SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / APRIL 2016 VOL 56 [4]

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Super Petrels can land just about anywhere. This one landed at Clifton for the fly-in. Photo: Alan Betteridge

ON THE COVER

"There is something for everybody, whether you are just getting into aviation, an active pilot or someone who just loves to reminisce"

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NEWS

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EXTRAS

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TERMS AND CONDITIONS

The finer points

BY MICHAEL MONCK

IN the previous two editions I wrote about the new constitution and the headline changes contained within it. With the time to vote on the proposed changes fast approaching, it's probably worth a quick recap and discussion on a couple of the finer points.

The first point to review is the legal structure. At the moment we have a structure which requires reporting at the state level as well as federal. We have a convoluted structure which sees us incorporated in the ACT but operating across all states and territories, requiring recognition at a higher level. We achieve this by being a registrable Australian body, but this classification brings with it additional administrative burdens.

From the routine to the not-so-routine, there are matters where this structure forces us to duplicate work. Matters ranging from financial reports to changes in key personnel have to be reported to two separate bodies, which obviously increases our administrative workload. Worse still, as I reported before, we can't simply submit the same piece of paper to both bodies. They want us to give them the same information carved up in slightly different ways.

If we alter our structure to a company limited by guarantee, we halve this workload and no longer have to submit paperwork to the ACT government body responsible for incorporated associations. Instead, we just report to ASIC. Once. This will make life a lot simpler.

More importantly, we are a much larger organisation today than we were when we first incorporated and so we owe a higher degree of due diligence to our members and other stakeholders. Moving to the federal system will place more rigorous requirements on directors and management to govern the organisation. But it means members would have a higher degree of assurance things are being run appropriately. ASIC applies a higher degree of scrutiny when they are the sole regulator.

Following on from this I raised the issue of a reduction in the size of the board. Under the current structure of 13 board members, it often costs us in the order of $1,000 per board member to hold a meeting and we do this twice a year. That's $26,000 every year to discuss matters related to the organisation. While the current constitution states that the Executive shall manage the affairs of the organisation in between meetings, the reality is that this sub group of the board has full time commitments outside of RAAus and as such, delegates most of its responsibilities to the CEO and the management team.

This model, where the Executive is responsible for the affairs of RAAus, was borne out of the roots of the ultralight movement where the small size allowed such a system to work effectively. Nowadays this is not the case. Formal recognition of a more appropriate way to run RAAus needs to be embodied in the constitution to protect the interests of all members.

For these reasons we have proposed a new board structure which consists of people with the skills, knowledge and experience required to run an organisation of our size and breadth. No longer do we need to appoint people based on their postcode and popularity. We need a structure, where the people who are qualified and equipped to represent the interests of members, are appointed to do just that.

Using a model based on people with the ability to properly govern RAAus regardless of where they live, and who are appointed by the whole membership rather than just those who live nearby, will provide a layer of protection to members not previously afforded. Moreover, it ensures every single member can exercise their right to express a view on board composition regardless of whether or not there is someone in their own region who has nominated. This contrasts with the current system where some members are effectively gagged when no one in their region contests the seat.

Having said this, though, we need to reinforce the principles upon which we were founded and ensure all members have clear communication channels and a voice. While many issues about airspace, access to airports and so forth, affect us all, it is always important to canvas the views of all members and gain as much insight as possible into the challenges they face.

To address this we have listened, first hand, to the opinions of members from around the country for the past 12 months. The general consensus seems to be that most would be comfortable with a local person from their own ranks who they would trust to ensure the board heard their message.

> "Take the time to express an interest"

I have recommended two volunteers per state take on the role. These people would not be formally elected, but instead would be entrusted by their communities to act on their behalf. This would avoid the current problem of calling for nominations, holding expensive elections, and then repeating the process in the event a board member had to step down.

Members in any area would simply select people of their own choosing to act in the role and then inform who they are. If that person steps down for any reason or isn't performing. the local community would be free to choose someone else more appropriate.

And in the instance that a new critical mass of members formed in a new location (say a new airfield, school or club) this process would allow us the freedom to have a person represent that location without the long winded constitutional change which takes months, if not years, to implement.

RAAus would then consult with these representatives for opinions on operational matters, technical matters, safety issues and so forth and ensure the diverse views of the membership were catered for as best we can.

We're now entering the time where members will be called on to vote on the changes. It is critical you take the time to vote on the resolutions, whether by proxy or in person, at the AGM.

Most of us simply want to go flying, but we must still take the time to express an interest in the future of RAAus, because if we don't we may find it heads in a direction we won't like.

So if you are interested in helping RAAus move into the next phase of its existence and structuring it to better represent your interests, grab a proxy form from the website, your club or your flying school when the resolutions are published and let us know how you want to vote. As they say, vote often and vote early. Or in our case, just vote!

A. 15 APRIL
AAAA NATIONAL FLY-IN

The national fly-in at Echuca is the premier event for the Antique Aeroplane Association of Australia. More than 100 beautifully restored and cared for aircraft expected to be on hand to be admired.

Food and drink available. For more information, www.antique-aeroplane.com.au.

B. 17 APRIL
HECK FIELD FLY-IN

Come along and take a look at one of the best recreational airfields on the east coast. Joy flights, displays, food and drink available. For more information, Ric 0412 959 575.

C. 23 APRIL
MERIMBULA RED BARON BALL

Gala Night. Oompahpah band, cabaret, fancy dress, comedy, food. Other planned activities will be oyster tours, golf tours, Eden whale museum tour and Bega Valley cheese tour. There's also a fly-in at Frogs Hollow planned on Sunday. Big ANZAC activity at the Merimbula RSL on Monday. For more information, (02) 6495 1306.

D. 23 APRIL
DENILIQUIN ANZAC WEEKEND FLY-IN

The Deniliquin Aero Club will celebrate the achievement of local people in aviation, World War II, agricultural aviation and the long standing contribution of Macknight airlines.

Field Air will demonstrate fire bombing and low level spraying with its Ag planes and aerobatics in a Pitts Special. Special guest Michael Smith will speak at the dinner about his Around-the-World adventure at 80kts in a SeaRey (See his blog at http://www.southernsun.voyage).

Deniliquin Airport has plenty of tie-down space. Avgas and transport will be organised for the day. Breakfast available Sunday morning. For more information, www.deniliquinaeroclub.com or Ian 0418 452 521.

E. 22-24 APRIL
MEMORIAL FLY-IN

The Seaplane Pilots Association event at Lake Boga in Victoria will be held in memory of one of their most ardent and dedicated seaplane pilots, Ross Vining, lost in an accident in 2012.

For more information Donna Handley donnadqn@gmail.com or seaplanes.org.au.

F. 23-24 APRIL
TAVAS GREAT VINTAGE FLY-IN

At Caboolture. Featuring the only collection of flying WW1 aircraft in Australia, large contingent of WW2 aircraft flying and more. Full details at www.vintagefly-in.com.

G. 30 APRIL-1 MAY
WINGS OVER ILLAWARRA

Big crowds attend this show, primarily because of the big noisy jets. See aerobatics, warbirds, vintage aircraft, jets and formation flying.

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

H. 8 MAY
GATTON AIRPARK BREAKFAST FLY-IN

Enjoy a hot breakfast and cappuccino with friends and a stroll around Australia's most popular residential airpark.

See classic and modern aeroplanes and classic cars. From 0730. Details in ERSA or Martin 0419 368 696.

I. 14 MAY
RAAUS GENERAL MEETING

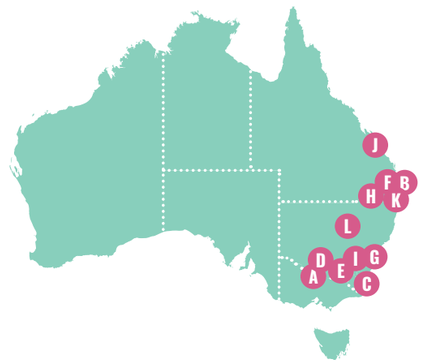
To be held at RAAus HQ this time - 3/1 Pirie St, Fyshwick ACT.

Details of special resolutions will be circulated to all members through *Sport Pilot*, electronic newsletter and be posted on the RAAus website.

K. 29 MAY
CASINO BEEF WEEK MUSTER

A highlight of the Casino Beef Week Festival. All aviation businesses welcome. A fun weekend for everyone, on and off the aerodrome. Saturday Beef Week activities include street festival and markets, main street parade, whip cracking demonstrations, car show, wood chopping competition and rodeo.

Sunday is a Family Fun Day next to the aerodrome. Amusement rides, market & food stalls, adventure flights and aviation chat all weekend. All amenities at the aerodrome. For more information, www.casinobeefweek.com.au, Russell 0427 627 477 or Debbie 0438 627 607.



J. 27-29 MAY
OLD STATION FLY-IN AND HERITAGE SHOW

Aviators and campers are welcome from Friday afternoon. Truck show, joy flights, vintage tractor pulls, heritage machinery, children's entertainment, fashion parade, air display including Matt Hall and fireworks. Licenced bar, food, drinks and lots more. Weekend camping no bookings needed. Proceeds to the Capricorn Helicopter Rescue Service. For more information, leonie@creedgrazing.com.au, (07) 4934 6562 or aviation inquiries Ron 0408 346 536.

L. 6-9 OCTOBER
AUSFLY

Australia's recreational and sport aviators return to Narromine for another big weekend. Workshops, seminars, air displays, entertainment and more. For more information www.saaa.com.

SQUARELY AND FAIRLY

From the most recent annual report, 25% of members do not renew. At the expiry of my membership, I will likely be one of these. Why?

Look at the numbers. There are an estimated 10,000 members and 3,500 aircraft. Two thirds of members do not own an aircraft. Yet most of the sagas with RAAus recently have involved problems with aircraft, not problems with membership.

It appears that non-owner members are cross-subsidising owner members. This is especially true of not-for-profit flying clubs where twenty or thirty members might own two aircraft between them.

Non-owner members can vote with their feet and apparently are. They can either move to the GA sector, or stop flying altogether. Owner members cannot. This is borne by the financial data, where membership income is decreasing and registration income is static.

A revenue neutral increase in registration fees, coupled with a decrease in membership costs, would entice new students, encourage current members to renew and place the costs on the organisation most squarely and fairly on those who benefit most from the organisation - aircraft owners.

ADA LIM

FLATLY DENIED

I read the article 'There and Back Again' (*Sport Pilot* January 2016) with interest, as it related to the type of area I often fly. I make a regular flight from the Lockyer Valley south overflying Gatton Air Park and pass directly over Maryvale township, situated a few miles west of Cunningham's Gap.

During my most recent return trip, tracking back north to home, I was on descent near Maryvale from smooth air, just above scattered clouds to pass under Amberley airspace and met a stiff easterly of 15/20kts@4,500ft (600- 800ft AGL). Once reaching clearance altitude at 4,500ft and getting over some not so friendly terrain (which is normally a fine trip with landing options to the west) I experienced mountain turbulence which was horrific.

Because I regularly fly in this area, I know the procedures and airspace requirements and constantly monitor Brisbane Centre and Amberley when it's active. With the article fresh in mind, I requested Amberley clearance for a height of 5,500ft until Gatton Air Park which would have allowed me to descend into clear air and continue north home safely. Clearance was flatly denied. The air I had descended into not only shocked me, but was so rough it was hard to read back the message to Amberley Clearance. They asked me several times had I understood them and to read back the message

to verify I had understood, the controller must have sensed the difficulty in my voice and proceeded to ask if I was transponder equipped? When I replied "Negative transponder", the controller reinforced "Maintain C Class clearance". I had given my position, track, height and intentions in the event I did receive a clearance, so they knew exactly where I was. Reason to be denied?

Today I received February Issue and read your remarks on page 11 in response to Bart Edward's letter. I quote your remarks "ATC will help you. They have to help you". I read this with much frustration. No they don't! I don't have PPL or transponder and they were not keen to assist. I get the need for a transponder and, in the future, would be keen to install such a device for my own safety and other aircraft. But PPL style endorsement? I sense a big money grab again like the ASIC card system. Most pilots are intelligent enough to communicate with ATC and a transponder would identify and locate us in the event we entered controlled airspace after receiving a clearance. What else do we need?

Most of us chose to fly RAAus and not PPL for a very good reason. Price and freedom. Please keep it that way.

LEIGH GRAYSON

FROM THE ED */ Your frustration is palpable. So I would make two observations about it. The first is that when I spoke to the controller, I told him I "required" the immediate clearance, I didn't say "requested'. Requested gives him a choice to deny me. Required means he has to act. Secondly as pilot-in-command, regardless of the airspace, the law clearly says I am first and last responsible for the safety of the flight, including my own survival, not the controller, who is sitting somewhere safely on the ground. I considered my life was in danger, so I was climbing, regardless of what he might or might not approve me to do. He would have moved everyone out of my way if necessary. I just have to be ready to justify my behaviour later to the committee of geniuses armed with forms for me to fill out, so you never want to do it frivolously. But you must always act as pilot-in-command and, so as long as you are serious about it and act professionally, they will get over it. And frankly a grilling by the pen pushers is always going to feel better than drilling a hole in a mountain.*

VOTE OR ELSE!

Attention all RAAus members! The association needs your help. Soon you will be asked to vote to adopt a new constitution. It is important that every member votes!

As a past board member, I am fully aware that most of you just want to fly. You are not interested in politics, CASA, AirServices or what is occurring at the RAAus office, unless it directly affects you. Well I want you to change your ways for this one very important issue.

A large amount of work has been completed by the current (and past) board members and office staff to develop, design and write a new constitution. This document has the ability to bring RAAus into the 21st century and allow the organisation to grow and prosper. It will save plenty of money (your money) and modernise how our association works. It will also encourage a more business-like governance model which will allow us to change with the world and the aviation sector in a dynamic way.

The good news is you don't have to attend the AGM yourself. You can vote by proxy. But if, as in the past, most members choose not to vote, the new constitution might not be adopted. In fact even worse for us would be for you not to vote and allow a small group of members who might be against the changes to block them and trap us in the outdated constitution. The old constitution has too many representatives. It costs money to fly them around the country to visit airfields and attend meetings, adding little value, but costing thousands of dollars every year.

With this in mind, I urge you in the strongest possible way to vote for the changes. Attend if you can or appoint a proxy to vote on your behalf. The President, Michael Monck, tells me he will happily volunteer to be your proxy. This is a once in a lifetime change. Have your say.

JIM TATLOCK

THE 500FT RULE

CASA enforces an unusual rule which prohibits flying below 500ft over any terrain, anywhere. Equivalent countries like the UK, the US and Canada allow such flights whenever humans or structures are absent.

The UK allows low level flight as long as the aircraft does not fly vertically or diagonally nearer than 500ft to any person, building or vessel.

US minimum altitudes are found in the FARs for the US and the CARs for Canada.

FAR (US), Part 91.119 states in reference to minimum altitudes: "Over other than congested areas. An altitude of 500ft above the surface, except over open water or sparsely populated areas. In these cases, the aircraft may not be operated closer than 500ft to any

LETTERS TO THE EDITOR

person, vessel, vehicle or structure."

The UK and US thus sensibly realise there is no need for a minimum altitude in "sparsely populated areas" and instead require a 500ft separation from human activity. Canada comes to a similar conclusion.

Even in Australia there are exceptions to the 500ft rule. Gliders, which are controlled by the Gliding Federation of Australia under CASA supervision, have no 500ft restriction. The rule is: "When engaged in ridge or hill soaring, a sailplane shall not be flown at a height lower than 100ft while it is within 100m of any person, dwelling or public road." At any other time, the minimum height is at the discretion of the pilot (from the Gliding Federation of Australia, Operational Regulations, issue 6).

Not only is CASA out of step with major aviation regulators, it has actually been out of step with itself in the past. CASA's predecessor, the Department of Transport, officially violated the 500ft rule in October, 1976, when the Department of Transport issued an Air Navigation Order, ANO 95.10 (Later CAO 95.10.) which required ultralight aircraft to fly BELOW 300ft. In 1985 the ceiling was raised to 500ft. If flying below 500ft is so dangerous, why did the regulator demand that aircraft stay under that altitude? To this day, pilots marvel at the absurdity of the ruling.

In the matter of the present CASA sharp cut-off of legality at 500ft above ground level, it should be noted that CASA's sister organisation, AirServices, which runs the Air Traffic Control system, recognises the difficulties in determining exact altitudes by allowing a 200ft vertical leeway in position.

The UK's Civil Aviation Authority pioneered aviation regulation. The US FAA successfully manages the world's biggest aviation industry. Canada is recognised as having one of the safest civil aviation programs in the world. CASA's rigid 500ft rule is out of step with these other, far more experienced aviation regulators.

NORM SANDERS

***FROM THE OPS DEPT** / Any flight conducted below 500ft AGL carries an increased risk due to hazards such as power lines, birds, micrometeorology and drones, which were never an issue previously but have become so with the enhanced speed and performance of our newer aircraft. Pilots can easily avoid these hazards by remaining above 500ft AGL and low level training will assist pilots to understand and manage these additional hazards.*

WRITE IN: EDITOR@SPORTPILOT.NET.AU

The state of the organisation is reflected in the Letters to the Editor columns. The more letters – the healthier the organisation.
So don't just sit there – get involved.
Your contributions are always welcome, even if no one else agrees with your opinion.
The Editor makes every effort to run all letters, even if the queue gets long at certain times of the year.
(By the way – the Editor reserves the right to edit Letters to the Editor to shorten them to fit the space available, to improve the clarity of the letter or to prevent libel. The opinions and views expressed in the Letters to the Editor are those of the individual writer and neither RA-Aus or *Sport Pilot* magazine endorses or supports the views expressed within them).

AMNESTY A SUCCESS

BY THE OPS DEPARTMENT

THE recent amnesty period for lapsed members and those flying non-compliantly was a tremendous success.

The amnesty ran from December 1, 2015 to February 29 and encouraged members to renew memberships, complete BFRs and re-register aircraft without fear of punitive or disciplinary action by RAAus or CASA.

We are happy to advise no action was taken regarding members who returned to RAAus during the amnesty period.

In summary, we renewed 27 members who had been lapsed for between 6-12 months and 82 others who had been out of the system for 12 months or more.

And we welcomed back some aircraft too. Three which had been unregistered for 6-12 months and 17 which had been cancelled for 12 months or more.

An amnesty of this scope is not likely to be repeated any time again in the near future. However RAAus always encourages former and cancelled members to contact Operations and Technical managers at any time for assistance. We realise that sometimes reminder notices are misplaced or forgotten or BFR dates slip past. We are committed to reminding members who have genuinely let something slip.

WIN!

WIN A GOPRO

AS part of its new deal with GoPro, RAAus is offering the chance for two people to win one of these fantastic cameras.

Last month it was announced RAAus had forged a deal with the Australian GoPro distributor to allow financial members to purchase its equipment at wholesale prices.

The cameras are small, easy to install and provide a great new way or recording your flights (don't forget to get someone qualified to install it if you plan to fit it outside your aircraft).

The cameras can prove useful tools in the event of an accident or dispute. You can also install them in your car or on your bike helmet.

The ordering process and prices are available on request from RAAus headquarters.

During April and June, anyone who subscribes to *Sport Pilot* will go into the draw to win a GoPro. There will be one person drawn each month and the winners will be notified by email and listed in *Sport Pilot* magazine in August.

For more information on the product range, www.gopro.com.

To subscribe to *Sport Pilot,* Australia's best aviation publication, www.raa.asn.au and follow the prompts.

RANS LAUNCHES A NEW RAVEN

RANS Designs has launched a ready-to-fly factory version of its new aircraft, the Raven.

The Experimental version, launched in 2014, has been selling well according to RANS.

The factory built sport version, the S-20LS, will be suitable for engines from 80 to 180hp. Panels include traditional analog, Dynon and Garmin components; engine choices include Lycoming 0-233, Titan 0-340 the Rotax 912ULS, 912iS, 914 and the 915, as soon as it's available.

Designer and President of RANS, Randy Schlitter said the company had worked hard to bring the S-20LS Raven into its line of SLSA offerings.

"The Raven expands the RANS lineup into the fast-growing market for light sport STOL planes."

RANS currently delivers seven kit designs; the S-20LS Raven joins the ready-to-fly S-6LS Coyote II, the S-7LS Courier, and the low-wing S-19LS Venterra.

It won't be cheap. The Raven will start at USD$119,000.

For more information, www.rans.com.

MERLIN NOW FLYING

AS forecast in *Sport Pilot (*February 2016) the Merlin PSA has flown for the first time.

"The acceleration and climb rate are exhilarating," said pilot Chip Erwin after the first flight in Florida in February.

"Flight conditions were less than ideal, with gusty winds and choppy turbulence but the Merlin handled the conditions perfectly. The pilot sits right on the longitudinal axis and the wing loading is higher than the average LSA, so it is quite comfortable flying all day long. I was seeing cruise speeds over 100 mph and climb rates of 1,400 fpm," said Chip.

The Merlin PSA (Personal Sport Aircraft) is an Experimental – Amateur-Built class aircraft which can be flown under LSA rules.

A complete kit, including the builder's assist program, is quoted at USD$34,900. The demo aircraft was equipped with a glass panel, 2 x GPS, transceiver, an ADS-B out-equipped Mode S transponder, BRS parachute system, electric trim and the new TruTrack ECO autopilot, for a total cost of around USD$50,000.

The factory says the all-aluminum aircraft is available as a quick-build E-AB (Experimental Amateur-Built, 51% Rule) aircraft. They also say its CAD/CAM design means build time can be measured in days rather than months or years. The aircraft can also be flown as a taildragger or as an amphibian.

For more information, www.aeromarine-lsa.com.

PILOT AVOIDS MANSLAUGHTER CONVICTION

A NSW pilot who hit powerlines, killing his passenger, has been found not guilty of manslaughter but guilty of reckless flying.

Eleven year old Kayla Whitten and her father David, were on a joy flight with pilot, John Crumpton when the aircraft they were in hit powerlines and dropped into the Clarence River at Ewingar, in northern NSW in April 2014. Crumpton and Mr Whitten survived but the child could not be rescued.

In the district court, 55 year old Crumpton was found not guilty of manslaughter but guilty of two counts of reckless flying endangering a life. The 11-member jury took two days to reach the verdict. Sentencing will take place on April 28. The court was told the pilot flew low enough to disturb birds.

It was also told that between 1999 and 2008, there had been at least six fatal accidents associated with unauthorised or unnecessary low flying.

PHOTO CREDIT

SPORT Pilot March 2016 edition. A credit should have been listed for Hamish Golden for the photograph of Drifter 27-0790 on page 42.

Face to face

BY MICHAEL MONCK AND MICHAEL LINKE

IN 2015 RAAus recognised it needed to improve the way the organisation communicated with members.

A range of strategies was adopted, including more input into *Sport Pilot*, more timely electronic communications and a completely reworked website. As a result of these strategies we have made significant inroads already and hope to further develop and deepen our relationship with everyone.

None of this, however, works as well as face-to-face discussions. With this in mind we took the decision to come to you, meet you in your own backyards and have conversations with you about the things you want to talk about.

Over the past twelve months we have made a big effort to reach out. We have attended local fly-ins and air shows in most states, and hosted member forums. To keep costs down, these forums have largely been held in conjunction with other events but have proven to be very successful. Your feedback has been overwhelmingly positive and you have invited us to hold more.

The hectic schedule has been wearing on the President and CEO, but the plan is for us to maintain the momentum throughout 2016.

Our travels have seen us traverse the country from Queensland - to events such as the Old Station Fly-In - all the way to Western Australia, where Mick Monck was formally invited to launch the Busselton Aerofest event. Occasions like these present RAAus with a unique opportunity to engage not only with members, but also aviators from other organisations, as well as other non-aviation locals. In this latter group, we have spoken to prospective members, councils and airport owners, giving us the opportunity to reinforce the benefits of aviation to their communities.

In between the extremes of WA and Queensland, we have visited Evans Head, Narromine, Holbrook, Loxton, Tooradin, Lethbridge and a host of other local aviation hotbeds along the way. In keeping with our intention to meet with as many members as possible, we'll be riding on the coattails of the upcoming Pilot Examiner Professional Development Workshops in South Australia and holding more member forums there in May. For those who have yet to make it to any of these events, we hope to cross paths with you in the near future.

To give you an idea of the flavour of the discussions, consider our recent trip to WA and the chats we had along the way.

It may be a long way to Tipperary, but it isn't quite as far as the distance between Australia's east and west coasts. It's a pity really, because the aviators in the west are no different to those in the east and we all share the same concerns - access to airports, access to airspace, struggles relating to fuel availability, security hassles and so on.

It was enlightening and frustrating to hear about the western specific issues from the first conversations we had at Busselton, through to the last ones we had in Perth, but it is also refreshing to know the causes for which RAAus is fighting across the country are the correct ones. In between Busselton and Perth we visited locations, from the simple but incredibly active airfield at Serpentine, through to the expansive and somewhat more commercial Jandakot. And during the entire journey we found ourselves talking about the same topics which had been raised in the forums. It didn't seem to matter where we went, the issues were the same.

Questions are always raised about Jabiru (at the time of writing, RAAus had been asked to attend a meeting between Jabiru, CASA and several government senators). The difficulties still exist and we are hoping CASA and Jabiru can resolve the technical aspects of the problem soon so owners and operators of Jabiru powered aircraft can return to normal operations.

Questions have been asked about the constitution, the changes to the current board structure and how we will ensure members receive local representation on issues which affect them (although we're yet to discover any issue unique to any particular region). We outlined one proposed method of ensuring everyone has a voice on matters relevant to them (see the President's column this edition for more) and how this would be more flexible than the rigid voting mechanisms embodied in the current constitution.

And on top of this, we spoke to aviators representing weight shift and powered parachute pilots, a smaller proportion of our total membership, equally important but often neglected or overlooked in the past.

While none of the issues we have come across so far are exclusive to any particular region, we have found it extraordinarily helpful to talk to people in different places. It has helped us uncover a number of issues we had not previously considered and it turns out that with the right changes, some of them might even be able to improve conditions for all members.

These conversations always throw up new ideas – from requirements for powered parachutes through to changes in our member mailing lists. All good stuff.

The trip to the west took over a week of our time (more than 24 hours of it stuck in a plane seat or cheap rental car) to travel between locations there to meet members. And we stayed in some pretty average motels along the way. Despite this we've learned a lot and will be using this, at strategic and operational levels, to shape the organisation going forward. Even when members levelled criticism at us (and we never mind this, as long as it is done constructively) the conversations were instructional.

Of course such an ambitious and wide reaching agenda as this, takes commitment – and time. RAAus always asks a lot from its volunteer board members and professional office staff, but we both agree that when we meet members and get fresh perspectives on things, it can also be incredibly rewarding.

So keep an eye out for any opportunities to share your thoughts with us in the coming months and help RAAus to improve even more. A handshake, cup of coffee and a biscuit will be a great way to start the conversation, because nothing beats face-to-face.


All sorts of aviators


Sunsets are better in the west


Outback WA


Classy motels

"We hope to cross paths with you in the near future"

Aerofest

HELP PROTECT OUR PAST

RAAUS has made it easy for members to help protect our particular part of aviation history by establishing its first Heritage Fund.

The board made the decision last year when AUF/RAAus turned 30. It has now seeded the fund with $20,000 from reserves, as a gesture and a tool by which members can do their part.

Projects such as restoring heritage aircraft, curating museums dedicated to light aircraft and the Australian ultralight movement, and other heritage based projects, will be able to be supported by money from the fund from July 1.

The distribution criteria for the fund is still being established, but the fund itself is now open for your support.

We hope you will take part by making a small donation when you renew your membership or registration. When you click on the site, you will see an option there to support the fund. 100% of the money you donate will be allocated to heritage-based projects.

If you're not due to renew your membership or registration, or if you aren't a member but would still like to contribute, phone the office (02) 6280 4700 and our staff will help you.

Bill Dinsmore, Ian Young and John Haggedoorn

National Safety Month launch at Canberra Airport (left to right, RAAus President Michael Monck, Director of Air Safety CASA Mark Skidmore, RAAus CEO Michael Linke and Matt Hall.

Building a better RAAus

BY MICHAEL LINKE **CEO**

EIGHTEEN months ago I walked in the front doors of RAAus. I discovered an organisation bursting at the seams. An organisation bursting with ideas for a brighter future. An organisation bursting with enthusiasm.

But also an organisation struggling with its own growth.

Ideas abounded. Air shows with Drifter and Thruster races, an event as big as Oshkosh, digitisation of all of our records, one million pieces of paper, a new constitution, new premises, new endorsements, electric engines. The list went on.

The enthusiasm was electrifying.

But our explosive growth was holding us back in some places. We were an organisation of 10,000 but some of our number wanted to operate as we had in 1983. I was pushed to enact change quickly, damn the consequences.

Instead I had to temper the excitement. To remind everyone it wasn't 1983 anymore. The regulator was nervous about our recent safety record, the Forsyth Review questioned our governance and we suffered from frequent staffing and board member changes, which meant our corporate memory was lacking. We needed to get our house in order before great change could come our way.

As well, many among us had joined in recent times and flew the so called plastic fantastics. Our average member stays with RAAus for seven years. I thought about that as I pondered our priorities. We've been around for 30 years but 80% of our members had joined in the past ten. We needed to balance our heritage with innovation and ensure they could co-exist in a modern RAAus.

I needed to explore all the good ideas and implement the ones that were feasible, achievable and added value to our broader membership. And let me tell you there were literally hundreds of ideas, some of them way out there.

Early on I was told I should explore buying an airpark: Temora or Evans Head. I was told to buy an ailing aircraft manufacturer. I was urged to arrange Oshkosh – or an event as big as Oshkosh. I was told to move our office out of Canberra.

I was also advised: Trust this person, but not that person. Visit that school, but not this school. Employ more staff. Get rid of staff. Hate CASA. Love CASA. Fly in that plane, but not this one, unless she was your pilot. Visit that flying school, but steer clear of him.

A person could have gone mad with all the advice.

I was pulled, pushed, abused and thanked. My first 18 months have been a grueling yet incredibly rewarding time.

Recently I told my staff that, in my opinion, we had been operating at VNE for a long time. If we didn't throttle back we were going to explode.

They looked at me and told me "Wow Michael, we have done a lot, but look at how much you've learned about aviation."

As you know, I came into RAAus with no aviation experience at all. This hasn't hindered me at all, it's actually helped. It has allowed me to look at RAAus through clear glasses and with no excess baggage, no preconceptions, no axe to grind and no vested interests to defend. It has allowed a clear focus to emerge on how we could develop a plan for a better RAAus.

So after 18 months, how has does that plan look?

First and foremost we solved the aircraft registration delay. We revised our Operations Manual. We digitised *Sport Pilot*. We improved our insurance coverage. We improved member interaction. We created transparent lines of communication. We engaged with stakeholders. We've dramatically improved safety, reporting, operations and maintenance. Sure, we've got a way to go. But the signs are good.

We've created a digital ecosystem for members which will continue to grow with us. This ecosystem is perhaps the brightest shining light in the past 18 months. It has said to members and our CFIs, "we trust you, this is your data."

Today we stand on the verge of the next big thing. A new constitution. Read the President's column for a detailed assessment of the importance of this project. It is, quite simply, the single most important project RAAus needs to deliver.

I've loved my time so far. I've loved meeting our members. I've loved the feedback, good and bad.

Now it's time to get back to it. There is so much more to do. I've spent much of March getting out into airports and schools engaging with members and I have a huge new crop of ideas to filter, develop and implement. Stay tuned. Our best days are still ahead of us.

Hughes LightWing had a striking colour scheme

Savannah departs for a local flight over Clifton

FLY-INS

"The weather over the ranges made the going difficult for any pilot planning to fly in from the coast"

Water or land, now let's see where do I want to put it down? Super Petrel was popular among the spectators

WIND, WEATHER & WONDERFUL

STORY AND PICS BY ALAN BETTERIDGE

THOSE are the three words which best describe this year's Clifton Fly-In.

A strong south easterly breeze bringing showers and cloud over the coastal ranges had been affecting Queensland in the weeks leading up to this much anticipated event.

While, for the better part of the weekend, the weather at Clifton remained good, the weather over the ranges made the going difficult for any pilot planning to fly in from the coast.

Although 120 or so aircraft had been expected to arrive, the weather drastically reduced this number to just over 80.

The biggest change this year was the number of people who visited by car, up from 60 last year to over 200.

Clifton's Bange Field, home to the Lone Eagle Flying School, has been holding an annual fly-in since 1982 and has only ever had to cancel once.

"That was due to a very localised thunderstorm which dropped a large amount of rain directly over the airstrip," said CFI and airfield owner Trevor Bange.

"While I knew local pilots would have no problems knowing just where the soft patches would be, we considered it just too dangerous for others flying in.

"We pride ourselves on safety and for that reason the decision was taken to cancel it," he said.

"It was a decision not taken lightly," Trevor added.

I have been coming to this event since 2007 and consider it one of the most well organised and family friendly events on the Queensland aviation calendar and wouldn't miss it.

This year was no exception and, as at each event, it had been expanded to add further interest and enticements to draw in the crowds.

A jumping castle for the kids, market stalls and a variety of cars from Minis to MGs were all there. But with all of that, it is the aircraft which are the main attraction for most people.

Making an appearance for the first time was Ian Comley's replica Nieport 17.

Ian had taken delivery of the aircraft on the Saturday and, although it did not fly during the weekend, it still attracted a lot of attention.

"It is powered by a 1700cc VW engine of 60hp, and is finished in the livery of the American Indian Squadron which flew during the First World War," said Ian.

"The thinking was that they were indians, so why not give them a go and see just how brave they were," he said with a wry grin.

As far as Ian is aware there are only 325 Nieuport 17s of this type in the world and he is very proud of his.

"I just can't wait to fly it again," he said.

Another war, another classic - this time a

Pretty looking RV7 was one of a number of the type in attendance

Ian Comley with his new pride and joy replica Nieuport 17

Not too many RV8's around with this colouring, but it sure looked good

full scale replica of the epitome of World War Two fighters, the classic Supermarine Spitfire was also a crowd puller.

The aircraft has only recently returned to flying duties after having been re-homed and re-engined. The aircraft is fitted with an ISO-540 Continental and it sounded and looked fabulous.

To hear and see it was something to behold and heads turned skywards as it did a low fly-past before its return a short distance to its home in Warwick, a few miles south of Clifton.

RAAus registered aircraft were well represented (as they are every year) and, despite the gusty crosswinds at times, showed they were equal to anything in the GA field.

It wasn't all that many years ago that ultra-light aircraft would never have been able to fly in those types of conditions. How times change.

Aviation enthusiast Bill Baxter made his annual pilgrimage to Clifton and was only too happy to stop and have a yarn.

"My first foray into microlight planes was more years ago than I care to remember," said 85 year-old Bill.

"I can recall it well, it had a tiny two-stroke engine I'm sure had been purloined from an old Victa mower and wing warping to make it change direction.

"You could only fly it on days when the conditions were absolutely still, usually in the early mornings and even then you would be taking your life in your hands," he said.

"My wife said she just didn't want to know when I went flying, but she always gave me a hug and a kiss, just in case," he added with a chuckle.

"Those were the days and, although I no longer fly, I still attend as many fly-ins and aviation events as my health will allow.

"Keeps me young, I reckon."

Clifton is one of those types of events. There is something for everybody, whether you are just getting into aviation, an active pilot or someone who, like Bill, just loves to reminisce and take in the atmosphere and be around like-minded people.

By the time you read this, planning will be underway for next year's Clifton Fly-In and, although no firm date has yet been set, you can be sure it will be around mid-March.

Come by car, camp or fly-in but whatever way you decide to visit, just don't miss it.

Now if only I can convince Trevor and the team to hold it twice a year, that would be something.

LATE NEWS After last year, when 20 pilots infringed Amberely airspace on the way to and from Clifton, this year there were none!

James Bange with his favourite new toy a Corby Starlet

Four year-old Lucas Betteridge knows just what he wants to be when he grows up

Glennis Rossow from Stanthorpe had her first flight in an LSA at Clifton courtesy of Glen Bruggemann

Call in at – GLOUCESTER –

BY RON WEST

A freeloader on my fabulous Jabiru

READER STORY

IT is lovely to be able to read *Sport Pilot* magazine to see what innovative changes are being made in the ultralight aircraft of today.

We have come a long way since my father and I began flying our Scout many years ago. The Scout had a Pixie engine in it, chain drive reduction and plastic scooter wheels. Yes, I did have a few minor hiccups with wheels and the chain, but we enjoyed the early days of real ultralight flying. It is a wonderful sight when Neville White gives a demo in the Scout at Temora or Holbrook air shows.

We were of the era who taught ourselves to fly and 99% of us are still alive to tell the story (apart from those who have naturally passed away). The majority of the early pilots also maintained and repaired their own aircraft after any hard landing etc. It was a great experience along the way. Not only did we repair our own aircraft, we were busy building and designing our own propellers. They were prone to hit the ground first and thus were getting broken quite often.

I updated to a Stolero, built by Steve Cohen. I flew this around our local Hunter Valley area for many years and had a lot of enjoyment with my fellow Windsock Flying Club members who had similar aircraft. In 1985 I built my own Koala 202 which had a 1600 Jabiru engine in it. I had 17½ years of fabulous pleasure flying this lovely aircraft until my family suggested I invest some of their inheritance on an LSA 3J Jabiru and that is something I don't regret. Once again I've had this aircraft for many years and have really enjoyed flying wherever and whenever I want to (always keeping out of the vast controlled airspaces we have up and down our coast).

We have seen many changes in recreational aircraft over the years. There are some great engines available these days and, yes, that includes the Jabiru engine. Back in the days of the Scout, a 20 minute flight was a wonder because either the engine would stop, run out of fuel or the aircraft run out of lift and it would settle back onto the ground whenever it thought appropriate.

If you're ever flying down the light lane west of the RAAF zone at Williamtown, call at Gloucester air strip and say hello. Somebody might be around.

The annual fly-in is being organised, so come along when the dates are announced. Fly in or drive and enjoy the friendly country atmosphere of Gloucester. Gloucester Aero Club members are owners of recreational aircraft and model planes plus the club has its own Cessna for members and licenced pilots to hire.


A Sonerai lay broken


It was not a time to be out in the open


It looked like a cyclone had hit us

"Others had been less lucky than ourselves"


Ruined SeaRey

FEATURE STORY

Storm smashes The Oaks

BY DAMIAN SKEELES

THIS year is the 30th anniversary of the Sydney Recreational Flying Club. It very nearly became our last.

As with all such events, there was little sign of what was to come. There had been rain and storms over the ocean near Sydney that afternoon, but the weather further inland at The Oaks airfield, 100km to the southwest, had been benign.

"Looks like those forecast storms didn't turn up," quipped Tom, one of our instructors, as he left for the day.

We'd finished instruction for the day and were doing maintenance on a couple of the aircraft when a storm cell appeared to the south-east, from the coast, tracking west. It was clear it was going to miss us, so we kept our heads down in the aircraft. Minutes later, Chris voice sounded out:

"Guys, that cell has turned. It's coming towards us and looks pretty dark inside. I think we'd better get the aircraft away."

The first drops of rain fell as we raced around and got all three aircraft in hangars, leaving Mark to close up while we went back to the clubhouse. The rain grew heavier. We became aware of a distant howl of wind growing closer and the first 'ting' of small hail on the roof.

"We'd better get the cars under cover as well."

Joe and Mark ran to get their cars under cover as the storm strengthened. The 'ting's changed to 'thud's as the hail grew to golf-ball size. The rain grew heavier and turned into a deluge. Suddenly the day turned to dusk and the airport boundary disappeared in the murk as the storm rolled over us.

Then the wind built again - and again - and again. What we thought was a particularly strong gust would remain as howling wind, and be followed a few seconds later by a stronger burst, and then an even stronger one. Pieces of debris began flashing past the clubhouse. Visibility dropped further and further until we could see no further than the cars parked right outside. The howling grew so loud we had to shout into each other's ears to be heard. Our concern grew from the threat to the aircraft, to a growing fear about our own safety. Three of us, Joe, Chris, and Phil, sheltered in the maintenance building, while Mark stayed in the hangar. It was not a time to be out in the open.

At that point there was likely a splintering noise – although we couldn't hear it – then the club's tool shed detached from its base and flew past us at a rate an F18 wouldn't catch. Phil managed to capture video of the fly-past of the jumble of corrugated panels. Two blurred frames' worth, was later shown on Channel 9 news and we posted it on our Facebook page.

Eventually the storm died down and we peered outside. It looked like a cyclone had hit us. Debris was strewn across the entire 1,000m of the field and across both runways. A SeaRey lay on its back, wings broken, fuselage buckled, 40m from where it had been tied down. A Sonerai lay broken in the middle of one runway. It had been spat out from a T-hangar which had disintegrated and cartwheeled. A container, stored on top of another one, had blown off, travelled five metres laterally as it fell and landed on the tail of a Jabiru parked in its lee. Another hangar had collapsed onto another Jabiru and a car. A 10m Portacabin next to our hangar lay on its back, all five tonnes of it. It might have rolled into our hangar if it hadn't been stopped by a caravan parked behind it.

As we assessed the damage, we came to realise how incredibly lucky our club had been. Aside from the tool shed, we had a cracked window pane, a buckled hangar roof, a car with a broken window, and another with hail damage (not to the roof, but one side). We wondered what wind speed was required to drive golf-ball sized hail more horizontally than vertically.

Others were not so lucky. Two aircraft were destroyed and three others badly damaged. Four buildings were destroyed or damaged, including one where the ceiling and walls had lifted and been whipped away around the occupants sheltering inside. A few people were shaken, but there was only one injury. One person was cut by flying glass.

As night fell we assessed the damage and cleaned enough debris off the road to be able to drive out, as the news vans arrived. We also sent out an urgent notice to members and friends about a working bee for the next day, so we could start work on repairs.

And that's where the real story is here. At 9am the next morning, a wave of people descended on The Oaks to help with the tidy up. Some even brought their own heavy machinery. By mid-morning, 60 people were onsite helping clear the runways, pile debris and make repairs, not just from SRFC and Dave's Flying School, but also the township, Camden airport, and further afield.

By lunchtime, SRFC and the airfield were fully operational again, and members were enjoying an unanticipated club barbecue. Others had been less lucky than ourselves, but the level of aviator camaraderie and support displayed in getting everyone back on their feet was heartwarming.

And so, at our anniversary celebrations later this year, SRFC will have something else to celebrate. Not only are we one of the oldest recreational flying clubs in Australia, but we are also one of the luckiest.


We came to realise how lucky we had been

TECHNICAL MANUAL VERSION 4

AUTUMN 2016 RELEASE

TIME TO GET ACQUAINTED WITH MAINTENANCE AND REGISTRATION REQUIREMENTS

ADVICE ON NEW CHANGES COMING SOON

MAINTENANCE

VERSION 4
QUICK CONTENT OVERVIEW

Technical Policy & Technical Managers Duty Statement — 1&2

Outlines the purpose of the manual. The CAO's require that all RAAus Technical activities be specified in the Technical Manual. RAAus administers this content .

Aircraft Types — 3

Covers the various categories consisting of amateur built, factory built and experimental LSA aircraft types and their respective requirements for registration. The process/ steps for registration is outlined here.

CAO 95.10 Aircraft Design Approvals — 4

The application procedure and requirements regarding the approval of 95.10 kits and plans/ drawings are discussed in section four. The requirements for 95.10 owner designed aircraft are also listed here.

Aircraft Registration — 5

Section five details registration forms/ number allocation/ registration renewal/ transfer from VH and other registers/ transfer from LSA to E-LSA and registration markings.

Aircraft Modifications — 6

Modification matters relating to all RAAus registered aircraft are detailed here. Section 6 also outlines modification approval and who can perform modification work. A major component of Section 6 is the Modification And Repair Approval Process (MARAP) covering the modification of Type Certified aircraft.

Aircraft Repairs — 7

Covers repairs to all RAAus registered aircraft including details on airframe, powerplant and propeller. Major and Minor repairs are introduced in Version 4.

First of type acceptance — 8

Outlines the process for the registration of CAO 95.55 type certified aircraft that have never been registered with RAAus. Does not apply to amateur built or LSA category aircraft.

9 Cockpit Warning Placards/ labels

Cockpit warning labels must be affixed to all aircraft. Section 9 details what wording is required for each registration category.

10 Weight & Balance

Outlines when a weight and balance is required to be submitted. Covers weighing of three axis and weight shift aircraft. Version 4 clarifies who can weigh RAAus aircraft.

11 Maintenance Policy & Authorities

Section 11 covers the elements of maintenance in relation to what, when, how and who can conduct maintenance on RAAus aircraft. Maintenance Authorities are discussed and outlines what level of maintenance authority is required for works on various categories of RAAus registered aircraft. The application process for the various maintenance authorities are found here.

12 Maintenance Activities

Runs through a generic daily and pre flight inspection regime. Further information on inspection after reassembly, heavy landing, abnormal flight load and lightning strike. Section 12 outlines instrument and transponder requirements. Aircraft maintenance logbooks are covered and outline what should be contained in one and examples are provided. The process required to operate an engine on condition is listed and the section is covered off with periodic inspection details.

13 Accident, Occurrence and defect

Section 13 covers advice on defects regarding faults in design, function or qualitative characteristics of an item fitted to an aircraft which differs from specification. These defects need to be reported. Covers what an airworthiness notice (AN) is and how it applies to RAAus registered aircraft.

2016 MAINTAINER OF THE YEAR AWARD

THE time is rapidly approaching for you to put your hand up and call out your choice for the inaugural RAAus Maintainer of the Year award.

This is a long overdue recognition of the people who keep our aircraft in the air. Nominations open on May 15 and close on September 30.

The award will be the first time RAAus will showcase the knowledge, experience and integrity of our L2s. The awards will be judged by an independent panel of members from the recreational and GA community. The winners will received their awards at a function later in the year. For more information, www.raa.asn.au.

The complete list of prizes are still being finalised but *Sport Pilot* has been told the main prize for the winner will be a trip of a lifetime to next year's Oshkosh Air Venture. A big bag of other prizes will also be up for grabs (details in the May edition of *Sport Pilot*).

The competition is open to any RAAus L2 Maintainer, nominated by a financial member of the organisation.

Look around your airfield. If you think your L2 has the special traits and qualities to become the organisation's first award recipient, get ready to nominate him or her.

OUR MAINTAINERS

The RAAus Maintainer of the Year award will put the spotlight on those people who are the most important when it comes to keeping our aircraft flying. Maintainers like Chad Summers and Andrew Ralston.

The place for me

BY CHAD SUMMERS LAME, L2/L4

AVIATION has been one of the major contributors to my life, after my family and friends. The intricate engineering behind aircraft, the skills required to operate them, the feeling of accomplishment I get each time I repair or solve an issue and the freedom I feel when airborne, really captivates me.

Chad hard at work

I was raised in Tamworth and, like most kids, I loved toys. Not only playing with them, I wanted to know why and how they worked. Much to my parents' dismay, I used to open them up to figure out the internal mechanical and electrical components and why they ticked.

But it was when one of my toy planes stopped working, and I replaced a burnt out motor with one from a pile of 'fixed toys' (and it worked) that I knew what I wanted to do with my life.

After completing school and working a few jobs here and there, I applied for a position with the Royal Australian Navy as an aircraft engineer-engines and airframes.

I joined the Navy and was sent to the RAAF School of Technical Training and two years later, graduated with a Certificate in Aircraft Engineering-Mechanical.

In the Navy I accrued a great deal of experience on both helicopters and fixed wing aircraft, ranging from SK50 Sea King helicopters to the Fairey Firefly (in all of its v12 awesomeness) with multiple types in between. The exposure was as excitingly brilliant as it was diverse.

A brief exchange with the Royal Navy gave me the well-known and often expensive bug to become a pilot and, after a battery of testing, the navy granted my request.

After I left the force, I looked around for a place or group of people I felt shared my skills, somewhere to continue flying as a hobby and to share my passion. This is when I stumbled upon RAAus.

I drove along a long dirt road into a paddock at Jaspers Brush in NSW. There was a clubhouse, some aircraft, a runway and a diverse group of people ranging from school age to retired, all mingling and clearly enjoying themselves. They spoke my language, aviation, and made me feel welcome and involved. Clearly this was the place for me.

I joined RAAus and the club and made some lifelong friends. I still had a feeling I could contribute more to help grow RAAus and my new friends in some way. So I applied to become an L2/L4 and can say it has been one of the best decisions I have ever made. I have had the opportunity to assist multiple owners across multiple types, learning new ways and marveling at peoples' ingenuity in solving often complex issues and fulfilling their dreams to build their own aircraft.

I have been a licenced aircraft engineer for 15 years now and an L2/4 for approximately half that time. I currently work in the aviation industry on heavy turboprop aircraft. I enjoy both sides of recreational aviation and am training to become a flying instructor with my local club, Tamworth Aero.

I look forward to making a positive contribution and being a member of RAAus for a very long time to come.

Andrew and his big metal friend

BY ANDREW RALSTON LAME, L2

I HAD a lot of childhood memories centred around flying in my father's Cessna 210, messing around in his maintenance hangar and generally getting in the way, so it's probably no surprise I ended up working in aviation in some capacity.

When I joined the aircraft maintenance industry, there weren't a great number of LSA aircraft around, certainly by today's standards. I began at Royal Victorian Aero Club in 1993 where I stayed for five years, before moving onto The Old Aeroplane Co. based at Tyabb, Victoria.

After roughly three years working on warbirds, including spending four months in the US helping on a full rebuild of Judy Pay's P40F, I had a brief stint at Moorabbin again before joining Qantas. I was based at the airline's Heavy Maintenance Depot, which specialised in 737 maintenance at Tullamarine Airport.

There, I was able to add to my previous GA licences by adding the 737 Classic Engine and Airframe, then the 737NG Engine and Airframe, along with a licence and course credit for the 767. Ultimately I was selected to go to Wichita in Kansas to act as Qantas' resident inspector overseeing production of 737 fuselages.

In 2012, the airline decided to close and move the 737 heavy maintenance to Brisbane. So, faced with the prospect of either moving to Brisbane or staying on doing line maintenance at Tullamarine, I decided to open up my own maintenance facility at Tyabb.

It soon became apparent to me that since I had left GA, the number of LSA aircraft had grown significantly. They would obviously become a part of what would have traditionally been exclusively GA based maintenance activities.

With that in mind, once I had worked on several different types of LSA aircraft, from Jabiru 160, 170 and 230 aircraft, Sportstar, Bristell and Texan, and gained sufficient experience with LSA type aircraft, I applied for and gained an L2/L4 accreditation.

My business continues to grow. Along the way, we have undertaken maintenance on four separate flying school aircraft fleets including many privately owned aircraft like Tecnam, Flight Design, Gazelle and Fly Synthesis' Storch.

It certainly has been interesting to add LSA aircraft to the types we commonly maintain for people now, and see how all the different manufacturers have tackled the challenges of weight, design, style, aerodynamics and strength. And I look forward to continuing to help owners achieve the maximum enjoyment from their machines into the future.

Jabiru's smooth operator

BY SUE WOODS **JABIRU BUSINESS MANAGER**

MAINTENANCE TIPS FOR YOUR JABIRU

ALL Jabiru engine related incidents are reported to ATSB. These statistics, which list every reported cough or splutter since 2009 through to 2015 are useful tools if used correctly.

Jabiru has been taking the opportunity to examine this list of all the reported engine related incidents as part of our ongoing efforts to communicate to and educate the Jabiru fleet on the operational and maintenance requirements for engines and aircraft. The information has given us a good insight into some of the general maintenance tips to focus on in our engine workshops and communications to the Jabiru fleet.

Here are a few useful tips for all owners and operators.

PRE-FLIGHT INSPECTIONS

Refresh your knowledge even if you have operated your aircraft for many years. Check what is required and remember, don't let yourself get distracted during these vital checks. Your Pilot Operating Handbook contains a detailed Pre-Flight Inspection Checklist. It is often the small simple things which get overlooked as you get more and more familiar with your aircraft. Inside the cabin, checks are just as important as outside.

Have you checked the rod ends on the rudder pedals and control column? Are the fuel taps inside the cabin on? Have you done a pull through while the engine is still cold? Check the Jabiru website at http://jabiru.net.au/service/manuals#pilot-handbook regularly for any updates and update your POH accordingly (Be careful not to discard the weight and balance and other aircraft specific information from your aircraft's original documentation).

If you are using Mogas, be sure to drain it into your car or lawn mower if you don't use it within two weeks. It is very important that shandies of Mogas and Avgas are not used. Another tip - don't use automotive oil, even if you are using Mogas. Also remember to check for water and contaminants in the fuel, including the header tank.

If it has been a little while since you had the opportunity to take to the skies, take the cowls off and check for insects. You should always be diligent about using covers for the pitot tube, static tube, air intakes and fuel breathers when the aircraft is on the ground. Likewise, if your aircraft isn't in regular use, inhibit the engine or turn the prop regularly (more regularly if the air is moist or coastal). Detailed instructions for storage and cleaning are contained in the Engine Maintenance Manual http://jabiru.net.au/Manuals/Engine/JEM0002-6.pdf (Page 42).

Leak down checks are your best friend - Perform a leak down/compression check at least 50 hourly and record the measurements. If the aircraft is not regularly in use, there is no harm in doing them more regularly. Your aircraft will thank you! Once again your bible (the Engine Maintenance Manual) has detailed instructions on Page 70.

CARBURETOR ICING

Are you familiar with the symptoms? A loss of RPM or altitude might be the first symptom. As the icing becomes more serious, engine rough running may occur. Why does carby icing occur? In simple terms it is due to the air temperature and the relative humidity. Carby icing can (and does) occur in hot ambient temperatures and the higher the humidity, the greater risk of icing. If the outside air temperature is moist and below 16C, be prepared for carby icing. It is a good idea as a precaution to use carby heat on descent when power is reduced. Remember, applying carby heat is the recommended first corrective measure to be tried in almost any situation for the engine. Another little tip around the carby. After a service, check the carby balance tube is attached and not kinked off by zippy ties.

ON A FINAL NOTE

Be a smooth operator. Advance your throttle smoothly for take-offs and go-rounds and try not to punch the throttle.

The website at www.jabiru.net.au is always up to date with Service Bulletins, Service Letters and Manuals so check it regularly.

NEXT MONTH Maintenance tips for your Rotax

"Check the Jabiru website regularly for updates"

MAINTENANCE

Murphy again

BY ALAN BETTERIDGE

***SPORT Pilot*'s story of the crash of a Glasair III (*Sport Pilot* February 2016) raised some interesting comments.**

The story, based on an ATSB investigation, was focused on the human factors risks when doing your own maintenance. The story pointed out that one of the many advantages of building and operating your own aircraft was the ability to be able to do most of the maintenance yourself – and thereby saving a considerable amount of money. However, it also made the point that improper maintenance contributed to a significant number of aviation accidents and incidents.

The story concerned the engine failure and subsequent crash in 2013 of a Glasair III, shortly after take-off from Jandakot.

The pilot had limited options for a forced landing and, during his attempt to set down on a sports field, the aircraft clipped a metal goal post, tearing off the wing and causing the aircraft to cartwheel into the ground. Both pilot and passenger were seriously injured and the aircraft destroyed by impact forces and a fierce post-impact fire.

The aircraft in question had been built in the US and imported into Australia, where it had been maintained by one of the most well-known and highly respected LAMEs in Jandakot on a no-expense spared basis.

The ATSB learned that, during construction in the US, the aircraft had been fitted with a dual electronic ignition system. The US builder had modified the wiring by inserting a MIL spec cannon plug in the single multiple core wiring loom near the single crank angle sensor. The builder wanted a dual system which would provide redundancy. The modification met all the current FAA requirements of the time.

But the single wiring harness from the engine timing trigger plate to the connector plug created a single point of failure in the dual system. So the loss of the engine timing signal, such as from the disconnection of the single wiring harness, would result in the loss of timing signals to both ignition modules and failure of the system. After the crash the connector was found to be disconnected, but because of the damage, it could not be established if it happened before or after the crash. Nor could it be determined why it had disconnected. One theory holds that the V-belt may have failed, tearing the connecter apart.

The ATSB report mentioned the fact that the V-belt manufacturer had stated the belt should be replaced every eight years, but industry sources say typically V-belts are replaced only on an on-inspection basis – not time-life, typical of a CASA Schedule 5 maintenance program under which the aircraft was maintained. A failed alternator V-belt should not typically cause an engine to stop.

What is far safer is to have two ignition systems completely independent of each other - one electronic the other via a magneto for example.

So the accident was a case of Murphy at his best.

The wiring harness was only exposed to the vicinity of the V-belt over a 50mm space. What were the chances of the belt breaking at that exact moment and position?

And the engine failure occurred just when the pilot had his fewest options.

Any earlier he would have been still taxying or just airborne with plenty of space to land ahead.

Any later and he would have been much higher and have more options to land in any one of a number of large open sporting areas in the vicinity.

The other thing to learn from the accident is to be aware an engine failure can happen at any time – and if Murphy is involved, it will be the most inopportune time.

MEMBERS LOST IN CRASHES

ROD HAY

RAAUS reported the sad loss in February of well-known and respected CFI, Rod Hay.

80 year old Rod died when his Jabiru crashed near Katoomba airport on February 27.

According to RAAus "The damage to nearby trees in conjunction with the extensive damage to the propeller, and lack of visible external damage to the engine, indicates the engine was operating at impact.

"To fully examine the engine, RAAus will conduct a supervised tear down with officials from ATSB and Jabiru. The damage is consistent with impact damage. At present our preliminary assessment of the evidence supports a possible loss of control, but the cause is, as yet, undetermined."

News reports at the time raised questions about whether the elderly pilot was safe to fly.

But RAAus CEO Michael Linke told reporters checks were in place to ensure pilots at all ages were fit to fly.

"It's perfectly safe for an 80-year-old to be flying. There are many 80-year-old pilots across the country," said Michael.

"Once somebody turns 75 they are required to have an annual medical appointment with their doctor and they need to get signed off as medically sound and fit to continue to fly."

RAAus will work with authorities on the investigation. It could be several months before the cause of the crash is determined.

DUBBO

An RAAus pilot also died in an accident south of Dubbo on March 10. According to local authorities the crash happened near the man's property as he was landing his Savannah.

Preliminary evidence at the accident site, as well as witness statements, indicate the engine appeared to be operating at impact. To fully examine the engine, NSW Police will conduct a supervised tear down.

The post impact fire consumed much of the aircraft, including the instrumentation, flight control systems and surfaces. Initial investigations, however, suggest there are unlikely to be any mechanical or maintenance related issues.

RAAus' preliminary assessment of the evidence appears to support a possible loss of control at low level, with the cause as yet undetermined. RAAus will continue to work with authorities on the investigation.

YARRAWONGA

And another accident near Yarrawonga airfield on March 13 claimed the lives of Ian Cook, 60, and Quoc Huong Vu, 44.

Mr. Cook, described as an experienced pilot, had been flying his Airborne XT 912 for about 20 minutes before the crash which happened near the airfield.

An RAAus investigator attended the scene and is working with police. The investigation is still in the very early stages, however local media reports say the accident may have been captured on film.

Preliminary investigations indicate no mechanical or maintenance related issues are to blame. RAAus will continue to work with the police and witnesses to fully explore the circumstances surrounding this accident.

These accidents serve as devastating reminders of how unforgiving our sport can be. RAAus remains committed to keeping our sport safe and fun. We ask all members to continue to adhere to our core safety messages. Find more information about our safety programs on the website under the heading 'Safety'.

ROD HAY *Source: Facebook*

QUOC HUONG VU

Pointing the finger

BY THE DEVIL'S ADVOCATE

IN common parlance, a devil's advocate is someone who, given a certain argument, takes a position they do not necessarily agree with (or simply an alternative position from the accepted norm), for the sake of debate or to explore the thought further.

Now, why you might ask, would I tell you all that? Well I'm kind of fed up with all the political correctness - and it's getting awfully crowded on the high moral ground. Someone needs to take all our hallowed rules and beliefs and question them before we CASAise (new word, not yet Googerisable) ourselves into oblivion.

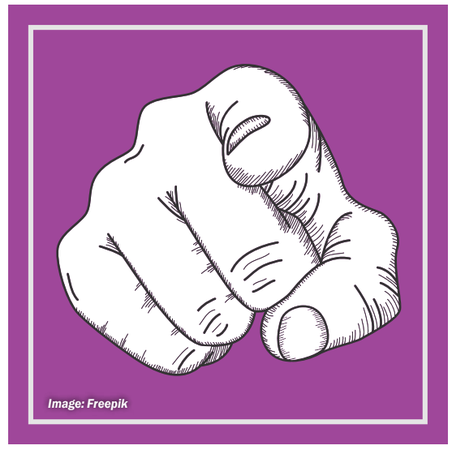


Image: Freepik

Years ago, when Pontius was still a student pilot, and I was a fledgling, I used to love to sit in the hangar/tearoom/clubhouse and listen to the old pilots tell stories of how they got into trouble and how they got out of it again. For them it was a catharsis, a sort of confessional – for me it was an education. Nowadays everyone is too afraid of the Goodie Two Shoes (GTS) brigade to 'fess up' to anything for fear of criticism.

You can usually pick the GTS by their long arms (all the better to pat themselves on the back) and their beatific smiles (from the enlightenment of being perfect pilots). There is even a small hierarchy of GTS called the Secret Aviation Police (SAP), but they don't smile a lot.

The confessional kind of education, however, seems to be dying for fear of reprisal. Australian national character or not, the larrikin has died too. Thank goodness Ron Wheeler had a bit of larrikin in him though, or we wouldn't have an association at all. Would someone today attach their Victa lawn mower engine to a modified hang glider and take on City Hall to allow them to fly it? Was it safe to fly not above 300ft? And safe for whom? A larrikin can't possibly understand good Airmanship eh? Or was the 300ft rule imposed by the Department of Civil Aviation?

Anyway, Airmanship is hard to define and tricky. Just when you congratulate yourself for carrying out a precautionary landing and waiting out the weather, some GTS comes along and tells you it was bad Airmanship to get into that position in the first place. Whatever happens, don't tell anyone your mistakes. It might lead to everyone wanting to do it - or not. Mistakes, like beauty, are sometimes in the eye of the beholder. Sometimes they're called bad Airmanship. Sometimes they're called education.

I make lots of mistakes. I'm still trying to carry out a perfect flight and I think that if, one day, I delude myself into thinking I've achieved it, I should quit flying. The point is there are things we need to discuss openly, even in front of the SAP (especially in front of the SAP). Humans learn by trial and error.

Preferably someone else's error, but we need to acknowledge and discuss it. I've often thought pilots get more pleasure out of talking about flying than actually doing it. We like to congregate and learn from each other - and I have a vague concern that because of the GTS, SAP and political (read aviation) correctness, we hold back. Not me. I'm the devil's advocate.

So next time you see a GTS point a finger at one of us mere mortals, you might like to point out that there are three fingers pointing back at them. Keep fessing up. I need to learn.

EDITOR'S CHOICE

Our own worst enemies

BY BRIAN BIGG

"Flying an aeroplane is an occupation which requires firm decision making"

HAVE you ever noticed that when you get ten pilots into a room, you get at least 11 opinions on every subject? And that every pilot believes his or her own opinion is the only correct one, no matter what the subject? And that everyone else in the room is not only mistaken, but dangerously so?

As anyone who has tried to serve on an aviation committee has discovered, we are definitely a loud and opinionated bunch of people. Perhaps, as has been widely postulated, it's because aviation primarily attracts people with Type A personalities. On the surface, that's not a bad thing. After all, flying an aeroplane is an occupation which requires firm decision making. You don't want some wishy-washy namby-pamby at the controls when the weather turns bad, the fuel tank starts leaking, your passenger suddenly gets air sick and the nearest airport is well behind you.

So we are Type A personalities, right? And proud of it?

The dictionary defines a Type A personality as "an ego state characterised by a behaviour pattern associated with individuals who are highly competitive and work compulsively to meet deadlines." That's definitely us.

Type A personalities are also considered to have a "strong orientation towards achievement". Us again.

These are just the sorts of traits our passengers want in the person who holds their lives in their hands, aren't they? But a glance further down the definition and the same behaviour sprouts some downsides.

Often what we think is competitiveness in ourselves, others see as rude and impatient. "Type A people are often workaholics, get frustrated while waiting in line, interrupt others often, walk or talk at a rapid pace and are always painfully aware of the time and how little of it they have to spare. Many get upset over small things and have short fuses."

Um. Let's see a show of hands. Us again, I suppose.

And it gets worse.

"Over the years, Type A personalities build up a lot of extra stress because of that behaviour. It takes a toll on their health and lifestyle. They are more prone to hypertension, heart disease, job stress and social isolation."

Does that fidgeting mean everyone recognises who it's still talking about? Us again?

It is clear being a Type A personality is not all beer and beans.

Perhaps the answer is a little bit more balance. Rather than shout down the idiot with the stupid opinion at the other end of the table, I could concede he or she might have a point - even if I don't necessarily agree with it.

Perhaps the eminently sensible motion I put to the committee might get a seconder, if I don't make my argument dripping with irony and sarcasm, or shouting and finger pointing at the dead heads on the committee.

And rather than actively plotting against the naive new club secretary, and lying in wait for him or her to make a mistake so I can lead the pack in dragging them down, I could point out where he or she is going wrong in time to prevent the mistake in the first place and save the club money, even though I won't get to be recognised as the hero who forecast the disaster.

Imagine a room with 10 pilots having a meeting where, after a warm hearted and friendly discussion, there is only one opinion and everyone agrees that it's the only sensible opinion.

No, I can't either. Type A's don't play well with others, do we?

A predator lurks

BY EVAN HART

NO doubt all Australian pilots would be familiar, to some degree, with the situation in Europe where new aircraft are proposed, designed but rarely actually appear above an airfield. Europe is an exceptionally competitive market in which to do business, probably even more so than the US.

A new aeroplane is trying to pioneer a new pathway to the world-wide market. The designer wants to build the aircraft in Australia, far away from the pressures of Europe. The aeroplane is the Predator X1. It is the brainchild of a Slovakian company and design work is now almost complete. The aeroplane has been designed to the ASTM requirements and detailed engineering drawings are being finalised. This is the last step before manufacturing can be begin.

The Predator will be made entirely of carbon-composite material and Kevlar. Construction will be modular, so the aircraft can be separated into a range of parts; both wings can be removed, along with the empennage so the machine can be easily stored and transported. It is expected to have a retractable undercarriage. The Predator will be certified around the world in the UL/LSA category and the producer is contemplating manufacture via some form of co-operation, maybe a joint venture.

Certification of the Predator X1 would be in the Special Category in Australia and its equivalents overseas.

The Predator X1's performance, using the new Rotax 915iS engine of 135 BHP is expected to be as follows:

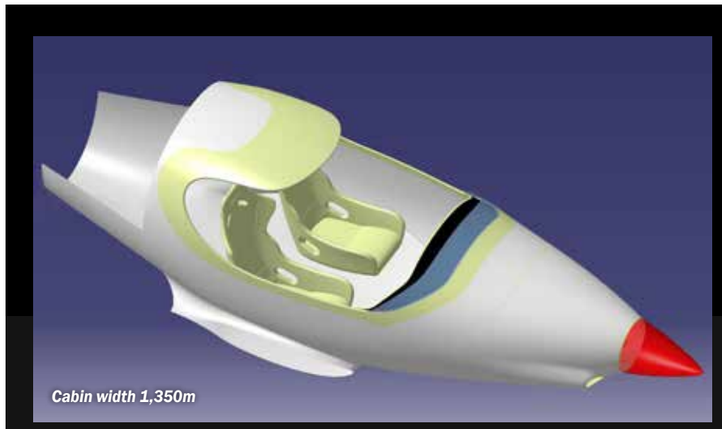
- Empty Weight 300kgs (+/-10);
- 600kgs MTOW;
- Baggage 5-20kgs maybe a little less (the aeroplane is 7m long due to the speed and stability);
- Fuel tanks 2×45 litres or 2 x 60 litres, so the range in economy cruise will be about 1,200/1,500kms;
- Engine will be a Rotax 915iS with Rockwell Collins ECU and turbo-charger. The engine is rated at 135 BHP;
- Rate of climb 2,150fpm–2,550fpm;
- Theoretical service ceiling 30,000ft;
- Cruising speed 130–140kts;
- Maximum speed 145–155kts;
- Vne 185kts;
- Stressed to +6/-3 G.

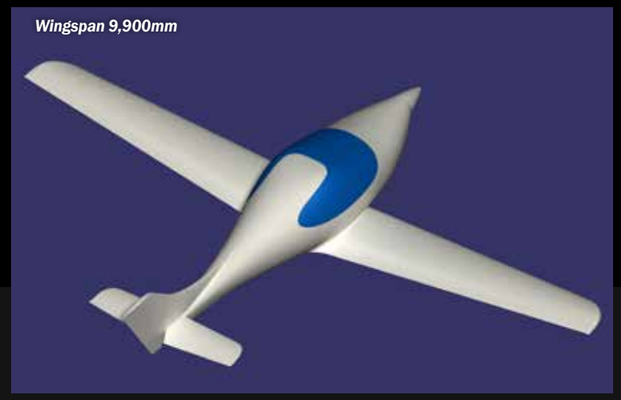
There will be three versions of the Predator X1, the first powered by the 100 BHP Rotax 912ULS, then a version powered by the 115 BHP 914UL and, finally one powered by the 135 BHP Rotax 915iS.

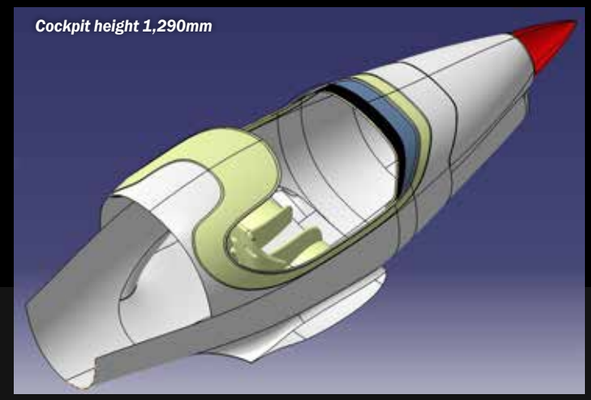
The interior will be luxuriously furnished. The cabin is wider and the seats will be high quality leather covered. The aeroplane will be very computer-centric, with a computerised notification system designed to inform the pilot of any condition which might lead to a dangerous state or to an incident.

The designer of the Predator X1 would be interested to hear from any Australian composites manufacturing company which might be interested in building the aircraft. He would also be interested to hear from any Australian company willing to assist him to equip the Predator X1 EFIS systems, navigation systems, VHF radios and transponders. Any expressions of interest can be sent to: aero-impex@bigpond.com.

RAAus and Sport Pilot make no claims or endorse the above product. It is for the information of members only. Anyone wishing to go further on this information should undertake their own due diligence.







"Design work is now almost complete"

VNE	EMPTY WEIGHT	MTOW	MAX SPEED	ENGINE	MAX CLIMB RATE
185kts	300kg	600kg	155kts	Rotax915iS	2.550fpm

Walsh airstrip CTAF 126.70 MHZ

Marvelous MANSFIELD

BY MARGARET MOORE

RECENTLY we had the pleasure of spending three nights in the Mansfield region, enjoying the local hospitality and sights and thought we'd better tell everyone about it.

On a Monday afternoon we travelled down the spine of the Great Dividing Range into Victoria and past the spectacular sights of Mts Buller and Stirling. No sign of snow at this time of year but an impressive sight nevertheless.

We landed on Walsh's 1,000m strip in prevailing light and variable winds. It had been easy to arrange for a 4WD hire vehicle to be waiting for us at the strip and it was a quick four kilometer run into town to pick up fuel.

Having quickly secured the necessary Mogas and a couple of local Aberdeen angus steaks for dinner from the prodigious Mansfield butcher, we drove back past the airstrip to our bed and breakfast accommodation at Moore House, situated another 10kms further along on the Jamieson Road. The secluded cottage, nestled in a picturesque valley, met all our expectations of a home away from home and was fully equipped with everything we needed including razor sharp kitchen knives, a piano and an outdoor bush shower with a view of the creek beside the house! That evening we enjoyed a memorable dinner, totally unmolested by mosquitos, sitting on the deck watching the local birdlife come and go from the dam in front of the house with the Southern Cross clearly visible above us. There wasn't another house in sight and the views of the local countryside were spectacular and deafeningly quiet - if you don't count the chorus of frogs around the water.

The following morning, we motored back to the airstrip and took a tour of the region. We passed over Jamieson and its river, remote Kevington, deep in the bush, and Lake Eildon which was looking low but not desperate thanks to recent rains. Heading north we passed over Lake Nillahcootie, which is on the Broken River nestled between Mt. Strathbogie State Forest and Mt. Samaria State Park. Not long ago I read Peter Carey's 'The True History of the Kelly Gang' which is set in this region and wondered at the life he must have led, hiding out and trying to live in those remote hills and rugged, uncharted country. Powers Lookout (Harry Power was Ned Kelly's protégé and mentor after his mother apprenticed him to Harry to learn his trade as a bushranger) with its rugged stone steps overlooks the King Valley winding between the ranges. It's not hard to imagine one could be in France with vineyards and chestnut groves visible along the King River flats.

The next day, having gained a good feel for this spectacular region from the air, we explored Craig's Hut which was constructed on Mt. Buller for the set of the film *The Man from Snowy River.* The vehicle we had hired would have easily taken us there, but we took an organised tour because a picnic lunch was provided and saved us going shopping. This was an excellent decision, the food was delicious and generous and the views were spectacular. This was an unmistakably Australian high country experience.

That afternoon I planned on a bit of fishing. We met a local guide who took us to a delightful spot on the Howqua River for some fly fishing and helped me to brush up my rusty casting skills. We barbequed the Blackfish I caught for dinner. You can't buy fresher than that!

Airstrip surface after the rains

No neighbours

Next day we reluctantly left the comfort and seclusion of Moore House and motored back to the airstrip where we left the 4WD and took to the air in a gentle northerly and clear skies.

This was a very relaxing fly-in break and everything we needed was either provided or easily obtainable. Arranging it only took a couple of phone calls and an email or two. The Mansfield/Mt. Buller region is studded with interesting features and there is much more we wanted to explore. Spring, summer and autumn is a great time to go when there are no winter ski crowds. Next time we'll go to the zoo and watch them feeding the lions and maybe go trail riding through the bush at a nearby horse trekking property.

For more information: *www.moorehouse.com.au*
Walsh's airstrip: *pvywoo@bigpond.com*
Car Hire: Mansfield Tyre Service: *(03) 5775 1122*

Make sure you close the gate

PILOT TALK

From the top down

BY THE OPS TEAM

Members don't have to look too far these days to see significant changes in the way RAAus is operating. Communications, modernisation, member engagement and a focus on development and enhancements to services are just a few of the more visible initiatives which now make our interactions with members easier and more productive, giving everyone more time for flying.

LESS obvious is the assurance and development of pilot standards. From the freshly minted Pilot Certificate holder to Chief Flying Instructors, instructor trainers and our examiners and regional coordinators, the tree stretches skyward with the various levels of training and assessment approvals. Operations has a responsibility to ensure not only that training and assessment standards are maintained, but also developed to cater for changes and to make sure we are well placed for additional privileges. This responsibility reaches across the spectrum of RAAus flight operations.

WHY IS THIS SO IMPORTANT?

We've come a long way. Paddock hopping has been replaced by cross continental sorties, flying holidays now cover many flight miles in aircraft which rival and often surpass many of those we looked up to and dreamed about as kids. In many places the paddocks are getting harder to find and we regularly mix it up with choppers, twins and jets all competing for the same airspace and airports. In a way, we've all grown up!

We are now more visible aviation users. In many cases, we exercise the same privileges for which others have fought and paid significantly more for over the years. That's why maintaining and building our own standards has become so important- other than for the obvious safety benefits.

The introduction of the CASA Recreational Pilot's Licence, while not directly related to our operations, has provided an extension path for those pilots who want to enhance their flight activities. It's not for everyone, but for those who do want to follow this path, we are obliged to ensure our training standards and competencies at least place our pilots in the best position to make the transition as seamlessly as possible. Recognition of our training syllabus was the start, but ensuring pilots meet these standards, begins with correct delivery from the top down.

It may come as little surprise to some that our pilots don't always do the right thing. Sometimes it's a simple error, occasionally

We are more visible aviation users

it is deliberate and willful. But more often it is borne from ignorance. "I didn't know", "I was never taught that" or "that's not what I was shown" are the common responses. We know in many cases our pilots are taught to minimum standards, but in some cases they are not and that's why minimum standards need to exist. Operations staff will never have enough time to fix the basic processes which have matured over time, but we can go to the source of the teaching, the top of the tree, to rationalise standards and consistency.

SO WHAT'S BEEN HAPPENING?

Considerable work has been undertaken in the past two years to assist instructors and examiners with the task of maintaining and building these standards. This has historically been undertaken through a Biennial School Inspection. This is where CFIs and instructors meet on site with Operations to confirm they are compliant with Ops Manual standards. It's also a great opportunity to review briefings, fly with CFIs and instructors and share knowledge while checking and updating the renewals. The revalidation of the Regional Operations Coordinator roles in 2013 has helped Ops perform these tasks and our ROCs do a fantastic job in assisting what otherwise is a two person team.

The introduction of a Generic Training record system was one of the early initiatives rolled out to improve compliance and training consistency. This has been extended to include a range of checklists and guidance material for instructors in areas such as converting pilots from other disciplines and basic checks for a Biennial Flight Review.

Ongoing development of our own RAAus instructor training reference manual is also well underway, with significant input from key approval holders and industry stakeholders. This will provide additional resource material including basic briefing sets and guidance material for teaching and training delivery standards. Uniquely, our manual will recognise the diversity of recreational flying by also providing material for weight shift trike and powered parachute instructors.

Our ongoing modernisation project has also provided a recent enhancement for CFIs via the CFI portal. The portal allows CFIs on-the-spot access to membership and aircraft registration information.

BRINGING IT ALL TOGETHER

There is no substitute for working together and, with this in mind, we have embarked on a range of Professional Development Programmes with Pilot Examiners and instructor trainers. Brisbane will have been run by the time you read this. Further programs will follow in Canberra this month and Adelaide in May. This educational and collaborative approach is expected to focus on standardisation and consultation for training operations and processes. It has the goal of helping you, the pilot, be the safest you can be, through professional and consistent training and assessment practices. After all, we know that in most cases the apple won't fall far from the tree, so we are working from the top down.

The path to enlightenment

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL

IN case you were wondering, no I haven't abandoned engineering and opted for a life of quiet meditation. I do firmly believe, however, that weight reduction should be pursued with an almost religious fervour, so I wholeheartedly recommend putting some serious thought into the load paths within the structures you design. After all, the potential weight savings are massive. But I'm getting ahead of myself. Before you can optimise load paths you need to know what a load path is, and what constitutes a good or bad one.

A POSITIVE REACTION

Newton's third law tells us that for an object to be in equilibrium (i.e. not accelerating), all the forces acting on it must be balanced. To use the famous phrase, 'Every action must have an equal and opposite reaction.' The great thing about structures is they allow the 'actions' and 'reactions' to be physically separated from each other. They do this by providing a load path between them. As an example, the wall of a house takes the load imposed by the weight of the roof and transfers that load to the ground via the foundations. In this way the wall provides a load path connecting the 'action' created by the weight of the roof to the supporting 'reaction' of the ground under the house. It's clear then that the basic purpose of pretty much every structure ever built is to provide a load path to transfer forces from one place to another. But, as we shall see, not all load paths are created equal.

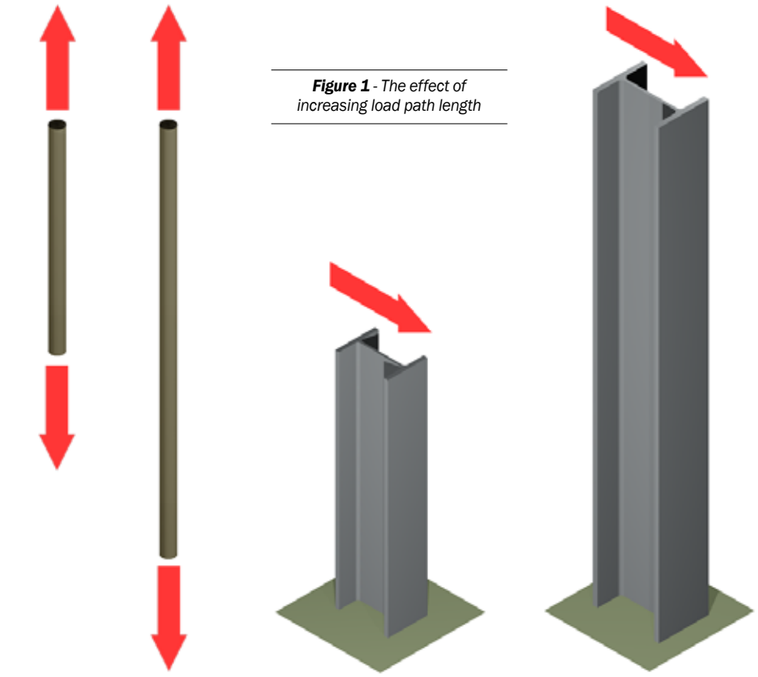


Figure 1 *- The effect of increasing load path length*

Rod in Tension
Doubling the length doubles the weight.

Beam in Bending
Doubling the length doubles the bending moment. Scaling up the cross-section to keep the peak stress the same in both beams more than triples the weight.

SHORT AND SWEET

If you are designing a structure for minimum weight, it pays to make the load paths as short, straight and continuous as possible. To see why, let's start with the obvious. The left hand side of Fig. 1 shows a rod in tension. Doubling the length of the rod doubles the material required and so doubles the weight. Thus short load paths are lighter simply because they require less material. This is even truer of structures which have to carry bending loads. The right hand side of Fig. 1 shows an 'I' beam loaded in bending. Keeping the same force applied to the end of the beam but doubling the beam's length doubles the bending moment (that is the applied force multiplied by the length of the beam) at the fixed end. To keep the peak stresses in the two beams the same requires an increase in the cross section of the longer beam of approximately 25%, which, when combined with the doubling in length, results in a weight more than triple that of the short beam. Now I must admit that simply increasing the cross section is not the most efficient solution to doubling a beam's length - a tapered beam would be a lighter solution - but even so, when designing for bending, doubling the length always more than doubles the weight.

In a similar vein, straight load paths are preferred simply because the shortest path between two points will be a straight line, but there is more to it than that. Looking at Fig. 2 it can be seen that a push pull rod with a dogleg will not only be heavier because of the extra material required, it will also have to be more heavily built to cope with the bending stresses the corners introduce, or else be weaker and much less stiff.

Finally, load paths should be contiguous. In other words, joints and connections should be avoided wherever possible. A single piece structure will always be more weight efficient than one with lots of connectors. This is one of the primary reasons why composite construction is appealing for aircraft. The major issue is that joining components mechanically requires the loading to be concentrated into a small area around the attachment point. This in turn requires local reinforcement of the structure to control the stresses and heavy fittings capable of carrying the concentrated loads.

So how do we apply this knowledge to practical aircraft design? Consider a tractor aeroplane with nose wheel landing gear. If the nose gear is aligned with the firewall it can be mounted directly to what is already a robust part of the structure using only a short bracket. However, if it needs to be mounted 300mm in front of the firewall, a large and heavy mounting bracket will be required to bridge the gap, incurring a significant weight penalty. In this case a more optimal solution may be to attach the nose gear directly to the engine mount. Given the primary load on the nose wheel will be the weight of the engine, this will provide a short and direct load path with minimal fittings.

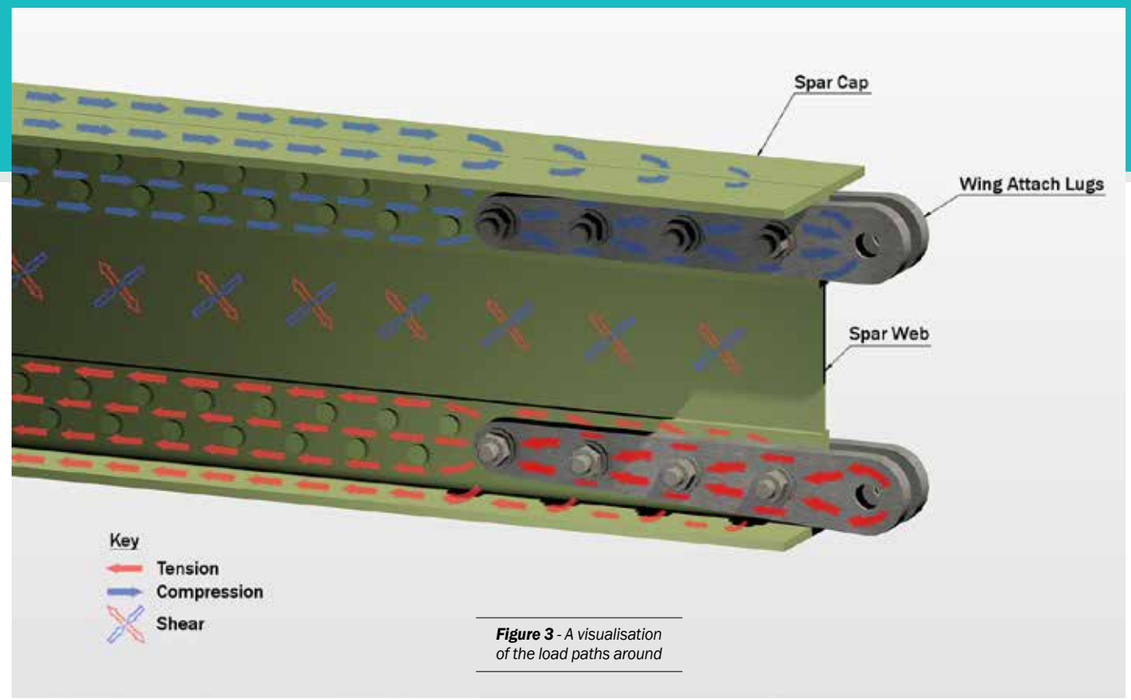


Figure 3 *- A visualisation of the load paths around*

Aircraft design is full of these sorts of problems. Next time you go flying have a look at the structure of your aircraft and you'll find optimised load paths everywhere. High wing pushers, where the engine is mounted right on top of the wing, or low wing craft, where the landing gear is bolted directly to the wing spars. There are plenty of old designs where the wing box carry-through forms the seat base, allowing the weight of the pilot and passenger to bypass the fuselage all together and there's more than one good reason why modern airliners mount the engines on the wings.

KEEPING IT SIMPLE?

Simple load paths are appealing. A structure with a single load path, such as a bracket secured with a single bolt, is both easy to analyse (it's pretty obvious where the loads are going) and cheap to produce. The drawback is that it puts all your eggs in one basket and a single failure will fail the whole structure. Multiple load paths, in comparison, have a distinct safety advantage because they can be designed with redundancy - think of a plate secured by a pattern of rivets where a single rivet failure will not fail the structure. Redundancy of this type protects against single points of failure, but comes at a cost of increased complexity and, in many cases, increased weight. In addition, when it comes to multiple load paths, things can really start to get complicated on the design and analysis front. You are now forced to figure out where the loads (and therefore stresses) are going within the structure and also how they are being shared between parts.

> "Multiple load paths have a distinct safety advantage"

Analysing redundant structures is complicated, but there are two factors which determine the load distribution: How the external loads are applied and how stiff are the different parts of the structure. This point is illustrated in Fig. 4 with some simple examples, but it is important to realise that many real-life structures will fall outside the ideals shown. Structures like those in Fig. 4 where the stiffness and external loading don't interact are nice, but not all that common. I'm sure you'll be relieved to hear that more complex structures are beyond the scope of this article, but there are still some useful insights to be had, so let's take a look at a couple of examples and see how failing to understand stiffness and load paths can get you into trouble.

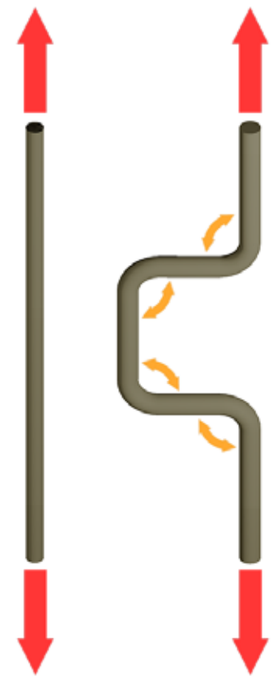
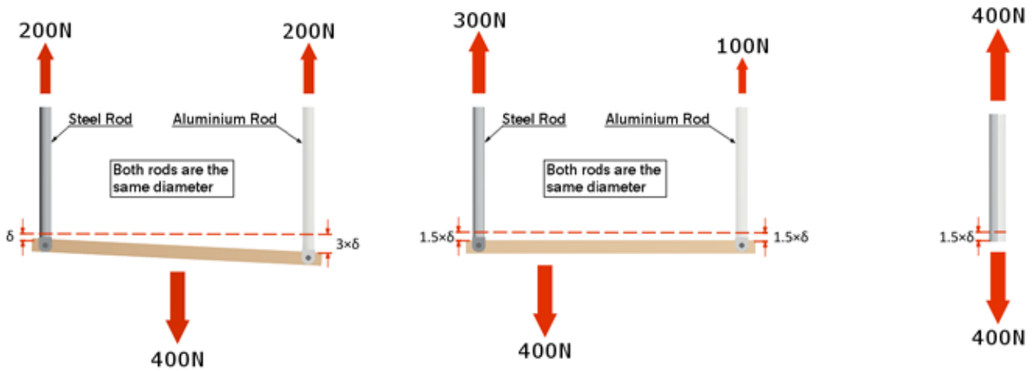


Figure 2 *- Straight load paths are more efficient*

Indirect routing
Straight load paths are more efficient. Curves introduce bending loads which require parts to be more heavily built to achieve the same strength and stiffness.

The path to enlightenment

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL



① If the geometry of the structure and the position of the loading ensures that both rods experience the same load, then the *stresses* in the two rods will be identical. The aluminium rod has only one third the stiffness of the steel and so experiences three times more *strain*.

② For both rods to experience identical *strain* the *stresses* in the two rods must be different in proportion to their stiffness. In this case the position of the load has been moved so that the steel rod carrys three times the load of the aluminium rod.

③ Equal *strain* can be enforced by the structure rather than the loading. Attaching a steel tube inside an aluminium tube to give a cross-section that is 50% steel and 50% aluminium will have a similar result to ② As long as the tubes are rigidly connected the *strains* must be identical, so the steel will carry three times the load (and bear three times the *stress*) because it is three times as stiff.

④ Stiffnes is not just a material property but also depends on geometry. Replacing the aluminium rod in ① with a steel rod of one-third the cross-section would result in the same deflections, but the thin rod would experience triple the stress. Replacing the aluminium rod in ② with a steel rod of one-third the cross-section would result in identical stress in both rods - as required for them to experience the same strain.

Figure 4 *- The effect of stiffness and external loading on load distribution within a structure*

SETTING A BAD EXAMPLE

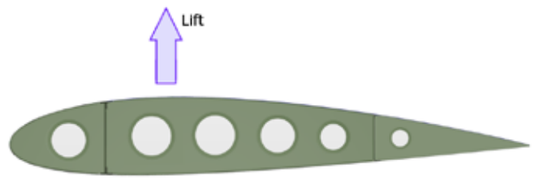
First up is the classic case of mixing up strength and stiffness. I was recently party to an internet discussion where someone suggested an existing aircraft design could be beefed up by simply laminating a layer of carbon fibre onto the outside of the wooden spars. The key thing to appreciate here is that carbon fibre composites are stiff, and wood really isn't. In fact, the ratio is in the ballpark of 20:1 so for every 200kg the carbon fibre spar caps carried, the wood would only carry about 10kg. Now the amount of carbon fibre wasn't specified so one of two outcomes was possible. If a small amount of carbon fibre was to be added, the strength of the wing would not be increased as the stiff carbon fibre would take nearly all of the load and then fail well before the strength of the wooden spar was exceeded. This wouldn't be dangerous because the wooden spars would still function just fine, but it would be expensive, and provide no discernable benefit. Alternatively if enough carbon fibre was added to significantly increase the strength above that of the underlying wooden spar, the aircraft would be carrying around a heavy wooden spar with almost no structural purpose. Not what most people would consider an optimum design.

> "Carbon fibre composites are stiff and wood isn't"

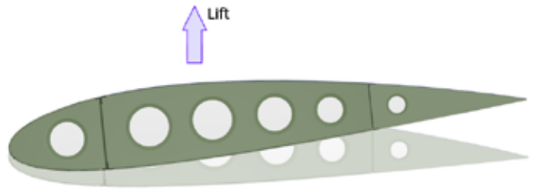
The second example is why building a plane stronger than the plans call for is not necessarily a good idea. The top half of Fig. 5 shows how a two spar wing is usually designed to behave. A vertical gust load will cause the wing to bend up, but simultaneously twist nose-down. This reduces the angle-of-attack and sheds some of the load, thus protecting the structure. Compare this to the lower half of Fig. 5, which shows what can happen if the rear spar is reinforced or overbuilt, increasing its stiffness. In this case the stiff rear spar bends much less under load, so a gust now causes the wing to twist nose-up. This initiates what is called divergence. The increased twist increases the angle-of-attack, which in turn increases the load, which further increases the twist and so on until, a fraction of a second later, the wing twists itself off. Not a good result from a modification intended to make the wing stronger!

NEXT MONTH **What it takes to make a STOL aircraft.**

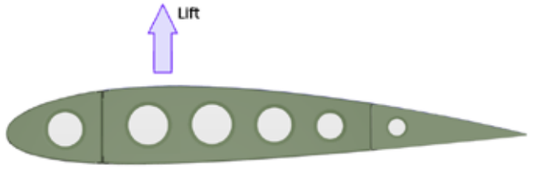
Rear Spar With Correct Stiffness



① Wing hits a gust causing an increase in lift force.



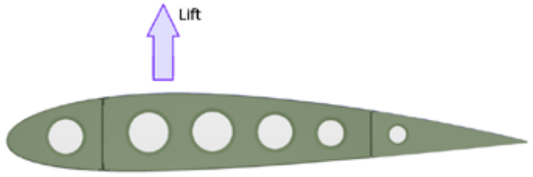
② Rear spar deflects more than front spar causing the wing to twist nose down. The resulting reduction in angle-of-attack reduces the lift force.



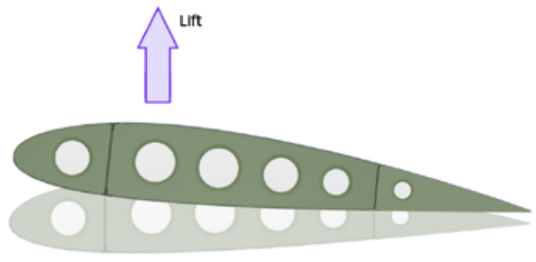
③ Reduction if lift force allows the wing to return to its equilibrium position.

Figure 5 *- Why increased stiffness is not always a good thing*

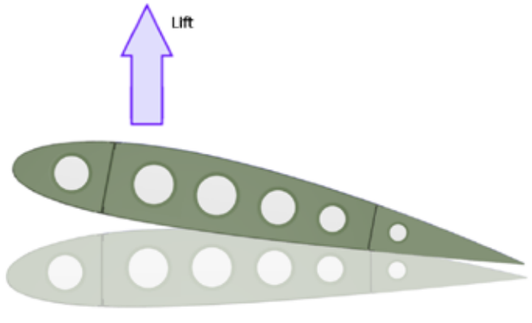
Rear Spar Too Stiff



① Wing hits a gust causing an increase in lift force.



② Stiff rear spar deflects less than front spar causing the wing to twist nose up. The resulting increase in angle-of-attack further increases the lift force.



③ The increased lift force further increases the wing twist, increasing the angle-of-attack which in turn further increases the lift force. This feedback loop continues causing 'divergence' which ultimately twists the wing off the aircraft.

Rescue from the salt

BY VAUN MONCUR

MY FRIEND AND LONG DISTANCE FLYING COMPANION, DAVID GEERS, OF BRISBANE, SAYS PEOPLE LIKE TO READ ABOUT CRASHES AND MISTAKES. THIS IS DAVID'S STORY.

DAVID and Doug Bauer, both flying SeaRey amphibious aircraft, took off from Brisbane to fly over Lake Eyre in February 2015. David had a passenger named Dan on board.

Lake Eyre was receding after recent floods. Dave and Doug's plan was to land on the water on the northern end of the lake and refuel with extra fuel carried in Doug's plane. They would then continue on to William Creek. Strong headwinds picked up in the afternoon, so it was agreed they would track directly for William Creek. But, because they were right on the minimum reserve, they decided to land and refuel from the bladders in Doug's seaplane.

With perfect weather conditions, David decided to descend and have a closer look at this vast salt flat. During his precautionary look, he noticed car tracks marking the surface but after a careful examination, he decided to go ahead and land anyway, ready to pour the power back on if the surface proved to be soft. Big mistake.

After a 50 meter landing roll, the big SeaRey's tyres sank into a much softer surface. David powered on, but it was too late. The salt crust was just 30mm thick and underneath was soft clay. He was bogged.

What followed was a chain of events you would never wish on anyone.

After assessing his situation, David radioed to Doug and warned him not to land. Doug flew on to William Creek to raise the alarm. David and Dan, meanwhile, took all the heavy items out of the aircraft, and raised the landing gear hoping to take off, skidding the hull along the surface salt. Although the plane moved forward, it didn't work. Dave then set off his EPERB and, late that afternoon, a rescue helicopter arrived from William Creek.

It gets worse. The pilot of the chopper, concerned about salt intake, shut down its engine too quickly, and it overheated. So there were now five people and two stricken aircraft in the middle of Lake Eyre and it was getting dark. Another rescue helicopter was organised from Moomba Gas mines, 150nm away. David reports that because there was no moonlight, it was the scariest rescue arrival and takeoff imaginable. Even using the lights from the two stricken aircraft below for orientation, the pilot of the second chopper had difficulty judging the height properly. And taking off at maximum weight, with six people on board, was terrifying. David says the pilot showed incredible skill.

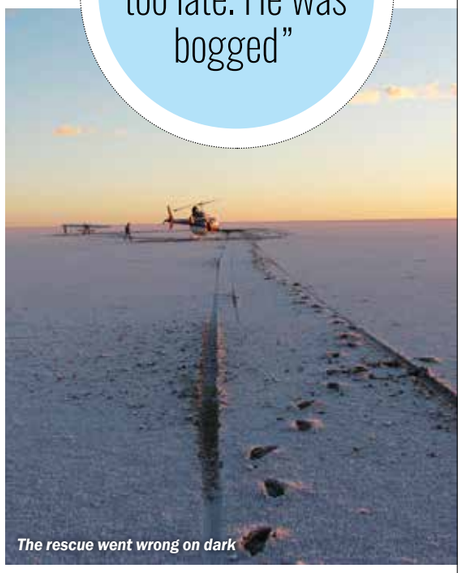
Finally everyone was back safely at William Creek, where Dave and Dan began the arduous process of salvaging the SeaRey from the salt. They maintain they stayed longer than any other tourists in William Creek. They were one week in that tiny iconic pub in the Simpson Desert, running up a substantial bar tab.

The next day, a new helicopter engine and two mechanics were flown out to the lake. They somehow managed to replace the engine

The crust was just 30mm thick

"It was too late. He was bogged"

Being made ready for trailering


The rescue went wrong on dark

Rescue from the salt *cont'd*

BY VAUN MONCUR

Battered and bruised after eight weeks in the salt

Stuck

Was it worth taking home?

Heading to Brisbane

Under sling

despite the conditions. A second helicopter was organised to sling David's SeaRey out.

For the first 30 minutes the sling operation went according to plan, then things deteriorated. The SeaRey started to fly itself under the helicopter and began swinging violently from side to side. The helicopter pilot was forced to release it.

The pilot reported the aircraft flew itself gracefully back down to Lake Eyre and, although it landed on its wheels, it sustained serious damage. David inspected his pride and joy and became quite dejected. He returned to William Creek to work out whether it was viable to attempt a second recovery.

Two months later, a second helicopter sling was organised. In preparation, the fabric was cut from the damaged wings to prevent it trying to fly itself again. A trailing tail rope was also attached, to ensure the aircraft stayed straight while it was being slung.

Steady rain greeted the ruined SeaRey on arrival at William Creek. There, David discovered his pride and joy had been further damaged by eight weeks out in harsh conditions. The deck and dash had been battered by the strong winds. As the rain fell, the SeaRey was dismantled for transport home. As it turned out, David had rescued his plane just two hours before the heavens opened up and Lake Eyre flooded again.

The rain, of course, closed all roads out of William Creek, so now it was my turn to spend a week in the iconic pub while David flew home in an RV. Finally I was able to assist and towed the damaged amphibian on a boat trailer back to Brisbane.

Many months have passed and David has begun the slow rebuilding of his SeaRey in his garage. We have contemplated what he should, and should not, have done, but ultimately it's a fruitless discussion. On the bright side, David and Dan were not injured and the SeaRey will hopefully be back in the air soon.

There's also a lesson here for all light aircraft pilots. Over the years, there have been about 20 aircraft lost or salvaged from Lake Eyre. Land speed records are usually attempted on the dry salt flats of Lake Torrens in South Australia just 200nm south of Lake Eyre. But don't take my word for landing there, make your own enquiries.

And when in doubt, go about.

FLYING TAUGHT ME THIS TODAY

Land the damned aeroplane

BY ROB KNIGHT

THE age old affliction of being unable to carry out a 180° turn and land when faced with a serious in-flight hazard is still culling its crop of pilots.

This hazard appears in many guises – deteriorating weather, fading daylight, too much air in the fuel tanks – the list is long. However, ask any pilot before any flight and you'll get, "Of course, the hazards are obvious but I reckon I'm sensible enough; I'll turn back and/or land ASAP if there's a problem."

So why is it that pilots fail so often to act sensibly? Why are they are so reluctant to turn back and/or land when there is a real need to do so?

I know one reason why - human conditioning – and I have experienced it first-hand. In my case it was the subtle but powerful pressure to keep on keeping on, coupled with a lack of definitive training in determining and positively acting on an emergency action which had been depicted to me in the loosest of verbal instructions.

I was 19 years old and a new PPL when I encountered my weather emergency. I admit I failed the test miserably. Only good luck and benevolent fate prevented me from gaining immortality as a line on an accident statistic. Looking back now, the seat of my problem was two-fold, breaking with the habit of every successful flight I had ever made and making a conscious decision to carry out an action that was an emergency one. I didn't want to be in an emergency – I just wanted to keep doing what I was doing and see my destination peep over the horizon in half an hour as it always did.

You see, all my previous emergencies were pretend and they always had good outcomes. I had been told lots about emergencies and had been taught and practiced a plan of action should the engine stop - but it was still running sweetly. All the talk around the aero club, by pilots I considered far more experienced and capable, had been about bad weather. But they hadn't turned back: they had soldiered on like real pilots and flown through it. They had got home, so was I going to make myself a target for their caustic humour if I beat a retreat?

It was early autumn, a time of year when bands of afternoon CB's traverse the countryside, bringing intense and extensive storms. It was a two hour flight home. I had time in hand, several hours remained before the T5 (Victa Airtourer 150) was due back at the aero club. I was approaching a line of hills, south of a sleepy country town.

I had idly watched a line of CBs developing ahead but only felt alarm when it extended beyond the east and west horizons. I had sat there, fat, dumb and happy, and cruised towards the malignant mass at a steady 125kts at 2,500 feet AMSL. This was a seriously threatening storm wall and I continued with no contingency plans to reduce the potential gravity of the situation. Instead of prudently retreating to two airfields I knew were behind me or landing on one of the farm topdressing strips abounding the area, I flew on, ignoring common sense, listening instead to mental memories of other pilots reporting a valley through these hills, about three miles west of the main road south, and through which pilots could easily pass at 800ft QNH.

I pushed the nose down and the speed built. I was nowhere near VNE but very close to the dark rolling edges of the CBs. Hey, this was great, I thought. I really had this sussed. No need for a timid turn-back here!

I found the valley easily and it looked very inviting. Even though its steep sides disappeared into the clouds, it beckoned like a tantalising temptress. Above, there was no sky, just a very sullen silvery-black cloud mass which glowered down. Without further thought I entered the valley at 500ft AGL, with cruise speed and cruise power of 2,400 rpm and 24 inches manifold pressure.

All was sweet, hills flashed past my wing tips, sheep scattered from the echoing engine noise. Then the valley narrowed and the hills closed in. It became too tight to turn around and my commitment became total. Later I realised the revolver I had raised to my head had five of its six chambers loaded.

In the light rain, visibility became quite reduced. Closing rapidly on a dark shape looming ahead, a bend in the valley appeared. Bugger! I had imagined the valley was straight. I couldn't change anything now!

I hit the bend too low and far too fast. It was just wide enough for the aircraft to turn; I was right on the outside edge of my flying ability. Heavily banked, I rounded the bend and rolled to wings level. The world exploded into noise and blackness as VFR went out the window and was replaced with IMC. There was no horizon, no flight visibility at all. The valley around me was filled with cloud, intense rain and hail from the CB above. I couldn't see them, but the hillsides were just a few hundred feet on either side.

Firewalling the throttle, I eased the nose up. I had only about five hours of instrument training, all on the Victa 100, the little sister to this aircraft, but the panels held the same flight instruments - a turn and slip, altimeter, vertical speed indicator and compass. I put the ball in the middle, kept the turn needle vertical, and held 105kts. This was well above the normal climb speed but I had too much on my hands for finesse. My senses were being pummeled with fear and noise and a distracting torrent of water from the leaking canopy hatch seal above me.

So I remained for the eternity until it ceased, as suddenly as I had flown into it. Light appeared, then the horizon. The altimeter read 3,700ft and I was about five miles south of the hills. I restored cruise power. I have no idea what the actual RPM and manifold settings had been, they never featured on my priority list, but there seemed to be no ill effects. I could see ahead the skyline of the city and my VFR reporting point then began my approach for runway 23. Still in shock, I lowered the nose again to descend before entering the transit zone, but this time I really could see where I was going.

Back at the aero club no one asked me about my trip. I was really shaken up. I have no idea what replies I would have given. There were no visible signs of my acquired new knowledge, save my totally drenched flight plan, whizz wheel and AIP. However, I was still chilled with fright and furious with myself. Why had I even considered such an obvious trap?

That powerful lesson, indelibly infused in my memory, remains ever fresh. In a later life, working as an instructor, I worked my students through extra turn-back exercises and unexpected off-airfield approaches, in addition to the prescribed flight training exercises. I never wanted one of my protégés to be hesitant about appropriate bad weather decisions due to their lacking experience, or too mindful of what other useless moles might say afterwards. I taught that decisions made early are decisions made better.

The big secret to handling inclement weather? Land the damn aeroplane! Just find a field and put the wheels in it while you still have choices and situational control. Be alive to argue about it later.

INSTRUCTING

Those who can, teach

BY BRIAN BIGG

THE ARTICLE I WAS READING MADE ME SCARED. "A STUDY OF PILOTS INVOLVED IN RECENT FATAL OR SERIOUS ACCIDENTS IN AUSTRALIA UNCOVERED THAT THE AVERAGE AGE OF THE PILOT WAS 58 AND THAT HE OR SHE HAD ABOUT 500 HOURS IN COMMAND."

I HAVE about 600 hours up and am heading towards 58 at a speed which would have exceeded VNE a few years ago.

I do this sport for love, but I'd really rather not die doing it. So I began to think of ways to improve my chances of making it past the potentially fatal bottleneck.

The answer was relatively simple. More training. And not just jumping in and doing a few circuits either (I do that anyway for the fun of it). But structured training, with an instructor next to me helping me to achieve specific goals.

In GA when you have your restricted licence, it's a simple matter to go to your unrestricted licence, then to your Night VFR, retractable undercarriage endorsement, tail wheel endorsement, aerobatic endorsement, then perhaps onto your instrument rating, a twin endorsement, then to a commercial rating and, if your age and wallet allows it, possibly even an airline transport rating.

It's a clever way of ensuring you are in an aircraft with an instructor beside you fairly regularly during your flying career where he or she can keep an eye on what you are doing and stop your bad habits before they become bad habits.

I was partway to my instrument rating when I discovered RAAus. I had no real desire to fly in bad weather in big aircraft, but I understood the value of structured training and the discipline required to do it.

When I came to buy my own aircraft, I realised I just wanted to fly in good weather, going nowhere in particular, as cheaply as possible. RAAus was a godsend.

"I would have to get a class 2 medical"

And in the years since then, the only time I've been near an instructor is every two years for my BFR, when Nick comes up with me and forces me to do things in my aeroplane that I never do when I am in it on my own. I always enjoy the experience and Nick always says nice things about my flying skills, but was it enough to keep me safe through the potentially fatal years? The years when, according to the experts, I go round believing I'm the world's best pilot and before I reach the level of professionalism (1,000 hours) to realise I am not?

I sensed it was not enough. But how to get more formal training in RAAus? What reason could I have to get an instructor to sit beside me during a formal series of lessons to improve my skills? There is no formal skill tree in RAAus like in GA. Perhaps there should be.

I have decided to go for my RAAus instructor's rating.

It must be said at the outset that I don't ever anticipate officially teaching other people how to fly. It's purely for my own benefit and to avoid the bottleneck. But whenever I take other people up as passengers, I find that I am able to explain to them what is going on and help them overcome their fear of it relatively quickly and easily. So I shouldn't be too bad at it, if I ever do come to do it professionally.

I also quite like the idea of learning how to fly from the right seat, which I've never done.

So how to go about it? Could I really do it?

My first port of call was to Jill Bailey, the Ops Manager. Jill and I have a great relationship (she tells me what to do and I do it without question) and, as RAAus's senior operational administrator, she knows everything about this subject.

Jill was full of encouragement for my idea.

"It is a rewarding, frustrating and exhilarating role," she told me. "Part mother or father, big brother or sister, friend, teacher and role model. Your flying will improve, your theory knowledge will deepen, and you should never stop learning." Confirming just what I was after.

Jill is an instructor herself, obviously.

"One of the primary reasons why I took on the role of instructor and even eventually, Ops Manager, was to learn from others, get better at what I did and continually improve, which I have discovered is a common reason for pilots becoming instructors. As long as you don't become complacent and keep learning, you will enjoy the journey."

The first question to be answered was could I do my instructing lessons in my own 19 registered aircraft? That was going to be a major factor with costs.

Jill told me that it was possible for me to learn in my own aircraft, but not to conduct commercial lessons in it once I had my rating. For that you need a factory built aircraft.

Jill then pointed me towards the Ops Manual, which has a thorough outline of all the things I will have to learn. It's quite daunting and it appears I will be spending more time in the briefing room than in the cockpit. I haven't done any theory tests for 30 years and it is going to be fun(?) to find out how much of it I still know.

The first big surprise? I would have to go and get a class 2 medical. Why? If, on my current certificate, I'm considered safe enough to fly on my own with passengers is a private individual, how can I be any more safer with a class 2 medical?

Jill explained that because I would have an increased level of responsibility as an instructor, the regulations required I achieve an increased level of compliance, including a medical.

In that case, couldn't I delay getting the medical until I started working as a professional instructor? After all, until then I was just a student? Nope. It's the first piece of paper I will need when I walk in the door to my own instructor and ask him to begin lessons.

I think it's silly, a hangover from the bad old days. It doesn't make sense, but I'm not going to get the law changed, so I will have to submit once more to the ministrations of the doctors. It may be some time before I can report to you that I've started my lessons. I have to go out jogging.

NEXT MONTH **The syllabus**

More on Jabiru

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS

IN my last article on the Jabiru operational restrictions (Home Builder *Sport Pilot* March 2016), I stated there may be more documents which would shed light on the process CASA used to determine the operational restrictions were necessary.

Only one document was produced.

This summarised 46 incidents, including a flat tyre, crook radio, carburetor flooding, shorted cigarette lighter socket and incompetent maintenance, as well as genuine engine failures. Apparently on the basis of this, and with no formal consideration of other possible remedies, CASA determined passengers in the safest aircraft in the RAAus fleet should be warned of potential dangers.

A normal professional bureaucratic process would require a manager to present a report to senior officers which outlined the concerns and suggested possible remedies. Such a document would then be modified and updated to reflect concerns about the evidence base and the impact of proposed remedies. It would probably have excluded the cigarette lighter as supporting evidence for engine malfunctions. But this did not happen, and it is reasonable to ask why.

There is more to this story which will develop over the coming months when the ATSB releases its investigation, CASA reviews the operational limitations and hopefully other media pick up on the issue.

Meanwhile, Kitplanes magazine has published its annual directory of aircraft engines. This is the definitive authority for such information. The entry for Jabiru is as follows.

'Jabiru pioneered the new wave more than 20 years ago. 2015 was an unhappy time, as Jabiru owners in the home country (Australia) were forced to operate under a CASA-imposed requirement to inform passengers, in writing, that the engine has 'suffered a high number of failures and reliability problems.' CASA published reliability statistics to back their action. The Australian Recreational Aviation Association acknowledged the reliability issue, but disputed CASA's statistical methods, and objected to their approach, in particular the condemnation of a brand rather than the correction of specific issues. Not surprisingly, Jabiru considers the requirement to be draconian, while insiders whisper about personality clashes. Worldwide, no other regulatory agency has found reason for concern.'

I doubt this is the image CASA and Jabiru want to see promulgated around the world.

> "This should produce the sort of cultural change I have called for"

WELCOME MARAP

Changing the topic entirely, in last month's *Sport Pilot,* Technical Manager, Darren Barnfield, outlined the MARAP process, whereby changes to certified factory-built aircraft could be incorporated into the aircraft's registration.

I believe this can and should produce the sort of cultural change I have called for in this column over the past couple of years. We lack the culture, promoted by the EAA in the US, which allows and encourages the development of aircraft. Darren intends that changes authorised under MARAP will eventually be catalogued online and be available to other owners. Once a change is authorised, the process for extending the change to another aircraft will be greatly simplified. That is, the work and experience in making a successful change to an aircraft will be shared. It should be clear though, that a change authorised under MARAP applies only to the airplane on which it is authorised, and a separate application will be required to extend that change to another aircraft.

When a change is authorised under MARAP, the aircraft will retain its registration and user privileges.

While I believe this is a great change, it has a particular and unintended impact on Jabiru. Because Jabiru is the largest single type in the RAAus fleet, all things being equal, the bulk of MARAP changes will occur on Jabiru aircraft. Consider this scenario. A Jabiru owner decides to install a Gypsy Major (or Rotax) engine in his aircraft, overcomes the weight and balance challenge, finds an engineer to sign off on the change, and then crashes the aircraft. The crash is reported as a crash of a Jabiru aircraft, and duly recorded as number 47 on the CASA list of Jabiru failures, alongside the cigarette lighter. Similarly, someone will pop up to report in the media the problems with Jabiru aircraft, as has happened in the past.

If you choose to assemble a kit aircraft, it is registered as such and the responsibility is clear. You may be terrific at putting together the fiberglass pieces, but that does not mean you can do a good installation of the Gypsy Major engine, or that it is wise to do so – but it is up to you. If the finished aircraft meets the definition of an RAAus aircraft it can be registered. If you then have an accident, it will be reported as amateur-built or experimental, reflecting the line of responsibility.

There are two parts to the solution of this problem. Overcoming whatever it is which ails CASA is the lesser. The greater problem is the wider reputational damage, and it is far from clear what could be done to alleviate it.

However, credit should be given to CASA for negotiating the MARAP change with RAAus. It is far from risk free for CASA.

One can imagine a distraught widow ringing the kit manufacturer, CASA, RAAus, Qantas, her local member, Mr. Turnbull, Mr. Shorten and possibly Mr. Abbott and saying "You allowed him to install an Acme power enhancer, and you knew he was a complete idiot." This is the nightmare scenario for all of these people, and there is no answer, but we should welcome the courage it takes to confront the possible public consequences.

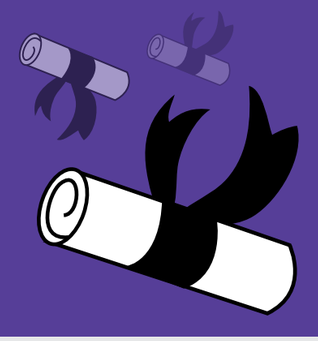
Underlying the MARAP process, but more or less invisible to those not directly involved, is the improvement to fleet safety likely to happen because of these rules.

Of the handful of Jabiru owners I know, I don't think any of their aircraft are absolutely compliant. Owners have made a host of modifications - to the cowls to improve airflow over the engine, placed blanking plates over the oil cooler air intake in winter, used different spark plugs, installed oil thermostats, used a different dipstick or changed the engine instrumentation and so on - almost all of which were designed to make the plane safer (and probably do) and almost all of which mean the aircraft is not compliant (if it is factory built). While some of these changes are so trivial the owners are unlikely to bother with the MARAP process, other changes will go through the system to the advantage of all of us.

SPORT PILOT WELCOMES A NEW PROFESSOR THIS EDITION

Fuel for thought

BY PROFESSOR AVIUS **AVIATION GURU**



THERE is an old saying, there are only two things certain in life - death and taxes. Without oxygen the human body might avoid taxes, but it won't avoid the other one.

Internal combustion engines also rely on oxygen, but also need a combustible energy source in the form of fuel. Without oxygen and fuel, an internal combustion engine is just complex assembly of pieces of metal.

The requirements of aviation engines are focused on output power (HP/kW), not necessarily output torque. To generate that power, the energy comes from the fuel and some engines are more fuel efficient for the same output than other similar engines – this comes down to basic thermal design factors. Commonly, aircraft engine manufacturers will be aiming for peak fuel efficiency in the range of 65% to 75% maximum power – but this does vary.

FUEL GRADE/SPECIFICATION

The most basic fuel management requirement is knowing the fuel grade for your ignition type piston engine – we all know that an Avgas or Mogas engine definitely doesn't like turbine fuel or diesel, but do you pay adequate attention to the octane rating? A general rule is that an engine will accept fuel with an octane rating greater than the minimum; but less than the minimum leads to detonation and other nasties. Know what the minimum is and stick to it – and always use fresh fuel.

OXYGEN

The intake filter must be clean. There was an incident in western Queensland many years back where an aircraft lost almost all power after flying into locusts on take-off – the insects completely blocked the forward facing filter. It's another consideration for flight planning.

PREFLIGHT FUEL MANAGEMENT

Before starting any flight, you need to accurately determine the amount of fuel in the tanks. Assuming you have calculated the total amount needed for your flight, it's just a matter of filling the tanks with the amount required and you're good to go. Almost. It would be wise to check the available fuel by at least two methods: use an empty tank and fill it with known quantities or use a dipstick calibrated for your aircraft.

DIPPING TANKS

Each year a number of aircraft accidents are related to fuel starvation, exhaustion or contamination. And unfortunately RAAus aircraft are not immune. They are avoidable and are caused by a number of reasons: from inadequate systems knowledge, pre-flight planning issues, take-off and landing checks, failing to monitor consumption during flight and even failing to refuel the correct quantity before the flight.

Pre-flighting the fuel system is as important as pre-flighting the rest of the aircraft. Determine your fuel availability, usable quantity and your fuel management log.

CONSUMPTION GRAPH

Most engines have a sweet spot where the fuel burned per unit of power output will be at a minimum – this won't be at maximum power and it won't be at idle, more typically it will be in the 50% to 75% of maximum power.

How much fuel do you really have? There is only one way to be sure of how much fuel is on board – dip the tanks before you start. And know what your fuel burn really is – use your historical data. Don't just calculate your endurance based on the book fuel capacity less engine hours, because the fuel burn will vary considerably dependent on the power setting you use. If you tend to keep the throttle to the firewall, you may use as much as 25litres in the hour, not the 15litres you assumed.

FUEL AND MTOW

Most RAAus registered two seat aircraft cannot legally operate with two averaged sized people and full fuel. For example, a Jabiru J230 which has an MTOW of 600kgs, has an empty weight of 370kgs – this leaves 230kgs for people and fuel. Full fuel equals 130litres (93.73kgs based on Avgas' specific gravity 0.721). This leaves 136.27kgs for pilot/passenger/luggage. If the pilot and passenger average 85kgs and there is 10kgs of luggage –the available fuel would be just 50kgs = 69.3litres of fuel.

TANK CONSTRUCTION

Due to the construction of the tank and the location where the fuel inlet port and drain port are located, a certain amount of the fuel is unusable and some part of that is even undrainable. Unusable fuel (which includes undrainable) is the amount which cannot be used in level flight. This amount can vary from model to model and in your aircraft flight manual you will find the specifics for your aircraft.

The experimental aircraft builder/owner must determine for himself the exact amount of unusable fuel for his aircraft and make a note in the flight manual.

LEVEL GAUGES

Tank content is displayed on gauges and these should be reasonably correct when the tanks are empty. Check the accuracy by comparing the indications on the gauges when dipping the tanks. Remember that during some manoeuvres, slipping/skidding and in turbulence, tank indications can and will vary. If the aircraft is equipped with a flow indicator, its indications should be checked against the level of fuel in the tank after the flight to see if the expected calculated consumption was achieved.

FUEL TANK DIPPING

Because each aircraft (and tank in that aircraft) are always different, it is important to use the correct dipstick for your aircraft.

Each dipstick is calibrated to the fuel tanks of a particular aircraft. It should have the aircraft registration number marked on it too.

When dipping fuel tanks, follow some simple guidelines:

The aircraft should be parked on a level surface and you should make sure the tanks are not cross feeding. This will happen when the fuel selector is set to BOTH. Fuel will flow from the tank with the greatest amount to the other tank. This could be a problem if you need both tanks to be full. Just set the selector to either RIGHT or LEFT.

The dipstick must be held perpendicular to the wing unless stated otherwise in the aircraft manual. Usually caused by wing construction, the spar location is the culprit here.

Always dip the tanks after refueling. Even when refueling with a known quantity.

Do the refueling yourself. You are the pilot in command and you are responsible, do not rely on someone else.

If there is no dipstick for your aircraft, start the flight with full tanks and keep a good log during the flight. But because dipsticks can be bought for a reasonable price, buy one and get it calibrated (and labelled) for your aircraft. Or talk to your L2 or LAME about making one.

Because you normally refill the aircraft at the end of the day to keep the chance of moisture as low as possible, it would be wise to dip and drain the tanks in the morning. Water and dirt in the fuel will then have sunk to the lowest part to be drained.

And just because you filled the tanks last night – re-check. If the aircraft was parked on an uneven surface, fuel could flow from the higher tank to the lower tank and siphon out through the vents. And, don't discount theft – it still happens.

RAAus at a glance

ALL ABOUT YOUR ORGANISATION

3,226
Number of aircraft on the RAAus register as of Dec 2015

5
Number of Ramphos weight shift aircraft on the RAAus register as of Dec 2015

$75,000
Record amount offered to GYFTS scholarship winners this year

9.45 METERS
Wingspan of an A32 Vixxen
Source: Foxbat

2
Number of times a year on average an airliner is struck by lightning
Source: Boeing

1/11 MILLION
The odds of dying in an aeroplane
Source: Ropeik

1/5,000
The odds of dying in a car accident
Source: Ropeik

151
GA accidents investigated by ATSB Feb 2015 – Feb 2016

500,000
The estimated crowd at Oshkosh 2014
Source: EAA

4138 AUSTFLIGHT SB 582 DRIFTER

2 seater, can be used for training. 865hrs TT. Rotax oil-injected 2-stroke engine. Comps and bearing clearances within tolerances. L2 owned and maintained. Main skins UV treated, in excellent condition. Tailplane/fin covered in Ceconite. MicroAir 760 radio/intercom, 2 comfortable Icaro helmets. Full set of instruments front and rear. Always hangared. $19,900. Contact Steve 0410 301 210.

4221 MORGAN CHEETAH

Cheetah Aircraft - almost completed. 100hp BMW Powered Cheetah. 3-blade warp drive prop, grove undercarriage, wheels and brakes with differential steering thru Cessna Pedals. All metal wings. VFR instrumentation. Empty Weight 326kg MTOW 545kg. $25,000. Contact 0428 241436 or email farhills@bigpond.net.au.

4395 AUSTRALIAN LIGHTWING GR912T SPORT 2000

Rotax 912ULS 100hp, TBO 1500hrs. Includes - Carbon fibre prop, original wooden prop, Heliview panel, standard instruments, Microair radio, transponder. All ANs completed. Updates - fuel pump, regulator, heavy duty starter motor, new main tyres. Wheel spats included (never installed). Always hangared in Ballina. Tidy, reliable aeroplane. Will provide 5/6 years of average usage before engine replacement/ overhaul. $20,000. Geoff 02 6676 0325.

4399 JABIRU 170-C FACTORY BUILT

4 cylinder 2200 80hp engine. Jabiru Option A Instrument Panel - Microair Transponder and VHF, Garmin GPSMAP 296, Monroy ATD-300 "Traffic Watch" Collision Avoidance system. Aircraft meticulously maintained by experienced L2. All ADs complied. Good compressions on all cylinders. Always hangared. No accident history. Punkin Head covers. Fantastic little aircraft, wonderful to fly. $58,000 –contact Graeme 0466 169 707.

4420 KITFOX MK4 1200 SPEEDSTER

Selling due to health. Has not been flown for three years. Just completed overhaul, all ADs up to date. Vortex generators fitted in 2006 for a more low speed feel and control. Always hangared. Stall speed 35 knots, cruises at 80/85 knots. Very flexible aircraft with 7 hours endurance. $40,000. Contact John 0418 321 643.

4428 FLIGHTSTAR SL11

Built 2009. 19-5544. 1059 hours TT. HKS 700E 4-stroke engine, 412 hours, in good condition. 3-blade Powerfin prop. Uses 10L/hr, cruises at 70kts. Standard instruments with ICOM radio. Weight 205kg, MTOW 450kg. Skins in excellent condition. Always hangared. Located at South Grafton. $15,000 ONO. Contact Warren 02 6642 3517 or wandpgrant@bigpond.com.

4433 JABIRU 170D FACTORY-BUILT

Jabiru 170D factory built mid-2013, as new condition, leather seats, 225 hours, generous warranty work and upgrades by Jabiru make the engine in as new condition, standard dash with fuel flow gauge and inside/outside air temp, cruise 102KNTS, very reliable, always hangered. $57,000. Located Northern NSW. Contact Peter 0418 654 938 or 07 5590 4313.

4435 SAVANNAH VG STOL

Aircraft in superb condition. 50hrs on airframe, engine and prop. 80HP Rotax 912 with 3-blade Bolly prop. All servicing and AD's up to date. High quality hangar also available – 12mx12m at Jamestown Airfield SA with full sliding doors and weather station. $60,000 for aircraft, $100,000 for both hangar and aircraft. Contact Erin 0427 042 350 / 08 8662 2338.

4450 X-AIR STANDARD

Aircraft in excellent condition, always hangared. Great local run-about. Operates easily from 300m grass strip. 50 hours TT. Rotax 582 UL DCDI Mod99 engine with oil injection. Type E gearbox 3:1 ratio. Bolly Bos3 60p x 72d prop. Standard instruments. VHF/ UHF so good for mustering. Need space for new project. $27,500. Contact Jeff 0400 505 058.

4464 JABIRU J230D

Immaculate presentation. Factory built Nov 2009. Through bolts completed, 10ply tyres, rudder extensions, wing/fin strobes, drain gutters over doors. Sensenich 60x55 prop. Cruises at 120kts, comes up quickly, climbs well. Dynon D10, MicroAir radio, transponder plus other essential gauges. Cabin heat, leather seats, good leg/head room. $74,000. Contact Mike 0411 744 948.

4465 SAVANNAH VG

Built 2008. Always hangared. Annual completed Nov 2015 by L2. 912 ULS engine 100HP. Cruises at 80kts, 270hrs TT. Bolly prop, 100hrs TT. Standard fuel tanks and instrument panel. Aircraft in good condition. Pilot's headset Lightspeed Sierra with Bluetooth. Can be inspected at Watts Bridge. $49,000. Contact Wayne 0418 602 560.

4469 AEROCHUTE INDUSTRIES DUAL ▶

Excellent conditions. 32-4720. Low 58hrs. Wide head plate, solo weight, webbing all round, battery & charger, radio & headsets, complete engine monitoring, CHT, EGT, flight time, Hobbs, volts, RPM, + time to next maintenance. Currently hangared at Cowra. Can be bought to Sydney. Enclosed trailer available. $10,000. Contact Graham 0417 377 728.

WHERE IS CAGIT?

CAGIT REMAINS IN THE NORTH

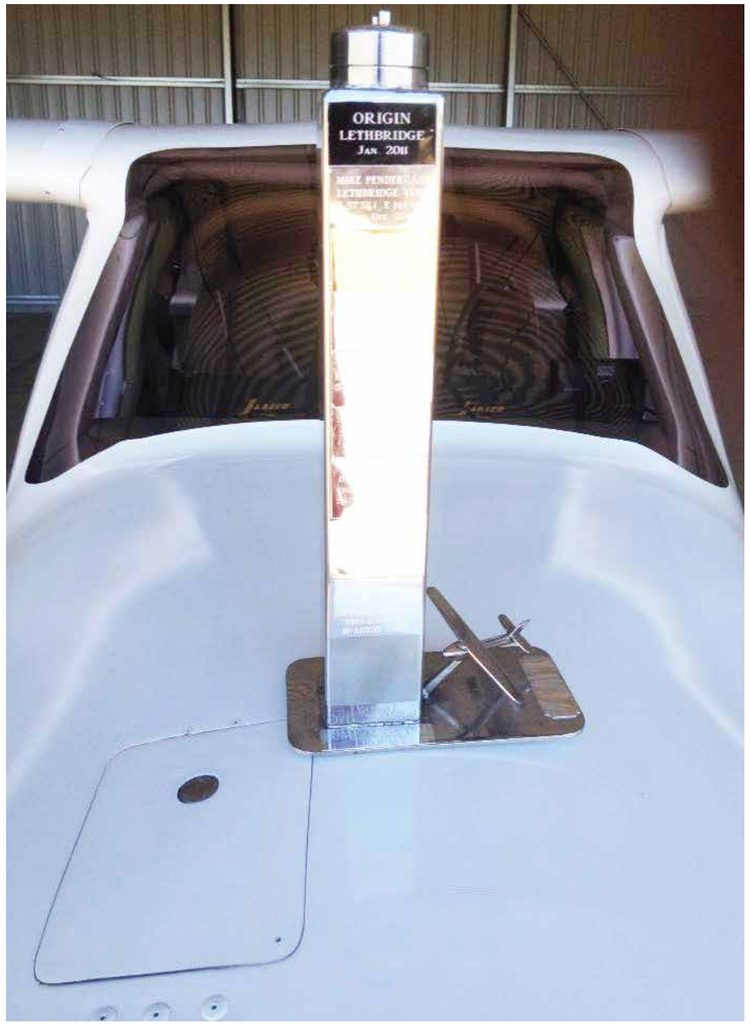
The Come and Get It Trophy remains in the north of the country. John Gotts and Rene Smit took the trophy from David Carroll of Central West flying at Bathurst in September after an epic journey from the Northern Territory in their Jabirus.

The trophy now resides at MKT, Noonamah. By the look at the maps it's a hard slog from anywhere in the south, if you are thinking of making a go for it.

You can talk to them (Rene on 0437 272 645 or John on 0414 486 580 (john@candrconstructions.com.au) if you think you have what it takes to grab the trophy for yourself and take it home.

For a full list of the rules about capturing the CAGIT, visit raa.asn.au/events/cagit-trophy.

Also Dexter Burkill's great Facebook page is a valuable resource. www.facebook.com/cagithunters?ref=hl



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THE TIME IS WRIGHT

The company which licences the use of the Wright Brothers name is about to release a new limited edition watch.

The first batch of 500 sold out in a short time. It came packaged in a special custom gift box, with a certificate of authenticity, leather card wallet, leather carrying case, a hickory watch box, and included a leather-bound coffee table book featuring photography from the Wright Brothers' collection.

Some of the proceeds go to assist the Wright Brothers museum.

- **PRICE** Sold for USD$1,000.00 ea
- **WEB** thewrightbrothersstore.com

WELCOME MAT

Greet them at the door with a touch of fun with this Arrival/Departure doormat. This mat is designed to be used inside or outside. It is crafted from material resistant to soil and stains and can be cleaned with a hose. Stitched edges lend it a handsome finish while its design is long-wearing, so it stays looking good longer.

- **PRICE** USD$29.99
- **WEB** www.pilotmall.com

LUGGAGE SCALE

Don't just spitball how much luggage you are trying to jam in the back. Measure it accurately and, better still, measure it with a scale branded with the Airbus logo.

The scale has a digital weight display and a sturdy anthracite-colored strap with a metal hook. The white high gloss casing carries a discreet Airbus logo. The luggage scale is delivered with battery. The maximum weight is 50kgs at a scale of 50gr.

- **PRICE** AUD$30.00
- **WEB** www.conceptaviation.com.au

THE WRIGHT STUFF

If you can't wait for the new watch, the Wright Brothers store also has posh flying jackets. The full shearling flight jacket, made from lambskin, is handsome and warm, according to the company. It says taking cues from the traditional bomber jacket, this jacket will become your first choice for colder outdoor activities. Features include adjustable snap cuffs and waist sides.

- **PRICE** USD$2,995.00
- **WEB** www.thewrightbrothersstore.com

Another new graduate

BY FRED NOLAN

CRAIG Estens, nephew of well-known cotton and Moree identity Dick Estens, completed his flight test on Saturday February 13.

He has now qualified for his RAAus Pilot Certificate and passenger carrying endorsement.

Craig started his flying lessons in August 2014 and completed his first solo flight in September 2015.

Chief Flying Instructor Fred Nolan said, "Craig managed to fit his flight training into his busy farm schedule. He manages the orange orchard north of town for the Estens family fruit juice operation.

"He recently also took on more responsibility in managing a large cotton portfolio.

"Flying will be a tremendous asset for Craig with his agricultural interests. He has been an above average student and will now start his navigation syllabus.

"Later he will extend his qualifications to pilot the family Cessna 210N in support of the family business," said Fred.

Craig Estens has now qualified for his RAAus Pilot Certificate and passenger carrying endorsement

SEND IN YOUR STORIES

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

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