

SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / FEBRUARY 2016 VOL 54 [2]



RAAUS CONSTITUTION

CHANGES ON THE WAY

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NOTICE OF GENERAL MEETING

RAAus invites all members to the next General Meeting, to be held in Canberra.

When: May 14, 2016

Start time: 2pm

Venue: RAAus Head Office.

Unit 3, 1 Pirie Street, Fyshwick. ACT. 2609.

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

Michael Linke
Chief Executive

NOMINATIONS NOW OPEN

RAAus invites North Queensland members to nominate for election to the board to fill the vacancy created by the death of Ross Millard.

See the nomination pack, available from the RAAus website, for further information. A nomination form is included in the pack. You can also call the RAAus office and have a nomination pack mailed to you.

Nominations open on February 1 and close at 5.00pm AEDST February 29. If more than one nomination is received an election will take place in March.

To nominate for the position use the form headed 'NOMINATION FOR CASUAL VACANCY' and read the instructions carefully.

Nominees using the wrong form, or who incorrectly complete the form, will be deemed to have not nominated.

Once a result is declared for this position, the successful nominee will take office immediately. The term of the position concludes at the AGM in 2016. The appointed board member will be required to attend the General Meeting and board meeting planned for May 14 and 15.

A new organisation

BY MICHAEL MONCK

MANY of you will be aware of the challenges we have faced in recent years and, I am pleased to say, what has been done to address them. Much is still left to be done, but looking back and comparing the present to the past, I think we'd all agree there has been a lot of improvement.

As part of our ongoing efforts to further improve the organisation and give it an even more solid platform for the future, we plan to change how we are structured and how we operate. For the most part this will not affect what we do or how we do it. It will simply give us a more efficient legal framework from which to do it.

People have heard me say on many occasions we still operate in a manner which resembles the way a small aero club or sporting club is run. To my mind this is not a good way to run a multi-million dollar organisation and will only set a path for failure if it is maintained.

Small organisations with relatively few responsibilities (when compared to RAAus) usually operate with a board of management. These boards consist of a President or Chair, who acts much like a CEO for the organisation, a Treasurer, who performs the functions of an in-house accountant or book keeper, and a Secretary, who ensures the regulatory obligations of the club are met and often couples this with administrative tasks. In contrast to this RAAus has around 14 full time staff and 13 board members.

Most, if not all, the board members have obligations outside of RAAus. Some are in full-time paid work. This often requires them to be elsewhere for up to 40 hours per week, making it almost impossible for them to devote the time needed these days to act as a manager of this organisation. It's why we have full time staff.

Having said that, our constitution states that the executive 'shall make all the decisions necessary in relation to the Association's business', which means the executive officers are responsible for running the organisation and making decisions relating to day-to-day operations. The CEO is appointed for 'the purposes of signing and lodging documents as required by the Associations Act 1991'.

Essentially what this means is that we have a highly skilled CEO and management team employed to lodge paperwork, while a three person volunteer part time group is expected to make decisions relating to the activities of all of RAAus' 10,000 pilots and 3,500 aircraft.

Let's break this down a little further. Assume the executive officers all have day jobs which consume them for 48 weeks of the year. The remaining four weeks (consisting of their leave which they donate to RAAus) is devoted to making decisions for RAAus. This means there would be only 160 hours a year each of these people could devote to guiding the activities of pilots and aircraft owners and the 300,000 movements.

Of course these numbers are not strictly true. Board members devote considerable time after hours to ensuring RAAus runs

smoothly. I estimate I devote about two full days per week on average, around 100 days per year.

So this poses some significant questions. Who is actually responsible for running the organisation? Is it the unpaid volunteers, who are expected to give up their time for free and cannot possibly be expected to be on top of the day-to-day goings on of the organisation? Or is it the CEO and his team who are paid on a full time basis and devote full working weeks to the tasks at hand?

If it is the former, it hardly seems sustainable. I am lucky because I run my own successful business and can afford to devote the time required to fulfil my role on the board. For others, giving that commitment is more difficult. We recently lost the services of a highly skilled Treasurer because he could no longer balance his personal and professional life with the increasing demands of the organisation.

Most of the other board members have been unable to fully commit since the last board meeting, due to their own commitments outside of RAAus, so I wonder if I stepped down what would happen? And how does the next President after me do it? The staff in the office perform most of the tasks to run the organisation, but strictly speaking, they are doing the work of the executive - an executive which, we have established, can't carry out these functions effectively.

All of this means that while we function well today (and much better than in the past), we are doing so on an uncertain foundation, prone to failure should we ever need to revert to the strict wording of the constitution.

We would continue to have the interests of the entire organisation, members and aircraft, the livelihoods of instructors and the future of our students, not to mention the well-being of our external stakeholders, all subject to the decisions of a volunteer board without the time or capacity required to effectively run RAAus.

With this in mind, change is obviously required. As I mentioned earlier, this will largely go unnoticed from the perspective of the services we offer (although I expect we will also offer better, improved services over time) but it will require us to modify our constitution and legal structure.

Over the coming months, I will be talking more about what this means, how it will be done and what needs to be done by you to successfully move through the transition. We are still discussing these changes with members and have put out a draft constitution for consideration. This will no doubt change before it comes to a final vote. Take a moment to read it, think about what it means and come and talk to us about it.

We'll be trying to get around to members in the first half of this year but, if we can't get to a location close to you, feel free to give us a phone call or drop us an email.

It is important we get this right and we need your help to ensure that happens. ✪

"We have some exciting times coming up"



A. 5-6 MARCH

AEROFEST

Busseton Aero Club in W.A. Big family day with everything aviation, skydiving, food and drink. Saturday evening BBQ. Busseton Regional Airport is the gateway to the Margaret River wine region. For more information, Ken Manton 0429 967 172 or ken.manton@bigpond.com.



B. 13 MARCH

CLIFTON FLY-IN

This has become an iconic event in the region and is the premier attraction for all types of aviation in southern Queensland. See various types, shapes, sizes and models of recreational, ultralight and home built aircraft. Come late p.m. Saturday for BBQ and drinks. Fly or drive in, see ERSA. On field camping, bring your swag. Advise for catering. For more information, Trevor Bange 0429 378 370, (07) 4695 8541 or trevorbange@bigpond.com.

C. 13 MARCH

TYABB AIRSHOW

The theme for the show will be Winged Warriors. Aerial displays, antique aircraft, static displays, new LSA display, classic cars, model aircraft display. Food and drinks available.

For more information, pac@pac.asn.au or (03) 5977 4406.



D. 26-27 MARCH

BACK TO HOLBROOK FLY-IN

Holbrook Ultralight Club reminds you to put its annual event in your diary for Easter. Forums on Saturday afternoon and a planned local fly-out Sunday morning. Dinner plus award presentation Saturday evening and BBQ breakfast Sunday. Underwing camping and transport to and from Holbrook township for accommodation and fuel available.

For more information, John Harley 0456 357 735 or www.holbrookultralightclub.asn.au



F. 23 APRIL

DENILIQIN 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 at the dinner will be Michael Smith speaking about his Around the World Adventure at 80knots 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. Tickets need to be prebooked. For more information, www.deniliquinaeroclub.com or lan 0418 452 521.

E. 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.





VERY CROSSWIND

I have commented on some of your articles on several occasions and you attract my attention again with the article you wrote in the December issue (Editor's Choice Sport Pilot December 2015).

RA-Aus is trying to improve safety in all areas and you decide to write an article on what I would call Bad Airmanship.

There is no mention of overflying the airfield to get an appreciation of the crosswind, can you read the strength of the wind from the windsock? And what is your Max crosswind for the aircraft you're flying? Do you know what it is, or are you flying from experience of your previous bad landing?

If, in your opinion, the wind was above the manufacturer's published speed, then you should not have attempted a landing. I won't even comment on the crossed controls you applied on a cross wind landing!

You put yourself and a passenger in danger, and then you have the audacity to relate your brave and heroic experience for others to emulate.

GIANCARLO BERTELLI

FROM THE ED - The airport from which I fly has two windsocks, one of which is clearly visible as you reach the circuit from the coast. The two often disagree with each other, as they did on this day - one slack, the other firmly pointing. So it was clear to me conditions varied along the 1,900m I had available on which to land. 1,900m is 1,800m more than I require. I have landed here hundreds of times, nearly all of them in a crosswind of some strength or another, and felt it was worth testing the waters. I made the point in the article that it wasn't until afterwards I realised that the idea of testing the water was forgotten once my need to safely control the descent became paramount. The landing technique I use in crosswinds was one of two I was trained in GA to use (crabbing is the other). The controls were not crossed, nor was the crosswind limit of my aircraft exceeded.

CUT AND PASTE

Great reflection photo on the front page (Sport Pilot December 2015). I'm glad the extra subscription payments by those opting to take

the mag in print form has helped keep the organisation afloat.

However, in the article 'State of the Industry' I found that five of your correspondents had exactly the same answer to the question on page 31, as they did to the question on page 29 - which is not really surprising, as you posed the same question again.

Perhaps it is time your 'cut and paste' editor, and 'content' editor had a meeting to decide if both are doing their jobs properly, or perhaps it is because they feel that the average reader needs a bit of repetition to make the information soak in! Either way, if we used the same degree of rigour to prepare flight plans, we would not end up where we intended to! Your call!

ROB ENGLAND

FROM THE ED - Rest assured the 'cut and paste' editor has been given a pasting and been cut.

AWW SHUCKS

This photo and caption appeared in the English magazine Sailplane & Gliding. I would greatly appreciate it if you could reprint it in Sport Pilot please.



Future junior champion? Neumayer-McGrath is born into a family with a passion for flying. Parents Oana Neumayar and David McGrath are both glider pilots at Bicestser, while David's father is possibly the oldest pilot to solo in Australia, aged 83

I am very interested to see if there are any pilots who were older than myself when they first went solo.

I have a grand daughter who is academically brilliant, going into Year 12 and who tells everyone I am the oldest pilot in Australia. She has her sights set on becoming an astronaut.

I hope members enjoy the photo.

DAVID MCGRATH

LOOKING DOWN

Loved the article by Brian Bigg (Editor's Choice Sport Pilot November 2015) and thought of this an old mate sent to me.



MATT VERSTEEGEN

PRAISE FOR CHANGES

In the past year of my association with RAAus, I have seen it grow exceptionally, especially in bringing out the safety related messages to its members. Big changes to your website, I love the way you can log in and everything is available there.

Also the ease of access to new members and processing speed has a very positive effect in the overall experience. It has helped us to bring new members into the company more quickly and help grow the RAAus organisation. So many positive changes have taken place within the light sport industry in just one year!

I hope this year brings even more success to RAAus

KOUSHIK PANCHANGAM

DEAD CAPITAL

I am glad to read mention of these two issues in SP (ASIC and violations of controlled airspace, Sport Pilot December 2015).

I live in Canberra undergoing training. These are very important to me and would like to keep abreast of any events affecting RAAus. Are there any GA/LSA pilots who could write an article on GA/LSA aviation past and present in Canberra, particularly after the airport was privatised?

I sometimes sit at the airport at lunch and it appears dead.

CAMERON LANGFORD

CALLING FOR HELP

I enjoy reading your editorials each month. I've just read your article about being squashed between terrain and controlled airspace (Editor's Choice Sport Pilot January 2016). I'm a young pilot based in Toowoomba, with just under 200 hours. I also regularly feel the pain of this issue while operating my little Jabiru SP. One location that really frustrates me is the mountain line which runs north to south on the western side of Brisbane, below BNE C Class.

Another particularly painful location is Cunningham's Gap, east of Warwick. When Amberley is active you only have 600ft between terrain and the restricted airspace that starts at 4,500ft.

One particular day I was really wound up about Cunningham's Gap. It was a day or two after the cyclone that hit Vanuatu last year and the RAAF was flying C17s from Amberley to the affected area. The restricted airspace (R625C) had been activated.

For the life of me I can't work out why airspace 35nm away from Amberley and almost at ground level needs to be restricted just to get a couple of C17s in and out. Surely just the Amberley CTR would be sufficient. And why should Australians once again be put at risk for some other country?



It was good to hear the controllers assisted you very well in the event you were involved in. However my Jabiru has no transponder and I don't have a PPL so I can't go asking for clearance. Maybe in an emergency I could get a clearance but certainly not for normal ops.

So I guess my options are -

- 1 - Raise these issues at a RAPAC meeting, ask and hope for changes.
2 - Fork out cash for a transponder and PPL and get clearances.
3 - Continue to fly in these areas and ask for clearances when the stuff hits the fan.
4 - Don't fly in these areas at all - this a terrible option, the skies should be free for all to enjoy within reason.

What are your thoughts?

BART EDWARDS

FROM THE ED - You don't need a transponder or PPL if you get into trouble with the terrain and need help. Just holler. As pilot-in-command, the safety of the flight is always up to you. ATC will help you. They have to help you. And if RAAus manages to get us ATC approval this year or next, most aircraft will end up with transponders and most pilots with PPL style control zone endorsements (if they have any sense). Certainly on the east coast it's going to be way safer than threading our way through the murderous little VFR lanes we are now forced to use.

TIME FLIES

As a self-funded acknowledged tragic with the urge to fly after a 20 year interregnum, I bought a Jabiru J230.

My limited research then showed that the Jabiru was up to date, value for money, safe and Australian. My construction of the kit was helped greatly by the help from SAAA T/C's and Jamie Cook from Jabiru who has yet to be stumped by one of my questions.

The aircraft looks good, flies well and does what is printed on the box it came in.

Then all of a sudden, almost two years ago, the world fell out of Jabiru's bottom with CASA's edict. Like others, I have changed certain items earlier than scheduled in order to reduce my perceived chances of an engine failure. I can handle a forced landing into a pasture here in South Australia, but I don't relish an engine failure before 200ft after take-off.

CASA still demands I get a 'blood chit' from any passenger bold enough to fly with me in the face of such governmental dissuasion. CASA still hasn't told me what is wrong with my motor. I haven't been reassured by Jabiru's information either, or lack of fact. Their engines are assembled by CAMIT. CAMIT's own engines are not subject to the CASA restraint. What is the root difference between the two engines?

I am not an engineer, but my L2 leads me to believe that CAMIT has solid valve lifters, whereas Jabiru uses hydraulic lifters. CAMIT has separate oil feeds to the cylinder heads, Jabirus has forged rockers and hollow pushrods. Both have 7/16th through-bolts as standard with valve relief pistons. Jabiru has now suggested EGT and CHT monitoring on all cylinders.

What has to happen, and by whom, before I can fly my engine without restriction? Time certainly flies, I think more than I do.

GRAHAM PHILLIPS

FROM THE ED - Sue Woods from Jabiru says "CAMit has always been the supplier of engines to Jabiru, except for in the very early days. CAMit sought to provide engines to the Experimental market and was given an exemption from the limitations soon after they were imposed. Jabiru has not been a party to

the information on CAMit modifications but we do know they have reverted to earlier solid lifter configurations. They do not use the valve relief pistons. 7/16" through-bolts were not part of the solid lifter configuration, but CAMit modifications may have been made to 7/16" through-bolt crankcases. ATSB scores CAMit modified engine failures as Jabiru engine failures although Jabiru has objected to this".

MILKING COW

Further to the ASIC debacle (Letters to the Editor Sport Pilot December 2015). Why, when my new ASIC arrived after six weeks, was it effectively only good for 23 months. It took a whole month from approval and issuing to get to me. Makes one wonder if it's actually value for money. Might be cheaper to pay a little more and get one which has 24 months left on it.

I sent my application to RAAus. It appears they send it onto an airport in Melbourne and I suppose they then deal with all sorts of government services to process it. Lots of middle men there. Snail mail all the way I assume. Aviation is still a milking cow.

BRIAN CAVANAGH

Advertisement for Sport Pilot magazine featuring a dog holding a magazine. Text: SPORTPILOT. RAAus members get Sport Pilot free of charge online at www.raa.asn.au. if you are not a member or would prefer a hardcopy magazine, you can subscribe by contacting RAAus headquarters at admin@raa.asn.au.

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).

ITS ON THE CARDS

Membership and aircraft registration cards – What are they for? Why do we have them? Do we need them?

It all began with the modernisation project RAAus recently implemented. Since late last year, everyone can now get access to their own information, and make changes whenever they want, at the click of a mouse.

There is also the new CFI Portal, which allows CFIs to view important member details like membership expiry, BFR dates, endorsements held and aircraft registration dates.

All of this progress got RAAus staff thinking. Do we really need to supply everyone with a plastic card? It costs a lot of money every year, what with the associated postage and printing costs. And now everyone can access their important data via the member's portal, and CFIs can see what they need to via the CFI Portal, do cards serve any purpose?

The membership card contains your membership number, current membership expiry date, BFR date and any endorsements you hold, but if the timing of some of these items

is out, the card may not be truly current.

Members can also provide CFIs with BFR dates and other information, such as endorsements, via their logbooks.

One proposal has been suggested for a basic membership card with name, membership number and aircraft group (3 axis, weight shift etc.) RAAus would produce this once for members to keep in their wallets. We would then email a paper certificate to the member each time they renew membership, which could contain the up-to-date information about membership expiry, BFR dates and endorsements.

This would provide significant cost savings, but still allow information to be viewed via the paper certificate, on the members' portal and CFI Portal.

Likewise, the current requirement for a printed aircraft registration card could also be dealt with differently.

The RAAus Technical Team has reviewed the registration system and has identified an improved alternative.

The purpose of the registration card is to

identify that an aircraft is registered and when that registration period expires. With the modernisation project now completed, members will be able to log into the portal and enter a registration number and retrieve the same information. Only make, model and registration expiry. No personal details.

The proposed alternative would include a 'maintenance record' on registration renewal, incorporating the information supplied from the registration card while enabling the member to also record pertinent maintenance information, such as annual inspections, AN and SB scheduled maintenance, daily inspections, flight hours, landings and monitor the addition of oil.

This proposal is the first step to improving the standardisation of RAAus maintenance recording. Further improvements are contained in issue 4 of the RAAus Technical Manual, which will be released later this year along with further education materials in the member's portal.

We want to hear your thoughts on these proposals. Email admin@raa.asn.au with your thoughts.

ONLINE UPDATE

The new website and online members portal is now three months old and the team has been working hard to iron out all the bugs.

RAAus has thanked members for their patience during this period and beyond as they work to develop a solid platform for member services.

The new RAAus website is divided into two sections. The public site raa.asn.au, which is primarily to promote the organisation, provides an accessible gateway for new members to join RAAus. The second site, the member's portal, is accessible only to members (by logging on with supplied details from RAAus) and provides more detailed information relevant to the membership.

The portal also provides members with the ability to renew their membership, aircraft registration, subscribe to *Sport Pilot*, edit contact details and view their membership and aircraft data.

If you have not received your member login details yet, email websupport@raa.asn.au with your member number and tell them you do not have your login details. You will receive your login credentials via return email.

Please ensure your email address and mobile number are up to date because this is now the primary method of communication with you by RAAus. You can check your details by logging into the member's portal and clicking on 'Manage my membership' in the top right of the screen.

Australia Post has now been permitted to increase the cost of a letter to \$1 and to take two extra days for delivery. As a result, these changes are expected to markedly increase RAAus operating expenses for snail mail. However, members located in remote areas who do not have an email address, will continue to have their renewals mailed out.



MEMBERS' MARKET CHANGES

There has been a big change made to the way Members' Market is organised.

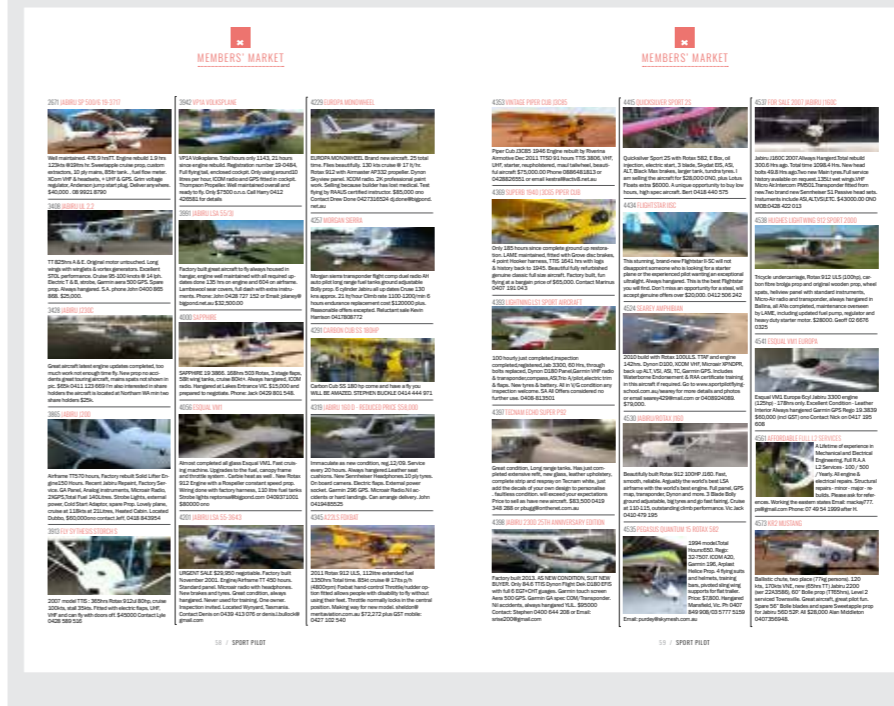
Since January, all inquiries and sales regarding Members' Market have transferred from RAAus to Aviation Advertiser.

It's part of RAAus' modernisation project and designed to take the Members' Market pressure off the RAAus office staff and give it to the staff of Aviation Advertiser, who look after aviation classified advertising all

the time and who have an efficient and cost effective system in place to do so.

Your ad will still appear in the magazine, but it will also get exposure to the wider Aviation Advertiser audience, which is a good thing if you are trying to sell your aircraft.

So instead of contacting raa.asn.au if you want to place an ad in Members' Market, contact www.aviationadvertiser.com.au instead and follow the prompts.



ROSS SENT TO REST

BY BRIAN BIGG

RAAus board members and friends farewelled well known board member, Ross Millard, at his funeral in Townsville in December.

Ross, 64, was killed in an aircraft crash on November 29. Reports suggested Ross' aircraft experienced engine problems after takeoff from Townsville. The aircraft hit the ground near the airfield and caught fire.

Ross was a mainstay of RAAus for a number of years. He was well known throughout the aviation industry and a well recognised face at many fly-ins around the country. He was always willing to share a story and assist others in their flying endeavours.

RAAus Technical Manager, Darren Barnfield, is in charge of the investigation into why the accident happened. A definite cause may not be known for some time.



The Whitsunday flying friends photo and flower tribute at Ross' funeral. The wreath is in his aircraft colours



The author of the story in the January 2016 edition – Jabiru in West Africa – should have been Wynand van Niekerk. This was a contributor's error.

TIME RUNNING OUT

THE amnesty period, which has now been in place for almost three months, is set to expire.

The intention of the amnesty has been to encourage back those RAAus members who deliberately or unintentionally let their membership lapse, BFR due dates slip past or aircraft registration expire. It's a one-off opportunity for lapsed and non-compliant members to return to legal and compliant operations with RAAus.

An analysis of accidents, both serious and fatal, revealed a common thread was non-compliance of some sort. The amnesty period is intended to address as many of these issues as possible, and has received a positive response from the regulator.

The office has already received an encour-

aging number of phone calls and emails from members and CFIs.

These calls have covered a wide range of areas, with the common thread of wanting to make sure all requirements were met, and that the member would now operate compliantly.

There have been no punitive actions taken against members to date as a result of coming forward.

RAAus has grown and evolved considerably over the past few years and, while past experiences with the organisation may have not been as positive as possible, all RAAus staff and board members are committed to improving and growing the organisation.

The amnesty period will expire on February 29. Come on back.




 2016
MAINTAINER OF THE YEAR
 **AWARD**
 Do you know someone who deserves to be 2016's Maintainer Of The Year?
 More info at raa.asn.au



Maintainer of the Year

Recreational Aviation Australia is proud to announce its first annual L2 Maintainer of the Year award. This initiative will shine a light on our maintainers as we look for an outstanding individual who epitomises the RAAus ethos.

The 2016 Maintainer of the Year award will be the first time RAAus will showcase the knowledge, experience and integrity of our L2s. They aren't an easily recognised sector within the aviation community. But this award will be a great opportunity for these unsung heroes and extraordinary engineers to receive the recognition they deserve.

Do you have one of those maintainers who seems to live at the local airfield? Are they the person who is always around to lend a hand, help

with the little things such as the correct tool, bit of lock wire or provide you with the direction and guidance with all things technical?

If you think your L2 has the special traits and qualities to become the organisation's first Maintainer of the Year award recipient, get ready to nominate. And look around you. Help us search for and find our best L2 maintainers.

The nomination period will run from May 15 to September 30 with the winner and runner ups being announced in November.

All awards will be judged by an independent panel of members from the recreational and GA community.

For more information, www.raa.asn.au.

Come on back

BY MICHAEL LINKE CEO

Our records indicate that a number of members across the RAAus network have not renewed their membership on schedule.

As readers of *Sport Pilot* would be aware, RAAus launched a new digital membership renewal platform in October. Some members have not activated or renewed their accounts since that time.

And if your membership has lapsed, you may have missed some of the great things we are doing and have planned this year.

We'd love to see you renew so you can continue to fly with us and enjoy all of the benefits membership can bring.

Being a part of RAAus is to be a part of the most exciting sport in Australia. Last year, RAAus undertook major changes across a broad range of its activities and the organisation is now as healthy as it has ever been. But we need to keep a strong membership base to support the ultralight movement in Australia.

We've completely modernised how we engage with the vast majority of members, but we have also kept our original paper based system for those members who prefer to communicate

that way.

We also launched a new way of modifying and repairing legacy aircraft, we now provide *Sport Pilot* magazine in both printed and digital form and we began work on new endorsements to allow members greater access to the skies over Australia.

We have also strengthened our insurance coverage, for better peace of mind.

But to take advantage of all these great things, you need to be a financial member of RAAus. If you are flying and are no longer a financial member of RAAus, our great new insurance policy will no longer cover you. You could be putting yourself and others at risk of terrible financial hardship.

Contact RAAus to pay and reactivate your membership as soon as possible.

We are all working hard to create a sustainable future for light sport aviation in Australia. We want you to be part of it.





Landing Options

BY VAUN MONCUR

AS IN ALL AVIATION, WIND DIRECTION IS IMPORTANT WHEN LANDING A SEAPLANE. BUT IT'S NOT YOUR ONLY CONSIDERATION WHEN LANDING ON WATER.

THE seaplane pilot has to choose an acceptable wave height within their aircraft's capabilities, preferably under 30cms high. The advantage with a seaplane is that you usually have another landing option around the next bend if things are not so good here.

Thumping the seaplane into rough water isn't smart. It usually results in heavy water spray through the propeller which can cause pitting along the leading edge.

Your main concern should be to land on the least busy piece of water, then get ashore uneventfully while staying away from traffic. Generally shallow water and obstacles can easily be spotted from above. I can't emphasise enough, though, how important it is to do a thorough preliminary search first. Jet skis can appear out of small creeks in the mangroves at high speed. Speed boats sometimes tow parachutes. Swans seem to always take off towards you. I've never hit a bird, or even had a near miss, but a seaplane pilot must have good peripheral vision.

My Super Petrel LS has a narrow wing span but a large wing area.

This is helpful in two ways. There are no flaps to set when landing and the greater wing area provides a slower stall speed, just 38kts.

It's important to know how strong the wind or current will be when you land and begin to slow down. Plough taxiing decisions and step taxiing decisions to get to shore, must all be planned before the hull hits the water, especially when it's windy and you're trying to come ashore in a congested waterway.

Obviously a busy boat ramp is not suitable for a safe and uneventful arrival for a seaplane. Even at slow speeds, on water or on land, things can happen unexpectedly and go wrong. A seaplane pilot must be always vigilant and aware of potential dangers and obstacles.

Maneuvering slowly in wind among anchored vessels and pylons can be very challenging. You have no brakes or reverse gear. You must commit and that means better control under light throttle.

Your seaplane is easily pushed off course by the wind catching your fuselage in a slow plough taxi.

Close to shore, consider dropping your wheels to act as sea anchors, which might allow you to more safely use throttle for better directional control. A manoeuvre called sailing can be used when you drift backwards with the wind. You can marginally change your drift direction by opening either cockpit door. I'm not a fan of sailing but it is an option.

And you have to take care. Often, the novelty of a seaplane docking or leaving and taking off will cause uninvited curiosity from power boat or jet-ski drivers and a small mistake in front of such an unforgiving public observer can be very embarrassing.

Sometimes taxiing out of the water on firm sand can be easier than using the boat ramp.

My Super Petrel has small castoring nose wheel which will not roll on softer sand. Sometimes tail draggers like the SeaRey with larger tyres, can handle soft sand beaching better.

Your safest approach to shore is wheels down, especially if the bottom may be rocky. Step out then walk the shoreline to check for firm sand. If you sink above your ankles, it's generally too soft to taxi on. If you can't taxi out, manually swing your seaplane around backwards and pull it up the bank until it's firmly stuck while you consider other options. I also carry a collapsible paddle and a small plastic anchor to secure my aircraft just off shore if the tide is receding.

If you do choose to taxi up a boat ramp, ensure you have plenty of wing

space both sides all the way to your parking area because you won't be able to stop half way. Unlike most seaplanes, my Super Petrel has no park brake, so if it's sloping I can't get out of my seat until I'm on flat ground.

It can be common for boat ramps not to be cleared sufficiently to allow for your wing span. Often a boat ramp user will stand with hands on hips watching you circle waiting to use the ramp, unaware you are waiting for him to move his trailer (A small air horn can be useful). Remember the boat using public has no idea of a water pilot's needs.

On top of that you need spectators, children and dogs to be well away from your exposed propeller (even though the propeller is safely above and behind you), all the way up the ramp and into the car park.

As seaplanes become more common, the public will eventually appreciate our safety needs. Hopefully they will warn and prepare others about getting too close.

Until then it's much safer close to shore to first retract your gear, nose up to the shoreline or soft sand, then get out and check all your options.

Contact me by email with any questions - vaun.moncur@hotmail.com.

NEXT MONTH: Taking off ☺

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Going through the gap Happy Valley



Noel entering the Kiewa valley



Tanarg's from YFT parked for the day



"This was a good experience for the new pilots"

QuikR and the Tanarg's parked at Mt Beauty for the day

YFT gathers with moths

BY PETER AND ANNE MCLEAN

THE plan was to get as many aircraft together to fly to the Mt Beauty Gathering of the Moths. The weather was looking good and the pilots were keen to do the flight.

The plan was made many weeks before. They say time flies when you're having fun, but I just couldn't believe a year had gone so quickly. It seemed like yesterday I was doing the same plan!

FRIDAY

Pilots started to arrive by lunchtime and at six o'clock they were all at YFT for a briefing. The plan was to have wheels up at 0600 hours. This

meant we would beat the main group of aircraft which had planned to arrive to get the golden tie down. The weather was looking good, with a possible change late in the day. So, from a briefing stand point, it was a goer.

SATURDAY

Pilots started to arrive at 0500 hours. This was good sign and it looked like we would be on time for departure. Wheels-up was just after 0600, the air was good and the aircraft were all heading in the right direction, towards the mountains. We began with a tailwind, but as we reached the mountains the wind turned into a headwind. "How normal" did I hear you say?

We turned down the Ovens Valley and then made a left turn into Happy Valley. It was a quick flight over the range and then a right turn into the Kiewa Valley, which put us on a 10nm final for runway 14. You can see the runway as soon as you turn down the valley. This was good experience for the new pilots as they were learning how to fly down a valley safely, by not just flying down the middle. Calls were made, and one by one the aircraft arrived, were marshalled to the parking area and we all shut down for the day.

First off we walked into town for breakfast. As the YFT group moved into the cafeteria, the seats disappeared very quickly. Mt Beauty had done it again. We were now over MTOW, and the walk back to the aerodrome helped towards get-

ting us all back under MTOW. The rest of the day was spent talking with other aviators and looking at aircraft coming and going. Lunch was a BBQ run by the gliding club, and most of the afternoon was spent sitting under the wings of the aircraft, keeping out of the sun and trying not to get sun-burnt.

All of a sudden we noticed pilots started to move towards their aircraft. Engines started up and the aircraft departed. The YFT group decided to get ready to depart as well. One by one we lined up and departed on runway 32, heading down the valley for home. Yes, we had a headwind. That's normal, isn't it? The flight was smooth and the chat channel was busy with conversations about what had happened during the day.

Arriving back at Yarrawonga, it was a quick circuit then down the taxiway and into the hangars. Time for a drink and to reflect on a great day's flying, socialising and fun. A big thanks to everyone at Mt Beauty for putting on the Gathering of Moths. We will be there next year. You can count on it. ☺



Welcome to Mt Beauty. With the YFT trikes in the background

Treating the rash

BY BARRY WRENFORD

WE seem to have had a rash of fatalities from both stall / spins and flying into cloud, which prompts some suggestions.

STALL / SPINS

Overseas, it is said 41% of all fatalities are stall/spins and this seems to be about par with our records. Most notable stall / spin accidents happen after engine failure on the climb after take-off - Airspeed, airspeed, airspeed.

In winch launching of gliders, the aircraft climb attitude is around 45° (60° is used overseas with high powered winches). Cable breaks occur and training for glider pilots is standard for safe recovery and landing. Spin training and recovery is also part of gliding, but we are prevented from this by the lack of suitable aircraft. Because of the training, no winch endorsed glider pilot would ever be caught in a stall/spin after an engine failure in an aircraft.

In gliders we first maintain a safe launch speed and recover from a cable break by instantly pushing the stick full forward to unweight the wings and get the nose down. The maps and the dust from the floor might be floating around your head, but the wings are unweighted and cannot stall. During this manoeuvre the airspeed will be dropping. When the nose is well down and the speed is starting to increase, you have to check the rotation and wait for the speed to build up. When maneuvering speed is reached, then is the time to fly and decide where to go.

Powered aircraft are much draggier than gliders and, even with their lower nose attitude, the speed loss is fast when the engine fails. But we have to do the same thing and it is better to overdo getting the nose down than underdoing it. You cannot hesitate after failure in a full climb attitude and must act immediately to get the nose down - fast!

There are two danger points in an engine failure on climb out:

- 1) The first is not getting stick forward quickly enough - quickly putting the stick fully forward and experiencing zero G is not a problem and prevents the wings from stalling at any airspeed.
- 2) The second is having the nose down, but not waiting until the airspeed has built up to safe levels. To manoeuvre the aircraft beforehand is the recipe for a spin anyway, so pause to recover your airspeed.

If you can get a bit of spin training in a GA aircraft, do so - it may save your life later on.

In any case follow these rules:

- a) In the climb out always keep your speed high, towards the maximum allowed.
- b) If the engine fails, get the stick full forward - fast!
- c) Hold the nose well down straight ahead until maneuvering speed is obtained, then fly.

CLOUD FLYING

Illegal or not, there are those who have a Dynon or A/H, and have mucked around in a quiet little cloud and decided it is okay not to have full instrument training and currency to go with it.

Turbulence is the real killer for these people. GA aircraft are heavier and are mostly designed for stability. Compared to our light sports cars they fly more like buses. In turbulence they might wobble around, while we are getting the washing machine treatment.

If you are flung around in cloud with turbulence into an unusual attitude, and are not trained in recovery using instruments, you are inviting your own death spiral. If your Dynon is telling you one thing, your ear canals screaming that you do the opposite, and you are being flung around, you won't save yourself. The accelerating speed and G forces of the resulting spiral dive will tear your aircraft apart long before you even reach the ground.

Turbulence in clouds can occur from convection and from the lee of hills or mountains.

The fact it is calm in some parts of a convection cloud does not mean there is calm everywhere. A core, or cores, of rapidly rising air with strong shear turbulence around the edges, is there somewhere. Be aware! From hills, downwind turbulence can extend for long distances - 10nm in moderate winds is nothing, even above the hill tops. Strong winds are much worse. Flying in stuffed clouds, especially in any sort of wind, is asking for trouble. If the winds anywhere are moderate or above, it is not a good time to test yourself in cloud.

The real answer is not to fly in cloud at all without full training and currency, and is best done in a very stable platform. For those worried about being caught in cloud during normal flying, the answer is in your 'push on' attitude. If it looks doubtful ahead, don't push on but divert or go back. It can be done - I have found the best safety device for a cross country is not to have blind flying instruments. It makes you more cautious and careful with weather. I have flown 60 years without ever being caught out and trapped, because I do not push on. ☺





Spin training

BY RALPH WALKER



THE number of fatal accidents involving recreational aviation pilots in the past six months is totally unacceptable. The sad fact is that most of these accidents could have been avoided.

Pilots are forgetting one of the first lessons they learned when they started to fly - that is to maintain safe speed near the ground.

When flying below 1,000ft above the terrain always . The safe speed for any aircraft is one and a half times the stalling speed. This speed should be flown once base leg is joined and should be maintained right to round out. It doesn't matter if it is a normal circuit or an out landing.

Accurate speed should be monitored constantly, above all the other tasks essential to completing a safe and accurate circuit. Pilots who constantly train themselves to respond instinctively to maintain safe speed near the ground will not let a stall occur. When the pilot is dealing with a situation which is not normal, he or she needs to have developed essential flying skills which will be adhered to when under extreme pressure. I am referring again to flying the aircraft by attitude and constantly monitoring a safe speed near the ground. This is the priority above all other decisions when dealing with an emergency. All the other actions required to complete a safe landing will not stop the aircraft from stalling.

Decision making! In the case of loss of power or engine failure, as soon as possible make an emergency landing. Don't try to stretch the glide by turning back to the strip to reach a better area to land. If there is any doubt about making it to the field, land out. It is better to maintain control and fly the plane safely to the ground. The resulting landing may end up as a controlled crash but statistics show the survival rate by maintaining control is much higher than spinning vertically into the ground.

In an emergency the air speed on final is maintained by monitoring the airspeed indicator, as the attitude is now not in reference to the horizon. When on final, the pilot must maintain safe speed, right to round out. The pilot assesses the strength of the head wind then adds extra speed to overcome the aircraft entering a slower speed due to wind gradient. Wind gradient is usually caused by friction with the ground, or an area behind trees or some obstruction which slows the wind down near the ground. The aircraft can stall when entering slower wind near the ground due to the wind gradient.

By not maintaining safe speed near the ground, or doing accurate turns, it is possible for the aircraft to enter a simple stall which can then develop into a deadly spin. A large number of pilots in RAAus have most likely not experienced a fully developed spin throughout their entire flying experience, making their chances of recovering from a spin very small.

It can be an overwhelming experience the first time a pilot experiences a fully developed spin. To recover, the pilot needs to be familiar with the feeling and the visual picture of the aircraft rotating vertically towards the ground.

To carry out a perfect spin recovery requires constant practice. This can be done by recovering from a simple wing drop by using the correct spin recovery: full opposite rudder, stick forward until rotation ceases, and ease out of the resulting dive. Remember you are recovering from only a wing drop but rehearsing the full spin recovery.

In a full spin, the aircraft speed is stable, on recovery (full opposite rudder, stick forward) the inside wing speeds up, becoming unstalled. The aircraft is now flying normally. Without the drag of the stalled wing the aircraft will gain speed rapidly. If the stick is held forward for too long a lot of height will be lost. If the stick is moved back too soon, the aircraft, though not rotating, may be stalled

and possibly start spinning again. If the stick is held forward too long the aircraft will gain speed at an alarming rate. Once the aircraft stops rotating, carefully ease out of the dive. The difference between a perfect recovery and a slow recovery could be as much as 1,000ft or more.

We are not able to deliberately spin our aircraft. Before being certified, all aircraft are tested for spin recovery, but not many RAAus training aircraft are suitable for spin training. This is a real problem for training schools, unless they replace their aircraft (won't happen) with an aircraft in which spin training could be taught. An alternative way of teaching spins needs to be found.

If we could introduce some form of spin training we would reduce the number of fatalities.

One option could be to have spin training as an endorsement to be added to your flying skills at a later time. All gliding training aircraft are used for spin training. I am sure RAAus could arrange for all our pilots to receive spin training. Having done the training, pilots would know how to recover safely from a spin. The way to avoid a spin is by maintaining safe speed near the ground.

I wonder if spin training could be successful in a simulator. It would give the pilot the visual part of a spin but not the physical and mental stresses experienced in a real spin. This would help demonstrate how an aircraft behaves and how to recover from a fully developed spin.

How can we bring this forward as a discussion among all RAAus members to contribute to reducing our high accident rate? ☺

FROM THE OPS DEPT

Spin recovery was a topic for CFIs at the National CFI Conference in Bundaberg in October. Ops received overwhelming support for mandatory spin recovery training for RAAus Instructors. While there is no intention to mandate spin recovery for Pilot Certificate holders, we encourage all pilots to improve their skills with training which could be undertaken right now, such as Emergency Manoeuvres Training in GA aircraft or spin recovery in gliders. Pilots should constantly work to improve competency and confidence, and should undertake this sort of training voluntarily rather than by having RAAus impose requirements on them.

GYFTS Scholarships now open \$50,000 available

The Giving Youth Flight Training Support (GYFTS) program supports the dreams of young aviators.

Each year RAAus awards scholarships to a number of young aviators to support them in their pursuit of a career in aviation.

The aims of the scholarship program are to:

- Introduce young people to the sport of recreational aviation;
- Develop responsible and safe flying attitudes;
- Offer a basis of aviation knowledge for advancement and careers in recreational, military or general commercial aviation;
- Assist young people to complete their flying training at minimal cost; and
- Encourage young people to become active long-term members of the recreational aviation community.

APPLICATIONS open February 1 APPLICATIONS close March 31

\$50,000 in scholarships on offer FOR more information: www.raa.asn.au

FOR many years RAAus members have supported this program by donating a small amount each year. If you would like to help the future of aviation, please contact the RAAus office to make a donation.

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Please do not submit articles regarding events that are the subject of a current official investigation. Submissions may be edited for clarity, length and reader focus.




Greg getting ready in the Aerochute

I just want to fly

BY GREG JARVIS

A lifetime of trying to get airborne in any way shape or form with a very limited budget began shortly after I left school at 15 with a feeble attempt to join the Air Force.

I didn't really want a service career. I was just under the impression I could get a cheap pilot's licence. The Air Force careers bloke saw straight through me - I was rejected.

The next step was to start a pilot's licence course at Casey Fields at Berwick - I ran out of cash.

It all seemed too expensive. However, logic would state a one way trip should be cheaper, so in 1973 I had my first parachute jump. From memory it was on a temporary drop zone somewhere near Anakie (not Meredith) with Melbourne Parachute Centre. Five jumps later, a lot of bad weather days and delays, the nerves started to play and so I didn't return until the 1980s. Encouraged by Colin Streeter, Jump Master at Wangaratta Skydivers, I graduated from the old TU 28ft cargo parachute to the up-market 5 cell Strato Star. Again a move to Melbourne and several delays saw me drift away from the sport until 1999. Yep, back in the air again at Barwon Heads and later Nagambie drop zones.

I was never a heavy duty skydiver. I loved freefall but hated the lead up, and to be honest, I wasn't very good. Blokes around me progressed a lot faster than I did and the new group coming through seemed to take things very seriously. When you leave the plane and the brown stuff is up and blue stuff down, you know you've bugged up. I preferred to have a laugh about it rather than have some whipper-snapper explaining to me in excruciating detail how I went wrong.

An aging body accelerated by a few hard or awkward landings and inherited back problems prompted me to seek something a little gentler.

The introduction to paragliding tested my patience (not my strong suit) and dedication to the sport. I admire those who have broken through the learner phase and are able to control the more difficult conditions, widening their window of opportunity to fly, the masters flying for hours. I found the paragliding community extremely supportive and would recommend it to anyone who has the patience and dedication and is prepared to sit on a hill for hours in the hope of a 10-20 minute flight.

After four years and a total of approximately 28 hours, I managed to park the thing in a tree- obviously I needed a motor.

My first flight in an Aerochute was in January 2012. I spent the next 10 months procrastinating about the required investment and other more sensible and demanding priorities that needed attention. You know - house repairs, an old car which needed replacing. It was obvious I would be completely irresponsible wasting money on an Aerochute. I commenced my course in November 2012 and four months later had already past the hours I had attained in paragliding over four years. My Aerochute is neither the latest nor the sleekest machine, but it does get me in the air. After a lifetime of searching, I believe this to be cheapest and safest form of elevation. Paragliders, both free flying and powered, no doubt enjoy their endeavours individually (apart from the advanced tandem pilots), however I find the opportunity to gain a passenger endorsement after just 30 hours and being able to share the experience with others, extremely appealing.

If you are interested in becoming airborne I have no hesitation in recommending the Aerochute as the answer.

I do prefer flying machines without doors, so if you are interested in flying, I look forward to seeing you under an Aerochute canopy at some stage, or alternatively I do have a professionally repaired paraglider kit for sale. ☺

Yaw is not to yawn about

BY ROB KNIGHT

FOR nearly 45 years I have taught Effects of Controls. And for 15 years I have assessed other pilot's handling of aircraft. My observations over these periods have left me with the conclusion that too many pilots find flying in a straight line is a difficult manoeuvre.

This is so broad across the spectrum that it's a serious indictment on pilot training. While almost everyone would argue with me, the evidence is abundantly clear. So what's the problem? Essentially it's one of human nature, compounded by inadequate flight instruction.

Humans naturally ignore yaw. In learning to walk we quickly find that leaning too far forward or backwards makes us fall over and it hurts. We also learn that leaning excessively left or right causes a fall sideways and that hurts too. However, we can stand and spin around and around and get dizzy: that is actually fun. Yaw is safe, but pitch and roll are punished with pain. This conditioning is life-long unless modified so, when pilots learn to fly, they must be taught to amend the conception.

Too many pilots qualify while still lacking the necessary clear understanding of yaw, and the true function of the aeroplane rudder, because their instructors suffer the same conditioning shortcomings and are unable to see it themselves. Pilots carrying this fundamental misconception naturally place an excessive priority on monitoring pitch and roll to the detriment of discerning and controlling yaw.

Over the years, asking flight test candidates about the role of the rudder got me a virtually unanimous response "To balance aileron drag". Further pressing may sometime yield me, "Steering when taxiing".

Both are correct but rudder function is much more than these. Rudder controls yaw, either by causing it when input, or preventing it, or stopping it if it has already occurred.

The rudder is the aeroplane's yaw control.

SO WHAT IS YAW?

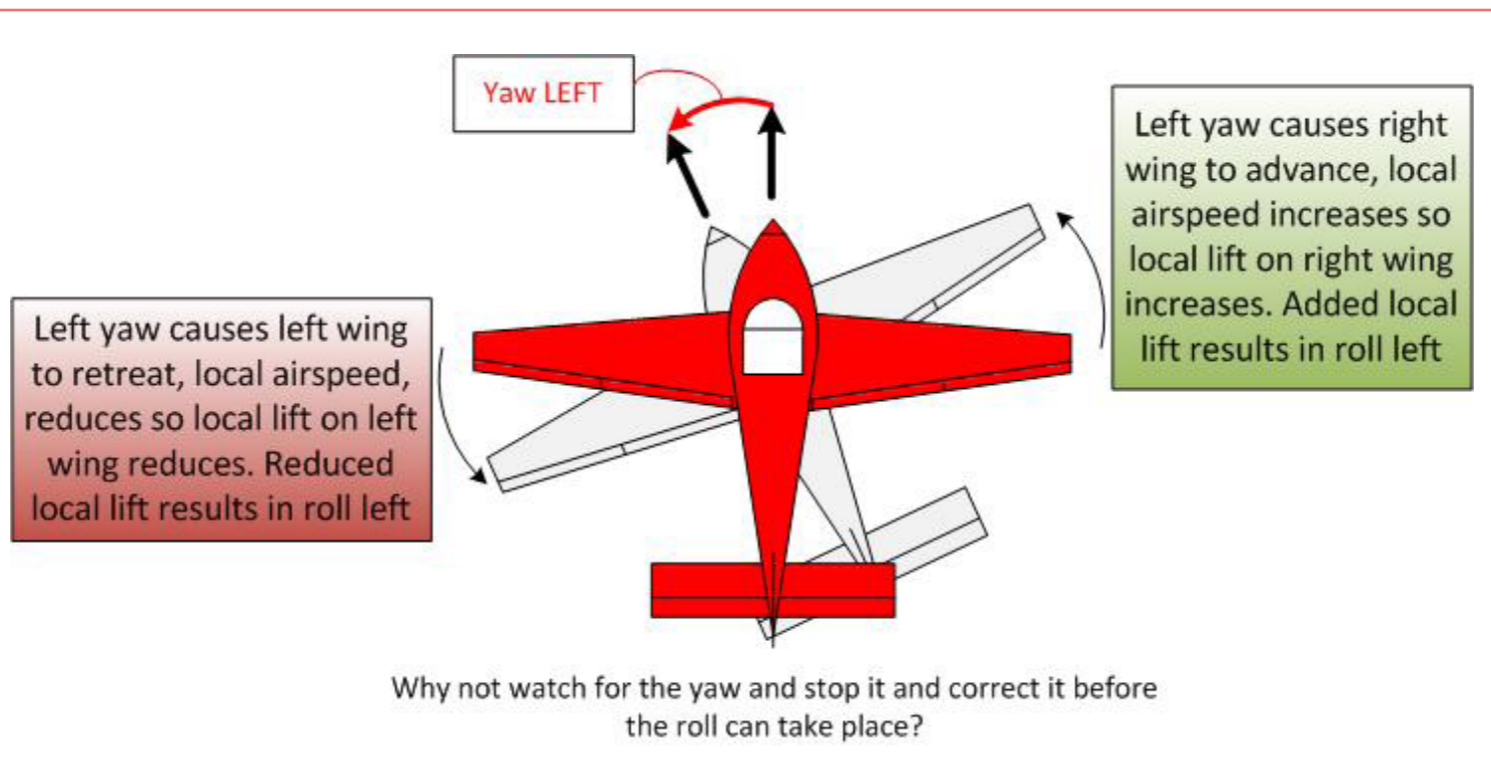
Yaw is movement about the aeroplane's vertical (or normal) axis. Or, from a pilot's perspective, lateral movement of the nose. Exactly as was taught in Further Effects of Controls, yawing the aeroplane will subsequently promote roll. The reason is simple – if the aeroplane's nose, for example, is yawed left, while the yaw is occurring, the left wing will retreat compared to the right wing and the right wing will advance compared to the left wing. This creates an airspeed difference between the wings and, with a constant angle of attack, airspeed changes must result in lift changes. Therefore differing local airspeeds cause differing local lift values and, after these forces have been applied, the aeroplane will subsequently roll in the direction to which it yawed, even though the ailerons are central.

So why the confusion with yaw? Because pilots don't perceive yaw since they are not looking for it - they still prioritise roll and pitch. If an aircraft yaws and then rolls, but the pilot doesn't see the yaw, they inevitably use aileron to resolve the roll symptom and not the yaw cause.

So what other causes are there for yaw that the non-discerning pilot can miss? The list is longer, even for single engine aircraft, than most people realise. It's not just the rudder which instigates yaw so let's look just at the two most predominant causes.

First (and the one actually taught) aileron drag causes adverse yaw when entering or exiting turns.

Ailerons deflect in opposing directions – when one is UP the other is DOWN and each produces a different drag signature when deflected. The up aileron enjoys relatively lower drag while the down aileron experiences relatively higher drag.



Thus, and again, as taught in Further Effects of Controls, ailerons promote roll and then, fractionally later in time, subsequent yaw. It's important to note that the drag differential between the wings will produce yaw away from the direction of intended turn.

Any time a pilot enters or exits a turn using aileron the aircraft will subsequently yaw (the wrong way) unless corrected.

Second (and the one not regularly taught) the atmosphere. Turbulence and horizontal wind gusts both cause yaw. If turbulence lifts a wing, the aeroplane slips away from the raised wing. The keel surface behind the centre of gravity causes weathercocking so the aeroplane will yaw and then roll.

Even more insidious are horizontal wind gusts which are most prevalent on approach, especially as height diminishes. Horizontal wind gusts also cause weathercocking and result in yaw and then roll - and too many pilots don't recognise this. They tend to see only the resulting roll and correct that, leaving the yaw uncorrected. Turbulence and gusts are perfectly natural occurrences and what the pilot does about them is the element which, in my experience, differentiates between pilots and airplane drivers.

The driver will use the ailerons to level the wings. That is what they're there for, isn't it? Yes and no: it depends on what else is happening at the time. Remember that roll follows yaw. If the pilot only sees the roll and misses the yaw he is behind the aeroplane and using aileron alone will only aggravate the situation. The driver will then, after the aileron application, continue to try and get the nose back onto the reference point with his hand, tolerating the, hopefully, reducing swerves and wanderings of the nose. This can take from a few seconds or, on finals, take the entire leg and perhaps result in a go around because the aeroplane is too close to the runway edge for safety.

Pilots giving yaw recognition and yaw control a higher priority than roll or pitch will recognise the yaw before the roll occurs. They apply sufficient rudder to arrest any lateral nose movement and restore it to the original reference point. As roll is subsequent to yaw, if the pilot is quick and precise, the nose can be put back in place before roll has occurred. A pilot must first keep the aircraft straight relative to the reference point ahead and only then use aileron, with appropriate rudder to balance, to level the wings.

Otherwise they have overlooked/missed/not seen, the yaw which needed to be arrested by the rudder a few milliseconds before. Ergo they are behind the aircraft. They are controlling the symptoms, not eliminating the cause.

While entering and exiting turns is a subject for another time, a view heard from other experienced pilots is that they prefer to lead with rudder when applying, adjusting, or controlling bank. I do not subscribe to this.

Except for turns of just a few degrees, I find this technique not to be universal, but more applicable to specific aeroplane types with particular aileron designs and longitudinal stability issues. This is especially so when using small aileron deflections necessary for gentle roll-ins.

I use just sufficient rudder to counter any adverse yaw created. Because I don't have adverse yaw before I use ailerons, there is no point applying rudder before the aileron. It is really a case of recognising the characteristics of the machine you are flying.

However, when making an approach after setting the aeroplane up on finals on the extended centre-line, the situation requires a finer look. I have sat through an uncomfortably high number of qualified pilots making approaches which would have done great justice to a ski slalom event. The cause – they underused the rudder to stop yaw and keep straight, and overused the ailerons trying to keep the wings level. If they kept the aeroplane straight with the rudder the wings would have stayed level without, or with only minor, aileron input.

On finals, keeping the highest priority on yaw will ease the pilot load, because the aeroplane will be steadier and there will be no need to engage in combat with the controls. This will provide time to exercise better judgment so the approach will go easier and the flare and hold-off float will be easier to judge.

This will make for better landings so confidence rises and so then will competence and expertise. All for the sake of applying a higher priority on yaw prevention and control.

Don't be an aircraft driver, be a pilot – it's much more comfortable. ✈️

FROM THE OPS DEPT

Rob's articles is a good starting point for understanding yaw, which also has further considerations while turning, like same side yaw once the aircraft is established in the turn and the ailerons are neutralised. The effect of the wind striking the side of the fuselage causes the aircraft to yaw in the direction of the turn. Additionally, Rob could expand further on the effect of propeller slipstream and torque effect from the engine. The bottom line is, if the pilot does not understand and recognise yaw, they cannot effectively counter it with rudder.

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Magic Merlin

BY BRIAN BIGG

THERE'S a new light aircraft on its way into the already crowded recreational marketplace. The Merlin PSA is described by its designer, Chip Irwin, as an affordable high-performance single-seat personal sport aircraft.

It's an all-aluminum aircraft with a cantilevered wing, 105kt cruise speed, plenty of cabin (Chip claims it has more shoulder room than a Beechcraft King Air 200) and luggage space.

The aircraft comes in either tailwheel or tricycle-gear configuration. There are three choices of power: 2-stroke Rotax, 4-stroke Rotax or, coming soon according to Chip, an all-electric Merlin engine (which is still under development).

The Merlin PSA is available as a quick-build E-AB (Experimental Amateur-Built, 51% Rule) aircraft. Its design has been created on 3D CAD/CAM equipment, resulting in what Chip says are easy-to-build matched-hole assemblies which require no fixtures, and he claims build time will be measured in days, rather than months or years.

Builders can also spend a couple of weeks at the Merlin Builders' Center in Florida and fly their new Merlin home from there (probably not if you are from Australia).

The aircraft comes with an option for amphibious floats (available for under USD\$10,000). Other options include a glass panel and a BRS rescue system.

Chip says a big selling point for the new aircraft will be its price – under USD\$35,000.

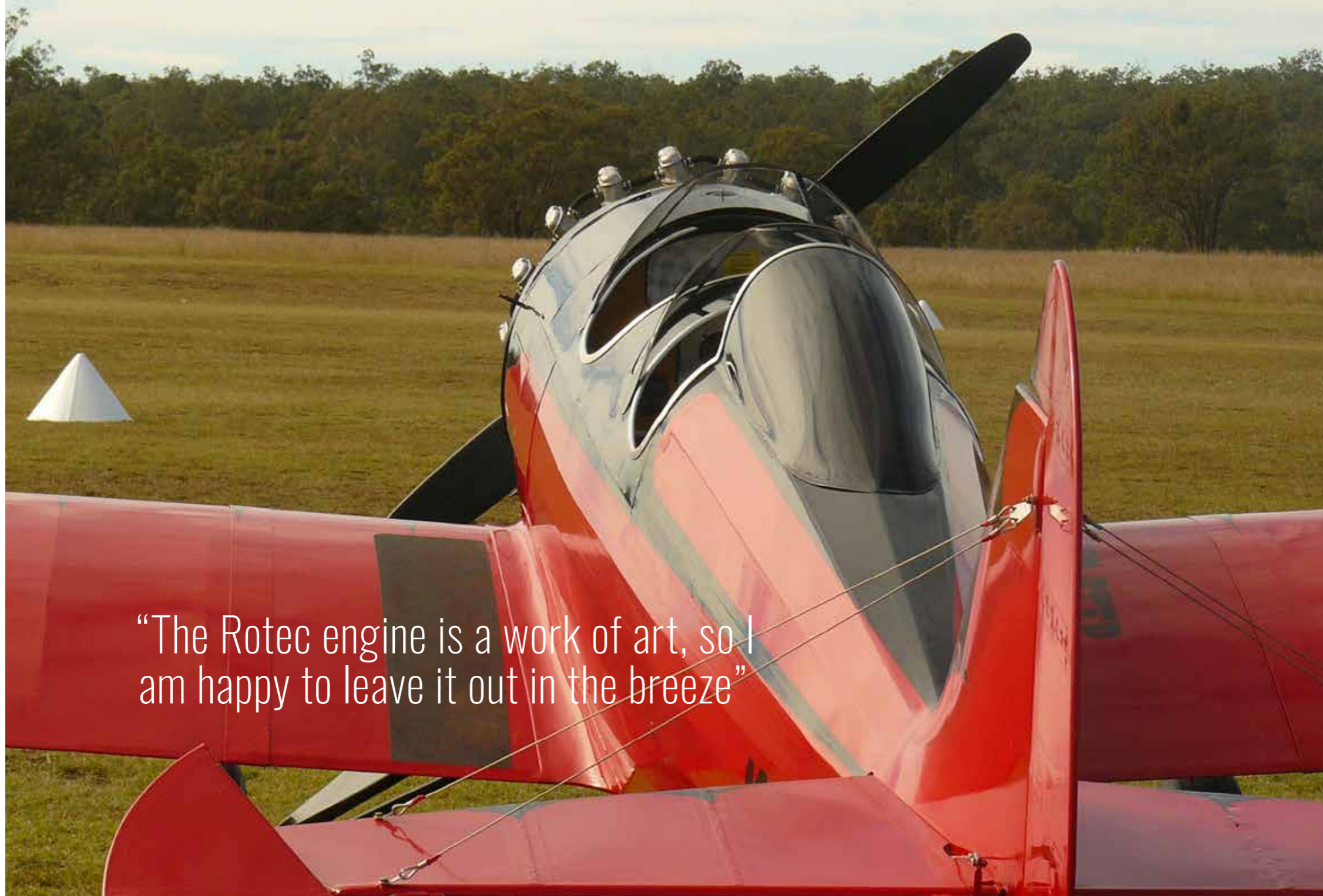
For more information visit www.aeromarine-lsa.com.



“Build time will be measured in days, rather than months or years”

Spacewalker fits the bill

BY MARTIN HONE



“The Rotec engine is a work of art, so I am happy to leave it out in the breeze”

THIS little tale has its genesis way back around 1990. My father and I had bought a J6 Karatoo kit and duly came across another Jesse Anglin design, the Spacewalker, being built by the then distributor.

The Spacewalker is a real retro machine and appealed as a real low and slow aircraft. I have maintained an interest in it ever since.

Fast forward to 2005 and I was researching a suitable airframe in which to house a Rotec radial engine. The Spacewalker was certainly on the short-list. As it turned out, I was able to buy the very same part-built project which had piqued my interest 15 years earlier.

Getting all the parts up to Queensland proved uneventful and even fitting the 9 cylinder, 150hp Rotec proved straightforward. The engine was simply positioned via an engine crane where preliminary weight and balance calculations had predicted and an engine mount was constructed to hold it there. This is where the head scratching began, because a round engine needs a round firewall. So a circular panel of stainless steel replaced the square one, and thus the entire fuselage shape was determined. Semi-circular plywood formers were attached each side of the box shaped fuselage. Four wood stingers were attached each side and hand carved to provide a rounded taper from the firewall back to the tail. The same process was used on the belly, while the upper deck is pretty much as per the plans, but with the addition of a roll bar and head fairing. The wood wing is in three pieces – two main panels and a deep centre section permanently fixed in the fuselage.



Martin and the Spacewalker

Spacewalker fits the bill cont.



This needed some thought as to how to mate the centre section protrusions each side into the new shape, given that the plans don't have lot of information or advice regarding this area. By laying up glass-fibre over a shaped foam fillet, it was possible to smoothly fair the sides into the wing, solving the problem. From the front cockpit forward, I made up alloy panels with large access hatches, which have proved a blessing when it comes to any form of maintenance. Likewise, the engine mount was designed to pivot on the right side upper and lower mounts so the entire engine and oil tank can be swung out to gain access to the throttle body injection and twin ignition systems. It involves undoing three of the five easily accessed mounting bolts, plus two oil tank supports, but I can do all this and have the engine swung out in about 15 minutes for maintenance or inspection.

By any standard, the Rotec engine is a work of art, so I am happy to leave it out in the breeze, but a boot cowl covers the area immediately aft of the engine - the engine mount, fuel pumps, oil tank etc. - with the possible benefit of smoothing the airflow between the cylinders and airframe. The engine drives through a reduction box so is able to swing a much bigger prop, which is great if you are building a WW1 replica with a 90 inch diameter propeller. Some measuring and number crunching showed that the smallest diameter prop I could use was 76 inches (same as you would find on a DH-82 Tiger Moth) but even then we needed longer legs. Nine inches longer as it turned out, so my airpark neighbour, Phil, worked out the appropriate wall thickness



Martin's old mate Aube Coote, an 89yo CFI and the only person to have flown the RR from the front seat



and diameters which actually increased strength without any weight penalty, and the longer legs certainly give the aircraft a much more imposing stance.

Other than the custom engine installation, the rounding up of the fuselage and longer gear legs, the aircraft is pretty much as per the plans, although I did lower both seats and fabricate a swing-down instrument panel - something which had proven a great success on my RV-6.

Unlike the Karatoo, where completion became an obsession, I was able to really enjoy both the building and design process with the Spacewalker. Maybe the interim period had mellowed me, but having another aircraft to fly took all the pressure off having to set deadlines for completion. I didn't keep a record of the precise number of hours, but it was 2.5 years in the building before one sunny Queensland morning in July, it took to the air. With the engine performing beautifully and the wings released from their surly bonds, we were airborne in less than 100m and climbing like a rocket. The handling surprised me, in that I expected the Piper Cub-like feel of the Karatoo. But Anglin has imbued the Spacewalker with control responses more akin to an RV. In other words, well balanced, light

and responsive.

The engine is slightly over-pitched with its 76 inch diameter x 67 inch pitch 2-blader but, with the short take-off run and steep climb, I really don't need the engine to turn any more than the 3,100 rpm it does now, though another couple of hundred rpm should only help. It will easily cruise at 100kts, but I find the open cockpit environment more comfortable at 90kts where the engine is relaxed at 2,800 rpm and the fuel burn is around 19 litres per hour.

Currently, there are two examples at an advanced stage underway in Western Australia, another in Victoria and one almost ready to fly in California. The new owner of the original Spacewalker and Karatoo design, Serenity Aviation, is putting them back into limited production, starting with the RR version, so there are another three soon to commence construction in Queensland, Victoria and Switzerland.

Living in Queensland, my partner and I wanted a low and slow open-cockpit aircraft with a bit of character, ideal for our lifestyle. With its smooth, powerful and reliable engine, and that lovely yet muted radial rumble which perfectly matches the wind in the hair - what's left of it - and bugs in the teeth nostalgia trip, the radial-engine Spacewalker fits the bill nicely. ☺

"The handling surprised me"



EVANS HEAD BRINGS BIG SMILES

BY BRIAN BIGG



The Great Eastern Fly-In continues to build on its reputation as one of the best drawcards on the aviation calendar.



EVANS HEAD BRINGS BIG SMILES cont.

Organiser Gai Taylor strikes a pose during a short break among the biplanes



Byron Bay Microlights made the journey south



The warbirds are always popular



The stalls were busy all weekend



Commercial displays



Gai with RAAus bosses President Michael Monck (L) and CEO Michael Linke

JANUARY'S event drew up to 9,000 people through the gates and well over 120 aircraft. According to the fly-in organiser, Gai Taylor, the weather in the lead up look threatening, but by the Thursday, the sky over the east coast of Australia was glorious.

"This year we tended to get a lot of day trippers," said Gai. "The uncertain forecast probably had a lot to do with that. People left their decision to come or not until the last moment."

The number of pilots who flew in and camped on the field was down a little on last year, but not by much.

"The fly-in was happy and relaxed like always," said Gai. "Pilots who flew in, did so safely during the breaks in the air displays. There were only two minor incidents. One pilot was caught out by the difference between NSW and Queensland time and was ribbed accordingly."

Former RAAus president, John Gardon, acted as display coordinator for the weekend again. He had the field and the airspace above it well-organised. Despite pressure from Airservices for the fly-in to have its own Unicom frequency, Evans Head organisers insist it was safer for pilots to stay on the local area frequency even though it became very congested

at different times during the weekend.

"We didn't think it would be safe to ask pilots to change frequencies two or three times as they approached Evans Head," said Gai. "We told that to Airservices and hopefully we showed them the current system works safely."

Two CASA representatives were present during the festivities and Gai was full of praise for their supportive attitude.

"It was obvious they wanted the event to go off well and for things to be as low risk as possible. They worked with us the entire weekend and were always on hand to discuss any issues which came up, to answer questions in the briefings and to provide assistance", said Gai.

"It was their idea for us to create a grass taxiway parallel to runway 18/36, which turned out to be a great idea."

No ramp checks were carried out and Gai says CASA's involvement was so positive she is hoping to build on that next year.

It was also a big weekend for Angel Flight, the charity which benefits from money raised at the fly-in. The CEO, Marjorie Pagani,

worked tirelessly to meet many of the Angel Flight pilots who flew in. She was also on hand to answer questions from people interested in becoming Angel Flight pilots. Marjorie was the guest speaker at the sellout Saturday night dinner.

RAAus also had a big presence. President Michael Monck, CEO Michael Linke and assistant Ops Manager, Neil Schaefer were on hand, both to answer questions, and to conduct a workshop on the activities of RAAus. Regular readers of this magazine would know it's the new policy of RAAus to get its leaders out and about meeting pilots at events around Australia. That policy seems to be working very well.

On the field, the large crowds had a lot to see and do. Sling Aircraft, Byron Bay Microlights and Evektor had commercial stands, as did Ozrunways. Local operators Air TNG and Aussie Air were busy all weekend taking people for flights.

The Evans Head Museum was also crowded. More than 1,300 people paid to go through on Saturday and see the F1 11, which will provide welcome funds towards the museum's upkeep.



Evans Head brings big smiles cont.

Australian Light Wing on display



Evans Head beach with the aerodrome behind the town

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Getting ready to go flying

Even though Evans Head organisers have been resisting moves to turn the event into a full-on air show, the big noisy warbirds doing their aerobatic displays are still the things which bring the feet tripping through the gate.

The highlights again this year were the Mustang, the Trojan and the two-ship Yak displays.

Nigel Arnot craned necks with his impressive display in the Tiger Moth and James Crockett brought the Yak 3 called 'Steadfast' from Queensland. What a beast this former Reno racer is.

Gai was full of praise for Pete Anderson, who drove up from Sydney for the weekend to provide his services as MC for the crowds.

"He did a great job and what he doesn't know about aircraft isn't worth knowing," said Gai.

The Seaplane Association turned up in numbers. The six amphibians couldn't splashdown on the river as planned because recent rain had made the water too dirty and risky to land on. On land, the president and the CEO of Australian Warbirds were on hand to watch their big machines amaze the crowd.

Gai also made mention of the impressive displays of the model jets owned by the local model aircraft club, some of which are worth more than \$20,000.

"And I have to remember to thank the volunteers," said Gai. "Last year we got 14. 10 of them came back this year and we had six newbies. They were all terrific and have promised to come back next year."

Gai says the dates for next year's Great Eastern have not yet been set, but she is planning on it being bigger and better than ever, with more workshops and more activities to lure pilots to fly in.

"The volunteers manning the gates reported everyone had big smiles on their faces on the way in," said Gai. "I know the fly-in was successful because they also reported everyone had big smiles on their faces on the way out."

"A big thank you to everyone who helped make the Great Eastern another big success."



The air over Evans Head gets busy

Filling up my logbook

BY BRIAN BIGG



IT'S STRANGE BUT NEW YEAR'S EVE ALWAYS HAS ME LOOKING BACK AS MUCH AS LOOKING FORWARD. IT'S BEEN MANY YEARS SINCE I FELT THE NEED TO GO OUT ON NEW YEAR'S EVE AND DESTROY BRAIN CELLS TO PROVE TO MYSELF AND OTHERS THAT I AM NOT GETTING OLD.

I'M NOT GETTING OLD - I PROMISE. I'M STILL YOUNG.
I'M NOT GETTING OLD. I'M NOT GETTING OLD. I'M NOT GETTING OLD.

THIS New Year's Eve I found myself at home, not getting old, preparing for a flight I planned to take the next day. As midnight approached, I found myself flicking through my log book, which was my first aviation related purchase in June 1986.

My log book is my most valuable possession and one I know my kids won't appreciate or look after when I'm gone. It is an intensely personal document, full of memories for me, but totally uninteresting to them or anyone else. It is stored in the go-bag with the hard drives which contain our family photos and home videos. In a fire, that go-bag is the only possession I plan to grab.

Only a pilot can understand the value of their logbook. I have been lucky enough to inherit my father-in-law's. He trained as a pilot during World War II and his logbook is full of flights around England in an Oxford bomber. He got there too late (fortunately) to drop bombs on the Germans, but his logbook captures that time of his life when he was at his most vibrant and alive. You can feel his excitement and intensity on every page. On his return to Australia, he couldn't afford to fly again but his logbook remained his most valuable possession and he ceremoniously passed it on to me shortly before his death a few years ago, knowing that of all the family, I would be the one to understand its importance. His logbook needs to be in a museum somewhere, but I guess there are thousands just like it, many with more exciting history contained in them.

My own logbook begins with a very neatly written entry on June 12, 1986. On that day at Bankstown Airport, I climbed into a Piper Tomahawk (VH-HAV), for the first time ever in the left seat, next to a man called Alan Judd, an instructor with the Royal Aero Club of New South Wales. Over the next 50 minutes he showed me the effects of the controls and he must've done a good job of it because I came back a week later, then a week after that, and another week after that.

On October 2, when I had 15 hours 30 minutes written down (I was on my third page by then), Alan stepped out of VH-HAW and sent me on my first solo. I can remember every single detail of that day - what the weather was like, what I was wearing, which way the wind was blowing and what an amazing thing I did to take an aeroplane off by myself, carry out a circuit and land it without killing myself. It still astonishes me nearly 30 years later.

Alan Judd later saved my life, and his own I guess, when I inadvertently flipped HAW upside down practicing descending turn stalls. I was a total mess for a week afterwards and I almost gave up flying because of it. He laughed it off. I wondered where Alan is these days. He holds an indelible place in my logbook and my life. I bet there are hundreds and hundreds of us out there who Alan gave the gift to.

By the late 1990s my logbook records that I would often only fly once a month or less. The cost of hiring a big four seat aircraft for an hour was

climbing dramatically in those days and I had a wife, new babies and a mortgage that was crippling me. Spending the equivalent of a week's groceries on an hour in an aeroplane going nowhere became hard to justify. Even though the passion was still there, entries in my book reduced to a trickle.

Then there was the almost 10 year gap between one entry and the next. I had moved to Europe, where flying is only for rich people, and I wasn't one of them. I did fly with a friend of mine who was rich, but paying a €25 landing fee and trying to navigate visually through the pea soup they call a clear summer's day didn't encourage me to do more. I was also very busy working. On December 4, 2001, my logbook returns that just three months after my return to Australia, I was back in the air. I went

The first year with my Zephyr I did 69 flights, the second year 78. That's better than once a week. It appears I didn't need any reason to go for a fly in those days. I would often wheel it out and take off on the way home from work even if there was only half an hour to go before sunset. I logged dozens of flights of 20 minutes or less, most of which were done at 50kts along the coast in silky smooth conditions. I can still recall how smug I felt. These days I'm back to about once every two weeks, because life has a way of getting in the road again.

According to my logbook I've taken up 120 people as passengers over the years. I love turning people from aviation scaredy-cats to potential pilots and all my friends know I'm forever on the lookout for a passenger.

One quarter of my flights with passengers have been with my children.



"Spending the equivalent of a week's groceries on an hour in an aeroplane going nowhere became hard to justify"

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up in a Cessna 152 with Basair instructor, Andrew Bailie, for a check flight. It records the weather was hazy with clouds at 1,500ft. I also noted that my flying was not bad after such a long break and that my first landing was great but my second not so good. Not much changes.

Twenty seven pages from the first one, my logbook records the day in 2005 when I left the ground at the controls of ATEC Zephyr 19-4227 for the first time, alongside my recreational aircraft mentor, Malcolm Aldred. Malcolm, from Heck Field, had spent nearly two years shepherding me through the build process for my beautiful new aircraft.

His name appears on my logbook dozens of times over subsequent pages, because he remains my first port of call whenever I have a problem. Malcolm is my own personal Siri (or Cortana) and when he decides to hang up aviation for good, I guess I will have too as well, because the idea of keeping my aeroplane in good nick without him scares me.

According to my logbook, owning my own aeroplane made a massive difference to the amount of flying I was able to do. Before I owned one, I flew once a month at best.

My son actually started taking lessons himself, but lost interest after recording about eight hours in his own logbook, when school and other teenage interests got in the way. You can't force them. My youngest daughter has been up with me quite a bit since then and I have great hopes for her inheriting my aeroplane. My logbook records I even took up my dog, Sam, once. That ended badly but is a story for another day.

I know pilots with quite a few logbooks, but I have only one. I've paid for every single flight I've listed and I'm sure it must add up to quite a lot of money over the years. But I've never bothered to add it all up because what aviation has given me goes beyond mere money.

My precious logbook has only three more empty pages before it's full. I know I can buy another one at any time, but I worry my logbook also represents my life. I hope when it is finally full I go on and fill another one. But if I don't, at least I'm satisfied my original logbook represents a life well spent.

The sound of fireworks at midnight when 2015 became 2016 stirred me from my reverie. I wished my growing children a Happy New Year, then tucked my logbook back into my flight bag and went to bed. I had to go flying in the morning. ☺

DIY maintenance friend or foe?

BY ALAN BETTERIDGE

ONE of the many advantages of building and operating your own aircraft is the ability to be able to do most of the maintenance yourself – and thereby saving a considerable amount of money.

Maintenance is essential to aviation safety, yet improper maintenance still contributes to a significant proportion of aviation accidents and incidents.

This is because a small percentage of maintenance tasks are performed incorrectly or omitted because of human error.

Many maintenance issues have little or no consequence, but some pose a significant safety threat. A threat which may not be immediately obvious but can become a latent threat later.

In December 2013 the pilot/builder of a Glasair III which was being operated in the Experimental category experienced a total engine failure shortly after take-off from Jandakot.

The pilot had limited options for a forced landing and, during his attempt to land on a sports field, the wing 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 was

destroyed by impact forces and a fierce post-impact fire.

The ATSB found that during construction, the aircraft was fitted with a single electronic ignition system which had been modified by the builder of the aircraft with the addition of a second ignition module.

The builder wanted a dual system that would provide redundancy.

But the modification retained the original single wiring harness from the engine timing trigger plate to the connector plug, thus creating a single point of failure in the dual system.

Cessation 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 ignition system.

In addition, the builder had used an inline connector which was not suitable for the purpose.

While the connector was found to be disconnected, it could not be positively established that this had occurred before or after the accident, due to the amount of damage.

Nor could be it positively discovered what had caused the disconnection.

One theory holds that the V-belt, which had not been changed since 2000, may have failed, tearing the connector apart.

The belt manufacturer required that the belt be replaced every eight years but investigators could find no record of this having been done.

Obviously the builder had not set out to create such a scenario. On the contrary he was trying to make his aircraft safer. Had the simple fact that the V-belt had not been replaced been the initiating factor in the accident?

DID HUMAN FACTORS COME INTO PLAY?

The answer is almost certainly yes, at least to the second question.

As pilots we are all well versed in checking around the engine looking for potential problems, but just how well do we check?

Items like an alternator belt can be difficult to inspect and normally give little or no trouble. Human nature tends to make us give this type of item a cursory glance only.

Human factors have long been known about and well researched in the mainstream aviation maintenance industry. Most organisations have put in place procedures and systems which prevent, or at least greatly reduce, the risk factor of human error.

Most aircraft maintenance engineers are well trained in risk management and have learned from past mistakes in the industry. But even with all this in place, problems still occasionally occur. So what is the chance of an error occurring when the maintenance person is also the builder or operator of the aircraft?

Can human factors, such as familiarity and complacency, ever be eliminated? The answer is probably not but each and every person who is involved in the maintenance of their own aircraft must become aware of their limitations.

If you are not sure about something, ask someone who is. If you don't believe you have the necessary knowledge or equipment, then get someone who has, to do the job.

Never take the advice of anyone who, while having no qualification, will tell you they know how to fix a problem. Indeed they may, but remember, false knowledge or a little knowledge can be far more dangerous than total ignorance in an aviation environment.

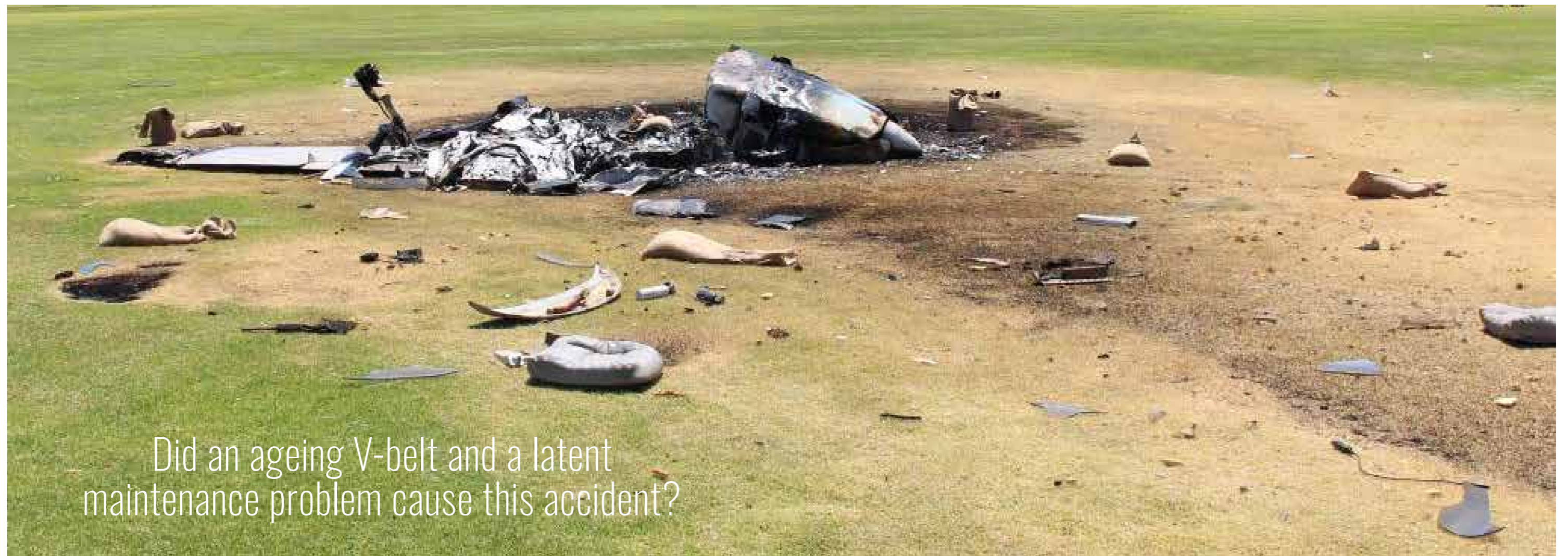
We have the freedom to be able to do a lot of our own maintenance, but with any freedom comes responsibility.

Safety is not just a word but should be the mantle under which we all operate. Everything we do comes with some risk, the key is to manage and reduce that risk.

So the next time you do some maintenance ask yourself: "Am I up to this task? Do I really understand what's required and do I have the expertise to complete it safely?"

If you answer no to any of the above then do yourself and your passengers a favour and get someone who is to do the work. Don't allow pride or pig-headedness get in the way. After all a bent aeroplane is a sure way to ruin your day – and your wallet.

Sport Pilot plans to run special features on maintenance in the April edition. So we need to hear from you. We need stories about good and bad maintenance, stories about lessons you learned from your own mistakes and lessons you learned from others' mistakes. We are also looking for tips for owners/operators who may not be as experienced as you are. Get involved. Email editor@sportpilot.net.au. Attach photos where appropriate.



Did an ageing V-belt and a latent maintenance problem cause this accident?

Alpine Aircraft Sales

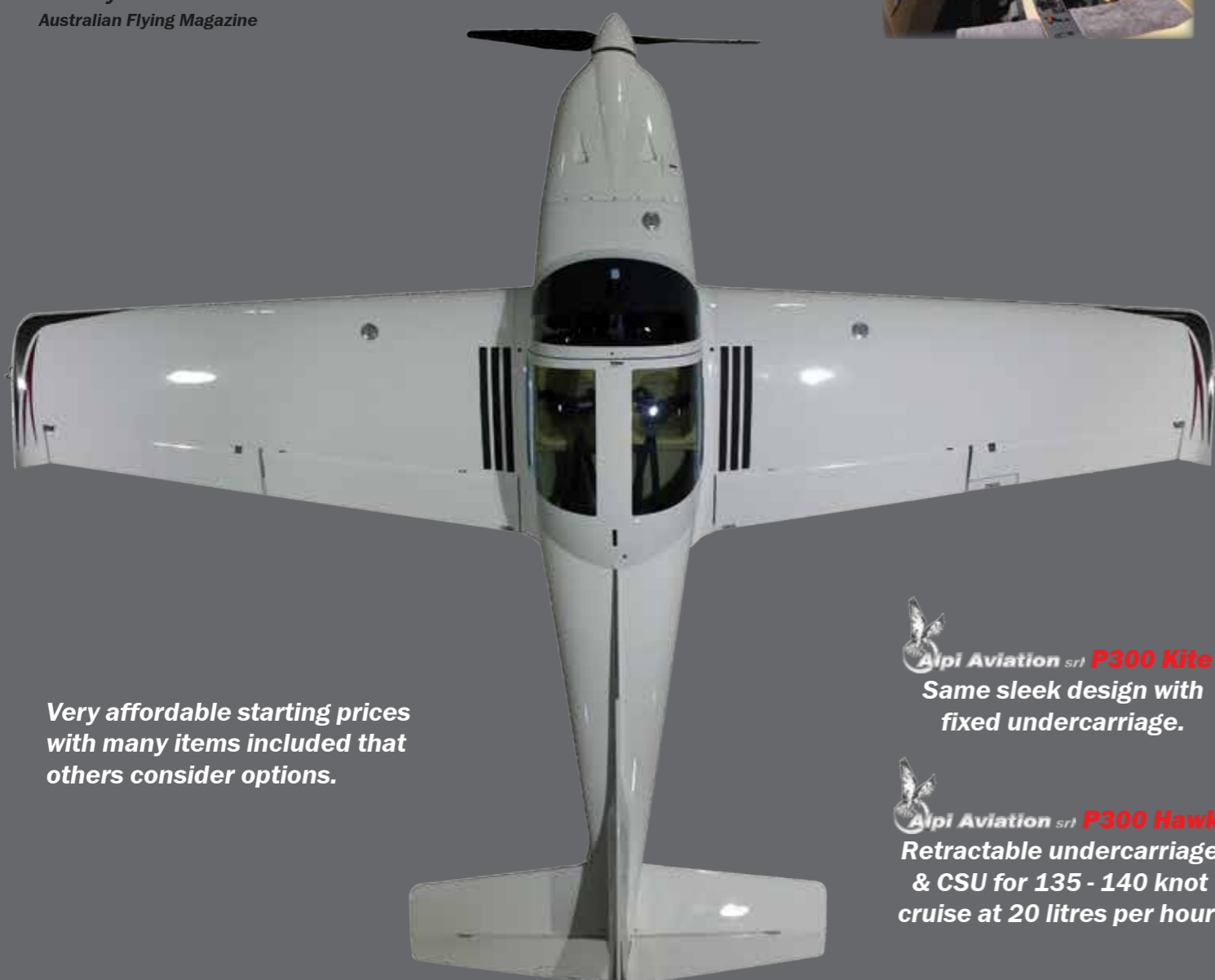
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FLYING TAUGHT ME THIS TODAY



Letting you down

WE were sitting outside having a cup of coffee while we waited for the power to come back on. The phone rang and it was our young neighbor asking if his dad had arrived here yet in his microlight.

"No buddy", we replied. "Not yet." Two minutes later he rang back.

"Dad's dead. He hit power lines." He hung up.

It wasn't more than a couple of years later one of my students was telling me that, as a kid in the country, he arrived home from school one day to see a smoldering heap in the paddock.

"Hey dad," he asked his father. "What's that?"

"That's your uncle," was the reply. "He flew into the power lines."

But he was not dead. The police though were treating it as a pending fatality and I needed to get there before the weather set in.

I arrived to a terrible scene; the microlight had obviously hit the ground inverted with the kingpost jutting out through the undersurface of the wing. There was a pool of petrol but no blood. "That's a good sign, isn't it?" I asked the officer on the scene. "Yeah, sure, a good sign". He smiled in an attempt to lift my spirits.

One of these accidents was just plain bad luck. Perhaps they should have turned back to the airport 10 miles behind them.

Or maybe the power companies could give power line locations to the EFB designers to include on their displays when below a certain height, rather than posting silly adverts telling us not to fly into power lines?



Three years ago, two of my friends set off from WA to attend Avalon Air Show. After a few great days flying and with only 30 miles to go, Avplan showed a band of rain blocking their path. So a field was chosen and, with two pairs of eyes, a precautionary search was commenced. Three passes were done then a landing started.

On late final, the propeller exploded and all hell broke loose. The plane stopped in mid-air then sprang backwards, spinning and falling down on one wing and then the other.

The deceleration from the crumpling wings probably saved both my friends from serious injury. They were able to get out and away from the twisted heap that had been the pride and joy of the owner builder.

They had hit a SWER (Single Wire Earth Return) suspended on poles obscured in a row of trees.

Only a few months ago, I received a phone call asking me to undertake an investigation into the crash of a microlight into power lines. It was one of my students and a good friend. My heart sank.

Of one of the other incidents, I only have sketchy details, something about clearing the strip of livestock prior to landing?

But the other two were accidents waiting to happen.

There is nothing quite like the freedom of leaving the school environs, no watchful eye of the CFI to comment on your flights. The allure of low level undulating terrain, buzzing the homestead and flying low over the neighbors to wave, just makes the hard work of getting your Pilot Certificate seem worth the effort. Racing the cars down the road is a rush, no coppers up here.

The proximity to the ground is such an exhilarating sensation, zooming around the small hills gives you the feeling you are a fighter pilot hugging the ground to avoid the enemy, the three dimensional freedom is just so alluring.

My friend is now able to move around with the aid of crutches for a few minutes at a time and is looking forward to getting his new carbon fiber splints so he can go home from the hospital.

"I will fly again", he says. "The plane didn't let me down - I let myself down". ☹️



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The calendar has clicked over to another year and our New Year's resolutions have no doubt fallen by the wayside again. But it's a good time to self-assess our flying..

WHAT are we planning to do with our flying in 2016? Where do we reckon our skill levels are at? Are we planning to expand into new areas with our flying, add a new endorsement, buy a new aircraft or aim for a different licence?

The opportunities are limitless, even if the bank balance isn't, but setting some personal flying goals can be a great motivator to keep the flying enthusiasm high and maintain or improve our skills.

As a student pilot our development path is well forged, the gradual climb to the Pilot Certificate, the extra endorsements like a passenger to share the joy and a cross country to expand our new flying world. During these times, it seems like that right seat is always occupied with an experienced person in the form of an Instructor providing mentoring, and there is ongoing scrutiny checking on your skills and standards.

Fast forward a few years, and your flying might now be in cruise mode, with your comfort levels high and you're living the dream. You've got the fly in scene covered and there is only the biennial inconvenience of the dreaded BFR. Hey, it's only an hour round the block with a few curly questions that you have to muddle through, and Joe the CFI is now your mate so it won't be that bad. Life is good.

Sadly this may be the reality for many pilots and with the annual hours for RAAus pilots averaging under 25 hours, those early days of flying euphoria are often replaced with social Saturdays and a routine local area flight being the norm.

So why don't we review the competencies that were expected and you achieved when your CFI issued your Pilot Certificate back in the day?

Section 1.01 to 1.03 of the Syllabus of Flight Training, now separated from the Operations Manual, outlines the competency elements and required Pilot Certificate standards. Standard 2 is defined as a pilot's ability to be able to competently, and without instructional assistance, perform the activity correctly and adjust actions to cope with emergencies under uncontrolled environments.

To determine if a particular activity is being performed correctly we need to look at a number of specific elements.

- The planning & preparation for the manoeuvre;
- Correct control application;
- Tolerance management & correction;
- Decision making & judgement.

One area that may not clearly understood for recreational operations is flight tolerances. Undoubtedly your instructor would have clearly outlined this during your training but perhaps these expected minimum standards may have slipped over the years.

CASA provided accepted reference parameters for competency in the Day VFR syllabus, now replaced by the Manual of Standards in CAR Part 61. This forms a useful reference point to check our current competency. Remember these standards were probably used as a basis for your initial Pilot Certificate issue and form the foundation for a minimum standard of piloting performance in any flight environment or if you decide to add to your qualifications with any additional licences and privileges.

How do you stack up for these requirements now? Why would you accept a lesser standard now than what your Instructor expected while you were a student?

Flight path or manoeuvre		Flight tolerances
Taxing aircraft		±1.5 metres of centreline
Nominated heading		±10°
Climb airspeed		-0 / +5 kts
Level off from climb and descent		±150 ft
Straight and level	Altitude	±150 ft
	IAS	±10 kts
Power descent airspeed		±10 kts
Glide		-5 / +10 kts
Turns		Angle of Bank ±5°
Turns onto nominated headings		Heading ±10°
Steep Turn		Heading ±10° Height ±150 ft
Final approach airspeed		-0 / +5 kts
Landing	Touchdown	±120 m
	Centreline tracking	±2 m

Extract Schedule 8 CASA Part 61 MOS

Part of Operation's role is to assess pilots on this basis, and recent flights have revealed areas where this expected level of competency has not been to the required standard. Pilots forgot checks, did not configure the aircraft correctly, had a poor lookout, did not fly within published flight parameters, or failed to safely manage a simulated emergency. These are just a few of the more common areas where substandard performance has been observed. These would not have been acceptable while a student, so why do we accept these lesser standards just because we have been flying for a few years? Do we expect that our greater experience will protect us?

In a similar fashion to recalibrating our aircraft instruments regularly, as pilots we should review our competency against the syllabus, or better still undertake some advanced training or endorsement training as a way to maintain or expand our minimum flying skills and standards.

The greatest self-assessment of this competence is by asking the simple question of yourself- Was I the best pilot I could have been today? The answer may not always be yes, and that's ok, but by constantly self-assessing ourselves against recognised standards we can at least have confidence in our continued competence as pilots. ☺

References:

- RAAus Operations Manual Sect 3.03 para 9
- RAAus Syllabus of Flight Training
- https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/newrules/parts/061/download/draft-ac61-08.pdf
- CASA Part 61 Manual of Standards Schedule 8

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TECH TALK

New Year's resolutions

BY DARREN BARNFIELD RA-AUS TECHNICAL MANAGER



I hope all of you made at least one new year resolution to do with your aircraft, making sure it is always in top working order and finally getting those things done which require doing. This is going to be a year focused on the back bone of the organisation, the L2 maintainers.

WOODEN AIRCRAFT

The recent spate of tropical storms in the north of the country and the excruciating heat in the south does little for the equilibrium of our aircraft, especially those flying wooden propellers.

It is therefore timely to remind those affected by adverse weather to review their aircraft, control systems and propeller tensions.

DEFLECTION CHECKING

It's great to see a larger number of amateur built aircraft being constructed. For me building my own aircraft was a way to build up my skill sets which helped me gain the experience for my LAME licence.

Part of the initial inspection prior to flight is checking control deflections. In fact, at any time you have the control circuit apart to replace components, the flight control deflection should be checked. To L2s and ABIs, ensure this is being conducted and witnessed accordingly. Wandering deflections can help determine possible issues within the system, i.e., loose lock nuts or control rods shortening or lengthening themselves.

Control or pushrod interference should not be present in any system. If it is, take the time and find out what is causing it or, if possible, compare it to another aircraft of the same type. Also remember to check the website for any service bulletins. Whether its 19-, 24- or 32- there may be a AN required and to be complied with.

LSA - IT'S SIMPLE

There still seems to be a cloud over the LSA category and the registration of aircraft therein.

The process is fairly simple and has minimal involvement with either RAAus or CASA, which is the way CASA would like it to stay. An aircraft eligible for the LSA category must have a statement of conformity signed by the manufacturer that the aircraft meets the LSA criteria. Along with other documents like eligibility for flight in the country of manufacture, evidence is required that the manufacturer is approved, a certificate of registration from CASA or RAAus and the relevant flight, maintenance and service manuals. All this goes to the CASA approved Authorised Person who can sign out an LSA aircraft and issue you with a relevant Special Certificate of Airworthiness.

THE DOCUMENTS RAAUS REQUIRES FOR FACTORY BUILT LSA INCLUDE:

Application for registration, Weight and Balance report from the factory, Flight Test report from the factory, copy of the Statement of Conformity on the CASA form 681 (current amendment) and a copy of the Special Certificate of Airworthiness, along with photographs of the registration markings on both sides of the fuselage or tail section. (The requirement of underwing registration was removed in mid-2015).

The ASTM standard is designed around a 600kg MTOW and so, for all you budding aircraft designers and builders out there wanting to take on the world one aircraft at a time, get yourself a copy of the ASTM

standards to design and build your aircraft around it. www.astm.org.

AIRCRAFT REGISTRATIONS

The process of CAO 95.55 para 1.2(e) (Amateur Built) registration really is quite simple, though it is amazing how many people choose to ignore it and believe they can do what they want, or simply don't know the steps. Therefore, once an aircraft is finished:

- 1) Apply for a registration number;
- 2) Organise an Amateur Built Inspector (L4) ABI to inspect the aircraft;
- 3) Complete the Pre-Flight final inspection checklist;
- 4) Conduct a weight and balance assessment and get the inspector to sign it;
- 5) Take photographs showing the registration numbers on the vertical surfaces in accordance with the Operations Manual;
- 6) Take photographs of the cockpit showing the instrumentation, weight and warning placards, engine installation;
- 7) Complete the Aircraft Data Sheet;
- 8) Complete the Application for registration found in the member's portal on the website (unless you want to ring up and pay by phone, or send a cheque);
- 9) Submit all of that to receive a Provisional Registration.

Once you receive a Provisional Registration, you may then and only then begin the test flying period for the aircraft. After you have completed the required 25 hours for an aircraft fitted with an aviation approved engine like Rotax or Jabiru (or 40 hours for an auto engine conversion like VW - Corvair or Subaru), complete the test flight period finalisation form and send that in to receive full registration. NOTE: Some of the above requirements will change with the release of the new Technical Manual due this year. There will be a transition period after the new Technical Manual is released.

An important note for your reference: Flying an unregistered aircraft is a serious offence.

An extract from the Civil Aviation Act: '20AA Flying unregistered aircraft etc. Flying an unregistered aircraft

(1) A person must not fly an aircraft within Australian territory if:

(a) the aircraft is not registered under the regulations; and
(b) the aircraft is, under this Act or those regulations, required to be registered under those regulations.

Penalty: Imprisonment for 2 years.'

Two years jail should give you something to think about next time you just duck over the hill to a mate's place.

LEVEL 2S

If you are an L2 and have not already done so, please inform the office of your email address and contact details. I want to do email and text updates to the Level 2s to keep you updated. I am hoping that by informing everyone about issues found during inspections, audits and with the new online Occurrence Management System (OMS) that we build a more informed audience of the L2 maintainers sharing in issues found on various aircraft.

If you used to receive an email and have not done so since last year, please contact the office and verify your email address. ☺

Gone with the wind

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL



WE'VE all had those days. The forecast said it was going to be a hot one, so you expected to get bounced around a bit, but once airborne it was like flying in a tumble dryer.

You may even have discovered your shoulder straps were not quite tight enough, thanks to a particularly punchy downdraft unceremoniously cracking your head on the cabin roof. It goes without saying then that gusts are a force to be reckoned with. But when it comes to designing for gust loading, there are one or two surprises in store.

An aeroplane's gust response is, superficially at least, pretty simple. An updraft increases the wing's angle-of-attack, and so generates additional lift (as shown in Fig.1) while a downdraft has the opposite effect, reducing the angle-of-attack and decreasing the lift force (or even generating a negative lift force in the most extreme cases). The magnitude of the lift change due to a gust is directly proportional to the gust's strength. That is to say, if you double the gust strength you double the change in lift. Now the different regulating authorities don't agree on how gust strength should be calculated, but the usual approach is to pretend a gust is 'sharp edged' for calculations (i.e. assume it hits instantly), and then apply a fudge factor to account for the fact that a real gust actually ramps up over a short distance much like it is shown in Fig.1. In reality, the 50fps 'sharp edged' gust assumed by FAR Part 23 actually represents a stronger 66fps gust but with a more gradual ramp up. All very straightforward so far, but what does this mean for the aircraft structure?

The effect of a gust can be split into two areas; the immediate load increase on the wings and the effect of the ensuing gust induced acceleration. The change in lift force produced by a gust is determined purely by the wing's aerodynamic properties and so, initially at least,

is independent of aircraft weight. This leads to some unexpected effects when determining the critical loading. For the wing structure the worst case scenario will be hitting an updraft with the aircraft at maximum weight. The gust load will add to the large lift load already required to support the aircraft, producing severe loading on the wing structure. "Nothing particularly strange about that", I hear you say, but now consider what happens with the plane flying at minimum weight. Gust forces are independent of weight, so both the light and the heavily loaded plane will experience the same increase in lift force, but thanks to Newton we know that the same force will accelerate a light object more rapidly than a heavy one, so the light plane will accelerate more sharply and thus experience a higher load factor. This confirms what we already know intuitively - light planes get thrown around more in turbulence - but there is more to it than that. The wing structure will probably be okay at minimum weight because the increased load factor will be effectively balanced out by the reduced weight of the aircraft, so the resulting loading is unlikely to be critical. But this is not true for the rest of the structure. Taking the engine mount as an example. It doesn't matter whether the plane is flying heavy or light, the engine will weigh the same, but the lighter plane will experience a higher load factor due to its faster acceleration. If this load factor works out to be larger than the maneuvering load factor for the plane, it will present the critical scenario for the design of the engine mount. As can be seen in the example shown in Fig.2, the same gust produces a 60% higher load on the engine mount for the minimum weight plane, compared to the maximum weight one. I'm guessing there's a good chance that that wasn't a result you were expecting!

"A light plane will accelerate more sharply and experience a higher load factor"

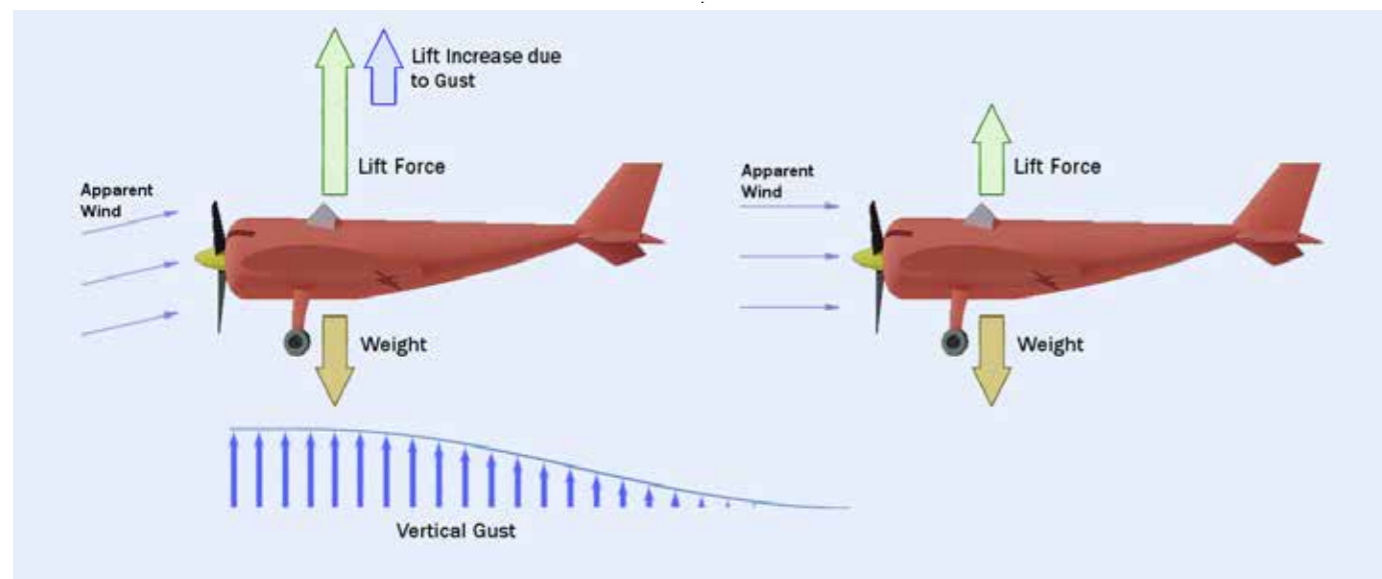


Fig.1 - A simplified gust response

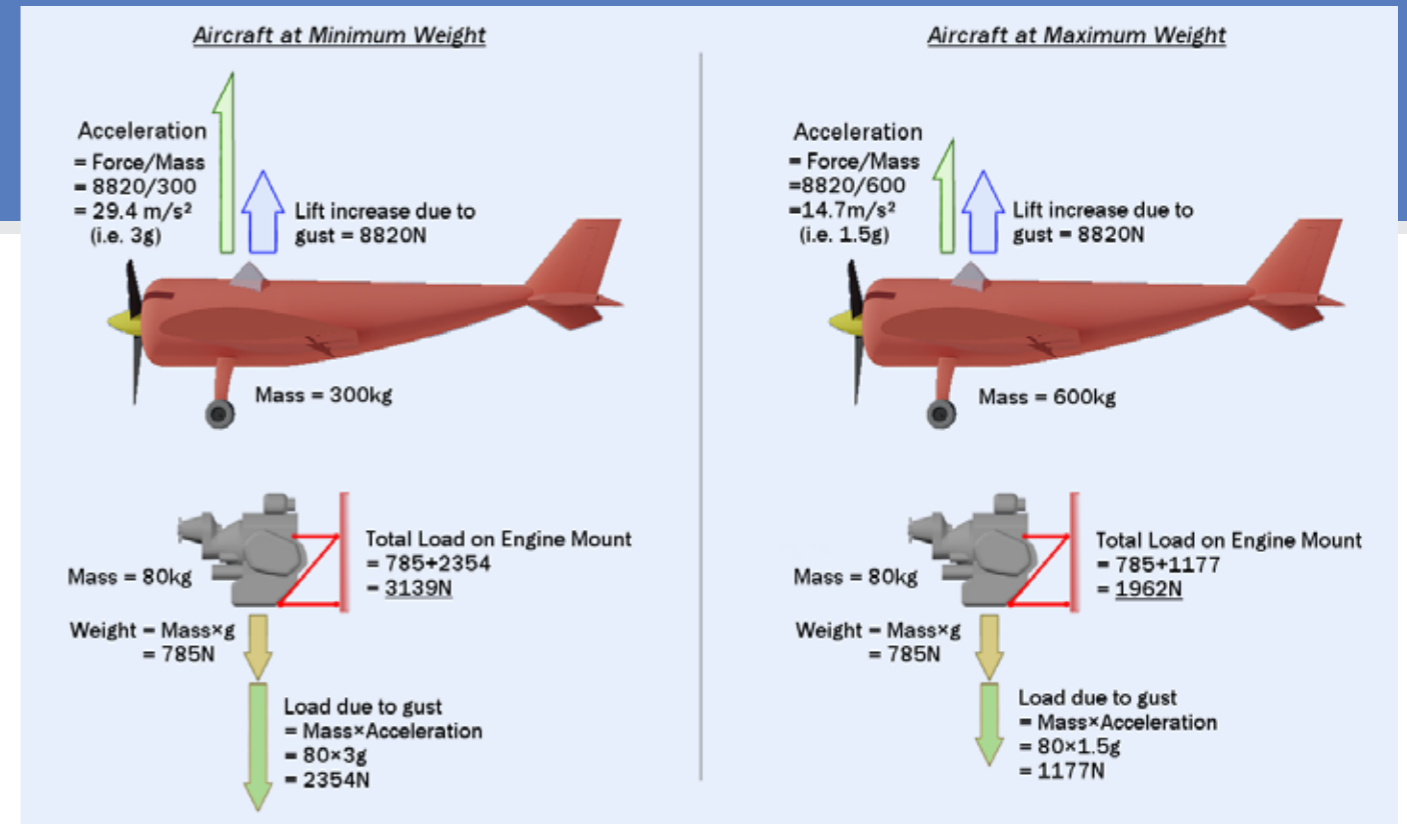
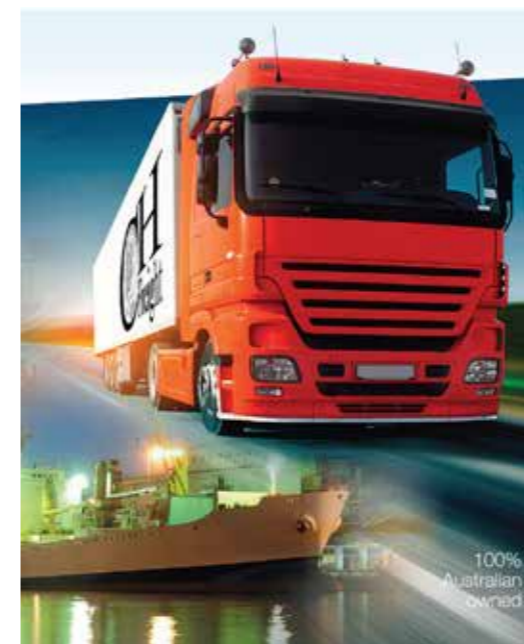


Fig.2 - The effect of weight on gust loading

The above requirement also extends to all the other structures supporting fixed masses such as battery trays, pulley mounts, seats, even cup holders! It also demonstrates an important concept; any large acceleration, no matter what the cause, can produce loads that are critical for design. The V-n diagram will capture manoeuvre load factors and may also include gust loading, but there are other sources a designer needs to consider. If you have a hard landing, your first thought will probably be for the landing gear, but a 3g landing deceleration applied to a wing with full tip tanks or pylon mounted engines, is likely to produce a load in the wing spars way beyond that produced by a limit negative-g manoeuvre.

There is another source of acceleration loading too, albeit one unlikely to be an issue for an ultralight design. That is rotation - i.e. pitch, roll and yaw. If your aircraft is to be exposed to violent manoeuvres (or it is simply dimensionally very large) then masses mounted at the extremities of the aircraft will generate significant loading when the airframe is rotated, both due to rotational acceleration and centrifetal forces.

NEXT MONTH: Load paths



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SAFETY MATTERS

In your own hands

BY AMSA



ARE YOUR SAFETY PRECAUTIONS RUNNING ON AUTOPILOT? TAKE SAFETY INTO YOUR OWN HANDS.

BEFORE any pilot takes to the sky, there are a number of measures to consider which prepare you for your journey and help SAR authorities respond if you require assistance.

Most recreational pilots have a distress beacon on board in the case of an emergency. Incidents which involve distress beacon alerts are received by AMSA Search and Rescue in Canberra.

There are three types of distress beacons which cater for different needs and environments, so depending on your aircraft, it may be one of the following:

Emergency Position Indicating Radio Beacons (EPIRB) usually for use on water;

Personal Locator Beacons (PLB) for personal use by bushwalkers, four-wheel drivers, other adventurers on land, employees working in remote areas and for people on board vessels or aircraft; and

Emergency Locator Transmitters (ELT) usually for use in an aircraft, although in some cases an EPIRB or PLB can be carried in place of an ELT.

Pilots often debate when it is appropriate to activate a beacon in flight.

The rule of thumb is, if you ever find yourself in a life threatening situation where verbal communication is unavailable, activate your distress beacon to alert search and rescue authorities.

This equates to when a pilot feels they face a life threatening situation – it's a personal decision for every individual.

Facing a forced landing would be enough reason to feel you are in a life threatening situation.

When a pilot is unsure of their position or has deviated from their planned or notified flight route, this would elevate the level of concern and a decision to activate their beacon would certainly be wise, so a search and rescue response would focus on the correct location.

Once the distress alert has been received, AMSA Search and Rescue can ring your emergency contacts to obtain useful information to assist search and rescue authorities to effectively coordinate a response. So it is essential to keep your registration details up to date.

You can also now upload details about your

trip plans and photos of your aircraft onto your online registration account, which will be used to identify you in an emergency.

There are also some precautionary measures you can take to raise the alert when you are overdue.

Submit a flight plan or a SARTIME to AirServices or leave a Flight Note with someone responsible. If pilots fail to cancel SARTIMES, or report their arrival within 15 minutes of their ETA, a search and rescue response is initiated.

In November, a search for a helicopter in the Hunter region of NSW did not begin until more than 24 hours after its departure, because the pilot had not lodged a SARTIME or flight plan.

Also AMSA Search and Rescue recommends you set a reminder in your phone to cancel your SARTIME to prevent an unnecessary activation of a search and rescue operation.

To update your beacon registration, or for more information on beacons, visit www.amsa.gov.au/beacons or phone 1800 406 406.

For more information on SARTIME management, visit www.airservicesaustralia.com.

HOW TO PREPARE YOUR BEACON BEFORE FLYING



1 Register your beacon and keep your details up to date

AMSA has recently improved the online beacon registration system to make it more mobile friendly and accessible for registering and updating your beacon information from your mobile, tablet or laptop.

Make sure your details are up to date in your online beacon registration account. This includes your contact details and emergency contacts. You can also now upload details about your trip plans and photos of your aircraft to help identify you in an emergency.

Having a registered beacon could make all the difference in a life threatening situation.

2 Check your battery expiry date

Regularly check your battery expiry date and test your beacon as per the manufacturers' instructions. Note that even if the light operates when you are testing your beacon after the battery expiry date, this does not guarantee your beacon will work correctly in a distress situation. So make sure you service and replace the battery before it expires.

3 Store your beacon correctly

Although ELT's are mounted in a rack and installed permanently in an aircraft, PLBs should be kept on your person and within easy reach in case of an emergency. Be sure to keep it away from items that might accidentally knock the activation switch.

4 Test your beacon correctly

Test your beacon on 'test mode' and not by switching it on and off in the operation mode. This will transmit a 121.5MHz homing frequency, which can be heard by overhead aircraft that will be reported to AMSA.

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LEARNING TO FLY

Sounds like a plan

BY ANTHONY SIBARY



THERE are few things finer than arriving at your favourite airfield under almost cloudless skies, knowing you will soon be airborne and having fun. The conditions did not come as a surprise, because I had gone through my usual routine the previous night of checking the weather on NAIPS and again on the morning of my planned flight...but more on that later.

I will not list the many acronyms related to planning and what happens if you fail to do so. I have seen and heard what can happen if people do not do it and I would rather not become a member of that club.

I was taught to get into healthy planning habits early in my aviation adventure, that way they will stay with me. With this in mind, I have been refining my abilities as I have gone and discovering what works best for me.

I can remember when I started flying lessons. I would check the weather forecast the night before and then head off to the Oaks based on what I saw on the TV. Was it aviation specific and therefore an acceptable part of my plan? No, it sure wasn't. I look back now and wonder why I did it, but that was all part of the learning process. I spoke with my instructor, John, and my CFI and explained my dilemma. If you are unsure of anything during your flying training journey, ask your instructor. The only stupid question is the one not asked (spoken like a true former school teacher).

The first thing I did was register with Airservices for NAIPS and I now use the App on my tablet. As my studies progressed I was able to decipher the language of the forecast and it is amazing just how detailed the information is. Stick with it. It is pretty tough to decipher at first, but you will get the hang of it and be glad you did.

You may also be able to phone ahead to someone at the airfield who is there early enough to advise you of the current conditions. Another useful tool my CFI told me about is the Willy Weather app. It is free and provides detailed current wind and temperature conditions. Have a look and see if it will work for you. As I mentioned earlier, these are all tools which help in the flight planning process.

As I build hours in the left seat, I am constantly reminded of just how important weather is to me. The saying goes something like "I would rather be on the ground wishing I was in the air, than in the air wishing I was on the ground".

It is simply a waste of your valuable time and money taking a flying lesson in poor weather. As you progress in your flight training, you will learn all about crosswind techniques and your instructor will show you the correct way to handle the aircraft in varying conditions. But early on, it's too hard.

"It is a waste of time taking a flying lesson in poor weather"

On one occasion, I had done my due diligence and checked the conditions were good and headed off to YOAS. This was not just another ordinary flying lesson, it was to be the flight test for my Pilot Certificate. I am not sure what I noticed first, the sound of the wind blowing out of the north, or the way the incredibly large gum tree on the western end of the Oaks airfield was swaying and branches and leaves were being thrown from it at an alarming rate. The wind eventually eased, but it was still much more than just a breeze. Dave confirmed what I had already suspected, that we would not fly that day.

Sure, I was disappointed but imagine the worse outcome if Dave not been the professional he is? One of the many reasons I chose Dave's Flying School in the first place. They are more concerned about my safety than making money. Enough said.

Did I manage to get some left seat time in recently? Yes, and it was circuit time at YOAS. Conditions were good and I completed some touch and goes from 18L. There was a slight crosswind component from the south east and I adjusted my control inputs accordingly.

Because I had checked NAIPS and planned for the conditions, it made for a fun and relaxing 1.1 hours in the left seat. I am planning on going flying again tomorrow. The forecast says it's going to be great flying conditions again.

See you in the pilots lounge for cocktails and debriefing. ☺

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No cheap computer game

BY GEOFF WOOD

I met Sam Craig during our Wangaratta TIF day, sponsored by locals and business to enable school students to glimpse aviation as a career. With two Tecnams and a helicopter, we managed to get 24 potential students into the air at half price.

I was approached by Sam asking if he could also have a TIF because he had always wanted to learn but had never had a lesson. "No problems", was my reply. "Do you have any flying experience?"

"Only on my simulator I have at home", Sam replied. "I have flown over 2,000hrs on it. It has three screens, rudder pedals, high graphics, dozens of aircraft, lots of airports including Wangaratta and Benalla. I use the radio to make appropriate calls."

"Ok Sam, let's go fly."

I gave Sam the pre-flight briefing, then with me hovering over the controls, Sam taxied to the holding point. I gave the runway entering radio call and, after the final checks, we lined up.

"Ok Sam, you have control."

With that Sam took off, kept it straight, climbed at the required speed and made the 500ft climbing turn. It was amazing. Things beginners struggle with, often for hours, he nailed first time.

After going through several manoeuvres, we came in to land. The only part of the flight I helped and talked Sam through was the flare, because his sim could not give him the feel of putting an aircraft onto the ground. It was an impressive first flight by any standards and on the strength of the TIF, Sam signed up for lessons.

Sam invited me to check out his sim, which I did days later and I was blown away with the complexity of it. We dialed in Orange airport with actual local weather and took off in a Harvard. Sam ran through the aircraft checks and flew a perfect circuit. Sam often flies different Airbus A320s from Melbourne to Cairns or other places in the world.

His pre-flight checks take up to 20 mins.

For his RAAus Certificate he dials up a Tecnam and uses Wangaratta as the airport. Unfortunately there is not a Eurofox available in the library. The sim saves him so much time – especially practicing things like making radio calls. Anything which needed polishing up in his real training, Sam practices at home.

Sam registered with AirServices and always turns up for real lessons with weather, NOTAMS etc. He had to obtain an ARN to do so.

For crosswind training, his sim can be set to deliver crosswind, turbulence, traffic, weather and actual real time weather at any airport. I was most amused to see on the screen a bloke sweeping the hangar at Benalla airport and trucks going along the highway. Where they going, I wondered.

It's now six months down the track and with 21 hours in his logbook Sam went to fly his flight test with Doug using the Eurofox (tests are done in the aircraft in which the student has done their most recent five hours flying).

He did it easily. Doug even gave him a 12kt crosswind landing, which Sam managed perfectly.

Now we await the paperwork from RAAus and Sam has his Certificate to fly within 25nm. Cross country navs are on the list for early 2016. Of course, he shouldn't get lost. Sam has already sim flown the Tecnam to Shepparton and other airfields in the region.

As an instructor I find a good sim saves many expensive hours. Flying can be done on those no fly days and the cost is much less than an hour in a real aircraft. Sam, being a computer whiz, has set up a similar sim at Wangaratta for others to use. It's already been put to good use, including by me. I will never get the opportunity to fly a real F1-11, but on the sim I flew one out of Avalon. I wasn't going to get lost around Geelong, even at 400kts. ☺

"It was an impressive flight by any standards"



Sam's sim showing controls for a Caribou

Bits and pieces

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS



AROUND thirty years ago I came upon a copy of Kitplanes in my local newsagent. As many have written, the realisation you could build your own plane came as a stunning revelation.

However, in those days, there used to be an article in each edition focused on how to avoid your two-stroke motor failing in flight. There were many possible solutions - frequent servicing, the quality of your pre-mix fuel, reasonable engine life and the way you used your engine.

There were a number of two-stroke engine choices, but Rotax engines gradually became dominant in the market.

The two-stroke Rotax engines were based on snowmobile engines produced for the parent company Bombardier, a Canadian company, and a relevant part of the story, but probably next month.

As snowmobile engines, they were required to be very reliable in difficult conditions, but not usually where ambient heat was likely to become a problem. I don't have the actual statistics, but it appears early on that the performance of the engines in snowmobiles greatly exceeded that in aircraft. And so it goes for Volkswagen and any other repurposed engines and perhaps any engine new to aviation, including those designed for the purpose from the ground up.

A friend recently referred me to an online article concerning problems with hydraulic lifters in Lycoming engines (Google it). The article goes to great lengths to explain the problem, but the relevant fact for us is that even for this esteemed brand, there are, or at least have been, significant issues. This is an issue the editor addressed a few months ago in reference to Jabiru engines, and this is where this argument will eventually go.

It appears the basic problem is that reciprocating engines are not particularly well-suited to flight. I can hear the howls of disagreement even before I finished writing the sentence, but consider the quite astonishing reliability of jet aircraft engines compared with that of reciprocating engines. I remember some years ago touring the Qantas jet base and asking one of the engineers about the life of 747 engines. He told me they didn't actually have a life. They replaced an odd part as they timed out, but their service life ended when there was a better engine available. In the meantime, a good service every 10,000 hours or so seemed to do the job.

It appears reciprocating engines do not particularly like being cycled through their full range of power settings. They operate with extraordinary reliability in settings, such as large diesel trucks and marine applications, but this reliability is not replicated in aviation. No one would suggest you would need to do a complete rebuild on a B-double engine after just 2,000 hours, or about 20 Sydney to Perth return trips.

So here is the dilemma. Reciprocating aircraft engines are relatively

cheap to build and far more fuel-efficient than turbines. Despite many years of intensive research, no engine manufacturer has managed to come up with a turbine which can come close to the performance of, say, the ubiquitous 150hp four cylinder 360 cubic inch aircraft engine in normal operation. In fact, it is quite possible we will see electric aircraft engines in widespread service in light aircraft before we see turbines. Like turbines, electric engines are very well-suited to aviation use.

Over the past 100 years the world has learned how to operate reciprocating engines reliably in aircraft, or at least, sufficiently reliably. If these

engines are operated exactly as they should be, they work well. But there are all sorts of missions where this doesn't happen. For example, pilots with little experience doing circuits put an enormous strain on the engine. For example, the pilot may not have good control of their speed in climb, leading to the engine being cycled from close to its maximum operating temperature to rapidly being chilled in descent. Usually it is not their aircraft and they may not know of tell-tale problem indications which should be reported.

It is difficult for the manufacturers of aircraft engines to gain sufficient data to determine the nature of a particular problem. Unlike the automotive industry, where the engine manufacturer also manufactures the vehicle in very large numbers, the manufacturer of aircraft engines may have only a tiny number of engines operating in a particular airframe. If, for example, Volkswagen is informed that 10

cars out of nine million manufactured have a particular problem, they have a lot of data on which to make an assessment.

If Lycoming is informed that, say, an RV6 fitted with an IO360 engine has crashed, they have little to work on. Was the engine fitted correctly? Was it serviced correctly? And how many similar such installations are there? Was it pilot error? Have some number of potentially similar incidents occurred which did not, in the opinion of the operator, warrant reporting?

The cost to manufacturers of reacting to what may appear to be one-off incidents is astronomical and leads to the splintering of the operating conditions of the engines in service, leading to more difficult analysis when another incident occurs.

No doubt there are algorithms used by manufacturers to reduce this dilemma, but there is no silver bullet.

So, the safe operation of aircraft engines relies on experience, judgement, data and common sense from pilots, manufacturers, service people and regulators. These are qualities not always found together.

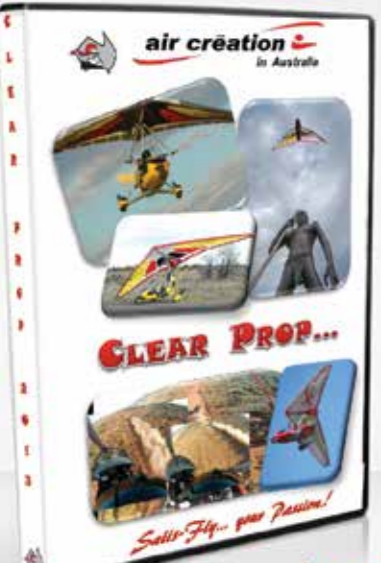


"It appears reciprocating engines are not particularly well-suited to flight"

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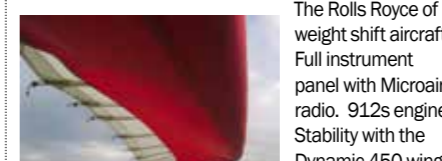
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OFF THE SHELF



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Lightspeed Aviation has entered the field pioneered by Australia's own EQ with the release of its first wireless headset. The ANR Tango is not Bluetooth or WiFi, but incorporates existing technologies chosen for both signal reliability and audio quality for the aviation environment. The Lightspeed Link connection can support up to six headsets in the same aircraft (way more than enough for RAAus aircraft), letting everyone on board experience the true freedom of wireless flight.

The device routes communication between the headset, the intercom and auxiliary devices and can be mounted securely in any aircraft. The interface also stores the backup cable in the event the batteries become depleted. The Tango is powered by rechargeable lithium ion batteries.



- PRICE AUD\$1,299.00
- WEB www.lightspeedaviation.com

DIY DRONE

Here's the thing for a person who loves aviation and has everything already... a paper aeroplane drone with a live streaming camera.

PowerUp FPV lets you experience flight as if you were sitting in the cockpit of your very own paper airplane. Wearing your smartphone with a head-mounted display (Google cardboard viewer included), you see what your plane sees, controlling your drone with movements of your head and your phone.

The throttle controls the motor's thrust. Full thrust makes the airplane climb. You can raise or lower the throttle by sliding your finger up or down anywhere in the lower part of the screen. Tilting the smartphone makes the airplane bank by controlling the rudder at the tail.

PowerUp even provides templates for various paper aircraft designs.

Oh dear the hours to be wasted with this.

- PRICE USD\$199.99
- WEB www.poweruptoys.com



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- WEB Myfody.com

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@canrconstructions.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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RAAus at a glance

ALL ABOUT YOUR ORGANISATION

<p>104 Number of Hughes Engineering aircraft on the RAAus register as of September 2015</p>	<p>1,057 Number of RAAus members in South Australia</p>	<p>10,947 Peak membership of RAAus (so far), reached in June 2012</p>
<p>3,567 Peak aircraft registrations by RAAus (so far), reached in September 2012</p>	<p>27:1 The glide ratio claimed by the makers of the Pipistrel Sinus</p>	<p>160 Accidents per million hours flown in recreational aircraft over nine years to 2015 Source: ATSB</p>
<p>241 Accidents, serious or otherwise, involving recreational aircraft reported to the ATSB in 2013 Source: ATSB</p>	<p>80% The percentage of fatal accidents in LSA aircraft in the US caused by pilot error in 2014 Source: FAA</p>	<p>54% The percentage of those accidents where the pilot was 60 years or older Source: FAA</p>

UNDO January statistics listed 1.98 engine failures per 10,000 flight hours across the RAAus fleet. It should have been 1,000,000 flight hours.

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The best birthday

BY ALYSHA MEREDITH



APPROACHING middle school, I started to realise my high school years were going to go fast and before I knew it, I was going to graduate. During that time, I didn't have any strong ambitions for the future. I always thought to myself I never want to work in an office environment and be in the same old routine every day. I started to think more about aviation. My father works as an airline pilot. When I was 12, Dad transferred to the Boeing 777 and would talk about how much he enjoyed it. I started to get really intrigued with aircraft and dad's enthusiasm for flying. I think that is when I started to realise I wanted to fly. When I was 13 we started looking around our local airports trying to find somewhere for me to do a TIF. One day, driving back from the Sunshine Coast, we dropped in to Caboolture Aerodrome and met Bill and Heather Haynes. Bill is the CFI.

So the decision was made and we booked a TIF. I couldn't wait for the day to come. I remember being really nervous and not knowing what to expect. I walked out to the Jabiru 120 with Bill. I was so excited I couldn't even talk, I just nodded. As soon as I hopped into the aircraft and took off, I knew this is what I wanted to do for the rest of my life. My Dad saw this in my smile when we arrived back. He knew what that smile meant because he had the same one when he did his first flight.

I was eager to start training, but I was too young and had to wait till I was 14 and a half. A strategy was hatched. We decided we would get all my training completed so I would be up to circuits and ready to go solo on my 15th birthday on December 1. That became my goal for 2015.

The day finally arrived. So many things could've gone wrong but to my surprise, the forecast strong winds held off and everything went brilliantly. I flew three circuits which confirmed I was ready to go solo. Then Bill climbed out of the Foxbat.

I felt a huge rush of panic and excitement. I knew this was something I was never going to forget. The feeling of being told to go fly a circuit by myself is something words cannot express; I could barely make any radio calls because I couldn't stop smiling. I remember lining up, going full throttle and taking off. I looked to my left and could see all the people below me watching me and then looked to my right and saw no one but the beautiful views of Brisbane and the Sunshine coast.

I think the best thing about the day was how much effort everyone put in just to be there and make my day extra special. All the birthday wishes and congratulations from so many people I had never met, just blew me away.

Special thank you to Bill and Heather Haynes, everyone at Caboolture Recreational Aviation, Peter Harlow, Peter Pretorius, everyone who congratulated me and wished me Happy Birthday and especially to my dad, who was and has been there for me the whole way.

By the way, we now own the Foxbat I went solo in. ✈️



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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