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For recreational pilots
JUNE 2014 VOL 35 (6)

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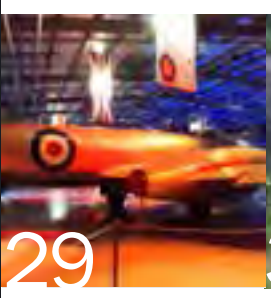
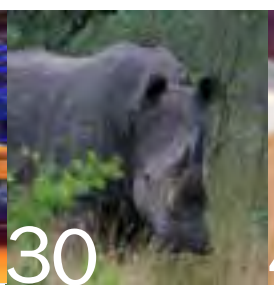
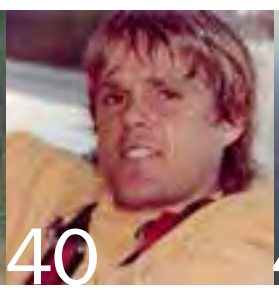
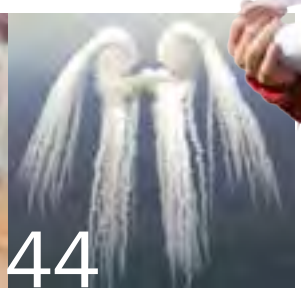
News

Extras









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President's Report

MICHAEL MONCK

Change is coming

IT has been an interesting few weeks. My predecessors warned me the task is a mammoth one and I am now beginning to appreciate that. I will, however, hold back from talking about the mundane parts of the role and instead talk about change in our Association.

Over the past few years we have become complacent. We have neglected our duties to our members and, as a result, the privileges we enjoyed for many years were suspended for a while. We still face challenges in terms of protecting them and expanding them in future.

Protecting what we have

We've gone through a sad time in our Association's history. I won't pretend to know the entire accident history of the AUF and RA-Aus but I will hazard a guess the number of deaths we have experienced in the past twelve months or so would signal one of the worst periods since we started in 1983. To me it's a pretty horrible way to mark a significant milestone in our existence and, to be blunt, it's something we should be ashamed of.

Since around 2003 we have kept decent records of our fatality rate and the number of hours flown. During this period the fatality rate has remained stable while the number of hours flown has more than doubled. This means our fatality rate in statistical terms has halved. We should be proud, right? Of course we should, but we should also be aware that while statistical outliers can be easily shrugged off as anomalies, those people who died were mates, friends and families.

RA-Aus strives to be the leading aviation organisation in Australia. We could define this in many ways - number of members, hours flown, aircraft registered, flight cycles, etc. but none of these really capture the essence of what we are about. On our website, we compare RA-Aus flying with a PPL and make the distinction that people like flying with us 'simply because it is fun and affordable'. But there's nothing fun about dying.

When we take off, our families and loved ones want us back safely. When we take friends with us, their families and loved ones want them back safely too. Every time a plane flies overhead, the public should look up at us with awe, not believing we are about to fall out of the sky.

In my short time on the board, I have seen many instances of poor maintenance, bad flying practices and sub-standard record keeping. I know a lot of readers will give me a hard time and insist we're not broken, we've been doing this for years and so on, but the sad fact remains – we are broken. You need more than two hands to count the number of deaths in recent times - we are well into double digits.

We owe it to ourselves to improve our record. We owe it to our mates to make sure we understand how to maintain our aircraft. We owe it to our friends to make sure we fly safely when they occupy the seat next to us. We owe it to our families to make sure we come home in time for dinner. And as much as anything else, we owe it to the almost 10,000 other members of our Association to ensure our own stupid mistakes don't threaten their privileges and the right to fly and operate their aircraft.

So everyone should ask two simple questions the next time they go to the airfield: Is the aircraft safe? Am I safe?

If you can't honestly answer those questions with a resounding 'yes' you're putting somebody's life in danger. It is that simple.

Other things afoot

Recently your executive met with CASA in its Canberra offices. We have heard from SASAO on a number of occasions that CASA's decisions are being led by its leaders, so this time we short cut the process and went right to the top. The meeting came after months of what could be described as an adversarial relationship, but we hope this was the start of a new beginning. Many topics were discussed and one that is very topical was covered in detail.

Biennial aircraft inspections are being pushed on us under the guise of safety. While we should not always expect a solid safety case to be presented with every new regulation (after all, some things are no brainers), this one doesn't seem so obvious. We put forward a case that there was no tangible safety benefit to the measure and argued that general concerns about maintenance practices would be addressed by the new L1 training requirements to be shortly introduced. We also argued that in recent times we have navigated some muddy waters which have seen a long list of non-compliance notices shrink to just four.

During the meeting it became apparent that the desired outcome of a biennial aircraft inspection was not clear. Those in the room seemed unsure if the outcome was meant to be merely compliance or some sort of safety dividend. The Associate Director, Jonathan Aleck, noted he didn't want to enforce compliance for the sake of compliance and told us CASA would revisit the measure with a view to clarifying its requirements and desired outcome.

I think for the first time in a while the higher ups in CASA took notice for the right reasons and, from our perspective, it was certainly a very welcome meeting.

The fight (for want of a better word) is not over yet but we can say one thing. In recent times we have met with the Minister for Transport and senior officials within the regulator. These relationships seem to be on a more positive footing than they have been for a long time. I, for one, look forward to building on them.

Calendar of events

7 June

Ballina Aero Club

Ballina Aero Club's new clubhouse will be officially opened on Saturday, June 7 at 3pm. The building has been completed through a volunteer effort by members over the past two years. All welcome. For more information, Gary Faulks 0418 663 666 or www.ballinaaeroclub.org.au.

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.

31 August

Harley Ride and Fly Brown Ribbon Day

Golden Plains Aviation will turn Lethbridge Airport into a show piece for big bikes and beautiful aircraft to raise money for the EJ Whitten Foundation to help in its fight against prostate cancer. Harley rides, joy flights, a Harley parade on the new runway and a free BBQ lunch on site. For more information, Daphne Gibbs 0420 985 931.

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.

7-9 June

Thangool Fly-In

This will be Callide Dawson Flying Group Inc's first ever fly-in. There will be walk throughs of operating aircraft, joy flights, forums on aviation topics, a flight simulator, market and food stalls, jumping castle, vintage cars and machinery displays. Evening entertainment for those staying over. Gold coin donation for entry at the gate. All proceeds to Angel Flight and RFDS. For more information, Dave See (07) 4993 1120 or Len Neale (07) 4992 3959.

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/

23-24 August

Port Pirie Fly-In

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

LETTERS TO THE EDITOR

Training standards

I have been a member of RA-Aus for approximately four years and have flown for over 20 years in GA. I have a CPL and I am an RA-Aus CFI running my own flying school. I am writing this letter anonymously because I believe it would be seen as sour grapes or an attempt to bag my local competitors.

I have recently flown with a former student of one of the local RA-Aus flying schools. This person holds a full RA-Aus Pilot Certificate but his flying standard is so poor, he can't do a circuit without almost having an accident. He does no pre-landing checks, he did a weird oblique (45 degree) base/final leg, he doesn't have any idea about how to achieve and hold an airspeed on approach, he extended his flaps at 20kts above Vfe, he rounded out too high and then proceeded to push the nose down and would have ploughed into the strip if I hadn't taken over... and they were the good bits!

Two other students I have spoken to who were trained by the same school can't even tell me what pre-landing checks they use. In other words, no landing checks.

I read in a previous *Sport Pilot* magazine that the RA-Aus board is concerned about frequent accidents and fatalities occurring in RA-Aus and their advice is "to be more careful". The reason there are so many accidents/incidents occurring out there is because some of the training standards out there are atrocious and it needs to be addressed.

I believe there are too many CFIs who were 'given' an Instructor rating when RA-Aus was still the AUF. Correct me if I am wrong, but did anyone involved in the AUF years ago have formal training to become an instructor? RA-Aus' answer will be that CFIs have to undergo a check by a pilot examiner every two years. My experience is that it is an old boy's situation where some are signed off without actually being checked to see if they are competent. How can a student have a good standard when the instructor doesn't have a good standard?

The pilot I am referring to above has such a low standard of competency he should never have been issued a Certificate. I really don't know if the instructor doesn't care he issues Certificates when his students are not competent or if his own standard is so low he thinks the standard of his students is okay.

In any event, it is scary and one of the reasons the RA-Aus is treated as a joke by the GA fraternity.

Anonymous

Reply by Operations *- Ops has an oversight process to ensure CFI renewals are not carried out in an 'old boy' manner. And we encourage emails or letters from members or Instructors who may know about poor training standards or airmanship of pilots. You will be asked to provide contact details to allow us to follow up the complaint, however if preferred, your concerns may also be submitted anonymously.*

A memorable experience

I recently received my Pilot Certificate. It was quite a journey and, in the process, it became apparent to me that anyone who aspires to participating in recreational aviation cannot, from the outset, do it alone.

I wanted to take this opportunity to describe my experiences, what I think the organisation and its members can do to promote the development of the sport and to assist those new to aviation to become safely, confidently and enjoyably involved in this great sport.

Although I initially thought I would buy a trike, find someone to teach me to fly it and then, in due course, become part of the flying community, I quickly realised it doesn't work that way.

From the outset, I became reliant on you - those already in the flying community - to welcome, support and assist me. When I bought my trike I had to have it inspected, repaired and declared airworthy by a LAME. I had to buy parts from Bert Flood. Registration involved negotiations with RA-Aus, the aircraft manufacturer and the seller. As my plane needed a new wing, I needed the assistance and advice of Airborne Australia. Then, to proceed, I had to establish the most important relationship of all - find a great instructor.

Without exception, these people provided me with outstanding service and support. Specifically, Airborne, who advised me on the best wing for my needs and sold me one at a great price; Bert Flood, whose people never tired of answering my stupid questions and sending me bits in the mail; Wingtech, who spent time with me in discussing wings, bags, battens and all things Dacron; Bruce Barcham from BTB Ultralights at Mudgee, who is a passionate airman and professional educator (the ideal instructor in my view) and, of course, the fantastic people at RA-Aus who are clearly peerless in their professionalism, patience and efficiency.

Prior to settling into instruction with Bruce Barcham at Mudgee, who I would recommend to anyone, I had a couple of bad experiences - shameful behaviour by RA-Aus instructors that damage the capacity of students to become sound airmen/women and bring the organisation into disrepute. Rather than go into details, (my dilemma is that I do not want to further damage already tenuous relationships with people connected to these scurrilous operators) I want to limit my comments to noting that all of our safety and enjoyment relies on our capacity to conduct ourselves with integrity, so as to build and sustain healthy relationships with each other. Our integrity, fair and respectful treatment of each other, including students, is imperative to how we manage our relationships and behaviour in the air or around high traffic areas. Enough said.

I now have my trike hangared at a friend's property at Nana Glen in NSW. He has kindly provided me with unfettered access to his hangar and 900m grass strip. I feel like a viking in Valhalla. I am slowly developing a network with other flyers in the local area.

Although a considerable distance from Mudgee, I have established a solid ongoing relationship with my instructor, who is available to assist me with support and advice, and who I will happily travel to see to avail myself of assistance with endorsements.

I also have absolute confidence in, and ready access to, advice and support from Airborne, Wingtech, Bert Flood Imports and of course RA-Aus.

These individuals and agencies have made my journey safe and enjoyable. As a result of their sound advice regarding purchases which have needed to be made, fair-mindedness and impeccable integrity, they have made my entry into recreational aviation very affordable, which is an integral aspect of its attraction over general aviation.

In closing I want to describe an extraordinary and memorable experience I had one day when Bruce and I were out at Gulgong airstrip.

Bruce had been booked to take a young woman for a check flight in a Dragonfly. While they were off flying, I got to meet and chat to her grandfather, Bill Moyes (You know you've got

the best instructor when Bill Moyes sends his granddaughter up with him). Since I was a kid I have been avidly fascinated by this bloke's exploits, so to meet him was a significant event for me. What a great bloke. I've come to understand why his immense knowledge, extraordinary generosity (he gave me a Silent Racer Trike and two wings because he was clearing out a hangar) and good humour are legendary.

I reckon that if Bill had contributed as much to football or horse racing as he has to aviation in Australia, they'd have thrown a fete and declared a public holiday in his honour.

So there it was. A young woman in the air in an Australian built aircraft, under absolutely sound instruction, while an old flying legend and a newby had a laugh and a natter on a country airstrip. If that's not what Australian recreational aviation is all about, I don't know what is.
Grahame Chaseling

Into CTA

After Jill Bailey's Pilot Talk on RA-Aus flights into controlled airspace (*Sport Pilot* April 2014) I finally bit the bullet, turned on my transponder and ventured into controlled airspace myself. Steve, the Tiger Moth guy here at Tyagarah, is a CPL with a zillion hours who had his own chopper business and flew 16 summers in the Antarctic. He says he never wants to enter controlled airspace again.

Anyway, I pored over ERSA and got good advice from Peter (C172) and Craig (172 RG) and took off for the Gold Coast. No problems with clearance, although I had to give them the ICAO designation for the Sonex (SONX) so that Centre could deal with me. Once I got to the Gold Coast, things loosened up. The tower guys were cool. One asked me if I was familiar with Cook Island, just south of Coolangatta, which I was approaching. I replied, "As a matter of fact, I am going to the Cook Islands next week. We go four times a year. The snorkelling is the best in the world." The tower replied, "Roger that."
I went past Q1 and then got a clearance for Robina and Stott's Island. At one stage the tower reported there was a pelican without airways clearance circling off the end of runway 32.

When I reached Stott's Island, the tower said "Arrivederci" to which I replied "Kiaorana, as we say in the Cook Islands."
It was a great flight.
Norm Sanders

To the Ops Manager

Your article about flight into CTA (*Sport Pilot* April 2014) was a very good summation of requirements for RA-Aus Aircraft going into controlled airspace. Thank you.
Ross Clarke

More myth debate

The judgements made by the myth's author, Thomas Bisshop (Letters to the Editor *Sport Pilot* April 2014) are appreciated. However my response to his challenge might have been misunderstood in one aspect, so I would like to clarify the point I was trying to make.

My contention was concerned with an upward reactive force (total reaction) to that aerodynamic force which a streamline shape, at a positive angle to the relative airflow, creates when changing the direction of that relative airflow downwards. My reference to that reaction force seems to have been confused with a claim that 'upward airflow' caused lift. Not so. The Bernoulli principle has a valid part in quantifying the substance of that aerodynamic force which arises to move the continuous streamlined airflow in a downward curved path over the upper surface of an aerofoil. My intention was to view Lift in terms of a reactive force, and not the dynamics of the airflow.

Having mass, air responds to any force applied to it. Likening a streamline of air to a piece of pliable wire held in front, palms down, one can bend the wire downwards with force from the right hand; however bending will only occur if the left hand reacts with an upward opposing force . Viewing lift then in terms of force rather than airflow, one might consider lift as the vertical component of the total reaction to that net force which changes the relative airflow direction downwards.
Sam Todhunter

If it ain't broke

I was dismayed to read in the Technical Manager's report (*Sport Pilot* April 2014) the proposal to tighten up requirements on L1 maintenance privileges and the President's Report that compulsory biennial condition reports of aircraft were being considered.

These steps have been initiated by CASA in response to the dysfunctional administration of RA-Aus. A classic case of a body with power imposing penalties on a subservient organisation when an opportunity arises and where their case can be supported by ill-conceived perceptions.

The case for the above changes only has merit if the perception, that a safety problem exists in the maintenance of RA-Aus aircraft, can be supported by documented facts. I kept copies of the RA-Aus magazine back to June 2010 where, except for gaps in 2011 and 2013, considerable data were available in the reporting of accidents and incidents. These data covered 201 individual reports, a sample of sufficient size to indicate the extent to which maintenance was a significant issue. I divided the cause of accidents/incidents into four categories - Pilot Error, Engine Failure, Aircraft Maintenance and Miscellaneous. While there might be a small degree of subjectivity in assigning categories, the error does not affect the interpretation of the results.

RESULTS: Pilot error accounted for 69% of accidents/incidents, Engine failure 21%, Maintenance 4% and Miscellaneous 6%.

CASA and RA-Aus bureaucrats, a problem does not exist in the maintenance of our aircraft. The introduction of the new proposal will only achieve two things; an increase in costs to aircraft owners and an inevitable increase in non-compliance.

The irony in the above data is that in the 90% of accidents/incidents (69% + 21%) there is a stand out feature, a fact that those of us who fly aircraft with low stall speed characteristics and use very reliable engines are well aware of.

The reason the current maintenance privileges of aircraft by owner/pilots work well is that the overwhelming majority consult widely, read maintenance publications extensively and then only undertake maintenance when they are confident of their competency. Their lives depend on it. The few less competent pilots have L2s do their maintenance. The current system is working perfectly well.
David Huett

Reply from the Tech Manager *- RA-Aus' Operations, Technical and Safety teams are currently completing an assessment of previously received accident reports to assess if maintenance issues feature as factors. Additionally, while RA-Aus appreciates the good work completed by the majority of our L2 maintainers, the requirement for renewal has been in place since 2007 and has simply not been enacted until now. The Technical team trusts that most members understand the intent behind this process.*

Finding fuel

I have recently received and read, cover to cover, the new issue of your wonderful publication (*Sport Pilot* April 2014).
I noted that you have a small snippet on page 15 entitled 'Fuel Finder'. This idea is absolutely magnificent and would provide for much safer flight planning given the availability of fuel at the intended destination.

This idea, however, is not completely new. If I may draw your attention to a website www.skyvector.com. The website is American and, as such, does not have a complete data set for Australia. However it does provide a good

grounding to work from. The site not only has charts, which is the main focus of the site, but includes a tab at the top of that page for fuel prices.

If you open this link as an example: http://skyvector.com/airport/OTH/Southwest-Oregon-Regional-Airport you will find the absolute wealth of information available to the aviators in the US. While this page is aimed more at GA and civil operations, you can clearly see the amount of information would be invaluable to anyone planning a journey.

Something like this, or an extension of this site, would be a very advantageous thing to see in our great country as well.
Ben Renes

Busting a cap

I refer to the 'Busting a Cap' article, by Rob Walsh and the reply written by Geoff Stolberg (*Sport Pilot* March 2014). The last paragraph of Geoff Stolberg's reply is a very real concern, not only to me, but should be setting off alarm bells all over RA-Aus. What ever happened to pre-flight inspections? One can only wonder. I'm 67 years young and learned to fly at 16 and I can still remember my instructor applying the hand of knowledge (a good clip to the ear - right or left, it didn't matter) if I failed to carry out a pre-flight inspection to his requirements. My instructor was an ex-WW2 Spitfire pilot.

Geoff, I agree with you whole heartily and with your statements. Why was the cap not found before any subsequent flight? A thorough pre-flight inspection would have found the cap missing. So, no flying until the cap is found – it's not hard. Why was the aircraft flown for 40 more flights?

Bob, if this is how you do your inspections, then I also choose not to fly with you. There are two things in this life I don't like, pain and blood, especially when its mine. And, is it that RA-Aus members really don't see a need to be concerned about pre-flight inspections? I hope not. There is more to a pre-flight inspection than just kicking the tyres and dipping the tanks. It's called responsibility and being safe.
Bob Simmons

Fresh air

Regarding Mark Clayton's view that the structure of RA-Aus needs to change (*Sport Pilot* April 2014).

What a breath of fresh air!

Yes, yes, yes!

Change is vital, essential and inevitable.

I cannot imagine the effort required to allow the publication of this report.

Mark has nailed it with the words 'costly', 'cumbersome', arcane', 'unproductive' and 'monolithic'.

Bring on change!

We (as a group) need to move on and keep control of the privileges we enjoy.

Mark, you have my support.
Phil Evans

L2s giving back

(The Tech Manager has implemented a review process of the L2 system which will require L2s to re-apply for accreditation every two years)

To the Tech Manager


POSITION REPORT
MARK CLAYTON
Same as it ever was

The requirement to re-apply for L2 accreditation has always been there. I filed an application a few years back as requested and nothing came of it. On enquiry I was told 'Oh don't worry about it'.

Additionally, if we start pushing L2s too much, we will simply lose many of them.

Remember most are sport flyers and their L2 activities are just additional to that. It is part of their weekend sporting activity. Very few, for instance, make big money out of their efforts, yet carry considerable risk and liability potential because of their activities.

Many L2s, like myself, work all week on aircraft, already dealing with an ever increasing mountain of regulations in other maintenance areas. We would gladly shed ourselves of L2 commitments or responsibilities, but we continue to do it to support our sport, our organisation and fellow flyers who require our help.

The activities of L2s contribute a considerable amount of income to the organisation annually, by facilitating UACRs, aircraft owner transfer applications, re-registrations, training aircraft sign-offs etc. With the organisation losing money we can't afford to further impact on this valuable area of income.

Without L2s volunteering their services we would lose our training fleet rapidly, as they require an L2 sign off to operate.

Frankly with additional regulations and requirements, the holding of an L2 rating will just become too much trouble and many will opt out, choosing instead to just enjoy their sport as a recreational *sport pilot*.

Please consider your actions carefully as there will be future ramifications. It is very easy to issue yet another regulation or requirement, but not so easy to find another capable experienced and interested person who wants to be an L2, to support ever-changing fleet.
Ross Millard, North Queensland Board Representative

Reply from the Tech Manager *- Unlike yourself, Ross, there are some L2s not giving back to the industry. I'm happy for any L2 to provide their history, such as you did, or a letter outlining the work they've done within the past two year privilege period. Within the next two years the Tech Manual requirements will be enforced for L2s. For example, if an L2 is maintaining only one aircraft, the new process will require him to meet with other members to gain exposure to the industry and discuss new developments. The LAME L2 will be issued with a Certificate which will be perpetual based on their Part 66 privileges as long as they maintain their LAME L2 Certificate and RA-Aus membership. The LAME L2 will be required to lodge a copy of their Part 66 Licence and be re-accredited with the rest of the L2 maintainers.*

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).

GYFTS SCHOLARSHIP

A moment to remember

by Emily Coggan

I AM writing to thank you for the financial support given to me through the RA-Aus GYFTS scholarship program.

Recently I received my Recreational Pilot's Certificate by the Lone Eagle Flying School and it is a moment I will never forget.

I have really enjoyed the past year and fulfilling my passion to become a pilot like my father and great grandfather. It has given me a whole new understanding and respect for those lucky enough to achieve this goal.

I started my journey in December 2012 and could not have predicted the personal growth I achieved through doing my Certificate.

Once again, thank you for your support and assistance. One day I hope to be able to give other young people the same opportunity I have been given.

New airpark

QUEENSLAND RA-Aus member, Mark Pearce, tells us that the Fraser Coast Regional Council is moving ahead with a new airpark development at Maryborough Airport.

The council has started negotiations with a developer for a joint venture agreement.

The council believes the airpark will attract people to the Fraser Coast and bolster the aviation service industry in the region.

Mark reports there is another airpark development happening six miles south of Fraser Coast Airport in Hervey Bay (towards Maryborough and inside the CTAFR) but this has met with CASA snags. The council is apparently also still keen to see this happen. It's a far cry from the bad old anti-aviation days of the Hervey Bay City Council.

Office will be closed

2014

Monday 9 June	Queen's Birthday
Monday 29 September	Family & Community Day

Meet Neil Schaefer

Assistant Operations Manager

NEIL has been an active RA-Aus member since 2004 and held a CFI approval for three years.

Prior to that, he was involved in the Hang Gliding Federation as a Safety Assurance Officer and pilot, the Gliding Federation as a pilot and Instructor and he made more than 350 jumps as a member of the Australian Parachute Federation.

He says his passion for flying hasn't wavered since his days as a starry eyed nine year old at the airport fence in Armidale.

"RA Aus has enabled the dream of flying for me and thousands of other pilots", says Neil. "I will work in my new role with integrity to ensure I do my part to promote and assist in recreational flight where fun and safety can exist side by side.

"A key challenge for all pilots is to not only maintain the standard which gave us the privilege to fly, but to develop it constantly, through training, continued learning, reviews and refreshing the underpinning knowledge and skills.

"The organisation is dedicated to implementing, delivering and monitoring these standards via Flight Training Facilities and individual pilot compliance, remembering the ultimate responsibility for safe flight always remains with the pilot in command.

"There can be no delegation of safety in single pilot operations, so our individual habits and culture form the basis of our own safety management.

"We will become more aware of this in the coming months as more safety initiatives are rolled out through all the sport aviation bodies, including RA-Aus."

Welcome Neil.

GM RESIGNS

by Michael Monck

AFTER a little over a year in the RA-Aus General Manager job, Mark Clayton has decided to step down from the role and return to his family in Queensland.

Most members will be aware that the role of managing our organisation's affairs can be challenging - some have likened it to nailing jelly to a tree. Despite these challenges, Mark has performed admirably in this role. His dedication to improving RA-Aus has been noted and is very much appreciated.

Mark brought a new level of professionalism to the office and helped to guide us through challenging times, with respect to registration issues.

The board would like to express its sincere gratitude and thanks for the efforts put in by Mark during his time and wish him well in his future endeavours.

We will be recruiting for a new General Manager by the time this magazine is printed and hope to make an announcement in the following issue.

Sunseeker goes duo

SOLAR Flight has been test flying a new solar powered airplane, the Sunseeker Duo.

The Duo is the most advanced solar powered airplane in the world and the first which might be suited to production. It is also the first solar powered airplane with a passenger seat. The project is led by husband and wife, Eric and Irena Raymond.

The engineering challenges to build a solar powered aircraft are formidable. The structure must be incredibly light and aerodynamically efficient to perform well with only the power from integrated solar arrays. Because of the demanding requirements, solar powered airplanes have mostly been built as engineering novelties to break records or win prizes, rather than with the intent for practical use. The Sunseeker series is looking to integrate the conflicting design challenges into high performance, practical sport airplanes.

Over the past two months, the flying qualities of the airplane, as well as the performance of the battery system, motor, propeller, folding hub mechanism and landing gear retraction systems have been explored. After some instability in pitch was observed during the unpowered test flights, more area and additional solar cells were added to the horizontal stabilizer. Now the airplane is docile with good control authority in the air and on the ground. The performance is better than previous versions in every category - operations are easier because the landing gear and systems are more conventional and the airplane has enough excess power to carry a passenger and baggage.

For more information, www.solar-flight.com.

Introducing Willis Australia

THE Willis Group has been named as the new insurance broker for Recreational Aviation Australia.

The Willis Group is a leading global risk adviser and insurance broker with more than 400 offices worldwide. It is the world's number one aviation broker with a deep commitment to the industry.

Willis employs approximately 380 associates and has six offices around Australia. Willis Associates pride themselves on a high standard of service to clients, particularly delivering timely responses to inquiries and strongly advocating for clients when managing insurance claims on their behalf.

In addition to providing Aviation Liability, Members Liability and Voluntary Worker's Cover to protect everyday activities of the RA-Aus and its members, Willis looks forward to working closely with the Association to develop a range of value added insurance options for members.

Willis has a depth of experience in tailoring insurance solutions to meet the needs of member groups and will draw on its size and strength to negotiate with insurance markets in order to provide RA-Aus members with customised covers at competitive premiums.

>> Gary Perera, the principal point of contact for RA-Aus business

A great weekend

By Tony King,
Natfly Co-ordinator

NATFLY 2014 was was very much a pilot's weekend, although numbers were down on previous years, those who were there enjoyed a great event with perfect weather and plenty of things for aviation enthusiasts to see and do.

The forum program organised by Temora local, Carol Richards, included something for everyone, including how to stitch fabric, working with composites, getting the best from your Rotax engine, when to activate your EPIRB and what happens after you do.

Paul Bennet and the team from MaxxG Aerobatics put on a great display of formation aerobatics, Temora Aviation Museum flew one of their Spitfires and Red Bull Air Racer Matt Hall provided a great aerobatics display followed by a very good seminar on airmanship.

Several attendees took advantage of Keith Baker's dynamic propeller balancing service, others took a ride in Aerohunter's Yak52 and a number of people spent half an hour with an instructor in Graham Hutchinson's C172 simulator. Several operators were kept busy providing trial instructional flights to new flyers and many of the exhibitors were pleased with the level of interest their displays attracted.

The NATFLY Presentation Dinner was held on the Saturday night at the Temora Ex Services Club. About 190 people were present. Chief Judge, Dave King, had done considerable research on the history of the awards and was able to present that information as the various trophies were awarded. It was so interesting to everyone, it slowed down the dining process.

Aircraft flew into NATFLY this year from all over the country, including several from Western Australia, at least one from Darwin and a couple from Far North Queensland. Many of these aircraft flew over 15 hours to Temora.

The support from the Temora community was fantastic as always, with a significant commitment of funding and resources from the Council, strong support from local businesses and lots of volunteers from the community, especially the residents of the Temora Airpark.

A gallery of pictures of the event and the award winners is also on the NATFLY website. Thank you letters have gone out, post mortems held and the bills paid, so that's NATFLY for another year.

Planning for NATFLY 2015 will commence in the not too distant future. See you there.

>> Ken and Debbie Hulse from Brisbane check out a Rotec R2800

>> Major Millard's beautifully kept GR Lightwing from North Queensland

>> Temora looks a treat from on high Photo: Sheldon Jones

FK's 5th Generation Trainer

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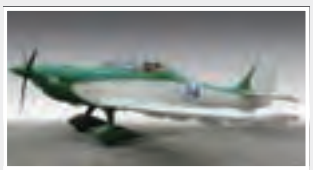

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NATFLY 2014

>> A single seat Quicksilver GT400 demonstrator

Photos: Arthur Marcel

>> A Rutan Long-EZ taking a break

>> The local classic car club was in attendance

>> One of the parking areas

>> A Tecnam twin taking off on the main runway

>> Mick Poole and Kevin Scrimshaw from CASA looking totally benign

Blue skies, no crowds

by Arthur Marcel and Brian Bigg

THE weather was spectacular; the airfield was picture postcard perfect; the generous, warm-hearted people of Temora were welcoming; and the event itself was one of the best organised in years. Pilots of recreational aircraft from all over Australia flew in or drove, some from as far away as Western Australia and the Northern Territory. RA-Aus, in conjunction with the Temora City Council, the Temora Aero Club, the Temora Aviation Museum and countless local and RA-Aus volunteers, put a tremendous amount of work into ensuring the success of the weekend. As usual, the Awards Night Dinner at the Temora Ex Services Club was a highlight. The food and service were absolutely excellent.

Sad to say, however, NATFLY 2014 was not well attended this year. Aircraft and exhibits were way down on previous years. In fact, it has to be said that the five Temora NATFLYs so far have shown a steady year-by-year decline in attendance. Pilots in South East Queensland sometimes say Temora is just that little too far past Narromine, where the event used to be staged. So is it Temora? The evidence says no it isn't because, despite glorious weather, local aircraft were just as conspicuously absent as those from Queensland. The blame for the poor attendance cannot be laid on Temora.

Some people say the unannounced CASA ramp checks in 2012 put the cat among the pigeons. Definitely CASA could have started their public relations exercise a little earlier than they did, but they have been at pains since to point out that the service is primarily advisory. Pilots who have been checked all report courteous, non-intimidating helpfulness. Some pilots even feel a little put out when they go to great pains to make sure they have everything in order and then are not pulled up on arrival. CASA's presence at Temora this year was subtle and polite. So the disappointing numbers can likewise not be put down to ramp checking.

The timing of the event is a possible cause. The late Easter, followed immediately by the Anzac Day holiday might have seen many people taking a two week break, rather than just escaping for a long weekend to Temora. Perhaps, also, people are simply reluctant to go to NATFLY at Easter every year. Are their better halves wanting an occasional Easter at home with the family?

The number of trade sites was well down as well, but company representatives reported a steady stream of inquiries. There were plenty of new and used aircraft to stare at and lots of flying. Aerial magicians, Matt Hall and Paul Bennet, turned it on for the crowd on both Friday and Saturday and the Temora Museum Spitfire was also put through its paces on Friday. There is nothing quite like the sound of a real Rolls Royce Merlin at full throttle.

The RA-Aus organised forums were well attended. There were also more than 70 people at the General Meeting on the Saturday. For those who made the journey, the weekend was very enjoyable. There was plenty to see and do, with the upside being a lack of jostling by the crowd and no queuing at the coffee stand.

Thank you to the wonderful people of Temora for their unstinting efforts in supporting NATFLY 2014.

>> Lots to see and do

>> Paul Bennet turns it on for the crowd in his Pitts Special

NATFLY 2014

>> Rod Birrell address the General Meeting

>> The new CAMit aero motor

>>A Rotec powered Fly Baby

>> Ron Ligeti with the RA-Aus Ligeti LaBahn Memorial Shield

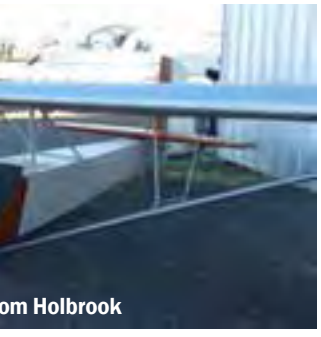
>> A Vans RV-4

>> Woody the early ultralight fr

>> A very well attended dinner at the Temora Ex-services Club

>> The very nice, recently imported Polish Topaz

>> A German FK9 taildragger



om Holbrook

>> Mr Bird's latest masterpiece, a VW powered Corby Starlet

>> Another photo of the Bird/Corby Starlet

>> Part of the Tecnam display

NATFLY 2014 Fantastic or Fizzler?

by Carol Richards

NATFLY was fabulous in 2014. The weather was perfect and the atmosphere was pleasant. There was plenty of coffee, chances for socialising and even short displays featuring the Spitfire and aerobatic aircraft. But there were noticeably fewer pilots and aircraft than in previous years.

Over the past four years NATFLY has seen a decline in the number of members who fly in. Organisers have surveyed members and used that feedback to improve the utility of the food court, organisation of exhibition spaces, aircraft parking, content of forums, amenities and even the variety of food - but still members don't come. It seems everyone has a theory about why the numbers are down, but the Board has decided to get to the root of the problem. The Board recognises that NATFLY is the RA-Aus premier event each year, so it is important we get it right.

Members are being asked to complete a short survey to determine why they are not supporting the event. They will not be asked to identify problems, but rather why they, personally, do not come and what must happen to entice them back. As the survey is anonymous (no names) and confidential (it will be analysed by an independent researcher), it is hoped members will be honest and forthcoming in their answers. This is the only way changes that will improve the event, can be made.

Members who are renewing their membership in the next two months will be asked to complete the survey and send it back to the office with their renewal documentation. The survey will then be forwarded on.

Additionally, everyone who has been an exhibitor in the past three years will be asked to either complete a survey online at: https://www.surveymonkey.com/s/5Y8Z5GM or agree to be interviewed. Other stakeholders such as the volunteers, the Temora Aviation Museum, the Temora Shire Council, the Temora Aero Club and even food vendors will be asked for feedback about the event. By the end of August, a report will be sent to the RA-Aus board, detailing the major causes of poor attendance by members and industry. Together we can make NATFLY an event we all want to support.

NATFLY 2014

>> A VH registered Yak 52

>> An early Wheeler Scout from Holbrook

>> Gary Morgan's latest creation, the Morgan 10

>> This Revolution Mini 500 chopper could be yours for only $45,000

>> The Troublechuter range of powered parachutes

>> A Savage Cub with very big feet

>> The joint venture Anderson Aviation/Jabiru BRM Bristell

NATFLY 2014


Best Presented Tecnam


Grand Champion Home Built


Best Prop and Spinner Combo


Most Innovative Design


Best Powered Parachute


Thruster Aircraft Trophy


Concourse de Elegance


Best VH Registered Aircraft


Best Kit Built Jabiru

Natfly 2014 winners

by Dave King, Chief Judge

Best Presented Tecnam
Wayne Dillon (Tecnam Bravo 24-8777)

Best Factory Built Jabiru
Steve Clack (J160 24-7990)

Best Kit Built Jabiru
John Millsteed (J230 19-5020)

Scott Winton Memorial Shield for Most Innovative Design
Wally Szajnoha (Nova 19-4078)

Bolly Aviation Award for Best Prop and Spinner Combination
Doug McLean (Sonex VH-SNZ)

Mike Valentine Award for Best Soft Wing Aircraft
Rob Maslin (Kitfox 28-5011)

Cummins Spinner Trophy for Best Automotive Engine Conversion
Ray White (Zenith Zodiac 601 XLB 19-8316)

Hawkesbury Powered Parachute Centre Perpetual Shield for Best Powered Parachute
Robin Lowe (Fresh Breeze 32-8312)

Ian Hodgson Memorial Shield Grand Champion Two Seat Trike
Gary and Diane McNamara (Airborne Trike 912 32- 4957)

Solar Wings Pegasus Shield Grand Champion for Single Seat Trike
Not awarded

Thruster Aircraft Trophy for Best 95.25, 101.55 (now 95.55) Category Aircraft
Keith Bradshaw (Sirius 24-7509)

Ligeti Labahn Memorial Shield for Best Single Seat Ultralight
Reinout Vandermolen (Fockewulfe 190A 19-8311)

AUF Perpetual Shield Grand Champion Home Built
Reg Brost (Savannah 19-7371)

Chamberlain Insurance and Booker International Award 'Concourse de Elegance' for Best Overall Aircraft
James Nagorcka (Titan Mustang 19-7732)

Best VH Registered Aircraft
Ross Dickson (Vans RV7 VH-PIV)

Living beyond our means

by Brian Bigg

RA-AUS Treasurer, Jim Tatlock, earned rare praise during NATFLY 2014 when he stood up in front of a crowded General Meeting and outlined the state of the organisation's financial affairs.

He was praised, not for the state of those affairs, but for having the courage to stand up and demonstrate just how precarious is the situation now facing RA-Aus.

He revealed that RA-Aus was in line to make a loss of $442,085 this financial year. That's a big turnaround from the profit of $219,925 the organisation made just two years ago.

Jim explained the reasons - $163,115 reduction in membership income, $30,000 reduction in other income (shop, members market, ASICS), $103,719 increase in staff wages (including contractors and staff severance payments) and $54,000 more than budgeted for board expenses ($18,000), professional fees ($19,000) and office expenses ($17,000).

He explained there would be a continuing drain on resources because of a reduced number of new members, an increased number of members not renewing, registration issues, office renovations, implementing the Safety Management System and computer development.

He did report that internal procedures were being developed to maximise income and reduce expenditure through such things as electronic processing, audits and simplification.

He told the meeting the goal was to develop strategies to expand and retain members, obtain more funding from CASA and improve our safety performance.

Jim said the current financial position was unsustainable for more than three years. The trend needed to be reversed.

He reported that most of the increase in costs to the organisation went to satisfying CASA assurance activities and that there would be more of these coming in the next 18 months including new training and auditing requirements.

Jim told the meeting the big goal over the next few months would be to convince CASA to provide RA-Aus with a realistic level of funding so we can pay for the activities we perform on behalf of the regulator.

POSITION REPORT

MARK CLAYTON

Landing fees

THE payment – and non-payment - of landing fee charges appears to be one of those vexatious topics which members, management and Board have tended to treat with circumspection. Many Association members may operate from airfields where landing charges aren't levied and may consider, therefore, that the matter is of no personal consequence to them. If only it was that simple.

Section 8 of the Air Services Act 1995 (Cth) allows for Airservices Australia to recover terminal navigation charges (a.k.a. landing fees) for each:

i. landing only;

ii. Session of circuit training only; and

iii. Session of circuit training immediately followed by a landing

At a place within a control zone associated with an aerodrome listed in Schedule 1 of its Services Contract. Although ultralights are exempted from paying these Commonwealth charges, many airport owners, particularly those outside of CTAs, actively seek to recover landing charges from all users. Although the practice is widespread, pricing outside of these CTAs appears to be unregulated. Methods used to identify airport users (i.e. payees) include:

(a) Avdata voice recordings;

(b) Manual recording by airport groundsman/ safety officer;

(c) CAGRS/Unicom records (Broome/Ayers Rock);

(d) APM recording of prior permission requests.

Anecdotal evidence suggests that some pilots are either not making CTAF/MBZ calls – or making false calls - in order to avoid Avdata recordings. Consequently, some airports have installed movement-activated infrared CCTV on key taxiways.

> *Every member is paying for the administration of this landing fee recovery service*

Recovery of these charges is dependent nonetheless on the airport owner – or its agent – being able to identify the aircraft owner which, in most instances, is easily done via CASA's searchable online registration database.

Identifying foreign owned aircraft however is difficult, and the identification of RA-Aus registered aircraft remains impossible (at least for those wishing to recover these charges). This has been a source of ongoing frustration for operators such as Sydney Metro Airports (which operates Bankstown) who have 'an expectation' that RA-Aus will supply them with billing details thereby 'ensuring that equity exists throughout the various tiers of General Aviation'.

Indeed, RA-Aus would appear to be the only aircraft registering body - operating within the ICAO framework - withholding aircraft ownership details. While the reasons for this remain unstated, the issues that have arisen from this silent practise are well understood:

i. Reputational damage – Sydney Metro Airports have recently provided documentation indicating that one of our FTFs has accumulated landing fee debts of $1,230.86. Continued non-payment of these legitimate charges by one of our more prominent training facilities must inevitably bring the organisation and its members into disrepute.

ii. Unprofessional conduct - By failing to assist the recovery of these legitimate charges we are, in effect, not only tacitly endorsing questionable conduct but also reinforcing the perception that our organisation also considers itself to be above and beyond the law.

iii. Safety – Our prolonged silence in relation to this matter has no doubt helped foster the practice - described earlier - of some pilots making no circuit calls (or false identification calls), both of which are potentially dangerous.

iv. Financial – The Association's practice since at least 2009 has been to 'facilitate' the recovery of these fees by acting as a go-between. As fee recovery letters arrive at Head Office they are logged, then forwarded to the aircraft owner. Although it's not a significant workload, this is nonetheless a recurrent cost (in terms of staff administrative effort, and postage), for a service which delivers the Association no income.

v. NAA Alignment – RA-Aus stands apart as perhaps the only aircraft registering organisation which doesn't publish its fleet ownership details. North America, the UK, New Zealand and indeed, CASA have for years now had their fleet ownership data searchable, online, for the general public. Nothing in our Deed appears to compel us to fall in line with CASA on this count.

vi. Privacy – With the introduction last month of the Commonwealth's new Privacy Principles, the Association would require both an aircraft owner's prior consent and a clear statement of end-use purpose, before it could make its fleet ownership details publicly available. These two principles are however already being addressed (albeit, imperfectly), via our existing Privacy Declaration. As the Association has, in fact, always released aircraft ownership details to other governmental agencies (e.g. Police, AMSA, ATSB and CASA) for legitimate purposes, little change would be needed (other than an updated Privacy Policy statement and consent form) to effect the online publication of our aircraft fleet details.

Following are just some of the options available to the Board.

i. Publish de-identified fleet data – The Association used to publish de-identified fleet data on the www.auf.asn.au website. While a return to this practice wouldn't address the more serious issues identified here, it might go some way towards deflecting them (and would certainly please the plane-spotting fraternity).

ii. Publish identified fleet data on an owner-optional basis – The owner decides at registration (or renewal) if he/she wants their contact details published.

iii. Publish identified fleet data on a non-optional basis – this would save the Association the ongoing cost-recovery administrative costs and bring the Association in line with the practices of other NAAs, and all other RAAOs.

iv. Do nothing – Experience to date would indicate that by maintaining the status quo, the Association (and its members) could well continue – for many more years – without suffering any adverse effects. This would need to be balanced against the current administrative and postal costs (associated with on-forwarding third part invoices), the continued reputational damage and the risks associated with potential Fair Trading Act breaches.

The bottom line is that every member is currently having to pay – indirectly – for the administration of this landing fee recovery service, regardless of whether they are (or aren't) personally incurring these charges.

This is a matter of little consequence, of course, when compared with some of the Association's other travails. Or is it? Perhaps if we understood the root-case circumstances which have allowed this particular Clayton's solution (vis-à-vis landing fees) to exist, and persist, then we just might also find a way of dealing more effectively with those more pressing matters.

Even though it had been close to 40 years, the area welcomed me again with its unique beauty

DESTINATION: To the past - and the future

by Ross Millard

IT was the Monday following NATFLY and the big show for 2014 was all but over. My wife departed around 10am for Wagga in the rental car, for the quick trip back to Townsville, via Sydney.

I fuelled the LightWing (the slower trip) but because I didn't plan on departing till around 1pm, it was my chance to finally check out the Temora Air Museum.

From the outside they just look like two huge green buildings, but pay the entrance fee ($13) and one of the worlds' finest flying military aircraft museums is yours to wander through and marvel at. I also bought one of the impressive aircraft-themed Hawaiian shirts at the gift shop.

At 1.30pm I bid Temora goodbye once again and set course in smooth air for Cowra and onto my destination for the day, the new Rylstonee Airpark south of Mudgee.

The Rylstonee Kandos Valley and airfield hold many special memories for me. It had been a popular weekend destination for Sydney skydivers in the early seventies and I had spent many happy adventurous skydiving weekends there. We all had to join the Rylstonee Kandos Aero Club, as it was then. Their badge featured a small parachute hanging off the bottom for all the skydiver members. So popular was this valley that the Australian National Parachute Championships were held there in 1974.

My trusty LightWing took me over Cowra, the home of the Brumby, and on eastward, passing between Orange on the left and Bathurst on the right. After another 30nm, hills and valleys started looking familiar.

Even though it had been close to 40 years, the area welcomed me again with its unique beauty. And there, finally, were the two small twin towns of Rylstone and Kandos and the nearby country airfield in the middle of the valley. Amazed at how beautiful it was, I just cruised around taking photos, in no hurry at all to land.

Suddenly the radio squawked. "Aircraft over Rylstone, are you going to land? We'll be taking off soon".

It was Bing and Bev preparing to go flying in their Highlander, and why not? The afternoon was just gorgeous. They are two of the residents who bought land here and built one of the first impressive hangar-houses. Some eight other sites have already sold. Also in the hangar sits Bing's red RV 8, their 40 minute express trip to Sydney.

I asked permission to stay overnight and Bing directed me to an empty hangar. I landed on one of the manicured grass strips and the Highlander took off after me. I was left to wander my field of dreams for the next hour alone, until they returned.

Rylstone is now privately owned and being developed into a residential airpark only hours from Sydney, Canberra or Newcastle. I could not recommend a more pleasant airfield and valley in which to spend the rest of one's flying lifestyle.

The Rhino Jab

by Wynand Uys

A JABIRU J170 is playing a vital role in South Africa's brutal 'Rhino War'. And it's proving to be a major tool in preventing the destruction of the rhinoceros population by poachers working for international organised crime syndicates.

The aircraft, call sign ZU OPS, was donated to the cause by Jabiru's South African subsidiary and its operating costs are borne by local aviation enthusiasts. The aircraft has been deployed to Game Reserves United (GRU), the private game reserves on the western boundary of Kruger National Park. It's the only aircraft in the world assigned full time to the largest wild population of rhinos on private land.

ZU OPS has found a valuable niche. Due to its strategic location and a roster of five pilots, it is capable of being a fast responder. Reserve managers have learnt that the 'Rhino Jab' can be overhead a problem area in minutes to provide suppression and observation.

The Rhino Jab has proven to be the ideal aircraft for disrupting poacher activities. These are long, up to six hour, missions co-ordinated with ground forces.

Recently, a tracking team for whom ZU OPS provided air-support during a hot pursuit, found they could tell from the tracks when the aircraft had arrived on the scene. They could see the poachers had been following rhino tracks, but then shifted their behaviour. They had abandoned the tracks and moved from cover to cover where they were forced to lay low every time the aircraft was within view. This allowed the trackers and anti-poaching officers to catch up and outflank them, capturing them in an ambush just before sunset.

With the help of the Rhino Jab, GRU is on track to meet its 2014 goal of reducing rhino losses in the reserves by 50%. In 2013 those losses were at a rate of 1.4 per week. That has dropped to below 0.7 per week in 2014.

But outside the reserves, the national rhino mortality rate is still hovering around 20 per week, the same as last year, when more than 1,000 rhino in South Africa were slaughtered, no doubt the result of economic factors influencing the behaviour of international organised crime syndicates and their local recruits.

The rhino war is a long way from over.

VICTIM OF SUCCESS

In the late 1990's a succession of interventions and events started limiting the availability of rhino horn, which is popular in Asia as a medicine and for its supposed aphrodisiacal properties, although they are just superstitions.

In 1997 a trade ban came into effect, which led to a virtual and, in some cases, complete extermination of rhino in countries where they could be hunted without fear of being caught.

The trade ban also quickly dried up stockpiles of horn in Asia, as did a South African clamp down on pseudo-trophy hunts which had become the only 'legal' method of exporting rhino horn.

As a result, the retail value of horn rapidly rose above that of cocaine or gold and attracted the attention of international crime syndicates.

There was an immediate sharp rise in poaching - from 333 rhino lost in 2010 to 1004 in 2013. There's just too much money to be made to deter the criminals.

Most sensible people believe the only way to save the rhino is to farm them. And several

>> (From left) Jamie Cook from Jabiru Australia, Mark McGill. manager of Sabie Sands Nature Reserve Security, Sue Woods from Jabiru Australia and the author

South African game ranchers are gearing up for that prospect. The plan is for them to harvest the horn without killing the animal and eventually drive down the price to the point it becomes not cost effective for the criminals to poach the animals. But not everyone likes the idea.

Until a solution is found (discussions are due to take place in 2016), ZU OPS, the Rhino Jab, is buying the species more time.

Recently an orphaned young bull was spotted in one of the reserves but, before help arrived, it vanished. After an extensive search by vehicle and on foot, the conservation staff put in a flight request. The calf was quickly spotted hiding on a flat-top koppie close to where the ground personnel were searching. It was an easy task to talk a ranger in to it.

In less than an hour they'd sedated and loaded the youngster into a truck, bound for a place where specialist rehabilitation staff could care for it. Traumatised, stressed and weighing 400kg, it was a difficult baby to care for, but it took to the bottle and has been growing strong in preparation for its return to the reserves where the Rhino Jab will be keeping a close eye on it.

PILOT TALK

The Ops team

Fatality reports

SADLY, the organisation has reported its first fatality for 2014. The pilot of an Airborne trike was killed and his daughter critically injured in an accident at Tyabb in April.

The RA-Aus Board, management, staff and members extend their deepest sympathies to the family and friends.

Members may not be aware how RA-Aus interacts with the police and Coroners in these circumstances. Under the Transport Safety Investigation Act 2003, the ATSB has the authority to investigate any aircraft accident. However, due to resource allocation and budgetary constraints, the ATSB often elects not to investigate recreational aviation accidents.

When there's been an accident, Operations receives notice from either the ATSB or the Rescue Coordination Centre and we are given contact details of the police officer in charge. We then contact the officer and offer the assistance of our Accident Consultants. Additionally, we provide the police with any information we have about the pilot and the aircraft.

Operations then contacts the nearest ACs to arrange their travel to the accident site to begin the investigation, under police oversight.

Two ACs are usually sent to ensure there's a good cross section of maintenance, operational experience and specialist aircraft knowledge. Operations also determines if there is the opportunity for a more seasoned AC to buddy with a less experienced one. A fatal accident is obviously a distressing event, not only for the family and friends of the pilot and passenger, but also for the people immediately involved, such as fellow club members and the Accident Consultants themselves. Counselling is offered to the ACs immediately after an investigation and in the weeks and months which follow.

The ACs assess the site, create a written report, take photos and liaise with the ATSB to extract GPS, engine management system data, or photographic evidence from any cameras mounted to the aircraft.

The increase in use of Go-Pro cameras has greatly assisted recent investigations - including this latest fatality – and the footage, while disturbing, offers real time assessment of the flight.

Don't forget installing a camera requires a letter of approval from an aeronautical engineer, if the aircraft is Type Certified, or the manufacturer if it is an LSA aircraft. The latest edition of Flight Safety from CASA has a great article on the subject.

http://www.flightsafetyaustralia.com/2014/03/everything-has-eyes/

Any footage, with the data from electronic devices, witness statements, assessment of the wreckage and interviews with Instructors, maintainers or other pilots, is then turned into an internationally standardised report and submitted to the police. They use the report to create an evidence package for the Coroner, who then determines if an inquest is required.

As members can imagine, this process is not swift. To give you an example, a Coronial inquest was due to begin in Gympie in late May in relation to an accident which occurred in October 2010.

Only once the inquest is completed can information be released to the public about the accident. That's why you often don't see reports relating to fatal accidents until many years later.

The ATSB can release its own reports much more quickly because it has protection from prosecution under the previously mentioned TSI Act 2003. That protection is not afforded to RA-Aus.

As part of RA-Aus policy, we investigate all accidents. This applies not only to fatalities, but to all accident and incident reports we receive. Members are reminded that when reporting an accident or incident, the initial notification and primary report must be to the ATSB.

The current RA-Aus reporting form has been updated to remind members of this responsibility as outlined in the Operations Manual. The collated information is loaded and shared on the RA-Aus website portal (under Accident and Incident summary tab) for members' viewing and education purposes.

We investigate accidents with the sole purpose of preventing them from happening again.

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SAFETY MATTERS

KATIE JENKINS National Safety Manager

Safety Assurance

OVER the past few editions I have discussed the components which make up a Safety Management System.

I dealt with RA-Aus' safety policies and objectives and the establishment of controls which govern how hazard identification and risk management occurs within RA-Aus. This article ties in with those previous topics.

The aim of the SMS is to provide a systematic way for RA-Aus to identify hazards and control risks, while making sure the controls are effective. So how do we do that?

It's where Safety Assurance comes in. Safety Assurance monitors the performance and effectiveness of the SMS.

It ensures the hazard identification, risk assessment and mitigation processes are being followed effectively and the appropriate mitigation measures are being implemented and working as intended.

There are three identified elements of Safety Assurance:

- Safety Performance Monitoring and Measuring;
- Management of Change;
- Continuous Improvement of the SMS.

MONITORING AND MEASUREMENT

RA-Aus develops and maintains safety performance to comply with its safety policy and objectives and to validate the effectiveness of its risk management. Safety Assurance concepts are built into the existing safety tools - hazard and incident reports, safety committee meetings and safety audits can include assurance concepts which help determine if the action taken in response to a safety issue actually corrected a given situation and improved the system. Safety Assurance also helps document results and encourages management to avoid action which merely covers symptoms.

Safety investigations are carried out to find systematic causes and implement corrective action - not to apportion blame to individuals. Safety audits focus on the performance of the organisation and its services and to assess if there are adequate resource levels, compliance with safety procedures and instructions, if the required levels of reporting performance are maintained and how effective has been the intervention and risk mitigation.

However, some areas require a special effort to assess the effectiveness of safety initiatives. For example, there are no specific tools to measure the effectiveness of training, but supervisors should be prepared to evaluate training programs.

The outputs of Safety Assurance activities feed the other components of safety management. For example, when Safety Assurance activities identify a hazard, a safety risk management process begins. When negative trends in performance are identified through audits, they are corrected and that information shared across the organisation. When compliance issues are identified, they are reviewed for their impact on policies and procedures.

Safety Assurance ensures that risk controls, once designed and put into place, perform in a way which continues to meet their objectives.

Through monitoring and measurement, RA-Aus is able to monitor its safety performance through hazard and incident reports, complaints, safety surveys, audit findings and investigations from CASA or other reports. Due to the limited data to which staff have access, it is important to investigate events and reports from all sources.

MANAGING CHANGE

Changes within RA-Aus itself may create hazards which could impact on safety. In the main, changes are made to meet the organisation's demands and RA-Aus needs the flexibility to meet these requirements. However, while changes need to be made effectively and efficiently, our focus is on implementing the changes safely.

Typical areas which require the application of change management procedures include:

- Introduction of new equipment and or procedures;
- Addition of new aircraft type;
- Change in key personnel; and
- New contracted services.

CONTINUOUS IMPROVEMENT

RA-Aus understands the continuous improvement of the SMS requires the management of two major components:

- Maintenance – the objective of which is to maintain current technological, managerial and operating standards, and
- Improvement – to improve current standards.

The RA-Aus Safety Committee carries out on-going reviews of the SMS process to ensure it is meeting its objectives and targets. Monitoring and measuring safety performance against the objectives and targets and addressing identifying hazards in a timely and appropriate manner are also other ways the safety system within RA-Aus is continually improved.

By focusing on these three components, Safety Assurance provides a tangible approach to assure the SMS is working at its best. At the end of the day, Safety Assurance is designed to focus not so much on processes, but on results.

Next month I will present real world examples of safety assurance via accidents and incidents. If you have any stories or suggestions email me safety@raa.asn.au

TECH TALK

DARREN BARNFIELD RA-Aus Technical Manager

Incident reporting

AT the time of writing I have had the unfortunate duty of having to attend the site of a fatal accident involving one of our members. One thing I learned was that the emergency service respondents did not know the process to report an RA-Aus registered aircraft. I think it is a good time to remind everyone of that process.

Incident and defect reporting is one of the primary ways we have in ensuring continued safety in our operations.

Another important point to take into consideration is the carriage of minors. Please ensure when taking children for a flight they are secured via the best practicable means and they are old enough to understand instructions from the pilot.

Accident & Incident Reporting

The pilot in command, the owner and the hirer (if any) are each responsible for ensuring accident or incident details, set out in Section 4.08 of the Operations Manual are notified to the Australian Transport Safety Bureau (ATSB) and RA-Aus Operations within forty-eight hours of the occurrence.

ATSB Notifications can be submitted via:

Telephone: 1800 011 034 (24hrs)
Facsimile: (02) 6274 6434 (24hrs)
Post: ATSB Notifications, Reply Paid 967, Australian Transport Safety Bureau Notifications Officer, PO Box 967, Civic Square, ACT 2608.
Online: www.atsb.gov.au/mandatory/asairform.aspx is to be used to notify the ATSB about all aviation safety occurrences.

Pilots, owners and hirers are urged to familiarise themselves with the ATSB's enforcement policy (www.atsb.gov.au/about_atsb/legislation/enforcement-policy.aspx) which deals with what happens to you if you fail to provide notification to them.

RA-Aus notifications can be made using this form: http://www.raa.asn.au/wp-content/uploads/2012/02/Accident-Incident-and-Defect-Reporting-form-Rev-Jan-2013.pdf
The form can be submitted via:
Email: admin@raa.asn.au
Post: RA-Aus PO Box 1265, Fyshwick, ACT 2609.
Facsimile: (02) 6280 4775 (24hrs).

Flight testing for amateur built aircraft

The website has been updated to include the RA-Aus flight test schedule. Recently, a number of aircraft have been signed off without the appropriate flight test hours and specified locations. A proposed new process in the new Technical Manual will remove the L4s privilege to issue a flight test area.

Flight test approvals will be issued via a flight test permit issued by the Technical Manager following recommendation from the L4 and subject to a risk assessment being completed. For an aircraft to progress from a number allocation to full registration, the builder will also be required to submit a completed flight test schedule. The flight test schedule can be found at http://www.raa.asn.au/wp-content/uploads/2014/05/Flight-Test-Guide-Issue1.pdf

Technical Manual update

The Technical Manual update is in its final stages of review and I was due to meet with CASA at the end of the month to thrash out the last of the amendments and changes. The new manual will give our organisation the ability to manage and provide appropriate means of compliance to address and correct issues which have been discovered.

L2 Maintenance privileges and renewal process

A letter has been sent to all L2 Maintenance holders. This will provide advance information about the requirements in the new Tech Manual and outlines the process required for people who wish to operate with that privilege.

PILOT NOTES

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

"The instructor was unable to prevent a second bounce but applied power and landed the aircraft

Savannah

Conditions: Light wind, nil turbulence.
Pilot experience: 181hrs, 47 on type.
The aircraft was climbing out after a crosswind take-off when it drifted off the centreline and made contact with the top of a tree. After landing it was discovered the leading edge of the starboard wing and the tailplane had sustained minor damage and dents.

Jabiru J230

Engine: Jabiru 3300, 340hrs ttis.
While on a cross country flight the pilot noticed a hot 'metal to metal' smell in the aircraft. He closed the throttle and headed towards an area suitable for a landing but the engine failed on approach. The landing was completed uneventfully and an inspection revealed the flywheel bolts had sheared.

Nieuport II

Pilot experience: 341hrs, 2.5 on type.
Conditions: Light winds, nil turbulence.
The pilot lost control of the aircraft early in the take-off roll and it departed the runway. Despite corrective action the aircraft ground looped and came to rest in long grass adjacent to the runway. One wingtip contacted the ground resulting in minor damage. The tail wheel mount was also bent.

Super Petrel

Pilot experience: 31hrs, 9 on type.
The pilot was landing at a private strip which had been subjected to recent rain. Shortly after the aircraft touched down the nose wheel encountered a wheel rut and the aircraft ran off the strip and into a ridge of soil hidden by long grass. Damage was confined to the nose and one main wheel plus minor hull damage.

Kitfox III

Conditions: Light wind, nil turbulence.
Pilot experience: 291hrs, 12 on type.
The pilot was attempting a touch and go. On landing the left wheel touched down first and the aircraft began to drift to the right. He attempted to correct the swing and then applied power to go around but the aircraft was already at 90° to the runway. It struck a patch of soft ground, tearing the left main wheel off and finally came to rest with major damage to the propeller, fuselage, wings and undercarriage. None of the crew was injured.

Savannah

Conditions: Showers of rain in area.
Pilot experience: 850hrs on type.
Due to increasing shower activity with associated reduction in visibility on the aircraft's track, the pilot elected to make a precautionary landing. After making three passes over the intended landing area the pilot approached for a landing. On the approach the aircraft struck an unseen SWER (Single Wire Earth Return) power line. The impact pulled the line free from three poles and the aircraft rebounded and rotated through 180° before impacting the ground on its port wing. Although the aircraft was destroyed, the cabin retained its integrity and the two occupants exited uninjured.

Skyfox Gazelle CA 25

Conditions: Light wind, nil turbulence.
Pilot experience: 7745hrs, 17 on type.
The instructor was conducting dual circuits with a pre-solo student. The student had done two reasonable circuits but on the third, was slightly low and slow on approach. After adding a substantial amount of power the student abruptly reduced power to idle and the aircraft bounced. The instructor was unable to prevent a second bounce but applied power and landed the aircraft. It was later discovered the right main undercarriage strut was bent.

DEFECTS

FK Lightplanes FK 14

While adjusting the rigging on a new aircraft, it was discovered the Fokker needles (safety pins) securing the automatic control couplings in the wings had not been inserted to lock the joints. The defect was reported to the factory which responded by issuing a revised maintenance manual drawing attention to the requirement to ensure the pins are installed.

Jabiru J 160C

Engine: Jabiru 2200, 350hrs ttis.
After experiencing smoke in the cabin in flight, the aircraft was inspected and a leak was discovered in the oil cooler. There was no resulting damage to the engine although it required a substantial amount of oil to bring it back to operational level.

Tecnam P2002 Sierra

Airframe: 524hrs ttis.
During a daily inspection it was discovered the lever which operates the nose wheel steering had failed at the attachment point to the rudder bar. It is suggested that, as the nose wheel steering is connected directly to the rudder bar, in the event of a nose heavy landing with the nose wheel off centre, excessive force may be applied to the attachment point, causing it to fail.

Jabiru J230D

Engine: Jabiru 3300, 544hrs ttis.
After oil was noticed on the cowling, the engine was inspected and a small crack discovered at the base of No. 2 cylinder. Further investigation revealed both push rods on this cylinder were bent.

Remembering Scott Winton

by Arthur Marcel

SHORTLY after midday on Friday May 12, 1989, at Tyagarah airfield just north of Byron Bay on the north coast of NSW, Eric Scott Winton rolled his much celebrated, record breaking ultralight aircraft, the Facet Opal, out of its hangar for what would be both his and the aircraft's final flight.

Sunday was Mother's Day and Scott was planning to fly to Warnervale near Newcastle, about 300nm south, for a family reunion. There was also to be a party for his grandmother's 80th birthday.

Scott had turned 31 in March. He'd led a very full life already.

His mother and father had split up when he was eight or nine years old. There were five children in the Winton family. Eldest sister, Isla, had moved to WA. Brother, Dean, was older than Scott, and then there was Murray. Youngest brother, Glenn, was already overseas making a name for himself as a world champion professional surfer. Scott's mother had remarried some time after the break up and the combined family, numbering eleven children, lived in Noraville.

Scott's father, Col Winton, had also remarried and was living on a houseboat near the Gold Coast. Scott had been spending quite of bit of time with him over the past couple of months. The father/son relationship had not always been a harmonious one. Both were involved in the design and manufacture of ultralight aircraft, but working together had proven problematic. Col had several successful designs to his credit, most notably the Grasshopper, which he had produced in a factory in Manly in the seventies. Other designs of his were the Cricket, the Sportsman and the Gold Coaster. Col later wrote these words in Australian Ultralights, July 1999:

'A few months passed and Scott and I spent some time talking about old times, avoiding any discussion on aircraft, and I found a way we could talk together; by me holding my tongue. The person I knew before had changed and he seemed so much more human and was so full of ambition. .... Requests to display the Facet Opal at different shows left Scott showing his new aircraft, and he stayed with Mickie and me on our houseboat. We had a great time together in those last couple of months, before his flight back home forever.'

Scott had always shown a flair for hands-on innovative design. He had made his first surfboard at the age of 11 not a long one as was normal then, but a shorter, more controllable one, as is common now. A year later, he built a go-kart which performed well enough to have its use curtailed by the local police. As a teenage boy, he worked after school for a company called McKellar Engineering, gaining experience with large machine tools, lathes, etc. During his holidays, he worked for Mariner Cruisers gaining experience in the use of plywood and fibre-reinforced composite construction techniques. At 14, he built a 14ft racing skiff of his own design. That same year, long before the era of the ubiquitous personal water craft, Scott built himself a jet ski. During those summer holidays he went to Melbourne with Col to assist in the construction of a hydroplane that would eventually take out the Australian power boat unlimited speed record. The boat, which was owned by Stan Jones, was powered by a 1600hp Rolls Royce Merlin aircraft engine.

In 1974, at the age of 16, Scott left school and moved to Melbourne to work for Col, making GRP ski boats and hydroplanes. He also put together his own motorcycle using a GZ frame and an Ossa motor. The following year, he moved back to Mona Vale (where he had lived before his parents split up) to work for Sonata Yachts as an independent contractor. In 1976, Scott again went to work with his father, who was now building Grasshopper ultralight aircraft in the Manly Vale Winton Aircraft factory, but that arrangement lasted barely a year because they couldn't agree on design techniques.

About this time also, he took up hang gliding, designing and building his own wings. These had solid leading edges and high aspect ratios, not heard of then but now the standard. Two years later, with 500 hours on hang gliders, he travelled to Tocumwal to train on conventional gliders, going solo after only two-and-a-half hours. In 1980, at the age of 22, Scott took up motor bike racing. Two years later, he was racing in open competition and came second at the state titles in the 125cc division. He was selected to ride with the Dave Burns Kawasaki Motor Cycle Trade Racing Team.

Not everything in Scott's life was fast and furious. He also had a passion for prospecting. His mentor was Sydney Hill:

> *"Scott had always shown a flair for hands-on innovative design*

"I remember so well the first time I saw Scott, when I opened the door of our farmhouse in answer to a loud knocking, to confront a rather scruffy looking young bloke who promptly piped up and said, "I'm Scott Winton. Are you Syd Hill? I wonder if you would show me how to prospect for gold?" I later learnt that this was the way with Scott. He never dilly dallied about. Always spoke straight to the point he had in mind."

Syd was also interested in ultralight aircraft, and the idea for Scott's first aircraft design was born around a campfire:

"The gold now forgotten, we talked about different designs and, by the time the fire died

>> Sapphire brochure

>> Ultrabat

down, Scott had outlined to me a rough sketch on the hard ground of what he had in mind. OK, I said, I know just the name for the machine; call it the Sapphire. It has to be a gem and I'll buy the first one for sale (which I did)."

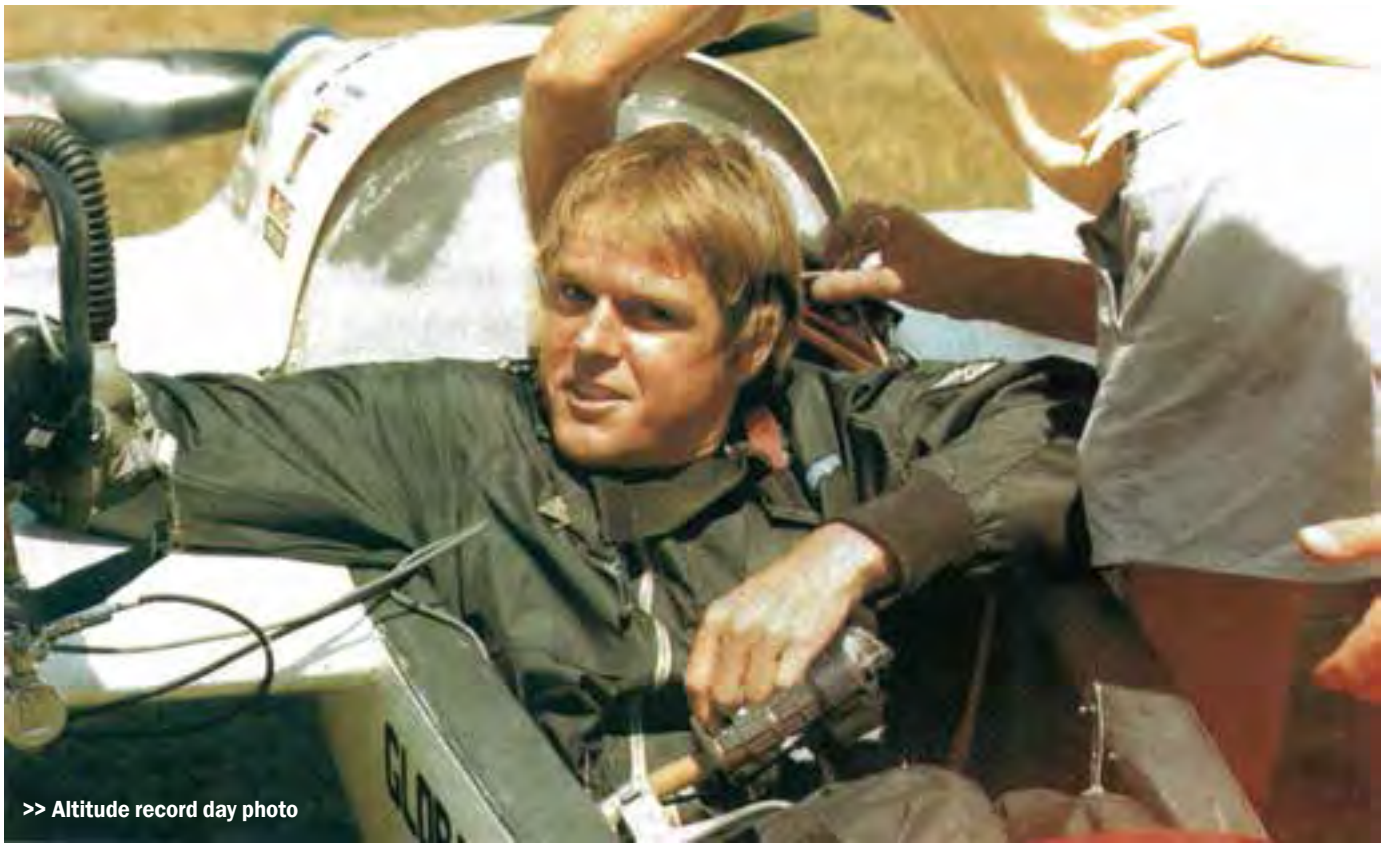
The Sapphire first flew in August 1982, quickly turning the Australian ultralight world upside down. It both performed and looked better than anything else on the market at that time. In 1983, Scott started Facet Aircraft to build and sell Sapphires. The word 'facet' refers to polished surfaces. No doubt Scott had in mind other gems (like Opals). He developed the Sapphire design as he produced them. Older brother, Dean, joined the business at Doyalson (north of Gosford). As much a GRP expert as Scott, Dean laid up eight Sapphires in his first year, while Scott finished them in Sydney. By the end of 1985, with the advent of ANO 95.25, a total of 21 Sapphires had been built. The Sapphire then became the first aircraft type on the 95.25 register.

About this time, Scott was commissioned to build a fully aerobatic variant, the Ultrabat. Engineer, Graeme Swanell, assisted with the design (under ANO 101.31). The plane sported a short but powerfully flapped wing set mid-fuselage with the horizontal stabiliser raised to meet the prop wash. It flew like a little jet and handled beautifully. In 1988, it was demonstrated at the Bicentennial Airshow. In the early 1990s, George Markey took it the US, thrilling crowds with low level aerobatic displays. Two more Ultrabats were built in the US, but the design was not successfully commercialised.

In 1987, Scott decided to move on to his next project, the Opal, so he sold the rights to the Sapphire to Victorian, Don Bowd. Don added a notable refinement, a stabilator centring system. A decade later, the business was sold to Steve Dumesny, also a Victorian. I was told a total of 55 Sapphires were built (I own number 55), but that may not include the twenty-one 95.10 aircraft.

After rolling the Opal into position, Scott set the throttle, switched on the ignition and went to the back of the aircraft. He grasped one blade of the small propeller with both hands and, with a sharp flick, the Rotax 447 two-stroke motor sprang into life. He then walked quickly around the left wing tip, adjusted his ear muffs, took hold of the detachable canopy resting on the grass beside the plane and climbed into the steeply reclined Opal cockpit. He fitted the front of the canopy under the combing and clipped it down flush at the back. After buckling up, he upped the RPM and slowly taxied the aircraft out onto the Tyagarah strip, its wings wobbling along on the narrow tricycle undercarriage. A few minutes later, the plane was quickly disappearing into the south on its way to Warnervale.

In 1982, Scott had married Jennifer Cunningham. They would eventually have two children, Jason and Jamie. Dean also married a girl called Jennifer. Scott had always had an excellent relationship with his older brother. Not long after the two had begun making Sapphires, they also became hooked on radio controlled model aircraft, thereby helping to further their understanding of aerodynamics. Dean became especially fixated with flying wings, and Scott came to realise that this style of aircraft could have great potential as an ultralight. The big advantage of a flying wing was low weight and



>> Altitude record day photo

>> Grasshopper

low drag. The key to controllable lift in Dean's design was a rectangular non-pitching wing with a precisely positioned line of thrust.

Scott asked Dean to make him a much larger model for further testing. Dean made several planes, including one with a 2.5 metre span and 320mm chord, which flew so perfectly it won a gold medal in open competition. After more experimentation, Scott began construction of the Opal, but soon moved to Ballina, where he completed it in a shed he shared with John Heard, a good mate of Howie Hughes of Australian Lightwing. The plane was high tech from the outset. Foam sandwich construction methods using vinyl ester resins meant high strength for low weight. The plane was two-and-a-half times the size of Dean's biggest model with a span of 6.6 metres. The bullet shaped pod was 3.2 metres in length. It had a narrow track tricycle undercarriage with a simple but fully faired retraction mechanism.

The laminar flow wing used an advanced symmetrical NACA sub-sonic aerofoil section making the Opal probably the lowest drag aircraft that has ever been constructed. The plane was initially fitted with a Rotax 532 60hp two-stroke motor. This was downsized to a 50hp Rotax 503 for a short while, but it was quickly realised a 40hp Rotax 447 would provide more than adequate power, while considerably extending range and endurance.

The Opal was completed and first flown in early 1988. In all, Scott would invest about $120,000 into the project; however, some of this would come from sponsors connected with the record attempts. The outstanding potential of the Opal was quickly realised; a potential that was basically a function of its high power to weight ratio and low drag aerodynamics. To enhance the commercial viability of the project, it was decided to make attempts to break some existing aviation records. It is a matter of history that in early March 1989 using RAAF airspace off Evans Head, Scott broke four of these records: Time to 3000m (5th March, Scott's 31st birthday), Time to 6000m, Highest Altitude, Class C-1 a/0 (30,150ft) and Highest Altitude, Class R-1 Microlight (30,000ft). It was only deteriorating weather which precluded further record attempts within the period specified by the FAI. Scott's team then refocussed on the World Microlight non-stop distance record. In July the preceding year, with Roger King at the controls, the Opal had made an attempt. It was unsuccessful on technical grounds but still set an unofficial record of 1400km in the process. The new goal became a trans-continental one, to fly across Australia east to west, a distance of 3200km. Unfortunately, fate would intervene.

The Opal came in low and fast over the Lake Munmorah area from the north about 4.10pm, flying through light drizzle under a 1500ft overcast. Visibility was about 10km, the winds light and variable. The plane immediately entered a wide left-hand orbit. Scott was alerting his relatives to his arrival. During this turn, the plane was seen by an untrained observer to perform an unusual dip that was quickly corrected. The aircraft then headed south west towards Doyalson, travelling at 100kts, 300ft AGL. Approaching the Pacific Highway, it commenced a level turn to the left to parallel the road and head south towards Warnervale, about 10km further on. The angle of bank was relatively shallow. Almost immediately after entering the turn, however, the aircraft suffered a catastrophic failure of the main spar. The wings were seen to 'flap' several times, then separate completely from the fuselage pod. They fell to earth on the eastern side of the highway. The aircraft's trajectory carried the pod and engine 200m further on over the highway into the forest. Shortly after, the smashed cockpit was found at the base of a tree, Scott's body still strapped in.

The accident was investigated by the Bureau of Safety Investigation (now ATSB), which concluded that an uncontrolled pitch oscillation had overloaded the wing, thereby causing the observed flapping. That conclusion was probably incorrect. Firstly, while it is true the Opal was short coupled in pitch and very touchy to fly at speeds over 100kts, it was not flying above 100kts at the time. Secondly, Dean conducted a detailed examination of the wreckage before cutting out the fractured remains of the main spar centre section and sending them to BASI. He says the fracture in the main spar web originated at the hole Scott had drilled to fix his oxygen bottle in place during his altitude record attempt. Furthermore, the fractured sections of spar showed clear evidence of being forced back together after their initial separation. This means the failure of the spar began to occur before the flapping, not as a result of it. Dean argues quite convincingly that the flapping was caused by contorted control linkages oscillating the plane's flaperons after the spar had fractured. As a consequence of the report, Dean travelled to Canberra for a face-to-face meeting with the accident investigators. They said they agreed with his conclusions, promising to amend the report. To date, this has not been done.

Like most prototype aircraft, the Opal had seen a hard life. It had endured a couple of out-landings, several undercarriage failures, engine changes and other modifications. As a purpose-built airframe built to prove a concept, it was getting a little weary. In retrospect, Scott probably made a mistake drilling into the spar web. Dean believes the initial failure actually occurred over Lake Munmorah when the Opal was observed to dip and recover.

A RARE HONOUR

At the 83rd General Conference of the Federation Aeronautique Internationale (FAI), in Budapest, Hungary in 1990, the Louis Blériot Medal for meritorious achievement in aviation was awarded posthumously to Eric Scott Winton. Scott was only the 46th person to receive this prestigious medal and the first (so far the only) Australian to have received it. The award of this medal alone distinguishes Scott Winton as a great Australian.

THE OPAL TODAY

After Scott's death, Dean tried to keep the memory of the Opal alive by marketing radio-controlled models of the plane for slope soaring. I know these model aircraft started a trend because I clearly remember in the 1990s watching many of them (not necessarily made by Dean, but definitely copied) flying at the edge of Moreton Bay in the Brisbane suburb of Sandgate. Dean moved back into boat building and laid up hundreds of yacht hulls for various companies, before eventually starting his own business manufacturing an accessory for old bowlers who could no longer bend their knees. This is what he is still doing and has only just moved from the old Sapphire factory at Doyalson to a workshop at his home. Over all these years, however, there has always been a place of honour in Dean's workshop for the remains of the Opal. He has many times returned to it, lovingly repairing it, until now the airframe is complete and awaits only painting. Dean understands more than anyone the limitations of the original design, particularly in enabling a variable geometry (airspeed dependent) pitch control input. He has strengthened the main spar and modified other parts of the airframe. He sees a definite future for the Opal, perhaps as an extremely efficient electrically powered aircraft. He is seeking sponsorship to help with completion of the project.

As I start to write this last paragraph, I am aware that in three days it will have been twenty-five years since the death of Scott Winton. Much has happened in those twenty-five years to turn the basic ultralight aircraft of Scott's day into the sophisticated recreational aircraft of today. However, every time I strap myself into my beautiful Sapphire I am also reminded of how so much of what Scott created has lived on.

DESIGN NOTES

DAVE DANIEL

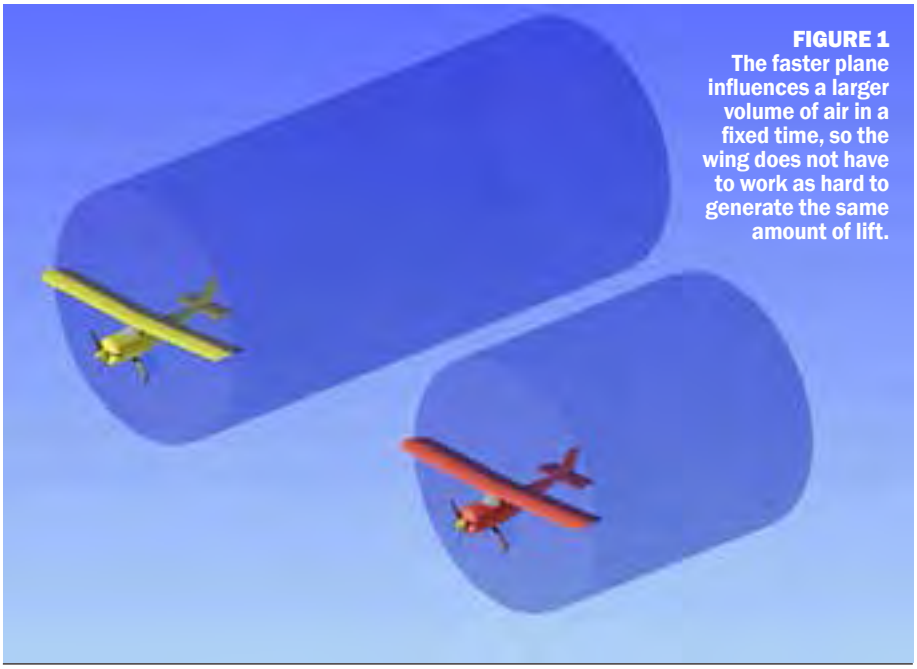


FIGURE 1
The faster plane influences a larger volume of air in a fixed time, so the wing does not have to work as hard to generate the same amount of lift.

Wing shapes

IF you take a stroll along the flight line at any airfield, one thing which should immediately strike you is the remarkable variety of wing shapes. There are long thin wings, short stubby wings, tapered wings, straight wings, swept wings, wings with twist. The list goes on. But why is there so much variation? Before I can answer that question, let's talk lift coefficient or C_L as it's usually abbreviated.

A wing's C_L is not a fixed number but varies during flight depending primarily on the angle of attack. C_L increases from zero, when no lift is being produced, to a maximum value limited by the size, shape and surface of the wing at the point of stall. Secondly, the C_L allows us to calculate how much lift force a wing will produce at any given airspeed, air density and wing area.

But as useful as this information may be, it doesn't really give us an intuitive feel for what C_L actually tells us - how 'hard' a wing is working.

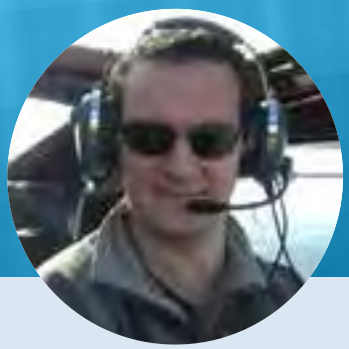
During level flight or when established in a climb/descent, lift is essentially constant and approximately equal to the weight of the aircraft - otherwise, as Isaac Newton told us, you'd be accelerating up or down. Also the air density and wing area are usually fixed, (assuming you aren't approaching Mach 1 or extending flaps), which conveniently leaves us with a direct relationship between airspeed and C_L.

At high airspeeds a lot of air passes the wing so the C_L must be low - the wing only needs to divert the passing air a small amount to produce the lift required to hold the plane up. As airspeed decreases the C_L, and therefore angle of attack, must increase to compensate (if level flight is to be maintained). Because less air passes the wing it has to work harder, diverting the air down more forcefully to maintain the same amount of lift force. Carried to the extreme, the airspeed can drop so low that the wing reaches its maximum possible C_L. It is now at its stalling angle of attack and any attempt to further divert the passing airflow will cause the flow to separate from the wing's upper surface - initiating a stall.

Now we understand C_L let's get back to wing geometry, starting with wing area. If I want a low landing speed, good STOL performance or the ability to safely potter around the sky at low speed, my aircraft needs to have a low stalling speed. To achieve that I need lots of wing area (or a wing with a high maximum C_L, but that discussion is for another article). Simply put, if you see an aircraft with large wings for its size, it's either heavy or it needs to fly slowly.

We all know that a wing produces lift by diverting the passing airflow. What you may not know, however, is that for an aircraft with infinitely long wings this production of lift will result in no drag. Sadly for us, infinitely long wings are both tricky to build and hard to hangar, leaving finite wings as our only option. Finite wings inevitably allow some of the high pressure air beneath the wings to escape around the tips to the low pressure region on top, forming wingtip vortices in the process. These vortices alter the air flow around the wing and impart a slight backward angle to the lift force vector - almost like the aircraft is flying uphill. This rearward portion of the lift is called Induced Drag or drag due to lift. To minimise the Induced Drag, longer wing spans are desirable - they have weaker

FIGURE 2
Wingtip vortices are clearly visible in the smoke behind a C17 Globemaster III (Source: U.S. Air Force - Tech. Sergeant Russell E. Cooley IV).



What wing planform is best for a typical ultralight?

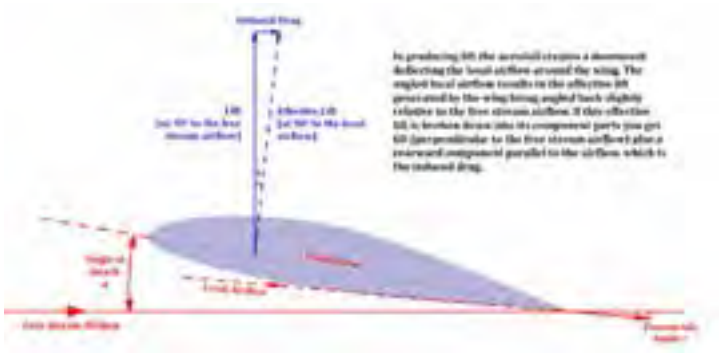


FIGURE 3 Explanation of Induced Drag.

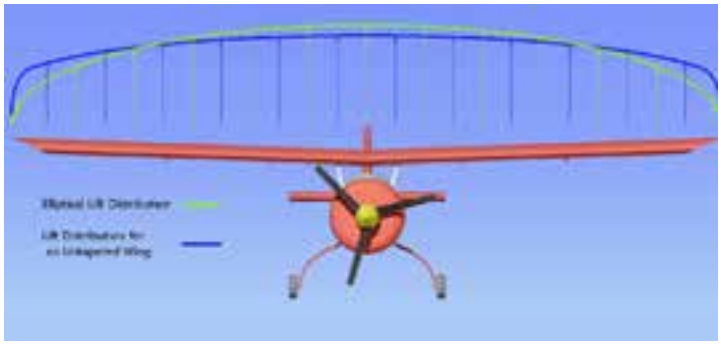


FIGURE 4
Comparison of the ideal elliptical lift distribution and the distribution over an untapered wing. The total lift is the same, but the untapered wing distributes more lift towards the wing tips.

tip vortices and thus a lower drag penalty. However because wing area is chosen based mainly on stall speed, choosing more span means reducing the wing chord, i.e. opting for a higher aspect ratio.

So it seems that long skinny wings are good - but once again there's no free lunch. Long wings limit roll rate, require a heavier structure and provide less internal space for fuel and undercarriage, so it's compromise time again.

I was surprised to discover recently that if you put some aircraft designers in a room, or in my case on an internet forum, and ask them 'What wing planform is best for a typical ultralight?' you will kick off quite a lively and passionate discussion with the burning issue being the compromise between lift distribution, ease of construction and stall behaviour.

According to the snappily titled *Lanchester-Prandtl wing theory*, Induced Drag is at a minimum when a wing has an elliptical lift distribution. To achieve this you could build an elliptical wing, but that's difficult to do and results in a wing that stalls all in one go - not a desirable characteristic; even the legendary Spitfire wing had some twist to avoid this problem. In reality, most designers don't bother with elliptical wings and make do with either a straight taper or no taper at all. The real argument is whether tapering is actually worth the effort. Even on an untapered wing, the lift approximates an elliptical distribution so the penalty isn't massive - plus there's the added benefit that untapered wings stall from the root first, a desirable trait because your ailerons will still work when the wing starts to stall. On the other hand, straight wings move the lift load out towards the tips and so require a beefier structure. Tapered wings are lighter, but a wing with an optimum taper ratio of 0.4 is well into the territory where the tips stall before the root, usually requiring an aerodynamic fix in the form of twist which is once again tricky to build and carries a drag penalty.

So is taper worthwhile? If you are chasing higher cruise speed, probably not. During cruise your wings operate at a low C_L and so minimal induced drag irrespective of planform, wing taper will have little impact, meaning an untapered wing won't cruise significantly slower than a tapered one. Induced Drag is only really important for take-off and climb performance when speeds are low and C_L is high.

Finally, no discussion of wings would be complete without mentioning sweep and there's no doubt swept wings do make a plane look fast - probably because swept wings are only useful at 400+ knots. At ultralight speeds there's not much point aerodynamically, however small amounts of sweep are used occasionally to solve problems with spar placement or weight and balance. Forward sweep is definitely asking for trouble, unless of course you happen to be structural engineer.

FLIGHT INSTRUCTOR'S FORUM

Facilitated by the aviation guru Professor Avius

The Black Swan Event

A SO called Black Swan Event is a term which originates in the time of William Dampier.

In Europe at the time, there were only white swans. On his return from Western Australia, Dampier told them that on other side of the world there existed a black swan. Many so-called experts in the old country did not, or could not, believe him.

The term is defined today as occurrence which comes as a surprise to an observer, an event which lies beyond the realm of regular expectations, an event difficult to predict.

It is also an event which has a major effect, or an extreme impact, and one in which after the first recorded instance of it, is easily rationalised by hindsight, as if it could have been expected. That is, as if the relevant datum had been available but unaccounted for.

The term was revitalised by author, Nassim Nicholas Taleb in his 2001 book *Fooled By Randomness*, Taleb was using it in reference to financial events such as the Great Depression (and I guess could be used to describe the more recent 2008 -2009 World Financial Crisis).

The three main elements of a Black Swan Event are that it is rare, has an extreme impact and that it has retrospective predictability.

Sounds like so many aviation incidents or accidents, doesn't it?

We all know the scenario.

"He was a great pilot but why was he over that tiger country when the weather forecast told of thunderstorms in that area."

"She said that the engine had been running a bit rough lately and losing some oil. She was going to have it seen to at the next 100 hourly."

> *Shame about that engine failure on take-off. But why did he try to turn back to the field?*

"Shame about that engine failure on take-off. But why did he try to turn back to the field?"

We could all add our own story.

So how can we, as instructors, reverse the trend of Black Swan Events?

That is – predict the event - minimise its impact - or ensure it never happens.

We must make sure our training instils in the minds of our students the correct procedures, highly developed skills and disciplined, responsive decision making.

Lt Col. Dave Grossman in his 2004 speech to Marines at Camp Pendleton said:

"A frightened human being will only do what he or she has been trained to do. In order to rise to the occasion, you will sink to the level of your training."

This answer seems so simple but in reality is a difficult one to effectively achieve.

If we see something that is not quite right we must learn to say something.

There should be no 'accidents waiting to happen'.

The effects of an accident or incident can irreversibly change lives and livelihoods.

And, as is so often the case, after the event we often hear it said "I saw that coming a mile away."

We must work hard to prevent a Black Swan Event from darkening our skies.

References: *Wikipedia: The Black Swan Event; FAA Circular 61-67; Spin training and awareness notes.*

LEARNING TO FLY

BY ANTHONY SIBARY

From the left seat

"YOU should buy a kite," CFI Dave told me.

I looked at Dave with a puzzled expression. "This is what he thinks of my flying skills?"

I was relieved to learn he was only referring to the weather.

And it seemed kite flying was the only activity possible on many days recently when I was scheduled to have a flying lesson.

The wind never let up and it was several weeks before conditions improved and my lessons could continue. Then we headed out to the training area and climbed to a safe altitude for a session on stalls.

Having got the theory squared away, I was keen to see how the little Jabiru behaved at the point of a stall. My instructor, John, explained that many students try and use aileron to correct a dropped wing, when the correct technique if this occurred was opposite rudder.

"No problems", I thought and then expertly tried to pick up a dropping left wing with aileron.

"Okay Anthony", I told myself. "Concentrate please and let's do that again".

Power off, then ease the stick back, slight drop of right wing and holding with left rudder. Got it.

The Jabiru stalls with minimum loss of height and I soon had the technique sorted. We practised the manoeuvre with and without flaps. Again and again, all the while John pointing out the obvious dangers of stalling without suitable height from which to recover.

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

I am learning that subtle control inputs are what's needed, both with my hands and feet. I remembered something from my very first lesson in the LSA 55. Making sure when easing back on the centre stick in the Jabiru I had it coming straight back and not at an angle. As I discovered when I only wanted elevator, I got a little aileron as well.

Taking advantage of the decent weather, I returned to the airfield the very next day and got up in the circuit for some simulated engine failures and glide approaches. As much as I love having an engine singing sweetly up front, I understand that on occasions it may lose its voice. Throughout my training, my instructors Dave and John have stressed the importance of correctly dealing with engine failure if it occurs.

With this in mind, John demonstrated what to do if I had engine failures at various places in the circuit. If, for example, the engine gave out early in the climb under NO circumstances was I to turn back toward the runway. Instead I practiced getting the nose down to maintain my airspeed and looking for a suitable landing site on, or very near, to my current heading.

He then demonstrated to me what was a sufficient height for us to glide back to the airstrip. We also focussed on airspeed, flap settings, the radio call and how things were different if the failure happened on crosswind, early downwind and so on.

I really enjoyed this lesson. It reinforced the words I had been studying...Aviate, Navigate, Communicate. It is reassuring I now have the skills to deal with an engine failure in the circuit. After some more touch and go landings, it was time to head back to the classroom for my pre-solo exam.

I am very pleased to report I scored 100% and now it is up to me to demonstrate to both John and Dave I am ready for my first solo. Just between you and me, if I am completely honest - I cannot wait. See you in the pilot's lounge for cocktails and debriefing.

HOMEBUILDER

DAVE EDMUNDS

DAVE TALKS ABOUT EVERYTHING YOU NEED TO KNOW TO BUILD YOUR OWN AIRCRAFT

TAKE ONE TABLET

THE use of tablet computers in the cockpit for en-route navigation is already a contentious issue and is bound to become more so. I am overwhelmingly in favour of their use.

I will restrict this discussion to Apple devices, for which good GPS aviation software is available, but is only just becoming available for Android tablets. Google's Android operating system is open, which means there are a large number of devices of differing specifications and it is difficult to generalise. However, selecting the right device will produce similar functionality to the Apple iPad, probably at a lower price.

When buying Android devices, be aware updating the operating system and user software is a bit hit-and-miss, whereas the tightly controlled Apple ecosystem will alert users of upgrades.

There seems to be a misunderstanding about the underlying technology used by Apple.

The iPad version with no 4G or GPS is still able to locate your approximate position by triangulating phone towers, but it's not appropriate for aviation without an external GPS unit. Enroute and terminal weather will also not be available.

The other version of the iPad, the one with a full GPS chip and 4GS connectivity can receive and send data through the mobile network. This version uses phone tower triangulation to speed up the GPS fix from a cold start. Apple calls this Assisted GPS, (AGPS), and then provides navigational fixes through its GPS system. This is the version you want.

Apple uses GPS chips made by major specialist companies such as Broadcom and Qualcomm. Apple and Garmin don't provide much information about their devices, but it is a fair bet Garmin sources its own GPS chips from these or similar companies. Therefore, the accuracy of GPS fixes obtained by an iPad is unlikely to differ from those obtained by a dedicated device.

Apple provides no information about the algorithms it uses to provide any GPS information or the accuracy provided by the operating system to GPS software running on the iPad.

It is possible the design of the aerial may reduce drop outs and positional errors. For example, if you are operating a GPS device in a metal aircraft the signal may become shrouded unless you have an exposed aerial. Usually this is done by mounting an external GPS receiver and connecting via Bluetooth or USB, as tablet devices do not have provision for a remote aerial.

OzRunways, one of the two premier Australian suppliers of aviation navigation software for iPads, discards GPS fixes not accurate to 50m. I have never experienced this in the 50 hours flying with one, but I am aware other users have reported problems.

Any properly written iPad application obtains its GPS information from the operating system (IOS). The operating system provides latitude and longitude determined, as Apple sees fit, from some combination of GPS, GLONASS and mobile towers, and an estimate of accuracy. It does not provide additional information such as the number and strength of satellite connections, such as you might find in a dedicated device.

If you choose an external GPS unit such as a BadElf, you still have the same issue. BadElf uses an MTK chipset, which provides information to the iPad operating system, which in turn passes the information to the navigation program. The BadElf documentation provides no information on the algorithm it uses to massage the raw information provided by the GPS chip.

OzRunways states the accuracy reported by its own software is also obtained by interrogating the operating system.

A recent letter in *Sport Pilot* indicates the median error of the sort to be expected in an Apple GPS is 8m, or around the length of my aircraft. In a test flight for this article around the Goulburn area, the reported accuracy never varied from 5m.

But the meaning of the reported positional error is not defined. It probably means you have a high probability of being within the reported error distance of the GPS fix - but what if you are not? There is no substitute for looking at your map and out the window.

Altitude is reported accurately, if the cross check against my altimeter is any guide. It is rare the two GPS devices I carry in my cockpit vary by more than a metre, but you need to know any altitude error is approximately twice as large as the positional error, a factor to bear in mind when flying under control area steps. A reasonable procedure is to ensure you use the QNH reported by the navigation software and then fly according to the rules.

Notwithstanding the above, the navigation is normally so precise I am not able to fault it. I have flown extensively in remote areas and have always had pinpoint accuracy in my navigation, which means in practice I can clearly identify features on the ground when and where the GPS software predicts.

When I first started using the device, I continued using my Garmin 96C aviation GPS and the Garmin is certainly no faster or more accurate. It is rare the two devices differ by more than 0.1nm.

In fact, the accuracy is more related to the resolution of the moving map and screen size than any limitation on the GPS unit in the iPad.

Some users have reported overheating issues with their iPads and a broken screen is only a hand slip away, so a paper chart or second tablet is essential as backup.

One limitation you need to know about is the fact that these devices are not TSO'd. A TSO unit can recognise when there's a positional error or when it cannot trust its own signal and let you know. An ipad cannot.

Using a tablet for en-route navigation is transformative. I have found my map reading is improved because I can confirm my position as determined on the map and my navigation is vastly improved over the old days.

In one device I have all the maps and relevant documents including ERSA. While I have a relevant subset of these documents in my flight bag, cockpit organisation is considerably enhanced by not having them flapping around.

There are two superb Australian products, OzRunways and AVPlan, both of which are rapidly evolving. At least one of these companies is looking to release an Android version. You pay a subscription fee of less than $100 per year which includes all Australian maps, updates and all other documentation.

These programs also allow you to upload your flight plan via NAIPS, overlay weather radar, provide current QNH and FIA frequencies, overlay active restricted areas (AVPlan) and a host of other features that will enhance your flying experience and safety.

The smaller iPad Mini seems to be the favoured device and is the one I use. CASA stated at a recent safety seminar that the Mini complies with Australian requirements for Electronic Flight Bags, even though the screen is a millimeter or so smaller than stated in the regs.

While many pilots pride themselves on their navigation skills using a watch, compass and map, most of us cannot come within a bull's roar of the accuracy provided by a GPS, even on a bad day.

The GPS and its enhanced use in tablet applications enables some trips that only a very few of us would be confident undertaking using traditional navigation methods.

As a postscript, a friend phoned me on approach to Docker River. His iPad had not updated for 30nm, and then corrected. His other GPS was accurate, and he had his maps. There is no substitute in aviation for redundancy.

>> Photo: Bryan Gabriel

Free Flight Hornet

THE Australian Ultralight Aircraft Museum collection has what is to be believed all three examples of the Free Flight Hornet, the prototype and two production models, albeit without the original engines. This aircraft was designed by David Betteridge, who came up with the concept in 1977. It is probably one of the more innovative designs conceived in Australia.

The aircraft is described as a fully enclosed, single seat monoplane with three axis controls and no tail, yaw control being through pedals to wing tip rudders. Pitch and roll are controlled through the stick. The undercarriage could be described as a reverse tricycle rather than a taildragger. Both the leading and trailing edges were swept back 18 degrees.

It was powered by a Konig SC 430 engine developing 30hp at 4500rpm which drove a three bladed propeller inside a shroud. It was reputed to have a cruising speed of 85kts, with a stalling speed of 30kts and a rate of climb of 790ft/min.

One of the features of the Hornet was that the wings folded upwards and backwards for transportation giving an overall package 4.6 X 2.3m (15.1 X 7.5ft). It had a wingspan of 7.9m (25.9ft), a length of 3m (9.8ft) and a height of 1.7metres (5.6ft).

This aircraft would still, no doubt, appeal to a number of pilots today.

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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

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

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 factory built in very good condition, always hangared at Bathurst. TT448 hours $52,000 negotaible 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

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. $90,000 incl 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).

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

3575 DRIFTER 582

Drifter, wire braced, Royal blue with matching wings, upright engine mount, Rotax 582, electric start, Brolga propeller, "big boy" cockpit, electric prime, inflight trim, wheel fairings, landing light, long range tank, repainted & new wing fabric some years earlier looks good. Price down only $11,000. 03 97441305 www.airsports.net, drifter@goflying.com.au

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.

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

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

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. $50,000 + 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 - TEMORA 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

Members' Market ads can now also be placed online. Visit www.raa.asn.au/market

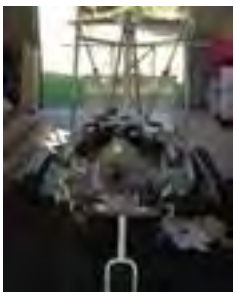
3735 NORTHERN RIVERS NSW.

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.

3785 ZODIAC 601 HDS

$35,000 Economical 16 L/hr at 95 kts. High manoeuvrability +/- 6 G. Easy to fly and land. Loads of space with 2x25 L wing lockers and room behind the cockpit. 66 L fuel capacity, Rotax 912 UL, 400 hrs TT. Good visibility. Always hangered, Echuca Vic. Ph 0412151225

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. $40,000 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.

3807 SPIRIT KIT

WAC Spirit E-LSA Quick Build Kit. All metal work completed by factory. Requires engine/prop, wiring, upholstery and instruments. Has engine mount for Rotax 912/914. Adjustable seats, Twin stick, Electric Flaps. Stall 31Kts Cruise 100Kts. Design weight 750Kg. 135L fuel. Get flying soon. $42,000. Ph. 0418157044 More pictures online.

3811 SONERAI 2L

Sonerai 2L 28-3043. 128.1 hours on air frame, 74.1 hours on engine and prop, neat and tidy plane, always hangered, Rotec carby, 4 into 1 exhaust , rv7 tail wheel 80hp Great Plains engine, eye catching paint work. 130kt cruise @ 15Lph $35,000 John 0422285404 I

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. Tom Grierson lern2fly@hotmail.com 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.

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.

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.

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

3835 THRUSTER T300

T300 Rotax 582 very good condition low hours never used for training easy to fly. Two Headsets 70L Tank . Bushby Mustang 2 kit approx 40% complete $15k kit cost $25k. Looking to buy Murphy Renegade. Narromine NSW Contact: Dave Donnelly dono.tano@yahoo.com.au 0419858394

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

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

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 Roy Counsell roy.counsell@det.nsw.edu.au 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. Total 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

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

PRICE REDUCED Offers now over $880,000 will be considered , if this property could be replaced the estimate in doing so would be over $1,300.000.00 !! If you are looking for a lifestyle change then this property wont disappoint , situations change ours have. Contact mark.baker030@gmail.com

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

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

hangared all its life, beautiful plane to fly comes with 2 head sets, garmin GPS, 80 hp Rotax, tail dragger phone Ken 0418700360

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

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.

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

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 64959251 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 Xl, L & S Lynx Intercom & Headsets Custom covers Licensed Trailer Full service history Located in Perth. Stephen McLernon 041 991 6032

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

007 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.

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

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. Sebastian Pollock pollock-seb8@bigpond.com 0427703702

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.

Members' Market ads can now also be placed online. Visit www.raa.asn.au/market

3933 TYPHOON TOURER


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

3934 KESTREL AND TRAILER


Lee Kestrel registration 10-1364 with new skins, Sweetapple prop, wheels, U/C springs, instrument panel and wiring. Electric start Rotax 503 with 549 hours plus VHF radio and headset. Enclosed trailer with current registration includes a winch. Asking $11,000 or reasonable offer. Location Sydney. Phone or SMS Tony 0412285828, email zodiacsolar@gmail.com.

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

3937 JABIRU TAILDRAGGER


Six cylinder solid lifter engine with fine finned heads. Fitted with basic instruments, Garmin 196, Card Compass, Microair M720 radio, TruTrak auto pilot, Garmin GTX327 Transponder. 85Litre tank and three bladed ground adjustable propeller. Inspect at West Sale Aerodrome (YWSL) $45K, offers considered. Contact Daryl on 0466925474 or dghooke@gmail.com

3940 NIEUPORT 11


Nieuport 11, Good order, VW1900cc motor complete with smoke generator. Mock machine gun cowling mounted. Popular air show participant in SE Queensland. $12,000. Phone 0428 662 528 for further details.

3941 HANGAR FOR SALE
Gawler/SA Lockable, easy access to runways and facilities. Insulated 12m X 12m Row C.11 $35,000. Robert Rose 0408 831 888 rebecca@rosechiro.com.au

3942 VP1A VOLKSPLANE


VP1A Volksplane. Total hours only 1143, 21 hours since engine rebuild. Registration number 19-0484, Full flying tail, enclosed cockpit. Only using around10 litres per hour, ICOM radio and GPS fitted in cockpit. Thompson Propeller. Well maintained overall and ready to fly. Only $8500 o.n.o. Call Harry 0412 426581 for details

3944 ROTOWAY HELICOPTER KIT
Rotorway F162 Helicopter Kit Complete. 2 Seat Ultralight Rota-blade Aircraft Selling due to other commitments. Cost New $113,000.00 Sell $45000.00 will consider swap for fixed wind aircraft. Minor works started. This kit is a 51 percent kit very complete with step by step manuals plus videos. Phone

0407851963 Email kymnicholson@westnet.com.au

3945 AIRBORNE EDGEX 582 BLEU HEAD STREAK WING

Bleuhead 582, full Bert Flood rebuild 125 hrs ago, Brolga prop, Streak Wing, logbooks, manuals, radio and helmets. Everything ready, just travelled Perth to Brisbane, luggage bag, jerry-can harness, full travel covers. Registered trailer with jerry-can holders, toolbox, oils, spares, winch, ramps $14,500 ono Wim 0417 066 123 voortman.seasia@bigpond.com

3946 SAVANNAH

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

3947 HKS POWERED BOORABEE

Reliable and easy to fly, 70 knts cruise using 11 ltrs/hr. 90 ltrs fuel in wings. Is 2 seater but rear seat only for small person. Very reliable and economical HKS 700E 4 stroke. Registered till Dec.2014. Asking $20000 ONO Ph. 0407502782

3948 WANTED DEAD OR ALIVE

Wanted sadler vampire in any condition with or without trailer willing to neg on price. max steel msteel1939@gmail.com 0421376512

3949 FOR SALE 2007 SUMMIT

32 registered with 500 sq.ft. wing ROTAX 582 with E-box, electric & manual start, (28 hours use), digital instruments, VHF & UHF radios, HEMA gps, plus helmets & headsets.Trailer with ramps, windsock & pole. All manuals & logbooks. Very good value $20,500.00 Enquires E-mail vayorke@bigpond.com or phone 0429 942 703

3950 GAZELLE CA25N

Bought new 1997, always hangared, brand new Rotax 912-A2, gearbox, prop and workshop manual. Bright yellow condition, maintained by LAME/L2. Pleasure to fly, affordable fun flying. Good for 20 knot Xwind. Can be flown into CTA with appropriate pilot qualifications. View 24-3505 at YBTH $45,750.00. Call/sms Mike Faine 0427406521

3952 RANS S-7S COURIER

Twice Natfly Concours & Best Fabric; Rotax 912ULS,

Airmaster C/S 3 blade prop; LAME built; corrosion inhibited frame; acrylic windscreen; "Aerothane" finish; wingtip strobe nav lights; dual controls (removable); ferry fuel system; Garmin SL40 VHF (ICS); Garmin GTX 327 transponder; Garmin 296 colour GPS; electric trim; builders log (www.mykitlog.com). $85,000 Contact Ken Edwards kenedwardsqld@gmail.com 0438178869

3953 SONEX 3300

Sonex taildragger, Jabiru 3300. For sale by builder 145hrs TT airframe and engine, First flight 2010. Performance with economy, Cruises 130kts @ 2700rpm 19lph. Easily removable 32 litre aux fuel tank which increases range to 550nm with reserve. Microair radio. Excellent condition and build quality. Always hangered. Located NSW. Steve srwoodham@gmail.com 0434727152

3955 AIRBORNE EDGE EXECUTIVE MICROLIGHT ROTAX

Airborne Edge Executive Microlight Rotax 582 Registered HGFA # T2-2792, Total Time (TT) 370 hr. There have been no incidents or accidents and the microlight was not used for training. Lots of extras. Can take over hangerspace at Tyabb Airport. $13,500 ono. Contact Anton 0439915001

3956 RANS COYOTE II S6ES

246 airframe and 86 engine (Rotax 582) hours. L2 maintained with all recent history. Annual airworthy in March 2014. Registered to March 2015. ICA 210 radio and King transponder fitted. ZEON MRX PCAS. Portable Garmin GPS loaded with Worldmap. Original construction manual. Registered trailer, extras. Ph Jeff 0405569205. email govo49@hotmail.com.

3957 JABIRU LSA

Solid Lifter 2200 engine. IC-A200 radio and Aerocom III Intercom. J120 brakes, New prop, Avcomm headsets, Big foot main wheels new tyres. MGL Infinity TC-1 gauge 4 x CHT thermocouples. Vertical card compass, standard instruments. Strobe and Landing lights. Wheel spats available. Currently hangared YWBN. Jason 0404032027 or flyjason78@gmail.com $29000

3958 A GREAT PLAINS 1835 VW

Have for sale:A Great plains 1835 VW conversion with reduction,and a ground adjust propeller T.T 70 hours Asking $3000.the lot Also a Rotax 582 no gearbox.Grey head model,electric start.dual cabs dual ignition.T.T 250 hrs.good engine but no further use. Asking $2500.evenings only Andre 07 5482 6805 after 19.30 hrs.

3959 SKYFOX TAIL DRAGGER

Skyfox ca 21 tail dragger , totally rebuilt aeropower less than 75 hrs ago, duel ig, sweetApple prop, 635 hrs total, stitts fabric, good paint, registered , all ads current, $22000, $ 24500 with 3 yr old multy purpose tandem trailer for plane, 0455596199 christamarmc@gmail.com

3962 CESSNA 150L

Cessna 150L 1973, TT 6899, ETR 970, PTR 1370, Excellent paint, interior, radios and glass. Economical GA aircraft hangared in SE Qld $29,500 Tony (07) 5476 0720.

3967 AIRFRAME 495HRS, JABIRU 2.2

184hrs. Aircraft totally rebuilt 18hrs since. New roomier fuselage. All fabric paint wheel's tyres disc brakes, starlet canopy nose bowl, delcom icom radios garmin gps III long range tank, lively performer. Top value owned 17yrs $15000 keith 073294 7259

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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

Exactly one quarter of a century before CASA directed our Association to introduce mandatory maintenance training and assessment (the latter to commence June 1, 2014), Allan Essery wrote in his Editorial that "The AUF should set up maintenance training courses for ultralight owners and operators.....whilst we should support the concept of owner maintenance to the hilt, I believe that owners and operators should be schooled in proper maintenance method and practices", lauding that there are [presently] "as many different views on this subject as there are hairs on a dog....I, for one, would like to see airframe and engine maintenance courses set up within the AUF. It is no longer acceptable, if ever it has been, for ultralight owners to be self-taught maintenance men, just as it is not very clever to try and teach yourself to fly".

Letters to the Editor were unusually wide ranging, beginning with this gem from Gritty -"Just what at this time is available, legally, to the 95.10 flyer, other than an endless system of paperwork, a lot of which we must obtain from the Mint in the form of dollars?"

A J Witlox, commenting on the lack of involvement by members, remarked "Many hands make flight work". A Lewid from Paddington, NSW felt that Pippet fuel filters "had no place on an aircraft", while Rusty Jenkins added this little pearl... "how many times have you heard the response "you'd never get me up in one of those things, too dangerous" (future bowls players).

The June 1989 issue also included AUF Technical Bulletin Number One, requiring every 95.10 aircraft to be fitted with a new restraint harness. Members were also informed that ARP88/5 (which is the draft proposal for CAO 95.55) had been released by the CAA – together with ARP (Aviation Regulatory Proposal) 89/5.

With the 3rd World Ultralight Competition scheduled to be held in North Africa (Tunisia) in October that year, the AUF Executive hinted it was considering a bid to host the 1993 competition in Australia. With this in mind it called for each club to nominate registered observers, this being a pre-condition for the judging of the prestigious FAI Colibri awards.

Richard Sweetapple (better known for his handcrafted propellers), recounted in great detail – four pages, in fact - the design and construction of his first aircraft. Curiously though, only one paragraph was given over to describing its handling characteristics.

The June issue closed with brief obituary recording the death of AUF member # 000003 and world [ultralight] record holder, Scott Winton, on 12th May 1989.

CALL FOR NOMINATIONS

Dear Member,

This letter/email is a correction of previous correspondence advising Members of nominations for Group A Board positions, which was sent on the 6th May.

Group A financial members are invited to nominate (vide Constitution Item 13) for the following Board vacancies:
Northern Queensland
South Queensland (No.2)
Victoria (No.2)
New South Wales (No.1)
New South Wales (No.3)
Tasmania
Northern Territory

Members may obtain a corrected nomination form from the RA-Aus website http://www.raa.asn.au/2014/05/call-for-nominations-group-a/
Please note the South Australian position is not part of this Group A election (as indicated – incorrectly – in the May 2014 Sport Pilot insert). Completed Nomination Forms (included with pre-paid envelopes in this issue) and Election Statements must be received at the Association's Head Office before c.o.b. on Friday, 13th June 2014

Candidates for positions as Board Members of the Association shall be entitled to submit an election statement for publication both on the Association's website, and in Sport Pilot magazine at no cost to the candidate. Statement requirements are set out in By-Law 4. Typewritten Statements can either be posted to our Head Office, or forwarded by email (together with the candidate's Nomination Form) to office2@raa.asn.au, prior to the nomination close at c.o.b. EST on Friday, 13th June 2014.

The statement must include a declaration of all income, remuneration or honoraria deriving from aviation related interests. Such organisations shall include those of sole trader, partnership, unincorporated association, incorporated association or limited liability company. In keeping with the Board's governance role, Statements should primarily and specifically address the nominee's expertise and experience of policy and strategy development, implementation and review. Nominees are also asked to provide a recent digital portrait image suitable for online publication.

After close of nominations, all statements received shall be printed in Sport Pilot magazine and on the Association's website, in alphabetical order (by surname).

Mark Clayton
Public Officer

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

3 litres
How much jet fuel the Airbus A380 aircraft uses per 100 passenger kilometres

Source: www.atag.org/facts-and-figures.html

26,615,486 KMS
Distance flown by the Royal Flying Doctor Service in 2013

www.flyingdoctor.org.au

Breitling Chronomat Airborne

Breitling celebrates the 50th anniversary of the Patrouille Suisse Air Display team with this exclusive version of the Chronomat, complete with personalised dial and engraved caseback. Issued in a 1,000-piece limited edition, this mechanical chronograph features a sturdy satin-brushed steel case with a black dial bearing the flight team logo at 9 o'clock, framed by a rotating bezel with inlaid rubber numerals. The second hour hand, tipped by the outline of a red F-5E Tiger II, serves to display a second time zone in 24-hour mode.

Price If you need to ask you probably can't afford it
Web www.breitling.com

Aviation English

Having trouble making yourself understood over the radio? Looking for a career in aviation but not sure your language skills are up to it? Global Aviation English is a Brazilian based company which specialises in English training for pilots.

They test and evaluate your skills and can prepare you for interviews.

Pilots can also practice for the ICAO English Proficiency test. The app contains questions and answers you can both read and listen to. There is also a function where you can record your voice, and play it back.

Price Free
Web Global Aviation English at the App store

OFF THE SHELF

GARMIN G3X Touch

With the G3X flight display, pilots of experimental/kitbuilt and light sport aircraft can now comfortably afford to fly with the latest in glass cockpit capabilities. Adapting proven technology from Garmin's top-of-the-line integrated flight deck systems, the G3X offers a full range of upgrade solutions to fit your panel, priorities and budget. Choose the number of displays you desire,then add a robust autopilot, datalink weather, traffic options, and other integrated sensors and avionics to complete your installation.

This easy-to-install suite can contain up to 3 redundant PFD/MFD configurable displays, all of which contain a built-in GPS and big, bright sunlight readable 7" high-resolution WVGA screen. The G3X provides full primary flight display (PFD) attitude/directional guidance along with electronic engine gauges, along with optional terrain/obstacles alerting and angle of attack sensor. An affordable Garmin autopilot system is also available with advanced features like coupled approaches and auto-trim, as well as flight director, indicated air speed hold and straight and level button when installed with an optional control panel.

Price $4,895 base model
Web www.ozpilot.com.au

UNDO Australian price for a Traser P6600 Military Type 6 Mil-G watch (Off the Shelf *Sport Pilot* April 2014) is $320.

Child's bomber jacket

The perfect jacket for your little co-pilot. The jacket is covered with patches and includes an aeroplane zipper. A reproduction of a classic brown leather bomber, complete with simulated fleece collar. Perfect for keeping them warm as they stroll the flight line with you in style.

Price $59.50
Web www.skyshop.com.au

HAPPY LANDINGS

Charlie goes solo

by Paul Hewitt

MY 70 year old student, Charles Bassett, has just passed his first solo.

Charles, from Innisfail, has been training with Sport Pilot Flying School (Great name for a flying school by the way – Ed).

He is now well on his way to obtaining his RA-Aus Pilot Certificate and is enjoying every moment of it. Charles says flying was one of those things he always wanted to do but just didn't have the time or money to do until now.

He admits he struggled at first, but he persevered and is very happy he did so. He still can't believe he can actually fly an aircraft by himself. He loves the Jabiru 230D, in which he has done all his training, and says he would like to buy one himself.

Good on you Charles.

For more information on Sport Pilot Flying School - 0408 924 089

>> Charles Bassett joins the pilot fraternity

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

Advertisers index

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GARMIN

The new **G3X Touch** is a large touchscreen, glass flight display system designed for experimental amateur-built and light sport aircraft (LSA). The non-certified G3X Touch system offers pilots easy-to-read, easy-to-use, high-resolution 10.6-inch flight displays with split-screen functionality and a host of advanced interface options – all at a great price.

PLEASE CALL OR SEE OUR WEB SITE FOR DETAILS

GTR 200 Com 10w 25khz .. **$1650**
GTR 225 Com 10w 25khz .. **$2295**
GTR 225A Com 10w 8.33khz **$3425**
GTR 225B Com 16w 8.33khz **$4550**
GNC 255A Nav/Com 10w **$5325**
GNC 255B Nav/Com 16w **$6500**
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GNS 430 recertified from **$8695**
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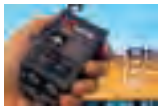
GTN 750 GPS/Com/Nav **$19795**
GTX 327 transponder **$2350**
GTX 328 Mode S transponder **$3400**
GMA 240 Audio panel **$1095**
GMA 340 Audio panel **$1795**
For all other GARMIN AVIONICS not listed ..... please call

iPad ACCESSORIES



Bad Elf Pro GPS **$220**
Bad Elf 1000 GPS ... **$160**
NEW Bad Elf 1008 GPS **$180**
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Garmin GLO GPS ... **$150**
GNS 2000 GPS **$139**
DUAL XGPS150A GPS **$140**
DUAL XGPS160 GPS **$199**
Kneeboards
i-Pilot for iphone **$60**
i-Pilot for mini ipad .. **$70**
i-Pilot for ipad **$80**

LEVIL AHRS-G mini SW **$950**
LEVIL AHRS-G mini AW **$1185**

GARMIN WATCH

- WAAS GPS
- Altimeter
- Go To function
- Ground speed
- Track
- Distance

GARMIN D2 Pilot watch **$565**

HANDHELD GPS

Australia's first airspace warning GPS with digital charts from Airservices Australia (*NZ ver. also available)

GARMIN ÆRA 500 ... **$ 795**
GARMIN ÆRA 550 ... **$1350**
GARMIN ÆRA 795 ... **$2150**
GARMIN GPSMAP 695 **$1950**
GARMIN GPSMAP 196 .. **$ 725**

AIRBOX AWARE **$279**
AIRBOX AWARE+ **$399**
AIRBOX AWARE 5 ..... **$399**
AIRBOX AWARE 5+ **$549**
AIRBOX CLARITY 3.0 ..... **$899**
AIRBOX FORESIGHT 3.0 **$1495**

HEADSETS

- Improved comfort
- better noise attenuation
- bluetooth connectivity
- auxiliary music input

Zulu.2 ANR GA version **$1045**
Zulu.2 ANR Helicopter ver. **$1045**
Zulu.2 ANR Lemo panel ver. **$1045**

Sierra ANR GA version ... **$825** with blue tooth and music input

HM40 GA H/set **$175**
HM40 ANR H/set ... **$495**
HM51 child headset **$199**
Peltor 8006 GA H/set **$350**
Sennheiser HME 110 **$329**
Sennheiser S1 Passive **$499**
Sennheiser S1 Digital **$1095**
Sennheiser HMEC250 **$599**
David Clark H10-13.4 **$459**
David Clark H10-60 **$499**
David Clark H10-13H **$489**
David Clark ProX ENC **$895**

Bose A20 Headset
A20 GA twin plug w/bluetooth **$1350**
A20 GA twin no bluetooth **$1250**
A20 Helicopter w/bluetooth **$1350**
A20 Lemo w/bluetooth **$1350**
Installed wiring harness **$75**

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AFFORDABLE GLASS COCKPIT AVIONICS

* Not TSO'd. For experimental aircraft or for certified aircraft with a CAR35 approval

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Portable true attitude indicator now with G meter and wifi connectivity
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EFIS-D6 ..... **$2100**
EFIS-D100 ... **$3400**
EFIS-D10A .. **$2895**
EMS-D120 ... **$2895**
FlightDEK-D180 **$4450**

Auto Pilot Systems
SV32 servo (36in/lb) **$995**
SV42 servo (55in/lb) **$995**
AP74 Interface module **$585**
NEW VHF COM-C25 **$1695**
SV-INTERCOM-2S ... **$395**

NEW SkyView Touch
SV-D1000T/B **$4995**
SV-D700 7" display **$3500**
SV-D1000 10" display **$4700**
SV-ADAHRS-200 ... **$1560**
SV-EMS-220/A **$780**
SV-XNPDR-262 Mode S transponder Module **$2340**

MICRO AVIONICS

MM001B Integral helmet **$795**
MM001C Integral helmet with VOX electronics **$995**
MM020A Helmet only **$349**
MM001 UL100 headset **$440**
MM001A UL200 ANR headset **$575**
MM005 Powered Radio Interface **$440**
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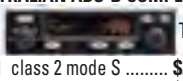

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