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MAY 2014 VOL 34 (5)

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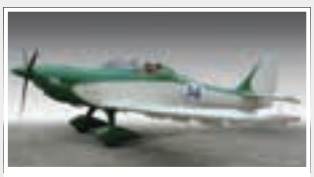

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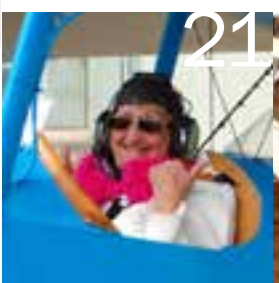

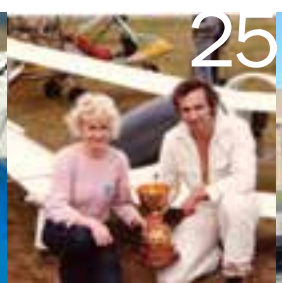

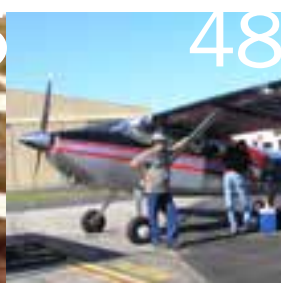

SPORT PILOT

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

FOR MAGAZINE ENQUIRIES 1300 838 416
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TO CHANGE YOUR MAILING ADDRESS EMAIL admin@raa.asn.au

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President's Report

MICHAEL MONCK

Exciting times

THIS is my first column as President and, while I have only been in the role for a couple of days, I can assure people it has been a pretty exciting period! We are still dealing with problems of the past, as well as trying to get ahead of things and pre-empt some of the challenges we will face over the coming years. To this end it is worth mentioning a couple of points.

We have struggled with many issues around maintenance training in recent years and have made commitments to CASA about implementing some sort of program. The framework of this is now in place and we hope to have something out to members shortly. This will enhance our skills as maintainers and will help us to fill gaps in our knowledge in relation to looking after our pride and joys.

On top of this we are still talking to CASA about the implementation of an aircraft inspection regimen, which they are imposing on us. We have largely ignored our commitments in the past - which has led us to this situation - and now we are paying the price. But we are working to continue the conversation.

In April, we attended the Standards Consultative Committee meeting in Canberra and we noted with interest that CASA is reducing the level of regulation in certain areas. It was said they are reducing the number of rules by some 3,500 or so which gives us hope. At one point it was noted that CASA is also subject to the requirements of the Federal Government's program to cut red tape (www.cuttingredtape.gov.au) and is working to comply with the 10 principles outlined as part of that policy.

Two things became apparent during this meeting. Firstly, no assessment of the costs associated with imposing biennial inspections was carried out and we still haven't been presented with a solid safety case clearly demonstrating the benefits associated with the requirement. This is a clear breach of the second principle of the above website which states "regulation should be imposed only when it can be shown to offer an overall net benefit". With no cost information and no demonstrable benefits, it is clear that while a net benefit is possible, it has not been shown.

> *We are trying to pre-empt the challenges we will face over the coming years*

The second thing which became apparent was the willingness of CASA to require us to do things that they themselves do not do. We have argued against inspections, not only because there is no demonstrated safety benefit, but also due to a lack of resources required to do so. The response to date has been one of take it or leave it. This contrasts with statements from the current Director of CASA during the same meeting.

When confronted with a safety issue concerning unmanned aerial vehicles conflicting with firefighting aircraft during emergencies, the Director stated that they couldn't do anything about it because they didn't have the resources to do so. Essentially the same situation we find ourselves in.

We have followed up some of our concerns directly with the Minister for Transport, Warren Truss, and have been invited to discuss these issues some more. The Minister is now directly aware of our role in aviation, the functions we perform which would otherwise fall to a government agency and the regulatory and cost pressures we currently face.

I hope to have more information on any developments in this area shortly and will communicate them via the RA-Aus website (www.raa.asn.au) and *Sport Pilot* where time permits.

In the meantime, I look forward to crossing paths with members in the coming months and meeting the people who make our association what it is.

Fly safe.

Calendar of events

11 May

Gatton Airpark Breakfast Fly-in

All types of aircraft and owners welcome to enjoy the unique facility. Hot breakfast from 0730. Check ERSA for airfield details. For more information Martin 0419 368 696 or aerobiz1@gmail.com

17-18 May

Barossa Birdmen Fly-in

At Truro Flats Airpark. Can be found in ERSA. Limited accommodation available, dinner on Saturday Night. Avgas and Mogas by prior arrangement. Pilots should be aware of restrictions regarding overflying neighbouring properties particularly to the SW of the airfield.For further information Dennis Martin (08) 8263 0553, Roy 0408 802 667 or email royp1948@gmail.com.

23-25 May

Old Station Fly-in, Air Display & Heritage Show

The Capricorn Helicopter Rescue Service will again be the beneficiary. Open to aircraft of all sizes and designs. Highlights include a truck show with the public judging 'The Truck of the Show', tractor pulling events and lots of heritage gear on display and working. Biggest drawcard this year will be Australia's Red Bull Air Racing Champion, Matt Hall. Matt will speak at the Friday night dinner and conduct displays over the weekend. The Roulettes have also been invited. Booking for Friday night dinner essential. Camping under the wing with showers and toilets available, but no power. For more information, Leonie Creed (07) 4934 6562 or 0438 346 563.

23 May

Nhill Aviation Heritage Centre Opening

At the Nhill Aerodrome at 11am. The new hangar builds on the legacy of Nhill's RAAF WWII Airbase to inform and educate this and future generations. Be part of this special day. Fly or drive. For more information, Rob Lynch 0428 911 387 or Joan Bennett (03) 5391 1206.

7-8 June

Queen's Birthday Fly–In

Sunraysia Sport Aircraft Club will hold its annual Fly-In at Wentworth Airport. The popular clubroom dinner and social evening will be held on Saturday with a three course meal. Book accommodation early. For more information, Brian Middleton 0408 690 650 or brianmiddleton12@ceinternet.com.au.

14-15 June

Burdekin Fly-In

At YAYR. Come and experience the dry tropics. Glorious scenery, massive river system. Great crabbing & fishing. Good fellowship. Camping or courtesy bus to town. Rotary Club Community Day Sunday. For more information, Richo 0429 144 921 or www.burdekinflyin.com.au.

6-8 August

World Microlight Championships

At the airfield in Kecskemét Matkópuszta, Hungary. The Championships are open to all active and associate member countries of FAI. Six pilots plus one all-female crew in each class. Entry fee is EUR450 for each pilot. For more information, http://wmc-wpc2014.hu/.

31 May

Watts Bridge Memorial Airfield All-In Fly-In

The Watts Bridge Open Day celebrates the rich diversity of all forms of recreational aviation. The airfield is situated in the Brisbane Valley and is the home base for a wide range of aircraft including vintage, aerobatic and recreational aircraft as well as gyroplanes, warbirds and a variety of homebuilt aircraft. On-field catering and coffee available. Free entry with no landing fees. For more information, Richard Faint 0412 317 754 or www.wattsbridge.com.au.

1 June

Casino Beef Week Fly-In Muster

The Casino Beef Week Festival is a fun weekend on and off the aerodrome. Fly in Saturday for the Main street parade, whip cracking, rodeo competition. On Sunday a Family Fun Day next to the aerodrome - kids activities, damper making, entertainment and more. Flying, adventure flights and aviation chat all weekend. All amenities at the aerodrome including catering, sausage sizzle, coffee and cake. For more information, Russell 0427 627 477, Debbie 0438 627 607 or www.casinobeefweek.com.au

LETTERS TO THE EDITOR

Big Claims reaction

Like Gordon Wilson (Letters to the Editor *Sport Pilot* March 2014) I am personally aware of the existence of several excellent training schools, particularly around my local Bundaberg area. However, as an old fellow with the old school ways about me, I decided from the start to draw up my most important priorities for learning to fly and to stick to these once identified.

First was 'Who is the best I can afford to train me?' Second was 'That the training should not be solely cost or convenience driven to achieve it'. Third was 'Because I was starting from scratch, I would start at the start and not from the middle, particularly regarding aircraft trainer types'.

I did not want my lead-in training to be in a Cessna pattern Landomatic (as per their advertisement), nose wheel type. The net result of these criteria was that instead of training at my closest school (17kms away), I choose instead to drive 220kms to the school whose advertisement you referred to. And I did it twenty times.

The effort involved in this was much greater for me to be trained by these instructors, than if I abandoned my priorities and trained closer and easier. But starting at the start with grass roots stick and rudder training, in my view, is best. My experience with this company has been excellent and nothing but positive.

As an aside to this, a lot has been said regarding the thrill of one's first solo flight and mine as well is firmly and fondly filed in the memory bank. But I can affirm, however, that it was actually an anti-climax due I'm certain, to quality of training provided and, in fact, was all but eclipsed in early training by the first perfect three point landing in a magnificent 1946 Piper Cub with its third wheel at the right end. The editor was quite correct in saying the ad is subjective. For my money, and time, I'm very happy to be one of those 'subjects'.
Michael Allison

Big Claims responds

Thank you for your editorial input to the letter about our ad last month (Big Claims *Sport Pilot* March 2014). I think you hit the nail right on the head.

To Gordon Wilson let me say thank you for your feedback, through the magazine, on our ad. If you have been offended or otherwise troubled by our advertising then I am truly very sorry.

Our intention was only ever to place a small, vibrant little ad that tries to encapsulate (in a very small space) what we do. The slogan 'Simply the Best' is a bit cheeky - but it's only a slogan, not an endorsement by anyone.

It's also a nice double entendre for us, as we feel the 'Simply' helps to explain that we are a simple, down-to-earth school. We also like simple stick and rudder flying with an emphasis on pure flying skills and having fun. The 'Best' bit? Well, it's a goal we try to live up to each and every day we go to work. We have a first class fleet of aircraft, a wonderful team of dedicated instructors and we train in one of the best locations for recreational flying in Australia.

You are quite right about there being several excellent training organisations in the RA-Aus. In fact our Association is so blessed with outstanding flying schools, in so many locations, that the members are quite spoiled for choice. And as for which one's the best? We still think we are, but isn't that a wonderful challenge for us all!

(Sorry about the exclamation mark. I did try very hard to ration myself to just one).
Paul McKeown, The RFC Gympie

Simply the best

I commenced flying under the RA-Aus category last year and look forward to each issue of *Sport Pilot* magazine. Lots of interesting information, shared experiences and a wealth of new ideas and products from your advertisers, whom I am sure, make a significant contribution to offsetting the cost of this publication.

However, a response to Gordon Wilson's letter 'Big Claims!!!' (*Sport Pilot* March 2014) is certainly warranted.

Yes, I do live in Queensland and yes I have undertaken my pilot certificate training with the organisation whose advertising I think you target as providing 'Simply the Best Training in the RA-Aus!' Was there nothing else Mr Wilson could contribute to the pages of this fine magazine or comment on other than this? Are you kidding me?

Do you watch commercial television, listen to the radio or read local and community newspapers and do you complain about these media because of the advertising and marketing claims made in them too? Have you not heard of product and marketing differentiation?

Might I also add that the RA-Aus advertiser in question also put up $10,000 worth of sponsored Pilot Certificate training for youngsters last year. I don't see too much of that elsewhere.

For the record, my only commercial affiliation with this advertiser is as a customer/student. I have thoroughly enjoyed my recreational flying training with these highly-professional folks and will continue to support their business.

Now, let's go and find something positive to read in the next issue of *Sport Pilot*.
Chris Howarth

Flight of the Grasshopper

Thank you for the story about Grasshopper (*Sport Pilot* March 2014). It was far more than I expected and I have had a lot of comments on how well it came out. I hope it might inspire

others to build a Corby.

I have now completed my 25nm restriction and hope to be able to meet up with other Corbies around South Australia and interstate (maybe another story!)

As I have mentioned, it is a great little aircraft to fly and I would recommend it to anyone.

Thank you and the team again for all the effort that you put into the article.
Graham Logan

Looking Forward

I have just finished reading 'Looking Forward' (Pilot Talk *Sport Pilot* December 2013).

Just what we need - more paperwork and regulation. It seems that for almost 40 years I have been doing my own maintenance on my motorcycles, aircraft and up until recently, my car.

Now I see I am no longer trusted to conduct such work without another's say so. Seems like I can build my own aircraft, taking responsibility for my own work, but am now incapable of maintaining it. Sure, I hear you say, I can just sit the online exam and I will be qualified in your eyes as a capable person.

I may have missed this new initiative and discussions about it in the magazine, but as one who is involved in online training, it is widely recognised as a process which is easily cheated on, so as to be pointless. It is a way for a workplace to survive an audit, not as a credible training or testing tool.

Is this an RA-Aus initiative or a directive from CASA? Was a TNA (training needs analysis) conducted on the current system of L1 maintenance? In my workplace I have to satisfy a need before implementing any new system of work. The main question asked would be 'how many accidents or incidents have been caused by an L1 maintainer?' Looking over a number of years' worth of published incidents, I fail to identify any need. Just about every incident is pilot error - be that fuel, controlled flight into terrain or stall/spin. I seem to have missed the huge number of L1 maintenance issues which have caused an accident or incident.

Until you can prove a creditable need for such an exam, and show me where all these problem aircraft and maintainers are, I will feel you are just making it harder for all of us who keep our heads down and just fly. Those who do not sit the exam can look forward to larger bills for an already expensive pastime.

It may have been easier to get my PPL. After all, this is where we are headed anyway.

Ken McGregor

From the Tech Manager – *Ken, there is a much bigger picture to consider. Recent analysis of our accident and incidents has revealed a number of engine failures of all types. A significant number of these have been on aircraft maintained by RA-Aus members issued with an L1 maintenance authority. When you consider RA-Aus did not previously offer any training or competency assessment for an L1 maintenance approval, a decision was reached to require an assessment of competency via an online course and assessment. This is not an onerous requirement. The SAAA has already a similar path for builders of experimental aircraft. While the builder of an aircraft could certainly be deemed competent to maintain the aircraft, maintenance is more than just changing the oil and spark plugs. It involves research and compliance with Service Bulletins and Airworthiness Directives and ensuring paperwork is completed correctly. The organisation has experienced a significant shift in membership away from aircraft building to where most aircraft owners purchase factory built aircraft and are automatically approved to conduct maintenance on it, even if they have never held a spanner before! Because you are involved in online training, can I ask you to consider applying your talents to help RA-Aus improve the online assessment and ensure it is appropriate.*

Stol inspired

Thank you for publishing the Article 'Short Field Landings' (*Sport Pilot* March 2014).

I look forward to the magazine each month in the hope that I will get to read this type of article.

Bill Grieve did a great job explaining his short field technique and it was an inspiration to get out and practice. I am the owner of a Savannah XL and it has been like having the best tool in the toolbox but not the skills to use it.

Bill's article inspired me to go out the very next day, armed with his guidance, and practice, practice, practice. All previous advice I have received on the subject, only served to scare the hell out of me. Now I feel a lot more comfortable in an approach to a short landing and look forward to the next one.

Maybe Bill would like to do us a further service by explaining his short field take-off?

Congratulations to you both.
Ron Hoey

Short field landings

I am surprised that you would print such an article as Short Field Landings (*Sport Pilot* March 2014). Despite the 'don't try this' recommendations in the article, there will now be now be a number of less experienced pilots out there doing just that . Articles you print are read by a huge number of low hour pilots that are flying a variety of aircraft. Non-standard procedures should not be encouraged. Does your new safety officer agree?
Steve Smith

Response from the Operations and Safety managers - *If pilots are now thinking about the requirements for a short field take-off or landing and have increased their knowledge of the operational considerations, the article has achieved its purpose. Operations requested an experienced CFI write an article on this subject in order to highlight the dangers and the need for pilots to be fully competent and experienced on the type before attempting short field operations.*

As such, the safety message was that these types of operations should only be initially attempted with an experienced Instructor aboard and only once the pilot is familiar on the type. A short field operation should only be attempted when circumstances demand it, whereas recent accident reports tell a different story, that pilots are attempting short field landings and take-offs when there is no operational need.

More on scams

Brenda Chitty is not the only person who received fake offers for an aircraft (Scam Warning – Letters to the Editor *Sport Pilot* March 2014). I had my microlight advertised for about a year and received eight of these offers. The RA-Aus members market is also not the only publication attracting scammers. They

target all websites where you can advertise your aircraft for free as well.

However, scammers have a few things in common and thus RA-Aus members are well advised to look out for the following giveaways:

- Payment is always requested to be by PayPal because they want your PayPal address.

- They are either interstate or overseas at the moment and unable to inspect the aircraft.

- They always have an internet based email account and do not provide real addresses or phone numbers. In fact, all you get is a story and if you ask questions they are either ignored or answered vaguely.

- They don't know much about flying and aircraft.

To peev them off you might want to suggest they send the money via Western Union.
Peter Schmidt

More from the mythbuster

Thanks to Rod Flockhart (Letters to the Editor *Sport Pilot* March 2014), whose experiment with an inverted RC aircraft is consistent with my article about why rudder causes roll when dihedral is positive. Note that in that article, gravity was never mentioned, nor was orientation relative to the earth. Assuming the aircraft is flying (not stalled), the only thing that matters is relative airflow. If an aircraft has positive dihedral, right rudder will cause right roll - that is clockwise roll - when viewed from the rear of the aircraft. This will happen when flying straight and level, inverted, heading straight up or straight down or at any point in a barrel roll. Orientation is irrelevant.

An inverted positive-dihedral aircraft does not have anhedral, it still has dihedral. If you insist that it has anhedral, meaning the top of the aircraft is where the wheels are, you also must accept that your rudder is now connected backwards, with right rudder on the control giving left rudder on the aircraft. So right rudder control gives left rudder, which with anhedral gives right roll. Your upside-down thinking cancels itself out.
Thomas Bisshop

Buyer beware

I have just purchased a factory built Arion Lightning with 35.7 hours and 56 landings in the book. A condition report was done and all the paperwork seemed to be in order. After doing test flights, eight landings and a check flight with another Lightning pilot, I flew the aircraft from Goolwa, South Australia to Caloundra, Queensland, with landings at Yarrawonga, Moree, then Caloundra. At this time it had logged a total of 49.7 hours and was due for a 50 hour service.

This is a 24 registered aircraft, and it was explained to me that a current maintenance report was required for the aircraft to be used in a flying school environment.

The maintenance report found and repaired a number of defects and Arion service bulletins were complied with.

It was discovered the pedals were not lining up in straight and level flight and that it had a low wing condition in flight. I took the aircraft up and confirmed the pedals were approximately 2.5cms out during level flight. I did four touch and goes and one landing. When correcting the low wing condition and moving some wiring for access, cracks were found in the spar box, also hidden by the ties (photos attached).

I looked up Arion's website and found a spar box service bulletin – AASB-1-12-2012, and I emailed this link to the company repairing the aircraft, who rang back to tell me the serial numbers affected were from 87 to 107 (my serial number is 109).

In the service bulletin however, it reads under the make and model affected, Lightning LS-1 SLSA and ELSA SN87 – 133, but under Applicability reads Lightning LS-1 SLSA or ELSA aircraft in the effected serial range of SN87 thru SN107. So it appears the serial numbers 87 to 133 were not changed under Applicability.

I emailed Arion Lightning in the US. I was under the impression they would supply the new spar box and pay to have it installed. How naive am I? Their response was that it was out of warranty and that the aircraft must have been hard landed or flown over gross weight at some time, so they would not pay for the repair.

The warranty on the aircraft is one year or 200 hours, whichever comes first, for the original owner. The distributor is the seller of the aircraft. That means I am the first owner.

This aircraft had only done 35.7 hours - it is two years old so there should have been two annual inspections done in that time.

If you are thinking of purchasing a Lightning or already own one, please check the spar box. Move the wiring and ties and check for cracks or this could be fatal.

I would like to say the service I have received from Arion Aircraft has not been what I would call helpful.
William Yates

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).

I WANT OUTA HERE!

by Norm Sanders

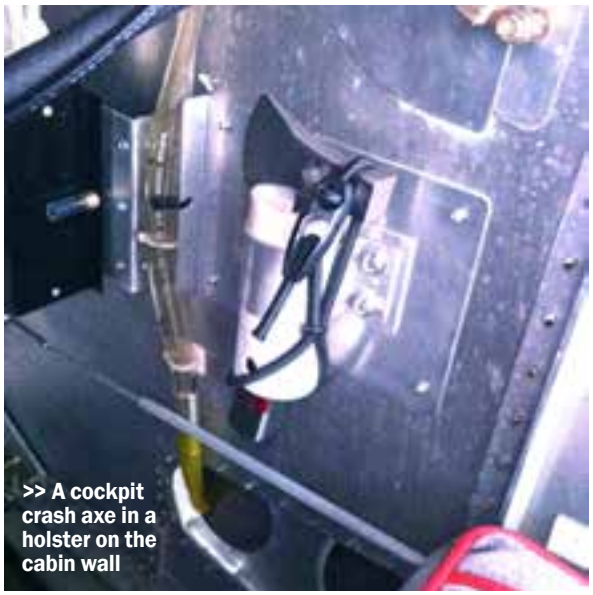
IN days of yore, just about all the affordable light aircraft were high-winged. In a crash they might flip over, but the occupants could crawl out a door. Nowadays, many RA-Aus aircraft are low-winged. What happens if they end up on their backs? Those nice, big bubble canopies get pinned down under the aircraft. With luck, they may have been ripped off or shattered. But if they are intact they will have to be broken.

Modern plastics, particularly Lexan, are very tough. Bare fists may not be enough. The solution is the cockpit crash axe. All airliners have one in a holster on a bulkhead. Many large aircraft actually have two, one in the cockpit and one hidden away in the passenger section.

These are serious weapons and far too heavy and difficult to stow in our aircraft. Fortunately, while plastics can resist an evenly distributed pressure, they are vulnerable to sharp objects. A small axe, a large knife or even a tie down kit hammer could do the trick. Of course, any such objects must be well secured in the cockpit while at the same time being instantly accessible. This is a challenge to ingenuity, but well worth the effort.

I found a small Chinese-made stainless steel axe in an El Cheapo store. It even has a knife blade, saw, file, ruler, bottle opener and screwdrivers folded up in the handle. It is presently secured on the starboard side of my cockpit by a bungee cord.

I make every effort to avoid flipping on my back, but at least I now have a fighting chance of getting out.



>> A cockpit crash axe in a holster on the cabin wall

New aircraft for disabled pilots

TECNAM has received approval for the first factory-built certified LSA aircraft to be equipped with hand controls for disabled pilots.

The EASA approval was the result of more than 18 months of ergonomic studies, test pilot reviews, specialist component design, collaboration with Italian CAA (ENAC) and EASA and the input from people involved with the disabled pilots community.

The version of the Tecnam P2002JF is the first to have its official certification documents contain explicit reference to disabled pilots.

The pilot controls the stick (pitch and roll) and the brakes with the left hand; and the rudder, throttle and flap with the right on the central control.

150 detailed files were produced by Tecnam's Research and Development team to design and certify the aircraft. 22 flight test hours were conducted by the company's Chief Test Pilot to explore every aspect of the control arrangement and more than 30 spin tests were performed to evaluate all possible instinctive reactions and the aircraft consequent behaviour.

Two of the world's leading disabled pilots, Tim Ellison (former RAF Harrier pilot) and Alessandro Paleri (Italian ULM pilot and co-founder of the first worldwide aerobatic team of disabled pilots) also performed flight evaluations and emergency escape tests.

For more information www.tecnam.com.

>> The SP aircraft on the tarmac at Ballina

>> Computer gen image of the new aircraft under construction

>> GR912

New LightWing takes off

Ultralight pioneer, Australian LightWing has launched its latest model – the LightWing GR-912-LSA.

The company says the new high wing tail dragger is designed to integrate the features of the tried and tested GR LightWing with the new low wing Light Sport Aircraft (LSA) SP range design and innovations

The company says the new model is focused around its initial concept of super strong and super light rag and tube fabric covering, keeping the pilot protection frame at its strongest and lightest. This provides maximum benefits for safety, maneuverability, upkeep, style and the all-important paint job.

"This traditional method of aircraft design is expertly combined with our technological innovations", a spokesperson says. "The glass cockpit, the VIP In-flight adjustable prop, the ALW Heli-vue windows and dash, bigger flaps, optional amphibian floats, and big clear bubble doors which can be easily removed for great observation around the paddocks or flying school."

The new aircraft took to the air for the first time in March. Stay tuned for a review in a future edition of *Sport Pilot*.

For more information,www.lightwing.com.au.

ROTAX GOES SPORTY

THE manufacturer of Rotax engines, BRM of Austria, has released a new version of its 912 series engine, the 912 iS Sport.

The most noticeable feature of the new powerplant is a bigger airbox. The company says the newly designed intake boosts fuel efficiency by up to 30 percent compared with the 912 ULS at economy cruise settings and by around 10 percent at full throttle.

It also increases torque, allowing better climb rates and shorter take-off runs, while providing even better fuel efficiency and higher cruise speeds.

Rotax says the new engine delivers 38% - 70% better fuel efficiency than comparable competitive engines.

The Sport version also includes updated engine control unit (ECU) software to optimise performance.

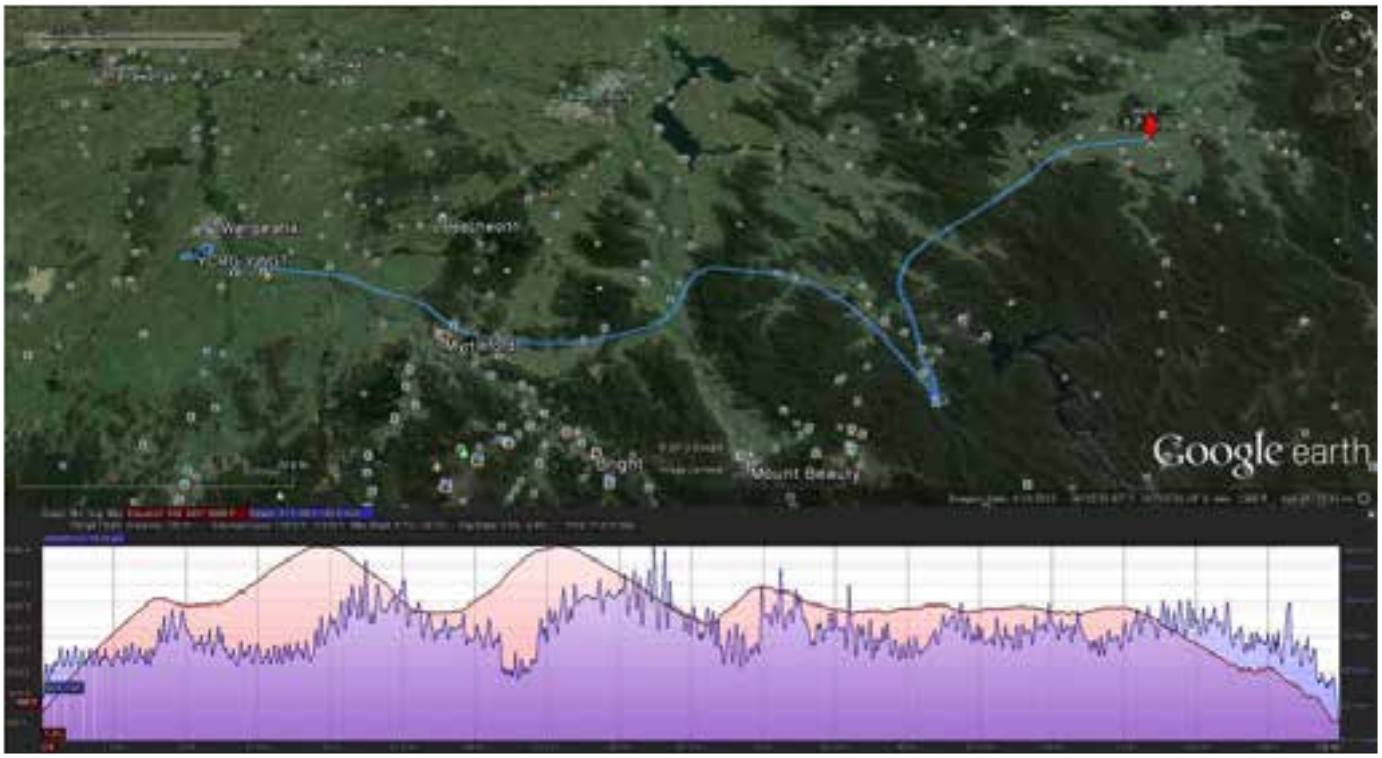
The Sport's dual-channel ECU is the same hardware as in the 912 iS but with new engine mapping to take advantage of the larger airbox, which allows more air to be drawn into each cylinder. Max continuous power in the Sport has been increased to 98 hp, while take-off horsepower remains the same at 100.

In the US, Rotax announced the price of the iS Sport would remain the same as the 2013 price for the 912 iS and that current owners of the 912 iS engine would be able to upgrade free of charge (not including labor) to bring it up to Sport specifications.

No information yet, if that deal also applies to Australia.

NATFLY next time

BECAUSE of the timing of Easter this year, the May edition of Sport Pilot was compiled before NATFLY. Expect to see lots about it in the June edition.



>> Top: Google Earth review of navigation, below, terrain map, map mode with Tumut details, instruments, airspace and satellite map mode.

Fly is fun

by Steve Elliott

AFTER reading Arthur Marcel's article on easy VFR (*Sport Pilot* November 2013), I thought I would share my experiences and the app I use. I am a very recent pilot (started November 2011) and have about 60 hours flying time. I received my Cross Country endorsement in September 2013 and have now managed to log more solo hours than dual hours.

Being a self-confessed geek (I work in I.T), I have been interested in what's available to pilots to assist them, from logbook apps to GPS software. I had bought myself a Microsoft Windows tablet for other reasons and thought this might be useable, but found a dearth of Windows apps. I've never been one to like Apple products, so OzRunways was out of contention. But I've also been using smartphones for many years and now have a Samsung Galaxy Note II with 5" screen.

So I have spent time over the past two years investigating all the apps which could help me in my flying. I'm a software developer and deal with users every day, so I'm probably a little more critical than most of the way things operate. So many of the apps I looked at quickly turned me off. But then I came across a strangely named app called *Fly is Fun*. It is written by a fellow aviator from the Czech Republic and he's been developing it since 2011. At last count, he is up to version 14 and still going strong – constantly adding new and improved features. A trial version with all features is available on Google Play and runs for one month without limits. For AUD$19.90 you can purchase the unlocker for unlimited use. It's a bargain.

I've been using it now for over six months and am still discovering new features. There is a very active forum on the website, including User Suggestions. Feedback on suggestions is very encouraging. The manual is kept up-to-date and explains things very well.

Recent updates now allow you to download maps for all of Australia at most zoom levels.

What this has allowed me to do is to download and use Google Satellite images as alternate maps. You can install multiple maps and switch between them anytime you like. You can also download terrain maps for various regions. This allows the app to show height AGL as well as height MSL. It also uses the terrain maps to calculate maximum terrain elevation between two waypoints.

A couple of other forum members have found applications that allow you to geo-locate an image and then store it into the same database format *Fly is Fun* uses. This means you can convert the Aerodrome and Procedure documents from AirServices and have those as your background map. Or you can draw your own takeoff/landing and circuit routes on a map or satellite image and then convert that to a map as well. Then all you have to do is follow the bouncing ball.

If your device has a barometric sensor (as mine does), you can calibrate this and use either or both GPS and barometric altitude. It will also calculate VSI from the barometric sensor. It can also use the inbuilt accelerometer for slip indication.

One of the new features allows you to customise the order it uses to locate and display the VHF frequencies associated with airports and zones. Another has the navigation list showing different information for different items, VHF for airports and threshold elevation for runways.

The app will automatically log every flight, either manually or starting and stopping based on a minimum speed. You can also manually add logbook entries. You can include pilot and aircraft information, notes, landings etc. Recorded logs can be exported and then displayed in Google Earth, including elevation and speed. You can even animate the trip and play it back.

While doing my Cross Country Endorsement flights, I had it operating in the pocket of the plane (with the screen off). I was then able to review my flights to see what I did wrong, as well as send them to my instructor for his perusal.

The navigation database stores 11 different types, including airspace, airports, runways, obstacles and waypoints. You can add your own directly into the app, or you can draw them in Google Earth (especially for things like runways or airspace), export from Google Earth and import into the app. How to do this is all is explained in the manual.

> *I hope one day to get myself a bigger screen so I can see more detail*

You can also download all the PDF documents from AirServices for every airport and load them onto your device. You can then select an airport and choose to view the PDF.

Route planning is improving, with more and more features. You can now set altitude, desired ETE and reminders for each waypoint along the route. You can add waypoints directly from the maps, or via searching the database. While flying a route you can update it and switch to the next active waypoint to show estimated time enroute. You can also enter fuel flow, cruising TAS, time reserve and minimum fuel, wind speed and direction, and it will also list your fuel requirements.

You could even use it for ILS approaches. You create ILS navigation items or, if you are navigating to a runway, choose to navigate (ILS). This can then show you the distance to threshold, track to threshold, glide slope indicator and required rate of decent.

You can customise which instruments are shown on each screen, of which there are four. You can also choose which navigation items are displayed on the map and change these at different zoom levels. The level of customisation is outstanding.

The latest version also includes a virtual radar. If you have mobile coverage, the app will send your location to a server and receive from the server any other plane within range, display them on your device. The latest version also includes planes from Planefinder.net. So if you are flying with friends, you all get to see where you all are.

Due to the screen being on all the time with the GPS running, battery use is quite draining. I get about four hours out of my fully charged phone, but plugging it into the plane solves that problem.

I hope one day to get myself a bigger screen so I can see more detail, but until then there are many more features to play with and learn about.

For more information, http://www.funair.cz/forum/orhttps://play.google.com/store/apps/details?id=gps.ils.vor.glasscockpit&hl=en

Clifton on the air

by Arthur Marcel

FOR quite a while, the Boonah Gliding Club in South East Queensland has had a camera mounted near its clubhouse to stream live images of the airfield over the Internet. Pilots approaching the field are able to use their mobile phones to check the prevailing conditions before arriving. There are also two webcams operating at Archerfield, sponsored by V2 Helicopters. At Jondaryan, the Darling Downs Soaring Club uses a webcam as well. The potential for these cameras to enhance safety is very real. They are not just a technical fad.

The Darling Downs Sport Aircraft Association and its flying school, the Lone Eagle Flying School, based at Clifton, have also set up a couple of cameras to monitor conditions at the airfield.

RA-Aus pilot and club member, Matthew Newbery, has been the driving force behind the project, and has done most of the work. Matthew's day job is Technical Manager for a helicopter simulator at Oakey airbase, so he knows a lot about information technology.

Matthew said it took about six months to properly investigate the available options. At first he wanted to feed the weather data to the Bureau of Meteorology, but was told they would charge for the privilege of taking it. They also required all data to be verified. Verification would have cost even more than the BOM was asking. Not only that, a 10m high frangible mast would have been required; a very expensive installation. Who would want such an obstacle near the field, frangible or not?

>> Matthew Newbery installing the cameras

So Matthew decided to follow the examples of Boonah, Archerfield and the DDSC by going direct to the Web via an Internet Service Provider. He chose Telstra and obtained a 3G server from them which would feed data directly to their 3G network, where it would be available through an entity called Ustream (www.ustream.tv/ddsaa), which is like the streaming equivalent of Youtube.

A lot of time was spent thinking about where to put the cameras. One needed to face east and the other west to align with the east/west oriented airfield, so its windsocks and approaches could be visible to incoming pilots. The easterly facing camera also needed to show any cloud cover over the distant peaks of the Cunninghams Gap. The position of the cameras also had to be out of the rain and not too far from the server. Ultimately, the choice was simple. The cameras were placed up under the eaves of the clubhouse and hangar complex, one at either end.

The whole installation has cost the club about $2,000, and the running costs amount to $30 per month.

To access it, pilots can go to www.loneeagleflyingschool.org.au and click on the webcam tab. A bonus feature is that everyone on the field gets free Wi-Fi access. Now that is very clever.

Carbon fibre fears

by Martin Hone

A RECENT tragedy involving an RV-6 at Gatton Airpark has re-enforced the tragic consequences of getting it wrong at low level, but also highlighted some unintended consequences of builder modifications and use of high tech materials.

Not only did we lose a good friend and neighbour and our beloved Harvey, the RV-6, but the subsequent clean up raised serious issues of which most, if not all, builders will be unaware.

Unusually for a case like this, the Australian Transport Safety Bureau (ATSB) became involved and, as the builder of the aircraft, I was contacted and asked if the aircraft carried any oxygen cylinders or carbon fibre components.

My answer at the time was "No, it was a regular VFR Vans RV-6".

With that, the ATSB conducted its investigation, which involved speaking to witnesses and inspecting the damage. It was about a week later, after the police had released the wreck back to the family for disposal, that I happened to mention to one of the ATSB officers that there had, in fact, been a small amount of carbon fibre, because of a recent modification.

During an Annual Inspection, I had reinforced my original aluminium cooling plenum design with a single layer of carbon cloth and added an expansion joint to prevent cracks in the top plate.

With that admission, the ATSB became very concerned about possible contamination and, as a consequence, the Environmental Protection Agency became involved. What should have been a simple trip to the tip suddenly became Chernobyl. The problem? It seems that carbon fibre, once damaged in a high impact crash and burned in a post-crash fire, develops similar properties to asbestos - and we all know what that means.

I contacted the SAAA TC network and was given information concerning the problems of carbon fibre - all of it news to me and, I dare say, to most of RA-Aus members. Links to investigations conducted by the US FAA and DOT showed that these bodies are very much concerned with the health hazards posed to fire fighters, investigators and clean-up personnel following the extensive use of carbon fibre composites in the Airbus and Boeing commercial transports.

"The potential health risks associated with fires involving fibre-reinforced polymer composites include the fibrous dust and airborne particles released during burning which can be inhaled and deposited in the deep lung region and the sharp fibre fragments which can penetrate the skin. As the organic resin burns off, the continuous, reinforcing fibres are exposed to a turbulent, oxidising environment which causes them to break up and erode into small micro fibre fragments. The concentration of respirable airborne micro fibres increases when the accident involves fire and impact or explosion. In addition, the toxic chemicals produced from the combustion of the organic resin may be adsorbed on respirable fibres and enter the respiratory system with acute or chronic effects."

> *"Carbon fibre, once damaged in a high impact crash and burned in a post-crash fire, develops similar properties to asbestos*

The fear is that the fibres are in the same range of size and shape as those of asbestos. None of the reports I have read produced a definitive assessment of the dangers, but the US Navy, NTSB, FAA and Britain's RAF have all adopted guidelines which include wearing self-contained breathing apparatus and full body suits when dealing with crashes to minimise exposure.

The obvious question for us is - what about

>> RV6 remains

>> Rudder lower fairing

>> Spinner

when we use this material in our projects?

It appears that in its normal state and when resin is added to make parts, we get adequate protection by using masks and oversuits, because the fibres aren't in the danger range and are mainly an irritant.

You can see from the photos that the resin has been burnt away from items such as the prop spinner and the fairing beneath the rudder. In both cases, the fiberglass cloth is almost back to its original state, quite pliable and could even be used again. Not so the carbon fibre.

So why should we worry ?

About the time the ATSB got alarmed and the EPA got involved, we had the situation where the ATSB was concerned for the 10 or so people who had been on the crash site. The maintenance base of Queensland's largest trucking company faced being closed down, the EPA wanted a truckload of sand dumped on the wreckage and a Class A EPA-approved disposal company had to be brought in to clear the site and dispose of the wreckage.

Who is going to pay for all this? If you are adequately insured, probably your insurance company. If not? Let me relate a story told to me by the EPA and others. It involved a well-known high performance composite aircraft which had crashed into a sports ground in WA. The insurance company had to pay something like $300,000 to clean up the area because of carbon fibre contamination. I know of a number of ultralight aircraft which use extensive amounts of carbon composites which would end up the same way in similar circumstances. So it is not just simply a health issue. It could easily become a wealth issue.

In my case, I was able to speak directly to one of the EPA's main people and explained the circumstances in terms of the size of the area involved and the amount of carbon fibre used. It was agreed that an EPA-approved (asbestos) disposal mob would suffice in this case. But it could have been so much worse.

As I write this, we have just had the tragedy of the crash of a Cessna 206 at Caboolture. The airfield was closed - you guessed it - in part because of carbon fibre contamination.

For more information http://www.aviationfire-journal.com/aviation/library/VOL6-Hazards.pdf.

Operations comments: *There is indeed a severe risk to first respondents and emergency personnel when attending an aircraft accident. This risk doesn't only include carbon fibres and the attendant respiratory factors, but Ballistic Recovery Systems (BRS), aircraft landing gear with compressed air, burning materials and other hazards pilots may not consider.*

The ATSB website contains excellent reference material, however members should remember not to place themselves in harms' way and allow emergency services to respond in the case of an accident.

http://www.atsb.gov.au/publications/2014/hazards-at-accident-sites_v6.aspx

>> Left Echelon triple

>> Ken & Peter flying Tanargs

>> Left Echelon

>> Line Astern

Formation Friday

by Chris Brandon

HAVE you ever seen the Roulettes? Or other pilots flying their machines in formation - with precision, harmony and absolute flight path management? Airmanship artistry in a display of skill and courage.

Sharing the sky with another pilot and machine is something we do regularly as pilots, although it is usually at a distance and usually by radio, VFR or situational awareness.

To fly an aircraft in formation with one other pilot, or with several, is a remarkable achievement. The challenge to fly in true formation is a command skill. Experienced pilots look for accuracy, discipline and absolute command of their machine and their flight path.

In principle, the skill is to fly on a designated flight path relative to the lead or other aircraft depending on your formation position and flight plan.

Appropriate professional accredited flight training is required to receive a Formation Endorsement on your RA-Aus Pilot Certificate. Few CFIs have the qualifications to instruct you.

Formation Friday at Yarrawonga Flight Training is a regular occurrence. CFI Peter McLean has trained many trike pilots to fly in formation with complete confidence and proficiency. The popularity of Formation Friday has grown significantly over the past few years.

The flight training syllabus developed by Peter is ideal for pilots wishing to step into the world of flight discipline and command correctness, applying absolute safety during formation flights.

Trike formation flying is great for sharpening your piloting skills, but inherently dangerous and far more involved than you might expect. It is a discipline and must be treated as such. But formation flying is also maximum fun and looks great to the people on the ground.

Usually about twenty hours of flight training are needed to earn the endorsement, not to mention the hours of theory - and those are just for straight and level techniques, such as echelon right or left, line astern, line abreast, and diamond.

Formation Friday flights are prefaced by a full briefing, particular to the operational airspace, weather, what manoeuvres are to be performed, in what sequence and which pilots are to fly in which position. Techniques are repeated, wind and other variables discussed, along with safe exits for each pilot.

Novice pilots will fly one-on-one with their instructor until they are comfortable to fly on station themselves, tucked in beside the second aircraft. Skill and trust become all important. A formation pilot must have the confidence and skill to be able to fly a very accurate path through the sky, but he/she must also feel comfortable enough to entrust their safety, and maybe even their life, to the skill of the pilots flying with them.

A comprehensive debrief is also held after the flight, including opinions on how the flight evolved, what may be improved, new routines or manoeuvres.

Peter has developed a comprehensive illustrated Formation Flying Manual to go with the training.

Formation flying is not for everyone. But for those who accept the challenge and the discipline, it can be very rewarding.

It's not done to impress anyone. It's a personal achievement and will improve your flying skills.

Girl's day out

There were big smiles and lots of emotion

by Andrew Carter

THE first ever Women of Aviation Worldwide Week has been a big success in Caboolture.

It was part of an international initiative started four years ago to celebrate the centennial of the first female pilot licence (Raymonde de Laroche on March 8, 1910).

Her call to 'Fly it forward' encouraged pilots around the world to introduce record numbers of girls and women to aviation.

This year was the first time in Australia activities were organised as part of the celebrations. Co-founder of The Australian Vintage Aviation Society (TAVAS), and recently solo pilot, Nathalie Gochel, organised a unique opportunity for 19 women when she decided to hold an introduction to vintage aviation with TAVAS's collection of aircraft. The women, ranging in age from 14 to 70, had little or no experience of flying other than as airline passengers. Nathalie put on a BBQ lunch for them, their partners and friends.

She used the TAVAS collection of WW1 aircraft under construction to show the group how aircraft were originally built of wood, fabric and wire. Then Nathalie offered them all a free 15 minute flight with me in a 1928 Pietenpol Aircamper.

She had also organised with Bill and Heather Haynes of the Caboolture Recreational Flying School, for them to take the women up in a modern training aircraft for 20 minutes.

The weather was less than ideal. But despite the bumpy conditions, every single one of them enjoyed

the flight so much they weren't even aware how rough the air (and a couple of my landings) was.

There were big smiles and lots of emotion upon exiting the aircraft (quite a few didn't want to get out – they wanted to go straight back up again).

Six of my passengers in the Aircamper had flown in the trainer with the RA-Aus school, before flying with me, and every one of them claimed they enjoyed the open cockpit flying far more than the newer aircraft.

The most satisfying flight was the second last of the day - A 15 year old, who was obviously very concerned about what she was about to do. (I think she was only there because her mum had signed her up and dragged her along). She didn't want me to make any 'sharp' turns, as she put it, and obviously just wanted to get it over with.

But when we landed and Nathalie began to assist her to get out of the cockpit, the young woman had a great big grin on her face and asked excitedly "how long will it take for me to get my pilot's licence?"

After doing 19 flights of up to 18 minutes duration each, and with only two short breaks for refuelling, I was exhausted and glad to finally put the ever reliable Pietenpol away.

Several of my passengers signed up on the day to start flying lessons with the flying school – so I guess we must have made a good impression.

A lot of planning, preparation and personal expense went into this event and Nathalie must be congratulated for the incredible success it was and the interest it generated. (www.tavas.com.au)

> *"Quite a few wanted to go straight back up again*

MEMBER, Neil Wickens, reports on another WOAW success.

"You may recall that a couple of years ago, I helped Diana Jemson set up her school (flyingonline.biz) at Goolwa which later moved to Strathalbyn where she obtained her CFI approval.

"In March, Diana participated in the Canadian initiative celebrating women in aviation (WoAW). She attracted more than 55 women of all ages to participate as passengers in short flights.

"Diana has since been acknowledged as having done the second best in the world, (second to an American and in front of a Canadian in third place). She will receive a well-deserved plaque for this.

"I think that this is a huge feather in her cap and, moreover, it reflects extremely well on aviation in Australia and, in particular, on RA-Aus."

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THE LIGETI STRATOS

by Arthur Marcel

CHARLES and Helena Ligeti came to Australia from Czechoslovakia in 1977. In those days, Czechoslovakia was part of the USSR. Charles was a qualified Chemical Engineer and soon found employment here in that field. This was not his main interest, however. Charles was an aircraft enthusiast and Australia at the time was on the doorstep of a new era in amateur aviation. Air Navigation Regulation (exemption) 95:10 was paving the way for the rebirth of do-it-yourself flight. It was a re-democratisation of aeronautics to the point of being able to design, build and operate your own aircraft with the minimum of governmental oversight and control.

Charles' father had been an aviator during the Second World War, flying with the Hungarian Luftwaffe. He was later a pilot with Czechoslovakian Airlines. Not only that, he was also an inventor with many government sponsored patents to his name. Like his dad, Charles also had an inherent ability to think outside the box when it came to design and it was natural that he wanted to follow in his father's footsteps. Helena, too, had innovative ideas and insisted that their aviation projects be progressive and ground-breaking. She suggested they investigate joint wing concepts and Charles agreed. He began working on an aircraft design which was truly different to just about anything that had ever flown before.

> *"Charles also had an inherent ability to think outside the box*

And so the Ligeti Stratos was born - first as an idea, then as some concept sketches, then as a flying model. The first model was a remotely controlled, fibreglass glider. The test flying showed mixed results, but identified several changes which needed to be made to improve lateral and directional stability. These changes were incorporated on subsequent, smaller models and the issue was quickly solved. All these models were used to examine the theory of connected wing tips and to experiment with different orientations between upper and lower wings. The goal was to achieve stable flight in yaw and roll, as well as safe stalling characteristics.

Experiments were also conducted to establish which types of control surfaces offered the best potential for pitchless lift and sideslip manoeuvres. A man-carrying, foot launched glider was also constructed to compete in the Melbourne Birdman Rally. This was not only a lot of fun, it provided really valuable insight into

the problems which lay ahead in scaling up their designs to people carrying, powered aircraft.

It wasn't until late 1983 that Charles and Helena felt confident enough to begin construction of the prototype S1 Stratos. But even by that stage, they were continuing to design the aircraft as they built it. Their construction techniques were also developed as they progressed, mainly based on those of other aircraft builders in the area with whom they had been consulting and assisting. The aircraft was to have its engine at the rear, driving a ducted fan in pusher configuration. The cockpit was to be enclosed and very streamlined. The lower wing would also act as a canard type forward control surface. The couple worked together for over a full year, with many late nights, to put together this very unusual little plane. They came in for a certain amount of criticism from other builders and pilots, who often expressed the opinion that such a strange looking aircraft would never fly. Such was the unconventional appearance of the diminutive Stratos, that even other original designers were dismissive of its potential. Charles and Helena remained undaunted, however, and completely determined to see their project through.

In 1985, the S1 Stratos was ready to fly. Everyone who saw the finished aircraft seemed to be of the opinion that the build quality, and the

way in which the couple had eventually mastered the complexity of the design, were a real credit to them.

Before the first flight, however, there were three months of ground testing to be carried out to further validate the predicted handling of the craft.

Charles intended to do the test flying himself, but he had no flying experience whatsoever. So Helena insisted he do at least ten hours combined time in a Cessna and a glider, which he dutifully did. But with only ten hours under his belt, he was hardly your average test pilot. Yet he felt that with such an unconventional aircraft, he had a moral obligation to be the first to fly it.

On April 25, 1985, at Penfield Aerodrome in Sunbury (35km from Melbourne), Charles Ligeti flew the Stratos for the first time, conducting a number of circuits and a safe landing. Filled with confidence in the aircraft's handling, Charles flew the Stratos every spare day he had after that. The people who had earlier said the Stratos would never fly were now silent, as they soon discovered that not only did it fly, there was no other 95:10 aeroplane in the air that even came close to its performance. Soon the Stratos was winning awards because of its performance and its unique design.

In 1986, after much deliberation, and with assistance from a financial broker, Charles and Helena started their own aircraft company. They then took the Stratos to the US and Canada. Everywhere they showed and demonstrated the plane, it was much acclaimed. They even won awards at Oshkosh.

Back in Australia and buoyed with optimism about the future, they set up a facility to construct the first production Stratos. Much had been learnt from the prototype and the S2 Stratos was to be significantly different to the S1. There would be increased cabin size, side stick controls, a slightly larger engine (24hp to 28hp), with elevator only on the canard wing and aileron only on the main wing.

> *Charles had intended to do the test flying himself, but he had no flying experience*

The Stratos was fast, manoeuvrable and efficient, with a high lift-to-drag ratio. The S1 had been underpowered, with a poor rate of climb and long take-off run. Wanting to improve the performance with the S2 and faced with a lack of engine choice, Charles modified the aerodynamics to gain extra lift efficiency per unit horsepower. The S2 would have airflow optimising splines on the fuselage sides. It would also have a curved channel along the fuselage which led into the fan duct. This would made use of the low pressure created by the induction flow as another form of lift. The elevator length would be extended to near full span of the canard, also to increase the amount of lift produced. The S2, in reality, would be a very different aircraft to the S1 and would require new moulds and tooling. Working with their usual dedicated efficiency, the Ligetis had the first production aircraft ready for testing after only one year.

The S2 design changes did indeed create extra lift, but they also created an unexpected side effect. Although the aircraft would stall at a lower speed, it would have a much more pronounced stall than the S1, more similar to a conventional aircraft, and would need more altitude to effect recovery. The S1 had a gentle canard style nose bobbing style of stall. Unfortunately, Charles expected the S2 to have similar stall characteristics.

On September 22, 1987, at Penfield Aerodrome, Charles prepared the S2 for its first flight. The CG location for the flight was not recorded, but it is apparent that the considerable aerodynamic and handling differences between the S1 and S2, particularly the plane's stalling characteristics, caught Charles off guard. These were the days when quite stupid rules resulted in all test flying having to be done below 500ft. During the first test flight, Charles stalled the aircraft but was unable to recover before impacting the ground. The accident claimed his life. All design work on the Ligeti Stratos was put on hold from that point.

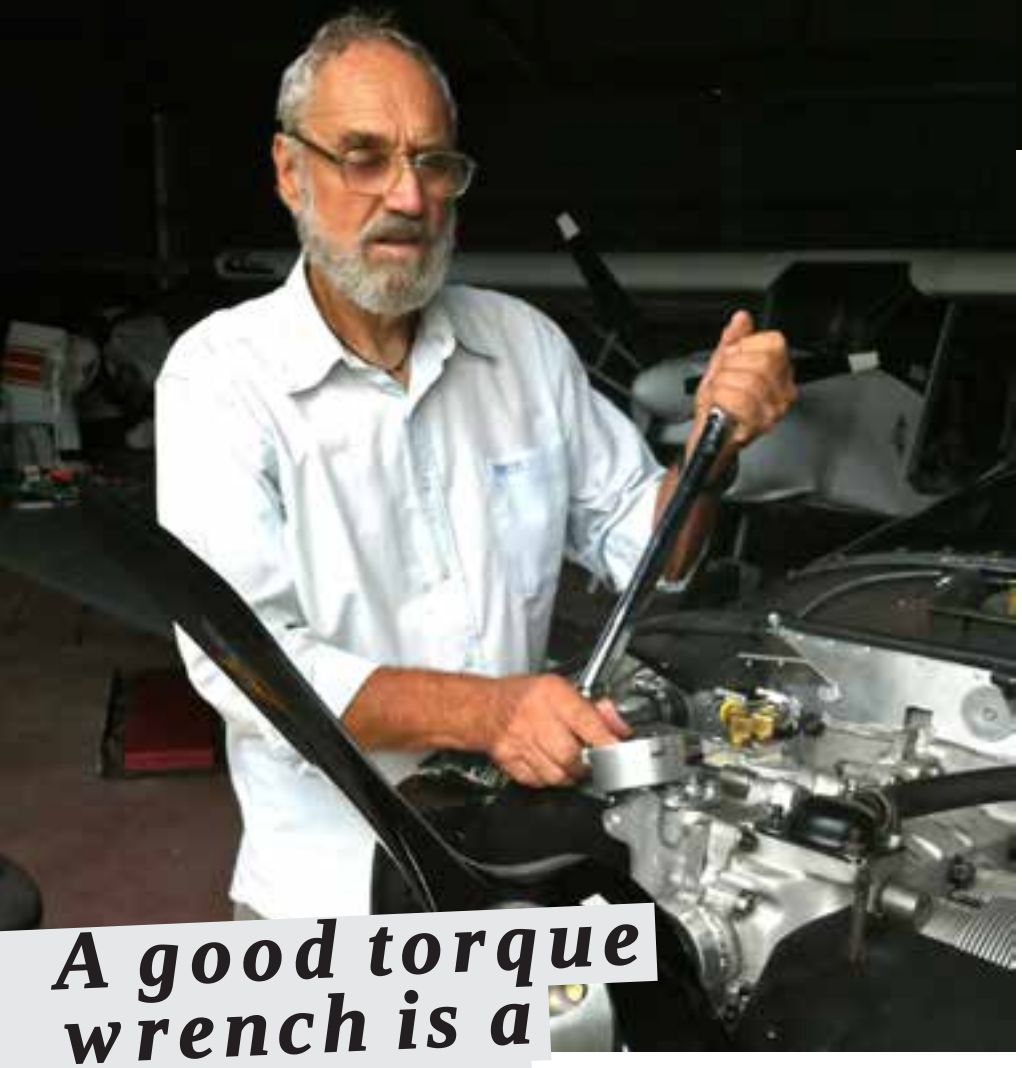
After Charles' death, Helena closed the business and ceased being involved with aviation. She and Charles had two young children, Klaudia and Ron. Faced with the financial realities of life as a widowed mother, Helena worked in various administrative jobs to support her growing family and provide them both with a good education. She never remarried.

Ron Ligeti has always revered his late father's memory, so it was only natural for him to pursue a career in aeronautics. He is a graduate of RMIT with a Diploma in Aerospace Engineering and a Certificate in Advanced Composite Construction (1998). In 2008, he attended a course in advanced composite structures at Stanford University in the US. He is currently employed on composite aircraft structure research with Boeing in Melbourne and has worked on projects for B777, B787, F18, CH300, F35 and other aircraft.

Ron has always dreamed of resurrecting his dad's project and turning the Stratos into a commercial success. After almost a lifetime of thinking about it, he believes Charles's normally conservative approach to flight testing was compromised by business pressures.

When Helena first heard Ron had plans to build a new Stratos, she was understandably very nervous. However, after a lot of discussion between mother and son, she has now become supportive. On her first visit to Ron's workshop, she was surprised to see he had already machined and laminated both wings and bonded them to the fuselage. She decided to get involved by offering to help him layup the fuel tank and blow the canopy.

She told Ron recently that building this new aircraft is an interesting and worthwhile thing to do in life. Ron thinks she is even becoming a little excited about it and is feeling a genuine purpose in helping him in what way she can. Ron believes the project is "Bringing back positive memories of when she was building with Dad, and of us kids when we were little."

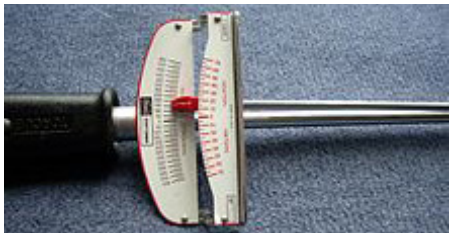


A good torque wrench is a joy forever

by Norm Sanders

CONSIDER the nut and bolt. Before nuts and bolts, all we had was bone, stone, wood. And much later, iron nails for fastenings. Archimedes came up with the idea of a screw, but it took Leonardo Da Vinci to invent the nut. Now, nuts and bolts are literally everywhere. In aviation, everything from a Dreamliner to a Drifter is held together by them. We tend to take them for granted, but they need to be understood. Too loose and they come apart. Too tight and the threads can strip. Most people these days have some idea of the required tensions. A good mechanic develops a feel which can be very accurate, but even they will use a torque wrench for critical jobs. Torque wrenches came along a lot later than the nut and bolt. There were many skinned knuckles and stripped threads before Conrad Bahr invented the torque wrench in 1918 in order to properly tighten sewer pipe connections in New York.

These days, there are three basic types of torque wrench:



1 DEFLECTING BEAM

Beam type torque wrench. The indicator bar remains straight while the main shaft bends proportionally to the force applied at the handle. Simple, sturdy and cheap, but not as accurate as:

2 CLICK TYPE

A more sophisticated method of presetting torque with a calibrated clutch mechanism. At the point where the desired torque is reached, the clutch slips and clicks. This is a better option, but is more expensive.

3 ELECTRONIC

With electronic (indicating) torque wrenches, measurement is by means of a strain gauge attached to the torsion rod. Very accurate, but not really necessary for most applications. It does have a readings memory which can then be easily transferred to a PC which might be handy.

Torque wrenches are magnificent tools, but they are only as good as the bolt specifications themselves. This is where it can get complicated. Bolts are graded by tensile strength and are easily identified by the number of slash marks on the head of the bolt. The more marks the higher the quality. Hardware store bolts with no markings on top are usually soft, mild steel, grade 2 quality and should be avoided. All bolts for aircraft use should be AN. AN bolts are certified strong. AN means Army-Navy, the old designation for US Military Specifications (MilSpec). They are often available from a local LAME, from suppliers like QED in Australia, or by mail from Aircraft Spruce or Great Plains in the US.

A bolt which has been over-tightened can be just as lethal as one that hasn't been tightened enough. A bolt which has gone beyond recommended torque specs can easily break in service. Keep in mind torque specs will be less for bolts that have oil on them than for clean, dry bolts. NOTE: If the bolt is threaded into an aluminium casting, the maximum torque would be far less again.

Here is a collection of values for a common RA-Aus aircraft application. For Rotax, Jabiru, Subaru, etc. see the appropriate manuals or check online.

TORQUE VALUES FOR VW DERIVED ENGINES

(From Aerovee manual. Aerovee recommends torqueing heads after first 10 hours, then 25 hours and annually)

ITEM	SOCKET	FT. LBS	IN. LBS.
Large Case Nuts	19mm	25	300
Cam Case Nuts		10	120
Small Case Nuts	13mm	14	168
Cylinder Head Nuts	15mm	18	216
Rocker Arm Nuts	13mm	14	168
Prop Hub Nuts	30mm	70-80	840-960
Flywheel Gland Nut	36mm	227	2724
Connecting Rod Nuts	14mm	25	300
Oil Pump Cover	13mm	14	168
Oil Pan Cover Nuts	10mm	5	60
Rear Unit Mount Bolts	17mm	25	300

PROP

Re-torque a wood prop with every change of season, or 25 to 50 hours. Normal torque is 11 to 14 ft. lbs. DO NOT OVERTIGHTEN OR WOOD CAN BE CRUSHED. Incidentally, wood props should be left horizontal when the airplane is parked. Here's why: Since the prop was once part of a tree, it still contains a certain amount of moisture. If the prop is parked in the vertical position over a period of time, this moisture can slowly migrate to the downward blade resulting in an out-of-balance condition.

SPARK PLUG TORQUE

(Based on information from NGK)

Torque is one of the most critical aspects of spark plug installation. Torque directly affects the spark plugs' ability to transfer heat out of the combustion chamber. A spark plug that is under-torqued will not be fully seated on the cylinder head, hence heat transfer will be slowed. This will tend to elevate combustion chamber temperatures to unsafe levels, and pre-ignition and detonation will usually follow. Serious engine damage is not far behind.

An over-torqued spark plug can suffer from severe stress to the metal shell which in turn can distort the spark plug's inner gas seals or even cause a hairline fracture to the spark plug's insulator. In either case heat transfer can again be slowed and the above mentioned conditions can occur.

The spark plug holes must always be cleaned prior to installation, otherwise you may be torquing against dirt or debris and the spark plug may actually end up under-torqued, even though your torque wrench says otherwise. The engine must be cool when installing spark plugs, because metal expands when it is hot and installation may prove difficult. Spark plug threads should be smeared lightly with high temperature grease to avoid galling aluminium heads and subsequent helicoil dramas. Torque values should be adjusted slightly downward to account for greased threads. Proper torque specs for both aluminum and cast iron cylinder heads are listed below.

Thread Diameter	Cast Iron Cylinder Head (lb-ft.)	Aluminum Cylinder Head (lb-ft.)
18 ø mm	25.3~32.5	25.3~32.5
14 ø mm	18.0~25.3	18.0~21.6
12 ø mm	10.8~18.0	10.8~14.5
10 ø mm	7.2~10.8	7.2~8.7
8 ø mm	--	5.8~7.2

Convinced? Torque Wrench prices range from $50 to $400. As with anything else, you get what you pay for. But remember, a quality torque wrench will be a lifetime source of satisfaction, pride and envy. (Trouble is, everybody will want to borrow it).

SAFETY MATTERS

KATIE JENKINS National Safety Manager

Safety risk management

MANAGING potential hazard in a business, is a major consideration for any owner or operator. Risk management is an important part of a business' continuity plan and it allows business owners to have a good understanding of potential risks. The main goal is to find ways to minimise the impacts of these risks, in order to help the business owner recover quickly if an incident occurs.

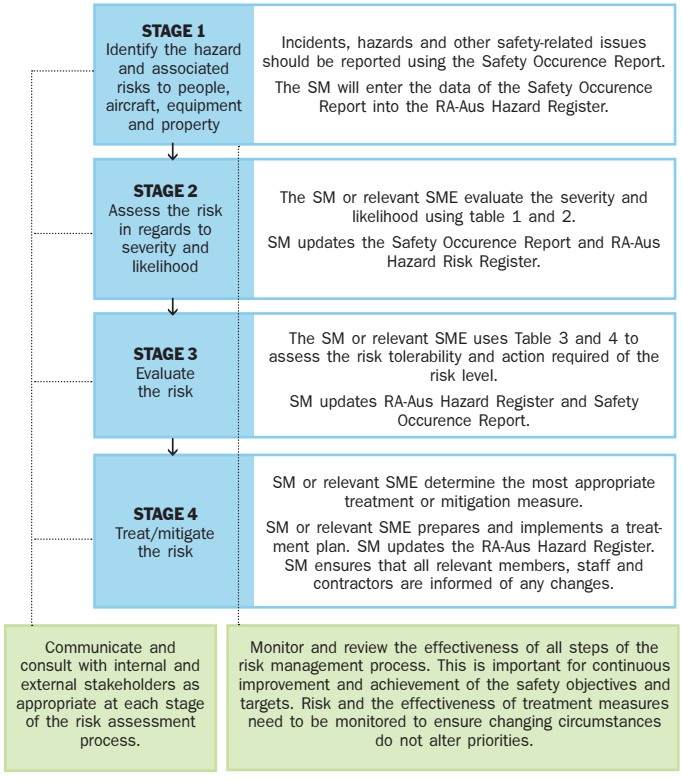
Risks in aviation businesses are very safety specific. If they are left unidentified and mitigated against they can affect other areas within the business, such as employees, equipment and property.

This process of identifying, assessing and developing strategies to manage risks is known as risk management. While it might appear that a Safety Management System (SMS) is mainly a document full of technical jargon, it actually encompasses the risk management strategy to protect your business.

Why then would you not consider working an SMS into your business plan?

Safety is the key to aviation. If your members or clients do not feel safe, it will be highly unlikely they will fly with you again. A SMS ensures hazards in your workplace are dealt with in a systematic way, rather than in response to a crisis. It is set up to help protect the business, workers, customers and personal liability as an employer, owner, manager or supervisor.

The RA-Aus Risk Management Process is no different and provides an easy step-by-step guide. It starts with identifying the hazards affecting safety and assesses the risks associated with those hazards in terms of likelihood and severity. Once the level of risk is identified, appropriate mitigation measures can be implemented to reduce the level of risk to as low as reasonably practical (ALARP). In order to explain the Risk Management Process the following diagram breaks it down into various stages:



STAGE 1 Identify the hazard and associated risks to people, aircraft, equipment and property

Stage 1 applies to any person who identifies a safety hazard, event or incident. It can also be identified through brain-storming with other employees, members or experienced personnel, developing scenarios, feedback during training, safety surveys or even through a casual conversation with similar operators. Once a hazard has been identified a Safety Occurrence Report is submitted to RA-Aus (currently through the use of an Accident and Incident Report (April 14). Once received, the Safety Manager logs the reported information into the RA-Aus Hazard Register.

STAGE 2 Assess the risk in regards to severity and likelihood

At this stage two questions need to be asked:

1. How serious is the consequence of the potential/real risk? This is where it needs to consider any current mitigation measures already in place and assess safety in terms of the worst possible realistic scenario (table 1).

2. How likely is it that this risk could happen? An evaluation of the possibility of the risk occurring needs to be conducted (table 2).

The following tables are detailed in the RA-Aus Risk Management Toolkit which is provided to assist all members in following the RA-Aus Risk Management Process. This toolkit is also available on the RA-Aus website www.raa.asn.au/safety.

Table 1: Identification of the severity/ consequence of the event

LEVEL	SEVERITY / CONSEQUENCE	DESCRIPTOR
5	Severe	Catastrophic (at least one fatality, huge financial loss)
4	Major	Major (extensive injuries to one or more persons, major financial loss)
3	Moderate	Moderate (medical treatment required, high financial loss)
2	Minor	Minor (first aid treatment at the workplace, medium financial loss)
1	Negligible	Insignificant (no injuries, low financial loss)

Table 2: Likelihood of Occurrence

LEVEL	LIKELIHOOD	DESCRIPTOR
5	Almost Certain	Imminent – is expected to occur in most circumstances
4	Likely	Once in the next month, will probably occur in most circumstances
3	Possible	Once in the next 12 months, might occur at some time
2	Unlikely	Once in the next 1 – 5 years, could occur at some time
1	Rare	Once in the next 10 years – may occur only in exceptional circumstances

A SMS ensures hazards are dealt with in a systematic way, rather than in response to a crisis

Table 3: Likelihood and consequence table

TABLE 3			CONSEQUENCE				
			1	2	3	4	5
			NEGLIGIBLE	MINOR	MODERATE	MAJOR	SEVERE
LIKELIHOOD	5	ALMOST CERTAIN	6	7	8	9	10
	4	LIKELY	5	6	7	8	9
	3	POSSIBLE	4	5	6	7	8
	2	UNLIKELY	3	4	5	6	7
	1	RARE	2	3	4	5	6

STAGE 3 Evaluate the risk

Once these levels have been identified it enables the assessor to determine the level of risk (Likelihood X Consequence = risk score) and the action required to mitigate against the risk (table 4).

STAGE 4 Treat/mitigate the risk

At this stage, a hazard has been identified as requiring further mitigation. Risk mitigation strategies in RA-Aus generally fall into four categories:

1. Avoidance – Operations or activity is cancelled or avoided because the safety risk exceeds the benefits of continuing the activity, thereby eliminating the risk.

2. Reduction – The frequency of the operation or activity is reduced or action is taken to reduce the magnitude of the consequences of the risk.

3. Segregation – Action is taken to isolate the effects of the consequences of the risk or build in redundancy to protect against them.

4. Procedures and Rules – Procedures or rules are used to manage the risk to ALARP.

If a treatment plan is required it will be prepared and implemented by the SM or relevant SME (this is where our Regional Safety Officers will be used). The treatment plan will introduce measures to reduce or eliminate the hazard. To ensure the measures don't lead to other hazards, the SM or relevant SME will conduct a further risk assessment on the treatment plan. The RA-Aus Hazard Register is then updated with all the relevant information from the treatment plan.

STAGE 5 Continuously monitor and review

In order to maintain effectiveness of all stages of the risk management process, the SM is required to consistently monitor and review the assessment process, assumptions, methods, data sources, results and the reasons for decisions being made.

STAGE 6 Continuously communicate and consult

Throughout each step it is essential consultation and communication is carried out with everyone at RA-Aus functions, activities and events. Safety promotion and communication are important aspects of informing all members of the outcomes of the risk mitigation. In order to ensure everyone is aware of the changes an identified risk may create, communication is required to educate and train everyone. This communication can occur through the RA-Aus website, *Sport Pilot* magazine, safety bulletins and emails.

Table 4: Action required of risk level

INDEX	RISK LEVEL	ACTION
> 7	EXTREME RISK	Cease activity until mitigation controls are implemented to reduce risk. Detailed treatment plan required
6 to 7	HIGH RISK	Needs senior management attention and treatment plan as appropriate with regular monitoring
4 to 5	MEDIUM RISK	Manager level attention and monitoring as appropriate
< 4	LOW RISK	Manage by local level procedures

The Safety Risk Management within a business is only one component of the SMS. It ties in directly with ensuring business policies and objectives are outlined so all members, employees and contractors understand their responsibilities if they identify a hazard or safety event. Additionally the risk management process ties in closely with the next component of a SMS, Safety Assurance, which will be covered next edition.

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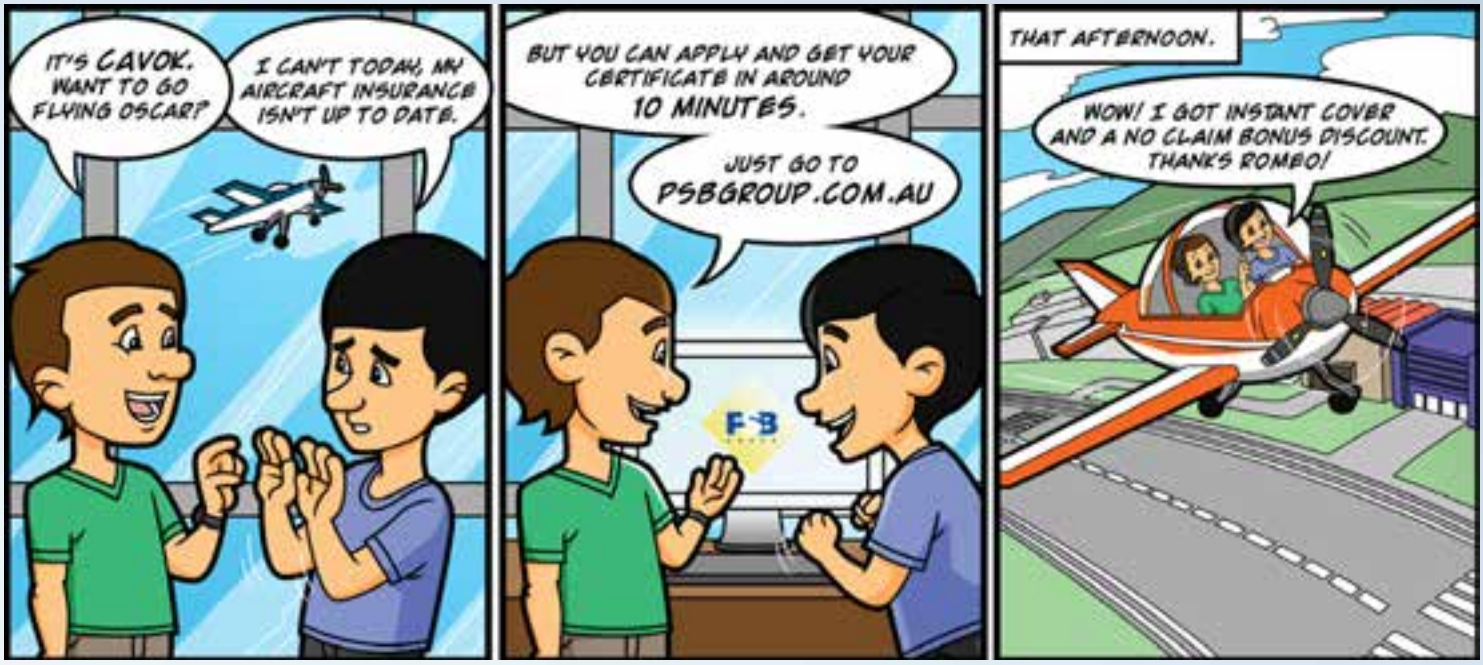

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PILOT TALK

Jill Bailey - Operations Manager

Coming over to the Lighter Side

MANY members have commented on the huge growth in recreational flight in recent years. More modern aircraft, appropriate operational legislation, improved training and an organisation based around members and focused on recreational flight are clear contributors to the growth of our aviation segment. Underpinning this also are the associated reduced costs within RA-Aus.

This growth has also been observed closely by other industry players. To quote Bob Dylan 'the times they are a changin' and nowhere is this more evident than in the influx of GA converts adding Recreational Pilot Certificates and Instructor ratings to their resumes.

Some of our newer members may not be aware of the early processes put in place by RA-Aus to ensure the safe transition to the 'lighter side' of the flight envelope. In the early days, many experienced pilots looking to dabble in 'fun flying' came unstuck when managing the higher drag, low inertia characteristics of our fledgling recreational craft. While many of these types still exist, most now are higher performance, more complex and heavier (by our standards) aircraft.

These aircraft still offer slightly different characteristics, depending on type. This can lead to a normally competent pilot reacting very differently, often in times of stress, to a situation where years of primacy invade the decision making and action processes. One particular area of note is landing. A Cessna or Piper may have grudgingly handled a less than graceful arrival for a pilot, but the lighter RA-Aus aircraft often do not have the weight and resultant strength of the heavier GA aircraft. With a lighter aircraft comes the need for a more delicate approach.

Also, some of our aircraft are not built to, or necessarily maintained to, GA standards. Technical exemptions exist for RA-Aus aircraft. Many aircraft systems are, therefore simplified to remain within the weight limits. Examples of these exclusions can include engine types and systems, vacuum systems, fuel systems, charging and lighting systems and instrument and avionic minimum requirements. How many pilots actually understand the differences in these areas?

Lycoming or Continental aircraft engines are different to Rotax or Jabiru engines and there are even bigger differences if the aircraft has an converted automobile engine. Many RA-Aus aircraft use glass cockpits, but pilots may not be aware these instruments may not be certified to an aviation standard and therefore cannot be relied on for anything other than VFR flight.

Pilots need to understand how fuel systems work, feeding from wing tanks to the engine directly or through a header tank, etc. The proposed type training is intended to address exactly these issues and ensure pilots are fully conversant with an aircraft's specific requirements.

It is why the RA-Aus Operations Manual stipulates a five hour minimum conversion time. "We know you can fly, but let's spend time understanding the differences" is a phrase many RA-Aus Instructors will have used. This is pertinent in any type-training, but particularly so when converting to RA-Aus from GA aircraft.

But it's not just the aircraft which is different, so are the legislation and entitlements afforded under our Civil Aviation Orders (CAO), and therefore the requirements for operating an RA-Aus aircraft as an RA-Aus Pilot Certificate holder.

Firstly RA-Aus pilots are issued a Pilot Certificate, not a pilot's licence, because only a Federal government appointed department can issue licences. An RA-Aus Pilot Certificate is not perpetual; it remains valid only as long as the requirements of Sections 2.01, 2.05 and 2.07 of our Operations Manual are met. This includes the requirement for maintenance of membership, a self-declared and self-assessed health standard, in addition to the usual flight review requirements.

The privileges of operation for RA-Aus pilots are also different and limited compared to that of a PPL holder. These limitations are clearly identified in CAO's 95.10, 95.32 and 95.55. Applicants must be aware of them and that some of the previous GA privileges may only continue to apply if the CASA issued licence is also maintained in terms of flight review and medical requirements, while operating as PIC in a recreational aircraft. Any privileges should not be assumed and should be clearly discussed with your RA-Aus Instructor during the conversion process. Likewise, all RA-Aus Instructors should remain familiar with, and up to date on, the differences which do exist.

As a recent example of this, an RA-Aus Pilot Certificate holder who converted from GA decided to fly from one airport to another. His previous experience included a General Flying Progress Test (GFPT), or what was formerly known as a Restricted PPL, meaning he could not fly anywhere other than in the circuit, to the training area and back. As a Pilot Certificate holder, his limitation included no flights further than 25nm from the point of departure. Either way he should not have contemplated a flight of more than 25nm.

Unfortunately, the pilot infringed Controlled Airspace and caused a Loss of Separation Assurance event for a QANTAS jet. Based on investigations by Operations, this resulted in the Pilot Certificate holder having his privileges suspended and being required to undergo retraining. The CFI, who recommended the pilot for his Certificate, was also required to undergo a revision of the conversion processes.

This example is exactly why a conversion process should be very carefully handled, not just from the perspective of the aircraft, but also from the regulations.

So while converting to RA-Aus might look simple, the practical and theoretical requirements can be more involved. Members and instructors must understand the differences.

Civil Aviation Safety Regulation – Part 61

Much has been written about the proposed changes due for implementation on September 1, 2014, and the impact on RA-Aus Pilot Certificate holders. Operations recently attended a CASA meeting dealing with the proposed changes. We learned about changes to the CASA website – it now has new information relevant to RA-Aus. The document has specific questions from an RA-Aus Pilot Certificate holder's point of view. http://www.casa.gov.au/wcmswr/_assets/main/lib100191/rr61_rpl_fs.pdf

If members intend to continue flying an RA-Aus registered aircraft, there will be no changes to their current processes. They simply continue to operate in accordance with the Operations Manual.

Changes only occur if members intend to fly a VH registered aircraft up to 1,500kgs. In this circumstance, the RA-Aus Pilot Certificate and theory achievements will be recognised. In an ideal situation, once the medical requirement is completed, a simple flight review with a GA CFI should result in the issue of an RPL.

A pilot simply needs to show competence in the requirements for the flight. This should also include the issue of a cross country endorsement to the RPL, which should be recognised from our RA-Aus Cross Country endorsement. Areas which may require additional training will include controlled airspace, controlled aerodrome, aerobatics and other endorsements.

The main point for members to remember is, privileges attached to the RA-Aus Pilot Certificate are only valid while RA-Aus requirements are met and only when operating an RA-Aus registered aircraft.

Similarly, any privileges available as the holder of an RPL or PPL are only valid for VH registered aircraft, if the requirements for flight review and medical status remain current.

Where the lines blur is that an RA-Aus Pilot Certificate holder may operate an appropriately maintained RA-Aus aircraft in controlled airspace, while using the RPL or PPL privileges, but the pilot must ensure both RA-Aus and GA privileges are current.

Frequently Asked Questions (FAQs) will be added to the RA-Aus website soon to specifically address these areas.

Formation flying

DESIGN NOTES

DAVE DANIEL

Configuration and layout

EVERY manned aircraft requires two things - a means to produce lift and somewhere to house, or at the very least attach, the occupants. I'm more demanding, so I'll also require a method of control, some form of propulsion and something other than my own legs on which to take off and land. So it's time to take a look at the most visible aspect of any design and one of the most critical - configuration and layout.

As fun as airships, autogyros and jet packs may be, I'm opting for a fixed-wing design. But that still leaves me with a few decisions, not least of which is - how many wings do I need, and where am I going to put them?

Biplanes have been around since the dawn of aviation and were the predominant type until well into the 1930s. While not as popular as they once were, the benefits of a biplane configuration are still valid today - more wing area for their size means good short field performance, often without requiring flaps and, in many cases, pleasant stall qualities. Shorter wingspans make for a compact aircraft with good roll response. In addition, shorter wings also mean lower bending loads and, if the usual approach of joining the upper and lower wings with struts and bracing is taken, a stiffer structure can be had for less weight than a comparable monoplane.

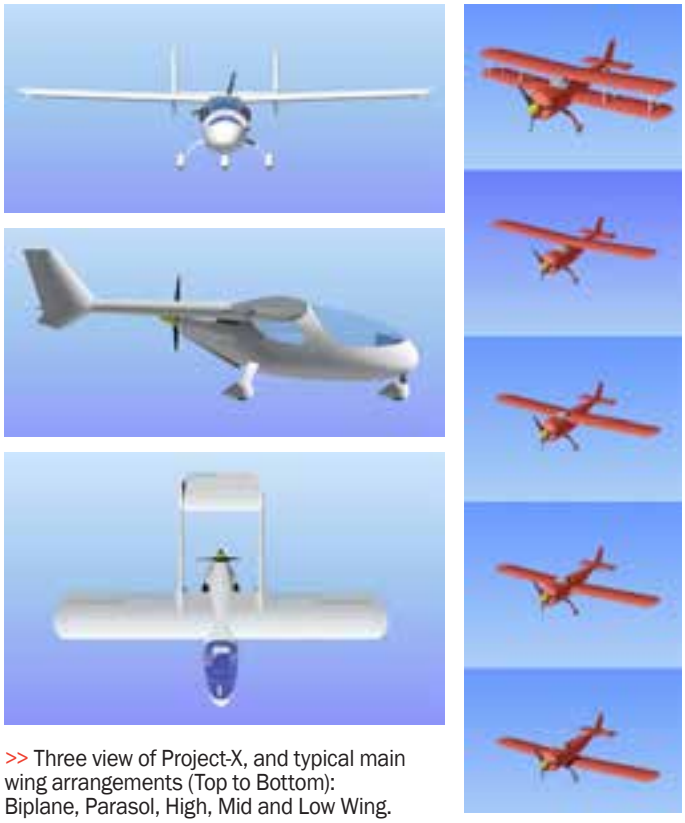
It's not all good news though. Struts and bracing mean drag and, in conventional biplane layouts, the wings interfere with each other, aerodynamically reducing their efficiency. The results are lower cruise speeds, reduced glide performance and less range. Achieving good pilot visibility can also be a challenge, but I assure you the view from the rear seat of a Tiger Moth is stunning, at least until you have to land or taxi.

Remove the bottom wing from a biplane and you get a Parasol wing – a single wing mounted above the fuselage on cabane struts or a pylon. This configuration gains some natural stability in roll and pitch due to the pendulum effect of having the centre of mass hanging below the wing, similar in principle to a paraglider.

Because I'm seeking low drag and ease of construction, I've chosen a monoplane, but then where should I put the wing; high, low or somewhere in between? It turns out there is no right or wrong answer to this particular question. It just depends on your visibility, structure, drag and to some extent, stability requirements.

High wings give a good view of the ground, but can block the view above and can obscure the view in the direction you are turning when banked - which is why your flying instructor is constantly banging on about looking before you turn. Low wings avoid the banking problem, but often at the cost of a clear view below. Mid-wing and shoulder wings give you the best of both worlds for visibility and have better drag performance to boot, but there's no free lunch and structure can be a challenge.

As a rule, the only place you'd like to be when your wings fold is safely on the ground. To avoid your wings doing it unexpectedly in flight, they need to be somehow connected structurally. This is often achieved by extending the wing spars into the fuselage so they overlap and join rigidly together or alternatively doing away with separate spars for each wing and just having a single spar cover the entire span. Either way this arrangement keeps the large wing bending loads in the spars, neatly bypassing the fuselage structure and allowing it to be lighter. For a low wing, this arrangement is simple to accommodate because the spars can pass through the fuselage under the seats. In a high wing they can be positioned overhead, at the cost of a slightly deeper fuselage. However for a mid-wing you're stuck with threading the spars straight through the middle of the fuselage or somehow diverting the loads around the outside using bulkheads or ring frames.



>> Three view of Project-X, and typical main wing arrangements (Top to Bottom): Biplane, Parasol, High, Mid and Low Wing.

There is another option - using a strut braced wing and removing the need for a spar carry through altogether. This configuration also works out to be lighter structurally, so is often used in high wing aircraft where the added drag penalty of an underwing strut is minimal. On a low wing aircraft struts are usually avoided because they disturb the airflow over the top surface of the wing, which is much more critical in terms of lift and drag.

No discussion on the position of the main wing would be complete without mentioning ground effect. When you fly within approximately one wing span of the ground, the wing starts to produce lift more efficiently - i.e. with less induced drag. The closer the wing gets to the ground, the more powerful this effect becomes. So a low wing plane is more affected than a high wing flying at the same height. This is great for a soft field take off because you can unstick early and then merrily accelerate away in ground effect before beginning the climb-out. Unfortunately, when you are trying to land, the opposite is true - giving low wing planes a much greater tendency to float during the flare.

Last month, I left you with a 3-view concept sketch of my ultralight. It was mid-winged, with side-by-side seating. But things have changed a little. I've gone to tandem seating - allowing me to place the pilot seat in front of the wing to give me fantastic all-round visibility (just ask a Drifter pilot). I've also abandoned the mid wing and moved to a high wing arrangement. This puts the spars out of the way and gives me the option of changing to a strut braced wing later in the design process, if it turns out I really need to save structural weight.

FLIGHT INSTRUCTOR'S FORUM

Facilitated by the aviation guru Professor Avius

Getting the PMI right

A FEW years back I remember fronting up for an endorsement. I felt fully prepared, current and confident. Unfortunately, it turned out to be the most demoralising, soul destroying aviation experience I have ever encountered. The CFI slammed everything I said, everything I presented and everything I did.

He did not find one positive in anything I had to offer. We didn't even get into the aircraft to demonstrate the skills, which I truly believed that I had - kind of - sort of or maybe no - I didn't ever really have (such was my slowly diminishing self-confidence).

Others later told me "Oh that's how the CFI treats everyone". So where were that person's Principles and Methods of Instruction?

As instructors our goal is to pass on information we have to create the next generation of safe, competent and confident pilots who are of the standard which the rigors of aviation demands.

Will the way in which we deliver this information have any bearing on the type and standard of pilot we produce? I am sure it will. How well we know the information, how we convey it and the attitude with which we present it, can be the difference between having a student who perseveres through the ups, downs and setbacks that most of our aviation journeys present, and the student who never returns (I didn't).

One definition of learning I came across described it as 'the change in behaviour as a result of experience.

If that is so, as instructors it is of utmost importance the teaching methods we use have the impact of ensuring a positive learning experience.

Ralph W. Tyler in his book *Basic Principles of Curriculum and Instruction* spoke of three steps to productive learning:

1. Have a purpose or objective;
2. Provide the experience to achieve No.1;
3. Determine an assessment to ensure that No.1 has been provided.

That was from a book printed in 1949. Fast forward to 2014. The principles of this formula remain the same. But the expectations and demands of our students and the authority, which oversees the training, require more rigorous accountability.

An example of a method of learning could be the Long Brief.

Aim - Provide a brief outline description of the lesson.

Introduction and Motivation - Explain the relevance and importance of the lesson, its practical significance, relating to flying the aircraft and relating to the sequence of previous and future lessons.

Duration: State the length of time of the briefing and keep to it. 40 -50 minutes is a practical length of time to ensure the trainee's attention span is maintained.

Objectives: The essential link between academic principles and the practical air exercise. Need to be clear, concise, meaningful and achievable. Each lesson typically may have 5 - 6 . Evidence of achieving these objectives can be obtained by questioning throughout the briefing or at the end.

> *'Oh that's how the CFI treats everyone'. Where were his PMI?*

Revision: Check knowledge/ understanding from previous lesson(s).

Definitions: Of new terms or concepts for greater understanding.

The Principles: Present the aerodynamic and theoretical knowledge required to understand the practical aspects of the air exercise.

Considerations: Present relevant environmental and operational variables which have an effect on the exercise.

Application: Explain what the air exercise will involve.

Emergency Procedures: Presenting actions to be taken in a real emergency.

Human Factors, Threat and Error Management and Airmanship considerations.

Assessment: Confirm lesson objectives have been achieved. Ensure any perceived deficiencies are reviewed.

Ensure Active Learning: Involve the student, use a variety of teaching aids. Pitching the knowledge at the level of the trainee, present the information in a logical sequence and always move from the known to the unknown.

'An important area of responsibility, in the accountability stakes, includes the keeping and monitoring of thorough and timely documentation. It is imperative instructors follow guidelines or syllabi competency standards, ensure student records are accurate and done in a timely manner'.

Above all, ensure the learning experience is delivered in a positive and enthusiastic manner.

It is critical that any critique or negative comments are not derogative or too harsh and ensure they are always matched with a positive aspect, no matter how minor or infrequent.

We have no right to demean or demoralise a person in their attempt to learn a new skill. Never forget the objective your student is trying to achieve. The principles and methods by which you instruct are only of importance if delivered with genuine interest, understanding and passion.

Confucius once said: "When the student is ready, the teacher will emerge."

Make of that what you will. It took me a while to get back to flying with confidence, after my disastrous encounter. *Principles and Methods of Instruction* is of great importance, it shouldn't be just another catch phrase.

References: *CAAP 5.59A -1 (0) Competency Based Training and Assessment in the Aviation Environment, Appendix G to CAAP 5-14 (20) Principles and Methods of Instruction – Knowledge Assessment Tools, Appendix E to CAAP 5-14 -2 (0) Flight Instructor Training (Aeroplane), Basic Principles of Curriculum and Instruction – University of Chicago 1949.*

LEARNING TO FLY

SHANNON LEGUISE

A necessary evil

THE day started out great. I got the exciting news that we were going out into the training area. Yay. I wouldn't have to go around and around the circuit, looking at the same scenery until I got dizzy.

It was finally time to learn something new. It was time to do forced landing training. I'd be lying to you if I said it was my favourite part of learning to fly. I actually found it quite frustrating, but it was most definitely a necessary evil.

Before we left I was given a briefing on Practice Forced Landings (PFL), given the opportunity to ask questions. Once I thought I understood we pre-flighted and went.

As soon as we were in the air I was loving every minute of it, as I usually do whenever I get to go for a fly. My instructor, Liz, demonstrated a forced landing for me, explaining as she went what she was doing. AVIATE, NAVIGATE, COMMUNICATE. The essential steps for a forced landing.

Then the engine 'failed'. First things first. Aviate. Set the plane up for the best glide speed and trim. I understood that part perfectly. I held on some back pressure, increased the angle of attack, let the airspeed come down to 65kts. Easy done, trimmed the plane, best glide speed was set.

After I mastered aviating it was time for step 2. Navigate. I thought I understood perfectly well what Liz had told me. She explained it so well, only an idiot wouldn't have understood. First, I had to figure out which direction to land, find a suitable paddock, find the low key point 45 degrees from the aiming point to turn base, then when I was sure I was going to make the paddock, start bringing the aiming point back. Simple.

Guess who turned out to be the idiot?

Even though I understood perfectly, putting the theory into practice turned out to be an entirely different kettle of fish. First I determined the direction of the wind, then tried to choose a suitable paddock into the wind, which had a nice shape and a suitable size and no power lines.

All well and good, but the paddock I was aiming for wasn't the paddock we would have landed in. I'm lucky my instructor was so patient, because I can tell you now, I was silently swearing my head off. I couldn't figure out how that low key point worked. I'd either crowd myself or give myself too much room.

After a few times flying around in circles confused, I finally gave in and got Liz to demonstrate another forced landing, explaining to me very clearly what she was doing. Then she gave me the tip, to imagine the paddock as a runway and make a normal circuit. That helped. I went home that day and downloaded Google Earth and did some homework. I flew around and around on Google Earth trying to figure out how it all worked.

I went into my next lesson feeling a lot better about things. I think I finally really understood. I first aviated, then I began to navigate again. It wasn't perfect, but it was a lot better than the first time. That was a huge confidence boost.

After spending a few more lessons practicing my navigating and Google flying, I got to move onto the third step. Communicate. This part I found to be relatively easy. It was simple enough. Once I was established to land while maintaining best glide speed, it was time to make a MAYDAY call. I had read about MAYDAY calls and practiced them a lot, so I picked it up pretty quickly.

I found PFLs frustrating to learn, but I'm glad I did them. I think doing study at home was definitely helpful when I was trying to understand things. Going through what my instructor taught me before I went to my next lesson - to make sure I completely understood - eased the frustration and gave me that extra boost of confidence I needed to make sure I am the best pilot I can be.

>> This Wheeler Scout was obtained from Steve Meddings to add to the Australian Ultralight Aircraft Museum's collection. Photo: Steve Meddings

Wheeler Scout

The Wheeler Scout was one of the world's first ultralights - it is believed to have been be the first commercially available ultralight kit in the world.

It was developed from a hang glider and went into production in 1976. Seven years later it was still available. It is also believed that over 200 kits were sold during the period of production.

The Scout was powered by a 173cc Pixie Major (14hp@6500rpm) engine with a chain drive to a two bladed wooden propeller. The controls were limited to two-axis - there was no separate roll control.

It weighed 122lbs empty with a MTOW of 297lbs and had a maximum level speed of 47mph and a VNE of 75mph. Economy cruise was 40mph and stalling speed was 20mph. It had an average cruising range of 28 miles or 45kms (if the chain didn't break!).

Source: Berger-Burr's Ultralight and Microlight Aircraft of the World Vol 1.

BRM Aero Bristell.

Integrity of design, quality of build and proven in perfomance.

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Customised to suit your needs with your choice of Rotax or Jabiru power.
Well designed, quality construction and outstanding performance
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BRM AERO Wings with heart

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IGUANA.4516.SP7/13

TECH TALK

DARREN BARNFIELD RA-Aus Technical Manager

A busy month for Tech

L4 AMATEUR BUILT INSPECTIONS

The pre-flight final inspection is done by the builder under the supervision of an inspector. The inspector (L4) must be a LAME who is also an L2 and, by definition, a member of RA-Aus. In certain circumstances, an L4 can also be approved by CASA. Only an L4 can supervise a pre-flight final inspection. After the inspection and any faults have been rectified, the inspector nominates the number of flight test hours which must be flown and the area in which the flight testing is to be carried out.

The pre-flight finalisation form is forwarded to RA-Aus and provisional registration is awarded to enable the flight tests to be completed. The number of test hours is dependent on the type of engine installed. It will be 25 hours for a type certificated engine and 40 hours for a non-type certificated engine. The carriage of passengers during the testing period is prohibited, as is flight in controlled airspace and flight over built up areas. Every aircraft recently tested has only been issued with 25 hours.

The area in which the testing is to be carried out is usually designated as five hours within five nautical miles of the airfield of departure and the balance of the flight test time within 25 nautical miles of the airfield of departure. Only in exceptional circumstances will these times and areas be modified and this will be at the discretion of the inspector.

A flight test manual has been produced for RA-Aus aircraft and will be available to members. This covers basic evaluation of aircraft parameters, plus advanced aircraft operation and testing. It should be read in conjunction with the FAA publication AC 90-89A.

When the test period has been completed, the inspector and RA-Aus are notified using the 'Flight Test Period Finalisation' form. Any problems encountered during the testing should also be advised, as well as any rectification which may have been carried out.

The aircraft is then issued full registration. Aircraft which have not had a Flight Test Period Finalisation form completed will remain restricted to the area originally designated by the inspector.

RTO PROCESS UPDATE

The RTO (registered training organisation) process is continuing. We recently successfully applied for a grant of $10,000 from CASA. This will go towards part funding the RTO process. This will allow RA-Aus to offer a nationally accredited training program for aircraft maintenance.

TECH MANAGER DELEGATION FOR 11.115

In September 2013, members were advised there were a number of aircraft which had been issued with an incorrect Category of Airwork or Aerial Work on the Certificates of Airworthiness for Light Sport Aircraft.

This issue was detected during audits of aircraft files conducted by CASA. In order to help correct this, CASA has issued a temporary delegation to me for the purposes of reissuing Certificates of Airworthiness under CASR 11.115.

This delegation therefore permits rectification of the previously incorrect category. These changes will be conducted free of charge to RA-Aus members without the need to conduct a full Certificate of Airworthiness inspection of their aircraft and will allow for the reissue of a new amended Special Certificate of Airworthiness.

Further enquiries about this can be me on techmgr@raa.asn.au.

CONVERTING ELSA TO LSA

It has been brought to the attention of the Tech department that some owners have been given incorrect information relating to the removal of the experimental status of their registration. The following summarises the correct procedure for transferring an aircraft from Experimental Light Sport Aircraft to Light Sport Aircraft registration.

An ELSA aircraft is operated under CAO 21.195A. It may mean the aircraft has been modified without approval from the manufacturer or, in the case of the Pipistrel range, because an ASTM standard was not available

to cover the in-flight adjustable propeller at the time of first registration. As a work-around, affected aircraft were transferred to the Experimental register, they have an E prefixed in front of the 24 registration number and have an experimental placard fitted in clear view of the passenger. The aircraft cannot be used for any purpose other than private operations.

To transfer an ELSA to an LSA the aircraft will require a letter from the manufacturer to support any non-compliant item or modification. It will also require a new Special Certificate of Airworthiness issued under CASR 21.176. The aircraft must be inspected, have the E removed from the front of the registration on both sides of the fuselage and underwing and the experimental placard removed from within the cockpit. Evidence of this is required for the authorised person to re-issue the Special Certificate of Airworthiness.

DISCREPANCY LIST

As outlined in other Tech Talk columns, certain items have been placed on a discrepancy list which has helped the team speed up the registration renewal process. This is a reminder to everyone who has been allowed to continue operations, you must supply the required documents within the 12 month grace period. Unless an agreement has been arranged beforehand with the Tech Manager, when your registration comes around for renewal your file will be assessed and the registration will not be processed until the required information is supplied.

CESSNA STRUCTURAL INSPECTIONS

A timetable has been set for a range of structural inspections required to be carried out on Cessna series aircraft. Owners and operators of Cessna 100, 200, 300 and 400 series aircraft must complete structural inspections developed by the manufacturer. CASA extended the original deadlines for the inspections and developed a phased timetable to give owners and operators time to have the work completed.

Supplemental Inspection Documents were developed by Cessna and the US FAA due to concerns critical principal structural elements of aircraft are susceptible to fatigue or corrosion damage. In many cases these components have not been inspected since the aircraft were manufactured decades ago.

The inspection, which complements existing scheduled maintenance, requires a detailed inspection of a range of structural areas such as wing spars, wing attachment points, strut attachments, rudder bars and attachment points and horizontal stabiliser attachment points.

Inspections are conducted to identify any metal corrosion damage or metal fatigue. Damaged components must be replaced or repaired. The timetable for the completion of the inspections ranges from December 31, 2014 for Cessna 300/400 aircraft to June 30, 2016 for Cessna 100 aircraft.

L2 RENEWALS

I want to remind all L2s that it's a requirement in the Technical Manual under Section 4.1.7 that you must renew your L2 privilege. With the new accreditation system in Technical Manual Issue 4 (awaiting approval from CASA) you will be required to complete a minimum of four annual or 100hrly inspections in the two year period. The new accreditation process will better define your abilities. I have had L2s tell me they are unrestricted. I want to remind people even a LAME is not unrestricted –there are limitations on LAME licences and so we will assess each L2's knowledge and expertise, which will be recorded and updated. Once the new manual has been approved by CASA, you will also start to see your maintenance privileges printed on your membership card. This will outline what you are allowed to perform.

L2 ACCREDITATION CATEGORIES

The following new categories will be used once CASA has approved the draft Technical Manual Issue 4.

1. Levels of maintenance

Level LM. Allows line maintenance as set out in the current Technical Manual under 4.1.1 Annex B (on any aircraft).

Level SM

Allows scheduled maintenance plus Aircraft Condition Reports on specified aircraft types.

Level SMR

Allows scheduled maintenance, Aircraft Condition Reports and minor repairs on specified aircraft types.

Level UL

Allows unlimited maintenance, repair and Aircraft Condition Reports on any aircraft type.

2. Aircraft types.

W - (Wood and fabric)
RT - (Rag and tube)
M - (Metal)
C - (Composite)
AT - (Any aircraft type)
WS - (Weight shift)
PP - (Powered parachute)
Individual type
(e.g. Jab, Tecnam etc.)

3. Systems

E - (Engine)
A - (Airframe)
AV - (Avionics/Electrics)

>> Picture: David Mason

Training rules simplified

NEW regulations covering a large number of flying training organisations are being simplified by CASA after its review of Part 141 of the Civil Aviation Safety Regulations.

CASA says the changes will cut red tape and reduce costs for about 300 flying training schools by nearly $2 million a year.

In a statement, CASA says optimal safety outcomes for flying training will be maintained by retaining the core elements of the new Part 141.

"Part 141 covers flying training for recreational, private and commercial pilot licences, ratings and endorsements for single pilot aircraft. It does not extend to intensive integrated training for private and commercial licences, which is contained in Part 142 of the Civil Aviation Safety Regulations.

"The new licencing suite of regulations, which includes Part 141, will take effect from September 1, 2014. Simplification of the requirements will be made before the regulations come into effect".

CASA's Director of Aviation Safety, John McCormick, says the review of flying training regulations was conducted in line with the Federal Government's direction to look for opportunities to reduce the cost and burden of regulatory compliance on industry.

"I am very pleased the new regulations in Part 141 can be simplified and made less costly while at the same time maintaining high safety outcomes," says Mr McCormick.

"Naturally, safety can never be jeopardised in the pursuit of simpler regulations, but with hard work the two outcomes can be achieved."

KEY CHANGES TO PART 141:

- The requirement for a safety management system will be removed. Recommending safety management systems are implemented for small, simple flying training organisations is more beneficial than mandating them.
- A quality assurance manager will no longer be required and the quality assurance system requirements will be simplified for operators who are limited to simulator training.
- There will no longer be a need to develop an exposition when transitioning to the new rules. An operations manual will achieve the same safety outcomes.
- To help reduce the administrative burden on flying schools, CASA will provide training course material and off-the-shelf operations manual material.
- A policy statement will be developed in relation to entry control processes to ensure they do not go beyond what is legislatively required.

For more information http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_101705

HOMEBUILDER

DAVE EDMUNDS

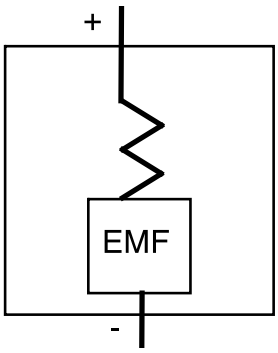
ALL CHARGED UP

IF you have a decent quality battery in your aircraft, it will tell you if it is ill – usually in plenty of time to do something about it.

Most RA-Aus registered aircraft use engines with self-energised ignition systems. This includes Jabiru, Rotax and most traditional Lycoming and Continental engines. These rely only on flywheel speed to energise their ignition systems and typically require around 300RPM to have sufficient energy to fire well.

The starter system is designed around this requirement. So, if you can start your engine, chances are your battery is OK. It means the battery can maintain sufficient voltage to supply the high current required by the starter motor. The speed of the starter motor is proportional to the voltage applied to it. That is why when your engine, car or aircraft cranks slowly it indicates a low battery voltage under load and that something is wrong.

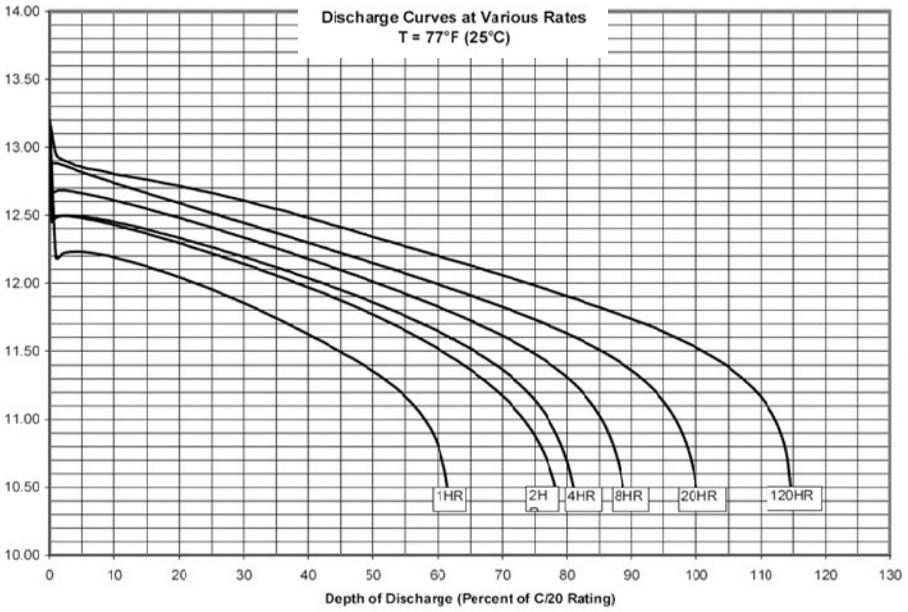
The story is different if you are running an engine with electronic fuel injection or an electronic engine management system. The processor board in these systems runs either on 5V, 3.3V or 1.8V, and a failing battery will generally supply sufficient energy for them to operate. Because the coil pack in such an engine may only require 8V, you may be able to start the engine with a failing battery, albeit cranking slowly.



Modern batteries are designed to supply very high currents. To do this, the area of lead in the battery is large to reduce internal resistance. It means modern batteries are somewhat more fragile than older-generation ones. The lead cathode, connected to the negative terminal may deteriorate, reducing its surface area and therefore its ability to deliver a high current. Remember a 12V battery has six lead-acid cells connected in series and is only as good as its weakest cell.

If the battery is fully charged, a voltmeter in the cockpit will show around 13.3V on the master switch, before anything else is switched on.

The diagram shows the standard simplified model for a battery and a connected circuit. When you measure the battery voltage before drawing any current from it, you are measuring the EMF or ElectroMotive Force of the battery. This will indicate all of the cells in the battery are fully charged, but does not indicate anything else about the condition of the battery.



Typically, when the starter motor is engaged, the battery supplies around 300 amps, which is a lot of current. If the battery is able to do this, the plates in the battery are probably undamaged.

If the battery shows less than around 12.9V when you turn on the master, you may have a problem. Your battery is not fully charged.

With the engine running, the voltmeter should indicate at least 14.4 volts. The voltage produced by the alternator is dependent on the engine RPM, so it is the job of the regulator to ensure the voltage does not run too high and damage the electrical system.

If the aircraft electrical system is correctly configured, you should not see a significant change to the voltage as you turn on any other equipment, such as a radio or transponder. The regulator will adjust accordingly.

When you finish a flight and shut down the engine, the battery should be fully charged and the voltmeter indicating around 13.3V. If it does not, you have a problem with either the alternator or regulator. Jabirus and Rotax engines run motorcycle-style permanent magnet alternators and the regulator is the weak link. There are plenty of websites showing how to check a regulator. It is quite straightforward.

Many traditional aircraft have an ammeter installed, but in my opinion, this is not as useful as a voltmeter. An ammeter will let you know if current is flowing to or from the battery, but not about the condition of it.

On the other hand, if the battery voltage shows less than 13V with the engine running, you know current is flowing from the battery. If it shows more than 13.3V you know current is flowing into the battery.

That is, the voltmeter will at least provide you with enough information to fly safely. Refer to the model diagram. Kirchoff's law says the voltages across the components in a circuit must add to zero. That is, when the battery is being discharged, the load and the resistor share the EMF voltage and this is indicated by a lower reading on the voltmeter. If the battery is being charged, the voltage across the internal resistance adds to the EMF and this is indicated by a higher reading on the voltmeter.

When you are flying, the load on the battery is very low - typically only the radio, transponder and some instruments draw current. The Jabiru, Rotax or other engine using self-energised ignition systems actually require no power to continue flying. From the discharge curve above, you can tell the state of charge of the battery. Remember, if the voltmeter is not showing something around 14.4V you have a problem, but probably not an emergency.

If the battery voltage droops, you may need to preserve the battery for entry to an airfield, so it may be safer to turn off unnecessary electrical devices to save the remaining charge for the radio during your approach and landing. The voltmeter will tell you how the battery charge is going. It is worthwhile considering this eventuality and making sure you understand your electrical system.

You cannot discharge the battery completely, so the 50% value on the chart above is of academic interest only. If the voltmeter shows less than around 12.5V you have only about half of the useful charge left.

So remember. When you hit the starter and the engine fires up; when you took the cowl off and noticed there were no deposits on the terminals or other sign of deterioration on the unit; or in the cockpit when you can see that the EMF (voltage), under no load and no charge, is around 13.3V, then the battery is probably okay.

NEXT MONTH IPad navigation systems

VIEW FROM THE INDUSTRY

SUE WOODS

***Sport Pilot* asked Sue Woods, Business Manager Jabiru Aircraft, the biggest light aircraft seller in Australia, for her views on where the industry has been and where it is going.**

WHY HAS THE RECREATIONAL MARKET SLUMPED IN THE PAST TWO YEARS? IS IT JUST THE ECONOMY OR WERE THERE SEPARATE REASONS?

The primary market for recreational aircraft (big boy's toys) is self-funded retirees. Nervousness about retirement funds was one of the major factors all over the world.

Flying schools are another market for recreational aircraft. Nervousness about the direction of RA-Aus is another factor. Since CASA stomped all over RA-Aus, we saw the closure of some flying schools. Lengthy delays of registrations saw their demise if they only had one aircraft on line.

Another reason has been the change from the days of recreational flying where fly-ins were focused on fun with little regulation, to what we have today with our focus shifted to 'Safe Skies for All'. How could we argue against this direction but it has played a part in changing the market.

The continual increase in price of Avgas has also been a dampener on the market.

Concerns about the longevity of aircraft manufacturers was another factor. With over 100 manufacturers in the market and sharply declining numbers of customers, some have lost their footing.

WHERE IS THE MARKET GENERALLY NOW? WHAT IS THE MARKET FOR JABIRU NOW?

There seems be a strong positive turn around in the market in South Africa. The US market is also responding positively to Jabiru coming onto the market at lower prices than ever before by using production in South Africa. China is also threatening to be a big market, though there are many challenges.

Engines for UAVs is another long established but still growing market for Jabiru.

WHERE WILL THE NEW/USED MARKET BE IN 12 MONTHS/2 YEARS/5 YEARS?

In 12 months to two years we probably won't see a lot of change. We expect a slow gradual improvement as the uncertainties listed above diminish.

By five years we will see a more significant recovery of recreational flying. Looking back over the history of aviation in Australia there have been many cycles of ups and downs.

No flight plan no details

A unique RA-Aus experience in a non-RA-Aus C-180

>> Oztrip Start BNA

>> Buccaneer Archipelago

>> Argyle Diamond Mine

by Ian Byrne

On behalf of Max, Bob and Bruce

ONE wonders why there would be so much fuss about GA (non-commercial) being deregulated. It seems totally logical to us amateurs. Even the maintenance schedule could be handled without much fuss, similar to the way it is done in recreational aviation.

Most of us can do more than pump up tyres and change the oil anyway. And if you can't, get help from someone who can. It's not much different falling out of the sky in a tinnie as it is in a rag and wire. A fall from 30 metres will kill most people anyway. And who wants to do that? We have too much to do before that happens.

The only part of our trip, which seemed clear at the beginning, was that we would do it when we were all available. That time turned out to be for a month after September 19. Retirees can do that sort of thing provided they can get permission from their wives. Generally it's not difficult at that age, because the wife is sick of you getting under her feet anyway.

When you have all seen Queensland, most of NSW and Tasmania and there is no need to go to Victoria (because you can get a gutful of AFL in WA anyway), it seemed logical we head west to the centre, then north to try and beat the heat, then south with the tail winds and home via the Nullarbor. Getting a consensus on that was easy, because we had to go via Eric's opal mine near Quilpie anyway. How's that for a general flight plan.

No detail.

The main thing was fuel. It helps if you have a low compression engine which can run on unleaded in emergencies or LL Avgas, if it is available at a reasonable price. The big thing for us on this trip, was the fuel flow instrument fitted to the aircraft which gave us constant monitoring and calculations of usage and reserve.

It was invaluable when we were looking for alternate fuel stops where a particular type of fuel card might be acceptable, a hefty call out fee may not be required or we had a good tail wind that was going to get us further down the track to somewhere reasonable for an overnight stop.

It's amazing what you find out there. Eve-


>> Refueling


>> Karijini respite


>> Horizontal Waterfall


>> Burrup Peninsula Karratha


>> Hancock Gorge

rywhere you go it's different with regard to fuel, type, availability, price, method of procurement, etc.

Maybe someone will someday have all types of fuel available. Diesel, Mogas, Avgas, High and Low Octane etc. to suit all engine types and make it available through machines with any sort of credit/debit card.

It might even improve aircraft safety because many accidents are caused by people running out of fuel, and some of the reasons for them doing that, might have to do with availability and the procurement process.

While I'm on the subject of differences, what about the security requirements at some airports? It seems the interpretation of the requirements is as varied as the fuel procurement process. Everywhere you go it's different. At Alice Springs you couldn't get in or out unless you rang the security service (at any time, day or night) to come and unlock the gate. Be thankful mobile phones have some coverage out there.

How about this for a scenario? You lodge a flight plan and a SAR time to go to a western Queensland town which gets RPT traffic occasionally. You arrive, having failed on many attempts to cancel SAR in the air. There is no VHF coverage on the ground and you are locked in. You have an OPTUS mobile with no coverage in the bush. The only phone is outside the fence. You desperately need fuel because of unexpected weather diversions and can't take off again. There is no one around, you are desperate to go to the toilet and you left the bolt cutters and the tent at home.


>> Berkeley River Gorge

You have to take your hat off to people who work this harsh brown land

You may be tempted to set off the EPIRB/ELB, provided the battery hasn't expired. But don't worry. Wait until dusk, find where the kangaroos get onto the runway and you will have your way out.

You have to take your hat off to people who work this harsh brown land and still smile and maintain a semblance of a lifestyle we coastal dwellers only take for granted. One is almost tempted to lock the plane in the shed and become a recluse, but there is too much to see and do out there to be morbid about the future.

So, Seize the Day (Carpe Diem). It is almost enough to make me want to go again and see more.

No flight plan, no detail, still sounds good to me.

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. $48,000 . 08 9921 8790

3028 FLIGHTSTAR 11 SC

Brand new 2 seater.Protective covering still on doors and windscreen.Airframe 0 hours.Engine 0 hours. HKS 80 HP fuel injected turbo with intercooler.Aerolux 3 blade adjustable prop with spinner and individual blade covers.Hydraulic disc brakes.Carpeted interior. Easy clean Mylar flying surfaces. ASI,VSI,Tacho,Manifold pressure,Slip indicator.$38.000 complete or if desired,$28.000 minus engine and prop.Ph.0419439976.Email formefitness@bigpond.com

3176 STORM 300 SPECIAL

Level 2 owned and maintained. 912S 100hp Rotax 780 hours. In flight adjust prop, KT79 transponder, 2X VHF radios Lightspeed ANR headsets, carb heat, AH (Vac) Garmin 196 GPS, Man pressure, ASI, ALT, CHT,plus heaps more $55,000 no GST for quick sale 0419348288 or pbugg@onthenet.com.au

3268 EUROPA XS 19-7850

Europa XS. Reg. 19-7850, 170 Hrs. Jabiru 120 HP, 130 Knots cruise, long range tank, 20 Cu Ft baggage. Electric trim, A-Horizon. Reg custom built trailer. $50,000 Phone 0428 988 662

3398 THRUSTER T500

Thruster T500 always hangered. Rotax 582, 230 hrs since overhaul. UHF and VHF radio with intercom and 2 headsets. Heavy duty undercarriage and large fuel tank. Very reliable. Reduced to sell at $12,500. Phone Paul 0427622176

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 $40.000 0418573212

3425 JABIRU

Very nice aircraft great endurance easy to fly lots of room. Working too much not enough time to fly. All work done by level two. $80,0000 0411 123 669

3426 CHEETAH XLS

Cheetah XLS 24-7072. 80 hrs airframe and engine. Jabiru 2200 PP. Single owner always hangared. Easy to fly and maintaine. 90ltr tank, spacious cockpit. Digital inst with analogue backup. 75kts cruise. Based Bunbury, WA. Reduced to $30,500 Contact George on janspo@westnet.com.au or 0406226566

3428 JABIRU J230C

Great aircraft latest engine updates completed, too much work not enough time fly. New prop no accidents great touring aircraft, mains spats not shown in pic. $88k 0411 123 669 I'm also interested in share holders the aircraft is located at northam wa min two share holders $25k.

3451 RANS S-14

Single seat high performance ultralight. Rotax 912, full instrumentation. Fighter-like agility and performance. No vices, and will trim hands-off, probably not for the very low hour pilot. A sea change means I have no time to fly it. Inspection will not dissapoint Located near Gatton Qld. $25,000 Ph Ian 0418880257

3460 SEAREY

Searey "C" Hull, 912 Rotax, Electric Gear, Dynon 180 instruments, GPS, Stobes, Nav Lights, 66 hours total time, VHF ,VOR, Transponder. Alum fuel tank, tundra tyres and more. LAME /L2 owned and always hangared.$68000. ono. Located VIC Ph:0419 727077

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.

3485 JABIRU J160C FACTORY BUILT

J160C factory built 2006. Option 2 Panel with Dynon EFIS, Garmin 296 GPS, Micro Radio & Transponder. Recent top end engine overhaul & upgrade. Always hangered, beautiful to fly. $49,500. Call Alan 0427 763 375 or more info at www.jabcor.com

3487 JABIRU SPT-6 TAILDRAGGGER

New Jabiru SPT-6 Taildragger, TT 25 hrs, New 3.3 engine, 85 litre tank, STD Jabiru dash,Gloss white ready for your decals. One of only four Jab 6cyl taildraggers. Goes like a rocket, Solo ROC 1800'/min, 125 kts @ 2700 RPM. YBNS airport. $54000. Phone Martin 0412 617110

3489 JABIRU SP6

Regd 19-3845 to 27/6/14; TTIS A/F 453 HRS ENGINE 22 HOURS (3300/120HP) HYDRAULIC LIFTER. GARMIN 126/8GPS,ICOMA200 RADIO/ INTERCOM,ASI,ALT,RPM,EGT,TURN CO-ORD, OIL PRESSURE AND LIGHT, VSI, CHT, OIL TEMP, ELEC FUEL PUMP, COMPASS, LOCK, WHEEL PANTS, TWO PLACE, BUILD BOOKS/ EXTRAS VNE 132 RAY 0411

956734/ 03 51555181 rjwheels@gmail.com ASKING $39000, O.N.O.

3490 JABIRU 170C

August 2008 factory built. 420 hours TTIS Option 1 panel plus Microair transponder, FC-10 fuel computer, garmin 196 GPS. 10ply front and mains. Always hangared. All AD's complied with. $67500 Contact Kevin 0417131816

3495 FOXBAT

TT700hr Rotax 912 100hp L2 maintained Excellent condition,New Kiev prop& tyres recently fitted, Hangared near Ballina nsw Transponder,Fuel flow meter,Microair radio,Garmin 196,ALT,ASI,VSI, Flydat monitoring system,AH-Trutrack ADI pilot2,headsetsx2 plus lots of extras PH Evan 0408025381 $68,000

3504 JABIRU J 250

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

3505 PROPERTY WITH AIRSTRIP & HANGAR

Excellent 100 acre property at Cowra NSW with 4BR ES house and garaging, plus large hangar and 700m airstrip, town and tank water and many improvements. Easy flying over picturesque country. Good aviation facilities nearby. Contact owner 0411155855.

3509 AIRBORNE 912 TOURER

AIRBORNE XT 912 TOURER 2007 MODEL 578 HRS STREAK 3 WING EXCELLENT CONDITION MICROAIR 760 VHF RADIO HELMETS WITH LYNX HEADSETS/INTERCOM PUNKINHEAD COVERS FULL SERVICE HISTORY RAA REG EXP APR 2014 $34,000 kenj@jelfor.com.au 0412512457

3510 JABIRU J160-C

Jabiru J160-C 24-5111 in very good condition, always hangared at Bathurst. TT448 hours $56,000 ono Ph 0402497671 airsurv@bigpond.com

3512 ROTAX E TYPE GEARBOX AND STARTER

Rotax E type Gearbox includes drive coupling and starter motor excellent condition has approx 300 hrs 3.47:1 ratio $1000 plus freight ph 0428240192

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. 255 hours TT airframe & engine. Full maintainance log. New Battery. Always hangered & covered. Excellent condition.Peter 0402599306 or Rod 0448470390. Reduced to $18,500

3536 JABIRU 2200 ENGINE

Solid lifter motor -250 hours still in plane -always run Amsoil synthetic oil-complete instalation kit(air box ,cht egt -sweetapple 58d 48p propeller etc). This is a good motor, only selling to upgrade to larger motor. Phone John 0409 308 232 for more details. $7000.00

3540 CORBY STARLET

Corby Starlet Total Hours: 346 Engine Hours: 346 Rego: 28-1976 Price: $25,000 Posted: 21 Jul 2013 Mosler 1835 cc motor 65 H.P. with injector throttle body has ICOM VHF full maintenance log always hangared delight to fly located Serpentine W.A. contact Tony 0433 33 77 33 or tony.mitchell1943@ bigpond.com

3548 JABIRU J160

Hanger ed in Adels Grove new motor installed recently, has 2 x Icom radio's 1 com system Garmin transponder Efis Altimeter Airspeed VSI (vertical speed idicator) Tacho Oil pressure Oil temp CHT (cylinder head temp) Volt Cargo door call Rod 0747485502 price dropped to sell $40,000. Great buy.

3551 JABIRU 230D

Jabiru230D, '09,Factory,TTIS360hrs.Reg8/14, own hangar, immac as new, L2 LAME maint, Redleather, EFISD100, AVMAP EKP IV GPS, 2axis AP, MicroairVHF & Xponder, remote ext plug, MP3 music, full covers nose to tail, wing strobes, all updates, new prop, rotors & pads, MLG wheel bearings, many spares. $92,500incl GST, 0419555726

3552 JABIRU J230-D 24-5490

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

3554 THATCHER CX4

THATCHER CX4, - single place, completed may 2012. second of type to fly in Aus, 1915CC VW engine, starter, alt. magneto & secondary secondary ignition, sweetapple prop, tinted sliding canopy, disc brakes, strobe, strong undercarriage, full castoring tailwheel, great plane to fly, $26K call KEVIN 0448856983(Bris) (NO TEXTS PLEASE).

3561 AUSFLIGHT DRIFTER W/B CERTIFIED

ausflight Drifter w/b factory, 582 bluehead oil injected long range tanks radio eng 145 hrs good cond easy to fly contact Lindsay . boydl@iinet.net.au . 0414586255 $14000

3564 RANS S12S SUPER AIRAILE

Reduced to Sell - Multi award winning, 1 Owner/ Builder, Rotax 912, 430 hrs, 2 seat side by side, Lots of extras, Nil accidents, Garmin 196, Stol performance. Great plane. $40,000. For more info & photos Phone Brian 0418 802 002

3579 CARBON CUB SS 180HP

Carbon Cub SS by Cubcrafters Inc, 200 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 0414 444 971 WWW. cubaircraftaustralia.com.au $230,000

3596 TYRO MK 2

Tyro Mk2 fun flying machine, fully refurbished with stits polyfibre, painted in twopack aerothane. As new VW 1600 twin port aero engine swinging a new Ark tech propeller, plus spare. The usual flight instruments and more. This is as good as new! 4 months rego. Call Mick 0409091495. $8,500.

3603 AIRBORNE XT TUNDRA 912 S3

2008, 199 hrs *Always hangered *Excellent condition *Skydat GX2 *Two helmets/ headsets *Microair transceiver *Tall windscreen *Maintenance log *Reg. 26/03/14 *Extras incl: *Custom heavy duty trailer *Heavy duty covers *All cross-country bags *Training bars** $40,000. Test flight avail. w/ qualified instructor. Contact Geoff 0409913858.

3605 VANS RV-3

Single seat. No frills (basic VFR panel), quick & agile, attention-grabbing. The RV-3 is Van's original and some-say best. Marge Warnke "the air claw" prop. Currently registered GA, is eligible for RA. 480TT, O-320 160HP 70SMOH (2566TT). Located YPJT. $30k obo. Alexis 0477381010 alexisoost@gmail.com

3606 FOR SALE SONERI PROJECT

Complete set of plans & photos,..compass, altimeter,ASI,Garmin GPS, Icom radio with VOR, Gas Colator, Flight timer, balance ball, Fuselage constructed comes with fabric, glue to complete plane. Aeropower 80hp engine, two props & spinners . all bolts,nuts,and rivets. all that's required is assembly.Contact:Barry on baajrowell@gmail.com or 0418659900 Price: $12500.00

3614 SLEPCEV STORCH

Slepcev Storch 19-3094 ,private use only 200 hrs , Rotax 912A , Bolly prop , Microair 760 vhf , gme TX 3200 uhf .Plumbed for l/r fuel . excellent condition . Always hangered. Suit property owner or short field operator. Contact Peter 0427958229 $57500.00

3621 KR2 ALMOST COMPLETE PROJECT

Registration lapsed KR2 99% complete. Needs new prop, new / repaired engine cowlings, redrive reassembly (all parts included), odd jobs and paint. Subaru ea81, flaps, tricycle u/c easily re-converted to tailwheel. Includes fitted intercom and older style GPS. Lapsed licence forces sale. $10,950 ono. Martin 0419 333 525

3627 PRIVATE AIRFIELD

600m private airstrip, Murrumbateman area, 20 mins Canberra, highway access, 12 x 12m hangar, OCTA. House 5 bed, 3 bath, tennis court, 4 car garaging, established gardens. 40ac income producing property, currently running 70 prime lamb ewes. Shearing, machinery, hay, workshop sheds, large cool room, 2 stables. $1.3m. Phone 0402413126.

3635 GAZELLE AND TRAILER

With excellent custom built trailer and CASA required wood prop.All documentations from first rego. Lots of extras, gps, spats. For photos and info phone 0888492060 mob. 0417492065 South Australia Paul

3639 ERCO ERCOUPE415C

Offers invited 1946 Ercoupe 415C project. Ex N2465H, serial No 3090. Corrosion free Coupe with most AD's completed. New glass, suspension donuts, cable loom and much more. C85-12 engine. All log books supplied. Well advanced. Can register RAA or VH. Inspection welcome. Brian. 0394591779 or 0400166762 or bjgarrett@optusnet.com.au

3648 SKYDART MK III

Rotax 447, 150hrs TBO. Great little aircraft for low hours pilot. Lots of fun. Sound skins, new tail feathers, all round in good condition. All instruments, ICOM radio. Reliable and ready to fly. $6,500 ono. Hangared North Queensland. Can be dismantled for transport. Contact Volker at volkerschwerdtfeger@gmail.com

3650 JABIRU J200B

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

3651 ALPI PIONEER 300

This is the Ferrari of ultralights. Factory built. Fitted with Pioneer "Super Wing", Rotax 912 100HP Engine, with electric Variable Pitch Propeller and retractable undercarriage. Comprehensive avionics systems fully factory installed. Nil accidents. Only 160hrs airframe time. Hangared since new, meticulously serviced. $105,000. Michael Bartlett, 0408 719742, mikes560@hotmail.com.

3660 JABIRU J160-C

Immaculate condition factory built october 2006, 560 TT engine and airframe. Well equipped Dynon D10A, Microair transponder and radio, PCAS, Trio autopilot, Garmin 3, cabin covers and more Always hangared, regular maintenance and nil accidents. One owner Jabiru and never used for training. S.A. $55,000 incl GST. theo@graftedvines.com.au 0418 805204.

3662 CLASSIC SAVANNAH VG AIRFAME KIT

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

3674 VIKING ENGINE 110HP HONDA JAZZ

New Viking Aircraft Engines Inline 4, Liquid cooling, fuel injection, 110hp @ 5,800 (2,500 prop) Torque (lb-ft @ rpm) 247 @ 4,800, 81kg, dual FADEC, dual fuel pumps & Viking Bus. phone Jon Gooding 0412091487 jgooding@chw.net.au Ballarat $17990

3683 DRIFTER

Drifter 25-319, Wire Brace, 582 Blue head, Icom, headsets, Good Skins, Well maintained, Flys well, Front and Rear instrumentation, cheap entry level flying, always hangared, $ 12,900 or nearest offer Phone Mark 0418 114 546

3686 CESSNA 120

Cessna 120, 24-8085, 2 seat, Cont 100hp, engine to run approx. 1300hrs, dual coms, transponder, VFR instruments, always hangared, cruise 95kt @ 20lph, Avgas/Mogas, 45kg luggage, 4 point harness, 100 hourly due 07/14, int/ext very good. Suitable for training, Located East Gippsland, $50000. ono Phone David 0419 503 157

3691 RPL? CESSNA 150M

Certified, proven GA aircraft, 1976, VFR, TT4630, Cont.O-200 ETR1700, 21lt/hr, McCauley PTR1500, fresh 100hr, all AD's, 2PTT/intercom, Garmin 296 in panel, KT76aTxp, MX300 Nav/Com, VOR, strobes, never damaged, always hangared, priv use only, Int & Ext 9/10, flys beaut, great recreational aircraft for RPL, $49000 ono, Ph 0418719318

3704 CORBY STARLET

Corby Starlet TT140Hrs. Built Nov 2010. Jabiru 2200. Mantained by L2. Always hangared at Lethbridge. $25000 ono. 0352755372 or 0451517910

3709 NEW HOUSE AND HANGAR - TE-MORA NSW

Council maintained airpark, 3 runways, taxiway to hangar. 18.5m x 13m hangar, power, lighting. New brick veneer home fully serviced set in beautiful park surroundings. Four bedrooms, ensuite, modern kitchen with separate butler's pantry. Ducted heating/cooling. Great community, wonderful life style, don't wait. $580,000 inc GST phone 0419 389 311

3713 ALPI PIONEER 200 SPARROW

Factory Built. Blue / White. Rotax 912 - 100hp Engine. Electric Variable Pitch Propeller. Dual Controls. Hydraulic Brakes. Long Range Fuel Tanks. AvMap Mark IV GPS. Full GA Instruments. Excellent Short Field Capacity and Climb. Cruise 110 Knots. Excellent Condition. Regretful Sale. Only 280 hours. Contact Andrew 0428442155. toolangatta@gmail.com $67,500

3727 DECEASED ESTATE (WESTERN AUSTRALIA)

Deceased Estate. (Western Australia) Almost completed Taylor Monoplane including new VW engine (cost $6,500.00). Plus instruments, propeller and most equipment to finish building. $12,000.00 ono. Ph: 08 9419 3408 Email: chittychittybang@bigpond.com

3728 LIGHTWING GR912S SPORT

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. $42000 including delivery. Contact Gareth Lloyd on 0402845244 (WA) or blue_sky@live.com.au

3734 TECNAM SIERRA P2002JF

This aircraft is in exceptional condition and has been refurbished from ground up 60hrs ago. Engine upgraded to 2000hrs. All ADs up to date including 5yr all rubber replacement. Full GA panel with 2 radios and (1 dual watch) 2 GP's and transponder. $75,000 Phone Mike on 0408 203362

3735 NORTHERN RIVERS NSW

Northern Rivers NSW. Property 228 acres. 700m airstrip. Hangar, workshop, all usual farm facilities. Runs 50 breeders. Suit retiree, club, group ownership etc. Dual river frontage. Asking $640,000. For further details, photos etc 0427 115225 or didja@skymesh.com.au

3736 DELIVERY PILOT

DELIVERY PILOT Do you need your RAA or GA aircraft delivered anywhere in Australia? 18000 hr retired professional pilot and RAA aircraft owner , available, best rate going, just need to keep busy. Recent deliveries to NT, QLD, Tasmania, Northern NSW, and WA. Ring Gus on 0414934750

3737 FOR SALE NYNJA AIRCRAFT KIT WITH 912ULS

Brisbane Area -- 1/5th Completed Kit - Nynja Aircraft. --Comes with Brand New Engine, Complete and Full Instrument Set, Radio,Transponder, Fuel Tank, plus all parts that have been purchased. Build Log at 10/2012 at www.markjamesallen.com $48,000. Email marka@markjamesallen.com.

3739 HANGAR FOR RENT

Goolwa,South Australia 18m+18m with all services 3 phase power, water, toilet etc Easy access to runways and facilities. Phone John 0420884022

3770 JABIRU SP500 SIX 120BHP- $39,900

19-3435 has a new 120 bhp 187 hour engine.This comfortable good looking pocket rocket has superb 2 pack paint finish.Five hour safe 135litre wing tanks + five litre header tank.Cruise 115 kts @ 21lph.Fly's hands off, full panel with A/H .Condition report completed. Photo's available. 0423 377 771 jondevine01@gmail.com Perth.

3776 SAPPHIRE

Sapphire 19 3594. 385 hours, 447 Rotex, 3 stage flaps, spats, Microair radio, new paint job, enclosed cockpit, 9 LPH, cruse 80 knots, 60 litre wing tanks. Always hangered, currently hangered at Bendigo Victoria. $16.000. Phone Ron 0414594022.

3782 X-AIR 602T

Rotax 582 blue head motor. 3 blade brolga prop. 50 ltr fuel tank. Xcom radio/intercom, 2 head sets. Built 2006, registered until 13.11.14. 215 hours TT. Hangared in Colac, Victoria on private 300m strip. Excellent short field performance, easy to fly. $19,000. Contact Rod, 0417 573 048.

3786 JABIRU SP470

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

3787 TERRIER 100

Terrier 100 19-3509 480 hours on 100 hp Subaru EA81 engine and airframe. Standard instruments, Garman 196 GPS, Microair radio/ intercom and always hangered. Good condition and is hangered at Woodstock near Townsville QLD. $45,000 Ph. John 0410857103.

3788 JABIRU J160D

Always hangared, exterior decals, strobe, dual caliper brakes, landing light, adjustable rudder pedals,D10A EFIS, Avmap GPS, 2 x ASI, ALT, VSI, VHF Radio, Transponder. A1 condition. All AD's and Service Bulletins complete. Nil accidents. With Annual inspection. As new condition. $67,500 Contact Lorraine 0419307768 or Email edgeaviation@yahoo.com

3789 JABIRU 230D

Exceptional condition. One owner. Private use only. Factory built. Meticulously maintained by owner, LAME and Level 3. Always hangared. Nil accidents or incidents. TT380 hours engine and airframe. Option 2 panel. VHF, Transponder, Garmin 296. Located Townsville area. $79000. John 0414947530.

3796 JABIRU J120

Factory built March 2011, TT 80 hrs, always hangered (Caloundra). Immaculate presentation, standard instruments, elec flaps, Garmin 500, PLB 406 GME, Headsets inc. Pilot 6' 2" - 95kg - easy fit. $49,000. Call Simon Brown - 0411 833804.

3797 FLOATING HOLIDAY HOME IN NOOSA

Floating home in Noosa with permanent mooring if required 2x25 HP tohatsu ,generator .Sale or swap for factory build ,rotax powered Plane. $59000 Call 0408798011 for more info and pics.

3800 RANDS 6-S COYOTE

Two seater, excellent condition, always hangared, 312 airframe hours, Rotax 912UL, Sensenich prop, radio, $39 000, text 0408 219 579 or email mbnell@bigpond.com

3801 JABIRU J200

Jabiru J200 Rego 19-4013 TTIS 430hrs One owner excellent condition, Always Hangared, L2 maintained and serviced, with nil accident history Basic VFR Panel, in panel Garmin 196 GPS, JPI Fuel scan, Micro-Air radio and transponder, inc. 2x headsets Must sell $49500 ono Email kwmagray@bigpond.com

3805 AIRBORNE REDBACK TUNDRA

Airborne Redback Tundra for sale. Two seat micro-light. Only 132 hours total, excellent condition. Rotax 503 Engine. Wizard wing 132 hours. Radio, intercom, dual headsets and helmets, 2 flying suits, stone guard, sadlle bags. Comes complete with purpose built trailer and Pumpkin Patch cover. All manuals. $12750 ono. Phone 0487340554

3807 SPIRIT KIT

WAC Spirit Quick Build Kit. All metal work completed by factory. Already Factory Painted. Requires engine/ prop, wiring, upholstery and instruments. Has engine mount for Rotax 912/914. Adjustable seats, Twin stick, Electric Flaps. Stall 31Kts Cruise 100Kts. Design weight 750Kg. 135L fuel. Get flying soon. $46,000. Ph. 0418157044 More pictures online.

3808 QUICKIE Q2 LOOKING FOR HOME

Quickie Q2 needs home. Built about 2000, owner stripped top side paint after last flight in 2006 and contracted cancer, passing in 2013. Plane is complete except missing the tail section. New prop and also has trailer. Contact Maurice on mozzieb@ispdr.net.au.

3809 GAZELLE AND TRAILER

Standard 1997 Gazelle, custom built registered trailer, 75kts at 14L/hr. Fits in my shed, soft seats, docile aircraft, spares, GPS Garmin 12XL, rotax 1170 hours -years to run, more info and photos etc Paul 08 8849 2060,m0417 492 065 $38k Curandero@aussiebb.com.au S.A. can deliver.

3810 JABIRU J170

J170 hydraulic lifter engine, 355 hrs TT, elec flaps, elec T&B, fuel flow meter, 135L wing tanks,Lowrance GPS plus standard instruments, 10 ply tyres, 2 pak aerothane paint and new Jabiru fibreglass scimitar prop. All in ex cond. $53K obo For photos please call Tom on 0428562020 or email thomas.odonnell@olamnet.com

3811 SONERAI 2L

Sonerai 2L 28-3043 113 hours on air frame, 59 hours on engine and prop, neat and tidy plane, always hangered,Rotec carby, 4 into 1 exhaust , rv7 tail wheel 80hp Great Plains engine, $42000 John 0422285404

3813 FISHER FP 606

3813 Fisher FP 606 Category: 3 Axis (UL) Build Year: 2004 Total Hours: 100 Engine Hours: 101 Rego:

19-3861 Price: $6800 Posted: 25 Jan 2014, 1 seat, Rotax 503- 50hp., 100hrs. Immaculate condition, always hangared, photo build history. $6800.00 ono, Northern Tasmania, Contact: Jon at jonank@live.com.au or 0457526984

3815 SAVANNAH VG MODEL

3815 Savannah VG Model Category: 3 Axis (UL) Build Year: 2005 Total Hours: 480 Engine Hours: 480 Rego: 194405 Price: $48000 Posted: 27 Jan 2014 STOL, always hangered and now at Cessnock, kool prop, 100hp rotax 912, tundra tyres, observer doors, 8 hours fuel, landing light, gps, radio, intercom. Contact details 0419414031

3817 WAC SPIRIT

New all metal WAC Spirit ELSA 100Hp Rotax, Bolly Prop, Adjustable Leather Seats, 10in Dynon Sky View, with 2 axis Auto Pilot, Vertical Power Electronic C/B's. STOL Performance with 100Kt Cruise. 750Kg Structural MTOW. Large cabin and luggage area, great visibility. Lovely to fly. Price $115,000. Ph0418157044. File Photo.

3819 CLEARANCE SALE

If you want to build or restore check these out 1.T300. damage to L main spar , 582 incomplete 2.Javelin, 447, stored 15 years, great condition 3.Mid wing single seat aerobatic (9510) needs finishing ,has flown Any reasonable offer for any of these aircraft Ray 0417 362 844

3822 HOUSE AND LAND WITH AIRSTRIP AND HANGAR

Enjoy a relaxed, peaceful lifestyle at Charlton Gully approximately 20kms north-west of Port Lincoln SA. The 14.21 ha (38 acres) property includes a 3 bedroom brick home, arable/grazing land, bushland, a 400m airstrip, 18m x 12m workshop/hangar and much more. $355,000. Ring 0437 429 052 for more info and photos.

3823 GR912 LIGHTWING

2 times winner of Natfly Best Overall Aircraft for sale Taildragger Microair radio GPS strobes landing light long range tanks 5 point harnesses aircraft fully refurbished www.youtube.com/watch?v=MBLQNi7hc2I L2 maintained contact Rodney 0408339806 email wallabyman@ymail.com best offer

3824 LIGHTWING G A 55.

Lightwing G A 55 Aeropower. T T 522hrs Engine & Airframe. Fresh 500hrly completed. (as per RAA requirements). Always hangared. Nil accidents. Registered until July 2014. Located Serpentine W A. Perfect presentation. Regretful sale. Phone John 0418841932 0895939828. $25000-00.

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

3826 JABIRU FOR SALE

JABIRU J230C 2006, White. Factory TT 327 hrs, good condition. Garmen GPS, transponder & VHF $60,000 Hanger - Insulated 12m X 12m at Gawler SA, $35,000. Robert Rose - lorrainer@adam.com.au or 0408 831 888

3827 DRIFTER SB 582

Must sell this aeroplane due to health. Any reasonable offer around the asking price considered as I have ongoing costs to recover . Hangared at Brigalow between Dalby and Chinchilla in Qld. Ring Al at 0419985280, leave message if out of service area. Contact: Allen Railton avrailton@bigpond.com 0419985280

3831 JABIRU SK

Like new - only 185 hours TT, 2.2 litre. Serviced and maintained by LAME. Alway hangered. Nil accident. Paint work 9/10. Fuel flow/usage gauge. Sigtronics intercom. Icom A200 radio. Located at Moorabbin. $35,000 Contact Ross +61428394598

3832 AIRCRAFT WANTED FOR BUSY FLIGHT SCHOOL

Inspire AVIATION

Busy Flight Training Facility in South East Queensland looking for long term Cross Hire arrangement to suit our expansion plan. Preference will be given to Low Wing and Rotax 912 powered aircraft. Great hours, great returns, and paid fortnightly upon invoice. Phone 0427 500 255 Contact: Robert Fulton cfi@inspireaviation.com

3835 THRUSTER T300

T300 very good condition 2nd owner never used for training.70L fuel tank. Contact Details 0419858394

3836 THRUSTER T300

Thruster T300 24 -0779 "Tony Hayes" pod and Airfoil struts, 60 kn. Rotax 582. Great entry ultralight. In vgc. Registration current. TTIS 726.2. TT Engine 146. Hangared at Bange's field Clifton, Qld. Level 2 maintained. Included single axle light aircraft trailer. $12800. PH. Mark 0412649615 or mark_teach@yahoo.co

3838 AIRBORNE XT-912 TUNDRA

Build Year: 2008 Total Hours: 350 Engine Hours: 350 Rego: 8053 Price: $35,000.00 Has always been hangered, in good condition. Comes with three helmets, two head sets, a micro air transceiver, wind-screen. Great trike. Any good offer considered Contact: Trent 0427719050

3841 WANTED TO BUY

WANTED. Info leading to purchase of older hi-wing, 2-seat, t'wheel experimental project with MTOW of 600Kg (prefer Aeronca Chief, Luscombe, Taylorcraft or similar). FWF (engine & prop) NOT required. Some damage/restoration to otherwise complete aircraft is OK. Will travel interstate to inspect/purchase. (08) 9299 8008, <<leenaabob@gmail.com>>

3842 1948 LUSCOMBE SILVAIRE

1948 Luscombe Silvaire One of the best in Australia. A joy to fly - a real eye-catcher. Airframe circa 2000 hours. Engine C85 and prop circa 300 hours. Microair radio, wing tanks, disc brakes, electric start, and more. Located Moruya NSW, $60,000. Call Ash 0477009448 or email ashjparker@icloud.com

3846 TECNAM ECHO CLASSIC P92

Tecnam Echo Classic P92 2007, Excellent Condition, Pleasure to Fly, Very low hours on New Rotex 100HP Engine,Serviced every 25 Hrs, UHF, VHF, Mirco Transponder, Siren, Intercom, Many More Extras, Always Hangered, Located In Cunnamulla QLD, Contact Ben, (07) 46554018 ginnenbah@skymesh.com.au. $100,000 Inc GST ONO

3847 JABIRU SP 500

Total hours 420, 2200 engine solid lifters, new pistons, rings, through bolts, 85 l tank, Icom 200 radio, GME UHF radio, Lowrance GPS, turn and slip, fuel miser, 2 prs Lightspeed 20xl ANR headsets, large rudder, upgraded undercarriage, always hangared, 100 kts cruise. $46,000. Narrogin WA. 08 98814924 0400014924

3848 EDGE X CLASSIC 582

Exceptional condition 185hrs TT. Grey motor. Full Rotax recommended service at 150hrs by Sea Breeze Aviation in excellent order. Streak11 wing, inflighttrim Brolga propeller. Always hangared. Aircom760 radio, two helmets, training bars, Punkinhead covers, GarminGPS, steering damper, parkbrake, tall windscreen, stoneguard, assorted spares, oils and manuals. based in Moruya. $19,500. Contact Details 0402027214

3850 LIGHT WEIGHT POWERED PARA-CHUTE

Great little Powered Parachute that fits in the back of a Ute. Motor M21y JPX Cors-Air 173cc two stroke consumption 5 1/2 liters per hr and holds18 liters. Flown under a 28 meter Paramania Action GT,all up weight of 175kg, Sutable for a pilot of 100kg. $7800. Rick 0409955089

3852 SPORTSTAR PLUS WITH GLIDER TOWING HITCH

Factory built 2007, TT450hrs, 100HP Rotax 912 ULS, Constant speed 3 blade woodcomp Prop with covers, always hangered and never used for training, UHF, VHF, Transponder, Color Garmin 296 GPS, glider/banner tow hitch. 6 hrs endurance, Maintained by LAME and fresh 100hrly in January 2014. $85000+Gst call John 0499468090

3854 LIGHTNING

Arion Lightning,200 hrs.Dynon 100-120,Garmin Radio-Transponder,795 GPS,Tru Track A/P, H/D Main U/C, Legs,Mk2 Tail,Ground A/D Prop,Rotec Elec Ign,$79000.North NSW. Ph 0427365460

3857 JABIRU J160 19-4265

Airframe 1042hrs, Engine 1254hrs, 252hrs since full Top Overhaul. Standard panel plus electric T&B, VSI, fuel guage, 85Ltr Tank, 2 Head Sets, Gamin 12 GPS. Been all over Australia never let us down, Always hangared no prangs. Medical reasons for Sale. Asking $37500. Mildura. Phone Geoff 0488241181

3864 TEXAN TOP CLASS LSA 550

Texan LSA 550 2004 model. TTIS 2460 hours. 2000 hour Rotax motor with 1100 hours TSN. Duc propeller 90 hours TSN. ICOM 200 VHF radio with intercom system. Fresh paint, upholstery, new seat belts and carpet. In Emerald QLD. Reduced to $71,700 +GST. Phone (07) 4987 6558.

3865 FOR SALE JABIRU J200

Airframe TT520 hours, Factory rebuilt Solid Lifter Engine 102 Hours. Recent Jabiru Repaint, Factory Service. GA Panel, Analog instruments, Microair Radio, 2XGPS√¢ÔøΩÔøΩs, Fuel 140Litres. Strobe Lights, external power, Cold Start Adaptor, spare Prop. Lovely plane, cruise at 118kts at 21Litres, Heated Cabin. Located Dubbo, $72,000.00 contact Jeff, 0418 843954

3868 AIRBORNE XT912 TRIKE

For sale trike xt 912 480 hrs registered aug 14 Streak III wing Training bars Bar mittens 2 setsof heavy duty covers Large windscreen Wing carrying trailerplustool ,box Jerry can holders, spare wheel, registered till aug 14 2sets wing packing cover/guards 2 Jerry cans $30,000 contact Tony 0488197488

3869 JABIRU J160

J160 19-4699 L2 built and maintained. This aircraft is in great condition and is fitted with MGL Stratomas-tor Extreme EFIS, Microair 760 radio and basic

instruments. The aircraft can be inspected at West Sale Aerodrome. Priced at $45000. Contact Daryl 0466925474, dghooke@gmail.com

3872 JABIRU 230D

Factory Built TT 600 hours and 7/16 through bolt engine. Engine and Prop only 100 hours old.Garmin D10/D100 UHF and VHF. Factory Approved AutoPilot. Garmin D10 Monitoring 6EGT6CHT Fuel Flow.Garmin 296 Colour GPS coupled to AutoPilot.Always hangared. Owned and maintained by Level 2 Engineer. Located in Broken Hill NSW.$82,000 Bruce 0407277039

3875 J430 JABIRU

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

3876 AUSTRALIAN LIGHTWING SPEED SP2000S

Fcty. built, Rotax 100HP, inflight variable pitch, Mountainscope Nav. system, GPS, X-Com radio. 105-114 kts. always hangared now at Tumut. Half new price for quick sale. $70,000 Contact George 0262919912 snowman@snowmaking.com.au

3878 LIFESTYLE PROPERTY WITH INCOME

Lifestyle property with income $945,000.00 Granite Gardens and luxury cottages Stanthorpe Qld set on 37 acres, 5 acres rose, native gardens, lake, 2 dams, 9 hole Par 3 Golf coarse, 2bed/1bath home, workshop, machinery shed all farm equip/tool, WIWO. Contact Mark Baker 0400771781.

3879 FOXBAT A22

Foxbat A22 24-4270 820hrs uhf vhf transponder AH fuel scan lowrance airmap 2000 GPS verticle card compass new prop just completed 500 hrly VGC $69,500 contact 0438981301

3880 SUIT NEW TRIKE BUYER

Airborne Microlight 2011 XT912 Tundra TT103 hours.Ballistic Chute fitted.Streak3 wing never been folded always been handared. Microair 760 Radio. Two headsets Lynx intercom and helmets. Garmin 196 GPS Pumpkinhead full covers and stone guard. Log books RAA Registered.Genuine reason for selling.Inspection Invited. Ph 0428456728

3881 PARTNER WANTED

I'm looking for a partner willing to invest technical skills and/or money into a ultralight aircraft and engine building project with the potential for future commercial sales. Email gould@netvigator.com for details.

3882 WANTED 80HP ROTAX ENGINE

Wanted 80 hp Rotax 912 engine with less than 1000 total hours must have log book please email details including asking price to robertfraser11@bigpond.com

3883 CHALLENGER 11

503 dcdi, 2 seat tandem, dual control, 55 hours engine/airframe, usual instruments, radio, GPS, intercom, 2 headsets and removable doors. Always hangared and no accidents. Low hours due to owners poor health. Quality of build is exceptional. Has speed fairings. Asking price $15000, ring 0418424101, email wallyx@bigpond.com

3884 TERRIER 200

Terrier 200, 2004 Build 650 hours Subaru motor, ground adjust Bolly Prop. Airbox, Colour GPS. All basic instruments very east to fly. Reg 194229 VIC $50K ono 0438 217 103

3887 HANGAR 15MX11M

Near new Hangar for sale/rent at Kilcoy. 15m wide, 11m deep. Best location on the field - faces straight down the taxiway. Insulated roof, weatherproofing, water supply, sealed floor, full width doors, side door, concrete apron. $79,500 or $330 per month. Contact Charles on 0409 629 152, email dcc.doyle@optusnet.com.au

3888 MX QUICKSILVER

MX Quicksilver. Single seat. Dismantled. 377 Rotax & Prop. Motor needs some work. Complete set of new skins & wire brace kit supplied $1950.. ono. Located Tasmania. Phone Bob . 0364921338 or 0419104439 or cradleview@gmail.com

3889 JABIRU J120

Factory built, Transponder, 295 Garmin GPS, Cruise 100kts at 2900rpm, Average 13.8l/hour. I love this little plane. Two kids at uni, money is tight. Must sell. Call Brett for more details 0419 694365. $40000 ONO. Half share $20000. Dalby QLD.

3890 GR12 LIGHT WING

Category: 3 Axis (LSA). Total Hours: 238. Engine Hours: 238. Rego: 25-3073. Price: $50000. Hangared all its life, beautiful plane to fly comes with 2 head sets, garmin GPS, 80 hp Rotax, tail dragger. Phone Ken 041870036

3891 HANGAR FOR SALE OR LEASE

Hangar for Lease or Sale at Colac airfield. Excellent condition. 9.25m X 12.3M (approx.) High clearance, Skylights,Easy slide doors, Power and overhead lights, Painted concrete floor, suit 2 ultralights or 1 large GA Aircraft. Protect and enjoy your investment.This is the last hangar available . Contact: Peter 0419 386 340

3892 JABIRU 170

JABIRU 170 Factory built 2007, airframe and engine hours 519 hrs, nil accident, strobe, wet wings, 2 props: carbon fibre & wood, Microair Radio, always hangared at Wedderburn, NSW. $65.000 o.n.o.John 0408202009

3893 AIRBORNE EDGE 582

Airborne Edge 582, 745hrs, 245hrs since overhaul, Electric Start, Tundra Tires, Strobe, Landing Light, Full Travel Covers, VHF Radio, Helmets and Intercom, Full Instuments, Hangerd at Mt Beauty. see flying footage at http://www.youtube.com/watch?v=so2ERpoSDs0 $8000.00 ono 0418554872

3894 AIRBORNE XT912 TUNDRA

Airborne XT912 Tundra with Cruze wing, 430 hrs, wing est 200 hrs. Complete package, 3 helmets, 3 suits, trike&wing covers, training bars, heavy duty custom trailer inc wing carrier, fantastic condition. Melbourne area. Price $40,000- Call Brett Harrington 0419610041.

3895 SABRE KP 2U

High performance Aircraft. 912s. electric Retracts, fowler flaps. elec trim, micro air comms, GPS. cruise 110 kts @ 15lph ,Stall 28 kts Beautifully built with superb handling and amazing short field performance . Presents 9/10. regretful but nessasary sale . $60,000. Call Ray . 0417362844

3896 JAVELIN

Javelin tt 25 hours , good skins, 447 , need prop. stored 10 years . Two : mid wing Aerobatic, composite wing . rag and tube airframe. fuse and wing only , had flown 9 hrs $4000 the lot or $2500 each Call Ray for full details 0417362 844

3897 PEGASUS XLQ 462

Pegasus XLQ with Rotax 462 engine. Q wing and flys very well, very good for a training aircraft or first plane. Comes with Icom 4 radio, headsets and helmets, with cover and trailer.HGFA registered T2-2571. $5500.00 Contact 0420 978 625. Email: colemanwilliam22@gmail.com

3898 JABIRU 230C DEAL OF THE YEAR

Factory Built 2007, looking to swap with a J170C, comparable hours and condition. Clean swap no cash. Contact 0429 221 787.

3899 WANTED GYROCOPTER PROJECT

O/hauled rotax 503 fancooled dcsi with b type box and carbs and exhaust See ra-aus website for full details or call wayne. Also chaseing gyrocopter project flying or not.will look at all offers.0458118938

3900 912 XT TUNDRA WITH ARROW WING

2009 XT 912 Tundra Arrow Wing. 3 helmets, 2 headsets, Training bars, Dust covers, Engine cover .Always hangared, never trailered. Crisp handling compared to streak or SST. Set up for 75-80 kt cruise, 225 hrs , Nil accident. Converted to Arrow Oct 2013. Asking $47,500 . Bunbury WA. ibawden@bigpond.net.au 0408610604

3901 HUMMEL BIRD

HUMMEL BIRD 95% built. Wide body version. All aluminium with spare stock, plans, building notes, building video discs, painted "training yellow" with enough to complete airframe. Complete body includes Global engine, undercarriage, wheels, brakes, altimeter, tachometer, airspeed indicator, slip turn indicator. $9500. Ernie 03 5743 3393 ernbev@gmail.com

3904 ACROLITE 1B

This Acrolite seen at <acrolite.org> but using Jabiru 2200cc engine, l600x6 wheels, cruises 110 mph, stall 45. Expert test pilots to 12.2 hours, 13 needed for full licence. As no medical, I can't fly, so asking $22,000. Aircraft at Lilydale Airport. Victoria. Reg: 19-7099. Robin, 0435 338 656. (03)97301106

3906 AV MAP PRO

AV MAP EKP 1V PRO,in case brand new ,never used,with leg strap.$1990.00 new, will sell for $1200.00. Terry 0427748094

3907 RANS S12 AIRAILE 2-PLACE DUAL CONTROL

RANS Airaile S12 in excellent condition - nil accidents Flown 330 hours only on Rotax 912 Always maintained by Level 2 mechanic/engineer Kept in spotless hangar at Wedderburn Airport in Sydney Lovely-to-fly aircraft with long rego New Lexan windscreen, tyres, battery, boost pump, radio intercom $30,000 (negotiable) Contact Neville (02)095334870

3908 X AIR F

X air f 19-3276 TT194 hrs Eng 54 hrs Rotax 618, 3 blade prop, just reweighted, usual instruments, microair radio 2 x headsets, garmin 96C Gps, ELB, reg. to 3/15 $14,000 John (03) 97461010 0408351072

3909 ZENITH CH 300

Zenith Tri-Z 2+2, Light Sport Aircraft. Cruise 110 KTS, Range 900 N.M. LYC 0-320, All Aluminium Aircraft. T/T 32 Hrs. All Olio undercarriage, all instruments, gps, Radio, Txpdr-Mode C, Stall 48 KTS, with fresh 100 Hrly. Contact Bob, 02 6495 9251 Or bobo-shkosh@yahoo.com $38,000 O.N.O.

3910 AIRBORNE XTC-582

2006 Model, 100 Hrs CRUZE wing Excellent Condition Microair 760 VHF Radio 3 Helmets XI, L & S Lynx Intercom & Headsets Custom covers Licensed Trailer Full service history Located in Perth. Contact 041 991 6032.

3911 FOXBAT WANTED

FOXBAT WANTED. Will pay up to $60k for 450kg MTOW; $75k for 600kg. E-mail details to: flying-boatz@bigpond.com.au

3912 JABIRU 200

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

3913 FLY SYTHESIS STORCH S

2007 model TTIS : 350hrs Rotax 912ul 80hp, cruise 100kts, stall 35kts. Fitted with electric flaps, UHF, VHF and can fly with doors off. $60000 or swap for taildragger Contact Lyle 0428589516

3914 JABIRU J 400

First flew: March 2005 TT: 450 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.

3915 SONEX TAIL DRAGGER KIT PLANE #1477

FOR SALE: SONEX TAIL DRAGGER KIT PLANE #1477 Sensenich 2 blade wooden propeller . Engine/Aerovee with pre-assembled crank shaft, baffle kit, CHT and fuel probes . Standard Instruments, Stratomaster xtreem EFIS display & RDAC XB . Complete set of build Plans & Engine assembly manual . Upholstery . Wing Spars. Too many extras to mention!! 03 9738 7100

3916 AUTOFLYTE REDUCTION DRIVE

AUTOFLYTE Reduction Gearbox Model EA to suit

Subaru EA81 engine. 2.21:1 ratio. 58 hrs since new. $2,900. Ph: 0429 810 008

3918 SUBARU EA81 ENGINE

Subaru EA81 aero engine. 100 HP. 58hrs since major overhaul. Electronic ignition. Electric start. Alternator. Carb Heat. $2,900. Stainless steel exhaust system, custom built for EA81 engine. Includes carb heat cuff. $500 Ph: 0429 810 008

3919 PROPELLER

IVOPROP Propeller. 3 blade composite construction. 70" Medium. RH rotation. Quick-adjust pitch change. Unused. Still in delivery packaging. $750 Ph: 0429 810 008

3920 SAVAGE CRUISER CUB

Savage Cruiser Cub Very well maintained and always hangared, a delight to fly and an easy tail wheel aircraft to operate. Recently had rotax 5 yearly hose and rubber replacement. GME PLB, Icom VHF, Garmin Transponder Located Yarra Valley Victoria Damien 0419 179 058 $68500

3921 JABIRU 160

Reg19-4398, 2200, TT700hrs Engine240hrs, Built 2005, Sensenich prop, cargo door, spare wheel, wing tanks, fin strobe, low oil press low fuel warning lights, Anderson plug and lead, Garmin96c, one owner, always hangered, nil accident, excellent condition, L2 maintained, $45,000 ono, located Bundaberg, contact Roger (07)41524076, mob0423121733, rjl2000@hotmail.com

3924 DTA VOYAGEUR I

Rotax 912 ULSFR-100hp Factory fitted electric speed trim. 2 Independent bucket seats. Microair M760 radio/intercom with headsets and helmets. Full training kit, bars, rear floor steering and throttle etc. Always hangered, well maintained, excellent condition. Further details at www.moore-pictures.com. Garmin Pilot II GPS included. Townsville Area Contact: Tim - 0417217806

3926 MAGNIFICENT REVO 912 100HP

Recognised as the most technically advanced trike in the world, this Revo 912 has every conceivable extra. Only 81 hrs always hangared and LAME serviced at Moruya airport. At $80,000 save $15k on replacement cost. Also custom built aluminium trailer 7 metre internal $22,000. gary@eldering.net.au mobile 0411550280

3927 AUSTFLIGHT DRIFTER A503

One of the lowest hour and most original examples around, 534hrs airframe/169hrs engine. Fantastic condition airframe/skins, and running beautifully. Rear seat ALT and ASI. Intercom and VHF, many spares, Reg 09/14, ready to fly and enjoy. Selling to upgrade, happy to consider similar price trades, such as X-Air. $15500neg. Contact 0427 703 702

3929 SUBARU EA81 ENGINE PACKAGE

Subaru EA81 engine. 58 hours since 100HP mods and complete rebuild. Electronic ignition. Autoflyte reduction gearbox. Rotec TBI fuel injection with mixture control. Electric start. Alternator. Carby heat. S/steel custom made exhaust system. Located Scone (YSCO) NSW. $5,500. Ph: 0429 810 008.

3930 ZODIAC 601 XLB

Built 2013 Price: $50,000.00 Total Hours 40, Engine Hours 190, Rego: 198323 Jabiru 3.300 solid lifter, 120 litre fuel capacity, 115 kt cruise at 2800RPM, Analogue Instruments, Avmap GPS. Low wing sports aircraft, electric flaps, elevator trim and aileron trim. Winglockers and a delight to fly. Ross 0413188350

3931 MINI CAB GY201

Build Year: 1963 Total Hours: 553 Engine Hours: 936 Rego: 197218 Price: $25,000.00 Posted: 31 Mar 2014 Engine continental C85. Complete airframe refurbishment and engine top end overhaul October 2009. Cruise at 100Kts @ 15 Litres per hour. Classic Low wing Sports aircraft. Ross 0413188350

3932 AEROCHUTE 503

Aerochute: Total Time 11.4hrs ROTAX 503, Large prop guard, 63inch propeller, Lynx intercom, Lynx helmets&headsetsX2, trailer cover, aerochute line guard, x2 spare wheel and new tyres, aerochute cruise control (not fitted) Level 2 Maintained Priced at $16,000.00 ONO Call Andrew for further information. More info and photos on members market.PH:0401999627

3935 WRECKING SKYFOX GAZELLE

Wrecking Skyfox Gazelle. Fully reconditioned engine, full life, aeropower 18cc engine, rear running in airframe, Mode C transponder. Bendix King Flip Flop Radio Instruments, All parts available. Contact O Walker 02 62862479 or 0413785265

3936 WANTED TO BUY

Wanted to buy. Strut braced Drifter with Rotax 582 Blue Head, preferrably with oil injection. Must in be in good condition both mechanically and cosmeticly. Please call Tom on 0419302341 or email details to thomas.odonnell@olamnet.com

Members can now place their advert online

FOLLOW THIS LINK
www.raa.asn.au/market
Your advert will still appear in the magazine, as well as online.

Deadline is the first of the month, one before the cover date. Text - $15 (50 words maximum – text will be edited when it exceeds maximum limit). Text and photos - $30 (you can place 6 photos online, one photo will appear in the magazine).

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25 years ago

by Mark Clayton

WITH the regulatory reforms now set in stone, the magazine's Editor (also the Treasurer) forewarned members that the Federation would soon be shifting its focus to pilot training, using a top-down strategy. To this end, PE's (Pilot Examiners) and CFIs would be used to assist the Operations Manager with training and recurrent checking. And, "if there is anyone who can't live with that then they should sell their ultralight and buy a fishing rod".

In the Letters to the Editor column one of the Federation's few female instructors questioned the wisdom of issuing AUF Pilot Certificates to GA Pilots after they'd completed just ten hours of conversion training, the implication being that they "almost know about ultralights, when in reality they know very little".

Another writer recommended adding anti-freeze fluids, such as isopropyl alcohol, dipropylene glycol and hexylene glycol to fuels, as a way of minimising idle carburettor icing. As a possible cure for cruise icing, he recommended treating inlet surfaces with sprays such as those used with proprietary non-stick (a.k.a. Teflon) frying pans and saucepans.

Elsewhere it was reported that Eve Jackson had recently been awarded Britain's prestigious Segrave trophy in recognition of her 12,000 mile England to Australia flight in 1987 in a CFM Streak Shadow.

What wasn't reported however, was that the Federation's Operations Manager had been compelled to discipline an instructor after the ABC's 7.30 Report broadcast video of him performing unapproved 'aerobatic manoeuvres'.

Airworthiness Advisories that month mostly concerned Thruster TSTs, instances of jury strut and wing trailing edge fatigue having both been reported. Pre-1988 Rotax 503 crankshaft failures were also mentioned, along with the blade separation of an Ivoprop propeller.

Another article by John Heard (Scott Winton's partner) foreshadowed an imminent attempt to set a new ultralight speed record of 150 m.p.h. in the Facet Opal.

A wrap-up of the 1st AUF National Fly-in held at Mangalore the preceding month estimated that between twenty-five and thirty Federation aircraft had flown in for the event, with another dozen arriving on trailers. This also marked the beginning of the first formal AUF awards (for best 95.10 and 95.25 aircraft, and most meritorious flight).

All the way to 10

by Garry Morgan

THE Morgan 10 is called that because it is the 10th aircraft I have designed and built.

The 10 has taken about two years to put together. The design and construction have deliberately been kept simple so the aircraft can be put together by someone at home without the need for moulds or jigs. In fact, there are no special tools required for any of it.

The aircraft has a four piece wing, so it can easily be rigged by one person. It is constructed mostly of metal.

The aircraft is powered by an 80hp Jabiru motor, which will give it a cruise speed of 90kts and 100 litres of fuel at 14 – 17 litres an hour.

The cabin is a two place side-by-side configuration and will carry two 110kg people. There is a lot of baggage space behind the seat and up front.

A low profile canopy has been used to lower the boundary layer over the fuselage. The aircraft weighs in at 395kg. Wing loading is 34 - 42kg per square metre. It is fitted with a BRS, Matco brakes, transponder and audio.

Flight testing will start very soon and it is expected the 18m wing will have a reasonable performance for its type.

For more information, morganareoworks.com.au.

BOOK GIVEAWAY

The winners of the book giveaway in April were:

Martin Gallagher, St Leonards NSW

Bill Weeks, Meredith, VIC

John Mooney, Mount Waverley VIC

Kevin McGrath, Toowoomba QLD

WHERE IS CAGIT?

Current location is at Royal Aero Club, Western Australia

JANDAKOT

S32 30.505
E115 49.957

S32 05.764
E115 51.763

Holder:
James Murphy
Email:
murphyjuk@hotmail.com

75

Percentage of all inflight arguments caused by economy passengers reclining their seats.

Source: www.news24.com

1086 /1088

Record for the number of passengers on a single aircraft (two babies were born during the flight).

Wikipedia / Operation Moses

290kg

Legal carrying capacity of the Foxbat A22LS.

www.Foxbat.com.au

Airbox Clarity 3.0

The Clarity 3.0 is a feature-packed GPS navigation system with WVGA 800 x 480 pixel 12.7cm sunlight readable screen, ultra-fast processor and keyboard data entry.

The user-interface makes complex route planning second nature; type in an ICAO identifier or airfield name and the destination is set, press and click the map to add airspace avoiding waypoints.

Clarity 3.0 comes with the PC desktop flight-planner, Fastplan allowing more complex route planning to take place from home. With Fastplan, users can download the latest weather and NOTAMs, update charts the moment they're released and make weight and balance calculations, which are then conveniently compiled into a printable flight pack.

In flight, Clarity 3.0 presents the pilot only with the information vital to their flight. Stored routes can be loaded from the system memory, current routes edited in-flight and if the need arises, a nearest airfields option can be selected. A complete 3D terrain database is available on terrain ahead up to 20nm away from your current position.

The Clarity 3.0 will warn pilots of potential airspace infringements up to five minutes ahead of the aircraft's current position. All warnings are relative to the aircraft's flight level and take into consideration whether the aircraft is climbing, descending or drifting towards airspace. The data that produces the airspace updates is updated every 28 days and provided free for the life of the product. Complete WAC 1:1,000,000 , VTC 1:250,000 & VNC 1:500,000 VFR charts are installed as standard.

Price AUD$899.00
Web www.ozpilot.com.au

Mode S Transponder

The Funkwerk TRT 800H OLED is a new development of the well known TRT 800 series transponder and now features an ultra-bright display (OLED) that can be seen easily from almost any angle. As with the earlier models the alticoder is built in and installation is straightforward. It fits a standard 57mm aviation housing and measures approx 65 x 65 x 170 mm and produces 125 watts at the antenna. If the optional TRT 800EMSS address adapter is fitted, the RS 232 interface allows connection to a GPS receiver to support ADS-B Out functionality.

Price AUD$3,250.00
Web www.skyshop.com.au

Touch screen GPS Dynon Skyview Touch

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PILOT NOTES

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

Before the pilot could regain control it struck the ground heavily causing damage to the engine

Drifter SB 582

Conditions: Light wind, nil turbulence.
Pilot experience: 423hrs, 127 on type.
The aircraft was landed heavily and the left main gear leg failed. The aircraft skidded for a short distance on the grass runway before coming to rest. In addition to the failed gear leg the belly tank and one wing tip also sustained damage.

Foxbat A22L

Conditions: Strong wind, moderate turbulence.
Pilot experience: 971hrs on type.
As the pilot flared the aircraft to land it was lifted by a gust of wind, the airspeed decayed and the aircraft stalled. Before the pilot could regain control it struck the ground heavily causing damage to the engine, propeller, undercarriage and wings which resulted in the aircraft being written off. The pilot was not injured.

Jabiru J230

Engine: Jabiru 3300, 390hrs ttis.
While on cruise the engine ran very roughly for a few seconds and then failed with a loud bang. The pilot landed in a paddock without further incident. The engine was later stripped down and it was found that the No. 4 cylinder exhaust valve had failed.

Thruster T300

Conditions: Light wind and turbulence.
The student was carrying out a sortie of dual training in cross wind conditions and the aircraft bounced on touchdown during a 'wheeler' landing. The instructor applied power but the aircraft struck the ground again and a retaining bolt on the left hand undercarriage spring failed. The spring then dug into the ground and the aircraft ground looped. Damage consisted of the broken spring as well as a bent tail and fuselage boom.

Airdrome Fokker DR1

Conditions: Moderate wind, heavy turbulence.
Pilot experience: 40hrs on type.
While on climb for a short flight the windscreen departed the open cockpit aircraft. The pilot completed the flight and returned to land at which time the conditions had deteriorated considerably. The aircraft touched down heavily on landing and sustained major damage to its wing, cowl, propeller, instrument panel and undercarriage. The pilot suffered minor leg injuries.

Jabiru J120C

As the aircraft touched down on a gravel runway a flock of galahs which had been feeding on the grass verge flew into the path of the aircraft. Three of the birds were struck by the propeller. The pilot landed the aircraft without further incident. Subsequent inspection revealed superficial damage to the propeller although one side of the aircraft and its tailplane were liberally covered with the remains of the birds.

Jabiru J160

Engine: Jabiru 2200, 990hrs ttis.
The engine began to run roughly as the aircraft was climbing out after take-off. As it was still developing some power the pilot elected to return to the airfield and made an uneventful landing on the runway. Later inspection revealed that the exhaust valve in No. 4 cylinder had failed.

Skyfox CA 25N

Engine: Rotax 912 1200hrs ttis.
The pilot noticed the engine was running very roughly when he reduced power prior to landing. After landing the engine ran very roughly at its mid power range and at idle but was operating normally at high power settings. An investigation found that a piece of the mesh from an air cleaner had detached and was jamming the left hand carburettor slide in the mid-range position.

Searey Amphibian

Airframe: 280hrs ttis.
The aircraft was taxying on grass after landing when the left landing gear leg slowly collapsed. Investigation revealed that an actuating rod for the retraction system had failed in the vicinity of some bolt holes. Other damage was confined to a wing float which contacted the ground when the gear collapsed.

Savannah S

Conditions; Light wind, nil turbulence.
Pilot experience: 110hrs, 21 on type.
As the aircraft approached to land the pilot slowed it to below the flap deployment speed and selected the first stage, succeeding only after several attempts. As the aircraft neared the ground a loud report was heard and the pilot had difficulty in controlling the aircraft which pitched down suddenly and struck the ground heavily. The impact caused the nose gear to collapse and the propeller struck the ground and was destroyed, along with damage to the main gear and airframe. None of the crew was injured but it was observed the flaps had disengaged and returned to the zero position.

Jabiru J170 C

Conditions: Light winds, moderate turbulence.
Pilot experience: 47hrs, all on type.
The pilot was practicing cross wind landings and, after touching down from the second circuit, the aircraft rolled for a short distance before veering to the left. Despite the pilots attempts to regain control the aircraft departed the runway and struck a landing light with one of the main gear legs. Damage was confined to the wheel spat.

HAPPY LANDINGS

A competition for non-pilots

by John Chambers

SOUNDS like a crazy, dangerous and illegal idea. But in pursuit of the first clause in its constitutional ideals - promotion of and participation in light aircraft flying - Aldinga Aero Club conducted just such a competition in March, safely and legally.

Through the co-operation of the local media and by posting flyers on local public notice boards, the club recruited six competitors. They needed to be 16 years or older and sign a declaration that they had never taken control of an aircraft in flight. A Sportstar aircraft and an instructor from the local training school, Adelaide Biplanes, were booked.

The competitors paid a registration fee of $85 to partially offset the cost of the aircraft and instructor, Ron Logan who, for the purpose of this competition, was re-labeled as a judge. They were also granted 12 months Associate Membership of the club and they and their cheer squads of family members and friends were treated to a BBQ lunch after the event. Each competitor undertook a 30 minute flight, during which Ron judged their ability to control the aircraft while taxiing, in level flight and performing 360 degree turns.

In his de-brief and adjudication, Ron complimented all six on their competence. He stated he had been able to leave the aircraft completely under their control for about 90% of their flights. Ultimately he awarded first place to Kori Summers of Goolwa. Kori was presented with a voucher for a 30 minute scenic flight in a Tiger Moth, generously donated by Adelaide Biplanes.

All in all a thoroughly enjoyable day which succeeded in introducing six newbies to the joy of light aircraft. Hopefully, through the course of their 12 month membership of the club, we can encourage them to begin the journey to obtaining their RA-Aus Pilot Certificates.

>> Kori Summers in the Sportstar, the crowd enjoying the BBQ, and below, the six competitors with Ron Logan (left)

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

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