SPORT PILOT

For recreational pilots
APRIL 2015 VOL 44 (4)

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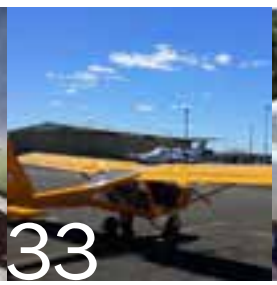

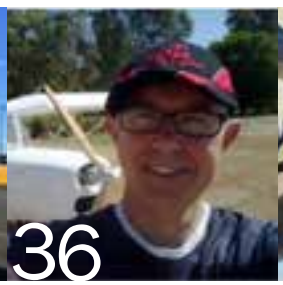

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President's Report

MICHAEL MONCK

An even better future

I'M approaching 12 months in the position of President and, looking back, I think we've achieved a great deal over the past year. Credit should be given to the board as well as the excellent team which runs the day-to-day activities.

Over the past couple of months, I have had the opportunity to meet with a reasonably large number of members (and I hope to meet more in coming months) and I have had a great deal of positive feedback. That's not to say we're doing things perfectly and there's nothing left to do. There's lots.

For a start the board has just approved a major overhaul to our IT systems. One of the biggest gripes we get from members – and we get it constantly – is that our website is difficult to navigate. This criticism has even gone as far as alleging the board is deliberately making it difficult to find things to hide information from members. I can assure you this is not the case.

Our website has been with us for a number of years and, when it was first implemented, it did its job quite well. The problem is that, like many aspects of our organisation, the website didn't evolve very well over time. This has led to it being confusing, cumbersome and often just plain annoying. Even our staff find it difficult to get information onto it. That said, our website is only one aspect of the modernisation project.

We are also implementing systems to make your life easier. Things such as changing your address will be simpler, renewing your membership or aircraft rego will be possible online and you'll be able to check the status of an aircraft you're about to fly.

The investment will be one of the single largest made by Recreational Aviation Australia and is daunting to many people. We have to consider though, that our world has changed around us and we can't afford to stand still.

One example is our safety system. Over the past couple of years our costs have risen as we have made progress in developing a new safety system and worked with flying schools and other bodies to roll it out. The safety benefits of such a system are obvious – the more information we get, the better we can manage the risks. The costs are equally obvious.

We've had to invest in people, hardware and systems to get it all up and running. The cost of this is well north of $100k per year. The board decision some years ago to do this has increased our cost base by a significant amount. If we are to stand by our commitment to safety, which we must, then we need to improve efficiencies elsewhere. And that's what this project is all about.

More information will be forthcoming over the next year as we make progress on it. I look forward to keeping our organisation the strongest sport aviation body in Australia and leading the way.

It doesn't, however, stop with IT systems. We are also exploring appropriate changes to our legal structure and constitution. In many ways our constitution is holding us back. It is based on the notion we are a local sporting club which runs meat raffles on weekends to raise funds. With near 10,000 members this could not be further from the truth.

Currently we have a board of 13 which, under the constitution, runs the organisation. We also have a team of around 15 or so full time employees who...well....also run the organisation. You can see the potential for confusion.

Our current structure lends itself to ambiguity because the board is empowered to get involved in the day-to-day running of the organisation in any ways it sees fit. We're not BHP or Telstra but it's worth considering that we are a multi-million dollar business in our own right and we need to run it accordingly. Imagine if the Chairman of BHP went into a mine and start telling the miners how to cut coal? It wouldn't work. But our current structure is based on the premise our board is there to do exactly that.

Before changing our constitution we need to consider the appropriate legal structure. We've had advice from governance experts that we're probably best to explore becoming a company limited by guarantee. We're now seeking professional legal advice on the best approach. Whatever we end up with, we have to be sure it represents the best interests of all our members.

While we have done some good things over the past year we'll do some greater things over the coming year. We have two of the most significant changes to our organisation coming up in the next twelve months so we will be working hard to get this right. We'll also be working on a range of other things to help members.

So during this period keep your eyes and ears open. We'll be making every effort to meet more members, get their opinions and set RA-Aus up for an even better future.

RA-AUS GENERAL MEETING 2015

Date: 2 May
Time: 10am to 12pm
Venue: Hunter Recreational Flying Club - Western Side of Cessnock A/Port, Grady Road, Pokolbin NSW 2320

All members are invited to attend. The President and CEO will provide a six month update. We will also discuss the six month financial report and projected financial picture for the forthcoming year.

The meeting will also be live webcast for all members to view or download on the RA-Aus YouTube channel. Details about the link will be sent to members in the electronic newsletter closer to the date.

The Executive will be on hand to answer questions at a forum following the meeting.

Calendar of events

4-5 APRIL

Back to Holbrook Fly-In

Holbrook Ultralight Club invites aircraft owners and pilots to Holbrook Airfield for the annual fly-in, now at Easter. This will be the 25th anniversary of the first AUF (RA-Aus) national fly-in held at Holbrook Airfield. Help us celebrate. Forums on Saturday afternoon and local fly-out Sunday morning. Fly-in dinner Saturday night and hot breakfast Sunday morning. Fly-in trophies awarded at the dinner. Underwing camping. Transport to and from Holbrook township for accommodation and fuel.
For more information, Bryan Gabriel (02) 6036 2601 or www.holbrookultralightclub.asn.au.

11 APRIL

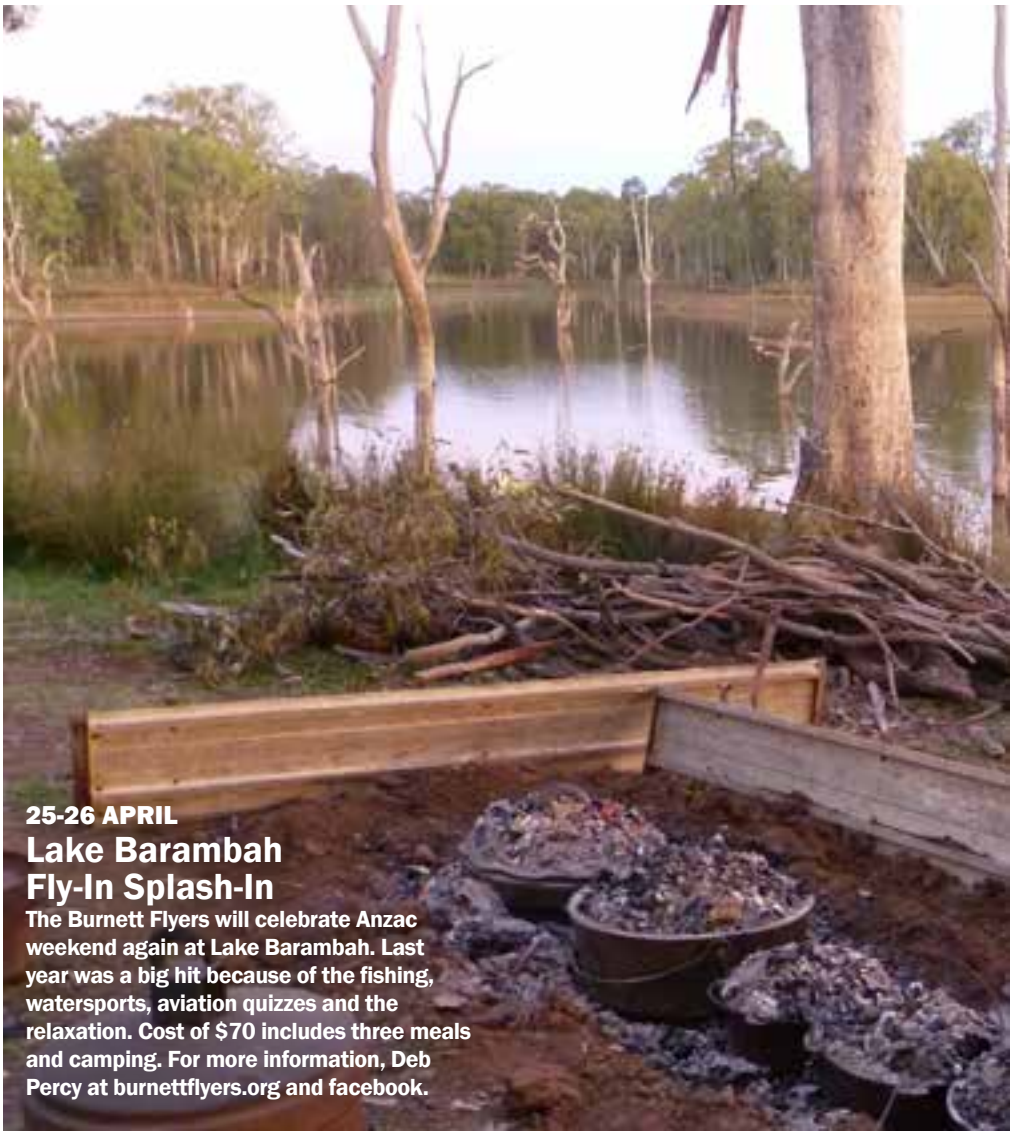
Valley View Summer Concert and Air Display

Valley View Farm, Northern Gully in WA. Air displays, aerobatics and fly pasts will celebrate the 100th anniversary of Gallipoli. Tickets $50. Pilots intending to fly in should contact the Air Show co-ordinator, Geoffrey McDougall 0400 760 778 or kelmac@macsland.net to receive arrival instructions. For more information, 0417 945 668 or www.valleyviewvintage.com.au.

12 APRIL

Barossa Airshow

The airshow / fly-in, now in its 11th year, is a family fun day with rides, amusements, static displays, stalls, food and wine. 10am-5pm. Includes aerobatic displays and helicopter joy flights. Fly in for the day or stay overnight. Anyone not familiar with the 600m strip at Rowland Flat should contact Steve Ahrens for a briefing. For more information, www.barossaairshow.com.au.



25-26 APRIL

Lake Barambah Fly-In Splash-In

The Burnett Flyers will celebrate Anzac weekend again at Lake Barambah. Last year was a big hit because of the fishing, watersports, aviation quizzes and the relaxation. Cost of $70 includes three meals and camping. For more information, Deb Percy at burnettflyers.org and facebook.

18 APRIL

Loxton Aero Club Fly-In

The theme this year is Women in Aviation. Guest Speaker for the hangar dinner will be iconic pilot, poet and performer, Marion McCall. The club's oldest member, Howard Hendrick (Lancaster pilot WW2) will present an afternoon session on his experiences. A trio of DH82s will be on display Saturday. TIFs, accommodation, food and refreshment. Electronic registration on the website http://loxtonaero.com/dinner.html (click on Biennial fly-in). This year we will again support Angel Flight (last fly-in we were able to give them almost $1,000). For more information, Kerrie Palamountain palark@tpg.com.au or http://loxtonaero.com.

Marion McCall

30 MAY

Watts Bridge All-In Fly-In

The Watts Bridge Airfield Open Day will celebrate the rich diversity of all forms of recreational aviation. Watts Bridge, in the Brisbane Valley, is the home of a wide range of aircraft. The All-In Fly-In is an all-day event with on-field catering, coffee and Avgas available. Entry is free with no landing fees. For more information, Richard Faint 0412 317 754 or www.wattsbridge.com.au.

12 SEPTEMBER

Wings over Warwick

Queensland Recreational Aircraft Assn incorporating Warwick Aero Club (www.qraa.info) invites pilots and enthusiasts to Warwick Aerodrome (YWCK). The strip is 1600m all bitumen with no landing fees (www.warwickaerodrome.com). Includes model plane display. Food and drinks available. For more information, Events co-ordinator Graham Hawthorne 0427 377 603, President Kelvin Hutchinson 0407 733 836 or Secretary Phil Goyne 0417 761 584.

22-24 MAY

Old Station Fly-In & Heritage Show

Raglan, Queensland. The fly-in will feature Australia's Red Bull Air Racing Champion, Matt Hall, and hopefully the ABC's Macca doing his Sunday morning radio program. There will be a welcome dinner Friday night. Saturday will feature a truck show, joy flights, vintage tractor pull, heritage machinery, children's entertainment, fashion parade and air displays. Proceeds go towards the Capricorn Helicopter Rescue Service.
For more information, Leonie (07) 4934 6562, leonie@creedgrazing.com.au or Ron 0408 346 536.

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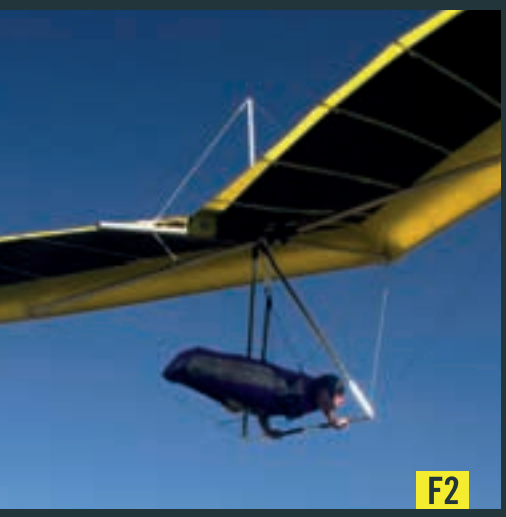

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LETTERS TO THE EDITOR

Licence or Certificate?

I thank the Editor for publishing my article 'Pilot Licence or Certificate?' (*Sport Pilot* December 2014) While I have no objection in principle to the disclaimer added by RA-Aus, I do not think I actually gave any advice to individuals. I did express some views distinctly contrary to official CASA and RA-Aus advice. But the disclaimer opens up another important issue.

It is inadequate for RA-Aus (or CASA) to simply say that they have 'a very different interpretation' of the Aviation Act, the Regulations and, in particular, CAO 95.55 (re the stated need for a licence holder to also have a Certificate) – and give no explanation. I have detailed those passages which I regard as the most relevant to this question and stated my interpretation and reasoning. I could be correct legally, or I may have missed or misinterpreted something and be wrong. Regardless, RA-Aus solicits money from the aviation community on the basis of its interpretation and refers to penalties of up to two years in jail for the lack of a Pilot Certificate. It is therefore long overdue for RA-Aus (and CASA) to publish and justify their interpretation of the Act which forms the basis for their position and to state where my interpretation is wrong or overridden.

The past and present coercive position held by RA-Aus regarding the necessity of membership for licenced pilots has alienated some potential members. It is analogous to a motoring organisation insisting that a motor vehicle licence will not suffice – that you must join or risk going to jail. Those organisations (like the namesake RAA or RACV) do very well, not by coercion, but by offering services. RA-Aus also offers good services – like insurance – with its membership and ultimately would benefit by dropping its claim that membership is always mandatory. In the long run, allowing licenced pilots to fly RA-Aus aircraft will encourage more pilots to do just that and lead naturally to increased membership.

Carl Nilsson

Another Licence view

I note Carl Nilsson's article 'Pilot Licence or Certificate' (*Sport Pilot* December 2104) which refers to a statement by the RA-Aus President, Michael Monck, in the August 2014 issue, to the effect that anybody flying an RA-Aus registered aircraft on a PPL but without also holding an RA-Aus Pilot Certificate, risks up to a two year jail term.

I wonder to which piece of legislation it is referring?

Certainly S20AB of the Civil Aviation Act 1988 says: Flying aircraft without licence etc. (1) A person must not perform any duty that is essential to the operation of an Australian aircraft during flight time unless: (a) the person holds a civil aviation authorisation that is in force and authorises the person to perform that duty; or (b) the person is authorised by or under the regulations to perform that duty without the civil aviation authorisation concerned. Penalty: Imprisonment for two years.

However, S3A of the same Act states: The main object of the Act is to establish a regulatory framework for maintaining, enhancing and promoting the safety of civil aviation, with particular emphasis on preventing aviation accidents and incidents.

So it would seem to me (although I am not a lawyer) that S20AB must be read in the context of S3A – i.e. the purpose of S20AB is safety.

So – assuming a pilot (a) holds a valid PPL and (b) is qualified on the aircraft type concerned – where is the safety issue?

S9 of the same Act states: CASA has the function of conducting the safety regulation of the following, in accordance with this Act and the regulations: (a) civil air operations in Australian territory; (b) the operation of Australian aircraft outside Australian territory; (b) ANZA activities in New Zealand authorised by Australian AOCs with ANZA privileges; by means that include the following: (c) developing and promulgating appropriate, clear and concise aviation safety standards; (d) developing effective enforcement strategies to secure compliance with aviation safety standards; (da) administering Part IV (about drug and alcohol management plans and testing); (e) issuing certificates, licences, registrations and permits.

The issuing of Certificates, licences etc is part of CASA's function in regulating the safety of civil air operations in Australian territory. CASA has no head of power in this regard other than to ensure safety.

The restrictions on RA-Aus Certificate holders in regard to controlled airspace make nonsense of any argument that a PPL is inferior to a RA-Aus Pilot Certificate; the question of currency on a specific type is a separate issue. Therefore, I rather suspect that any attempt to prosecute a holder of a valid PPL who was competent on the aircraft type, under S20AB, would be laughed out of court.

The General Conditions of Exemption (CAO 95.55.4) contain this statement: (b) the aeroplane must not be operated by a person as pilot in command unless the person holds a valid Pilot Certificate and, subject to the other conditions set out in this section, operates the aeroplane in accordance with the privileges and limitations of that Certificate.

The effect of this is that if the pilot holds a PPL, but not an RA-Aus Pilot Certificate, the exemptions specified in CAO 95.55.3 do not apply. This cannot reasonably be argued to be consistent with S9 of the Act; the colour of the piece of paper in the pilot's pocket has no physical affect whatsoever on the airworthiness of the aircraft. CASA has arguably acted in breach of S9 of the Act in making this stipulation. Provided the pilot observes the remainder of the conditions in CAO 95.55.4, there cannot be any safety issue.

CASA could presumably argue that because the exemptions in 95.55.3 do not apply if the pilot does not hold an RA-Aus Certificate, the pilot would, technically, be in breach of such matters as flying an aircraft that did not have a C of A or Maintenance Release (CAR 133 -50 penalty units) and of not carrying the required documents (CAR 139 – 10 penalty units) - (one penalty unit is currently worth $170).

However, in reality all this is not a safety issue, but a defence-of-turf issue; i.e. it affects RA-Aus' income. And that is really what all this is about.

Dafydd Llewellyn

From the CEO - *RA-Aus has stated its position on the matter of flying without a valid RA-Aus Pilot Certificate. That is, if we discover an RA-Aus registered aircraft is being piloted by someone in contravention of the relevant CAO the matter will be referred to CASA. By way of example, and as noted previously, CAO 95.55 s6.1b clearly states - the aeroplane must not be operated by a person as pilot in command unless the person holds a valid Pilot Certificate. The basis for our interpretation is that this clause operates wholly and independently of any other clause in the relevant Acts, regulations, orders, etc. and clearly requires the aircraft operator to hold a valid Pilot Certificate. While an exemption has been granted to s20AB of the Act to those who do not hold a licence there has been no exemption of s6.1b of the CAO granted to those who do.*

Regardless of whether a law is ludicrous or not, the choice to operate in accordance with it rests with the individual concerned. Should anyone wish to test this in court RA-Aus advises them to seek independent and qualified legal advice.

Mixture control

I found the article on mixture control of great interest (*Sport Pilot* September 2014). I fly an Airborne Nanolight 2 stroke Polini plus an Airborne Outback with 503 Rotax.

Instruments include a CHT, plus a mixture O_2 sensor. In my case the O_2 sensor is used to monitor fuel/ air ratio at different sites from 4,000ft at Walcha to sea level at the coast.

The O_2 sensor unit is part of a unit produced by Super Tuner for go-carts with an array of LED's indicating mixture. Such an addition to the instruments is another method of knowing what is going on in the engine.

Maybe this could be easily incorporated into the (black box) being described. All petrol fuel injected cars now use O_2 sensors.

Great Magazine.
Brian Robertson

Dear CASA

Here is a copy of a letter I recently sent to the new Director of Air Safety at CASA, Mark Skidmore.
Norm Sanders

Dear Mr. Skidmore:

I didn't attend the Great Eastern Fly-In at Evans Head this year in spite of the fact that I live in nearby Byron Bay. Why? Like many other pilots, I had heard of the heavy-handed treatment meted out by CASA employees at the previous year's event. This situation is a clear indication of CASA's failure to enhance air safety through communication with the aviation sector.

I have been involved in aviation for the past 60 years. I was a control tower operator in the USAF during the Korean War. I hold a US Commercial Licence, a US Instructor's rating, an Australian PPL with recent Class 2 medical, a Glider Pilot's Licence from the GFA and a Pilot Certificate. I am the CFI of the Byron Gliding Club and hold GFA and RA-Aus maintenance certificates.

When I arrived in Australia in 1974 I expected to find a very active GA presence. After all, it is a big country and what better way to travel than by light aircraft? I was surprised to find that the GA sector was small, and according to pilots, harassed by over-zealous policing of regulations by aviation bureaucrats. Today, GA activity is even less, but the aviation bureaucrats are more numerous and just as intent on policing the ever increasing mass of regulations.

As a Senator in the Australian Parliament, I watched the passage of many laws. I quickly realised two things - You can't legislate common sense and laws breed like rabbits (but unlike rabbits, laws are never culled). In 1988 I had a hand in the establishment of the CAA to replace the DOT. It was an attempt to make the bureaucracy more responsive to the needs of the aviation community. It worked for a while, but the old guard regained control and CASA and Air Services were the result in 1995. Air Services turned out to be a good thing, but CASA is worse than ever.

In the US, I was used to flying under the control of the FAA. The FAA was set up to promote and regulate aviation. Like most American pilots, I found the FAA was reasonable in its approach and was considered a partner in aviation rather than an adversary. In Australia, I have never found a pilot with a good word to say about CASA. Fear of CASA repercussions is so bad I have heard pilots say that they would never declare an emergency unless both wings had fallen off.

Perhaps it is in the name, Civil Aviation Safety Authority. If the only aim is safety, then the obvious bureaucratic goal is to keep all aircraft on the ground.

CASA has a real public relations problem which is exacerbated by ramp checks at fly-ins. (The present unjustifiable attack on Jabiru engines isn't helping either.)

In the case of the Great Eastern Fly In, my aircraft is well maintained and completely documented. I have all the required equipment and navigation material. I am sure I could pass a CASA ramp check. Why didn't I go? Try this comparison:

Every time you go to a football game and park in the lot, you are confronted by a police officer who examines your car and all your papers. You may be given a ticket for anything at the whim of the cop. All this leaves a bad taste in your mouth and ruins your enjoyment of the game. Next time you go, you will take the bus.

From all accounts, my decision to stay away turned out to be a good one. All aircraft were subjected to ramp checks. I have heard tales that three pilots got large on-the-spot fines for improper registration. A gyrocopter pilot got an infraction for landing on the approach end of a runway which was being vacated by a Mustang far down at the other end. A pilot in a Drifter was hassled over not locking his stick (He took out his sparkplugs instead.) He managed to talk his way out of a fine, but it was a close thing. (Let's get real: is a terrorist likely to steal a Drifter to blow up Parliament House?) I can't personally verify any of these occurrences because I wasn't there, but the entire aviation community is ready to believe that they happened because of CASA's reputation. I doubt your field officers would admit to any of this if queried. CASA intimidated so many pilots at last year's fly-in that I'm told numbers of aircraft were markedly down this time. If the trend continues, organisers fear that the affair will become just another air show instead of the traditional fly-in.

It doesn't need to be this way. With rare exceptions, pilots are not suicidal or intent on murdering their passengers. All the regulations in the world can't replace common sense, good judgement, experience and training. Instead of intimidating pilots, CASA should strive to create an environment where all in the aviation community can work together for the betterment of air safety.

Fly ins are a great opportunity for pilots to get together to swap experiences and expand their knowledge. CASA could set up a tent full of material and approachable staff. If CASA attended fly-ins as a helpful resource base rather than as policemen, the goal of 'Safe Skies for All' would be reached far more quickly.

Sincerely,
Dr. Norman K. Sanders

***From the Ed -** After hearing from Norm, I queried CASA. Its official response was that two inspectors were at Evans Head, but no ramp checks were conducted and no fines issued. The CASA spokesman pointed out that if they had found an RA-Aus aircraft with rego issues, it would be referred to RA-Aus in the first instance. This comment has also been confirmed by the CEO.*

***From the CEO -** CASA has advised us that they carried out a number of ramp checks on RA-Aus aircraft at the Avalon Airshow. They found no issues. Well done to our members.*

Real experience

I read with great interest Professors Avius' article entitled 'Mirror, Mirror' (*Sport Pilot* November 2014) Well done to him/her and RA-Aus for this forthrightfulness.

And yes I have also seen pilots do what, at the time, I considered dubious practises, especially concerning the weather. So, on reading, I got to thinking - why did he/she do that? Just what were they thinking? Or were they thinking at all?

I recalled my own ab-initio and subsequent experiences and began to think that indeed something has changed over the past 50 years or so. When I was taught to fly we flew in whatever conditions existed on the day, subject to maintaining VMC.

Does this happen today? Or do flying schools shut down when the weather gets a bit questionable? My experience tends to suggest many do. So where does that leave the trainee? With no real experience. Lots of talk, yes, but did the trainee actually get to make the go-no go call? Did he/she get to see the situation and thus develop awareness and make what is indeed often, what I will call, a progressive assessment of the conditions?

I well recall a flight I made over Katoomba from Bankstown with my then relatively new wife. There was some cloud cover near the township with a north easterly stream operating. As we got closer, I became concerned and turned around. By the time we got back to Penrith (about five miles or so) the weather had closed in behind us. If we had proceeded, we would have been caught. A good decision yes, but totally subjective and fear based. So, when I started instructing I developed a more rational fact based assessment methodology, which seems to work quite well.

But in this instance do we need to take a look at ourselves and be a bit more pro-active setting the range of parameters involved with teaching people to fly?
John Lyon

Old register

The current RA-Aus register of aircraft is three years out of date. The database is only current up to January 31, 2012.

And it does not show the name of the aircraft owner. So even though it is the responsibility of a buyer to check the registration and ownership prior to purchase, this is not possible because RA-Aus refuses to disclose the name of the registered owner.

Supplying the name of the person who owns an aircraft is surely not disclosing personal private information.

If the RA-Aus can't supply basic information or even advise if an aircraft is registered or not to ensure I am making a valid purchase, then I have to question why am I paying membership fees.

The CEO did, however, agree to let me view the register of owners if I call into the office in Canberra but it is hard to believe the information is available there but not over the phone or by email. Unfortunately, information which is three years out of date wouldn't do me any good anyway.

Record keeping which is three years behind is unacceptable.
Rogin Taylor

From the CEO - *Rogin's experience is a timely reminder it is the aircraft buyer's responsibility to ensure they are satisfied with all aspects of the transaction. As with registration authorities ranging from cars and boats through to aircraft, including other self-administering organisations, RA-Aus does not validate the ownership of any aircraft on our register. Our registration certificates clearly contain the words "This is not a certificate of title" and RA-Aus does not have the ability or capacity to confirm ownership of an aircraft with any legal authority. In addition to this we would like to assure all members that the registration database is up to date and that, as Rogin has explained, we treat member privacy with the utmost importance. We will not pass on your private details to anyone without your permission. This includes information relating to aircraft you may operate. If a buyer requests such information, you are more than welcome to provide it including copies of current registration certificates, just as you would with the sale of a car or other vehicle. This is akin to the aforementioned authorities who also do not provide ownership information and will not pass on information with respect to current registration details.*

Dodgy ETAs

I'm a student pilot not yet up to cross country stage (that's one of the goals for 2015) however I have spent quite some time in the right hand seat on navs assisting with both paper and EFB. From this vantage point I've come to realise the value of an accurate ETA offered by an EFB. Over airports across NSW I've observed ETAs offered by radio differ from reality by five minutes or more, which makes traffic spotting tricky among descents, runway choices and BUMPFICH checks.
What if we all gave an accurate ETA based on GPS tracked groundspeed continuously calculated against our precise distance from the aerodrome? Makes sense to me.
Graham Moss

CASA critical

In regard the CASA article on Jabiru engines (*Sport Pilot* February 2015).

It should be critically noted that in the first paragraph, CASA defines its response as being to "apparently high and increasing engine-related problems".

In the fifth paragraph CASA refers to the "potentially heightened risk".

The key words here are "apparently" and "potentially" which are indicative of CASA's indecisive and unprofessional approach to this matter. This is illustrated clearly in that CASA has had ample time to address any and all the issues relating to identified design inadequacies of Jabiru engines, along with the maintenance of these engines, through the Airworthiness Directives mechanism set up and accepted in the industry for that purpose.

CASA that has failed the industry and their own charter and should be held to account.
Ray Carter

Meaningful stuff?

With reference to "Who and where are we? (*Sport Pilot* February 2015).

I am not usually much interested in statistical stuff however this article caught my eye.

At first glance, it would appear RA-Aus members are mostly based in outer urban and rural centres, that is until you add the numbers up.

NSW, for example, is reported to have 2,470 members in one section and in the next section, by area postal code, only 322 members.

The difference, a whopping 2,148 members, are from where?

It could be they are evenly spread over the many postal codes not mentioned or the bulk of them might just be in the Sydney Basin (covered by multiple postal codes).

I understand there will be area codes with statistically insignificant numbers, but if you are going to print this sort of stuff, it might be more meaningful to print a considered interpretation rather than meaningless statistics.
Sean Griffin

Clear calls

I just read the latest article by Professor Avius (*Sport Pilot* February 2015). The airfield I regularly fly from/to is the delightful Boonah, South East Queensland. Boonah can be a bit busy on beautiful flying days, with a very active gliding club, a flight training company and the ever-present Flying Talkers. In relation to the latter, I am or course referring to the Flying Tigers, who occasionally push their dusty aircraft from the hangar so the tiny creatures living in them will be encouraged to fly off to get away from the heat of the sun. Sometimes someone will even borrow the start cart to run the motor for a bit, and if I remember rightly, I think I saw someone do a circuit once.

Having said all of that (and am now SO looking forward to my next visit to the Tiger's clubhouse), the circuit at Boonah can be a handful at times. On one occasion (while approaching the airfield high, from the live side but high enough to be clear of traffic) I witnessed a GA aircraft call his turn onto downwind, not very long after an RA-Aus Tecnam had done the same thing. The GA pilot made a good call by saying he did not have the Tecnam in sight. From my position I could clearly see both aircraft and I considered there was a risk. My call was simply "Cessna XXX on downwind, the Tecnam is at your 12 o'clock low" – the reaction from both pilots was instantaneous. Both aircraft called "departing the circuit" and cleared each other easily. In reality I doubt the GA pilot would have continued on downwind without sighting the Tecnam, which at the time of my radio call would have been unsighted below the cowl of the Cessna.

Three aircraft close together, and with professional flying including radio calls, the outcome was spot on. One other point I would like to make about circuit flying is courtesy. If I am on downwind and I hear a call from the glider tug to say he has just turned downwind, I know he is higher, further out, and much faster than me – if I make my standard turn onto base I will undoubtedly cause him to go around. My call was "XXX this is Drifter 455, I'll extend my downwind and land as number two to you". The response of nothing other than a couple of mike clicks indicates to me that we both know what the plan is, and I know for certain that the gliding club guys will be most appreciative of my actions.
Dave Tonks

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).

The fleet of 3 RA-Aus aircraft travelling as support

FOXY LADIES FLY THE BATON

BY NATHALIE GOCHEL

THE idea was for a women's pilot relay around Australia to raise funds for the Cancer Council.

Members of the Australian Women Pilots Association organised the event, the first of its kind. 70 female pilots, AWPA and non-AWPA members, wanted to make a difference while sharing a passion for flying and promoting aviation as a career of choice for women.

The concept was simple - we all fly a leg, then hand the baton to the next aviatrix. The baton started its voyage at Avalon on March 2 and will arrive in Launceston on April 22 in time for the AWPA Annual Conference. A total distance of over 28,000km will be covered.

Most of us have been touched by cancer at some point during our lives. Some have had their own personal battles and many of us have lost loved ones to the disease.

This cause is close to my own heart. I lost my mother to cancer two years ago. So I decided to rally the Caboolture Recreational Flying School to the cause and asked Heather Haynes to come flying with me. I don't have my licence yet and needed a pilot! She accepted and little did I know we would inspire other female pilots at the airfield to join forces. Our group name became 'the Foxy Ladies'.

When we left for Bundaberg on March 8, we were a group of five planes, all with female crew. We had a great time and the legs were about two hours each. On our arrival in Bundaberg, the Aero Club welcomed us and offered us refreshments. They even opened the club just for us. Thank you for your support.

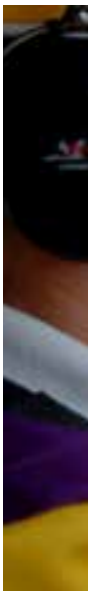
We then farewelled Danielle Joanne who was tasked with flying the baton to Mackay and we made our way back to Caboolture, proud and happy. Heather had her dad with her and I had my mom with me during the flights. We cannot bring them back, but we can make a difference and keep the ones who are still here longer.

I would like to extend an immense thank you to Peter Harlow from Foxbat Australia who donated $500 and to the Cancer Council in Queensland who donated merchandise to us on the day.

Also a big thank you to all of you who supported us and donated. The Foxy Ladies have so far raised over $3,615 and the relay overall has so far raised $15,072.

You can follow us on http://womenpilotsrelay.blogspot.com.au/p/links.html and https://www.facebook.com/WomenPilotsRelay

You can donate: http://foxbatpilot.com/2015/03/09/foxy-ladies-carry-the-baton.



FOXBAT OVER JUMBO

BY DAMIEN SKEELES

SUNDAY March 8 was an exciting day for aviation buffs in the Sydney area. Thousands of people gathered around the perimeter of Albion Park airfield, south of Wollongong, on a slightly overcast and hazy morning to see the famous Qantas 747-400 City of Canberra make an uncharacteristically short flight from Mascot, to be retired into the HARS collection.

Rather than risk the advertised traffic restrictions, road closures, congested parking and subsequent vying for a decent vantage spot at the perimeter, a couple of us Sydney Recreational Flying Club members decided it would be the perfect excuse to book a club aircraft and fly down instead!

We did note a timely advisory by RA-Aus that there would be a TRA in effect from SFC to 4,500ft and the airport would, to all intents and purposes, be closed so we planned to orbit overhead. We considered what a 747 would look like from a mile above and were fairly confident

Nathalie Gochel, Photographer Peter Pretorius and Heather Haynes holding the baton

The Foxy Ladies at Bundaberg

Heather Haynes at the controls with Bundaberg airport out the window

we'd still be able to see it.

So, after a 4am start, armed with a carefully marked VTC, DSLR and a thermos full of coffee approaching rocket-fuel strength, we prepped our yellow Foxbat in the beam of our car headlights, taxied as the red glow of the sun peeked above the horizon to the east and took off on The Oaks runway 18 in utterly calm conditions, bang on 7am.

Thirty minutes later, we arrived over YWOL to see crowds of people on the ground, but not a single other aircraft in the air.

We took position two miles south-east of the field at 4,700ft and the excitement built as the clock ticked down. Before long, on CTAF 127.3, Wollongong Ground announced "The 747 is due to depart in two minutes". We maintained our racetrack pattern and then: "The 747 has now departed Sydney".

A few minutes later, we spied the huge white body of VH-OJA six miles away, seemingly crawling along base leg, before a steep bank left revealed its huge wingspan and low speed.

Then: "Wollongong Traffic all stations, Oscar Juliet Alpha, Boeing Seven Forty Seven, on a five-mile final straight-in runway one six for a final landing, caution wake turbulence, all stations Wollongong Traffic".

We had a perfect view as she crossed the threshold, touched down and decelerated unbelievably quickly. I mused on the novelty of a Foxbat pilot admiring a 747 for its STOL capabilities.

We loitered a little longer to watch the pushback, then headed home after a pass over Kiama to watch the blowhole with a gorgeous day still ahead of us.

It was a historic day, a great experience – and I have since wondered how many ultralight pilots can claim to have flown over an airborne 747.

ONE GREAT MAGAZINE... TWO FORMATS

THE Board of RA-Aus made a decision in October to look at options to deliver *Sport Pilot* in different formats. The decision was centred on two key areas:
1) Offering a free digital alternative to members to aid in reducing some costs of production and also allow *Sport Pilot* to be available on a variety of platforms: PC, laptop, tablet and other mobile devices.
2) Giving members an option to purchase a subscription to a printed copy.

In recognition of the important role Flight Training Facilities (FTF) and aero clubs play, a decision was made to have complimentary printed copies delivered to all FTFs and clubs each month as a marketing and promotion tool to students and potential new members.

HOW WILL THIS AFFECT YOUR MEMBERSHIP?

A small change will apply to all membership types as we roll out the new digital edition of *Sport Pilot*. The change will only affect those members who would like a printed version. All members will have access to the free digital version.

If you would like a printed version of *Sport Pilot* you will need to subscribe before June 30. Updates and details on how to subscribe and the subscription fee will be communicated shortly.

FOR MAGAZINE SUBSCRIBERS ONLY (NON-MEMBERS)

Current magazine subscribers will continue to receive their printed copies until their subscription renewal is due. At that time you will need to decide on how you wish to continue your subscription. There will be a couple of options:
1) Re-subscribe to a printed version for a non-member fee;
2) We are exploring digital access subscriptions for a small fee to the RA-Aus website, which will include access to digital *Sport Pilot* and a range of other RA-Aus documents.

Members who do not subscribe to *Sport Pilot* (the printed version) by June 30 will no longer receive it in their letter box.

To aid with the transition we want to hear from you. We have created a short survey online at www.surveymonkey.com/s/8VWMM2Q and ask that you complete the survey by April 30.

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RA-AUS AT AVALON

BY EDITH RUTHERFORD

There was no shortage of recreational aircraft on display at Avalon's Australian International Airshow 2015

Photo: Andrew Westland

Damian Croatto, Peter Ryan and Jeff Cottrill love putting aerochutes on display every year

#RA-Aus had a big team on hand including Janelle Wayling, Jill Bailey, Kelly Stirton, Michael Linke and Maxine Milera

Caboolture's Trevor Mills flew the E.III Eindecker in the Heroes of the Sky battles

THERE was no shortage of recreational aircraft on display at Avalon's Australian International Airshow 2015.

Intermingled with massively impressive ADF displays and demonstrations were stands by local aero clubs such as Lethbridge, Geelong, Royal Victorian and others manned by well-known recreational aircraft suppliers such as Foxbat, Brumby and Tecnam.

This year's Avalon was ranked by the organisers and the best ever. Recreational aviation enthusiasts also called it a great event all round. For regular visitors to Avalon displays were easy to find. But several first timers commented that because our end of the flying industry was dwarfed by the big displays, next time it might be worth investing in some high and bright signage and markers to ensure everyone can find all the recreational aviation related displays.

The flight displays were awesome and drew crowds from opening day until the closing moments. The RA-Aus stand attracted about 3,000 visitors on the public days, which kept the staff busy. Imagine if just some of those dreamers decide to start learning to fly.

Recreational displays showcased aircraft ranging from the only WWI replica E.III Eindecker (see story this edition) at the eastern end of the field in the TAVAS display, through to the sleekest Sonex on the western end. The various types of light and sports aircraft spanning the site ensured there was no lack of inspiration for future flyers, among them quite a few ADF personnel itching to get up close and personal to their favourite ultralights.

Westland and Vickers names evoke a sense of aviation history - Bruce Vickers and Andrew Westland are both Geelong Sports Aviators

Michael Hooker's Murphy Renegade was a popular stop for visitors, alongside a mirror finished Sonex which won best ultralight on display, while Lethbridge Aero Club's expansive stand covered everything from the Bundaberg manufactured Jabiru through to a variety of kits and imported aircraft.

Steve Biele flew his latest Lightning, considerably smaller than the jet fighter his son Mark commands, though it was hard to figure out who was proudest. Steve recalled one air show he remembers as the most special.

"I remember way back, it would have been about eighteen years ago, when my wife shouted Mark and I gold passes to Avalon," said Steve. "The first thing I did was buy Mark an air show shirt. It had a big picture of a Hawk on the front. I remember holding it up saying 'Are you ever going to fly one of those, son?'"

"You know, I've still got that shirt," said Steve. "I never even thought about where Mark would end up when we started flying. All the kids are now in the RAAF, with our daughters Sarah and Kate both at Amberley."

When I asked more than one RAAF jet fighter pilot what three things were most similar about flying a tiny glider or ultralight compared to a modern jet fighter, the answer was almost the same from each – it was the perspective, the freedom and, of course, the opportunity to go where no one else can.

So while the big guns were doing big business, for the most part the rest of us were satisfied simply absorbing the feel, the sound and the atmosphere, making new friends and catching up with old ones.

Roll on the next Avalon.

Eddie Kuyper's Sonex out of Ballarat

Old Woody' Neville White (Leeton) and Max Brown (Canberra) caught up at the Australian Ultralight Aircraft Museum & Holbrook Ultralight Club display

Illawarra Flyers Leo Morris, Russell and Terry Pollock, Stephen Green always enjoy Avalon

Fokker debuts at Avalon

BY ANDREW CARTER

I KNOW you will receive plenty of pics and info about the RA-Aus involvement at the Avalon Air Show, but 19-8593 was probably the most significant aircraft at the show, given that it was the only aircraft there of a 100 year old design and is quite literally the great granddaddy of the modern fighter jet.

The Eindecker had its public debut at the air show commemorating the centenary of Anzac.

Designed by Anthony Fokker in 1915, the E.III Eindecker was the first aircraft to use an effective synchronisation gearing which allowed a machinegun to be mounted on the pilot's plane of sight and fire through the arc of the propeller. Thus it is known as the first true fighter aircraft.

"It is known as the first true fighter aircraft"

It is a wing warper, meaning the entire wing twists to turn the aircraft, as opposed to using ailerons as we do today. This was the same method developed and used by the Wright brothers to control their aircraft.

The Australian Vintage Aviation Society (TAVAS), completed the full size, 100% accurate reproduction, constructed as per the original - and finished as it would have been as if it had come out of the factory in 1915. The airframe is also made as per the original with a welded mild steel fuselage. The wings are traditional wooden built structures. Birch plywood is used for the ribs and spruce for the cap strips. The spars are Adler pine.

The engine is a reverse engineered copy of the unique 100hp rotary engine which powered this aircraft. In a rotary engine the prop is fixed and the entire engine turns. It was produced by Classic Aero Machining Services in NZ and fitted to the airframe last November.

Even the linen to cover the aircraft came from Belgium, from the same family-run business which made the fabric for these aircraft a century ago.

The aircraft is finished as one that was known to have been operated at Gallipoli - most probably against Australian troops. It was operated by the Turkish Airforce and flown by Hans Joachim Buddecke (among others) who is credited with thirteen victories. He was the third ace, after Max Immelmann and Oswald Boelcke, to earn the Blue Max (Pour le Mérite).

Initially this aircraft operated in German markings. It wasn't until around April 1916 at Smyrna Airfield in Turkey, that the aircraft crosses were overpainted to form the black square with a white border which became the Ottoman Turk's insignia.

This aircraft will now be part of the TAVAS flying collection which consists of a Fokker Triplane, Fokker D.VIII and a Bristol F2B Fighter. For more information, www.tavas.com.au.

Andrew pointing out the linen bag being fitted over the fuselage

Notice the deflector shield which diverts air (and oil) away from under the cockpit floor, which can be raised to allow the pilot to see straight down

Those magnificent men

E3 alongside other aircraft of the TAVAS collection - Fokkers Dr.I Triplane, D.VII and D.VIII

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Clifton turns it on

STORY & PICTURES BY ALAN BETTERIDGE

Michael Linke gives the thumbs up for his Drifter flight

Just SuperStol. Photo: David Wilson

Mal Shipton with his stunning Cessna 140

"DRIFTERS rock!" This was how RA-Aus CEO, Michael Linke described his first flight in a Drifter at the annual Bange's Field fly-in which was held in March.

Michael was in Clifton with several of the RA-Aus board members as part of the organisation's efforts to reconnect with the membership.

Michael took the flight after addressing a crowd of more than 60 members about the changes which have or will soon take place in the way the organisation operates, including discussions currently taking place with CASA, Airservices Australia and the ATSB.

The meeting was well received with most people agreeing the changes we are seeing are positive and a step in the right direction.

"I couldn't believe how many aircraft attended this fly-in," Michael said.

"At the last NATFLY we had about 120 aircraft and here we have seen over 100 fly in from all over Queensland and Northern NSW.

"It really has been an eye-opener for me," he said.

For other people the roll-up of aircraft came as no surprise.

Bill Jensen flew in from Archerfield in his Jabiru and said he wouldn't miss this event for the world.

"You can keep your hyped up shows like Avalon," Bill said. "To me the real grass roots aviation is in places like Clifton".

"You can come here, be made to feel welcome and everyone has a chance to catch up and have a good yarn.

"It was good to see the CEO of RA-Aus here. In the

Photo: David Wilson

Glen Bruggemann with the Jabiru he built and learned to fly in

A DH82 Tiger Moth looking resplendent in green

Michael Linke (left), James Bange (pilot) and RA-Aus Assistant Operations Manager Neil Schaefer

past it was like they had lost touch with the members who make up the organisation and some of the decisions being made didn't seem to make any sense to me."

The annual Clifton fly-in has been held continuously since 1982 and, in that time, only once was it cancelled.

"That was due to a localised thunderstorm that left water running over the strip and, while club pilots familiar with the airfield had no problems, I felt it was just too dangerous for those coming, so the decision to cancel was made," Trevor Bange, airfield owner and CFI of the Lone Eagle Flying School.

"It is one of the best organised events on the calendar"

Bange's Field can trace its roots to March 1932 when Trevor's father, John Joseph Bange, built and flew a primary glider from the field.

The Aviadell Flying Club was formed soon afterwards and continued up until the war years. The airfield, however, continues to this day.

The formation of the flying school was of vital interest to one of the founding members.

Glen Bruggemann wanted to learn to fly but his wife, Charmaine said; "you don't own a plane so why learn to fly?"

That was in 1999 and, being ever resourceful, Glen thought to himself: "I can soon fix that."

Glen travelled to Bundaberg and purchased one of the first Jabiru kits. He built it in his shed.

Three years or so later it was ready to fly but there was still no ultralight flight school in the district. Glen approached Trevor Bange and between them the problem was solved.

Trevor flew the first 25 hours in Glen's Jabiru so it could be certified and then trained Glen to fly it.

This year's Clifton fly-in was held in near perfect conditions with a 15kt cross wind abating on Saturday and becoming almost completely calm by Sunday morning.

The range and types of aircraft on display had to be seen to be believed with both GA and RA-Aus types in attendance.

Along with the usual suspects of Jabirus, RVs, Savannahs, Cessnas, Pipers and a huge range of European composite aircraft, there were also a number of new and unique types on display.

Mal Shipton flew in from Kilcoy with his beautiful Cessna 140 (one of a number of vintage aircraft Mal owns) which drew many admiring onlookers.

"It's just a lovely airplane to fly," Mal said. "And it doesn't cost a fortune to operate."

One aircraft which drew the crowds was the Just Aircraft's SuperStol.

With its huge wheels and high ground clearance this Rotax 912S powered aircraft really fulfils its design criteria.

The company motto is: 'No airfield? No problem' (See story on Just Aircraft *Sport Pilot* March 2015).

The iconic Clifton fly-in is eagerly anticipated every year and not one newcomer left disappointed.

It is one of the best organised and inexpensive events on the Queensland aviation calendar and, after coming here for many years, I would not dream of missing one.

David's first solo landing

Flying with Steve

BY DAVID GERMANO

WHEN you are 59 years old and tell your wife of 36 years that you want to fly an Aerochute, her reply is probably standard. "You are just going through a mid-life crisis." To which I replied "If I live for another 59 years I will definitely spend the kid's inheritance."

What sold me on the idea of flying an Aerochute was that there had never been a fatality in one. Although I have done a few ground breaking things in Colac, being the first fatality in an Aerochute was not my idea of doing something ground breaking.

I worked in the quarrying industry all my life and trained many operators how to feel what the loader, the off road dump truck or the excavator was doing as they operated. It came as a shock to me that I was not able to feel the Aerochute the way I had grown comfortable doing with heavy earth moving machines.

I will be the first to admit I was probably slower than a younger person at acquiring the skills needed to fly competently. The nervousness from Steve Conte as I tried my first touch and go with him beside me went unnoticed, except for a flinch when I hit too hard. After I flew solo for the first time I returned attached to the head of one of the thistles which grew around the edge of the airfield. I had missed the field completely. But with perseverance and practice I was able to land pretty close to my chosen mark on the field.

I helped out and enjoyed the Aerochute championships flight on the long weekend. The comradeship and jokes were shared by all on the day. I was even offered a hefty bribe from one team to shorten the tape measure.

Since purchasing my Hummerchute, I have flown six hours and have gone through one aborted take-off. But I feel immense pleasure from my achievements. I have planned my first trip to NSW and will use the Hummerchute to flush pigs out of the wheat crops (one of the main reasons I wanted to fly an Aerochute).

Learning to fly an Aerochute was different to anything I have done for a long time. It was both mentally and physically stimulating and I would recommend it to anyone. As they say 'Just do it!'

First solo


Last dual check

A broken Sapphire

BY ARTHUR MARCEL

In March I crash landed my Sapphire, causing extensive damage but luckily I was not hurt. There are two lessons to be learnt from this accident, both of which I would like to share with other pilots.

LESSON 1: THE EFFECT

AN INCIDENT PRIOR TO THE ACCIDENT

On the way back from an outing to Millmerran a few weeks before the accident, I had a partial power failure in my Sapphire. It lasted only a few seconds; ten at the most. At the time I was doing quite an extended cruise descent to get under a headwind. It was a hot day and the air was becoming more turbulent at the lower levels. I was directly over a large, newly cleared field at the time and immediately began an orbit. After the power kicked back in, I climbed back up to a couple of thousand feet above ground level while staying directly over the field. When I felt a little safer, I resumed the flight.

Back at Clifton, I looked in the carburettor bowls but they were full and clear. It was suggested that perhaps a drop or two of water had made its way through the system. I flew back to Forest Hill without further incident.

HOW PSYCHOLOGY PLAYS A PART IN THIS ACCIDENT

I once read about a psychology experiment in which laboratory rats were put into a bucket of water and left to swim for their lives. After an hour of desperate swimming, when the exhausted rats were on the verge of drowning, they were plucked from their would-be watery grave and saved. A week later they were put back in the bucket. Much to the researchers' surprise, this time they leisurely paddled around for a full 24 hours before rescue, the memory of their first survival experience having sustained them.

HOW IS THIS EXPERIMENT RELEVANT?

On the morning of my accident, I hadn't investigated my Millmerran incident any further when I departed Forest Hill heading back up to Clifton for the club's pre-fly-in working bee. After turning left I reduced power and was climbing slowly when the plane experienced another drop in power. I immediately began a shallow right hand turn back to the field. I clearly remember thinking that this time I had better take a closer look at the fuel system. Like a rat in a bucket, I was expecting power to kick back in and fly me home safely. Instead of looking for a place to put down, I was totally focused on flying the plane for minimum sink (no pun intended).

However, unlike the previous occasion, the power didn't come back. In fact, it seemed to drop out further. It was probably only in the final 30 seconds that I accepted an out-landing as inevitable. My guardian angel was with me, though, and the thickly grassed field directly in my path was absolutely perfect in terms of preserving life and limb. The landing was very low stress and only the expensive crunching noises coming from under the seat told me that I was seriously bending the plane.

It is best to say that I 'arrived' at this field. By turning back I had significantly limited my options as to where I might have put down. An ATSB study several years ago showed partial engine failures to be hugely more dangerous than complete engine failures. At first sight this finding might seem counter-intuitive; however, the key factor is that when the engine fails completely, full and immediate attention is given to putting the aircraft safely on the ground.

LESSON 2: THE CAUSE

Before removing the plane from the accident site, I inspected the carburettor bowls. As with the previous incident, they were both full and the fuel was clear. I thought this rather strange as I was convinced the power failure was fuel flow related. Rotax CDIs are magneto type and a double failure is virtually impossible (a 503 motor will run quite happily without a battery).

The fuel lines from the wings needed to be cut in order to disassemble the plane, but the fuselage remained in an upright position from paddock to hangar. However, upon examination of the fuel system a week or so later, I noted there was no fuel in the fuel filter. This was probably because I had examined the fuel bowls again back at the hangar and some fuel had escaped the float valves, but it got me thinking about the geometry of the fuel line near the filter.

When I had initially acquired the plane, one of the first things I had done was to completely replace the existing fuel line with low permeation hose. The Sapphire's tanks are only just above the carburettors and, in order to have the fuel filter in a vertical position, I had run the line slightly over the level of the tanks. I had noted the air lock at the time and remember bleeding it out of the system. A few months before the accident, I had installed a new fuel filter but had not bled the fuel line. I had forgotten.

After noting the empty fuel filter, I washed out the fuel lines into white cloth and found nothing. I disassembled the fuel pump and found it in good order.

CONCLUSION

I have concluded an air lock above the fuel filter was the cause of the engine failure. But why was I able to fly the plane at all? And why were the carburettor bowls full of fuel after the accident?

A trap waiting to spring

Fuel was reaching the carburettors under three circumstances. Firstly, when taxying or when flying in turbulent air, the sloshing fuel in the tanks overcame the effects of gravity and poured fuel into the top of the fuel filter. Secondly, at higher engine speeds (somewhere above 5,500rpm), the fuel pump was overcoming the air lock. Thirdly, in a side-slipped approach and when the plane was leaned over on the ground after the accident, fuel simply poured into the top of the fuel filter due to gravity. To some extent, the carburettor bowls would have buffered these situations.

The plane had only done two flights after installation of the fuel filter before the Millmerran flight. One was to Watts Bridge in the company of another plane. The other was to Clifton for circuit practice. Neither of these flights was done slowly, and, although circuit practice involves low engine speed descent, it was my habit to slip the plane from the base turn.

I realise now that the fuel line arrangement in this aircraft was not failsafe in its design. It allowed for the incorrect installation of a replacement filter. Furthermore, although in the past I had sometimes completely drained old fuel out of both tanks; if I had ever run the tanks dry I would have created a new air lock. So, from hard-earned experience, I recommend fuel line loops should be under the filter and never over it.

There is even a third lesson to be had from this accident. Millmerran was a close enough call and the trip home from Clifton that day probably even closer. Once home, however, I should have spent a lot of time looking at the aircraft's fuel system and seriously thinking about it, perhaps ground running it, before flying the plane again. At the very least, when I removed the carburettor bowls, I should have let the fuel flow out onto the ground for a sufficient length of time to know that I had continuous flow from tank to carburettors.

Seeing the light

BY OWEN BARTROP

THE article entitled 'You and the Aviation Regulations' (*Sport Pilot* February 2015) raises the question of how aviation regulations are interpreted. In the article it states: "It is a matter for individual members whether they choose to follow the regulations as interpreted by CASA and communicated by RA-Aus or follow some other path."

But how do we know if one of these organisations has a different interpretation than ourselves? Surely if a regulation is open to interpretation, then it is no longer a regulation, it is a suggestion. To be classed as a regulation, it has to be unambiguous.

Unfortunately, CASA does not make understanding regulation easy. It uses more than 1,000 acronyms and abbreviations.

In the above mentioned article, the last section under the subheading "CASA Advice" may as well have been written in Chinese. If the description had not stated it was an extract on the requirement to hold a RA-Aus Pilot Certificate, it would have had to be sent to a code breaker to determine its purpose. How many readers were able to understand the argument put forward? How many looked up the reference given in that section of the article? How many readers gave up after the second paragraph?

I will relate my own attempt at trying to obtain an understanding of CASA regulations. I hold an RA-Aus Pilot Certificate, a PPL (not current) and an RPL. I was seeking information, not trying to dream up a novel interpretation as suggested by the authors of the original article.

FLIGHT REVIEW

I needed an Aeroplane Flight Review (AFR) to make my RPL current so I could enter controlled air space. So I started a search of CASA regulations dealing with flight in controlled airspace. I wanted an AFR but wondered if CASA would accept my RA-Aus BFR as a CASA AFR.

I use the word regulation loosely to cover all of the CASA documents which indicate a directive. My progress went something like this:

I looked up Civil Aviation Order 95.55 Instrument 2011, Exemption from provisions of the Civil Aviation Regulations 1988 – certain ultralight aeroplanes. I thought this regulation encompassed RA-Aus registered aircraft. Under Flight conditions I found this statement. *7.3 An aeroplane, to which this Order applies, may be flown in Class A, B, C or D airspace only if all of the following conditions are complied with*: I will skip several subparagraphs because my aircraft satisfied those sections and come to subparagraph (e); *the pilot has satisfactorily completed an aeroplane flight review in accordance with regulation 5.81, 5.108 or 5.169 of CAR 1988*; This paragraph refers to other sections of the regulations, therefore I thought that those sections must be applicable to certain ultralight aeroplanes.

I looked up 5.81 and found subparagraph 5. Originally, this regulation stated that; A private pilot who, within a period of 2 years immediately before the day of the proposed flight, has: in sub-subparagraph (b), satisfactorily completes an aeroplane proficiency check; is taken to have satisfactorily completed an aeroplane flight review".

Having done a BFR in the period mentioned I considered I met the requirements of this regulation.

It appears this regulations has now been amended to read the following; *5.1 In this CAAP the process of undertaking a biennial assessment of a pilot's skills and knowledge is referred to as a flight review. In Australia the terms Aeroplane Flight Review (AFR) and Biennial Flight Review (BFR) are commonly used. However, the intention is to address flight reviews for all licences, categories of aircraft and appropriate ratings. Although the CAAP is numbered after CAR 5.81, it is not limited to the Private Pilot Licence (PPL) and aeroplanes. The current regulations specify flight reviews for all licences and for the Private Instrument Flight Rules (PIFR) rating.*

My reading of the original regulation meant that my BFR was acceptable as an AFR. I am not sure that the amendment changes that conclusion.

However, my authority for entering controlled airspace was put to CASA via RA-Aus and CASA came back with the answer that a BFR is not acceptable as an AFR.

HOW TO GET AN AFR

I emailed CASA to see if I could carry out an AFR in my RA-Aus registered aircraft and, if not, why not.

Two days later I received a phone call from a CASA representative. He stated I could not carry out an AFR in an RA-Aus aircraft. He also stated that even if I had an AFR I could not fly in controlled airspace in an RA-Aus registered aircraft. The reason he gave was that the regulations prevented it from happening. I accepted that statement and decided I might re-register my aircraft as a GA aircraft, so I asked the representative how did I go about changing my registration to VH. His reply was, "I have no idea." So I hung up to consider my options.

About 20 minutes later I received another call from CASA. This time from a different representative and he started the conversation by saying, "ignore what you were told by the earlier caller because the information was incorrect" or words to that effect. He then went on to explain what I had to do to get myself an AFR.

I brought up the subject of carrying out an AFR in the aircraft I had mostly used in the past 10 flights - my RA-Aus registered aircraft. He told me that requirement had been deleted from the regulation and that I could do my AFR in any VH regis-

tered aircraft with a GA instructor. Then I could fly my RA-Aus registered aircraft in controlled airspace. But seeing that the test is of the pilot not the aircraft, why can't an AFR be carried out in any aircraft?

SUMMARY

Three things come out of my efforts to gain an AFR:

1. I am of reasonable intelligence but apparently I was unable to understand CASA regulations;

2. My assessment of what was required was incorrect because I followed a referral from a regulation dealing with certain ultralight aeroplanes to a regulation that dealt with other types of aircraft. It seems strange that such a referral was ever included in the regulation. Not knowing that I had incorrectly interpreted the regulations there was no reason for me to approach CASA for a ruling;

3. When I did contact CASA on another subject, two CASA representatives gave me different answers.

NOTES FOR CASA

The way CASA regulations are written may be alright for lawyers to understand but they are near impossible for recreational pilots.

If regulations are open to interpretation and can't be easily understood what is the point of even reading them? I appreciate CASA regulations have to have all the i's dotted and t's crossed but CASA has to understand that they must also be readable and not open to interpretation.

In this day and age, the use of electronic documents allows them to be downloaded from the internet. Regulations could be made much easier to read if hypertext is used for acronyms, abbreviations and referrals. The reader, if unsure of their meaning, could get the required information without leaving the regulation by clicking on the hypertext.

When we all pray from the same book then God may allow us to see the light. But until then, CASA will continue to confuse us with unreadable regulations.

From RA-Aus - *The definition of an Australian registered aircraft or aeroplane appears in various legislation, ranging from the Civil Aviation Act 1988, the Civil Aviation Regulations and the Civil Aviation Safety Regulations. As a result confusion exists as to whether a flight review conducted in an RA-Aus aircraft by a dual qualified Instructor (GA and RA-Aus) for a dual qualified pilot (GA and RA-Aus) can be used for revalidation of a licence under CASA. We are in the process of requesting an official legal interpretation and will advise the outcome.*


Photo: Soar Aviation

Ferrying a Foxbat

BY LYNTON DALLA ROSA

ARRIVED at Perth Airport to a balmy 35 degrees and rising! We went straight to York, the last major town before a 700odd kilometer pilgrimage to the mining town of Kalgoorlie. The aircraft was located on White Gums airstrip, where one runway runs up and down a scrubby hillside and the other runs through a gate, in a paddock full of livestock!

After inspecting the aircraft, we started our take off roll down the hill and soon turned east towards Kalgoorlie. The land was primarily wheat fields, for at least the first few hundred kilometres, until it turned desolate and barren. Thermals were violent and constant the whole way. Not even cruising at 9,500ft could we escape them. We landed at Kalgoorlie right on 5pm.

The next morning we decided on an early departure before the thermals kicked in. We went almost directly east, the only navigable feature the Nullarbor railway line, which our track paralleled to the north. The odd abandoned mine and ranch station were the only other prominent features to stand out in the big, red wasteland. Forrest was a stretch. The fuel gauges were starting to look forlorn just as we spotted Forrest's big asphalt runways. Population: 2 - Mark and Sandy, a couple from the Gold Coast who decided to reverse sea-change and take care of the railway town.

Sandy made us special ham sandwiches and even baked us blueberry muffins for our journey east to Ceduna. I stapled my card to the wall as is tradition. The winds for our next leg were supposed to be favourable, but once we were airborne, we found that was not true at all. Varying headwinds up to a lazy 58kts saw us scrambling on the map for fuel stops. Back at Forrest, I remembered Mark telling us the Nullarbor Motel stored Mogas for the Eyre Highway and that we would be able to taxi around the front for fuel. Diversion planned and south we turned. The Nullarbor Strip was out the back of the motel, simple dirt and gravel -one of the runways had a 30 degree turn in the middle of it. We landed and taxied around to the front, where we had to push the aircraft right up to the bowser to fill it up with Premium 95. This turned a few heads, people in caravans and trucks and cars stopped to take photos and asked plenty of questions about our journey.

From the Nullarbor we pushed east for Ceduna. This was the first time we saw the coast since leaving Perth and I was blown away by how desolate the South Australian coast is. I was expecting it to be much like Victoria, green but drier inland. The Bight was sheer cliff. With sand dunes on some parts of the coast and the landscape changed from sand dunes straight to desert. No wonder the first explorers didn't think much of the Western and Southern lands. Ceduna soon appeared on our horizon, where after landing, we were picked up by Julia of the Ceduna Motor Inn, who treated us to an excellent dinner consisting of the freshest local whiting.

Up early the next morning there was a new obstacle, clouds. The first we had seen since Melbourne. It wouldn't stop us because we were determined and we managed to stay above the patchy ceiling. The further east we travelled, the less desolate the place became and we were welcomed back to agriculture and greenery as we made our way over Whyalla for Port Pirie, where we topped up the aircraft and our bellies, while enjoying the nice little clubhouse, complete with lounge, TV and a pictorial museum on the history of the ex-RAAF base.

Due east after departing Port Pirie, we brushed the southern edge of the Nullarbor for more barren lands, dotted with salt lakes and rabbit-proof fences. The greenery returned as we approached the tri-border area between NSW, Victoria and SA, where the Murray River snaked away. Landed at Mildura, fruit and wine capital of Australia, where we sampled the hospitality of the Workman's Club bistro.

THE LAST STRETCH

Weather was now becoming a consideration, a change we were still getting used to when compared with the constant perfect flying days of WA. The last leg was on familiar, but busier, ground so a good lookout was needed to make sure we got home safely. This was especially true, as we overflew Mangalore to enter the high traffic zone of the Kilmore gap. Melbourne Centre alerted us to the presence of another (them not flying hemispherical) aircraft tracking directly head on. A rapid dive later and a confirmation from ML centre was all we needed to affirm that we were now back in busy civilisation. After crossing the Kilmore gap, we arrived at Tyabb at 1230, just in time for lunch and the Foxbat's journey was complete.

THE JOURNEY

3.5 days, 1,600nm (3000km), 22.0 hours of flight, 6 fuel stops.

PILOT TALK

The Ops team

Fuel to Go!

A BIG trip is planned and the fuel calculations reveal you will need to find some fuel along the way or for your return leg. If there is no Avgas, or your aircraft can't be operated on Avgas, you may come to the decision to carry additional fuel with you in jerry cans.

But you should first stop and consider the full ramifications of carrying a flammable substance as a silent but potentially deadly passenger.

Can you carry additional fuel aboard a recreational aircraft and remain, not only legal, but safe?

Operations has received a number of inquiries asking this question. It's particularly pertinent for pilots operating aircraft with a limited fuel capacity or those who use fuel types, such as Premium unleaded or 2 stroke blends, which are not available at most aerodromes.

CASR Part 92 outlines the requirements for carrying dangerous goods, such as fuel, and guidance is also provided in Advisory Circular AC 92.A-01(0). The important point to note is that in paragraph 13.1 of the AC, private operations are exempt from compliance with the regulations. However pilots are expected to comply with further regulations outlined in CASR 92.175 (see sidebar). Effectively, this allows for the carriage of additional fuel in a recreational aircraft with specific requirements for how this should be achieved.

The key elements which must be complied with when carrying fuel on board a private aircraft are:

- The storage container must be an approved type and in good condition;
- It must be secured appropriately, not exceed luggage limitations or be stored contrary to load limits outlined in the aircraft POH;
- The MTOW of the aircraft must never be exceeded;
- The container must not cause interference with any flight controls;
- Prior to boarding, passengers must be advised that dangerous goods are being carried.

Further considerations should also be given to a risk management assessment of the following:

- Will any in-flight expansion affect the integrity of the container?
- Could there be fumes or odours in the cockpit?
- Is there a potential for static discharge during transport?
- When on the ground, can the container be appropriately bonded to transfer the fuel?
- On the ground, can the refuelling points be safely reached?
- What plan do you have if a container vents or leaks during flight?
- Is there a safer alternative – e.g carrying an empty container and filling it when on the ground?

"Can you carry additional fuel and remain safe?"

So while private operators are exempt from the specific requirements of the dangerous goods legislation, these points should always be considered.

That silent, but potentially deadly, passenger could really ruin what would otherwise be a fun fly away.

CAN YOU HELP?

Part of Operations' duties is to undertake investigations into accidents and incidents after they've been assessed by the Safety Manager. Recent investigations have highlighted an area of rapid change and we need your help.

An increasing number of people these days carry recording devices with them, such as iPhones, tablets or Go-Pro cameras. Often lately when working with police, Operations has been made aware of people in the vicinity of the accident who took footage or photos of the accident or knew about cameras on aircraft or nearby which may provide information important to our investigation.

In the case of a recent fatal accident, Operations has been made aware there was footage not volunteered to police on the day. Quite apart from a legal obligation not to impede an active police investigation, there is also a moral and ethical imperative for a person to come forward with footage or photos which may help us work out just what caused the accident.

Footage or photos taken by non-pilots on Go-Pro cameras, iPhones, and other devices is likely to appear on YouTube soon after the event. Let us know if you spot it. And if you have recorded an accident yourself, please contact the police or Operations and offer access to the device. The information may save your own life in the future.

Safe flying.

CASR 92.175 GOODS CARRIED BY PRIVATE OPERATORS

Subparts 92.B and 92.C do not apply to the carriage of dangerous goods by an aircraft operated by an operator engaged in private (non-commercial) operations if:
(a) the aircraft is operating in Australian territory and:
(i) is unpressurised; and
(ii) has an approved passenger seat configuration of less than 10 seats; and
(b) the goods:
(i) are in a proper condition for carriage by air; and
(ii) are identified by class in accordance with the Technical Instructions; and
(iii) are permitted by the Technical Instructions to be carried on a passenger or cargo aircraft; and
(iv) are stowed and secured on the aircraft to prevent movement and damage, and segregated in accordance with the requirements of the Technical Instructions if they are likely to react dangerously with one another; and
(c) the pilot-in-command of the aircraft ensures that every person on board the aircraft knows, before boarding the aircraft, that the dangerous goods are on board.

Better late than never

BY ANDREW BEVERIDGE

WE all know the legendary Rotax 912 series. It is admired for its reliability, simplicity, economy and downright awesomeness. So why the bloody hell was mine giving me so much trouble?

Rewind to 2009, the first flight of my Zenair CH701, powered by a 912ULS. Coupled with a nicely made 3-bladed wooden GSC prop in Canadian maple, my aircraft was 'built to drawing'. My mantra was: keep it simple, totally bog standard, straight out of the box, and we can't go far wrong.

The firewall forward package supplied by Zenair was comprehensive and provided pretty much everything I needed. However, the engine installation manual consisted of a ring binder containing lots of photos, but little in the way of text. So, it did leave a bit of um 'wriggle room' in certain aspects. I ordered one of those 'How to install your Rotax 912' DVDs from the US and this provided lots of additional useful information.

One of the little wrigglers was in the area of carby heat/airbox. Now, coming as I do from Yorkshire, we are renowned for being a little on the tight side when it comes to money. Almost on a par with the Scots - not necessarily a good thing in aviation.

So, here I was living under the bright skies of Perth, having moved here from the damp and cold climes of Cardiff, South Wales (a flying venue where, during my PPL training, the spectre of carby icing in the Piper Tomahawk was ever present and often experienced). However, faced with the prospect of spending an extra $1,000 on a large baked bean tin called an airbox, I bristled at the thought. After talking to the helpful guys at Bert Flood I convinced myself that carby icing on the 912 was probably a rare event anyway and so a decision was made that I didn't need an airbox. That was that, problem solved and $1,000 saved.

Reading up on the Rotax, I quickly realised you had to be careful with the Bing carby overflow pipes. Rotax was stern in that regard and decreed that: "Under no circumstances must you alter the length of the overflow pipes." So, being a compliant bloke, I followed orders and set about deciding how best to route these pipes. For those of you unacquainted with the delights of the Bing carburettor, these flexible tubes are designed to carry any excess fuel to somewhere safe if the carbs overflow due to over-pressurisation.

For clarification, my installation has gravity-fed wing tanks feeding into an in-line electric pump (sourced by Bert Flood) feeding into a mechanical engine-mounted fuel pump. The outlet then tees off and feeds straight into the twin carbs. Exactly as was recommended in the Zenair installation manual. Some people advocate a return line, but in my aircraft assembly manual, the wing tanks as supplied were not designed with a return line in mind. Because the recommended engine for a CH701 is the Rotax 912, I followed the manual.

But then I discovered I had a carby overflow pipe (whose length must be religiously maintained remember), emptying smack bang above a deliciously hot exhaust pipe. The RAAF dump and burn demonstration is always hugely exciting, but the prospect of it happening within my cowl and setting me alight didn't fill me with joy.

So, what to do? I reckoned a couple of large diameter aluminium tubes, into which the carby overflow pipes could be inserted, would do the trick. Exiting nicely at the bottom of the cowl, any overflow fuel would be kept well away from my hot exhaust. Because there was lots of fresh air between the outer diameter of the carby tube and the inner aluminium tube, there should be no pressurisation or suction effect....right?

Fast forward to 2015 and by now I have amassed 85 hours in the aircraft and the engine keeps giving me problems. Idle is lovely, 1,800rpm and sweet as a sewing machine. Full power is totally fine. Cruise power (4,500 or 5,000rpm) is also good.

So, where's the problem?

The problem always occurs during two phases of flight - Descending on reduced power at any altitude and turning onto base when I typically reduce power to 4,000rpm or below.

In each case, what happens is moderate and sometimes severe vibration, which is very unsettling for me and my passenger. Note that the 912 is known for having a vibration issue at certain rpm. However, I was unwilling to accept mine as okay, especially as other 912-ULS powered aircraft of a similar configuration seemed to be totally fine.

Annoyingly, I could never replicate the problem on the ground, only in flight. Tethering the plane to a solid object and doing full power run-ups and reduced power runs at the problem range of 3,000-4,000rpm produced nothing but turbine-smooth running. Of course, most people said "it's got to be carby icing!"

A fair point, I thought. Still in Yorkshire mode, not wanting to fork out $1,000 for an airbox, I bought an electrical heating device for the Bing carb barrel from a UK supplier. However, my nagging logic was this: If it is carby icing at 4,000rpm, chances are, if I reduce power to 3,000rpm, the engine will stop. And in every case, reducing power to 3,000 or increasing it to 5,000rpm eliminated the vibration. Hmm.

So, for the past two years I have been on a quest to try and fix my vibration issue. I did

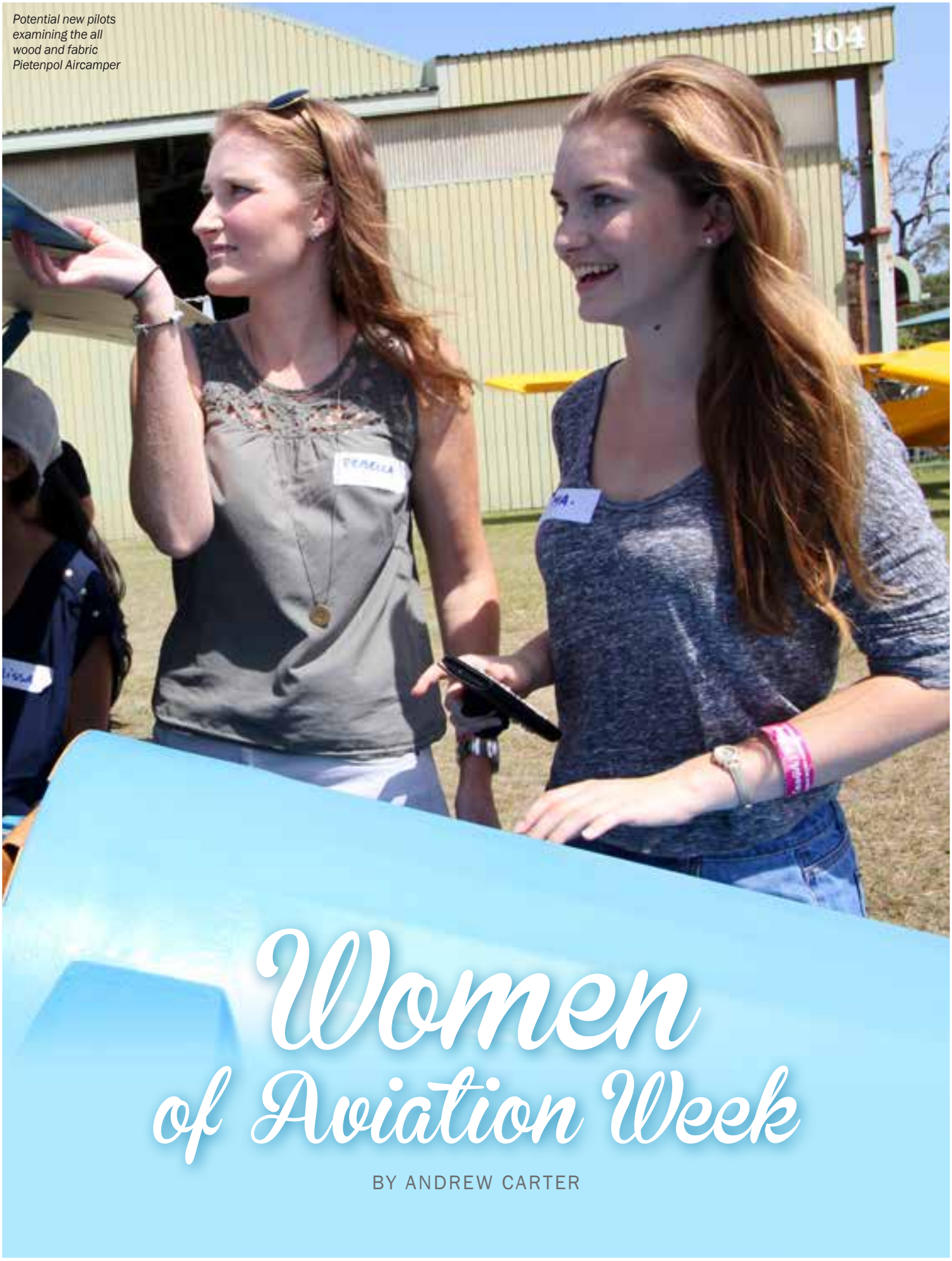
Andrew and his Zenair

all the normal things, balanced the prop; balanced the carbs pneumatically, changed the carb springs, checked the engine mounts, mixture control, etc. All of this several times over. I also joined a really good US CH701 forum, where it appeared quite a few other CH701 912ULS owners were having similar problems. Many people at Serpentine's Sport Aircraft Builder's Club offered advice and support, but we just didn't seem to be getting to the root cause.

In February, after many people had offered advice, one person queried why I had not installed carby drip trays. He went to on say that some Rotax owners used the carby overflow tubes to lean the mixture even further at altitude and that they were highly sensitive to pressure changes.

So I splashed out $200 and bought a pair of carby drip trays from Rotax. I also homed in on the choke operating system. What I did was to simplify the 2 into 1 cabling, running both choke cables all the way back to the instrument panel. I replaced the standard choke knob with a simple crimp in front of the panel. What also alarmed me was how much static friction there was on the cable run for one of the carbs. The cable running through the 90 degree metal cable tube was very stiff, much more so than the other side. Also, the lug crimped onto the end of the choke cable did not always run smoothly in the two parallel operating arms. Further investigation revealed these arms were not quite parallel. This caused the lug to sometimes jam and the choke on one carb to stick on intermittently.

Fixing both of these problems (drip tray and choke) has transformed my aircraft. Whether the alloy pipes were forcing air into the overflow tubes on descent and altering the mixture remains to be seen. Maybe it was just the sticking choke? Or maybe it was just a combination the two. A typical case of James Reason's 'Swiss cheese' aviation model, which seems so relevant. Whatever the reason, I now have a fully functioning, vibration free engine in the 3,000-4,000rpm range. I can't tell you what a relief it is and I only wish I had found the problem much sooner. But better late than never.



Potential new pilots examining the all wood and fabric Pietenpol Aircamper

Women of Aviation Week

BY ANDREW CARTER

David Kingshott and Rhianna Patrick just prior to Rhi starting the right hand engine on this WW2 C-47 Dakota

The unique Kiebitz operated by Marcel Vanhattem - just 54hp

The youngest girl – just six years old. Very shy, but she had a smile on her face all day. She already knows she will be a pilot when she grows up

University students writing their names and personal slogans about the day

CO-FOUNDER of the Australian Vintage Aviation Society, Nathalie Gochel, held the second annual Women of Aviation Fly It Forward event at Caboolture in March.

The campaign is an opportunity for people in aviation to donate their time and resources to introduce women to the many facets of flying.

Each year focuses on a different theme related to celebrating women in aviation over the past century. This year it was *Serving with honour: 100 years of female pilots in combat*.

Local hangar owner, Ralph Cusack, donated his large premises for the day. On entering the hangar, visitors were presented with the first 50 years of military aviation - a WW1 Fokker Triplane, a WW2 Bristol Beaufort bomber and a Korean War Mig 17. Everyone was free to examine and photograph them in detail.

Nathalie gave a presentation on the history of women in combat, going back to 1915. She finished with a history of Australian women pilots from the very first - Florence Taylor who flew a glider near Sydney in 1909 - through to the first woman to obtain a licence - Millicent Bryant in 1927 - right through to the first women pilots and navigators to fly with the RAAF.

RAAF Squadron Leader, Amanda Gosling, then spoke about life in today's Air Force for women pilots and engineers.

Members of the Australian Women Pilots Association were on hand to assist on the day, including President, Deb Evans who spoke about the organisation and the support it has provided women pilots for the past 65 years. The organisation was founded by Nancy Bird Walton in 1950.

David Kingshott, from Complete Aircraft Care maintenance facility, is in the process of restoring a C-47 (military DC-3) to flying condition and had one engine serviceable on the airframe. Several of the attendees got to start the engine to watch it belch smoke and make noise.

Thanks to the Caboolture Aero Club and its members who supplied their time and aircraft free of charge, there were plenty of aircraft and pilots available for joyrides. Everyone got to take at least three rides during the day.

By far the most popular were the open cockpit

One of the high school students experiencing open cockpit flying for the first time

Happy first time passenger taxying after her first open cockpit flight

Huge smiles all round.The sign of a truly successful day

aircraft. I hadn't planned to fly this year, but given how much demand there was for the open cockpit flying and how few aircraft we had on hand for that, I ended up firing up my Pietenpol Aircamper and Marcel Vanhattem did the same in his Kiebitz in its pseudo military colour scheme. It was satisfying to see the smiles on everyone's faces after what was, for many of them, their first experience in an open cockpit aircraft.

Nathalie took a large number of the women through the TAVAS hangar to show them the aircraft of WW1, which generated a surprising amount of interest. Nathalie described how each aircraft had been finished authentically and described the process of covering, rib stitching and doping, with which she is experienced, having done it all for the E.III Eindecker.

Counting all the female attendees, their partners or families and all the pilots assisting on the day, there were around 90 people at the event. The youngest passenger was six. The oldest was 90. There were several high school girls and many university students in attendance, all of them contemplating a career in aviation.

Each person received a goodies bag which had in it a peaked cap, a pair of aviator sunglasses, a coffee mug and literature about careers for women in the RAAF.

A prize of a 20 minute flight with Mahl Oakes at Fly Now at Redcliffe Airport was also awarded.

Having done this twice now and seen the great interest it generates each time, there is no doubt that the Women in Aviation exposure is valuable for introducing women to recreational and professional aviation. We will certainly be doing it again.

Congratulations must go to Nathalie Gochel for single handedly planning such a successful event on such a large scale. Thanks also to Ralph Cusack for the use of his hangar, to the members of The Australian Women Pilots Association who assisted on the day and other volunteers, to Mahl Oakes and to all the pilots who gave up their time to take people flying for free.

You can learn more about the Australian Women's Pilot Association at www.awpa.org.au and The Australian Vintage Aviation Society at www.tavas.com.au

TECH TALK

DARREN BARNFIELD RA-Aus Technical Manager

Amateur responsibility

THE Tech department has recently received a number of enquiries from people intending to build two seat trikes and two seat Powered Parachutes.

Information regarding amateur-built requirements for RA-Aus members is provided in CAO 95.55 para 1.2(e) but here is a summary.

Trikes and Powered Parachutes can be amateur-built (according to the Major Portion rule) if the kits are not manufactured by an organisation holding a certificate of approval to manufacture (i.e. with involvement by CASA or any other regulatory authority). Plans-built machines are definitely compliant.

So as a builder you are able to build your personal Powered Parachute Mark 1 from plans or assemble it from a kit, remembering you must comply with Section 3.3.1 of the current Tech Manual and all that other stuff (like the Major Portion rule) which is on the website at www.raa.asn.au.

If you don't have access to the web, call our office for a Builder's Pack. Don't forget to advise the Tech Manager before you start on your project. This is to make sure the project is suitable for registration by RA-Aus.

This really confirms the cornerstone of the amateur-built concept, which is that the builder (and the builder alone) takes full responsibility for all elements, information, equipment and quality of components and the airworthiness of the aircraft.

Being able to amateur build a kit from a manufacturer will help the process and implies that the manufacturer has had some oversight from a government authority somewhere. Never forget, however, there is absolutely no doubt the amateur builder (and any subsequent purchaser of an amateur built aircraft) carries full responsibility.

"This confirms the cornerstone of the amateur-built concept"

Dave prepares a passenger for a joyride

"Handling can only be described as light and responsive"

Low and slow

The best view in the world

Flying a Drifter

BY DAVE TONKS

WHAT it's like to fly a Drifter is something which takes a little explaining, considering the quite extraordinary design of the aircraft. The Drifter is a rag and tube aircraft and certainly that description has some merit considering the design is based around a six inch tube of alloy.

Very early versions were single seaters, wire braced, with relatively tiny motors.

A basic description of the classic Drifter/Fisher aircraft is - a high wing, pusher prop, inline seating, usually powered by a Rotax 503 or 582 motor. Later versions are strut-braced and, interestingly, the wire braced versions are rated higher for G-forces and are more popular with flying schools. Being a high drag, low inertia aircraft, the strutters are quite different, with quite different flight characteristics than the old wire braced versions with the kingpost over the top of the wing, mainly due to significantly less drag.

The ultimate Fisher variant is 912 Rotax powered, strut-braced - an incredibly capable little flying machine. After the death of Wayne Fisher the future of these magic little aircraft isn't clear. The Australian licence to build Drifter aircraft is currently held by The Drifter Factory at Kupunn, South East Queensland.

Dave ready to roll

Learning to fly a Drifter is one of those things that either clicks straight away or is a nightmare. For me, it was relatively straightforward – except for take-offs. With the light weight, pusher prop and taildragger layout, I found the task of keeping the little devil straight on take-off a major problem. A change of technique cured that and now (after 200+ hours) I often take off safely from my home strip within three slasher widths of grass.

The first thing a prospective Drifter pilot experiences is the exposed position of the pilot in command seating position – in the Drifter, that's the front seat. The passenger seat is directly under the C of G of the aircraft, so it doesn't affect the balance by having someone (or something) in it. The view is virtually unlimited and is simply spectacular, without any interruption of any kind.

As a prior skydiver and paraglider (plus many hours of flying in Army Aviation aircraft,) being out in the air was not an issue for me at all, although I hate to think what the average ab-initio student might think. With a total width of just 500mm on which to rest your feet, I can see how the outlook could be a little confronting.

One of the interesting characteristics of the Drifter is the way they perform when much lighter, e.g. without a large instructor in the back seat – which is of course what happens on your first solo. Take-off and climbout is distinctly faster and pulling the throttle to idle at the end of the downwind leg feels like you hit a brick wall – that's why it's drummed into you to get that stick forward fast when you throttle down for the traditional glide approach.

The intrepid Drifter drivers who have undertaken huge cross country trips (e.g. Boonah to Avalon) will tell you that on such trips the rear seat is usually occupied by 2 X 20 litre fuel containers, while the rest of the required gear is stashed in a purpose-built tubular bag attached to the pole which travels longitudinally under the wing. The wing fabric at that location is secured by either zippers or Velcro, so there is also opportunity to stash soft items there. With every gram counted, one pilot I know who did the Boonah – Avalon trip even cut his toothbrush in half!

Taking off in a Drifter is a little different than most aircraft. The way I was taught is to slowly advance the throttle (over a period of 2 – 3 seconds). I learned the hard way that advancing the throttle too quickly will catapult you off the runway on one wheel. It's also why I enjoy the nickname of Cropduster Dave (it was sorghum, I think). As the speed increases, forward stick is used to bring the tailwheel off the ground – once you reach 40kts, the aircraft is gently rotated with back pressure on the stick to ease it off the ground.

At that stage, the aircraft is flown parallel to the ground until you reach 50kts, then gentle back pressure is introduced and the aircraft climbs away happily at 50kts. As you would expect, weight is a significant issue with such a light aircraft – two up and with full fuel, the aircraft will be at or close to MTOW, and acceleration/climb rates are reduced.

Light weight can also produce other problems, particularly on hot days. Dust devils are usually visible, so there is some chance to avoid them – thermals are pretty well invisible, so they can produce a bit of a shock if you stumble into a particularly big and powerful one. Over 1,000ft it's at least fixable, but on late final or at a few hundred feet climbing away, it can be a little problematic. All pilots would be aware of how the air is as smooth as silk when cold, particularly early in the morning or at last light. These are definitely the Drifter times.

Overall handling can only be described as light and responsive – with full length ailerons (no need for flaps here) the roll rate is fast, and the other controls are similar. Vision (as you would expect) is phenomenal and, if you live in an area like the Scenic Rim, every flight is an absolute joy. Landings are straightforward, with the turn onto base crucial for positioning to reach your desired touchdown point. The Drifter sideslips like a demon, allowing too-high pilots to wash off height with ease.

Finding a school which teaches with a Drifter is not all that hard - I know of at least three in South East Queensland. Once licenced, shopping around for a nice Drifter (if you can find one for sale – they're getting rare) will set you back somewhere around $15-22k. Every day I see guys on touring motorcycles which cost more than that.

Those of you who enjoy flight simulators will be pleased to know that Ant's Airplanes has released a Drifter for Microsoft Flight Simulator 10 (FSX). My beaut little 0455 is there in all her glory, including a red-helmeted pilot with a beard and glasses who looks remarkably like Moi. It is payware, but the package price of $19.95 is not much for such a high-level reproduction. As an experienced flightsim author for over a decade, I can confirm this package is exceptional value for money.

Flying with a Sling

BY GERHARD VAN EEDEN

IN 2012 two of my brothers died when they intentionally spun our Cessna 150 from 4,000ft and then failed to recover. Isn't the whole point of having a type-certified aircraft that its flight characteristics are proven and predictable? I have given over 4,000 hours of flight instruction and I can tell you that while a C-152 will spin the same every time, a C-150 is a clown.

That C-150 was also my school's only aircraft. I had planned to build up a fleet of them, mostly because fuel is a flight school's greatest expense and Continentals' O-200 engine burns only 20 litres per hour. But the whole thing understandably had left a sour taste in my mouth.

Then I got a call from someone saying that Mike Blyth from The Airplane Factory was demonstrating the Sling. Honestly, I wasn't interested. I had flown too many of these new- fangled, very pretty little non-type-certified airplane designs with their Rotax engines and horrible flying characteristics. The ones I had flown were completely unsuitable for training.

Before we took off I told Mike his plane had to pass three tests in my book;

1. The stall had to be a non-event or my students, which at the time consisted mostly of the rejects from other flight schools, would be scattered all over the final approach path;
2. The flight controls had to remain effective at low speed or the crosswind at our airfield would send us farming on a daily basis;
3. The control harmony had to be good. The other types I had flown were all overly sensitive in pitch and unresponsive in roll.

We took off that April morning and a smile spread across my face; a smile that, my wife will tell you, did not go away for two whole days. Sling2 was simply delightful. There were issues though. I could buy three C-150's for the price of a single Sling and money was short. Also, the engineers on the field were warning me that they didn't think such a light airframe would stand up to being banged into the tarmac hour after hour and day after day. But Mike said his plane could take it so I ordered two that day. That's half the story.

The other half begins on the day soon afterwards when I read a small story about the fuel injected version of Rotax's tried and tested 912 engine that was about to be launched and which promised a 20% improvement in fuel consumption. I called Mike right away and specified the fuel injected engine for my aircraft. Mike said okay but there was a truck load of stuff he probably didn't know and certainly didn't tell me. For example:

"the 912is is controlled entirely by computer"

No one else in the world had ever used this engine and it wasn't really available yet, because the boys at Rotax were still ironing out a few wrinkles. The Airplane Factory had not figured out how to install it yet. Also, it wasn't like a Continental or Lycoming where fuel injection, at least from a pilot's perspective, was a fuel pump switch in the place of the carb heat handle. In fact this engine turned out to be everything we pilots had been crying for since the Wright brothers.

What I didn't get was that the 912is is controlled entirely by computer. The drawback of course, is that it needs electricity. No one thought to mention that when I ordered the engine. It took me a while to let go of the security of my trusty old magnetos, the way a baby finally parts with a dummy. But I was won over by the fact that that the engine has two alternators which automatically back each other up in the event one fails and that the battery can provide electricity for a while even in the unlikely event of a dual alternator failure. Interestingly, the alternators are not belt driven, but are driven directly by the crank and they run submerged in engine oil.

I took delivery in November 2012. The 512nm delivery flight to home took 4.5 hours and I burned just 60 litres of fuel. That's got to be some kind of a record.

Slings ready to go to work

Gone were the days of stressing about students running out of fuel when flying into headwinds or getting lost on their solo long navs.

We put 100 hours on that little plane in the first three weeks and then one Sunday morning an ab-initio student on a solo navex had had an engine failure. The nose wheel had collapsed in soft sand, but except for that, and the prop, there was no damage. As it turned out, the clamp that held the fuel line to the engine wasn't up to the three and a half bar of fuel pressure and the hose had become disconnected. It was an installation problem, not an engine problem. It cost hardly more than the excess to repair the damage and so I didn't bother the insurance

Fuel burn for a 105kt cruise is 13 litres per hour

company with it.

Teething trouble with our state of the art engines were present, but offset by the fantastic support of Rotax. The gremlins began to appear at about 400 hours on each engine. Weird things with the engine's computer suddenly developing a spiteful nature. The maladies were ghostly apparitions, there one moment, gone the next. No one knew the answers. At least we were able to download the data from the engine computers and email it to Rotax so they could analyse it. Slowly a pattern emerged. As I understand it, and electronics is black magic to me, the problem was caused by the gradual degradation of the consistency of the output from the alternators, which lead to overheating of the voltage regulators. In the end we had an engine failure when the regulators melted down.

Rotax supplied replacements free of charge and paid the labour costs. By now we had six Slings, all with the 912is engine and they all got new alternators, new computers, new fuse boxes and new voltage regulators.

For complex reasons the gearboxes were not getting enough lubrication and some parts showed signs of early wear. Rotax redesigned it and replaced them all free of charge, including labour.

So all of a sudden the problems were behind us and the despatch rate went to better than 99%. Once in while we still have a bum sensor. The engine has quite a few of those and we now keep them in stock. But in 7,000 hours we have never had to add a drop of oil between services.

Does your new car use any oil? And I mean really, how many times have you driven your car down the road and worried about an engine failure? It's weird we pilots have been brainwashed into accepting an engine failure as a normal part of life. It is not normal. It's also unacceptable.

At 2,000 hours our first Sling had done the equivalent to 400,000km and I was very interested to see what was going to crawl out the woodwork when it went in for its major. The guys at the maintenance facility tore it down, right back to kit form, looking for any signs of corrosion and metal fatigue. In the end they beefed up a vertical member in the rear fuselage, more as a precaution than anything else. Though we operate in the salt air, no corrosion was found.

After that, the major on the airframe was moved up to 3,000 hours. So much for those pessimistic engineers.

Rotax ran a competition that gave a free engine to the first school to reach 2,000 hours on the 912is. We won. All they asked for was the old engine so they could check it out. They gave us a new one to replace it.

The impact of the Sling2/Rotax 912is on our operation has been unbelievable. We have done 7,000 hours on the type in the past two years. Average fuel burn is nine litres per hour of operation. Fuel burn for a 105kt cruise is 13 litres per hour.

Our profit margin per hour went up 400% compared to what it was on the Cessna. I am not a terribly greedy person and so I used that to drive our prices down. Low prices combined with state of the art aircraft, combined with our fanatical orientation towards customer service saw my school grow so that we currently have over 150 active students.

I wish my brothers could have seen it.

DESIGNnot

DAVE DANIEL

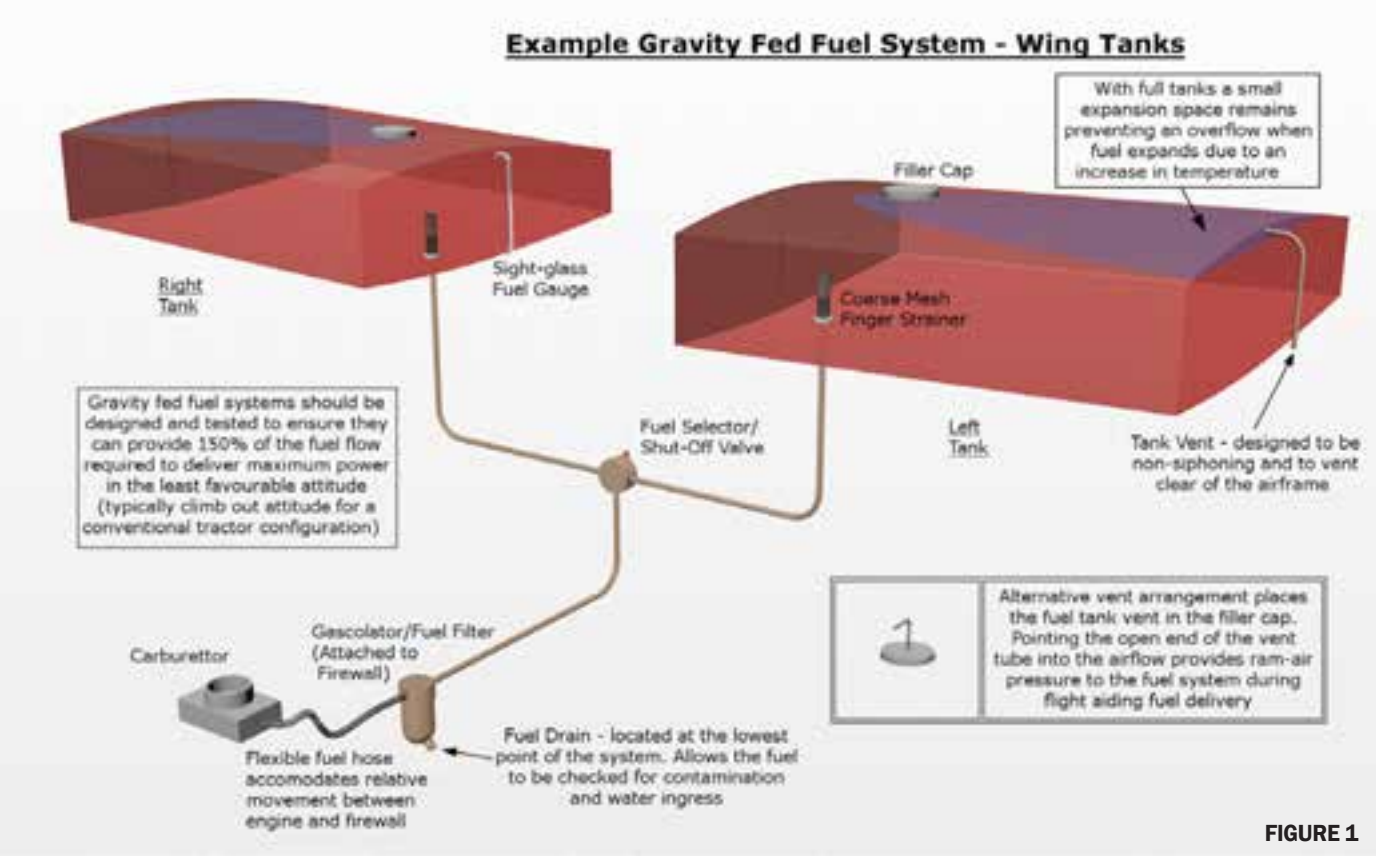


FIGURE 1

More fuel you?

IT is an inescapable fact that no matter what sort of flying you do, the energy required to get you into the air has to be stored somewhere. And yes, that statement includes gliders (Keeping your fuel in the tow plane/winch motor is clever - but it doesn't mean it doesn't exist).

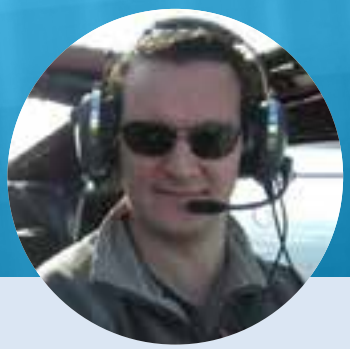
For the majority of our aircraft, the energy needed to fly will come in the form of Avgas or Mogas, so a means of storing and reliably delivering this volatile and flammable fluid to where it's needed forms a vital part of any design. At first glance this may appear to be nothing more than a mundane plumbing exercise, but it doesn't take a genius to spot what will happen if the designer gets it wrong. A sudden engine stoppage is bad enough but an in-flight fire is a truly horrifying prospect. So now I've got your attention, it's time to take a look at the challenges and pitfalls of designing a fuel system.

First up, fuel is heavy. If you squeeze the full 135 litre capacity into a Jabiru J160 (that's the fluid equivalent of 15 slabs of beer) you are looking at slightly over 100kg of fuel - that's almost 19% of the MTOW. Given the controllability impact of even small movements on an aircraft C of G, it's pretty clear you are going to want to store all this weight as close to the C of G as possible - to avoid ending up with an uncontrollable aircraft when the tanks are empty.

But that brings us to a second problem - where to put it all? Slap-bang in the middle of the plane may be the weight ideal - and there are plenty of aircraft out there with a fuel tank behind the instrument panel or under the seats - but sharing the cockpit with a sizeable quantity of fuel is not appealing to most people. I personally prefer wing tanks, if only because they guarantee leaking fuel won't soak into my socks. While crash-worthiness is often cited as a significant benefit of wing tanks, I'd suggest that in the event of a crash severe enough to cause structural damage, a tank's resistance to rupture is much more important than its location. Especially if you consider that following a crash, what's inside and what's outside the cabin may no longer be quite so clear cut and wing tanks - especially those in the leading edge - are in a position far more exposed to damage.

BUILT LIKE A TANK

Fuel tank construction methods divide into three types - integral, discrete and bladder. For sheet metal and composite airframes, integral tanks are common and offer the lightest option for fuel storage. By designing appropriately strengthened and sealed compartments into the airframe, the structure can perform double service as a fuel tank. In the case of wood, fabric and tubular framed aircraft integral tanks are not an option, so discrete tanks are the norm. Constructed separately from the airframe they do work out slightly heavier, but



"The energy required to get you into the air has to be stored somewhere

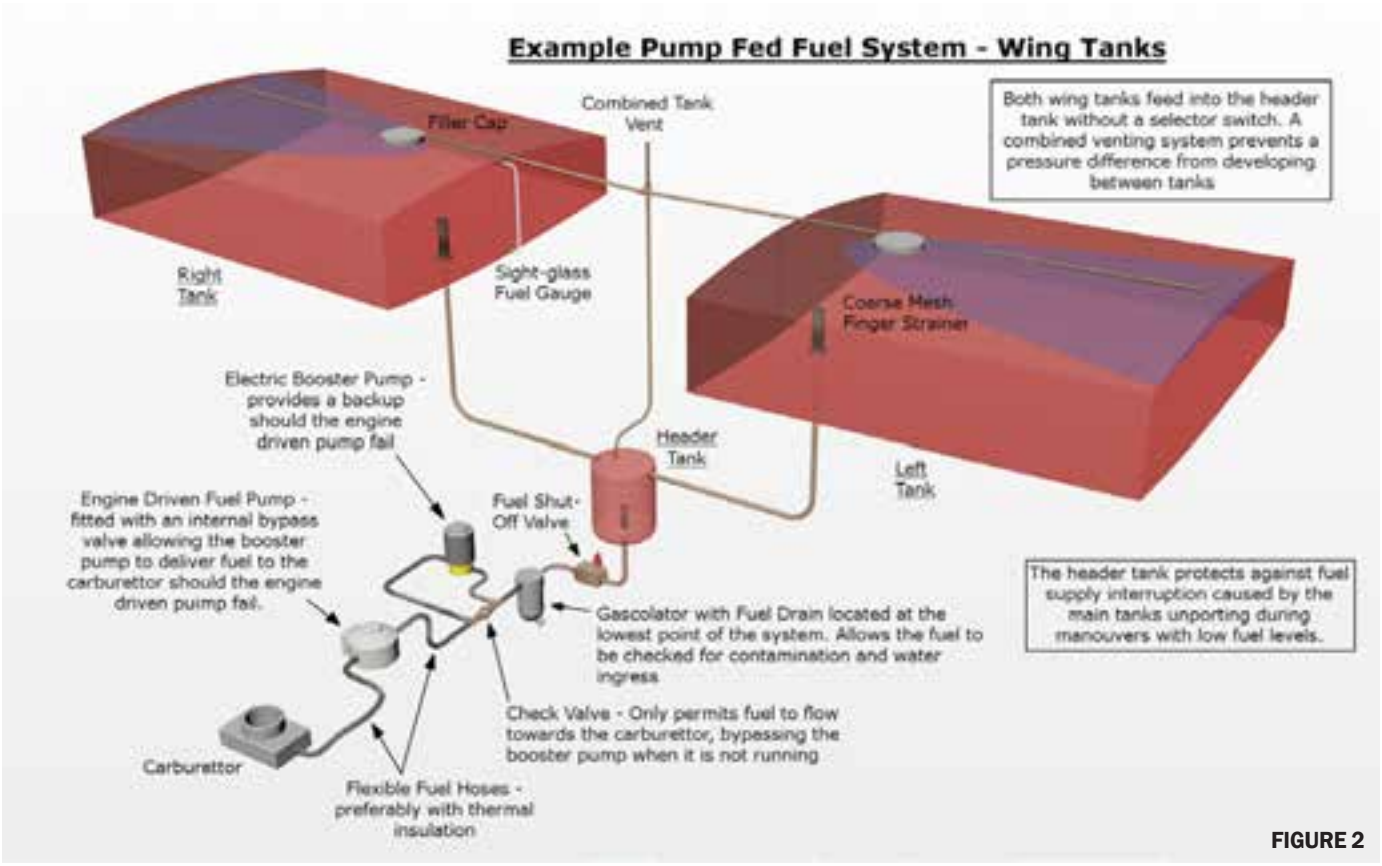


FIGURE 2

are more convenient to build and test and with some work can usually be removed for maintenance. Bladder tanks, basically being a flexible fuel bag designed to fit inside the structure, fall somewhere between the other two types. They turn up quite often in military aircraft and racing cars due to their crash worthiness and ability to provide self-sealing properties. They aren't cheap and I'm not aware of any production ultralights which use them, but there may be some out there.

From a construction perspective composite tanks have the advantage that they can be manufactured in almost any shape. However correct material selection is vital to ensure long-term resistance to fuel - including the ethanol which is progressively sneaking into Mogas. This is not just a case of avoiding leaks or fuel contamination, but critically for an integral type fuel tank, there must be no significant loss in the mechanical properties of the structure over the whole life of the aircraft.

Discrete tanks made from welded aluminium should theoretically be leak-proof(duh), but riveted tanks will always require sealing to be usable. This is achieved by painting or sloshing the inside of the tank with special elastomeric sealants - a messy and unpleasant task for a discrete tank, let alone one which forms part of an airframe. On the subject of sealing, it's important for designers to contemplate where fuel will end up when the inevitable leaks do occur and ensure drain holes are provided to avoid the potentially explosive build-up of fuel vapour in the airframe.

PIPE DREAMS

With tanks out of the way it's time to look at the plumbing. Aluminium 5052-O tubing is the usual choice for fuel lines in GA applications. However copper pipe is more readily available and so does turn up on some homebuilts despite being heavier and more prone to fatigue. Minimising the number of connections in a system means fewer opportunities for leaks, but there will always be some connections required, for which a wide array of aircraft grade AN fittings are available. While not a design consideration, it is worth noting that AN fittings are designed to accept a 37° pipe flare, not the 45° usually found in automotive applications. The two are not interchangeable, so if you are building or modifying your fuel system, getting the correct flaring tool for the job is essential.

"fuel is definitely a liquid and we'd really prefer it to stay that way"

When routing fuel lines there are several important considerations. Firstly, there should be a downhill slope with no intervening low points between the fuel tanks and the main drain (usually on the gascolator) to ensure that water and contaminants will only collect where they can be easily removed from the system. Secondly, vibration leads to fatigue failures and should be controlled by providing support at regular intervals along the pipe run - every 250mm is a good rule-of-thumb for small diameter pipes, but larger pipes will tolerate larger spacing. Care must be taken to ensure the pipes cannot chafe on support brackets or any other part of the aircraft structure, routing them away from areas where they may be inadvertently kicked or trodden on is also a good

idea. Finally, locations where relative movement can be expected between pipe ends, such as between the engine and the firewall for example, are not suitable for rigid pipes and flexible hoses should be used instead. Hoses with appropriate temperature, pressure and chemical resistance ratings are required, preferably those protected with an external braided metal sheath.

HAVING A GAS

Americans may insist on calling it gas but aviation fuel is definitely a liquid and we'd really prefer it to stay that way. Fuel pumps don't like pumping vapour and carburettors can't meter it, so allowing gas bubbles to form in your fuel system is a really bad idea. Unfortunately for us, combining Mogas (which is more susceptible to vapour problems than Avgas due to its higher vapour pressure) with a hot Australian summer day and high altitude creates the perfect recipe for vapour lock.

While an engine driven fuel pump is a great idea from a mechanical reliability point of view, it has some drawbacks when it comes to fuel vaporisation. First up it requires fuel to be routed close to the hot engine block, which raises its temperature. Secondly the pump is mounted on the engine and so sucks the fuel up from the gascolator rather than pushing it, which reduces the pressure in the fuel line. Both of these conditions increase the risk of vapour bubbles forming and need to be controlled. Placing firesleeves over the fuel pipes under the cowl gives fire protection but has the side benefit of insulating against engine heat. Any fuel systems requiring a pump should also be fitted with a backup electric booster pump. By locating this pump near the bottom of the system will help avoid low fuel pressure in the lines, at least while it is switched on.

BAD ATTITUDE

Aircraft fuel systems are exposed to much larger changes in attitude than most ground based vehicles. This presents some unique challenges when it comes to keeping the fuel flowing. For shallow and wide tanks the risk of attitude changes causing tank outlets to un-port is always a concern. A header tank is a common solution but installing baffles to reduce fuel slop and hold fuel near the tank outlets is also effective.

In a system with directly interconnected wing tanks, fuel will naturally transfer from one tank to the other any time the aircraft is flown with the slip ball off-centre. This can be irritating from a trim point of view, but taken to extremes can also cause a dangerous weight imbalance. When the tanks are full it will also result in fuel draining between tanks and then out of the aircraft through the vent system. Connected tank outlets but separate vent lines can also cause issues, especially in systems with a fuel pump. If the vents are exposed to different static pressures one tank can drain faster than the other, increasing the risk of one tank emptying and un-porting allowing the pump to draw air into the system while the other tank still has fuel in it. Of course the alternative is to install a selector switch so only one tank can be selected at a time, but that then relies on the pilot managing the system correctly, and let's face it, pilots don't have a great track record in that department.

Roll is not the only problem - pitch changes can cause serious problems too. I've not said much up to now on gravity vs pump fed systems, but pitch is likely to be the determining factor between which system to use. There are plenty of tales of homebuilt aircraft experiencing an EFATO on their first flight because the nose high attitude had not been properly accounted for in the fuel system design, resulting in fuel starvation on climb out. If gravity can't reliably deliver fuel at adequate pressure in any attitude at which the aircraft can reasonably be expected to fly, then a fully redundant pump fed system is the only choice, despite its increased complexity.

For fuel systems, as with just about every other aspect of aircraft design, the devil is in the details and adding complexity often leads to lower reliability. There's a lot to be said for the simplicity of a well designed single tank gravity fed arrangement... just remember to keep the blue side up.

NEXT MONTH Cooling

FLIGHT INSTRUCTOR'S FORUM

Facilitated by the aviation guru
Professor Avius

There would be few instructors out there who would argue with me if I said there are no new ways to kill yourself. In light aviation, the recurrence of various accident types seems to happen with almost boring regularity. The next three articles will deal specifically with the BIG 3 killers in light aviation:

1 Engine failure after take-off 2 Turning base stall 3 VFR into IMC

EFATO

I know what you are thinking - Oh no, not another article on engine failure after take-off. Yes yes, we all know - Lower the nose, land straight ahead, right? Once the student reaches a certain stage in their training, all instructors seem to relish pulling the power off at 200ft and urging them to get the nose down.

I'm sure every pilot, during their initial flight test, gets a few of these and, without fail, will dutifully lower the nose and say 'that one' as they point to a clear area or paddock.

In just the same way we teach almost parrot-like reactions to stalling, the student gets to know what he's meant to do and when he's meant to do it.

So why then are we still seeing EFATO's end badly? Why are pilots still yanking the turn on and trying to get home when the band stops playing?

There is no one simple answer, but clearly we are missing something, somewhere. We can train pilots to fly perfectly, accurately, on the numbers and to exercise good judgement in a variety of situations. Why then can't we train out of them the urge to turn back?

One of the biggest factors is the human element and when I say human, I mean the ancient human who lives deep down in all of us who used to get chased by sabre toothed tigers and other nasties. When a human being perceives a threat to his/her safety, a series of rapid and incredibly strong physiological changes take place in a fraction of a second. Some of the these changes are:

- pulse rate increases;
- pupils dilate to let in more light;
- hearing becomes much more sensitive;
- adrenalin is released into the bloodstream to help you turn and run or stand and fight.

It's an instinct as old as humanity itself, and when the proverbial hits the fan, the human being does things he/she would normally not even consider, or in this case, things he knows he should not do.

The second thing to consider is the aerodynamics. Question. What is the most crucial of the four forces in a climb? If you answered lift, you are not entirely correct. Thrust is what makes an aeroplane climb (or more accurately, an excess of thrust). When thrust is suddenly removed from the equation, the aeroplane will almost instantly stop climbing and, with no change to the attitude, this results in an increased angle of attack. In those crucial few seconds after the band stops playing, while you are busy succumbing to your primal instinct to run away from the tiger, the aeroplane is rapidly:

a) decelerating;

b) increasing the angle of attack (because you are just holding the nose in the same position) which also increases drag; and

c) descending.

To now ask the aeroplane to turn rapidly at a high angle of bank is simply too much. The science runs out of puff and the wing can no longer sustain the last morsels of lift. The result is a rapid increase in the descent, followed by a stall and spin.

What can we do to avoid this deadly situation?

Again, there's no simple answer, but we as instructors need to address both the human and performance elements. An excellent tool (if used properly) is the pre take-off safety brief. This simple, short speech given before the throttle is opened should help reduce the time spent in fright mode, and also give the pilot an action or procedure to go to.

But the brief alone is not enough. We must constantly drum in not the notion that the engine might fail, but rather the notion that it is always about to fail. Simple, subtle patter such as "where are we going to land when the engine fails", as opposed to "if" the engine fails, will help build the picture.

The idea is to get the student to take off thinking he is about to land in the paddock straight ahead every time. The pilot needs to develop the normal procedure to fly from landing area to landing area during the climb out. This technique may give him/her an extra second or two of cognitive function after the engine fails because they will simply activate a plan already in the mind rather then having to make a new decision to land ahead.

At this crucial stage, options can be considered, such as taking flap, delaying flap, sideslipping or manoeuvring to avoid objects. The pilot should have brain space left to execute these injury saving manoeuvres . A good understanding of how flap and slipping etc affect the descent rate is absolutely paramount.

Once on crosswind, the option to return to the field can be considered. It should be pointed out that even then, the field may not be the best option.

An engine failure does not result in a stall and spin, only the pilot can make that happen.

NEXT MONTH Turning Base stall

LEARNING TO FLY

Shannon and instructor, Liz

Going up, down and around

BY SHANNON LEGLISE

I WAS informed my next lesson would be climbing and descending. I had to wait a couple of weeks for the airfield to dry out after all the rain - this is where I felt the addiction really starting to kick in. After a couple of tense weeks with withdrawal symptoms, I finally got myself off the ground.

After a quick recap on straight and level, it was time to get into it. I was told I was going to use three different types of climbs, two different types of descents and be able to perform level turns with up to a 30 degree angle of bank. All of which I had already done without realising it.

Using different pictures, my instructor, Liz, explained the three types of climbs. She taught me that Vx stood for best angle of climb. Best angle of climb is associated with an airspeed - for Pinky it is 65kts and is used for obstacle clearance. Vx will give me the most height for the least amount of distance over the ground - it has a higher observed angle than other types of climb.

Liz explained Vy stood for best rate of climb. Vy is used is used for the most height gain in a given amount of time. Best rate of climb for Pinky is associated with an airspeed of 70kts. Vy has a lower observed angle over the ground compared to Vx, but there is more height gain for the same amount of time.

After Vy is cruise climb. A cruise climb is used for speed and distance rather than height gain. A cruise climb has a lower observed angle over the ground compared to Vx and Vy and not as much height gain for a given amount of time, but in that time the aircraft will travel further along the ground than the other two.

After I understood the differing types of climbs, Liz taught me it was the same sequence of actions to enter the climb as it was in straight and level - Power, Attitude, Trim. When leveling out at the top of the climb, however, the sequence of actions changed to Attitude, Power, Trim.

After I mastered climbing, Liz explained the two types of descents, the cruise (or powered) descent and the glide. The purpose of a cruise descent is to maintain airspeed, descend in a shorter distance and keep the engine warm. In a glide the total drag on the aircraft is at a minimum, therefore the range is a lot further. A glide is associated with a certain airspeed (65kts for Pinky) and a higher nose attitude than a cruise descent.

Once again I was instructed on how to enter a descent. Power, Attitude, Trim. By the end of the lesson I was sick of these words, but I'll never forget them.

Moving on from climbing and descending, I was taught all about turning at 30 degrees and maintaining altitude. Liz drew some cool vectors and explained how, in a turn, the lift vector tilts, creating the need for extra lift. To achieve that lift, going back to straight and level, the angle of attack must be increased. It was pretty straight forward.

The flight itself was fantastic. I was finally off the ground again! I had gone up and down and up and down and around and around so many times that I was dizzy by the end of it. Didn't stop me from wanting more though.

With a total of four hours logged now, I am ready and raring to go again, to fill up more of my log book pages.

NEXT LESSON **Stalling**

HOMEBUILDER

DAVE EDMUNDS

Taking my tablets

I RECENTLY had to replace my ancient iPhone. Ancient is a relative term, but Apple had stopped updating the operating system on this model and the battery was failing. I also realised that my Garmin GPS was long in the tooth. So, what to do?

I bought another iPhone. Apple has this trick of sucking people like me into its world, through, for example, commitment to other programs in which I have invested and the simplicity of updating. And they look cool.

While I would love to build another plane, this is not currently on the cards. But, if I were to do so, I would not be making provision for a dedicated GPS in the panel.

OzRunways allows a subscriber to run a phone and a tablet on the one licence, and AvPlan allows three devices, which in theory provides me with the redundancy I would like. While I have now flown around 200 hours with OzRunways and not found a problem, perhaps there is something that might just go wrong when it is least convenient. A solution to this problem is to run different devices running different software, so that the problem will not occur simultaneously on both devices.

Lest this discussion devolve to one of aviation safety, I should make it clear that I am talking about devices that are not related to immediate safety. No one has died because their GPS system had a glitch during a VFR flight.

This, as you can imagine, is a contentious area of discussion in fly-by-wire aircraft. It is dealt with mostly through custom real time operating systems, very well developed programming environments and specific hardware requirements that allow for self-checking of their integrity. There are very tight specifications for the operation and integrity of the thousands of peripheral processors in a large aircraft, and for the computers which tie these processors together.

Similarly, TSO certified devices comply with a set of quality control standards, that, I contend, are irrelevant to our environment, and in all likelihood provide no more reliability.

What is done in sophisticated airliners and aircraft designed to fly in IMC is largely irrelevant to our environment. While there is no aspect of the development of the software and hardware of an iPhone that is likely to meet stringent avionics standards, Apple sold 33.8 million iPhones in the last quarter, which is significantly more sales than those of Airbus. Each of these devices and the 14.1 million iPads Apple also sold can report errors back to Apple and the company is able to distribute updates to users very simply - and does so frequently. There is an overwhelming commercial imperative to get it right through a user database driving quality and error correction that aviation suppliers cannot hope to emulate.

It is difficult to get information on the development protocols of companies such as Garmin, so it is difficult to work out whether there is any inherent reliability advantage. Their volumes are much smaller, so the budget for their operating system, user programs and hardware must also be much smaller than Apple, Google, Samsung and the like, and so they do not have the user base to identify problems.

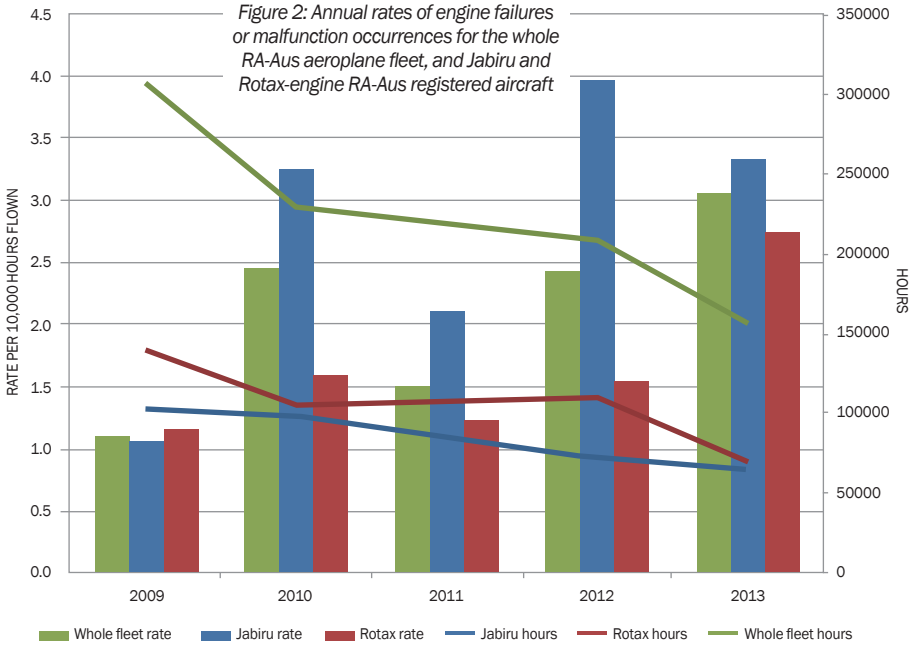


Figure 2: Annual rates of engine failures or malfunction occurrences for the whole RA-Aus aeroplane fleet, and Jabiru and Rotax-engine RA-Aus registered aircraft

So, my decision is to run OzRunways on my mini iPad and on a new iPhone in place of my old Garmin. I performed perfunctory tests on both OzRunways and AvPlan and my decision to go with OzRunways was pretty arbitrary. Both products blew me away with the quantum leap in functionality compared with what I was using before.

OzRunways tells me that it developed its Android version using Java as the development environment and it uses Objective C as the development environment for the IOS devices. There is no shared code, so this reduces the probability of simultaneous crashes. The underlying hardware of the devices is similar, both use ARM processors, and both use versions of the Unix operating system, but it is quite possible that there is sufficient diversity to provide some level of protection against a simultaneous crash. Of course, the probability of a crash in just one device is doubled.

The probability of a problem in my navigation software, not related to the hardware, occurring on both devices simultaneously, at some critical time when I can't use my compass is so diminishingly small that Apple won, even though theoretically they should not have done so for my second device. If I was making my decisions right now I would have considered an Android tablet instead of my mini iPad, now that OzRunways is available on this platform. However, the advice on the OzRunways site concerning the selection of Android tablets does not fill one with confidence.

The issue of TSO'ed devices and other aviation specific devices compared with generic devices from Apple and Google (Android) seems to me to be a topic deserving some discussion in these pages.

A COUPLE OF WHINGES

I have to renew my ASIC. I don't know why I have to have one. I am never asked for it and it provides precisely zero protection for anybody. I have written in these pages about this before. I asked for information under Freedom Of Information (FOI) for statistics concerning ASIC applications and, you won't be surprised to learn, no one has been knocked back because they were found to be a terrorist.

As a Jabiru owner I was very concerned about the flight limitations proposed by CASA. Many homebuilders now select Jabiru engines for homebuilt aircraft such as the Sonex. There was a bald statement about a worrying rise in engine incidents, but no further information concerning which model of engine, hours flown, mission, airframe, or expected reliability. So I asked under FOI for the data set underlying this decision. Now, it is a general principle of government that such information should be freely available, but after some considerable discussion, CASA informed me that a fee of $158 would have to be paid to obtain the information. I objected and argued that the reputational damage alone made the release of the information very much in the public interest. CASA informed me it would stand by its fee, as the release of the information was not in the public interest. I must live in a different world to these people. CASA did refer me to the chart compiled by the ATSB, which appears to contradict the assertions in the proposed limitation.

NEXT MONTH **Powering telephones and tablets in flight**

Members' market

2671 JABIRU SP 500/6 19-3717

Well maintained hangared. 449.5 hrs. 123kts @19ltrs hr. Sweetapple cruise prop, custom extractors, 10 ply mains, 85ltr tank. STD gauges electric turn coordinator, volt meter, fuel flow meter. XCom VHF & headsets, + UHF & 2xGPS. Grim voltage regulator, Anderson jump start plug. Deliver anywhere. $40,000 . 08 9921 8790

3408 JABIRU UL 2.2

TT 820hrs A & E. Original motor untouched. Long wings with winglets & vortex generators. Excellent STOL performance. Cruise 95-100 knots @ 14 lph. Electric T & B, strobe, Garmin aera 500 GPS. Spare prop. Always hangared. S.A. phone John 0400865868. $30,000 ono.

3416 JABIAU SP500 - 3300

TT 250hrs. This beautiful one owner aircraft has had no expense spared. Excellent GA Panel, Quallity Radio + Icom with headsets. Artificial Horizion. Garmin 296. 2 Pac Paint Leather Trim, Quick realease wings, Lame 2 Serviced Price Reduced $30.000 0418573212

3479 JABIRU SP500

Powerful 6 cyclinder set for cruising with 135L wet wings. Well equipped. Always hangared with full maintenance history. All ADs/MSBs current. Comes with spare Thompson prop, headsets, tie downs, chocks, spats, CO detector, 7"GPS c/w all Australian wac & vnc charts. $39900. Jon 0423377771 (Perth). Consider delivery Australia wide.

3526 X-AIR

X-air Standard .Reg 19-3322. Rotax 618. Brolga prop. Doors. Luggage compartment. Full instrumentation with X-com radio with intercom & two headsets. Spats not fitted but included. 256 hours TT airframe & engine. Full maintainance log. New Battery. Always hangered & covered. Lethbridge, Vic. Peter 0402599306 or Rod 0448470390. $17,750

3561 AUSFLIGHT DRIFTER W/B CERTIFIED

ausflight Drifter w/b factory, 582 bluehead oil injected long range tanks radio eng 155 hrs good cond easy to fly contact Lindsay . boydl@iinet.net.au . 0414586255 $10,500 price reduction

3579 CARBON CUB SS 180HP

Carbon Cub SS by Cubcrafters Inc, 230 hours, ready to fly away. 180 hp, optioned up, you will never get one at this price again. Tough, Safe, Powerful, and most off all FUN. Come and fly the most exciting cub ever, Tyabb Victoria. Call 0414444971 WWW. cubaircraftaustralia.com.au

3674 VIKING ENGINE 110HP HONDA

New Viking Aircraft Engines Inline 4, Liquid cooling, fuel injection, 110hp dual FADEC, dual fuel pumps Update your Jabiru today!! ..phone Jon Gooding 0412091487 jgooding@chw.net.au Ballarat $17990

3715 HOT AIR BALLOON (RAVEN)

Hot Air Balloon (Raven) Complete with new Honda

inflator Fan Flight Gages, 3 Alloy Gas tanks, log books, good basket and envelope. $7,500 ... Liberty Alliance libertyandassociates@gmail.com 0435802035

3721 SONERAI 2L

Sonerai 2L, Red with white trim, 100 hours, taildragger, Rego 19-4485, Aeropower 2100, twin bings, 4 to 1 exhaust,120 kts @ 12ltrs hr. 9/10 condition. Asking $35,000. Open to all offers. Sadly, must sell. I'm too old for this speedy beast! Contact Rolly 0400 594 886 Yarragon Vic.

3728 LIGHTWING GR912S SPORT

Price reduced $40000. Great first plane, easy to fly. Nose wheeled, 550hrs TT, Rotax 912s 100hp, Flaps, Icom A200 VHF radio, Electric turn coordinator, GPS (basic non aviation type, large screen), 3 blade Brolga prop, STOL performance. Contact Gareth Lloyd on 0402845244 (WA) or blue_sky@live.com.au

3825 RV3-B

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 0409875926 keneyearsrv4@bigpond.com

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, $68,000ono contact Jeff, 0418 843954

3875 J230

Jabiru J230. t/t 540 hrs top end a/h 40 hrs ago 2006 and flies like new.3blade,fuel flow meter, UHF, vert compass Alot of extras, Orginally $75,000 would like a quick sale now $55,000 phone 0428826551 or arrandale2@bigpond.com

3914 JABIRU J 400

First flew: March 2005 TT: 460 hours basic Jabiru instruments with turn co-ordinator radio, transponder, Garmin 295 GPS through bolts done at 442 hours. new piston rings, valves and springs fitted by Jabiru flywheel mod done Price: $50,000 If interested, please contact me Rory on 51551392 or 0448551392.

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 $7500 o.n.o. Call Harry 0412 426581 for details

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 0428727152 jolaney@bigpond.net.au $33500.00

3995 JABIRU 160C

Immaculate !!! As new, factory build, lame maintained, 410hrs engine/frame, 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. Russ 0418276747

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. $15,000 ono. Ph Jack 0429 801 548 or 03 5156 4355

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. $ 11,000 ono. Ph Tom 0409537440 or email tpieper28@bigpond.com

4028 QUICKSILVER GT500

2 seat GT 500 in good condition. New upholstery and tyres. 486 air frame hrs. Silver head 582 with 279 hrs. Fabric good condition. Micro air 760Q radio with two headsets. Based at Dalby QLD. Always hangered. Dream to fly. Ph 0437 738 869. $21500 ono. Rego April 2015

4099 JABIRU SP500 6 CYLINDER ENGINE

Great little factory built a/c: 6 Cylinder engine: 100 Litre wet wings: 6 inch wheels: Garmin GPS: Standard Jabiru Instruments: 2 head sets: Fast cross country a/c: Registration expires 05 Sep 2014: Always hangered and located near Kilcoy: Nil accident history: Price reduced to $41000: Contact John 0402-133-742.

4139 LIGHTWING GR 912 HELIVIEW TAILDRAGGER

Lightwing GR 912 Heliview Taildragger. 2100 hr TT. 75 hrs on NEW Rotax 912. 1925 hrs /14 years remaining. Manual unlocking tailwheel. 6 ply tyres. Fuel flow meter . ICOM A200. ANR Headsets . Wheel Spats / mount hardware. 290kg BEW, 480kg MTOW. L2 maintained.TR/DEL available. $ 45,000 0427113207 Peter

4233 AMPHIBIOUS TRIKE

Fly off water or land with this fun machine. Ramphos Trident. Rotax 912 80hp. Strutted H15 wing. TT 115hrs. All the gear you need including 2 life jackets, 2 Icaro helmets, 2 headsets. LSA Registered 27th June 2015. Phone Paul 0439 922 323.

4234 SKY FOX GAZELLE CA25N

Lame maintained, 80HP Rotax powered, Bolly 3 bladed propeller, folding wings, GPS factory fitted, flys well, all ADs up to date. Hangared at Tyabb, Vic $28,500.00 contact Roger 0419 891 431.

4300 2012 NYNJA 100HP

2012 Nynja Rotax 100HP Approx 135 HrsTT. Always Hangared. Icom A210. Transponder, EPIRB. No damage or heavy landings. Suit beginner/advanced pilot. Tinted windows. Steerable nosewheel. Hydraulic brakes. Full maintenance log. All SBs and ADs done. Cruise 90KIAS@5,000RPM. 94Ltr tank. $55,000 ONO Contact Scott 07-34091815 or 0438127488 or cscotthendry@hotmail.com http://www.youtube.com/user/TheCscotthendry

4319 JABIRU 160 D - REDUCED PRICE $58,000

Immaculate as new condition, reg.12/09. Service every 20 hours. Always hangered.Leather seat cushions. New Sennheiser Headphones.10 ply tyres. On board camera. Electric flaps. External power socket. Garmin 296 GPS. Microair Radio.Nil accidents or hard landings. Can arrange delivery. John 0419 485 525

4323 TECNAM SIERRA SYNDICATE SHARE

1/4 Syndicate share 2007 Tecnam p2002 hangared at Cessnock. New Rotax 912,high availability, low operating cost + fixed costs.Well maintained. The Syndicate works well with 3 like minded aviators. $20,000 per syndicate share. Please contact Gerard Kitt 0439 541 911 or Allan Tindall 0427 763 375

4331 EVEKTOR SPORTSTAR - WRECKING

Insurance write off - Tested 2000hr 912uls with re-cond gearbox, full set of gauges, GTX 327, Icom 210, Aera 500, landing gear, wheels/ tyres, harnesses, seats, joysticks, fuel pump, many other parts suited to building project or cheap spares. All reasonable prices, will freight if required. Call Bill 0407 656832

4333 VANS RV6A

RV6a, excellent for fun or touring. 0-320 Lyc engine 1200TT, 450 hrs since new eng & wood prop. JPI EGT CHT Fuel flow. Autopilot with GPS .Selling bc built RV7. Terra radios .Txp. VGC. $87k Price neg. Contact Jeff Rowlands ph 0417335799. Email .jkrowlands@gmail.com. Mansfield Vic.

4336 CESSNA 150 H

This plane has always been hangered, has standard instruments, King ADF, engine 759 hours to run, RA registered now ceased, Great plane needing owner to get it up in the air again, $25000 ono. Mobile 0419 738 952

4349 TECNAM RETRACTABLE

Engine airframe 620hrs, 912ULS, King KLX135A GPS/Com, Steam gauges, Autopilot, Cabin Heating, Long range tanks, Electric trim, PTT, Tinted windows, Cabin top lining, 12vot socket, Key locking, Landing Light, Excellent condition, Maintained by AME/L2 owner, Sold with new main tyres, full rubber replacement fresh 100hrly, $93,490.00, Welcome inspection ph 0433274599

4353 VINTAGE PIPER CUB J3C85

Piper Cub J3C85 1946 Engine rebuilt by Riverina

Airmotive Dec 2011 TTSO 91 hours TTIS 3806, VHF, UHF, starter, reupholstered, maul tailwheel, beautiful aircraft $80,000.00 Phone 0886481813 or 0428826551 or email kestral@activ8.net.au

4356 ONE OF THE VERY BEST JABIRU'S IN AUSTRALIA

FLYING DOCTOR /GP OWNED BUILT AND SERVICED BY FACTORY NO EXPENSE SPARED PANEL MOUNTED BY FACTORY =.GARMIN GPS,695 ICOM 210 RADIO , GARMIN 327 TXP, BOSE NOISE CANCELLATION HEADSETS X2 ORDERED FAST PLANE = 141KNOTS AT 500 FEET DURING TRIALS CRUISE 120-122KNTS 25L HR 2009 186 hrs BRILLIANT Kevin 0741252371

4364 TERRIER 200 CAMPER

Terrier 200 Camper 243 TTIS. Garmin 296. Northstar Fuel Flow. Electronic ign with back up. Aluminium tanks. Not being flown enough. Always hangared. Quick sale. $45000. Pieter 0407446100 WA

4376 TRELLEBORG T510,140-6 10 PLY RATED TYRE

TRELLEBORG T510, 140-6 10 ply rated tyre $99 each (+p&h) The tread is very deep. Triple your tyre life. Good for bitumen. Fits, mains and nose on Jabiru's. Spats OK. Weight 2.7kg each. Buy in pairs to keep postage lower ($10 - $56). Contact sales@topfun.net.au for a quote.

4378 BAYLINER CRUISER FOR SWAP

Available to swap for RAA Aircratft. 2004 Bayliner 245 Ciera. 24.5' cruiser, sleeps 4, shower, kitchenette, 5.0L 250hp Mercruiser VGC on Galvanised Trailer. Market value 55-65k. All offers considered & willing to pay extra cash for more expensive aircraft. Located Agnes Water Qld. Delivery can be arranged. Contact 0411961877-scaffsales@bigpond.com

4380 KR2 'MINI MUSTANG'

Two place (77kg persons) RA AUS reg 19-3873. 120 kts cruise with 170kts VNE, new (55hrs TT) Jabiru 2200 (ser. 22A3586), 60" Bolle prop (TT55hrs), Level 2 serviced, always hangered, 40ltr main header tank with 35ltr wing tanks. Great aircraft, nothing left to do. Reluctant sale $35,000 Townsville Alan 0407356948.

4387 SENIOR INSTRUCTOR/POTENTIAL CFI

Golden Plains Aviation An opportunity exists at Lethbridge Airport, Victoria, for an enthusiastic and experienced instructor to join one of Australia's most progressive RA flying schools. You will have a Senior Instructor rating. The opportunity exists to become the CFI. Website: www.goldenplainsaviation.com.au For further details contact David Mackay: 0419859085.

4388 AIRBORNE EDGE 582 X

Airborne edge 582 X. Streake 2B wing, near new. Always hangered. Engine 258 hours, cyclonic tested at 257 hours. New: water pump seals, aircleaner, jets, needles and fuel hoses. 4 blade prop., radio, intercom, 2 helmets. Exras: flying suit, mister funnel, wing cover. $19000 ono. Phone 0409040190 or 08 95615533

4389 AEROCHUTE AND TRAILER

Narrow head plate Aerochute and trailer 503 Rotex motor 350sq ft chute 238.8hrs Aerochute has all instrements +front hand brake ,hand throttle ,more to list as well as a brand new 500sq ft chute Price $7000 for just machine and trailer or $10,000 with new chute Ph Ian on 0407767162

4391 JABIRU SP470

2001 Jabiru SP470 TTIS 511.5 hrs, $27000,85 HP Jabiru engine. 95 kt cruise. Aircraft in VGC inside and out,always hangared and professionally maintained. Ph 0400472303

4397 TECNAM ECHO SUPER P92

Great condition, Long range tanks. Has just completed extensive refit, new glass, leather upholstery, complete strip and respray on Tecnam white, just add the decals of your own design to personalise . faultless condition. will exceed your expectations Price to sell as have new aircraft. $85,000 0419348288 or pbugg@onthenet.com.au

4398 JABIRU 230D 25TH ANNIVERSARY EDITION

Factory built 2013. AS NEW CONDITION, SUIT NEW BUYER. Only 84.6 TTIS Dynon Flight Dek D180 EFIS with full 6 EGT+CHT guages. Garmin touch screen Aera 500 GPS. Garmin GA spec COM/Transponder. Nil accidents, always hangared YLIL. $95000 Contact: Stephen 0400 644 208 srise200@gmail.com

4399 X-AIR F (FALCON)

Fully refurbished 2014. Reg - Dec 2015. New 582, new skins, new tyres. 68" Brolga prop. Cruise 60kts @ 5300rpm. Easy & forgiving to fly. Exc short field perf. with 3 stage flaps. Always hangared & covered. Based in Nth QLD. $20000. Email:-bsgjb@jcu.edu.au. Ph:-0409348293. Search Youtube- "X-Air Falcon Tuflux".

4401 PACIFIC IBIS

Beautiful, solid, all metal aircraft. 100hp Rotax engine. Total engine and airframe hours 410. Cruise 100kts,stall 30kts full flaps. Dual controls. 120ltrs fuel tank. Garmin296 GPS. Electric trim elevator and ailerons. Always hangared, nil accidents. Very safe aircraft. Responsive slow speed flying. Genuine sale, $70,000.00 Rod Brown - 0747411420

4402 EURO FOX

Eurofox like new TTIS 54 hrs suit new buyer. Custom built trailer also available. Folding wings for easy transport and storage. Always hangered, price $80,000 phone Peter 0418 381 360 Tyabb

4404 KITFOX

1994 Kitfox ,total hours 390,582 65hp Rotax engine,cruise 75kts,100lt fuel tank,Pilot 3 GPS,Icom 200 radio ,intercom,luggage compartment,Brolga Prop,folding wings,always hangared,located in Melbourne.$31,000 Ph 0408356213

4405 HANGER SHARE, MORUYA

Would you like to own a quarter share in large, clean, modern and secure hanger? Has power and room for workshop equipment. Moruya is close to Canberra, and is a wonderful place to fly from. Very cheap at $40k. Phone 0416283111 or jeff.roberts2001@gmail.com

4407 CORBY STARLET CJ1

Beautifully finished Corby Starlet, regarded as one of the best in the country. Jabiru 2200 gives great performance: 115kt cruise @13 litres per hour, climbs at 1,500 fpm. Currently VH registered but can easily be transferred to UL. Can deliver anywhere in Oz. $25,750. David Butler: 0418250763 or 0299381834

4408 HUMMERCHUTE 582 ROTAX

Aerochute's big brother for the heavier pilot and passenger, 242 kg payload. With extended foot rings and throttle. Bought new in 2012, now 80 hrs. Lynx intercom & headphones, Icom radio & helmets. All accessories included. On custom built trailer. Suit new buyer. $18,800 ono. Leeton NSW. 0400 401632

4409 FK9-ELA

FK9-ELA $80,000, 80 hp rotax ttis350 hrs lame maintained.epirb,garmin695gps,transducer,elect flaps,computer management screen, adj, seats, headsets, twin joystick controls, sep baggage comp,low landin speeds,immaculately maintained, cruise at 90-100 kts@ 11-13ltsph, excellent comfort and visibility, Gawler SA.mick 0418831790

4411 EUROPA XS TAILWHEEL PROJECT - VALUE!

GREAT VALUE. $92,500-firm. Best-equiped Europa project-near finished anywhere. Includes Garmin GTN650 navigator, STEC30-autopilot, Sandel SN3308-EHSI, CGR-30P Engine & Fuel Management system, SL30-nav/com, KR87-ADF, MD93-clock and USB Charger. Electric AH. All equipment TSO's for IFR category. Just panel-worth-more-than-USD$40K. Zero-time-Jabiru-3300 engine-solid lifters. Amazing value aircraft. Call Tony 0413810093

4413 RANS S12 FOR SALE

Rans S-12 Airaile 1994. T/T 490 hrs, Rotax 582 oil injected 130 hrs. Empty wt: 243kg MTOW: 435. Major service, refurbishment under LAME supervision. New skins, fuel, oil, brake lines, fuel pumps, primer. Yaesu VHF, Bolly prop. Easy to fly fun aircraft located in western NSW. $17.000. Ph:0488971614

4414 FOXBAT A22LS FOR SALE

Rotax 912 ULS, 112litre fuel tank 85kt cruise @ 17lts per hour (4800rpm) Dynon Flightdeck 180 with Garmin Aero GPS. Total Time in service 1000 with approximately 700 hours on the engine. Mode S transponder. Please contact by email neel@soaraviation.com.au or mobile 0488 747 069

4415 QUICKSILVER SPORT 2S

Quicksilver Sport 2S with Rotax 582, E Box, oil injection, electric start, 3 blade, Skydat EIS, ASI, ALT, Black Max brakes, larger tank, tundra tyres. I am selling the aircraft for $30,000, plus Lotus Floats extra $6000. A unique opportunity to buy a low hours, high spec aircraft. Bert 0418440575

4416 MUSTANG

Mustang WII fighter call Peter 0409505393 you want see one this cheap ever again.$15,000 firm. Hanged at Cesnock. Needs rego ,turn key fly away.

4417 FOR SALE: SONEX KIT PLANE

Tricycle Sonex kit includes: Engine, Prop, Baffle kit, EGT, CHT and fuel probes and Instruments. Kit contains canopies, Interior & glass fairings. Components already built: Ailerons, Elevators, Rudder& Vertical fin. Horizontal fin close to completion. Aft fuselage approx 40% constructed. Left wing has also been started. Asking price $26,500. 0397387100

4418 ESQUAL VM1 C/F KIT

Privately imported Esqual VM1 C/F Kit with Jabiru engine mount . We have decided not to continue with the project. The kit is in a Melbourne warehouse and offers should be made taking into account that the purchaser is to collect the kit. Enquiries and offers are made at hallspj@yahoo.com.au

4419 ENGINE WITH PROPELER FOR SALE

Full life reconditioned aero power 65HP. engine. All log books to go with it $8300 ono. Hear runing in airframe. A rare opportunity to get a bargin. Oliver Walker 0413 785 265

4421 WINTON JACKAROO

Winton Jackaroo Always Hangared good condition More Info and Price Ph 0427521363

4422 FK-9 EUROPEAN LIGHT AIRCRAFT (ELA)

German designed, ideal trainer. Steerable nose gear, one-piece main gear. Foldable Wings 'Reliable' ROTAX 100hp Glass Cockpit, Dynon EFS-D100, EMS-D120, Auto-Pilot, Radio, Trans, Garmin 695 GPS Electric Trim, Cabin Heat Low Drag >100kt cruise 110lt fuel , 35kg lug.Hangared, L2 Svc $115k Inc GST Gympie 0403 398 173

4423 CESSNA SKYCATCHER 162

Cessna Skycatcher 162, 2012. Airframe 250hrs, Serial No 1600198, Rego 24/8182. One Owner since new. Purchased June 2012. Optional Extras Include second MFD, Sun Visors, Intercom, EGT Sensor, External Power Receptacle and Macaulay Aluminum Propeller. Located Tara, Qld. Price $132000 (GST Inc). Contact Andrew Crowe 0428 657 014

4425 THATCHER CX4 PROJECT

Abandoned project, wings built, Westbery tail plane kit, fuselage, bulkheads, tail wheel kit, aircraft spruce hardware, extruded alum, alum sheets, nothing to spend on airframe $7000 ex Caboolture may assist with freight ph 0434 515 628

4430 LIGHTWING GR 912S

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Martin, which is backed by Hong Kong based KuangChi Science, raised AUD$27 million on its official stock exchange launch day in February, giving the company a value of about AUD$98 million.

Martin is hoping its futuristic looking machine will become an important asset to first responders, such as the police, fire service, defence and natural disaster recovery and emergency response organisations. No word yet if normal Australian pilots will be allowed to buy one for fun or who will manage their registration, RA-Aus or CASA.

The jetpack's composite structure is designed to protect the pilot in the event of an incident and a ballistic parachute system can deploy from only a few metres above the ground.

The company says an unmanned, remote controlled version will carry a payload of up to 120kgs.

For more information, www.martinaircraftcompany.com.

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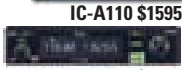

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