built in Florida by Airtime Aircraft. I imported the first Cygnet into Australia in 2013 and have been enjoying the extra dimension an amphibian offers. The Cygnet has a number of wing, engine, instrumentation and other options available but the wing of choice is the Mustang 3-19, a large single surface strutted wing. The engine of choice is the Rotax 912s 100hp. The combination of a large high lift wing with the 100hp allows for short a take-off run even when heavily loaded and on glassy water. It is a no nonsense trike, very practical for an amphibian, all systems are user friendly and easy to operate. The trike unit sits on tundra tyres when on the land and aluminum floats when on water with one simple lever to retract or extend the undercarriage as needed. The wheels are easily visible making it a no brainer to confirm wheels are up or down.

How lucky am I? I can open up my hangar, roll out the Cygnet, do my daily inspection and warm up, buckle my passenger in, taxi out and away I go, wheels up and off to the lake for some fun on the water.

Landing near the river mouth, I can come to a stop, put the wheels down, taxi to the shore and straight up onto the beach - the soft sand is no problems for the tundra tyres.

A picnic, some photos then back into the trike, onto the water, wheels up and away we can go. It's just way too much fun.

Historic Flight

by Brian Bigg

A small fleet, led by aviation author, Owen Zupp, has successfully completed an historic flight from Melbourne to Sydney to commemorate the 100th anniversary of the first airmail service in Australia.

Owen, in a Jabiru J-230, donated by Jabiru aircraft, led two other aircraft, on the three day flight from Essendon to Bankstown which landed on July 14.

Along the way the fleet touched down in eight regional centres, faithfully reproducing the track taken by Frenchman, Maurice Guillaux, who made the journey in 1914 in a Bleriot XI monoplane.

On the original mail run, the Frenchman carried a big bag of specially marked postcards as well as cordial and tea.

The original flight actually happened three days later than the commemorative flight, but the commemoration was moved up so the end would coincide with French Bastille Day celebrations.

On arrival at Bankstown, the fleet was welcomed by French Consul Eric Berti, who officially received the centenary mail from Owen. The flight was organised by the Aviation Historical Society.

A daring young man

Maurice Guillaux was born in 1883 in Montoire, France and obtained his pilot's licence in 1912.

He went on to win a number of flying competitions and races in Europe but at the end of 1913 he was banned for 10 years after being accused of trying to win the Pommery Cup by "cheating, falsifying his landfall and scrounging 50kms so as to take the cup from aviator Brindejonc de Moulinais". It must have been serious because Guillaux immediately jumped on a ship and came to the other side of the world.

He arrived in Australia in April 1914 with a Bleriot XI monoplane and set about making a name for himself. He was an instant hit with a thrill starved Australian public. Soon after Guillaux arrived he demonstrated Australia's first loop-the-loop in front of 60,000 spectators at Victoria Park Racecourse in Sydney and more daring aerobatics to another 10,000 people at the Newcastle showground. He also found himself in demand to endorse commercial products.

In June, Guillaux agreed to take over as pilot of the inaugural Australian airmail flight when the original pilot chosen for the mission, US aviator, Wizard Stone, was injured in a crash during a race against a car in Rockhampton.

Guillaux took off on the morning of July 16 from Melbourne's Agricultural Showgrounds and took three days to get to Sydney's Moore Park where he arrived to a rapturous crowd, which included the Governor General.

The official flight time was 9 hours 15 minutes, but Guillaux told reporters at the time it wasn't a speed run. He made seven refuelling stops during the flight. In Harden where he had to stop because of bad weather, he wowed a large crowd with an exciting aerobatic display.

At the end of the mail run, Guillaux had completed the longest airmail flight in history. It proved the concept could work, even though a regular airmail service between Sydney and Melbourne was not established until 1925.

Later the same year when the First World War began, Guillaux returned to France. He died in 1917 while testing an aircraft for the French Air Force. He was buried at Neuilly-sur-Sein.

The Bleriot stayed in Sydney where it was purchased in 1916 by Ballarat garage proprietor, Robert Carey. Carey used the aircraft for flying demonstrations around Victoria to raise money for the war effort.

The aircraft is now on display in the Powerhouse Museum in Sydney.

Source and for more information:
www.powerhousemuseum.com/collection/
Australian Historical Society
www.ahsa.org.au/
www.wikipedia.org/wiki/Maurice_Guillaux

>>End of the Centennial flight July 14th, Bastille Day Bankstown, Owen with French Consul, Eric Berti

>>Owen Zupp

>>Owen Zupp interview Bankstown

DESIGN note

DAVE DANIEL

WHAT A DRAG

The saying 'Less is More' has never been more true than in the case of drag.

Less drag means a better rate of climb, a longer glide and a faster (or more economical) cruise. Not only are all these things nice to have, the first two significantly improve safety. In fact, with the possible exception of acrobatics the only phase of flight when more drag is actually desirable is approach and landing; a time when adding drag is as easy as flying a bit faster, applying crossed-controls or just extending full flap. Reducing drag on the other hand, is much more of a challenge! But before you rush out to your hangar, cloth in hand ready to buff your machine to a high gloss, let's take a closer look at our adversary.

At the most basic level drag is simply the force which opposes thrust in the familiar lift -weight-thrust-drag forces of flight diagram. But this simplistic view lumps all the many separate drag sources into a single total drag value. I want to dig a little deeper, so I've dissected the total drag for you in Figure 1, so we can see where all this drag is really coming from:

INDUCED DRAG – As discussed in my June article, this is the drag which comes from the production of lift. Induced drag is unique in that it's the only source of aerodynamic drag which decreases the faster you fly. Of course there is no free lunch - it also increases rapidly at low speeds - hence why flying slower than your plane's best glide speed requires significant power and why flying on the backside of the power curve can really get you into trouble.

PARASITE DRAG – Covers all the remaining drag once the induced drag is removed. As the name suggests, it consumes energy without providing any benefit in return, increasing approximately with airspeed squared, i.e. doubling your airspeed will quadruple the parasite drag.

PROFILE DRAG – Is the drag a wing produces irrespective of whether it's producing any lift and is a combination of two parts; the wing's Form Drag (sometimes called Pressure Drag), and Friction Drag, both of which are described further below. From an aircraft performance point of view the Profile Drag is just another part of the overall Parasite Drag, however for a designer it's useful to group all the wing related drag together, so the Profile Drag often gets separated from the Parasite Drag allowing it to be combined with the Induced Drag for design purposes.

FORM DRAG - Depends on the frontal cross section of an object and also how streamlined it is. At typical flying speed, air flowing around a bluff body will turbulently separate from the rear surface forming vortices and creating an area of low pressure in the wake. This low pressure area, along with an area of raised pressure in front of the body, leads to a significant pressure differential between the front and rear surfaces resulting in a net drag force.

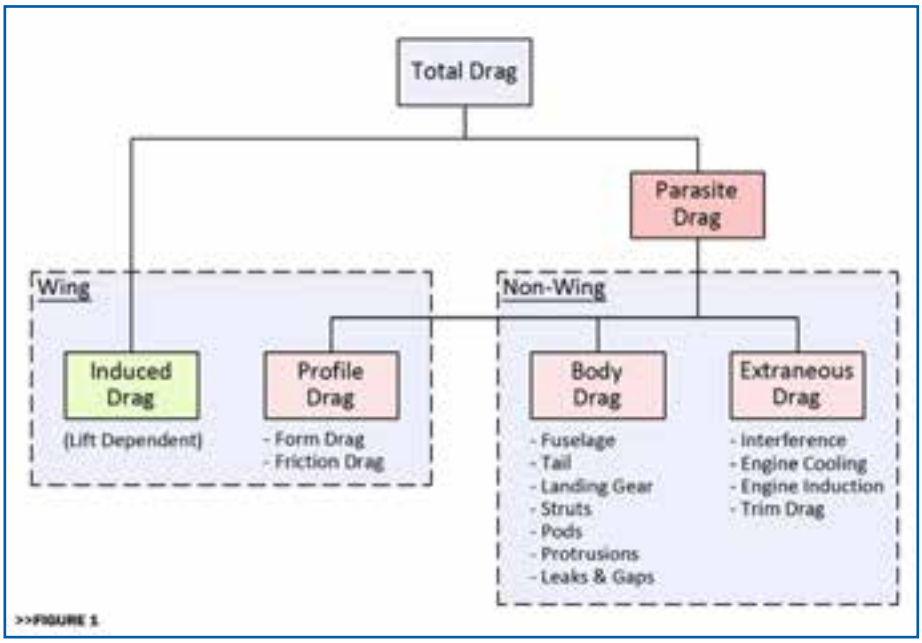
FRICTION DRAG - Depends on surface or 'wetted' area and originates from a fluid's tendency to be pulled along by a passing body due to viscosity. When an object moves through air, any molecules directly in contact with the surface stick to it firmly without slipping. Moving away from the surface the air molecules can slide over one another, meaning they are dragged progressively less and less the further from the surface you go. This process forms a thin boundary layer between the air stuck to the surface and the air far enough away to be unaffected. Any air molecule passing through this boundary layer will get dragged along to some extent, extracting energy from the passing body and carrying it away in the wake.

For an object the size of an aeroplane travelling through air at 100kts, Form Drag is much more influential than Friction Drag. This means a streamlined body (which limits flow separation and thus minimises Form Drag) is far more efficient than a bluff body, even when a large difference in wetted area exists. To visualise this Figure 2 shows two cross sections, a cylinder and a 25% thick aerofoil. Remarkably, despite a dramatic difference in size, these two cross sections produce the same drag!

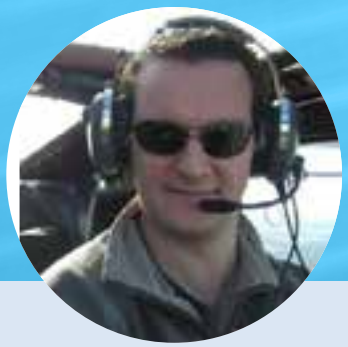
BODY DRAG – Is primarily the combined form and friction drag produced by the remainder of the airframe, excluding the wings. However it also includes the drag caused by gaps and leaks. Air which leaks into the aircraft will be accelerated to the speed of the aircraft and will then leak out again, taking its added energy with it. So a whistling door seal is doing more than just making an annoying noise, it's also slowing you down.

EXTRANEOUS DRAG – This is really the catch-all for what's left, but added up it can represent a significant portion of the total drag.

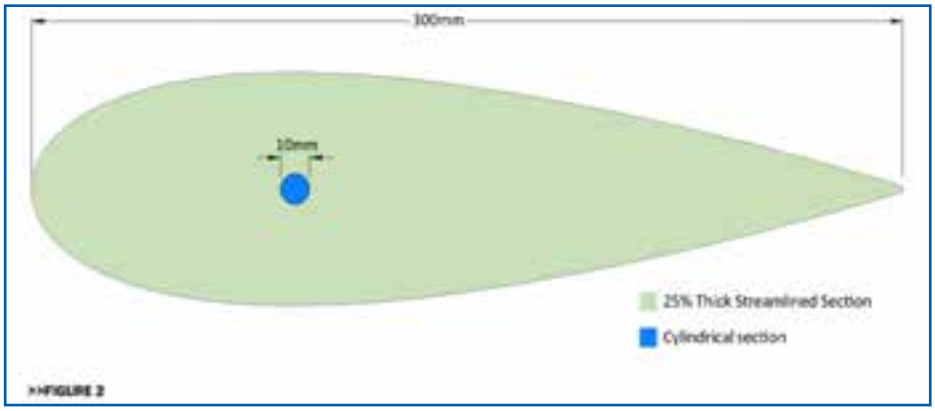
INTERFERENCE DRAG - occurs when the airflow around separate parts of an airframe interacts, causing additional drag above that which would occur if the parts operated on their own. The classic case is the wing-body intersection, but any sharp junction where parts meet at an angle of 90° or less, such as wing struts, can be a



>>FIGURE 1



Less is more has never been more true than in the case of drag



>>FIGURE 2

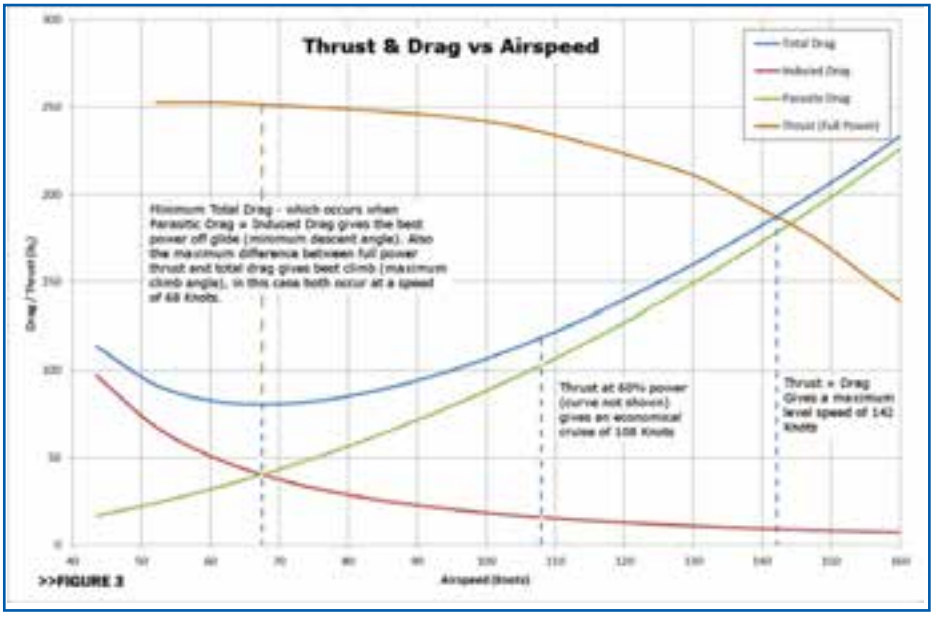
problem. Interference Drag is usually minimised by using fillets and fairings to provide smooth rounded junctions between surfaces.

A great deal of research has been put into minimising the losses associated with the aeroplane's power plant installation. Inevitably there are intake losses involved in capturing passing air and trading its speed for increased pressure, be it for more power or efficient cooling. A well-designed exhaust can claw some of these losses back but, for cooling, the holy grail is the mystical (and slightly controversial) 'Meredith Effect, using the heat energy gained from cooling the engine to actually provide thrust, eliminating Cooling Drag altogether.

TRIM DRAG - To allow trimming, most aeroplanes are provided with a tail to generate lift and counter the aeroplane's pitching moment. During cruise this lift will typically be downwards, and so has to be compensated for by additional lift from the main wing. Both this extra wing lift and the tail's lift result in additional Induced Drag, referred to as Trim Drag. This can be minimised - gliders almost universally opt for long tails with small surfaces, low pitching moment aerofoils have had plenty of research, but for transport category aircraft the usual solution is to simply move fuel around the plane, adjusting the trim by tweaking the weight distribution.

TURBULENT VS LAMINAR

No discussion of drag would be complete without mentioning laminar vs turbulent flow. In laminar flow a fluid remains in well-defined layers with no mixing between them. This allows for a thinner boundary layer and reduced Friction Drag. Viscose fluids like syrup and small scales such as insect wings naturally promote laminar flow. But in air, especially at the scale of an aeroplane wing, laminar flow is extremely hard to maintain, requiring very smooth surfaces and carefully controlled pressure gradients to prevent a breakdown into turbulence.



>>FIGURE 3

In addition, laminar flow doesn't like turning corners so it tends to separate from surfaces with lots of curvature, causing a dramatic increase in drag. Turbulent flow on the other hand causes more Friction Drag due to its thicker boundary layer, but it is much less prone to separation. Taking the humble golf ball as an example, it is not amenable to streamlining (it's a ball!), but the dimples ensure the boundary layer is turbulent which allows the flow to stay attached to the surface for longer, massively reducing the Profile Drag and more than offsetting the increased Friction Drag caused by the turbulence.

In my view laminar flow is a worthwhile goal, especially if I am designing a glider, but unless the surfaces are precisely manufactured, mirror smooth, impeccably clean and located outside of the prop-wash I'm unlikely to see much benefit. Having said that, even with turbulent flow most modern laminar aerofoil profiles will perform just as well, if not better, than traditional ones, so there's really no harm in trying.

Summing up, isn't it time to go streamline your struts, seal your gaps, wash the bugs off your leading edge, pop on your wheel spats, then sit back and marvel at the stunning improvement in your plane's performance?

NEXT MONTH: Materials

FIGURE 1 -Typical drag breakdown
FIGURE 2 -The importance of streamlining, both of these sections have the same drag.
FIGURE 3 -Example performance plot (for Project-Ex) illustrating how the relationship between drag and thrust determines aircraft performance.

TECH TALK

DARREN BARNFIELD RA-Aus Technical Manager

An Experimental direction

Most members will be aware of the technical and airworthiness compliance RA-Aus is undertaking. These requirements are nothing new. They have been mandatory for many years but until recently have not been effectively followed up.

As our organisation has grown, many processes have been overlooked, misinterpreted or misapplied. Since taking on the role of Technical Manager, I have identified quite a few non-compliant aircraft issues, many of which could be described as only administrative. But working with CASA and reviewing the current Civil Aviation Orders, I have also identified systemic failures which have contributed to the current situation.

CASA has been working with the RA-Aus Technical team to find a way for non-compliant aircraft to be administered safely while the Technical Manual is rewritten. The Tech Manual review has become an extremely large task because such a rewrite hasn't taken place for many years.

The next step is to prove to CASA that we have the knowledge and understanding to do more than just administer our aircraft. It has been suggested for years that RA-Aus should have an Experimental category. In GA there is such a process which allows an aircraft which does not conform to a Type Certificate to be operated privately - with restrictions. To date it's only been possible for an RA-Aus member to manufacture the major portion of his or her aircraft as an amateur built. Over the years some non-conforming aircraft were registered in the 19 category, which was not entirely correct. The 19 category only allows for the builder to fabricate the major portion (51%) for their own education and recreation. How we deal with non-conforming aircraft has been a regular topic of conversation.

As the holder of an Instrument of Appointment for CASA, I have issued many Special Certificates of Airworthiness for simular category operations. With the assistance of CASA it has been agreed that, while RA-Aus rewrites its Tech Manual, an amendment to my current IOA would allow me to issue Special Certificates of Airworthiness for affected aircraft. This will allow the aircraft to operate in an Experimental category for 12 months for private operations only, until the manual is completed.

This will mean an aircraft which does not conform to a Type Certificate (i.e. prop type, engine on condition or MTOW issue etc.) may be operated by the owner for private use with conditions to limit its operational impact on others. Depending on the circumstances there may be restrictions, such as no flight over populated areas, not being used in a flying school and the display of an Experimental placard. These will be mainly minor issues to most private operators and are only an interim measure to allow the aircraft to continue flying for the time being.

The new Tech Manual will address the problems in the approval process but like all things, there are also negatives. If you have an aircraft currently affected by a non-compliance problem, such as an engine type not listed on the Type Certificate, which is being used in a flying school, you will need to stop until the appropriate controls are put in place.

There are means of compliance still available. For example, if the aircraft has an Australian Type Certificate, a sub-Part 21M engineer can issue an engineering order in accordance with CAO 94.55 or 32.

To be able to take advantage of this process, the owner will need to apply to me for a Special Certificate of Airworthiness. The process is simple and only requires the addition of an Experimental placard on the passenger access side of the aircraft. At this stage the registration number will remain unchanged.

When things are finalised I will inform everyone of the appropriate process. I'm expecting a lot of inquiries about this, but hold off on your questions until we are able to publish the final protocols.

L2 Renewal Update

The L2 renewal has certainly upset a few maintainers - please remember the L2 rating is a privilege. Some maintainers appear to have been told they are unrestricted and won't need to reapply. But there is no reference to such advice in the current Tech Manual and, as such, I cannot support it.

RA-Aus acknowledges the process may have been poorly managed and I'm the person left to deal with the anger and frustration. The letter we sent out stated you could get a renewal if you show four ACAR annuals or by agreement with the Tech Manager. I have approved 160 renewals to date, but listening to the concerns of the L2s, its clear many didn't realise the process required of them. Based on that we have decided to relax the renewal process until the end of this year.

If members with an L2 are not able to complete or show that four annuals have been done, but can validate their service to the RA-Aus community through their help to others, we will judge each person on their merit. Over the next two years we will con-

> *As our organisation has grown, many processes have been overlooked*

tinue to remind the L2s of the requirements so when the renewal comes around again, hopefully we will all understand the process. For the L2 LAMEs out there, simply send in a copy of your Part 66 licence and the privileges you wish to exercise for the RA-Aus members and we will issue your L2 on a perpetual basis, in line with the CASA requirements for the LAME licence.

Recent Fatalities

In recent weeks I have had to attend three fatalities. I remind all members there are mandatory requirements when it comes to maintaining your aircraft. All aircraft are required to have annual or hourly based inspections on the engine and aircraft, which includes things like the transponder and pitot static checks, as listed in the Tech Manual. The work is to be recorded in a logbook which should be stored at home or in a safe location, not in the aircraft. Any accident or incident must also be recorded in the logbook.

If you are unsure of how to write these up, let me know and I can supply a set of standard logbook statements which can be printed or copied.

Lithium Batteries

There has been an incident of a lithium battery failing in flight causing an emergency landing. The pilot did a great job but got one hell of a scare in the process. There has been much discussion about the pros and cons of lithium batteries. In conversation with the importers and industry people, the common factor in premature failure is the charging and discharging of the units. As with all aviation items, don't take the word of the bloke at the shop. Find out for yourself the correct information. Refer to the manufacturer's instructions before installing one of these batteries. Incorrect installation can lead to in-flight emergencies, such as smoke in the cockpit, coupled with electrical system failure and, at worst, thermal runaway resulting in a fire.

L1 Training

We are still working on the L1 training process and accreditation. I'm now seeking expressions from members with aviation maintenance backgrounds as an L1, L2, L4 or LAME, with a certificate in workplace training and assessment. We have made good progress and have a working draft for the online component. I now need to establish a training process for the nationwide roll-out. Please forward your expression of interest to techmgr@raa.asn.au. I will need four to 10 members from every state to act as facilitators for the training.

Caring for your RO

Excerpts from a forum presented by North Queensland Board member and L2, Ross Millard, at NATFLY 2014.

History

The 80hp Rotax 912 first appeared on the scene in 1989, so it has been serving aviators worldwide now for 25 years. The 80hp and subsequent models have since gained worldwide appeal for their general ease of maintenance and servicing.

The typically robust German bottom end is built in and the all-alloy Nikasil cylinders and alloy water/air-cooled cylinder heads are easily capable of making their stated TBOs.

Rotax regularly sends out upgrades or required service instructions and the entire range of engines is well support by a global network of dealers.

The engines have been fitted to many types of flying machines the world over. Most current models enjoy TBOs of 2000hrs. They continue to be the standard for reliability in this field.

>>912 cracked carb mount rubber

Models

Certified engines

- 912 A/F/S / iS (Red colored S/No labels)

Non-certified engines

- 912 UL/ULS/ iSC (Black colored S/No labels)
- 80hp 912 (Low compression [9:1], 59.6Kw, twin altitude-compensating Bing 54 carbs, dry sump lubrication system);
- 100hp 912 (High compression [10:1], 73.5Kw, twin altitude-compensating Bing 54 carbs, dry sump lubrication system);
- 115hp 914 (Low compression [9:1], 84.5Kw, based on 80hp engine, twin altitude-compensating Bing 54 carbs, plus an exhaust turbocharger with electronically controlled turbo-wastegate for additional performance and power availability at the high end RPMs, dry sump lubrication system).
- 100hp 912 iS/iSC (High compression [10:1], 73.5 Kw, fuel injected with electronic computerised engine management system, dry sump lubrication system).

Common in-service problems

- Carb mount rubbers cracking
- Fuel pump upgrades
- Oil tank vent line
- Starter motor upgrade
- Ignition box failures and recent upgrades
- Material production problems with crankshafts and other components
- Recommended lubricant and coolant changes
- Ignition stator failures
- Spark plug gaps
- Non approved modifications

SL - Service letter
SB - Service Bulletin
SI - Service Instruction

Carb mount rubbers

(SB 912-030UL)

There have been cases of premature cracking of the carb-mount rubbers, some with as few as 200hrs in service. Some previous failures were traced to over-tightening of clamps, but newer clamps with a 7mm bush generally prevents over-tightening.

Badly adjusted carbs, or out of balance props, as well as poorly supported carbs, can be contributing causes. Additional carburetor support may be required. It is recommended the rubbers be removed for a close internal and external inspection every maintenance event and be replaced if any cracking is evident.

Refer to SB912-030UL R1 and SI-08-1995 -Fitting of carb supports.

OTAX

Fuel pump upgrades
(SB 912-053 and 063 UL)

Some part-number fuel pumps have been withdrawn from service. The AC pump with a flat surface edge is one of those. Rotax has listed fuel pumps as a five year rubber replacement, so they need to be renewed every five years. The new Corona pump requires a drain tube to be fitted and also a fuel line return, back to either the fuel tank or gascolator, to avoid a high fuel pressure build-up to the carbs. This return line has to have an .032" restriction orifice installed in it.

Additionally, it is recommended users install a fuel-pressure gauge to ensure fuel pressure to carbs always remains within recommended range (older pumps - min .15 bar/2.2psi max 0.4 bar/5.8psi. Newer pumps - min 0.15 bar/2.2psi max 0.5 bar/7.26psi).

Oil tank vent line
(SB912-036)

The oil tank vent line must always remain clear to facilitate transfer of oil from tank to engine and return. If it is blocked in any way, oil might not flow normally between the two. Be especially aware of mud hornets building in these hoses. Cover the end with wire gauze to ensure it stays clear.

Starter motor upgrade
(SB 912-037UL)

To generally improve the starting characteristics of its engines, Rotax now offers an improved, more powerful starter. The new starter fits onto the engine the same way, but overall length has been increased. So it may require some modifications to the firewall on some installations.

Ignition box failures and upgrades **(SI 912-013)**

There are occasional breakdowns on some Ducati ignition system components.

>>582 Rotax in a trike

>>912 Pipistrel Virus

>>2-stroke oil and recommended coolant

>>Ignition box failures continued


>>912 Carb


>>New (with shim -silver) and older style carb mount rubbers


>>80 HP 912 Kitfox


>>New 2-stroke installation

The two ignition modules can be damaged by incorrectly hooking up the battery (reverse polarity) or by turning the engine over with the spark plugs removed, or leads disconnected, with the ignition switches in the ON position.

This damage is more common where the ignition switch is a multi-position key-type switch. The ignition circuits are then activated to the ON position when the key is turned to the starter position. The approx. 40,000 volts produced by the ignition modules and coils cannot ground through the sparkplugs in the normal way and can return to the modules causing irreparable and expensive damage.

If it is necessary to 'motor' the engine on the starter, it is imperative the ignition switches be OFF or the plugs placed into the plug caps and grounded to the case with grounding leads.

Additionally, the ignition modules and coils may be damaged by excessive engine-generated heat, either during operation, or after shutdown in a tight cowl. Temperature sensors can be attached to these sensitive components or cool air ducted to them when the engine is operating. The latest modules incorporate the 'soft start' feature further making engine starting easier and smoother.

Rotax has now standardised ignition system components and connection plugs on all new engines. Older model engines can be upgraded and older systems parts will still be available if the owner decides not to carry out an upgrade.

The ignition stator at the rear of the case can also be damaged by chemicals or moisture during engine wash downs, and the area should be covered to protect it when doing so.

Material production problems

Crankshaft and gearbox components (SB 912-059UL, SB 912-064UL R1 and SB 912-027UL)

There have been some manufacturing irregularities on some crankshafts and gearbox components and periodic checking of those affected components is now required. The problems are restricted to only a small number of production engines in each case. Refer to the above service bulletins to see if your engine is affected. Additionally, Rotax now requires removal, checking and cleaning of the magnetic oil-plug mounted on the left side of the engine above the oil filter boss at each service and monitoring it for any increase in metal chips or particles which may show gearbox cog or other damage.

Recommended lubrication and coolant changes

(SI912-016 Rev 6)

Motor oils tested and approved if using unleaded fuel or MOGAS.

Oil – Usually AeroShell Sport plus 4 SAE 10 W 40.

Read the service Instruction (latest edition) carefully and select a suitable engine lubricating oil based on the fuel type you use – it changes often.

Coolant - 50/50 mix - 50% antifreeze-antiboil (Castrol recommended) with 50% demineralised water.

Easy to source in and out of major areas. Topped off with regular or demineralised water. Good for two years in most conditions.

Evans NPG+C waterless coolant is not suitable for 912iS. Water, or coolant containing water, must never be added to 912iS because maximum water content must not exceed 3.6% - ever. Beware of condensation buildup with this coolant which is difficult to source outside major areas.

Ignition stator failures

There was a mandatory stator upgrade on the earlier 80hp engines. If purchasing one of these engines, ensure the upgrade has been carried out. Later model engine stators appear to be mostly failure free. Care is needed when washing engines, especially if using strong chemicals which can enter the rear of engine and may damage stator components.

Spark plug gaps

Ensure the correct gap is maintained. Too large a gap can cause a misfire, or cause stress on the ignition system components. NKG plugs come out of the box new gapped for automobile use at .025in. The plug gap range recommended by Rotax is 0.6–0.7mm or 0.023-0.027in. (Maintenance manual 12-20-00 section 13.2.2)

Plug types

912A/F/UL Part No. 897255 NGK DCPR 7E x 8
912 S/ULS Part No. 297940 NGK DCPR 8E x 8

Non-approved modifications

(SL912-014)

Rotax does not support or recommend use of aftermarket parts on their engines or any unapproved modifications. Doing so will void any warranty.

For more information

ROTAX-OWNER.COM
www.rotax-owner.com
Assistance, videos, service/parts, manual downloads, service videos, specific engine serial number notification of SBs, SIs, SLs.

BERT FLOOD IMPORTS -
www.bertfloodimports.com.au
New engines, parts, advice, maintenance and assistance, service/parts manual downloads.

LOCKWOOD AVIATION SUPPLY
www.lockwood.aero
Parts, developments, information, service/parts manual downloads, informative forum.

DANJOHNSON.COM
www..bydanjohnson.com
Latest industry developments worldwide.

PILOT NOTES

For a listing of all 2014 accident and incident summaries see www.raa.asn/safety/accident-incident-summaries-2014

The aircraft ballooned and bounced several times

Airborne XT 912

Conditions: Light wind, moderate turbulence

The student was undergoing a sortie of dual circuits and had carried out several without intervention from the instructor. While the aircraft was being held off prior to touchdown, it was struck by a wind gust which caused it to drift off line. The student was slow to react and the instructor took over but was unable to prevent the aircraft from landing heavily on one wheel. The undercarriage failed and the propeller struck a spat and the ground, causing considerable damage.

Foxbat A22LS

Conditions: Moderate wind and turbulence
Pilot experience: 97hrs, all on type

The aircraft was caught by a crosswind gust on landing which lifted a wing and caused it to veer off line. The pilot attempted to correct the situation but was unable to do so and the aircraft ran off the runway. The nose wheel collapsed and the aircraft came to rest with further damage to the propeller and one wing. Neither of the crew was injured.

Storch S

Conditions: Moderate wind and turbulence
Pilot experience: 77hrs, all on type

The aircraft ballooned and bounced several times as it landed and the nose gear leg failed. The aircraft came to rest with damage to its propeller, cowl and radiator.
The pilot was not injured but believes he may have struck his head, become dazed momentarily and did not realise what was happening with the landing until it was too late to take corrective action.

Jabiru J200

Conditions: Light wind, moderate turbulence
Plot experience: 412hrs on type

Just after the aircraft touched down the starboard wing lifted rapidly and the opposite wing struck the ground. The tail lifted and the propeller also struck the ground. The aircraft finally came to rest on the runway with damage to the wing tip, propeller, nose-gear yoke and wheel spat.

Aircraft de-identified

The relatively inexperienced pilot was conducting a local scenic flight with a passenger who became airsick. The pilot set a heading for the nearest airfield but as they approached the field the passenger's condition deteriorated markedly and he vomited in the cabin. This distracted the pilot to the extent that he neglected to lower the undercarriage and in the subsequent wheels up landing the aircraft sustained damage to the fuselage and propeller.

Zodiac CH 701

Conditions: Moderate wind gusts and turbulence
Pilot experience: 26hrs, 10 on type

After a missed approach in turbulent conditions, the pilot went around and made a second landing attempt. As the aircraft touched down the nose pitched up sharply so the pilot applied forward control and the nose wheel struck the ground. The nose gear axle failed and the wheel departed the gear, after which the nose leg dug into the ground. The aircraft nosed over and onto its back, sustaining considerable damage. The pilot was uninjured.

Jabiru J230 C

Conditions: Nil wind or turbulence
Pilot experience: 339hrs, 125 on type

The aircraft landed several metres short of the runway and hit a flood mitigation channel bank. It then bounced into the air, veered off the strip and struck a permanent irrigation spray. The pilot applied power in an attempt to go around but the propeller had been damaged by the impact with the spray. The left wing dropped and hit the ground, spinning the aircraft through 180° after which it came to rest with damage to its propeller, nose gear, engine cowl, cabin and wing. The pilot suffered a minor laceration to his right leg.

DEFECTS

Tecnam P92 Eaglet

Airframe: 2,953hrs ttis

The aircraft was turning off the runway after a normal landing when the nose gear collapsed. The aircraft pitched forward onto its nose and came to rest with further damage to the propeller and engine mount.

Skyfox CA 25 Gazelle

Engine: Rotax 912A 1,818hrs ttis

While in flight the pilot noticed a change in engine noise which developed into a low vibrating sound. After a precautionary landing the engine was inspected and it was found an exhaust pipe had fractured at the flange where it attaches to the cylinder head.

Jabiru J120 C

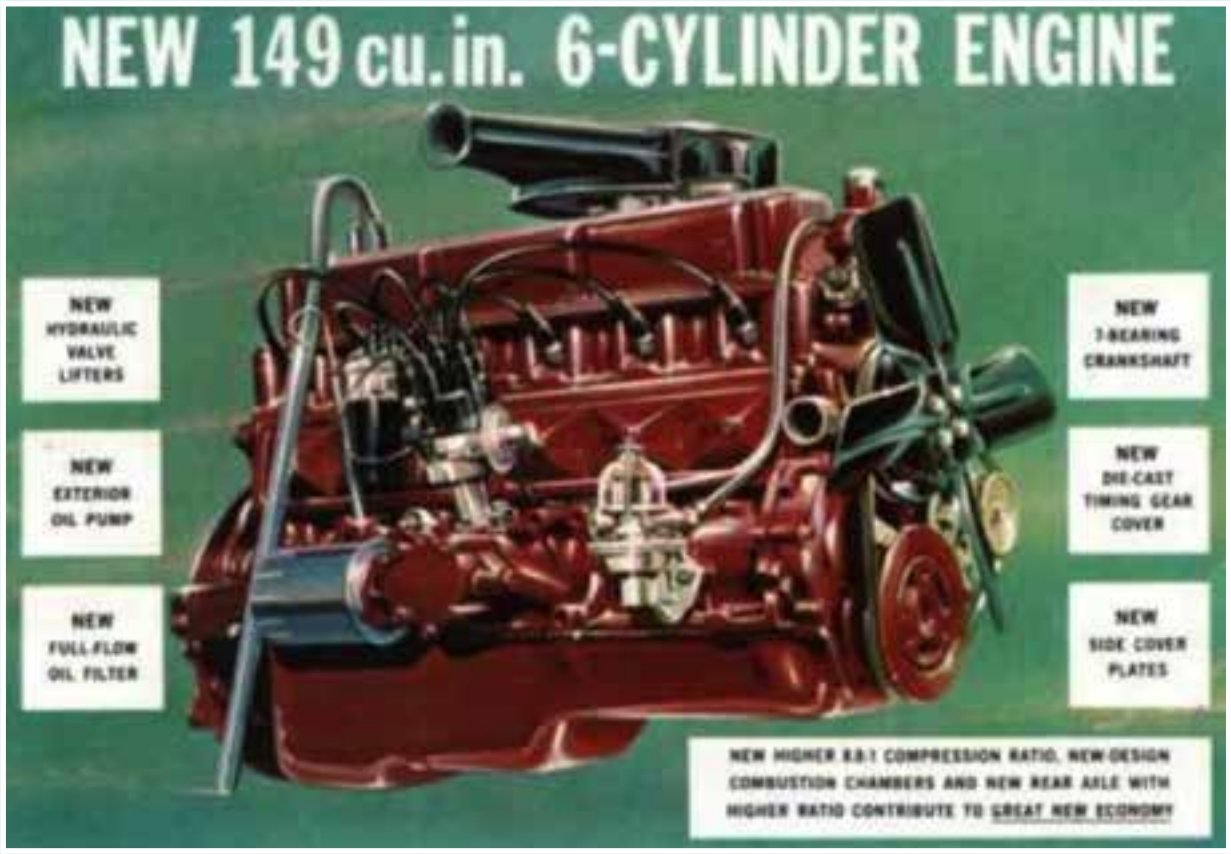
Airframe: 474hrs ttis

While the aircraft was being taxied on a rough grass taxiway the nose lifted enough for the nose wheel to leave the ground. The centre shaft of the damper fell out of the retaining sleeve and the aircraft pitched forward, allowing the propeller to strike the ground
Inspection revealed the retaining bolt through the assembly was missing.

HOMEBUILDER

DAVE EDMUNDS

USING CAR ENGINES



The Holy Grail for home builders has long been the use of car engines in their aircraft. After all, many of the earliest designs used car engines.

For example, the well-known 1929 Pietenpol was designed to use a Ford Model A engine.

The idea is that you build your aircraft then go to a vehicle wrecker and buy a low-mileage car engine, tidy it up a bit, bolt it into your aircraft and off you go.

The amazing thing is just how hard it is to make that work. There are very few car engines which have made it into mainstream aviation and then only after a considerable amount of additional engineering.

By far the most successful conversion has been the Volkswagen engine used in the Beetle and some Kombis. This engine had a design common to American-designed aircraft engines. It is air-cooled and a flat four configuration. It has a lot of alloy parts, so can be built for aircraft use with no more weight than an equivalent dedicated aircraft engine of the same power.

However, even here the successful conversions are not simple.

The best ones on the market now have few actual VW parts. They have an additional bearing to accept the propeller load, dual ignition systems and may have a capacity of up to three litres. Even the simplest conversions specify only a very particular subset of VW parts, such as particular camshafts, heads, cranks and so on. Typical power is 80hp.

FlyCorvair provides parts and information on converting the US Chevrolet Corvair engine. After many years of development it offers very sophisticated solutions, but like the VW there is a good deal of additional engineering required. This engine is a flat six horizontally opposed air-cooled engine which typically will give around 100hp when converted.

This is my pick and will probably be the subject of a future article. There is plenty about it on the web.

Both Corvair and VW engine conversions can provide significant savings, in the order of 50% when compared with engines from Jabiru and Rotax and considerably more when compared to traditional Lycoming or Continental engines.

There are very few engine conversions which have been produced in sufficient quantities and have a long enough service record to be relevant to most of us without engineering qualifications.

The Subaru range of engines has been extensively used, but whenever I follow them up, it appears that another conversion has left the market. It ought to work well, being a flat-four engine and has been popular in gyroplanes, but seems to prove the adage there is no such thing as a free lunch.

A lot of conversions have been attempted on small, light Japanese car engines, but none which stand out as conspicuous successes. Because these are high-revving engines, they need a speed reduction unit to bring the propeller speed down to a maximum of around 3,000RPM, to raise the propeller above the low-set crankshaft and to take the propeller load.

Among the engines used are the three-cylinder Suzuki Geo marketed by Raven, the Honda used in Viking engine conversions and the V6 Suzuki used in some scaled Mustang projects.

Conversions have been made to some European engines, for example, the Smart car engine, but it is relatively expensive. A range of motorcycle engines have also been used, of which the best-known is the BMW Boxer. Most of these European engines offer not much in real savings compared with an equivalent aircraft engine.

There are several American conversions based on relatively lightweight V6 and V8 car engines, but none in significant quantities. Around 20 years ago, a great deal of effort was put into converting the 3.8l Ford V6 engine, led by Dave Blanton, but this approach appears to have fizzled out. Readers with more information might like to write to *Sport Pilot.*

However, there is an anomaly. Modern car engines have outstanding engineering and build quality and a conversion for aircraft use appears theoretically possible, so where is the problem?

Weight is a significant issue. The weight of an engine in a car is a secondary issue, but it's of paramount importance in aircraft. One way of overcoming this issue is to use high-performance engines with excellent power-to-weight characteristics. But this introduces a reliability problem.

Car engines are designed to use only a tiny proportion of their available power most of the time, while aircraft engines run at high power a significant amount of the time. When car engines are used in racing vehicles their reliability plummets.

Perhaps the most important factor is the amount of effort dedicated to the conversion exercise. The conversions I know about are all done by enthusiasts, some of whom are highly skilled engineers, but they simply do not have the engineering foundation of existing aircraft or car engine manufacturers. It is possible a liability issue discourages some of the bigger engine companies from competing in this space.

Corvair engine conversions are successful for a couple of reasons. Much of the expertise has been driven by William Wynne, a force of nature who has been working on these engines with a talented group of colleagues and a very different business model for around 30 years. Around 1.7 million Corvairs were built, so there are plenty of engine cores available (only a few hundred conversions are completed every year). These engines, while 1960's technology, were extremely well engineered, as the projected production run allowed development dollars. The converted engines are a fusion of a solid core and clever aviation adaption.

Similarly, the best of the current VW conversions rely on a fusion of outstanding initial design and technology and modern, clever and enthusiastic aviation adaption.

A decent business model is essential. Sonex makes one such engine, the 80hp AeroVee, which enables the company to market a very cost-effective kit aircraft and engine package, while also selling the engine separately.

Perhaps one of the companies now offering converted modern car engines will emerge from the pack, but I have been following the issue for over 20 years and am still waiting for a 100hp aircraft engine based on a modern car engine which costs $10,000.

Only the two originals, the Corvair and VW, have stood the test of time.

Meanwhile, there are two new entrants into the dedicated aircraft engine market. The Belgian D-motor is a clever water-cooled injected side-valve engine designed as a direct competitor to Jabiru and Rotax. The other is also Belgian, the UL-power range of air-cooled injected engines, also designed as competition for existing dedicated aircraft engines. Both of these are direct drive. Both are too new to the market to determine whether they will prove successful.

I am sure there are some patriots out there planning to bolt a Holden EH red engine into their homebuilt project, but this is perhaps not wise. Unless the engine you plan to use has a history in aircraft, you will need to work out not only how to mount it and do the weight and balance, (a challenge with the EH engine) but also work out how to cool it and provide aircraft features such as redundant ignition and appropriate fuel-air mixture.

This begs the question as to whether it is actually easier to modify an existing car engine or design an aircraft engine from scratch.

SAFETY MATTERS

KATIE JENKINS National Safety Manager

Safety Management System

In the months since I began working at RA-Aus as Safety Manager I've found the mention of the term 'Safety Management System' has made some members grind their teeth while others have openly praised the direction the organisation is taking to improve everyone's safety.

In my previous life in the Royal Australian Navy I saw first-hand the effect of some major changes in this field, including the introduction of the Safety Reform in 2004. That was when Defence set out on a 10 year strategic direction to improve its own safety culture.

I remember there was massive resistance from just about everyone when the changes came into effect. Defence personnel, I remember, were especially unimpressed with the new requirement to report all incidents and near misses. They were also unhappy with the new requirement to fill out a Hazard Risk Index form before conducting any activity. It was the last thing anyone wanted to do – we were usually under pressure to get things done quickly and these seemed like administrative processes merely designed to slow us down.

There were also several times I read reports of incidents from other units and had to shake my head at the how they had happened. It was usually a series of failures all occurring simultaneously, which had resulted in the incident. With good leadership and good direction, however, the changes came into effect and they continue to improve Defence safety today.

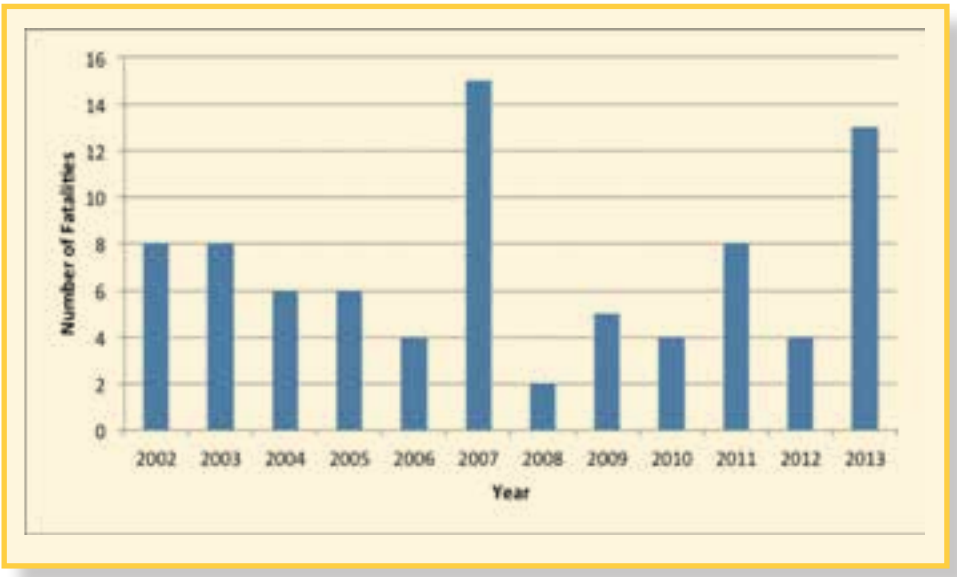
We can all understand the need for improved safety in a complex organisation such as Defence, but RA-Aus is a membership organisation which is about flying recreationally. So why is safety regulation required for us?

If you look at why governments impose safety regulations on any industry, it is always the same – the people in that industry are doing something which is causing deaths, severe injuries or disabilities and that something must be identified and changed.

In RA-Aus' case the unfortunate fatality rate in 2013 demonstrates there must be something amiss in our industry too.

Or did we just have a really bad year? And if it was just a bad year – should we just accept similar bad years in the future?

The figures for the past 13 years show there have been a relatively high number of fatalities for an organisation with the membership the size of RA-Aus. From 2002 until 2007 there was an average of nearly eight fatalities a year. After discussing the issue with the Assistant Operations Manager, I realised it was also important (and relevant) to look at the history of RA-Aus during the same period.



Around 2006-2007 the term 'Human Factors' was introduced into RA-Aus. Human Factors focused on the human elements of flying a plane. Its goal was to minimise the likelihood of human error while maximising performance to improve safety. Many pilots begrudgingly acknowledged the new CASA requirements but it's clear the introduction of Human Factors made pilots think more actively about their own limitations. During 2008-2010 the fatality figures show an impressive drop from previous years. The question must be asked - was this due to Human Factors training?

The numbers jumped again in 2011 and 2013 even though 2012 was relatively low in fatal incidents. Based on raw figures alone, there is just no way to truly know what is going on and why.

That's where the Safety Management System comes in.

The SMS not only regulates behaviour it also lets everyone know RA-Aus is doing whatever it can to find out why there are crashes and stop them from happening.

The SMS examines all reported incidents, accidents, defects and hazards to discover if there are issues, such as a particular faulty engine part or a group of students who haven't received the correct training.

By identifying areas within the organisation where there are safety concerns we can be proactive in providing support to improve these areas.

As well, by reporting back to the regulators, RA-Aus can demonstrate to them that we are aware of the areas of concern and that we can improve them through retraining, rectifying engineering issues or changing procedures.

At the end of the day isn't it better to know why the fatalities and other incidents are happening than just putting it all down to a bad year? And, knowing why they are happening, isn't it then easier to find ways to stop them happening?

If for no other reason than when you go for your next flight you can be confident RA-Aus has done all it can to get you and your aircraft home safely to your loved ones.

LEARNING TO FLY

BY ANTHONY SIBARY

The first time

That well known TV ad was all about working hard to be a Solo man and, although I was not drinking lemon squash, I sure had been working hard studying for the theory exams which lay ahead and applying what I was learning to my time in the air.

I arrived at the Oaks early in the morning, giving me plenty of time to conduct a thorough pre-flight inspection and to go over the theory for my lesson. My instructor, John, was satisfied I understood the aim for the flight and so, after the necessary checks, we departed to the north. We headed into the training area for some upper air work and then back to the airfield for some touch-and-goes and more work in the circuit.

After my second touch-and-go, John said "Please make the next one a full stop."

I thought "Great, he cannot wait to get back on the ground. Well done Anthony!" After landing I had confirmed via radio that we were clear of the runway when John turned to me and said "Just drop me off here and you can go on your own. Remember she will climb a lot quicker and float further closer to the ground, without me in here."

I felt a calm come over me and I was instantly at one with the machine. Ok, that's not exactly how it went. In reality, my mind exploded with every positive thought imaginable.

At least I had the presence of mind to ask John take a couple of pictures for me. After all, you only ever do one first solo.

I can honestly say I have never been so excited and yet, in a way so nervous, all at the same time. You can't help but talk to yourself out loud.

"Ok Anthony, this very nice man has just given you permission to fly a circuit in his aircraft without him in it. Let's thank him by doing it right."

Checklist in hand, I made my way to the run-up bay. As I always do, I worked methodically through what I needed to do.

I made the radio call, lined up and then accelerated smoothly down 36L. John had not been joking about the difference in the climb. Everything happened very quickly indeed.

I was incredibly focused, this was serious, and yet I was wearing a smile as big as Jack Nicholson's Joker.

Now, before the Editor's inbox is flooded with claims I was not taking my first solo seriously, let me state for the record that I was doing just that. It is just that, for me, flying should also be fun as well as safe and I had just discovered that, after 40 years of wanting to do it, unbelievably I was actually flying an aircraft all by myself.

I made the turn onto my downwind leg, reduced the throttle and went through my checks. I was parallel to the strip, the gauges were in the green and I was maintaining 1000ft AGL. I was happy I was rewarding John's confidence in me.

On late downwind it was time to reduce throttle further. Carb heat went on and I held on to the height before I made my turn onto base.

Everything looked good, so I made my radio call and turned final for 36L. I was a little high, but reducing the throttle sorted that. I began repeating the words - attitude, airspeed, runway - as I made my approach.

My airspeed crept a little higher than I wanted, so I raised the nose a little and that sorted it out. Power came off and, just as John had predicted, it seemed like the aircraft wanted to float forever. The little Jabiru touched down main gear first and, as the grass strip was damp, I made sure I did not over work the rudder. I also carefully applied the brakes after my landing roll had slowed.

I taxied back to the parking area and shut down. John greeted me with a huge smile, a handshake and a cuppa. I called my wife to share the great news and let her know I was now officially addicted to flying.

Then John told me "now the learning really begins." Wise words. I cannot thank John enough. My first solo was a great success. What an amazing feeling it was and still is. See you in the pilot's lounge for cocktails and debriefing.

>> My stunned expression after learning I was to go solo

Wangaratta Opportunities

by Geoff Wood

I just wanted to let everyone know about Wangaratta airport. It's a place of golden opportunity for a flying school to set up.

And what a flying destination it is. You can explore the wineries, river valleys, the mountains and the area. North of the divide the weather improves markedly. There is less wind and more sunny days.

That means more flying days, which is why we moved here.

Fly east from the airport and you have the hills and mountains with wisps of fog appearing out of the trees on many days.

Wangaratta airport has a great club-house and facilities. There is currently hangar space available.

There are no landing fees on the 1640m newly resealed runway and aprons.

There are camping facilities at the airport and it is only seven kilometres from Wangaratta township. Avgas and jet A1 are available. RA-Aus and sport aircraft can have any necessary maintenance and repairs done at Border Aerospace. Roland and Paul are very easy to get on with. Roland says a courtesy car is available to visitors who use their services.

The main terminal building is just waiting for a business to set up there (perhaps your RA-Aus school?). It is hoped the commercial kitchen in the terminal will also be soon be fired up again.

Wangaratta Council has an airport representative who is also keen to get a business up and running at the field.

Some readers may remember Drage Air World. The Hangar is not open to the public, but behind the closed doors there are Warbirds being restored inside.

Other nearby strips are Porepunkah (at the foot of Mt Buffalo), Mt Beauty (take a glider flight - Mt Beauty is the least windiest place in Australia), Benalla, Corowa, Yarrawonga and Shepparton.

Come set up a flying school at Wangaratta - opportunity knocks.

For more information, contact Terry at the Wangaratta Aero Club on (03) 5721 3845 or geoffreywood2@optusnet.com.au.

Weedhopper

The Weedhopper is a single seat, high wing monoplane with two axis control. The pitch and yaw are controlled by a rear mounted elevator and full flying rudder, both through the stick. A three axis option was available with wing spoilers.

The aircraft was designed and built by John Chotia who, in 1977, founded Weedhopper, of Utah. Chotia was killed testing a prototype of one of his aircraft in 1981.

The design was inspired by Santos Dumont's 'Demoiselle 20' and after the construction of two prototypes, two pre-production types and a further prototype with a larger wing area, the aircraft eventually went into production. The first model was known as the Weedhopper JC 24.

Several models followed, among them the JC 24P Penguin which had a reduced wing area. It was designed not to fly, but for dealers to train prospective buyers in ground handling. A later model had a pod and ailerons.

The Weedhopper was 5.64m long, 1.83m high and a wingspan of 8.53m.

It was powered by a Chotia 460D 25hp engine driving a 44 x 19" propeller at a maximum of 3,700rpm with no reduction.

It had a maximum level speed of 43kts, a maximum cruising speed of 34kts and a stalling speed of 17kts.

If you want to see a Weedhopper aircraft up close, one is on loan to the Australian Ultralight Aircraft Museum by Mr John Ferguson, of Holbrook.

Source: Max Brown, Australian Ultralight Aircraft Museum, Holbrook.

UNDO Dean Winton was Scott Winton's brother, not his son (*Sport Pilot* July 2014)

OFF THE SHELF

Child's Headset

Before you depart with youngsters aboard, ensure you provide them with adequate hearing protection for a safe and enjoyable flight. The Children's Hearing Protection Rockin' Red headset is sized to fit smaller head sizes and provides comfortable, reliable protection against engine and cockpit noise. The wide, low-profile earcups feature foam-filled cushions for a secure, comfy fit while the headband has a leather cover which prevents binding or pinching. It delivers a Noise Reduction Rating of 31dB. Each ear cup weighs 190 grams.

Price USD $27.99
Web www.pilotmall.com

Activity Monitor

The Vívofit is a stylish, lightweight fitness band designed to turn good intentions into lifelong habits.
Vívofit automatically greets you with a personalised daily goal, tracks your progress and reminds you when it's time to move. Engaging sleep mode when going to bed allows Vívofit to monitor the quality of your rest.
Pilots can take advantage of the health and lifestyle improvements Vívofit offers when assessing their ability to complete a given mission. For pilots familiar with the IM SAFE checklist, Vívofit can aid in completing that assessment. When it is time for a pilot's annual flight physical, aviators will have a more accurate idea of their overall health habits. When paired with Garmin Connect, a free online fitness community, users can share and compare their activities. Vívofit's batteries last more than a year, Vívofit is water-resistant (50m), and compatible with ANT+ heart rate monitors.

Price AUD$159.00
Web www.ozpilot.com.au

Airband Transciever

The Yaesu FTA-310 Professional-Grade Transceiver provides communication (transmit and receive) capability on the International Aircraft Communication Band (COM band: 118 ~ 136.975 MHz). It also provides VOR and CDI navigation features on the NAV band (108 ~ 117.975 MHz). It features 700mW of clean audio output from its 36mm diameter loudspeaker and also provides 8.33kHz synthesizer steps for operating on the new narrow-band channel plan. The FTA-310 includes both temperature and supply voltage displays with back-lighting for minimal degradation of your night vision, NOAA weather band monitoring, 8-character Alpha/Numeric Display and 150 Memory Channels. The channel configurations can be easily programmed using the optional PC Programming Kit. The radio is built around a solid die cast aluminium chassis with heavy duty gasketing throughout, allowing the radio to be submerged up 30 minutes.

Price AUD$395.00
Web www.skyshop.com.au

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Royal Aero Club,
Western Australia
JANDAKOT
S32 30.505 E115 49.957
S32 05.764 E115 51.763
Holder: James Murphy
Email: murphyjuk@hotmail.com

18.5
Avgas sold in Australia - December quarter 2013 (megalitres).
Source:
www.bitre.gov.au

22.4
Avgas sold in Australia - December quarter 2003 (megalitres).
Source:
www.bitre.gov.au

90
Number of engines Jabiru makes every month.
Source:
www.jabiru.net.au

CAGIT on Facebook
https://www.facebook.com/CagitHunters

Why and how I made the first Australian Recreational Learn to Fly DVD

by Damien Wills

A lot of students and customers have asked me over the past two years how and why I came to create Australia's first recreational Learn-to-Fly DVD.

At first it was just to help my own students at GoFly Aviation. Most students live very busy lives, juggling work and family commitments. Some told me they would often forget their pre-flight briefings or even their in-flight lessons by the time their next lesson came around. There is a lot going on in the cockpit during a lesson. When you're first learning to fly, the information and visual stimuli can be overwhelming.

So I was spending a lot of time the next lesson revising what my students had forgotten from the lesson before. This would add more time in the air (and cost) as they worked towards their Pilot Certificate or navigation endorsement. Some students also reported having trouble remembering certain procedures and sequences. I thought it would be great if all their lessons could be on a DVD for them to review at any time.

I looked around for a suitable DVD to assist them. The DVDs from the US were not well suited for the Australian market and many of them just consisted of instructors talking to the camera - so they were also quite boring. One of the more well known American sport pilot DVDs actually had the camera on the instructor's face during the flying sequences. I remember when I learnt to fly and I was not watching my instructor's face! After a lot of time searching I realised to my disbelief there was no Australian Recreational Learn-to-Fly DVD anywhere.

I had made quite a few short films when I was younger and had some basic editing and camera skills, so I decided to make a series of DVDs myself. I assumed it was only going to take about six months, but it ended up taking about two years to complete the series.

My main objective was to create a DVD series which put the student into the pilot's seat. There is very little footage of me talking - most of the shots are either air-to-air or taken from the student's point of view. I believe this is one of the reasons the DVDs have been so successful. You actually get to see exactly what the student pilot sees during each lesson.

I used a Sony Xacti High Def Camera, a Panasonic High Def Camera and a High Def Action Cam mounted to the inside of the aircraft cabin looking out the front. I sat in the instructor's seat and leaned as far to the right as I could, so my body and head were hardly visible and not distracting during the lesson.

We also filmed many shots air-to-air and from the ground-to-air to make sure each lesson was visually effective.

The biggest problem I faced was recording clear sound. I had purchased an adaptor which fed the sound from the headsets directly to the camera microphone, but the noise was heavily distorted. I tried to clean up the sound in post production, without much success. One of my students suggested I use a lapel microphone linked to my camera and place the microphone directly into the earpiece of my headset. I was blown away with the sound quality using this method and impressed with how simple it was (thanks Matt). Once I had a way of recording good sound I went back and re-shot about three months' worth of footage.

The hardest thing about instructing using just a camera (and with no student in the left seat) is the lack of feedback from the student. It took me a while to develop an instructional patter which sounded natural and realistic.

The other issue was lighting. I filmed most of the sequences around midday because, in the late afternoon or early morning, the sun was too close to the horizon and too harsh in the cockpit. The conditions also had to be smooth because turbulence made it impossible to film a clear and accurate horizon. This was one of the reasons the series took so long to film. I also had to create a pre-flight briefing for every lesson. This also took considerable time because I had to create all the graphics myself.

Once filming was completed, the editing and sound post production took another eighteen months because I was also building and operating two flying schools at the time.

I made the mistake of filming too much. I had about twenty hours of footage at the end and it had to condense into about three or four hours for the final product. While the production quality is not quite up there with 35mm film, I believe the content and how it is filmed is what separates this product from most learn-to-fly DVDs.

I make it very clear in the DVDs that, while it's important to stick to the flight syllabus, every instructor and chief pilot has their own teaching techniques. The DVDs are simply a tool to assist both the instructor and the student. The intention was never to replace quality flight instruction, but enhance it.

The rewarding part is receiving phone calls from students who thank me for creating the DVDs because it helped them complete their flight training. I also sell a lot of them to pilots who may not have flown for a while or want to brush up on their emergency procedures.

I love flying and teaching and I loved the process of creating these DVDs. I'm currently working on my next teaching aid project, set for release some time next year and look forward to sharing the next instalment with fellow pilots and students.

To the GoFly instructors and the many other pilots who assisted me to make the series, I want to say a huge thank you.

members' market

2671 JABIRU SP 500/6 19-3717

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Level 2 owned and maintained. 912S 100hp Rotax 780 hours. In flight adjust prop, KT79 transponder, 2X VHF radios Lightspeed ANR headsets, carb heat, AH (Vac) Garmin 196 GPS, Man pressure, ASI, ALT, CHT, plus heaps more $55,000 no GST for quick sale Phone 0419 348 288 or pbugg@onthenet.com.au

3230 JABIRU

2008 model factory built, Sensinich prop, option 2 panel with additional 6 channels EGT and CHT digital display. Currently 720 hrs, impressive performer all AD's up to date... mechanically A1 couple of minor scratches here and there on the paint. $70000.00 ono, contact Chad for more info Mob 0405 339 858

3238 AIRBORNE WINDSPORTS

2007 XT 912 CRUZE wing, TT 190 hrs, helmets & headsets, Micro-air radio. Roll around trolley system for easy movement - wing UP or Down. ALWAYS hangared ! - never dismantled. All in excellent condition. Price $39,500 Ph 0416 041 007 for more details. Near Taree NSW

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Airborne Microlight XT tourer trike, Rotax 912, 4 stroke engine, Streak 3 wing, Microair M760 dual comms radio, large windscreen, log book, manuals, registered RA-Aus til 27/9/2014, always hangared, always privately owned, excellent condition, lots of extras. $34,900. Phone 0429 619 987 Email flblainey@gmail.com

3301 SAVANNAH - STOL

Rotax 912 80hp. DUC bipala prop. Slats fitted. Has extra instruments and new MGL trans and coms system fitted. King transponder. wheel spats. Fully maintained and never had an accident. Ideal aircraft for low hours pilot. Always hangered. $45,000 Situated at Mandurah, contact Garth at garth.lb@bigpond.com or 0409 599 845.

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TT 800hrs A & E as at 01.06.14, long wing with winglets & vortex generators. Excellent STOL performance. Cruise 95-100 knots @ 13 lph. Electric T & B, strobe, Garmin aera 500 GPS. Spare prop. Always hangared. Sth Aust. phone John on 0400 865 868. $34,000.

3425 JABIRU

Very nice aircraft great endurance easy to fly lots of room. Working too much not enough time to fly. All work done by level two. $70000.00 call 0411 123 669 to find out how this can be yours.

3428 JABIRU J230C

Great aircraft latest engine updates completed, too much work not enough time fly. New prop no accidents great touring aircraft, mains spats not shown in pic. $75k 0411 123 669 I'm also interested in share holders the aircraft is located at Northam WA. Min two share holders $25k.

3432 JABIRU LSA55

For Sale Jabiru LSA55/3J One owner , always hangered 1400 hours TT . 2.2 solid lifter engine , Garmin 195 Micro Air radio & transponder , fuel flow , landing lights , 85 litres fuel , cruise 105 kts 13 litres . $31000 Contact Steve Lenne 0428 732 267

3487 JABIRU SPT-6 TAILDRAGGGER

New Jabiru SPT-6 Taildragger, TT 30 hrs, New 3.3 engine, 85 litre tank, STD Jabiru dash,Gloss white ready for your decals. One of only four Jab 6cyl taildraggers. Goes like a rocket, Solo ROC 1800'/min, 125 kts @ 2700 RPM. YBNS airport. $49,000. Phone Martin 0412 617 110

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3504 JABIRU J 250

Jabiru J 250 Reluctant sale. Good as new with only 80 hours TTIS. 10/10 inside and out, comes with spares and David Clark NC Headsets, GPS and many extras, needs to go to a good home, $65k or best offer. Phone Anthony on 0407 804 503

3509 AIRBORNE 912 TOURER

AIRBORNE XT 912 Tourer 2007 model 595 hrs Streak 3 wing excellent condition Microair 760 VHF radio, helmets with Lynx headsets/intercom Punkinhead covers full service history RA-Aus reg exp May 2015 $34,000 Email: kenj@jelfor.com.au Phone 0412 512 457

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3510 JABIRU J160-C

Jabiru J160-C 24-5111 factory built in very good condition, always hangared at Bathurst. TT448 hours $52,000 negotaible Phone: 0402 497 671 Email: airsurv@bigpond.com

3512 ROTAX E TYPE GEARBOX + STARTER

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Corby Starlet Total Hours: 346 Engine Hours: 346 Rego: 28-1976 Price: Make me an offer Posted: 21 Jul 2013 Mosler 1835 cc motor 65 H.P. injector throttle body has ICOM VHF maintenance log always hangared delight to fly located Serpentine W.A. Tony 0433 337 733 or tony.mitchell1943@bigpond.com

3551 JABIRU 230D

Jabiru 230D, '09 Factory TTIS360hrs. Reg8/14, own hangar, immac as new, L2 LAME maint, Redleather, EFISD100, AVMAP EKP IV GPS, 2axis AP, MicroairVHF & Xponder, remote ext plug, MP3 music, full covers nose to tail, wing strobes, all updates, new prop, rotors & pads, MLG wheel bearings, many spares. $90,000 incl GST, 0419 555 726

3552 JABIRU J230-D 24-5490

Factory built 2008, Airframe & engine 94hrs, Maintained every 25hrs, Nil accidents, Analogue instruments, Icom IC-200 radio, Garmin GTZ-320a transponder, Booster seats, Sensenich prop, Garmin 295 GPS. Always hangared & runs great. Contact Kevin: 02 4283 2671 or 0408 427 458 Email: kaybee@exemail.com.au $85,000

3554 THATCHER CX4

THATCHER CX4, - single place, completed May 2012. Second of type to fly in Aus, 1915CC VW engine, starter, alt. magneto & secondary secondary ignition, sweetapple prop, tinted sliding canopy, disc brakes, strobe, strong undercarriage, full castoring tailwheel, great plane to fly, $26K Phone Kevin 0448 856 983 Brisbane (No texts please).

3561 AUSFLIGHT DRIFTER W/B CERTIFIED

Ausflight Drifter w/b factory, 582 bluehead oil injected long range tanks radio eng 145 hrs good cond easy to fly contact Lindsay .Email: boydl@iinet.net.au Phone: 0414 586 255 $14,000

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3603 AIRBORNE XT TUNDRA 912 S3

2008, 199 hrs Always hangered Excellent condition Skydat GX2 Two helmets/headsets Microair transceiver Tall windscreen Maintenance log Reg. 26/03/15 Extras incl: Custom heavy duty trailer Heavy duty covers All cross-country bags Training bars $40,000. Test flight avail. w/qualified instructor. Contact Geoff 0409 913 858.

3631 CTSW

Simply the BEST CTsw available with many extras (e-mail for details) 120 kt cruise Amazing Visibility 7+hours endurance, Auto Pilot,Transponder and BRS just serviced to 2019 Completed its MAJOR 500 hrly inspection with LED Nav Lights being replaced so no real expenses looming- they've all been covered. peter@simplyspecs.com.au Price: $90,000

3637 KR2S

Certified Aeropower VW with dual ignition and Sweetapple Prop. Engine/airframe TT 370. Built 2005 and UL registered. Very economical 120kts at 12 L/hr (50L tank). Good condition, always hangared. Airmap 1000 GPS. Bellyboard (flap) fitted. Can't fit the family so must go. Located WA. $29000 ono. 0447180958.

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19-4103, Avalon winner 2007. Aircraft in excellent condition, always hangared. TT440 hrs serviced every 25 hrs - Mircoair radio. Garmin 296 and 95 GPS. Low fuel warning light 2strobes, manual flaps NIL accidents. $65,000 ono. Phone: Bevan 0428 536 338 Email: bevanlane@bigpond.com

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Immaculate condition factory built October 2006, 560 TT engine and airframe. Well equipped Dynon D10A, Microair transponder and radio, PCAS, Trio autopilot, Garmin pilot 3, cabin covers and more. Always hangared, regular maintenance and nil accidents. One owner Jabiru and never used for training. Contact: theo@graftedvines.com.au Mob: 0418 805204. Located S.A. $47,000 + GST

3662 CLASSIC SAVANNAH VG AIRFAME KIT

Classic Savannah VG Airframe Kit. New, complete and still in box - has not been unpacked. $25,000. Call 0419 215 514

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Cessna 120, 24-8085, 2 seat, Cont 100hp, engine to run approx. 1300hrs, dual coms, transponder, VFR instruments, always hangared, cruise 95kt @ 20lph, Avgas/Mogas, 45kg luggage, 4 point harness, 100 hourly due 07/14, int/ext very good. Suitable for training, Located East Gippsland, $40000. ono Phone David 0419 503 157

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3735 NORTHERN RIVERS NSW.

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3776 SAPPHIRE

Sapphire 19 3594. 385 hours, 447 Rotex, 3 stage flaps, spats, Microair radio, new paint job, enclosed cockpit, 9 LPH, cruse 80 knots, 60 litre wing tanks. Always hangered,; currently hangered at Bendigo Victoria. $16.000. Phone Ron 0414 594 022.

3786 JABIRU SP470

Jabiru SP470 Reg 19-3739. 550 hrs Engine and AF. Full height rudder fitted.Wheel Spats included. Reluctant sale.Asking $35k. Please phone Eddie for more information on 0401006506 or Email eddiemar2133@gmail.com

3787 TERRIER 100

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3789 JABIRU 230D

Exceptional condition. One owner. Private use only. Factory built. Meticulously maintained by owner, LAME and Level 3. Always hangared. Nil accidents or incidents. TT400 hours engine and airframe. Option 2 panel. VHF, Transponder, Garmin 296. Located Townsville area. $75,000. Phone John 0414 947 530.

3796 JABIRU J120

Factory built March 2011, TT 80 hrs, always hangered (Caloundra). Immaculate presentation, standard instruments, elec flaps, Garmin 500, PLB 406 GME, Headsets inc. Pilot 6' 2" - 95kg - easy fit. $47,500. Call Simon Brown - 0411 833 804.

3807 SPIRIT KIT

WAC Spirit E-LSA Quick Build Kit. All metal work completed by factory. Requires engine/prop, wiring, upholstery and instruments. Has engine mount for Rotax 912/914. Adjustable seats, Twin stick, Electric Flaps. Stall 31Kts Cruise 100Kts. Design weight 750Kg. 135L fuel. Get flying soon. $42,000. Phone 0418 157 044 More pictures online.

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Sonerai 2L 28-3043. 128.1 hours on air frame, 74.1 hours on engine and prop, neat and tidy plane, always hangered, Rotec carby, 4 into 1 exhaust , rv7 tail wheel 80hp Great Plains engine, eye catching paint work. 130kt cruise @ 15Lph $35,000 Phone John 0422 854 04 l

3815 SAVANNAH VG MODEL

3 Axis (UL) Build Year: 2005 Total Hours: 480 Engine Hours: 480 Rego: 194405 Price: $48000 STOL, always hangered and now at Cessnock, kool prop, 100hp rotax 912, tundra tyres, observer doors, 8 hours fuel, landing light, gps, radio, intercom, Tom Grierson lern2fly@hotmail.com 0419 414 031

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RV3B 3B Wing A/F 223 hours - electric flaps & trim Lycoming 0-360 engine -3 blade catto prop -160 knots cruise @ 2350 rpm TOTAL PERFORMANCE phone 0409 875 926 keneyearsrv4@bigpond.com

3826 JABIRU FOR SALE

JABIRU J230C 2006, White. Factory TT 327 hrs, good condition. Garmen GPS, transponder & VHF $60,000 Hanger - Insulated 12m X 12m at Gawler SA, $35, 000 Phone 0408 831 888

3831 JABIRU SK

Like new - only 185 hours TT, 2.2 litre. Serviced and maintained by LAME. Alway hangered. Nil accident. Paint work 9/10. Fuel flow/usage gauge. Sigtronics intercom. Icom A200 radio. Located at Moorabbin. $35,000 Contact Ross +61 4 2839 4598

3847 JABIRU SP 500

Total hours 420, 2200 engine solid lifters, new pistons, rings, through bolts, 85 l tank, Icom 200 radio, GME UHF radio, Lowrance GPS, turn and slip, fuel flow gauge, 2 prs Lightspeed 20xl ANR headsets, large rudder, upgraded undercarriage, always hangared, 100 kts cruise. $40,000. Narrogin WA. Phone (08) 9881 4924 or 0400 014 924

3857 JABIRU J160 19-4265

Airframe 1042hrs, Engine 1254hrs, 252hrs since full Top Overhaul. Standard panel plus electric T&B, VSI, fuel guage, 85Ltr Tank, 2 Head Sets, Gamin 12 GPS. Been all over Australia never let us down, Always hangared no prangs. Medical reasons for Sale. Asking $37500. Mildura. Phone Geoff 0488 241 181

3865 FOR SALE JABIRU J200

Airframe TT520 hours, Factory rebuilt Solid Lifter Engine102 Hours. Recent Jabiru Repaint, Factory Service. GA Panel, Analog instruments, Microair Radio, 2XGPS,Total Fuel 140Litres. Strobe Lights, external power, Cold Start Adaptor, spare Prop. Lovely plane, cruise at 118kts at 21Litres, Heated Cabin. Located Dubbo, $72,000ono Phone Jeff, 0418 843 954

3869 JABIRU J160

J160 19-4699 L2 built and maintained. This aircraft is in great condition and is fitted with MGL Stratomas-tor Extreme EFIS, Microair 760 radio and basic instruments. The aircraft can be inspected at West Sale Aerodrome. Reduced to $42,000. Contact Daryl 0466 925 474, dghooke@gmail.com

3875 J430 JABIRU

Jabiru J430. t/t 540 hrs top end a/h 40 hrs ago 2006 and flies like new.3blade,fuel flow meter, UHF,can deregister to raa, vert compass . lot of extras, $68,000.00 phone 0428826551 or arrandale2@ bigpond.com

3880 SUIT NEW TRIKE BUYER

Airborne Microlight 2011 XT912 Tundra TT105 hours. Ballistic Chute fitted.Streak3 wing never been folded always been hangared.Microair 760 Radio. Two headsets Lynx intercom and helmets. Garmin 196 GPS Punkin Head full covers and stone guard. Log books RAA Registered.Genuine reason for selling. Inspection Invited. $55,000. ono. Ph 0428 456 728

3908 X AIR F

X air f 19-3276 TT194 hrs Eng 54 hrs Rotax 618, 3 blade prop, just reweighted, usual instruments, microair radio 2 x headsets, garmin 96C Gps, ELB, reg. to 3/15 $12,000 Phone John (03) 9746 1010 or 0408 351 072

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(50 words maximum - text will be edited when it exceeds maximum limit)

TEXT AND PHOTO $30/month

3912 JABIRU 200

J200 solid lifter 350 hrs 3 blade prop power flaps Matco brakes garmin gps and much more. Great cross country aircraft. Best offer 0249486788. Bobbaza@hotmail.com.

3926 MAGNIFICENT REVO 912 100HP

Recognised as the most technically advanced trike in the world, this Revo 912 has every conceivable extra. Only 81 hrs always hangared and LAME serviced at Moruya airport. At $75,000 save $20k on replacement cost. Also custom built aluminium trike trailer 7 metre internal $22,000. Email: gary@eldering.net.au Phone mobile: 0411 550 280

3933 TYPHOON TOURER

Reluctant Sale, Must go, new project already underway. This little plane is easy to fly and capable of 90kts cruise. 62 hours on engine and airframe . Reliable 100hp VW engine reduction drive. New Bolly prop. Microair radio, good instruments plus more . $39,500 ONO Ph Peter 0412 595252

3934 KESTREL AND TRAILER

Lee Kestrel registration 10-1364 with new skins, Sweetapple prop, wheels, U/C springs, instrument panel and wiring. Electric start Rotax 503 with 549 hours plus VHF radio and headset. Enclosed trailer with current registration includes a winch. Asking $11,000 or reasonable offer. Location Sydney. Phone or SMS Tony 0412 285 828, Email: zodiacsolar@ gmail.com.

3935 WRECKING SKYFOX GAZELLE

Wrecking Skyfox Gazelle. Fully reconditioned engine, full life, aeropower 1800cc engine, Hear running in airframe, Mode C transponder. Bendix King Flip Flop Radio Instruments, All parts available. Contact O Walker (02) 6286 2479 or 0413 785 265

3937 JABIRU TAILDRAGGER

Six cylinder solid lifter engine with fine finned heads. Fitted with basic instruments, Garmin 196, Card Compass, Microair M720 radio, TruTrak auto pilot, Garmin GTX327 Transponder. 85lt tank and three bladed ground adjustable propeller. Inspect at West Sale Aerodrome (YWSL) $45K, offers considered. Ph Daryl on 0466 925 474 or dghooke@gmail.com

3941 HANGAR FOR SALE

Gawler/SA Lockable, easy access to runways and facilities. Insulated 12m X 12m Row C.11 $35,000. Robert Rose Phone: 0408 831 888 or Email: rebecca@rosechiro.com.au

3942 VP1A VOLKSPLANE

VP1A Volksplane. Total hours only 1143, 21 hours since engine rebuild. Registration number 19-0484, Full flying tail, enclosed cockpit. Only using around10 litres per hour, ICOM radio and GPS fitted in cockpit. Thompson Propeller. Well maintained overall and ready to fly. Only $8500 o.n.o. For details phone Harry 0412 426 581

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Rotorway F162 Helicopter Kit Complete. 2 Seat Ultralight Rota-blade Aircraft Selling due to other commitments. Cost New $113,000.00 Sell $45000.00 will consider swap for fixed wind aircraft. Minor works started. This kit is a 51 percent kit very complete with step by step manuals plus videos. Phone 0407 851 963 Email: kymnicholson@westnet.com.au

3946 SAVANNAH

Rotax 912s 100hp TTIS 390hrs. New 3 blade warpdrive prop. Tundra undercarriage.Long range tanks 7 hours endurancce. 560kg MTOW.L2Maintained. Steam gauges + electric turn & bank. Garmin GPS 196.Xcom radio intercom & headsets.Nil accidents.Always hangered.All books & manuals. Excellent condition.Euroa Victoria. Ph Joe 0427941072 $50.000.

3947 HKS POWERED BOORABEE

Reliable and easy to fly, 70 knts cruise using 11 ltrs/hr. 90 ltrs fuel in wings. Is 2 seater but rear seat only for small person. Very reliable and economical HKS 700E 4 stroke. Registered till Dec.2014. Asking $20,000 ono Ph. 0407 502 782

3948 WANTED DEAD OR ALIVE

Wanted sadler vampire in any condition with or without trailer willing to neg on price. Phone Max Steel 0421 376 512

3950 GAZELLE CA25N

Bought new 1997, always hangared, brand new Rotax 912-A2, gearbox, prop and workshop manual. Bright yellow condiTION, MAINTAINED BY LAME/L2. Pleasure to fly, affordable fun flying. Good for 20 knot Xwind. Can be flown into CTA with appropriate pilot qualifications. View 24-3505 at YBTH $45,750.00. Call/sms Mike Faine 0427 406 521

3952 RANS S-7S COURIER

Twice Natfly Concours & Best Fabric; Rotax 912ULS, Airmaster C/S 3 blade prop; LAME built; corrosion inhibited frame; acrylic windscreen; "Aerothane" finish; wingtip strobe nav lights; dual controls (removable); ferry fuel system; Garmin SL40 VHF (ICS); Garmin GTX 327 transponder; Garmin 296 colour GPS; electric trim; builders log (www.mykitlog.com). $85,000 Contact Ken Edwards kenedwardsqld@gmail.com Phone: 0438 178 869

3953 SONEX 3300

Sonex taildragger, Jabiru 3300. For sale by builder 145hrs TT airframe and engine, First flight 2010. Performance with economy, Cruises 130kts @ 2700rpm 19lph. Easily removable 32 litre aux fuel tank which increases range to 550nm with reserve. Microair radio. Excellent condition and build quality. Always hangered. Located NSW. Steve 0434 727 152

3956 RANS COYOTE II S6ES

246 airframe and 86 engine (Rotax 582) hours. L2 maintained with all recent history. Annual airworthy in March 2014. Registered to March 2015. ICA 210 radio and King transponder fitted. ZEON MRX PCAS. Portable Garmin GPS loaded with Worldmap. Original construction manual. Registered trailer, extras. Phone Jeff 0405 569 205. email govo49@hotmail.com.

3959 SKYFOX TAIL DRAGGER

Skyfox ca 21 tail dragger , totally rebuilt aeropower less than 75 hrs ago, duel ig, sweetApple prop, 635 hrs total, stitts fabric, good paint, registered , all ads current, $22000, $ 24500 with 3 yr old multy purpose tandem trailer for plane, 0455 596 199 christamarmc@gmail.com

3961 TECNAM P92

24-3777 Tecnam P92 Total Engine and frame 295hrs. Color GPS 96ltr tanks Transponder Fuel flow meter A/H and Constant speed prop $85000 firm contact Vin Martin 0411 130 643 or 0412 566 019 no texts please

3964 VANS RV12 KIT

Vans RV 12 kit. Ready to assemble. Includes all kit components except for engine and avionics kits. Includes interior trim and wheel fairing kits Located within 1 hours drive of Melbourne. Price is negotiable. Don't wait 6 months for delivery, start now. Phone: 0427 053 941

3965 TIGER MOTH DH82A

Tiger Moth 1941, Charter Cat Australian Made Beauty As at 23rd March 2014 Airframe 2949.7 TT 1,097 TR on motor,100hrly carried out Feb 2014 Recovered 2005 by Antique Aircraft Restorations Major inspection 2011/12 Beautiful Condition $93,000 inc GST Serious offers may be considered contact Richard Email: richard@firststepresources.com or Phone: 0425 896 992

3968 LIGHTWING GR 582 FOR SALE

Lightwing GR 582 $26,000 Factory built so can be used for training. Grand champion 95-25 class at Natfly in 2006. Excellent condition - always kept in a hangar. Only had two owners. Many extras. Will deliver Contact Bob Burns for further details Phone Mob: 0412 041 701

3973 582 EDGE X TRIKE

This is a golden oldie,still goes well with streak wing ,$8000 also have 25hr eng to go with it at $3000. you can,t go wrong fly away today with spare engine .all prices neg . Eddie 0401 006 506

3976 SKYRANGER V-MAX $43,000 ONO

149 hours engine/airframe. Rotax 912 ULS 100 HP. Glass and analogue gauges. Electric Carby Heat. Bolly IFA prop. BRS parachute installed 2012. Zaon Air-Traffic Avoidance system. Alpha Systems AOA meter. Recent 100hour/12month service and under-carriage overhaul. SkyRanger engine mounting upgrade. 90L fuel-tank. Swift wings. Always hangared. 0414496522 David.

3977 FLOAT TRIKE

Outback 912 float trike,35hrs suit new buyer.Comes with dual wheeled tilt trailer and launch and retrieval dolly with winch.Full trailer covers .Change over frame for wheeled flying.CASA primary certified.Great colours.Will separate trailer and floats if You already have own base and wing.Fun to fly, $80,000. Phone: John 0419 793 877Email: tangojohn@hotmail.com.

3987 HORNET STOL

Hornet STOL. Total hours 990. Engine hours 675. Built 2009. Rotax 912 ULS. Garmin GPS. UHF/VHF plus more. Phone Andrew for more information on 0427 953 983 or email burtundy@bigpond.com $60,000

3988 SKYFOX GAZELLE

1998 Factory Built, TT1600hrs, fully maintained iaw Skyfox M/manual, RAA tec/manual and AD's. Analogue panel, vhf, uhf, int/com, gps, strobe, and light. Solid performer always hangared, located Benalla. Asking $27,000 contact Ken 03357627385 or 0458 011 233

3990 AIRBORNE EDGE X

Excellent condition. 150 hrs base & Streak 11 wing. Tundra wheel kit fitted. Radio 2 helmets. Full covers. Training bars & Bar Mitts. Custom Trailer. $20,000. Shipping container- fits wing in set up on trolly + base and room for everything else. $2,000. Hartley NSW. Terry- 0438 574 228

3991 JABIRU LSA 55/3J

Factory built great aircraft to fly always housed in hangar, engine well maintained with all required updates done 135 hrs on engine and 604 on airframe. Lambswool sear covers, full dash with extra instruments. phone John 0428 727 152or email: johniep@bigpond.com.au $37,500.00

3992 KR2-S

Speed with economy, plan on 110kts @15 lph.222 hrs on air frame.Jabiru 80 hp solid lifter engine has EIS with full sensor suite and electric carby heater Instruments include GPS & autopilot.reason for sale another project.Comes with 1 year free hangar rent @ Cessnock or $1000 discount!Price $32000 O.N.O. phone 0418 439 620

3995 JABIRU 160C

Immaculate. As new, factory build, lame maintained, all AD's done,recent top end o/haul, also honed and new rings. Std panel, dual microair, transponder, fuel flow, aero 500 gps, headsets, covers, service report avail, leakdowns, compressions , perfect, deliver anywhere, looks and flys just beautifully. Phone Russ 0418 276 747

3996 JABIRU LSA

This Jabiru LSA is a factory built 2.2 model that has a new engine with little usage hours. It also features new cable, new undercarriage and J120 brakes. It's barely used and always in the hanger - in good condition. It comes with one spare propeller. $28,500 Contact David 0434 082 023

3998 SEAREY CLASSIC

Searey classic 2006 build, 19 8332 reg. second owner,,carbon fibre hull, Rotax 912 100 hp, TT 295 hours, analog instruments, micro air radio and transponder. Blue Mountains EFI. Electric retracts. Situated Wedderburn NSW. Live your dream! $55,000 Nash 0409 386 661 or Email hotndp@hotmail.com

3999 VARI EZE.

Vari. Eze reg198286 engine 0200. 800 hours to run. Radio analog instruments. Cruise 150 knts@ 24 lts hr or 110 knts @ 15 lts hr. Airframe 9/10 interior 7/10. Situated Wedderburn NSW. Steve 0425 221 271

4000 SAPPHIRE

SAPPHIRE 19 3866. 168hrs 503 Rotax, 3 stage flaps, 58lt wing tanks, cruise 80kt+. Always hangared, ICOM radio. Hangared at Lakes Entrance VIC. $21,000 ono. Ph Jack 0429 801 548 or 03 5156 4355

4002 AIRBORNE XT912 TUNDRA

Airborne XT912 Tundra,Brand NEW Arrow K wing, New Bolly Prop.A full inspection at Airborne and certified LSA.All Servicing done by L2,Trolley great for low hangers,Samsung 7"Tab with Oziexplorer &maps,Training bars,Landing light,Bar mitts,Engine cover,HGFA registered,396 hrs Always hangared, Awesome trike to fly in excellent condition.Dixons Creek Victoria.$38,500 Phone Steve 0419 879 340

4003 FLIGHT DESIGN CTLS

2011 build. TT 600 hrs. Rotax 912 100HP. Full Glass DYNON Skyview D1000 instruments. Garmin SL40 Radio. Garmin GTX330 Transponder. Garmin GPS MAP695. 2/3 Axis Auto Pilot. Constant Speed Prop. Strobe Lights. L2 maintained. 120 kts cruise. Excellent condition, always hangared. Located Gympie. $118,000 Call Eck 0488 338 895

4005 RV12

RV12, VH-XKH,25Hrs TT,Rotax912ULS,MTOW below 600kg,has AP,Transponder,lighting,interior lining,etc. All components new.Build by multiple RV builder and SAAA technical counsellor.Two pack paint all over white (put your own motif on) Hangared in Mittagong YMIG NSW. Asking $108.000.- no GST If you have any questions please contact me on: 0411 290 472 or 0248 844 143 or kahamer@bigpond.net.au

4006 J200 6CYL

Still the best Jabiru around. Only 300hr TT. TAS 120kts. 19.5Lt/Hr. Nil accidents.Multi awarded, best Jab Narromine, SAAA best homebuilt Cowra, best home built Jabiru factory award, multi awarded peoples choice.The aircraft has been hangared since new and has full service history. Immaculate condition ready to go. Selwyn 0429 368 081

4007 JABIRU J230

First flown 2011.Owned and cared for by L2.Dynon D10A and Dynon AP74,Garmin 495,EGT and VSI, Microair 760 and Calibrated transponder, Wing strobes and landing light,10 Ply Tyre sLeather interior and upholstery,Always Hangared,no damage to aircraft, needs engine.A Beautiful Plane to fly,lots of luggage room.Total time in service 320hrs.$82,000 Ono.Phone 0407 717 633

4008 KIT AIRCRAFT FOR SALE

Unfinished project. Featuring strut-braced high-wing, two-seats-in-side-by-side configuration in enclosed cockpit, fixed tricycle landing gear, single engine in tractor configuration. Aircraft is made from vacuum-molded composites with lightweight aluminium constructed wings. It has 8.7 m (28.5 ft) span wing and a unique zero time Jabiru 3.3 (120 horsepower) engine. Needs cabin assembly and fitout to complete. $20,000.00.ono Ph: 0417 710 440 email: robyn_rawson@yahoo.com.au

4009 ROTAX 912

Rotax 912 2009 (80hp). Completely unused looks like new. 3 Blade propellor, coolant radiator, oil cooler hoses, Rev counter altimeter VSI compass. Oil pressure guage, oil temp gauge (includes senders) volt meter hour meter strobe kit. Air Filters oil filters spark plugs. Sell as one lot $17,850 (02) 4928 2285

4010 X.AIR 3194

Rotax 503 engine - 428 hours TT. E/AF std instruments, Radio, landing lights. 3 blade brolga prop 60kt cruise. Looks Good, Flys great. Would trade cheaper single seat A/C. $13,000 phone Horsham VIC (03) 5382 4766

4011 JABIRU 160 D

As new, immaculate condition, always hangared, service every 20 hrs, New leather seats, Full Carpet, Microair Radio Package, New Sennheiser Headset, On board camera, Garmin GPS, Electric Flaps, Jumper lead kit. 135 l fuel tanks, New 10 ply tyres,Wheel Spats. Can Deliver. john@wholagan.com.au or phone 0419 485 525

4012 HANGERAGE - COROWA

Hangarage available Corowa Airport. Suit light aircraft. Good sealed runways, Avgas available. Contact Steve on 0429 328 053 or steve@corowaflying.com.au

4013 NIEUPORT 11 PROJECT

Fuselage tail plane and two lower wings already built Enough aircraft grade aluminium to complete upper wings. wheels and plans included.$500.00 Townsville NQ Phone Steve 0412 354 757

4016 QUICKSILVER GT400 10-1342

503DCDI 292Hrs A/F662Hrs. Dual EGT's, CHT's, & Tach's. Voltmeter. Hobbsmeter. Fully enclosed roomy cockpit. Long range tank. Oversize Lightwing wheels & tyres. IVO prop. Good condition. Flies straight. Docile & easy to land. Great STOL. Airframe & engine proven & reliable. All manuals. Always hangared (YCAB) $9500 feendene@bigpond.net.au (07) 3256 4047

4017 X-AIR BRAND NEW ZERO HOURS

NEW 582 Brand New X-Air Standard for sale Brand-new professionally built X-Air standard. Unstarted blue head Rotax 582 engine with oil injection and 3:1 E type gearbox, Bolly three blade propeller, all standard instrumentation including Ultralam fabric finish in yellow primary colour blue leading-edge. Contact Michael Coates Phone: 0418 168 665 Price: $33,000.00

4020 STRUT BRACED DRIFTER PROJECT

Strut braced drifter rebuild located in Brisbane, rolling chassis stage. Wing sails about 85%, two Rotax 582 short motors ready to rebuild. Full repaint of fuselage dark blue with white starburst pod. E-Type gearbox with brolga prop and spare blades. Run out of time to finish project, $10,000ono leeungermann@gmail.com 0412 650 668.

4021 SADLER VAMPIRE

Factory build by Skywise Ultralirht.447 Motor has been decoked, new rings ect. by Berd Flood Melbourne Mai 13. 6hrs. flying-time since. Cruses 80kts. and flays well. Will except any offer above $12,500 . That includes custom made trailer. g. remlein@hotmail.au or ring Gerry at (08) 8725 2586

4022 JABIRU 170C

Immaculate condition. LAME maintained. Standard Jabiru gauges and fit out. No accidents. Top end overhaul at 400 hrs. 1450TT on the frame 450 hrs tt on the engine. Was used as trainer then privately owned for the past 150 hrs. Aircraft comes with covers. John 0400 288 081

4023 WANTED
Damaged or written off Foxbat for parts. I will consider any condition. ph Tom 0419 476 677 or email planesmaker@gmail.com

4024 WANTED
Time-expired or accident damaged Rotax 912 or 912S or 914 Ph 0419 476 677 or email planesmaker@gmail.com

4025 FOR SALE OR SWAP


Cessna150h,engine and prop 300hrs to run, new battery,newpaint and interior,corrosion proofed,full panel, in very good condition, $20000, or would like to swap for a single seat supa pup with jabiru engine. Ph Graham Jones on 0427200640 or Email: grjones47@telstra.com

4026 AIRBORNE EDGE X MICROLIGHT


1998 Airborne Edge X Microlight. Rotax 582 2 stroke engine, 486 hrs. Streak wing, Vertex radio, intercom, headsets, helmets, wing covers, trike base covers. Hangared Coffs Harbour. $ 14,000 ono. Ph Tom 0409537440 or email tpieper28@bigpond.com

4027 JABIRU J120-C


Owner is CFI and is about to retire therefore aeroplane is surplus to requirements. All reasonable offers considered. All AD's complied with This aircraft is hangared in Northam WA Fully maintained by L2 Extras include: 6 inch wheels cabin heater Transponder VSI Ph Steve Yeates 0416 654 428 $38500 ono

4028 QUICKSILVER GT500


2 seat in tandem GT 500 in good condition. New upholstery and tyres. 471 air frame hrs. Silver head 582 with 264 hrs. Fabric good condition. Flown regularly. Micro air 760Q radio with two headsets. Based at Dalby QLD. Always hangered. Dream to fly. Ph 0437 738 869. Email greg@braziertrailers.com.au

4032 BUILDERS NOTE-DISPOSAL SALE
Elderly enthusiast in nursing home selling assorted materials including several Alclad sheets, titanium sheet, tubing. Winton engine (Never started) , 4 bladed Bolly prop, 2 upholstered seats. C182 nose landing gear (24 hrs since overhaul) Located t Stanhope, VIC. Ring (07) 5524 2144 or Email: gwsb@yahoo.com.

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HAPPY LANDINGS

Flight of Solidarity by Brian Bigg

A 17 year old Queensland student has completed a solo flight around Australia (excluding Tasmania).

Alexander Fisher had intended to include Tasmania in his epic journey, but a series of low pressure systems and strong winds in June made the proposed trip across Bass Strait too dangerous. Local aviators advised him to avoid the flight, so he did.

Alexander called his journey 'Flight of Solidarity' and used it to raise awareness and money for the Royal Flying Doctor Service. A secondary objective was to motivate young people to more actively contribute to their communities. Alexander is currently studying year 12 at Iona College, Wynnum West in Brisbane.

He designed the project to combine his passion for flying with his desire to contribute to his community. Alexender is also a member of the Australian Air Force Cadets City of Redlands – Squadron 217.

For more information about Flight of Solidarity email: flightofsolidarity@outlook.com or website: www.flightofsolidarity.com.au.

>> Alexander Fisher, adventurer

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

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- Ground speed
- Track
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