SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / JUNE 2016 VOL 58 [6]

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A perfect way to start the day at the Bush Flyers Down Under fly-in Photo: Clay Marks

ON THE COVER

"There is a young fellow up Tyagarah way, Tim Howes we call him by name."

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A brand new day

BY MICHAEL MONCK

SOME years ago I found myself in the unfortunate situation of having my aircraft grounded. It was costing money to insure, park it at the airport and I had to spend more money to hire another aircraft to fly while it was grounded. This was due not to any fault of the aircraft, but because we, RAAus, had not done our job at the time.

I say 'we' because I am now more involved in RAAus on the inside, so to speak. I could have just sat there and thrown stones (which I did) and not become involved, but I chose instead to be a part of the solution and work with the organisation to address the shortcomings. And over the past three years or so we've achieved a great deal.

We have had many people working together to address the problems with registration which arose out of some unsatisfactory audits. I am pleased to say that today we are on top of most of it. We have had more audits from CASA since I came onto the board and we've passed them with flying colours.

Michael addressing the GYFTs awards

We've also made a great deal of progress in other areas by investing heavily into the systems and procedures we use to manage Pilot Certificates. This is beginning to show dividends. RAAus has been able to reduce staff by the equivalent of one full time person as a direct result of the changes.

And over the weekend of May 14, members chose to continue this improvement process by convincingly supporting the adoption of a new constitution and a new form of incorporation.

In the coming weeks we'll be making considerable effort to make this change. I hope, by the time you read this, you will have heard about progress we will have made. We have to apply to the ACT authorities to transfer the incorporation from state to commonwealth. We have to submit an application for registration to ASIC, the federal regulator (not to be confused with those silly red cards we have to wear at airports). Perhaps the most visible aspect of the change will be the call for nominations to a new board.

We received almost 1,000 votes on the constitutional changes, with around 87% of us in favour of the changes. It is now the role of the board to do what you have instructed us to do. The first step is to look at the organisation from a strategic perspective. We need to ask what skills are required on the board to guide us going forward. We'll use guidance material from sources, including not-for-profit experts, to do this and make it available to all members. Nominees will be asked to respond to that call for skills. These responses will also be made available to members. The rest will be up to you.

On top of this, the new constitution requires that, when board numbers fall below four people, at least one director must retire at each annual general meeting. This means that one of the three current directors - me, Tony or Barry - will also have to vacate our position.

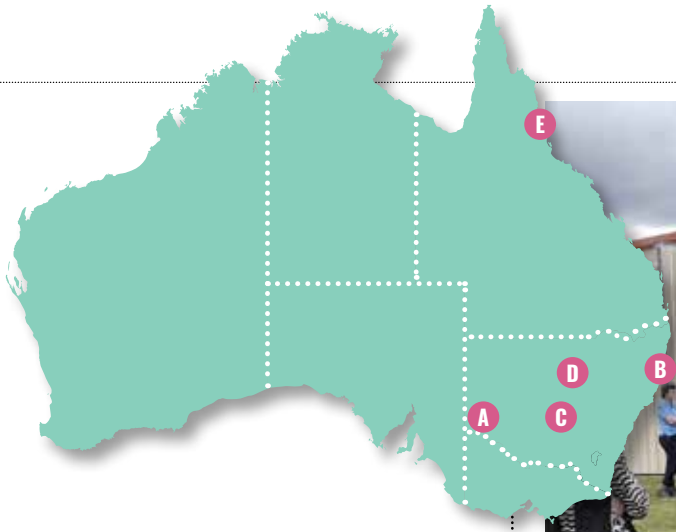
All of this will occur over the coming months with the Annual General Meeting planned for the usual September/October timeframe. At that meeting we'll have a new constitution, be structured as a company limited by guarantee and will be back to business as usual with the new directors taking up their positions. We'll be working as a fully functioning board to make the future of RAAus even brighter.

Speaking of the future, on the same weekend as the board meeting we had the pleasure of announcing our GYFTS recipients. We had a record year for this - 41 scholarships were awarded totalling more than $75,000. We have only been able to achieve this through the generous support of our donors with Air Services being our largest. Each year it gives us $25,000 to help young people get involved in flying. On top of this we have had tremendous support from other corporate sponsors including Oz-Runways, Aviation Advertiser, Stampils (our magazine publisher), Dick Smith Foods, Brisbane Airport, X-Air Australia and Busselton Aero Club. In addition to this, we also had the generous support of our long time business partners Cre8ive, Hallnet and Infinite who have all been heavily involved with our business for a number of years. And then of course, there are the unsung heroes of the program – our members.

To me this is kind of neat. It reminds me of what RAAus is about. It's a community of aviators working together to share their passion and inviting others into the community. It's members helping members. So it is quite fitting our members provide some of the driving force behind our efforts to involve youth even more.

It's also why I got directly involved a few years back. I saw an organisation that was struggling. Some said it was on its knees. Others said it was on the brink of collapse. Regardless of how it was described, it was an organisation which had seen better days and needed help. We're a lot better off today than we were but we still have a way to go. So I urge members with the skills we require to put their hands up and help us out. Look at the call for nominations when it is published and see if you'd be a good fit. By being involved, we can continue the ethos of members helping each other out and carry on improving this organisation which allows us so much freedom with our wonderful brand of aviation.

CALENDAR OF EVENTS



A. 11-12 JUNE
QUEEN'S BIRTHDAY FLY-IN

SUNRAYSIA Sport Aircraft Club welcomes all aviators to its popular annual event at the Wentworth airport. Club room dinner and social evening on Sat with a three course meal. Book accommodation early. For more information, Brian Middleton (03) 5022 7783 or brianmiddleton12@ceinternet.com.au.

B. 14 AUGUST
GRAFTON WINGS AND WHEELS

GRAFTON Aero Club will host its 4th annual Open Day from 10am to 2pm. We expect there will be more exhibitors this year, including hot rods to add to the classic, vintage, sports, touring and race cars, plus go-karts, motorcycles, model aircraft, etc. There are also exhibitors and demonstrations of stationery engines, blacksmiths, various things from the Men's Shed and hopefully some women's interest groups. We hope to have warbird adventure flights available, as well as joy flights. For more information, http://graftonaeroclub.com/wings-and-wheels

C. 27-27 AUGUST
GATHERING OF EAGLES

WATTS Bridge Memorial Airfield invites everyone to be a part of our annual fly-in. As well as the airshow display and parachute drops, expect to see a huge variety of aircraft types including warbirds and WW1 and WW2 replicas, vintage, aerobatic and homebuilts. There will also be vintage cars and military vehicles on display, WW1 and WW2 military re-enactors and other exhibits. Sat evening is a gourmet BBQ and music. 100LL Avgas available from the bowser. Admission for pilots and aircrew is free with no landing fees. Camping available on the airfield. For more information, Bruce Clarke on 0488 336 762 or visit www.wattsbridge.com.au.

D. 6-9 OCTOBER
OZKOSH

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

E. 15 OCTOBER
RAAF TOWNSVILLE AIR SHOW SPECTACULAR

THE event will celebrate Townsville's 150th birthday and its long relationship with the RAAF. Fireworks and live music along the town's foreshore. RAAF Base will hold an open day the next day. The last time the city and the air force put on a show like this, 70,000 people turned up. For more information, www.airforce.gov.au/Interact/Displays/Air-Shows.

A HOME NEEDED

As readers of this magazine will know, sport aviation is among the most accessible forms of aviation – and it was this this accessibility which made it possible for my late father, Doug Lucas, who passed away a few days ago after a long battle with cancer, to make it into the skies. He learned to fly in the 1980s, in the days of wing-warping Scouts. Through the 1990s he built his own Lea Kestrel, with the assistance of its designer, Ces Lea. He flew it happily, for a number of years, until failing health grounded him. But he still kept his blue and yellow plane, in the hope he would fly it again – an ultimately forlorn hope.

Instead, it has remained in its trailer, the grass has grown around the wheels and the tires have gone flat, as the summers and winters have passed. It will need some work to get it back into the skies again, but I'd like to offer it to someone in the flying community who would care for it. You will need to collect it from Sheldon, in Redlands City outside Brisbane. But if you would like it, the aircraft and trailer are yours at no cost. All I ask is that you share my father's dreams of flight and want to get it back in the sky, where it belongs. Call me on 0422 22 72 73, or email to samuelclucas@hotmail.com to discuss.

SAMUEL LUCAS

DAMNED STATISTICS

I am a 54 year old student pilot with 18 hours under my belt. I consider myself to be a fairly typical RAAus member, a white middle aged male who runs his own business and makes life decisions on well thought out calculated risks.

I am writing because I just cannot swallow the well-worn adage that flying is safer than driving. How many times have I heard that I am more likely to meet my maker driving to the airport than actually flying?

What prompted me to write this letter is the Statistics page (*Sport Pilot* April 2016) that the odds of dying in a car accident are one in 5,000, whereas the odds of dying in an aeroplane are one in 11 million.

While I agree that flying as a passenger on a commercial airline in Australia is inherently safe (thank you CASA), I cannot overlook the less-than-spectacular safety record of flying in a light plane. My cursory reading of the real facts are along these lines:

About 10 RAAus members die every year out of a 10,000 membership, and the average member flies less than 100 hours per year. That puts the death rate per hour of flying at more than one person every 100,000 hours.

Now, as I have stated, the average pilot is a competent professional with years of life skills and in many cases, hundreds of thousands of hours of experience in driving motor vehicles and other machinery. I haven't had a motor car accident in over 35 years.

Compare that with the 249 deaths on Victoria's roads last year and consider the number of hours driven by the 4,000,000 odd Victorians who use motor vehicles every year. I drive more than 40,000kms each year, which must equate to something like 1,000 hours behind the wheel each year.

If each Victorian used vehicles for only 500 hours each year, that would put the rate of death per hour at one every 8,000,000 hours. Now consider that the majority of those deaths were caused by young, inexperienced or drug affected drivers, and not by the type of competent experienced middle aged men with significant life skills, and the picture starts to become very clear.

I am loving my training as a student pilot, especially as I become more competent and am being given more responsibility, but I understand the risks and do not gloss over the hard facts, nor try to comfort myself that flying is safer than driving. We have seen at least three RAAus members die already this year and I do not believe we will make significant inroads into the safety of members unless such misleading statistics are replaced with realistic facts and a sober minded effort to address the safety issue is addressed. I know that my family will thank you.

DAVE ENGLISH

***FROM THE EDITOR** / No industry has been examined for risk as minutely as aviation. There are just about as many reports on the dangers of flying as there are aeroplanes themselves. The figure used in April came from David Ropeik, an Instructor in Risk Communication at the Harvard School of Public Health in the US. There's an interesting story about aviation risk by him at http://www.pbs.org/wgbh/nova/space/how-risky-is-flying.html*

MR EDITOR

You have done it again. In response to the letter ('Flatly Denied' *Sport Pilot* April 2016), you have condoned a person entering controlled airspace without a clearance and having a swipe at air traffic controllers by using such offensive phrases as 'sitting somewhere safely on the ground', 'committee of geniuses' and 'pen pushers'.

The author of the letter states 'with your article fresh in my mind I will try the same procedure'. Entering controlled airspace without a clearance is not a recommended procedure and I hope Mr. Editor, the pen pushers come down on you severely if you continue to violate controlled airspace. Planning a trip into known turbulence is your problem. Plan around the hot spot as you would high terrain. It's called good Airmanship, which you seem to lack.

Several months ago you related a flight in which you scared yourself and your passenger, because again you demonstrated poor Airmanship and put yourself and your passenger in real danger. Please don't continue publishing such articles where you condone bad Airmanship and call the authorities, who have safety as their prime objective, offensive names.

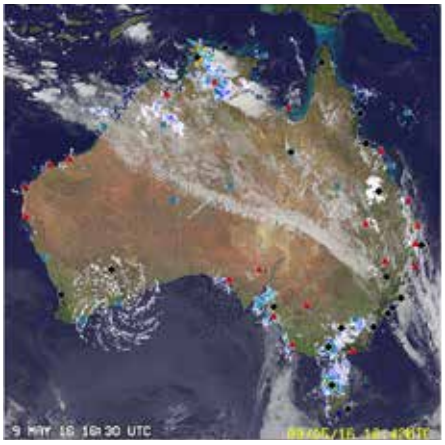
GIANCARLO BERTELLI

***FROM THE ED** / Despite what you say Giancarlo, I have never violated controlled airspace, but I can assure you I wouldn't hesitate to if it meant saving my own life. I'm a bit funny like that. And, while I always encourage robust debate from everyone, please remember personal attacks are not usually permitted in the magazine, which is why your previous letter to me didn't get a run and this one was heavily edited.*

HAARPY

I did a weather check this morning on BoM. Do you know what this is? It's HAARP in action over Esperance WA. Look it up on the net. Type in HAARP Images. See how the heat generated blows the cloud north east. It's real. If you think it's rubbish, give me your explanation, please. They heat up the ionosphere. Note the time. While most are asleep. Get educated.

IKE GOODWIN



GAZELLE LOVER

I felt compelled to write after reading many articles about the Jabiru aircraft. I am by no means an expert on anything to do with this aircraft, however I had my first two or three lessons in one.

I'll move on to the present time – I now own a Skyfox Gazelle and from the day it was purchased three years ago, it has been a faithful friend, forgiving ally, easy going, level headed, patient and kind.

I have recently gone solo in this exquisite little plane. It is easy to fly, easy to land, easy in which to accomplish all the required tasks from day one to solo.

Debra and her unique little machine

I overcame paralysing fear and a lack of enthusiasm for flying in this magic machine. It taught me to feel flight. It taught me how to relax. It assured me that I would be safe. It is super reliable, economic, placid, responsive and my best friend.

It was second hand when I bought it sight unseen as I couldn't afford the trip to WA to inspect it.

My first instructor went over, purchased the plane and brought it back to me. From day one I knew this little yellow plane and I would become united in a bond that will never be broken. I will go without food before I'd even contemplate selling this aircraft (I have come very close).

It had a few superficial war wounds but I have maintained it to the utmost of my ability, even when sometimes mechanics/engineers seem short on the ground here in Tassie.

The point of this letter is that I personally can't compare this unique little machine to the Jabiru. As a learner, I found the Jabiru twitchy, too quick, unforgiving and generally not easy to fly for me.

It is a personal preference and I have nothing against the Jabiru. But why oh why, doesn't someone try to resurrect the Skyfox Gazelle? This truly remarkable piece of Australian ingenuity should be respected and brought back to life, not left to die a lonely death. It has been raved about by numerous pilots (I have read all the testimonials) and is much easier to fly than a Jabiru (yes, it is), even my current instructor, who is a Jabiru owner and passionate about them, has come to love the Skyfox Gazelle. For a beginner, a woman, or anyone really, it is a no fuss, wonderful aircraft deserving of more than memories in the annuls of history.

DEBRA STEWART

BUSTLING THROUGH WA

Let me begin by saying that I am generally happy with what RAAus is doing for us. I am proud to be part of a unique organisation. I do appreciate the work being done by the CEO, staff and especially the volunteers. The consensus appears to be that the CEO and President are very switched on people, moving the RAAus forward at last. However, I feel compelled to share my thoughts on the recent visit to WA and, in particular, the Busselton Aerofest.

I was involved in possibly one of the largest static displays there, with two A22 Foxbats, a photographic display of White Gum Air Park and a marquee. Four of us manned the stand, representing Foxbat, the SkySports Flying School and the White Gum Air Park. We were all impressed by the professionally run Aerofest. Busselton Aero Club should be proud of its achievement. A job well done, presenting

the largest fly-in and airshow in WA.

However, in the airshow program, on the map and information section, it showed an RAAus information booth next to our own static display. This was nowhere to be found. When aero club members were asked where the RAAus was, they said they were also looking for them - apparently they arrived late and did not officially open the event as planned.

At the time I was extremely disappointed in RAAus and, considering they were in the state anyway, a little angry at a missed opportunity. Not one ounce of representation at the state's biggest airshow? A missed opportunity at our expense? Apparently they did attend, but no one came to our stand to offer support or even say hello. I have since learned they did engage with the public albeit from an eastern state's stand, which had nothing to do with WA or RAAus.

One of our members did briefly speak with both the President and CEO on the day - who said they had come over with the intention of helping establish RAAus better in WA. The question was asked why there had been such a rush to get over here, with little notice, three scheduled meetings (which will draw three men and a dog) but ignore Aerofest. In any case, they arrived too late to speak at the opening of the event - not clever. Pointed out was the need to work with the flying schools and facilities here in WA, not make decisions in Canberra in complete ignorance of our needs.

Two of us from White Gum Air Park also attended one of the forums at Jandakot, on the Tuesday after Aerofest. In the meeting, both the CEO and President acknowledged that communication, particularly to us Westerners, needs improving. The meeting went for over two hours with many things discussed. I presume it was a similar discussion everywhere, topics ranging from the constitution, to promotion and instruction. Many technical issues were also discussed. Too much political talk for my liking but...

The meeting had an informal approach, which in my opinion was good. Both CEO and President sat out at the front of perhaps a dozen people. I was surprised they didn't take any notes at all. I couldn't help thinking all this may have been just lip service. Will they remember all that was said at the meeting when back in Canberra? What were the key points from the Serpentine meeting or any of the WA meetings?

We are hopeful the visit wasn't just a blast around the country seeking support for constitutional changes, as that seemed to be the topic they mostly wanted to talk (sell) about. We all seem to have the right ideas; we just need to able to execute them at every opportunity.

I think I speak for the majority when I say we are looking forward to the 2018 Aerofest and the wonderful hospitality from the Busselton Aero Club. Hopefully we can all learn from this missed opportunity and have a representation and support from RAAus worthy of the professional organisation we have become.

ANDREW COTTERELL

FROM THE PRESIDENT */ Andrew, I agree the Aerofest event could have been better organised logistically. As it happened, we arrived early and there was some confusion with the announcers. So they never called on us to do our bit, even though we were at the commentary location 15 minutes ahead of schedule. We spoke with the organisers afterwards and discussed what we could do better next time. On the matter of having a site arranged, I wasn't aware of this. We spent considerable time wandering around speaking with different people at the event, but I can't argue it would have been handy to have a fixed base to make it easier for members to find us and have a chat. Co-ordination had been made more difficult because we received advice a fortnight before the event that the airshow had been cancelled due to some hassles with the local council. It took us a week or so to clarify this which hampered our efforts to coordinate things at our end. All that aside, we managed to meet with around 150 or so members at various locations from Bunbury to Jandakot to Serpentine and finally Perth. It was a great opportunity for us to speak with those west of the divide. We were advised this was the first time this had happened for quite a few years - if ever. We'd like to extend our thanks for the hospitality shown by members and the broader aviation community during our visit and we look forward to getting back there. Now we know the lay of the land, we'll be better placed to make our next visit even more of a success.*

GOING BATTY

Just reading the March issue of *Sport Pilot* and saw the article on the Bat Hawk. Great little aircraft. I have one (see photo) in York, WA at White Gum Farm. It's been in the country since early February. I have just had it LSA registered 24-8723 with a CAMit engine. Looking forward to getting in the air. I am sure they will do well in Australia as the conditions are very similar to those in South Africa.

FRED SELLEY

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).

TRANSPONDER KNOWHOW

BY DARREN BARNFIELD **TECH MANAGER**

I'VE had recent discussions with some 19-amateur aircraft builders and have learned many don't know about the new requirements when installing a transponder.

CAO 20.18 says all aircraft first registered after Feb 6, 2014, or having a transponder replaced after Feb 6, 2014, and operating in Class C or E airspace (forget class A & B) or above 10,000ft in class G, must carry a Mode S transponder with flight ID input.

Members are welcome to apply to the me for a 262AP endorsement if you meet the requirements. The transponder information listed here is one of the mandatory requirements. The second is an RPL with a control endorsement of PPL. A review on a case-by-case basis is required for each aircraft and member.

So if you are buying a new transponder now, make sure it is the right one. More information on the topic can be found at www.airservicesaustralia.com/projects/adsb/mode-s-transponders-ads-b-and-VFR-aircraft/.

WIN!

WIN A GOPRO

THERE is still time for an RAAus member to win a fantastic GoPro camera.

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

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

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

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

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

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

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

MUD WASP WARNING

IT'S that time of year when you have to be on the lookout for mud wasps.

A warning has been issued by CASA about the dangers of mud wasp infestation. It can take the little fellers just 20 minutes to build a nest which can block a pitot tube, vent or drain.

Between 2010 and 2015, CASA received about 20 reports of mud wasps affecting large aircraft. There have also been reports from overseas of fatal accidents attributed to wasp nests blocking the pitot tube, resulting in loss of airspeed indication. CASA reminds owners that the danger applies also to light aircraft.

A recent investigation found wasp nests inside the wing of a Cessna 182, in the cavity formed between the rear spar and the flap fairing. There was also a large wasp nest suspended on the flight control cables in the rear fuselage. CASA makes five recommendations about mud wasps, including installing approved fuel vent screens or removable drain/vent covers and engine compartment blanks, as well as installing tight fitting pitot/static vent covers.

For more information, https://www.casa.gov.au/files/awb-02-052-issue-2-wasp-nest-infestation-alert.

PILOTS NOT NEEDED

ARE we pilots about to become redundant?

The Italian Aerospace Research Centre (Centro Italiano Ricerche Aerospaziali - CIRA) has received permission from the Italian Civil Aviation Authority to test fly what it calls an 'Optionally Piloted' aircraft.

It plans to use a specially adapted Tecnam P92 Echo S (which it calls Flare - the Flying Laboratory for Aeronautical Research) to conduct testing of unmanned flight.

The permit to fly, valid for one year, has been issued on the basis of a complex technical effort, which included maintenance, design and changes to the two seater aircraft and its systems, producing the necessary documentation to ensure the compliance to the CS-VLA (Very Light aircraft) regulation.

The organisation says the Flare aircraft will be used as a flying platform for 'low cost and high efficiency technology validation able to operate in full compliance with aviation rules'.

The first experiments, which began in April, went on the development of autonomous flight technologies, traffic separation by ADSB and weather-satellite data acquisition systems. There will be more than 30 experimental flights over the next 12 months. Flare can only be flown in VFR conditions and a safety pilot must be on board at all times.

CASA MOVES ON FREQUENCY

AGITATION by RAAus pilots (among others) has led to CASA moving to resolve the confusion about which frequency should be used at unmarked aerodromes.

The rules say the most appropriate frequency in class G airspace at or near unmarked aerodromes is the VHF area frequency. However, many pilots use the multicom frequency 126.7.

After a meeting with the Regional Airspace and Procedures Advisory Committee conveners in April, CASA announced it would release a discussion paper on the issue. It wants everyone to comment on it and says it will consider all viewpoints before reaching a final position.

CASA says though, until the consultation process is finalised, pilots should follow the current advice on frequency choice in class G airspace, which is to use the VHF area frequency.

ASIC CHANGES

CASA has handed over processing for ASIC and AVID cards to its service provider, Aviation ID Australia.

From this month all applications will be processed by Aviation ID Australia rather than CASA directly. Unfortunately the regulator has not taken the opportunity to change the requirements for the cards.

RAAus members, of course, have the opportunity instead to renew their ASIC cards directly from the RAAus website.

BIG CROWDS FOR AERO

A RECORD crowd turned up for the 2016 AERO Friedrichshafen trade fair in April. A total of 606 companies from around the world took part this year against a backdrop of improving market conditions in Europe.

GA was well represented again. The big trend continues to be electric engines. Several were on display and drew big crowds. Excellent business was reported in the corporate aircraft area, as well as among manufacturers and dealers of ultralights and helicopters.

Edm aerotec of Germany reported its new ultralight helicopter attracted great international interest. “At our stand, we recorded concrete inquiries by interested parties from around the world.”

A VOTE FOR CHANGE

BY BRIAN BIGG

RAAUs members have made a major change to the organisation, a change described by CEO Michael Linke as a "significant milestone" in its history.

On Saturday, May 14, members overwhelmingly supported an initiative to restructure RAAus, at a stroke turning the organisation from the equivalent of a small club run by volunteers to a multi-million dollar professional company with real muscle.

Gone is the much loved regional representation, the idea we are different somehow depending on where we live and for some reason need different representation. Gone are the days when a board member got in and stayed in with the votes of as few as 40 of his friends. Gone too (hopefully) is the factionalism of the past where a large board actually got less done because it was too busy fighting over petty issues and personalities. Gone (definitely) is the idea that, even though we take off and land at different sides of a vast continent, we don't face the same regulatory pressures or battles with bureaucracy. Train passengers no longer get off at Albury in the middle of the night because the gauges are different. We are all in our sport together and cross each other's territories effortlessly.

At the special meeting in Canberra where the vote was taken, I spoke to a board member who forecast gloomily to me that he wouldn't be re-elected because he came from a state with fewer members and wouldn't stand a chance under the new rules. He was surprised, I think, when I told him I would have voted for him in the past, but hadn't been able to because I came from a different state. This time, I told him, I would be voting for him because, in my opinion, he had been one of the most effective board members we've ever had and, under the new constitution, I can reward him for that by voting for him. What was also encouraging was that, despite his pessimism about his own re-election, he had supported the changes because he reckoned they were good for the future of RAAus and that outweighed his own personal interests. Pretty good of him. We have been very lucky to have had as many good board members like him.

> "A multi-million dollar professional company with real muscle"

The number of votes cast for the new constitution was also a record for an RAAus poll. It was a clear indication of both the engagement and support of the membership for change and the effort by most of the current board to promote and drive the change.

I say most because, at the special meeting in Canberra, we found out for the first time that the board had not unanimously supported the changes.

Former RAAus president and longtime board member, Rod Birrell, rose and asked the meeting that his concerns be noted. Rod said he believed the move away from regional representation was not in the

best interests of the organisation. He said he believed reducing the board from 13 to as few as 3 or 5 was too few (other members who spoke at the meeting all recommended the board be set at the maximum seven allowed under the new constitution).

Rod said also most members had not had the chance to read or study the new Member's Charter or the new Disciplinary Framework, both of which are associated with the new constitution, but neither of which had been voted on by the board or the members as part of the special resolutions.

Rod said RAAus had been successful because it had been set up to look after the interests of members and industry under the one umbrella. He said under the new constitution, corporate members will be subject to the rules, but get no say in how RAAus is managed, because they will not have a vote. President Michael Monck pointed out that the rules in the new constitution concerning corporate voting rights were identical to the old constitution – nothing had changed. Michael also assured the meeting there had also been no erosion of member's rights, nor a member's right to push for a special resolution to further change the new constitution if it was found to be wanting.

Another member concerned about a possible reduction in regional representation was told by CEO Michael Linke that the answer would be 'Member Advocates', people chosen from their own aviation communities to put forward local concerns (Sport Pilot has asked the CEO for a fuller explanation about Member's Advocates – how they will work, what power they will have and how will they be appointed or dismissed. We'll bring that to you in a future edition).

As a result of the vote, President Michael Monck, Secretary Tony King and new treasurer Barry Windle, will become first directors of RAAus Ltd when it is formed on July 1.

Mick said, "I'd like to thank my colleagues on the board, some of whom will retire when we move to the new structure, for the work and effort they have contributed to RAAus over many years. Our first order of business will be to call an election and appoint the additional directors needed to continue to take RAAus through this major reform."

RAAus will need to keep communicating with members as the new structure is implemented in the coming weeks.

CEO Michael Linke says, "We have a lot of work to do. We will continue the conversation on the reform agenda as we consult broadly and widely with our membership. It is an exciting time to be part of an organisation going this major change. I have said many times, members are central to everything we do and this turning point in RAAus' history breathes more life into that notion."

FORMAL RESULTS

The process for receiving proxy votes and tallying the results was scrutineered by Colquhoun Murphy Lawyers, an independent legal firm not associated with RAAus, on May 13 after the deadline for proxies passed.
At this point the proxy count was:
Yes – 813
No – 115
As see fit – 20
On the day of the meeting there were 41 votes cast in favour of the reform and 13 against.
The formal count of votes, supervised by RAAus' legal adviser, Spencer Ferrier and two non-members, was conducted at the close of the meeting.
The final results, including proxies, were:
Yes – 854
No – 128
Percent in favour – 87%

THE STATE OF THE AVIATION NATION

During the special meeting, CEO Michael Linke gave members a snapshot of the state of RAAus in Autumn 2016. Here is an excerpt.

A SNAP SHOT OF THE PAST 18 MONTHS

- Registration delays solved
- Operations Manual V7 delivered - 7.1 on the way
- Commenced electronic newsletter to all members with email and regular surveys
- L1 training and assessing tool launched
- Corporate wide approach being taken to insurance and exploration of insurance products for members
- MARAP rolled out
- Modernisation project delivered, on time and on budget
- Safety month delivered
- Amnesty period delivered, securing 200 members and aircraft back to RAAus
- Record year for GYFTs - $75 000 awarded
- Learning and development program well advanced
- Heritage Fund to be launched soon

MODERNISATION PROJECT

- Member's portal, web based allowing

- Online registration renewal, membership renewal etc
- Streamlined communication with email based communication where possible and appropriate
- CFI portal incorporated

- Redesigned website
- New occurrence management system

- This will place RAAus at the head of the pack with regard to reporting and managing incidents, accidents and defects.
- Focus on learning, education and no blame ethos

HAS MODERNISATION DELIVERED?

- About 100 members a day log in
- Over 200 occurrence reports in six months, double our average for the past three years
- CFI portal offering CFIs instant access to a host of data and resources
- 1 full time staff positions saved
- Mailing and paper use reduced significantly

OTHER HOT TOPICS

- We are exploring additional endorsements for members, including

- Increased Weight
- CTA

THE FINANCIAL LANDSCAPE

- 2013/2014 deficit of $257,000
- 2014/2015 initial planned deficit of $400,000

We ended up with deficit of $260,000, through

- Reduced staffing
- More efficient processing

2015-2016 so far:

- Balance sheet remains strong, with total equity of $1.7M
- Deficit of $168 000, with expenditure within 1% of planned and revenue 7% below target
- Continue to exhibit a conservative fiscal strategy
- Expect to reduce this in final quarter of year
- Reasons for deficit include:

- The success of the digital *Sport Pilot* – subscriptions are below expected
- Unplanned legal costs
- 3% fewer members
- Higher than planned office and travel expenses associated with attending accidents, CFI based conferences and meetings
- Increasing insurance costs

- Significant claw back of expenses in last three months

A LOOK INTO THE OFFICE

NOW
- 14 Staff with
- 2 MBAs
- 4 ATSB investigator qualifications (1 with higher qualifications)
- 2 completing bachelor degrees
- 1 with marketing qualifications
- 1 graduate of the Institute of Company Directors
- all staff now formally trained in customer service
- all staff now formally trained in grief handling
- all senior staff now formally trained in SMS and report writing
- 4 pilots
- an engineer

THEN 3 TO 5 YEARS AGO
- 19 Staff
- 3 pilots

A LOOK AT RAAUS - EXTERNAL

NOW
- 9,800 Facebook followers
- Magazine sent to 1 800 subscribers
- Magazine viewed on website by 4 500 people/ month
- Magazine viewed on ISSUU by 2 000 people/ month
- 35,000 web hits per month
- Members emailed at least once a month
- More than 1,500 members personally engaged with by the CEO/Board/Staff at forums and fly-ins

THEN
- 26 Facebook followers
- Magazine sent to all members in hard copy
- 12,000 web hits per month
- No digital communication with members at all
- Members only engaged with once a year at NatFly, generally about 150 - 200 members.

A DAY IN THE OFFICE

NOW
- 75 members call the office
- 95 members a day looking at their portal
- Mail sent twice per week, about 50 items
- Members join online, takes about ten minutes
- Aircraft registered in under 5 days
- An RAAus aircraft changed hands every 36 hours
- Office team largely engaged with working with members to solve routine matters and get them in the air

THEN
- 100 calls per day
- Mail sent every day, about 250 items
- Aircraft registration took over 8 weeks
- Membership application took over 4 weeks
- Significant effort processing paper – prone to human error, getting lost
- Office team mainly involved in orienting, enveloping paperwork

A LOOK AT RAAUS - INTERNAL

NOW
- 8,700 members
- 3,500 aircraft
- 164 schools
- 43 clubs
- 450,000 hours flown
- 2.94 fatals per 100,000 hours
- 100 reported accidents per year

THEN
- 9,500 members
- 3,200 aircraft
- 168 schools
- 47 clubs
- 164,000 hours flown
- 4.51 fatals per 100,000 hours
- 100 reported accidents per year

NEW TREASURER

RAAUS Treasurer for the past seven months, Don Ramsay (pictured right), has hung up his Executive boots. Don, with his long career in senior finance management roles at BHP and Rio Tinto, has been crucial in helping RAAus restructure its financial situation and develop the new constitution.

His place as Treasurer, at least until the AGM in September / October, has been taken by one of the newest board members, Barry Windle (left). Barry has had an extensive career as a senior public servant in South Australia.

GYFTS breaks another record

BY BRIAN BIGG

RAAUS members and sponsors have allowed more young people than ever before to take their aviation dreams to the next step.

In May, a record 41 GYFTs scholarships were announced worth a total of $75,000. That's a new record for RAAus, over and above last year's record when $50,000 was handed out.

The word is obviously out there too. This year there was a record number of applications for scholarships and a record number of girls applying.

The youngest, Elyzia Quin from NSW, is just 14 years old. She put on a brave face at the award ceremony in Canberra, where she received a certificate, a medal and was then asked to speak to the room full of strangers. She did very well.

Four other winners were also at the ceremony - Alex Kuchmenko from Queensland, Django Forrest from NSW, George Seppelt from South Australia and James Reginato from Victoria.

RAAus president Michael Monck thanked the sponsors, particularly AirServices Australia which contributes $25,000 each year. Other sponsors this year included Dick Smith Foods, OzRunways, Cre8ive, Aviation Advertiser, Michael Coates and, of course, magazine publisher, Stampils.

Mick Gentleman MLA

Django Forrest

Elyzia Quin

Michael Monck presents James Reginato

WHAT IS GYFTS?

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.

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 office to make a donation.

Watch the website for information about the 2017 round of applications.

2016 GYFTS WINNERS

AIRSERVICES $2,500 SCHOLARSHIP

Alex Kuchmenko - QLD	Elyzia Quin - NSW	Nicholas Vardanega - QLD
Brianna Christian - QLD	Jack Last - NSW	Will Barber – TAS
Cooper Pollard - WA	Jackson Polinelli - QLD	
Django Forrest - NSW	Laurence Ryland - VIC	

RAAUS $1,500 SCHOLARSHIP

Dallas Alterator – QLD	Alex McGee – NSW	Corey Wright – WA
Cody Avery – NSW	Amelia Mentiplay-Smith – VIC	Zane Bailey – NT
Bailey Battistuzzi – QLD	Luke Muir – TAS	Zak Clifford – QLD
Jozef Beska – VIC	Nicholas Nanninga – NSW	Thomas Coggan – QLD
Mitchell Bisson – NSW	James Nation – TAS	Savannah Hawkeswood – NSW
Kai Bolton – VIC	James Reginato – VIC	Vicki Jones – WA
Jackson Carnell – QLD	Jack Ryan – QLD	Robert Matthews – NSW
Lachlan Dance – VIC	Harvey Ryland – VIC	Zac Miller – SA
Jonty Fahey – TAS	Harrison Sansby – QLD	Patrick Sanskey – QLD
Lachlan Grech – QLD	George Seppelt – SA	
Lachlan Hodgson – SA	Mitchell Watson – QLD	

Some of the proud winners with Nat Nagy (r). All photos Brooke Smith (brooke@oehmsmith.com)

Hats off to a new cross country pilot

Never too old

Knowing my limitations

BY KEVIN MCGRATH

IT may interest a few readers to know that this 85 year old just got his cross country endorsement. Over the past two or three years I have informed *Sport Pilot* readers that, having gone solo in 2012 (six days after turning 82), I intended to go on and get my cross country endorsement sometime.

I know quite well that some young and eager students condense and accelerate their training to get their endorsement quickly. I, however, was in no such rush. Throw in some bad weather and illness within my family and, well, time gets by. I took my time and enjoyed the experience. Our Club CFI and my instructor, Trevor Bange, seemed comfortable enough to allow me to roam afar (within limitations).

I cannot claim success on my first attempt. Rather I think it was the third (or later?) which got results for me. The flight test consisted of six legs, the first two into the rising sun. Trevor likes to go early in the still air, but I happen to live on the crest of the Great Dividing Range in Toowoomba and for the past fortnight we had fog each morning. I did not want to fly over the ranges into the sun and with the possibility of fog in low lying areas. So we left at 10am. The NAIPS forecast was for the wind to be 15kts, but I think that may have been conservative, because over the mountains it was boisterous. We experienced all variations possible and, at one stage on climb, I was actually losing height at 500fpm.

I was sharply reminded of the Bush Poet's Poem 'Turbulence'.

The third and fourth legs went fine (or so I thought) and we had started the fifth when Trevor casually mentioned a point of interest to our right. Off we went to have a closer look. Having just passed that we noticed a column of black smoke further off to our left. It certainly looked like a rural homestead going up, but thankfully, on closer inspection, it was not so and by now the fifth leg was behind us. I was on the final leg to home, only to find I was not quite where I should have been if all things were perfect. However I was able to do a straight in approach and we got home safely.

While neither my examiner nor I said anything about the flight, I was pleased and somewhat relieved when we got back to the clubhouse to see him reach for my log book and quietly start to write.

I know it was far from a perfect flight and I know there will be sceptics out there (and perhaps in my own club) who might wonder, why does he bother. Who does he think he is? Isn't he just too old?

But for me it was there as a challenge, a goal to be achieved.

I owe a debt of gratitude to my personal instructor, our Club CFI, Trevor Bange of Lone Eagle Flying School. As I reported before, I've had him on the horns of a dilemma for the past three or four years.

He must have wondered if I was too old, too slow, too whatever. But he has always been focused on my safety and my Airmanship. And I did it.

My next goal, the Come And Get It Trophy, presently at Noonamah, up near Darwin. 1,800 miles in a straight line and add a couple of hundred more for fuel and pit stops. It's just too far for me. Could some kind-hearted pilot bring it southwards, far far south - say to Roma or Kingaroy or closer. Then I could go for it. I know my limitations.

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Brett Anderson - Anderson's Aviation

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A bush pilot's muster

BY DEXTER BURKILL

'There is a young fellow up Tyagarah way
Tim Howes we call him by name,
An aviation nut some people would say,
Bush piloting being his favourite game,
A Storch and a Drifter his claim to fame.'

TIM is actually the driving force behind the Facebook group, Bush Flyers Down Under (BFDU) and convenor of the BFDU River Country Muster 2016 held in April. The event was primarily held for a limited number of group members on a first in - best dressed basis. And what an event it was.

Friday saw eight aircraft venture in to 'Little Italy'. It's a bush strip on a 8,000ha property in the mountains between Tenterfield and Casino. Most pilots had a story to tell because

Checking phone coverage

New arrival

the weather Gods were playing hard ball that day. These were shared between the arrivals at length. Save to say, no risks were taken, but diversions were the order of the day.

A number of arrivals postponed hoping for finer weather the following day. With no mobile phone coverage available, other than walking up a small hill to try and get one bar, Tim frequently jumped in his Storch to check his phone (and Facebook) to keep track of inbounds.

This was an event about pilots and flying. Not whether you were GA or RAAus and not about your aircraft, although some were worthy of more than a passing glance. It was a weekend of camaraderie and adventure. Safety was the utmost priority, with sign in sheets and recording logs of activities for those departing the strip on exploration sorties, a no buzzing rule and conventional or 500ft circuits the order of the day.

> "Safety was the utmost priority"

Friday night saw us sit around a camp fire sharing yarns and getting wet from showers, then drying out by the fire, only to get wet again. After a few cycles of this we all retired early to our tents.

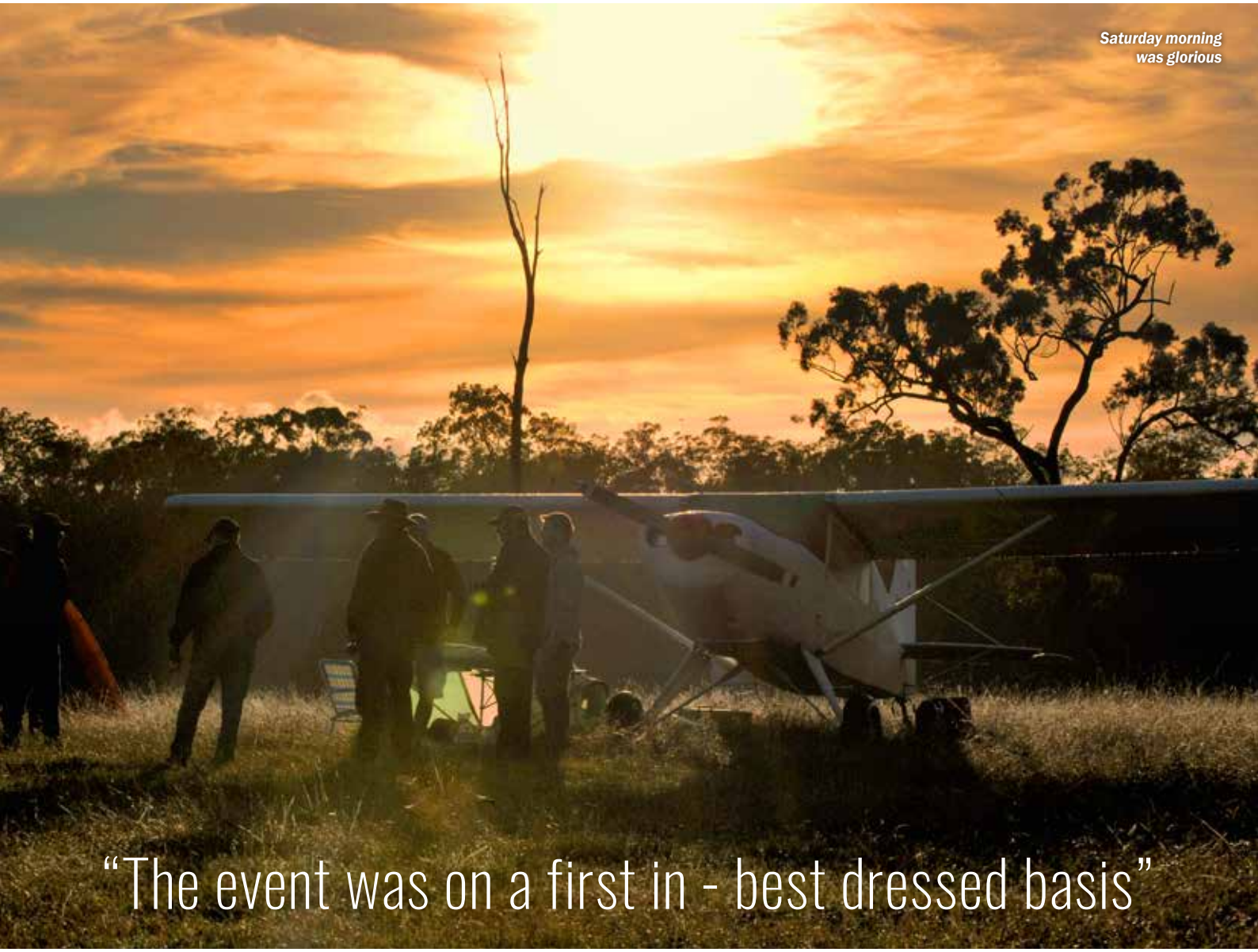
Saturday morning was glorious. The sun shone and excitement filled the air. Soon the hum of approaching aircraft could be heard. In they came throughout the day, all eight of them for a grand tally of 16 for the event.

So what did we get? 2 x C170's, 2 x C180's, 3 x Bearhawks, 1 x Piper Pacer, 2 x Storchs, 1 x Skyranger, 1 x X-Air Hanuman, 1 x Savannah, 1 x Super STOL, 1 x Highlander and a seemingly out of place Atec Zephyr low wing nose dragger. Most pilots were from northern NSW and south east Queensland but special mention should be made of Nick Duncan who flew his Bearhawk from Adelaide.

An enjoyable Saturday was had by all, topped off by a BBQ dinner, fireside chat and banter. We were joined by property owner Rod, who was shown sincere gratitude for allowing the group to use his land.

Sunday morning came with the usual farewells and departures. Some were reasonably early after breakfast, particularly those heading south, where the weather looked like it would deteriorate. I was one of them. We all look forward to the next BFDU Muster.

Tim has a video on YouTube showing some of the pilots who ventured into the somewhat challenging Homestead strip at https://www.youtube.com/watch?v=Qs_X2fUZDns.



Saturday morning was glorious

"The event was on a first in - best dressed basis"

It was more comfortable...

...than it appears

Off to a new home

Build complete

THE JOY OF THE BUILD

BY PHIL BIRD

Main spar complete

Fuselage coming together

Panel

SONEX 759 is my third aircraft build but my first all-metal one.

When I was building my Corby Starlet, I became interested in the Sonex after seeing Lyn Jarvis' excellent example and figured it would be my next build. I flew the Corby for more than four years and, with retirement coming up, I was ready for my next challenge.

I shopped around and was seriously considering importing a Waiex kit from the US when Sonex 759 came on the market in Tassie. The original builder had started on the fuselage and pictures he emailed to me showed his workmanship was good.

A price was negotiated and, in September 2014, I hired a trailer and drove from Mittagong to Tassie along with my mate, Eddie, and our wives. An inspection of the work completed so far showed things to be acceptable (I know I am a fussy bugger). Fortunately the front fuselage sides had only been cleco'd on to the rear and I found, after removing them, that everything fit into the trailer. On arrival at home, everything was unloaded and put away because the next day we were off overseas for a month.

On my return, I was immediately into it. I had asked Sonex in the US if they could supply me the parts to convert it into a V-tail Waiex, but they wouldn't be in it. There were a few areas of the completed work I wanted to change so that's where I started. I learned as I went along, drilling, deburring, clecoing and riveting. It didn't take so long before I had the fuselage on its wheels.

The engine mount which came with 759 was for a 2.2 Jabiru, so I decided to stick with that and ordered an engine from the factory. The other engine options for a Sonex are a Jabiru 3.3 or a VW. I had read that, even though a Jab 2.2 is the lightest option available, care has to be taken to avoid ending up with a rearward C of G. So I ordered the engine with a 50mm extended prop hub to push the prop and the heavy Sonex spinner forward. This modification allowed me to use the Jabiru supplied plenum chambers and also allowed me to fit the oil cooler at the front of the engine.

It did, however, create a lot more work to extend the cowling.

"I learned as I went along"

First take off

Wing contstruction

Tailplane coming together

Building the wings took some time, especially the main spars. These had to be assembled using solid rivets, whereas most of the plane uses pop rivets. The wing skins came pre-drilled and the LE skins also came pre bent. One of the LE skins on mine had corrosion in it (from cement wash), so I decided to replace it. The old one was used as a template to drill the holes, the LE bend was done using a vacuum bag around a steel pipe.

Approaching October 2015 the end was in sight so I regrettably sold the Corby (can't take my grandkids up in the Corby). I purchased a half decent spray gun, some good paint (Northane) and painted my new toy. The painting came out okay, even if I do say so myself.

759 was taken to the airfield in February this year and, after being signed off, RAAus issued the registration certificate. I test flew it in the middle of March so it was roughly 15 months/2,000hrs from go to whoa.

I wasn't really sure of what to expect about the flying qualities of the Sonex, because I know I had been spoilt with the Corby, but I was pleasantly surprised. The ailerons and rudder are heavier to control than the Corby, but not unduly so. The ailerons are good, even at lower speeds. I think it would be fair to describe the Sonex as being fairly neutral in stability - in that it stays wherever you leave it. The Sonex is reasonably sensitive in pitch, so more concentration is required to maintain a constant altitude. The flaps are great, I hadn't used flaps for a long time and had to be careful because the speed bled off quickly. But the nose down attitude required with the flaps helps you line up with the runway. Other than the forward visibility not being great when rolling out on landing, I would give this plane five stars.

I have a Sensenich 60 X 46 climb prop fitted, so when flying solo I regularly see 1,000fpm climb. It suffers a little in cruise, 105kts at 2,900ft, but I can live with that for now.

I really enjoy flying this plane but, truth be told, I enjoyed building it just as much.

Details of this build can be found at http://www.mykitlog.com/corby202/.

Lithium batteries

BY DARREN BARNFIELD **RA-AUS TECHNICAL MANAGER**

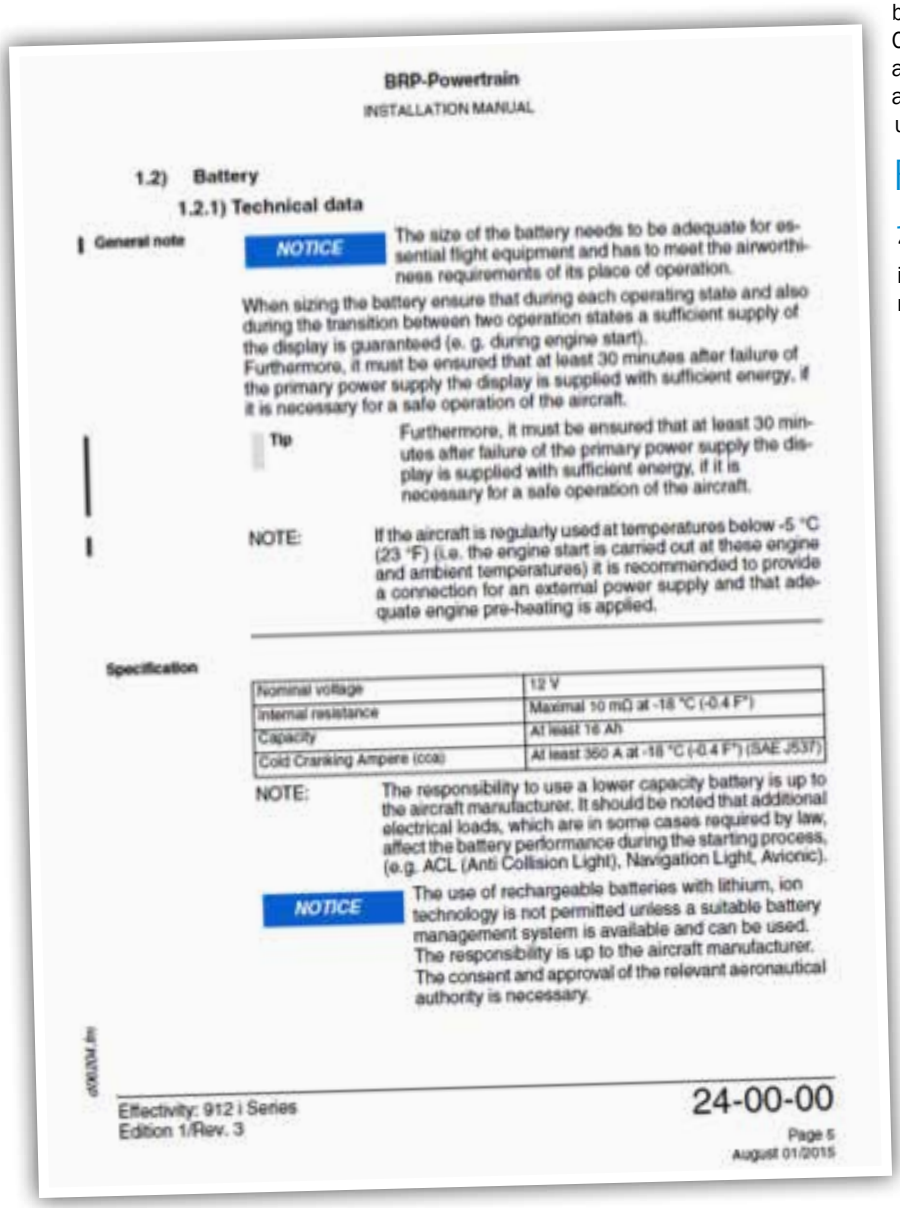
THE question of lithium batteries, both iron and ion, has again been raised by concerned members. Recently an L2 raised concerns that LiFePO4 chemistry batteries were being advertised as suitable for use in light aircraft powered by Rotax and Jabiru engines. I contacted Rotax and Jabiru about the questions and was told by both companies they do not support the use of this type of battery with their products.

Members should consider that, in some circumstances and designs, that the charge controllers associated with the permanent magnet alternators used on some engine types offer no form of voltage control. They function by allowing sections of each half wave to pass to the battery at full output current and unlimited voltage at a frequency of up to 1,200 Hz.

The time interval of each charge pulse is varied by the regulator in order to regulate the charge condition. LiFePO4 batteries cannot safely be exposed to charging voltages in excess of 14.8 volts. Independent tests conducted by some of our members on these charging systems show the voltage output exceeds 30 volts at full power. Lead acid batteries can be safely charged using systems where the current amplitude can be time limited on each half cycle and are immune to the applied voltage peaks.

A secondary risk is that LiFePO4 cells have an inbuilt safety switch which will open circuit the cells if the voltage reaches a critical danger level. While this switch will prevent the cell becoming unstable, it results in the high voltage spikes passing from the regulator directly to the instrument panel without the battery moderating the voltage spikes and will quickly destroy components such as radios, transponders, glass panels etc. Schicke Electronics GMBH, has developed a safety switch system which disconnects the alternator from the regulator when this occurs, in order to protect the panel instrumentation.

RAAus owner-maintainers and L2s are reminded to seek the appropriate supporting documentation from a light sport aircraft manufacturer before fitting or using a lithium iron phosphate battery. Owner-maintainers and L2s of other RAAus aircraft are also reminded to review battery documentation and seek appropriate guidance and information before planning to use this new battery technology.



BRP-Powertrain

INSTALLATION MANUAL

1.2) Battery

1.2.1) Technical data

General note

NOTICE

The size of the battery needs to be adequate for essential flight equipment and has to meet the airworthiness requirements of its place of operation.

When sizing the battery ensure that during each operating state and also during the transition between two operation states a sufficient supply of the display is guaranteed (e. g. during engine start).
Furthermore, it must be ensured that at least 30 minutes after failure of the primary power supply the display is supplied with sufficient energy, if it is necessary for a safe operation of the aircraft.

Tip

Furthermore, it must be ensured that at least 30 minutes after failure of the primary power supply the display is supplied with sufficient energy, if it is necessary for a safe operation of the aircraft.

NOTE: If the aircraft is regularly used at temperatures below -5 °C (23 °F) (i.e. the engine start is carried out at these engine and ambient temperatures) it is recommended to provide a connection for an external power supply and that adequate engine pre-heating is applied.

Specification

Nominal voltage	12 V
Internal resistance	Maximal 10 mΩ at -18 °C (-0.4 F°)
Capacity	At least 16 Ah
Cold Cranking Ampere (cca)	At least 360 A at -18 °C (-0.4 F°) (SAE J537)

NOTE: The responsibility to use a lower capacity battery is up to the aircraft manufacturer. It should be noted that additional electrical loads, which are in some cases required by law, affect the battery performance during the starting process, (e.g. ACL (Anti Collision Light), Navigation Light, Avionic).

NOTICE

The use of rechargeable batteries with lithium, ion technology is not permitted unless a suitable battery management system is available and can be used. The responsibility is up to the aircraft manufacturer. The consent and approval of the relevant aeronautical authority is necessary.

Effectivity: 912 i Series
Edition 1/Rev. 3

24-00-00

Page 5
August 01/2015

RESPONSE FROM JABIRU AIRCRAFT:

"We have not tested any Lithium Iron Phosphate batteries in Jabiru aircraft or with Jabiru engines and do not recommend them."

From the J230 flight manual:
Document No: JP-FM-07
8.4.9 BATTERY SERVICE

The J230 must be fitted with a 'no maintenance' 12 volt, PC625 Odyssey Sealed Lead Acid Battery (Jabiru P/No. PM0095N).

RESPONSE FROM BERT FLOOD (AGENT FOR ROTAX AUSTRALIA):

"In regards to the use of lithium ion batteries in Rotax aircraft engines, please find attached a screenshot from the current 912iS manual.

Regarding the use of lithium ion batteries in the other 912 - 914 range of Rotax engines, the following reply was received from Rotax:

"The aircraft manufacturer has to ensure the permitted limits of the used battery (for example the maximum permissible charging voltage) may not be exceeded in any case.

It must be ensured the operating limitations of the battery are strictly adhered to, also in case of a defect of the charging system.

This may be ensured by using a proper battery management system.

A similar statement will be added in the next revision of our installation manuals for carburetted engines." The FAA has good guidance in AC 20-184. This AC covers design, installation and maintenance requirements. It is a good starting point for installation of lithium batteries.

MAINTAINER OF THE YEAR

TIME TO NOMINATE

THE time has finally arrived for you to put your hand up and call out your choice for RAAus Maintainer of the Year.

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

The award will be the first time RAAus showcases the knowledge, experience and integrity of our L2s. Look around your airfield. If you think your L2 has the special traits and qualities to become the organisation's first Maintainer of the Year award recipient, get the form and nominate them.

Each state will have its own finalist. The awards will be judged by an independent panel of members from the recreational and GA community.

MAINTAINER PRIZES

First prize will be a return airfare for one person to the EAA Oshkosh Fly-In 2017. The prize will include meals and accommodation.

There are other prizes too, thanks to the generosity of our sponsors.

Jabiru Australia will supply a Jabiru engine course;

Bert Flood imports will supply a Rotax engine course;

The Industrial Shed will supply a Bahco tool set;

Peter Harlow from Foxbat Australia will supply a flyaway toolkit;

Bolly Propellers will donate a 3 Blade BOS 3 Ground adjustable propeller.

And other prizes are still being finalised.

YOUNG MAINTAINERS

Another initiative introduced this year has been the Young Maintainer of the Year award.

At the recent RAAus scholarship awards night in Canberra, the first two junior maintenance scholarships were awarded to Zach Clifford and Dallas Alterator, both from Townsville.

Jabiru Australia donated two of its engine maintainer's courses for the young men, as well providing them with the opportunity in the future to participate in aircraft manufacturing processes during school and university holidays. Jabiru also stipulated its scholarship money was to be used for their flight training.

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

Keith showing an attentive crowd prop balancing

OUR MAINTAINERS

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

KEITH BAKER L2, L4

GIVEN the number of years I've been in GA and recreational aviation, it's hard to know where to start.

I've had some heart stopping experiences overseas. I was thrown out of Laos (they thought I was a spy). I escaped jail in Haiphong in a canoe made out of aircraft external fuel tanks and I spent time heli logging with monster helicopters in Russia. Things are quieter nowadays.

I was with the Fleet Air Arm for 20 years as Chief Petty Officer and mechanic, including 12 months in Vietnam. I joined Lloyd Helicopters Offshore Division as a LAME and obtained my Pilot's Licence privately in the navy. I was Chief Engineer for Westcoast Helicopters out of Perth for over 10 Years and General Manager and Chief Engineer for LAO - Westcoast Helicopters based in Laos.

Back in Australia I contracted to several companies chasing diamonds, gold, iron ore and

everything else in the ground. I also contracted to an RPT company in PNG as Chief Engineer doing tours, then took over maintenance on Hamilton Island as Chief Engineer for a company there.

Then I ventured to Taiwan as the Technical Director of a kit helicopter which used the troubled Hirth H30 engine. I spent two years changing the oil and fuel injected systems and upgrading the electronics before moving to Cyprus to modify the kit to take a turbine and then to NZ to get the helicopter onto the register as a training machine.

I was a Licenced Inspector in NZ for two years. I then returned to Australia physically and mentally exhausted. After a rest, I turned to RAAus for an easy life.

I have been trying to promote dynamic balancing as a valuable safety and maintenance procedure which should be used more. I have carried out more than 50 balances on RAAus aircraft and found only one which did not need correction. Because I am now semi-retired I rarely charge anybody to do it, depending on the travel. I find it's often hard to tell someone with a perfectly running engine they have a problem with their propeller.

As an L2, L4 I am also currently keeping an eye on two aircraft being built near me - one, a new Morgan, the other a nice Jabiru with water cooled heads. Both are around 80% complete and going through the hardest part, closing down their projects.

My plan is to soldier on and just attack what comes up in the RAAus world. I wish the organisation all the success. I think there are still bigger things to come and, while I was a 'knocker' in the past, not now.

Weather tools for outback touring

BY RICK FRITH

EVERY pilot knows about ARFOR and TAF weather forecasts. The law says we must consult these before every flight and they are quite useful, as far as they go.

The greatest problem with these forecasts is that they are limited to 24 hours and TAFs only cover a few airports. Fine for big jets, but not good for a small VFR aircraft planning an outback tour over a couple of weeks. It's good to know if you are heading into a rainband which might trap you in some remote community for a week. Furthermore, most airports in Australia have no forecast of any kind. This can be awkward when travelling in remote areas, where there is no nearby airport with a TAF.

In the past, I have used the rainfall forecast site from the Bureau of Meteorology (BoM): http://www.bom.gov.au/jsp/watl/rainfall/pme.jsp . These maps show rainfall forecasts for the next five days, at 24 hour intervals. However, BoM has recently launched a major new platform called MetEye: http://www.bom.gov.au/australia/meteye/.

The computer generated forecasts are massaged by meteorologists in each state to improve the accuracy and, as a result, sometimes show a slight discontinuity at the state boundary.

MetEye gives rainfall forecast maps every three hours for seven days (Fig.1), along with a host of other goodies, including surface winds (direction and strength – great for landings), mixing height (turbulence altitude), QNH, wave height and swell directions (useful for planning ditching procedures when crossing Bass Strait), surface temperature and dew point. It can also overlay the weather radar. You can enter a placename or lat/long co-ordinates and show detailed, three hourly text based data at any location. These locations can be saved on the BoM computer, if you use cookies on your browser.

In addition to MetEye, dewpoint and wind forecasts for individual placenames are available at: http://www.weatherzone.com.au. The seven day outlook has 9am and 3pm forecasts and the 48 hour forecast every three hours.

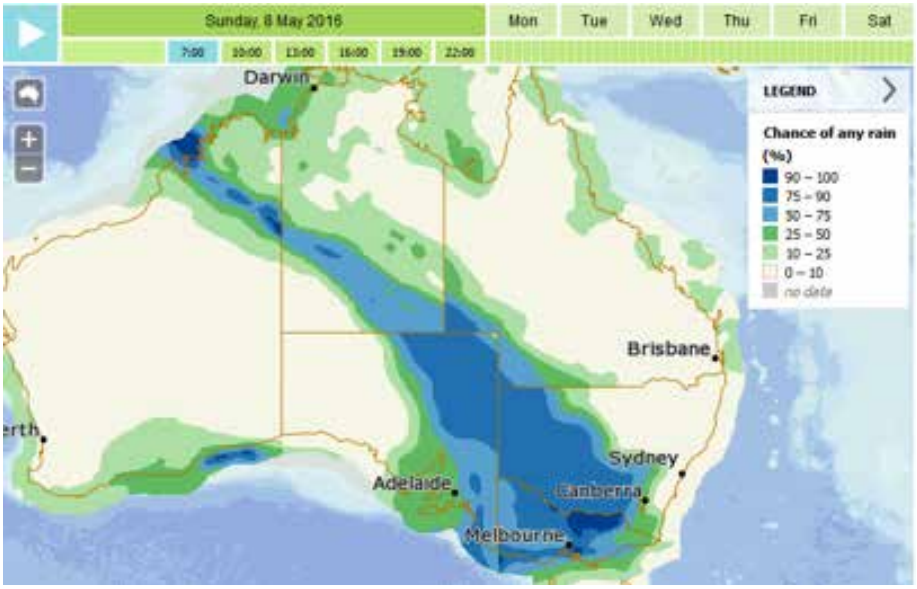


Fig. 1 *MetEye rainfall map*

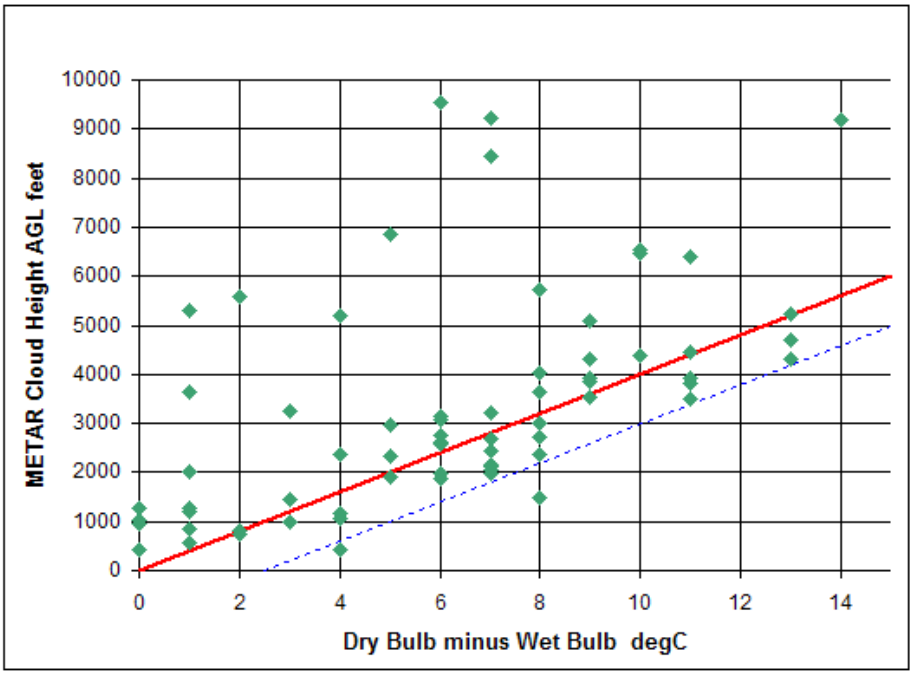


Fig. 2 *Above ground cloud height estimate from temperature and dew point*

The dew point is especially useful for preparing your own cloud height forecast. A simple rule of thumb is

Cloud height (in feet AGL) = (Surface Temperature °C – Dew Point °C)* 400.

This formula is not perfect, but as Fig. 2 shows, it is better than nothing. The red line is the formula, and is conservative. In about 75% of the 100+ samples studied – the cloud is higher than estimated. The blue dotted line shows that if 1,000ft is subtracted from the forecast, it is pretty good at predicting minimum cloud height and hence, safe cruising conditions. I use this formula regularly to check the next few days when touring. Note the formula gives height above ground level, not sea level.

When the day of take-off arrives, the area forecast is available. It can be greatly supplemented by other resources not recognised in the regulations. Weather radar is a fantastic asset, but has very sparse coverage. The BoM site has a tick button to show the nomi-

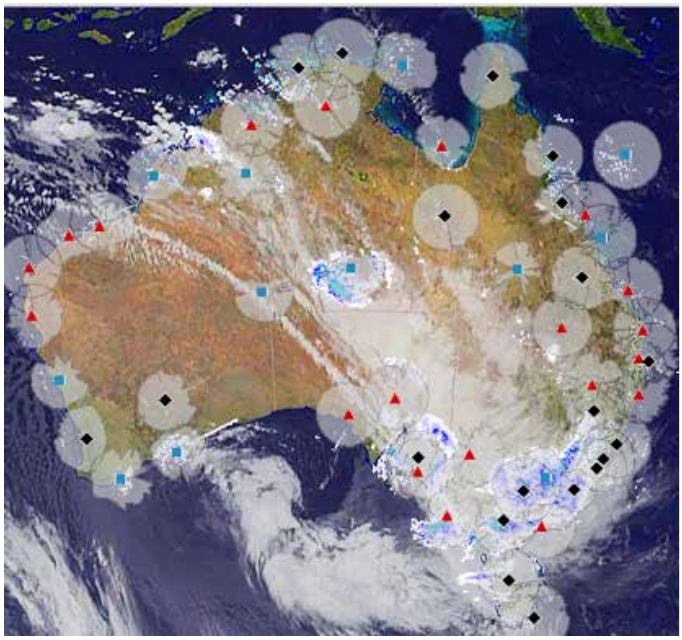


Fig. 3 *BoM Radar showing coverage circles*

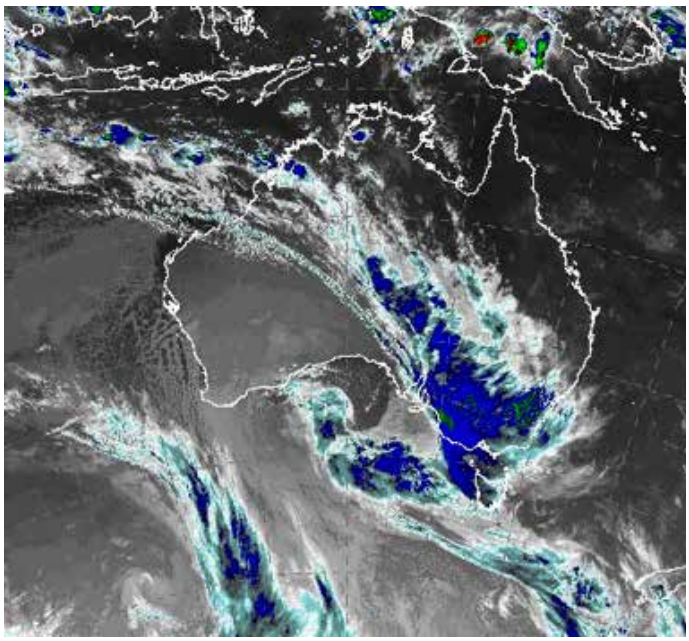


Fig. 4 *Low resolution Zehr enhanced satellite image*

nal range of each facility (Fig. 3). If using the radar to dodge storms, it is important to understand its limitations. For example, at extreme range, it is only the higher parts of a cloud which are observed. It may be raining lower down. Also, some radars, such as Longreach, Giles and Alice Springs, are significantly shaded in some directions, particularly at lower altitudes. It is also worth checking for mobile phone coverage because, unlike the US, you can't get the radar without a phone signal.

There is a detailed description of the radar system and individual characteristics of each facility under the Radar Site Information tab at: http://www.bom.gov.au/australia/radar/about/radar_coverage_national.shtml

Fortunately, BoM has another website for the new Himawari-8 satellite. One of the options is the Zehr enhanced infrared image which highlights cold cloud top temperatures usually associated with cyclones and thunderstorms:

http://www.bom.gov.au/australia/satellite/ (select Infrared - Zehr enhanced and refresh view). Fig. 4 shows the low resolution Zehr image which covers the regions between the radar sites.

Figs. 1, 3 and 4 all cover the same period within an hour, so it is interesting to compare the three datasets. In their own way, they each show the region to avoid if flying VFR.

Like the radar site, Himawari can also be stepped through a time lapse history to show how fast the weather systems are moving. There is an option under the Layers tab to display latitude and longitude at the cursor position on the high resolution images, but locations cannot be saved.

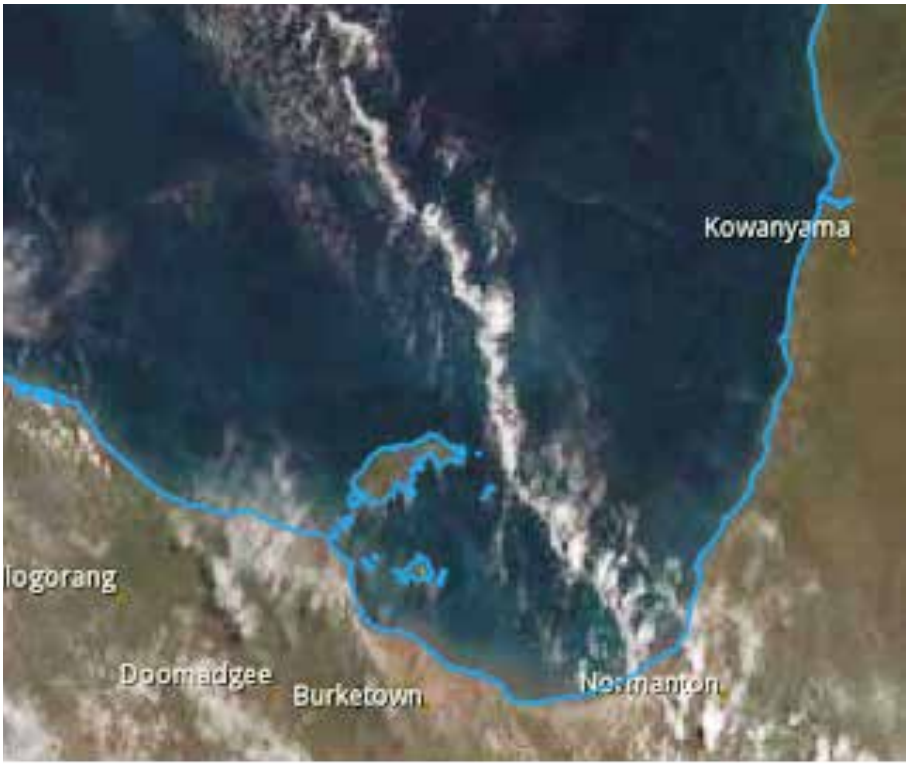


Fig. 5 *High resolution view of the NACL*

The Himawari infrared images were very useful when chasing Morning Glory clouds last October, a few days after the satellite was launched. Fig. 5 shows the high resolution view of the Northern Australian Cloud Line (NACL) crossing the Gulf of Carpentaria. When conditions are right, this forms the spectacular roll clouds at Burketown. I'll be heading there again next October, so may see some of you up there.

Of course, all these fancy tools require internet access, which may not be available in the outback. This is all the more reason to look ahead a few days before going bush, and then rely on the conventional means of getting the ARFOR by radio or satellite phone on the day.

STOL CH 750

READY-TO-FLY

New raised skylight and increased cabin height

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Perfect for exploring

STOL CH 750 READY-TO-FLY

THE companies which make the popular STOL CH-750 have announced that factory versions will soon be available again.

Zenair Ltd. of Ontario, Canada and M-Squared Aircraft of Alabama, US, say the news will be welcomed by fans of the short take-off and landing design who don't have the time or inclination to build their own kit version of the aircraft. The STOL CH 750 was originally offered as a factory-built S-LSA a number of years ago.

Finishing of the aircraft will take place at M-Squared facilities in southern Alabama from assemblies manufactured by Zenair Ltd.

Designed by aeronautical engineer Chris Heintz, a pioneer in the kit and LSA industries, the STOL CH 750 is an all-metal, two-seat aircraft optimised for off-airport operations. It is powered by a 100hp Continental O-200 engine (also produced in southern Alabama). Equipped with full-span leading-edge slats, the STOL has a published take-off distance of just 30m.

Zenith Aircraft Co. which manufactures the kits for the Heintz designs, will continue to manufacture and market the aircraft in kit form.

The base price for the STOL CH 750 with the Continental 0-200 D (with a high end touch screen avionics display) is US$99,990 (in the US).

For more information, www.msquaredaircraft.com.

Ground Handling

VIEWPOINT

I FIRMLY believe the difference between an average pilot and an above average pilot isn't how well they can fly the aircraft – it's what they know.

The push/pull bit, the actual flying, is just a matter of practice. By extension we could say that you don't learn to fly in the air. You learn to fly on the ground. And that's a matter of attitude, discipline and training.

Now I also reckon a flying instructor's job isn't just to teach me stuff that I learn by osmosis and repetition. Repetition, especially in the air, is an expensive way to learn to fly, eh? No, an instructor's job also involves teaching me what and how to learn by a system called modelling. It means being a role model. If you feel your instructor isn't someone you would want to copy as an aviator, then find another instructor. The relationship is important.

Which brings me to the subject of ground handling.

RAAus has an excellent, comprehensive syllabus, which I think is often skimped over in training. There are a number of reasons for this skimping. Firstly, there is no specific flight associated with ground handling so there is no specific pre-flight ground briefing set aside to cover it. Hence it gets taught piecemeal during the lessons. Secondly, flying training doesn't allow for training at numerous airfields where ground conditions are different. You just don't taxi around enough airfields to experience enough potential problems. Thirdly, I don't believe the training manuals cover the topic of ground handling particularly well. Have a look at the syllabus and see what you think. Fourthly, all flying schools and instructors love to fly. Ground stuff always seems to get the back seat. A cynic might even suggest since there is no flight associated with an associated ground briefing, there is no financial incentive to teach it.

Anyway I'm not a cynic and my job isn't to have answers. It's to ask questions - and hopefully get you to think about those questions. In fact, (surprise, surprise) I don't know all the answers but I guess I'll start by asking my instructor about the ground handling syllabus. I'll probably use ERSA and Google Earth as well as the reference texts. The trouble with problem areas is that you don't know what you don't know until you are in a position where you have to know it. Then it is too late to learn.

TIME AND IDEAS

They say the most unstoppable force is an idea whose time has come. It seems, however, we don't like giving up old habits, ideas or skills. Sometimes it takes eons from birth to maturity.

Anyway when Biro's came on the market, the teachers of the day were horrified. The only way to learn to write properly was with pen and ink. These new Biro things would destroy everyone's ability to write – not to mention the ink was poisonous. Calculators were the same. No-one would learn mathematics anymore and certainly it was cheating to take a calculator into exams. A slide rule was okay though.

And as for satellites? They would change weather patterns and gravitational pull etc. etc. Didn't happen though. Before satellites we had sextants, maps and dead reckoning and eventually, by the early 1960s, we had inertial navigation (which contained three accelerometers at right angles to each other). By the late 1960s, we had fairly accurate satellite navigation and the beginnings of GPS. Top Secret stuff at first but within a few years GPS was accurate enough to install into hand held navigation systems and not long after that in cars and on phones.

Enter computers, iPads and GPS in aircraft. Now the view is that no-one will learn to navigate any more and certainly it is cheating to use GPS in exams. Although you are allowed to use a whizz wheel calculator. Fifty years is a long time for an idea to come and, begrudgingly, be almost accepted (GNSS is probably only now being accepted because the older systems require expensive upkeep).

I suspect most people attracted to aviation have a pretty good sense of distance and direction and above average spatial orientation. Our aircraft fly fairly slowly and we have a fix every 30 minutes. At 3,000ft you can see for over 50nm, so you should almost be able to see your next turning point anyway, so the art should be picking a turning point which is obvious. Perhaps our maps aren't good enough to pick obvious points? Certainly there are areas of Australia where the terrain doesn't allow for obvious points, eh?

So let's get real. Electronic Flight Bags are accurate, reliable and up to date with both maps and information. CASA has, and has to, approve them and it's high time we started teaching how to use them rather than ignoring what is one of our best aviation tools. Map reading is now secondary not primary and dead reckoning may not be dead – but it's awfully unwell.

Getting old

BY BRIAN BIGG

I ASKED my friend as we headed out to the hangar the other day "How old is your aeroplane?'

He hesitated to answer. Rather, when we opened the doors, he replied 'How old do you think it is?"

"It looks brand new," I replied. And indeed it did.

It has a relatively new paint job. He obviously takes pains with the interior. And he washes and shampoos it much more often than he washes the car or shampoos the dog. To be honest, he told me, he doesn't often wash the aircraft himself. His kids have learned the hard way, that when he yells "Who wants McDonalds?" it does not mean they will take the most direct route to the burger joint. They quickly learned to look in the back seat or the boot of the car before climbing in. If they see buckets and rags, they often climb out and run away. It's an important lesson to learn, kids. In life, there are no free burgers.

But the question about how old is his aeroplane, is a difficult one to answer. Particularly since the regulator believes that, if his aeroplane was GA, it would be considered old if it had been out of the factory for 20 years or more. For some reason, it would then be more dangerous than it was when it was 19 years old.

In the US, the regulator doesn't even want to know about a GA aircraft until it's at least 30 years old. Why are our aircraft considered older at a younger age than the Americans? Maybe the harsh Aussie climate is bad for their complexion.

Sure, his aeroplane came out of the factory a long time ago. Officially. There's paperwork to prove that.

But the altimeter is only six months old. He can prove that, too. The previous altimeter started to tell him he was at 8,000ft all the time and had to be replaced.

The avionics panel was completely redone about five years ago, so none of that electronic stuff is old either. A previous owner gave it a new engine at some point so it too cannot be really thought of as old.

So, the way my friend figures it, at most he has the wings, fuselage and landing gear he would consider to be old.

Does that make his plane old? Or does his careful maintenance of it over the years, mean my friend's aircraft should really average out at somewhere like eight or 10 years? Is there a formula he could use? If he replaces more than 50 percent of the original machine with new parts, does it not mean it's closer to new than old?

And how can his plane, which has been hangared all its life, be compared to an aircraft which has been chained up outside in a salt air environment?

Is his plane more dangerous because some parts of it remain original? I have always understood the most dangerous part of the device is the ageing human sitting in the left seat. And how prepared that ageing human is to spend his or her hard earned readies to keep the machine up to scratch.

And by describing an aircraft of a particular age as suddenly untrustworthy, isn't it also saying to the LAME or L2 who maintains it, often for the machine's entire lifetime, that their work is suddenly no longer to be trusted either?

There are more than 12,000 GA aircraft on the register in Australia. The average age of that fleet is just over 28 years and getting older every birthday. One in five GA aircraft is more than 40 years old. RAAus is better than that, mostly by virtue of the fact that we started later. The average age of our fleet is about 10 years old, but it has to be said that most of our aircraft aren't built to withstand the same rigours and ageing will no doubt soon be a hot button topic in RAAus.

The regulator was advised a few years to start keeping an eye on the problem of ageing aircraft. Cessna owners are feeling the brunt of that issue at the moment. If it decides to get narky, there could come a time in the next few years when a whole bunch of RAAus aircraft are ordered back to the hangar for good because they are considered to be too old. Just like us ageing humans, I guess.

But I've often felt the best way to deal with the problem of ageing aircraft is to treat it as we do our own ageing selves. With lots of care and attention. And moderation.

After all, isn't it true you're only as old as you feel?

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The Stalling Syndrome

BY ROB KNIGHT

IN the 1960s, as a young student pilot, I listened avidly to the stories my PPL peers bandied around. Too much of their blarney involved the dangerous exercise of stalling. Their yarns fomented an atmosphere of danger and an ambience of fear, and the whole subject of aerodynamic stalling became a topic tinged with adrenalin. Along with the other students, I absorbed this completely erroneous impression. To me, stalling became an exercise I feared and this fear seriously eroded my confidence in carrying out any stalling exercise. Obviously it did nothing for my confidence in my ability to recover from any deliberate stall, let alone an inadvertent one.

Observations during my years instructing and examining impress on me that this fear is alive and well and manifests itself right across the flying fraternity, so broadly based as to be a syndrome and obviously not conducive to acceptably safe flying practices. Safe pilots must have a reasoned knowledge of the boundaries of flight so any reaction to an unexpected incident will be met by a reasoned response and not a panic attack which can induce inappropriate actions. Note well the Air France Airbus Flight 447 over the Atlantic which took all on board. Not even airline pilots are exempt from this syndrome.

So what is a stall? And what causes it? Asking pilot candidates this question prompted, too often, the response of "flying too slowly", which only demonstrated their poor training and lack of adequate understanding of the topic. Unfortunately, also too frequently, I could trace the inadequacy of the response directly to their instructor who, in turn and in spite of holding the prerequisite qualification to instruct and teach, didn't adequately understand the issue themselves.

It is so simple. The stall is a condition of flight where the aerofoil of the aeroplane's wing has reached an angle to the oncoming airflow that is too sharp to allow the air to flow over it. Instead, the airflow breaks away close to the point of maximum camber and tumbles across the rest of the upper surface. Like a car that tries to take a bend which is too sharp, the car will leave the curve because its mass provides too much inertia for it to follow the change in direction.

In the event of a stall, airflow across much of the aeroplane's aerofoil fails to follow the aerofoil's curve and thus substantial lift is lost – sometimes quoted as up to 80% of the lift being provided immediately before the airflow broke away.

So lift is lost. What is dreadful about that? The end of the world is not nigh, because the lift will be regained immediately the angle of attack is reduced to less than the stalling angle. Modern civil aeroplanes cannot get certification if their stalling characteristics are outside the boundaries considered safe and these boundaries are very conservative. To the aeroplane, and from a principles of flight point of view, stalling is a

perfectly normal function; the problem I pinpoint lies with the pilot holding the controls.

Too many pilots, my early self included, have this serious, deep-seated fear of relinquishing control and being unable to regain it. As in my own case, the predominant cause of this fear is a belief that the aeroplane's behaviour post stall might be so unpredictable that my abilities will be inadequate to restore myself to safe flight. In myself and the others I have observed, this belief is seldom verbalised, even under questioning, but can be seen by an instructor who is looking for the visual clues which manifest themselves during a stalling exercise.

So what really does lie after a stall? In a correctly rigged modern day aircraft with no damage to the wings, within its weight limit and with a centre of gravity position within limits, frankly nothing - provided yaw is controlled. So long as the aircraft nose position remains aligned to, or re-aligned if it wanders, a preselected reference point, the aircraft will just descend in a series of sagging wing and nose drops. This is a recognised manoeuvre known as a falling leaf. If a wing drops or sags, provided no aileron is applied and any/all yaw is stopped, the aircraft will descend in a series of sagging swoops but nothing else.

So what does a pilot need to do to render an aeroplane so tamed? The answer is extremely simple - just put a higher priority on yaw than roll: by not allowing themselves to be spooked by roll as a wing drops, or by pitch as the nose sags. As mentioned in my previous articles on flying techniques, pilots tend (naturally) to put a greater emphasis on roll and pitch than they do on yaw. Thus, unless specifically trained to change priorities, pilots tend to be spooked by roll and pitch when there is no reason to be. In fact, if they stop the yaw, the wing will stop dropping. If the banked attitude is ignored and the rudder used to re-align the nose with the reference point, the wings go back to level with very little input from the pilot.

So why do so many pilots fail to do this? As humans learning to walk, we learned that any failure to limit roll and pitch hurt our head/ears and nose/back of head re-

spectively. This conditioning remains with us for life unless an alert instructor teaches us otherwise in our basic training or, after many hours experience, some of us figure it out for ourselves.

It really is that simple. Stop the yaw after the stall and the aeroplane will be totally predictable and wing drop stalls will no longer be a tiger-to-tame filling pilots with dread. I use the term 'dread' because it is absolutely correct and appropriate.

In summary, remember that yaw and yaw control is very important in all stages of flight. Never more so, though, than when operating at low speed, and especially during stall recovery. Obviously roll and pitch are important too, but yaw is the first axis and plane of motion which must be controlled because it can instigate non-pilot-input roll at an inappropriate time. Remember the effects of controls lesson and the further effects of yaw?

Stalls are definitely not to be feared: such an emotion is not helpful to pilot proficiency. To be wary of stalling is healthy and wise; to be fearful is potentially tragic. Keep in mind the only dangerous stall in a modern aeroplane is the inadvertent one at low-level, on approach, with a distracted pilot. At a safe altitude, it is just an exercise and no more dangerous than a simple turn. Fear is a serious and potentially deadly distraction.

Are you such a fearful animal? What really is it that makes you be fearful of stalling? It's just another exercise which needs practice so you can recognise the symptoms of an impending stall and take action before it jumps up and grabs your wing.

If you have any questions talk to your CFI.

Remember: A stall is caused by the angle of attack being too high (above the critical angle). To recover from a stall, the angle of attack must be reduced (with just enough forward stick movement to unstall (no more than that). Simultaneous with the forward stick movement, any yaw must be stopped using rudder and full power applied to minimise height loss. DON'T USE THE AILERON UNTIL AFTER THE STALL RECOVERY HAS BEEN EFFECTED.

Alan Arthur's Kittyhawk


Good sized crowd on hand


Gary Coote in action


Future pilot

Size doesn't matter


Michael Smith


Award winners


Ag tractor landing


An impressive sight

Big crowd for Deniliquin

BY IAN MCATAMNEY

ACTION at Deniliquin's Anzac Weekend started on the Friday with several members of the Wheelies (disabled) pilots coming in and a few early birds joining the hard working club members for a social BBQ.

Saturday was a calm, clear warm day. A few trikes came in, followed by a steady stream of planes and a Robertson 44. The WW2 Jeeps were busy leading some 30 plus planes into their parking spots.

With a NOTAM in place for 4pm, the mini airshow began - Russell Banks in his Pitts Special and Garry Coote in the Agtractor for a firebombing demonstration. A huge crowd of locals came out to watch the spectacle.

Alan Arthur gave an Anzac Day feel to the weekend in his beautifully restored Kittyhawk. After a few pre-dinner drinks, the crowd of 150 moved to hangar 42 which had been transformed into a dining theatre. The MC, Juay Brown, asked for a minute's silence for Anzac remembrance, then events moved along.

The main aim of the evening was to recognise those people from the district who had been involved in aviation in the past, particularly Ag pilots involved in rice sowing. Certificates of recognition for their Airmanship were awarded to Peter Wood and Fred Clipperton, two early Ag pilots and directors of companies which served the agricultural community. Also receiving certificates were Ian Bradford as an active private pilot, Ian Priestly also an active pilot, examiner and administrator. We were honored to have former local pilot Edgar Pickles DFC, a WW2 pilot who flew 50 raids including with the Dambusters Squadron. John Macknight OAM, well known charter pilot and Comanche club member received a certificate as an active pilot and charter operator.

Guest speaker at the dinner Michael Smith told of his 'Around the World at 80 Knots' adventure in a SeaRay. Michael has quietly gone about what is another Australian aviator's first, flying a single engine amphibian around the world. Read of his adventure at www.southernsun.voyage.

Most visitors fronted to a hearty country breakfast before heading off to various destinations on Sunday morning. The Deniliquin Aero Club would like to thank those who attended and will look to put on another event next year.

Fly any aircraft well

BY THE OPS TEAM

Cast your mind back to when you learned to fly. Were you taught how to fly the aircraft at the airfield at which the school was based, or did the CFI teach you what you needed to know to fly any aircraft at any location?

IT is simple to fall into what seems the easier path of learning - to fly only the type of aircraft the school operates, and fly that aircraft mainly referencing local landmarks around your airfield.

But what happens when you fly another type of aircraft away from your home airfield?

At another airfield you can't turn over the house with the red roof for base, or use that mountain off in the distance to know when to turn downwind. The runway may be grass instead of tar, narrow instead of wide, or have surrounding terrain which is flat or very mountainous giving you different visual cues.

Then there is the aircraft, which may not seem as stable as the one you learned in, continuously climbing or descending or not maintaining straight and level in the circuit. The airspeed might not stay still and you might not be able to trim it properly.

If you experience any of these symptoms, you may have inadvertently learned to fly a specific aircraft at a specific location instead of learning techniques which will enable you to fly any aircraft at any location.

Techniques to avoid this trap include:

Establishing the straight and level position of the aircraft relative to the horizon while still taxiing.

Using the tried and true four finger width up from the level reference position and application of full power for climb attitude and two fingers down from the level reference position and power to idle for descent (managing the engine cooling appropriately).

Correctly using trim to relieve stick forces, but only after the aircraft is confirmed as established in straight and level.

Referencing the runway for positioning with the aircraft's wingtip around the circuit, rather than other ground based landmarks.

Using the correct scan technique to establish an attitude and using instruments to confirm the required speed and attitudes have been set, then using a scan pattern to monitor and correct as required.

Using the visual horizon as primary reference for pitch, roll and yaw, during turns or to ensure climb and descent so you don't wander over the landscape, and correcting as required.

Transferring your gaze from the aiming point on the runway to a suitable distance to ensure the round out is at a good height.

Trying to fly the aircraft to the end of the runway rather than making it land.

Using a standard checklist to ensure the aircraft is configured correctly prior to landing and after climb out, before stall practice and during emergencies.

All of these things are the mark of a successful pilot. Pilots who follow these techniques can climb into the cockpit of most aircraft and successfully fly it accurately and almost effortlessly at any airfield.

Sure the straight and level attitude view over the dashboard of a Tecnam Sierra looks vastly different to the view from a Tecnam Eaglet. The height of the cockpit coaming can play a huge part in what the cockpit view looks like. But regardless, using the correct technique will result in the aircraft being flown accurately and manageably.

Sometimes we can reach this level through extensive experience or number of hours, but the basic principles can be achieved by any pilot, if they are taught correctly and apply the same techniques for all aircraft from the beginning.

> "It's almost guaranteed you will do the worst landing of your career"

The other important reference in this process is the Pilot Operating Handbook (POH), which is the best source of accurate information about the aircraft and should be your bible if you are operating an aircraft with which you are not familiar. Another way of dealing with a new aircraft is to take the opportunity to fly it with an experienced instructor to ensure you remain safe. Another is to talk to pilots experienced on the aircraft who should be able to give you insight into any tricky handling characteristics or bad habits it has.

Ops hear lots of stories about how to transition to a new type and lots of horror stories when it isn't done well. One which stands out was the highly experienced glider pilot, who said he really only felt on top of a new glider after flying it for 100-150 hours, even though he had thousands of hours flying many types.

Why is this relevant?

Accident analysis has revealed that a high number of Runway - Loss of Control (R-LOC) accidents happen in an aircraft type in which the pilot did not learn. Further, the FAA and EAA are highlighting R-LOC as a high priority for focus in the US.

Our own accident analysis has revealed a high number of these R-LOC accidents have resulted from the pilot not being fully conversant on the type and not managing the slower flight phase required when landing or taking off.

Pilots often train at a school in a specific type, then go home and buy a different type they had their eye on. A great thing to do once you've got a few hours in your logbook is seek out schools with different types and, under their specialist guidance, get to know the differences in the wide variety of recreational aircraft we have. The school can also provide a different viewpoint on your own flying skills, and that adds to your overall experience.

If considering a purchase, and the importer is conscientious, they may offer conversion training to the new aircraft, or recommend an instructor to fly the aircraft with you, but the worst possible plan is for you to arrive at the airfield where your new pride and joy awaits, and taking off there and then to take it home.

Not only are you flying a new and unknown or unfamiliar aircraft, you also have to make serious decisions about factors which may not be clearly set in your mind like fuel use, cruise speed and instrumentation. They are unlikely to be the same as your usual trusty steed. Factor in the weather and the decision making which comes with that and the risks can pile up.

It's almost guaranteed you will stop at an unfamiliar airfield to refuel and do the worst landing of your career to date. Shaken, you may take some time to calm your nerves while eating the packet of chips and soft drink (the only food available at the field).

When you finally it to your home airfield the landing is not going to be the usual smooth, controlled event of the past, but usually turns into a nightmare of trying to manage speeds, circuit shape and wrestling with unfamiliar control inputs.

The classic phrase we then see in an incident report from a pilot is that a wind gust caused the aircraft to get out of control.

Was it really a wind gust? Or were you so far behind the aircraft due to unfamiliarity or lack of practice in the new type, that you didn't control the aircraft through all phases of the flight? Did you practice slow speed flight safely at altitude with an instructor or another pilot familiar with the aircraft, before you set off home? Did you really get a handle on the aircraft, or were you just winging it?

Runway Loss of Control (R-LOC) can happen to anyone, but familiarity on type and appropriate training to ensure you can fly the new aircraft well, no matter what the circumstances, offers significant mitigation in avoiding this type of accident.

Your local CFI would love the opportunity to fly to the location of your new aircraft, familiarise themselves with it and fly home with you. Or fly with you in your new aircraft when it is delivered to your home airfield.

When Ops talks to CFIs about these sorts of accidents, it's the common response we hear. The CFI is only too happy to help. Make use of them and keep safe in a new aircraft type.

CFIs Graeme Hutchinson, Stephen Conte, Brett Pearson, Andy Dimakopoulos, Mal Christie (via Skype), along with PPC member Kevin Williamson, and CFI Ed Herring, Jill Bailey and Michael Linke.

HISTORIC PPC MEETING

AN historic event occurred in May when all six Powered Parachute CFIs and other members of the PPC community met in Adelaide to discuss changes to the draft Operations Manual Issue 7.1.

During the talks, agreement was reached on proposed reductions to the training requirements for PPC across the manual. The Operations department remains committed to consulting with members who fly specialist aircraft to ensure they have the opportunity to express their views and ensure their needs are catered for. Because other changes to Operations Manual Issue 7.1 are only minor, it will be released for implementation next month. From then, members will be able to operate using Issue 7.1 with a three month moratorium from June.

The P Factor

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL

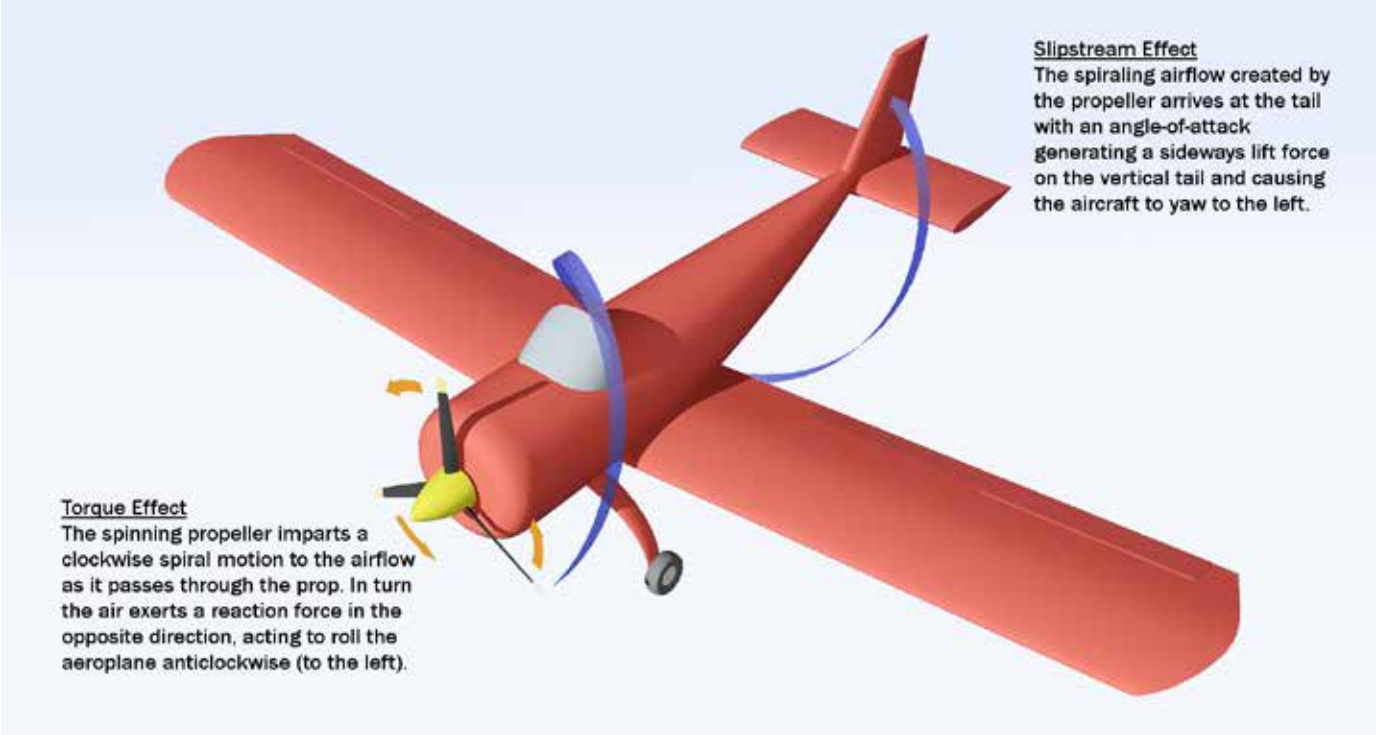


***Fig1** - Propellers add vorticity to the airflow causing Slipstream and Torque Effects*

CAST your mind back to the last time you went flying. Poised at the threshold you performed a quick run through of your final checks, then with a smooth application of power and a dab of rudder, your craft surged forward and off you went into the wild blue yonder.

I'm willing to bet that, for most of us, applying the aforementioned dab of rudder is so hard-coded into our subconscious, we're barely even aware we do it. And if I asked you why you do it? Other than the obvious answer, "To keep the nose straight", a hazy recollection of propeller effects may come to mind. It's time to refresh our collective memories and talk about the P-factor.

MIRROR MIRROR

At first glance most aeroplanes appear to be symmetrical, and when they are obviously not, such as in the Rutan Boomerang, they tend to attract a fair amount of attention. However the reality is that, despite appearances, all single propeller aircraft are inherently asymmetrical. If you cut a plane in half along the centreline and place it against a mirror, a major problem with the prop will be immediately apparent. Propellers are definitely not symmetrical. This leads to a whole host of propeller effects, requiring adjustments in both design and piloting technique to accommodate the quirks this asymmetry introduces.

Quite often all the P-effects get lumped together as a single thing, but they actually come from a whole variety of different sources, so I'm going to separate them out and look at them individually, starting with why we have to apply rudder when we power up for take-off.

SLIPSTREAM

For those of us who fly relatively low powered aircraft - which is virtually all of us given the shortage of Rolls Royce Merlin powered craft in the RAAus fleet - slipstream effect is the most noticeable of the prop effects. The airflow passing through the propeller is not just accelerated backwards but actually develops a helical motion matching the direction of the propeller rotation, causing the air to flow around the fuselage in a corkscrew path. When this airflow arrives at the vertical stabiliser, the resulting angle of attack generates a side force causing the aircraft to yaw unless opposite rudder is applied to cancel the effect. This slipstream effect is strongest at high power settings and low speeds, so is most noticeable during take-off and climb out. The pilot is simply expected to apply an appropriate amount of rudder to correct the yaw, but the designer does have the option of making the pilot's life easier by offsetting the vertical tail to a slight angle, using a cambered aerofoil or adding a fixed trim tab to the rudder to minimise the effect at cruise power and speeds.

> "The slipstream effect is strongest at high power settings and low speeds"

TORQUE EFFECT

At this point the more thoughtful, or argumentative, of you will probably be thinking, "Hold on a minute! If the airflow hitting the fin makes the plane yaw, why doesn't the same airflow hitting the two halves of the horizontal stabiliser cause the plane to roll?"

This is a very good question, and answer is, "It does", or at least it would, if it wasn't for the Torque Effect which is more powerful and acts in the opposite direction.

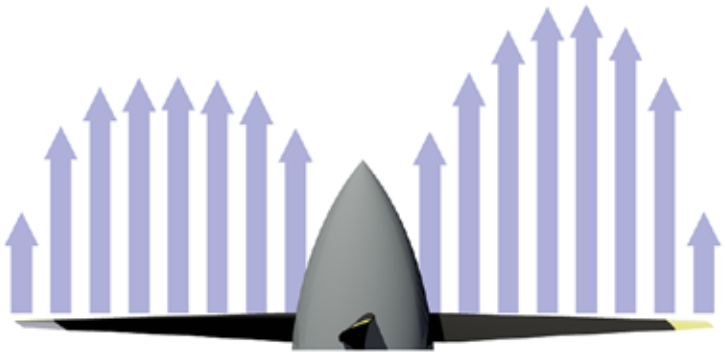
If the propeller is forcing the air to rotate clockwise, our old friend Newton tells us the air

must be reacting by trying to rotate the aeroplane anticlockwise – think of 'cartoon physics' where a character grabbing a propeller causes the whole aeroplane to spin in the opposite direction! Torque effect is constantly trying to make the aeroplane roll in the opposite direction to the propeller's rotation, but it is usually easily counteracted with an application of opposite aileron. However, for aircraft with thousands of horsepower travelling slowly, torque effect can be lethal. During WWII there were several accidents attributed to pilots rapidly applying full-power for a go-around at low airspeeds only to have the torque-roll overpower the ailerons and flip the aircraft inverted with fatal consequences. Thankfully in an ultralight, with 100hp or so, the effect is much more manageable, to the point it may not even be noticeable, being easily trimmed out or countered with a fixed tab on one of the ailerons.

ASYMMETRIC YAW EFFECT AND PROPELLER NORMAL FORCE

Whenever the prop disk is not perpendicular to the incoming airflow, such as when an aircraft is operating at high angles of attack or when yawed, the relative motion of the blades and airflow will cause thrust to be generated asymmetricly. As an example, in a nose high attitude, a downward travelling blade will also be mov-

An aircraft descending at high angle-of-attack experiences an airflow which is not perpendicular to the propeller disk. This results in the downward travelling propeller blade advancing into the airflow whilst an upward travelling blade moves away from it.



Asymmetric Yaw Effect:
Shown is the thrust developed by the propeller (viewed from above). The right hand side of the propeller sees a greater airspeed and angle-of-attack, so generates increased thrust. The opposite is true for the left hand side resulting in a thrust imbalance which acts to yaw the plane to the left.

***Fig2** - A propeller which is not aligned with the incoming airflow generates asymmetric yawing forces in addition to thrust*

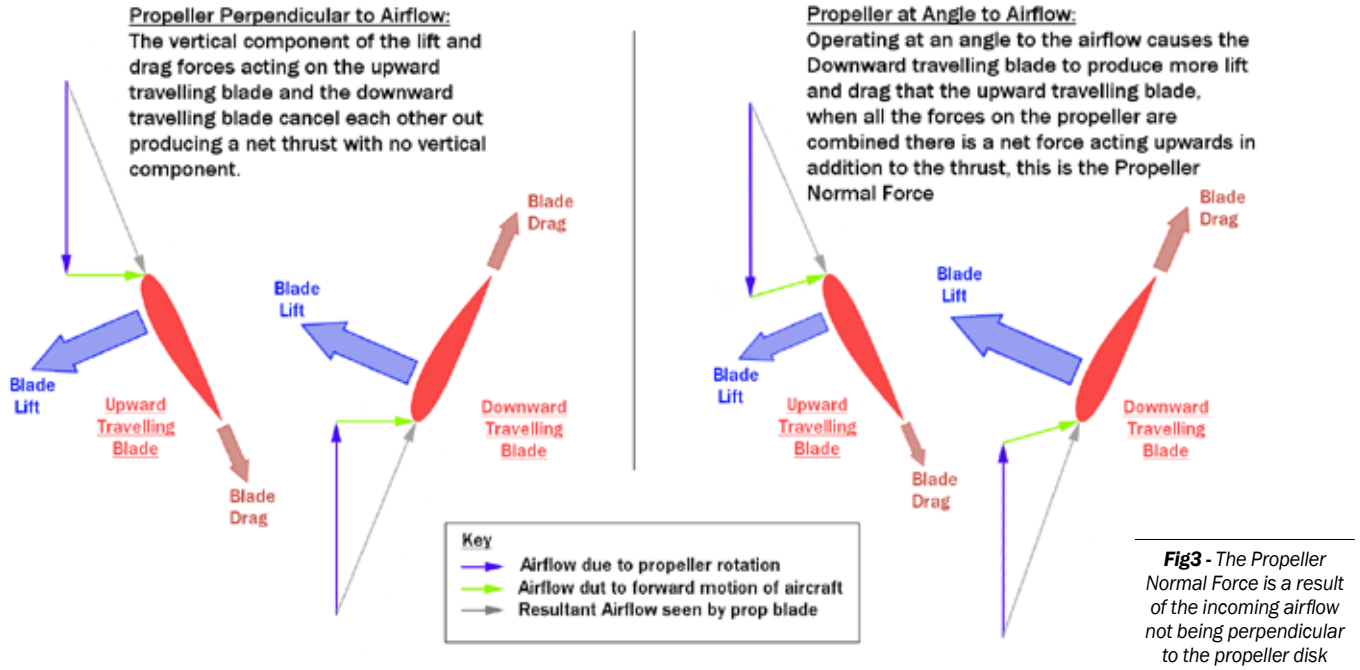
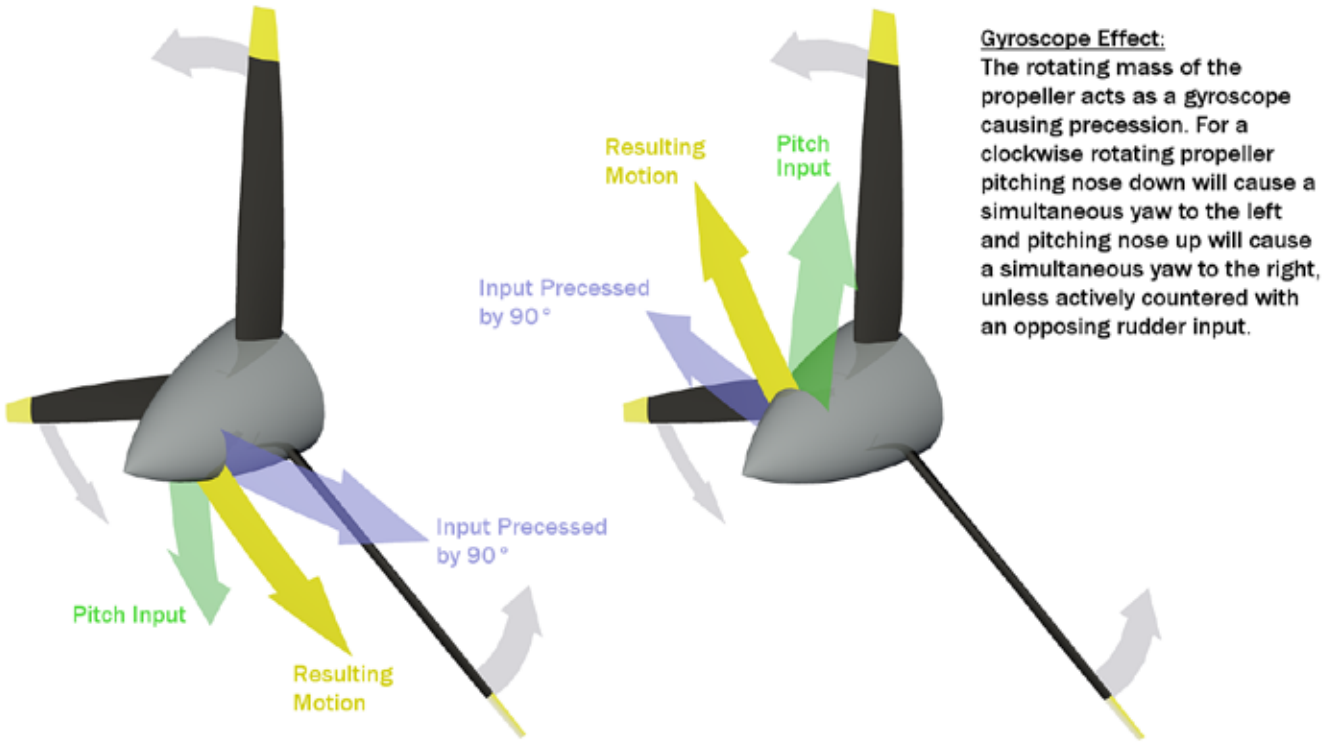


***Fig3** - The Propeller Normal Force is a result of the incoming airflow not being perpendicular to the propeller disk*

The P Factor *cont'd*

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL

Fig4 - *The propeller is a spinning mass and so acts as a gyroscope*



ing forward and an upward travelling blade travelling rearward relative to the airflow. This affects both the airspeed and angle of attack of the blades as they rotate, with a downward travelling blade seeing increased airspeed and angle of attack and an upward travelling blade seeing reduced airspeed and angle of attack. This leads to two outcomes: For a clockwise spinning prop the right hand side of the prop will generate increased thrust while the left hand side thrust will be reduced, this force imbalance results in a yaw to the left and is called the Asymmetric Yaw Effect. Secondly there will be a change in the direction of the force generated by the prop blades as they rotate. The downward travelling blade will incur more drag along with its increased lift while the upward travelling blade will incur less, when these two effects are combined the result is a net force acting upwards in the plane of the prop disk, known as the Propeller Normal Force. For tractor configured aircraft, the propeller normal force will be destabilising - pitching up produces a force which induces further pitch up - for pusher aircraft, where the prop is located behind the C of G, the effect is opposite, improving the stability. Either way the effect has implications for stability and needs to be considered when sizing tail surfaces.

GYROSCOPIC EFFECTS

Last of all, not all propeller effects are a result of aerodynamics. As a rapidly spinning mass, a propeller also acts as a gyroscope and so, like all gyroscopes, it experiences precession when a torque is applied to tilt its axis of rotation. Precession takes an applied torque and precesses it 90 degrees in the direction of rotation of the propeller. Gyroscopic precession is far from intuitive, so I'll give you an example:

When a tail-dragger with a conventional clockwise rotating propeller (as seen from the cockpit) raises its tail during the take-off run it pitches the nose down. Precession rotates this applied nose down torque 90 degrees in the direction of prop rotation, so as the tail comes up the aircraft also yaws left requiring the pilot to counter with rudder. Unfortunately this behaviour is a perfect recipe for a ground-loop. If the tail is raised quickly early in the take-off run (before there is enough airspeed for the rudder to become effective), the yaw can be more powerful than the rudder can counteract. Of course the same thing may happen at any time if the pilot happens to have slow feet!

SO WHAT DOES IT ALL MEAN?

Fortunately for low powered aircraft with small lightweight propellers, most of the effects just described are small in magnitude and can be easily trimmed out, assuming they are large enough to actually be noticed. Even in the worst cases, the controls are highly unlikely to be overpowered so all that is required in most cases is correct piloting technique.

As a pilot you don't need to know in detail why you have to counter an application of power with rudder, but you do need to press with the correct foot at the right moment, so understanding prop effects will at least save you some embarrassment when you find yourself piloting a plane with an anticlockwise prop for the first time.

Setting my minimums

BY ANTHONY SIBARY

IT has been great to finally get back in the left seat after all the adverse flying weather Sydney has been dishing up.

Before I get into that, I wanted to let you all know I have decided to obtain my cross country endorsement and possibly work toward a tail wheel one at a later date. I mentioned in a previous column I was looking into it and now it's time to start really focusing on keeping accurate time and flying a constant heading.

My CFI has told me those two things are very important when it comes to flying cross country. And yes I realise they are also important when flying in the circuit, just in case anyone is contemplating an email to the editor.

With almost 50 hours in my log book and some great flying weather, I headed out to YOAS for some circuit work. It seemed others were keen to get airborne and take advantage of the conditions too. It was fantastic having other aircraft in the circuit. Four aircraft, including the Jabiru I was piloting, all performing touch and go passes on both 36L and 36R. Transmitting messages and maintaining adequate separation keeps you on your toes.

One thing which added to the experience was the increase in ambient temperature. As my hour progressed it became noticeably bumpy, particularly on base and final. The ground was becoming hotter and that rising warm air let me know it was a warm day.

On a previous occasion I cut short a planned hour flight because it was just too bumpy for me. It was uncomfortable and I was struggling to concentrate, so I had made my next landing a full stop. I can remember John coming over and asking if everything was alright. I explained that I had set myself personal minimums when it comes to flying and I preferred to be on the ground. I had checked NAIPS and there was no reported turbulence or storms. Some might think I wasted my time that day and that a round trip of 90 minutes to the Oaks was also unnecessary, but I disagree. That is why I set myself personal minimums. Sure, meeting them may be an inconvenience, but consider the alternative. It's not good is it?

By setting my own personal minimums I have pre-determined what I will and will not do in any situations. Such as the one described here. I do not drink alcohol the night before I am going flying. I always complete a thorough pre-flight inspection. I always use the checklists I have made.

These are just a few examples of the level I set for myself. I will develop more when I have my cross country endorsement. It may be that I delay a planned return flight home due to a weather front closing in. I do not have to be a professional pilot to fly like a professional.

The volunteers

Taking on board the advice of my CFI, I headed into the training area to the south of YOAS to work on maintaining an accurate heading, keeping the aircraft in trim and performing some basic distance and time calculations. I calculated that at 90kts cruise I was covering 1.5nm each minute and I applied that to the chart on my kneeboard.

It is different to just being in the circuit isn't it? Not being in a rush was great. I was able to focus on each individual task and then try and combine them toward the end of the hour. It is early days and I will soon be building cross country time with my CFI. I look forward to sharing those adventures with you as well.

A few days before I completed this article, the Oaks airfield was hit by a micro burst storm which destroyed aircraft and buildings. Incredibly, only one person received a minor injury. I arrived at the airfield the next morning and saw the debris and the destruction. It was remarkable. Also remarkable was the number of people who arrived that morning to help in any way they could.

The building which housed our flying school was wiped out, but the runways were cleared in hours and Dave's Flying School went back to business as usual.

See you in the pilots lounge for cocktails and debriefing.

The morning after

Transition of responsibility

BY PROFESSOR AVIUS **AVIATION GURU**

FOR instructors and students, flight training involves a transition of responsibility.

During the early flights of a student's training, the instructor is 100% responsible. The student is basically along for the ride, let the journey begin. When the student receives their Pilot Certificate, the student has completed that journey and is then 100% responsible for planning and conducting their own flights from then on.

So what is the process?

During the first stages of training, there is a lot of responsibility for both the student and the instructor. The requirements are structured in the syllabus, including effects of control; turns; stalls; take-off; landing; EFATO; EFIC and more.

The Operations Manual clearly sets out the syllabus for all schools but there is much more.

All schools need to have a good training ethic – this ethic needs to include things like a commitment to provide the student with the best learning environment; instructors need to maintain individual skills; schools with more than one instructor should develop an individual Flying Training Operations Manual to ensure each instructor will be communicating the same message – even if the delivery method differs; not flying in weather or conditions which won't allow the student to learn; ensuring they give the student the best value for their training dollar (I know there are some schools which see the student merely as a revenue flow). For their part, the student also has a responsibility outside of just doing the flying. They must also keep up with the theory.

So how does a school, give their student the best chance to receive that responsibility on time and effectively?

It begins from the very first flight, when the student has completed a TIF, a lesson on effects of controls and has expressed a commitment to continue with training, progressing toward a Pilot's Certificate.

That's the time to introduce discipline into the training, stressing safety and Human Factors.

The debriefing is very important. The instructor must praise the good performance (regardless of our age, we all like to hear that we are progressing well – but don't flavour it too much). The instructor must also carefully manage those parts of the student's effort where things didn't go well. And consider how things might be changed to better suit the student's needs.

"We all like to hear we are progressing well"

Then they should provide advice to the student about what the next lesson will be about and which section of the theory they will need to review before that lesson.

When the student leaves, the instructor should make extensive notes in the student's record about what was communicated and what should be next.

When the student fronts up for the next lesson the instructor must have reviewed the notes – the student will probably remember better than you what was communicated/intended at the last debrief.

The pre-flight briefing then becomes the time to re-emphasise self-discipline and human factors and to inquire about the student's knowledge of the theory they were supposed to have reviewed. It's a good time to judge just how strong the student's commitment remains.

Then another flight, avoiding introducing any exercise which hasn't been pre-briefed, then another post flight briefing and updating the records. And so on.

At each lesson, the instructor will progressively hand over responsibility for more and more segments of the flight until it is time for the student to take it on themselves.

The first solo becomes the culmination of the progress the instructor has made in transferring responsibility to the student. And although the first solo is the time when the student must step up for the first time, they still don't get to make all the decisions. The instructor remains responsible for weather and other decisions to ensure the first memorable flight remains within the capabilities of the student. It wouldn't be logical, for example, to send a student on their first solo when a couple of RPTs are due at a regional airport.

It's not fear which makes the first solo so scary and yet so exhilarating. Rather it's because for the very first time the student is responsible for themselves. And that only becomes possible if the instructor has transferred those responsibilities effectively from the very first flight.

This transition of responsibility can be demonstrated by a two line graph.

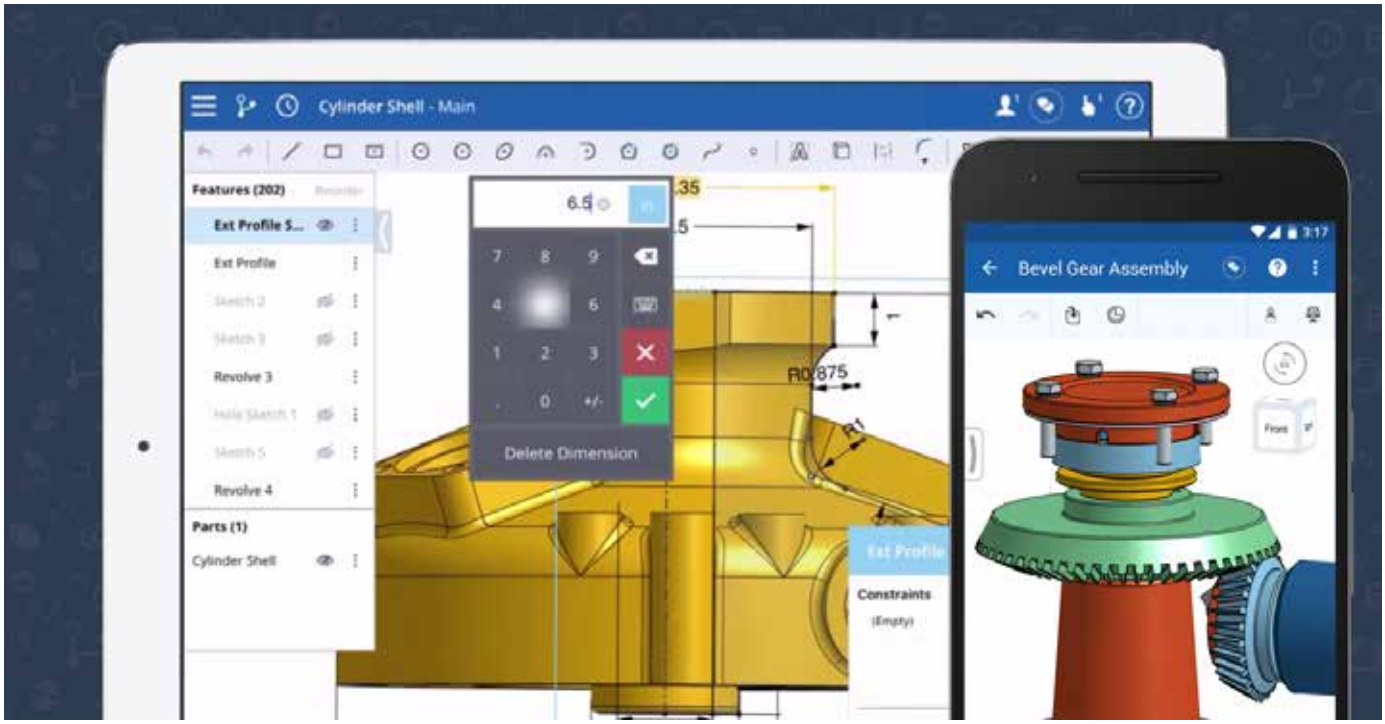
First solo will fall somewhere within the quadrilateral at the centre of the graph.

One line is the responsibility of the instructor and the second is the responsibility of the student, remembering that there is no standard graph. The progress lines will vary from student to student. Some will make their first solo earlier than others. However generally where the lines of responsibility cross, you will find the first solo. It is all about instructor instilling confidence and student developing competence. Remember, too, the standards are the minimum standards.

The Syllabus of Flight Training can be found at https://members.raa.asn.au/storage/syllabus-of-flight-training-issue-7-v2-single-pages.pdf

The cost of design

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS



BEFORE you even thought about the possibility of building an aeroplane, it probably occurred to you that you needed certain skills. You might have considered welding, timberwork, sheet-metal work, interpreting plans and mixing resin. But the world has changed. And if you didn't balk at learning the skills mentioned here, why would you balk at the idea of learning digital skills, when this is the direction of modern manufacturing? This is not to suggest that you might take up the digital design of an aircraft, but you may be interested in gaining an insight into how this is done. You never know, some of it may actually be useful.

A theme of this column (except lately), has been the intrusion of digital technology and its associated tools into all areas of light aviation. I have written about the development of instrumentation using a suite of free or open source tools, specifically, the Arduino, Eagle PCB and the development platforms for Apple and Android tablets. Another component of the suite is a 3D modelling program.

Virtually all manufacturing now depends on computer aided design and manufacture. Initially the design tools were limited to the development of 2-dimensional plans, the sort of thing which replaced pen and paper draftsmanship. Rapidly, these tools extended to material planning and development and then to manufacture. So, for example, a kit such as that produced by Sonex incorporates a lot of sheet metal which has been cut by machines driven by extensions to the design software, and then drilled to allow matched-hole assembly with an accuracy virtually impossible by hand. Such software used to be very expensive, but versions are now free.

The latest development in such software is the extension to 3D. As it happens, this has occurred just as the tools for small manufacture have appeared on the market in the form of 3D printers. The price of these has collapsed, simple small devices are available for $250, quite capable devices are priced from around $700. For those who are more ambitious, there are mills that will take a file developed on such software and cut metal accordingly, available from around $5,000.

For many years, large companies such as Boeing and Airbus have used very sophisticated versions of such software, but it is only recently that free versions have become available.

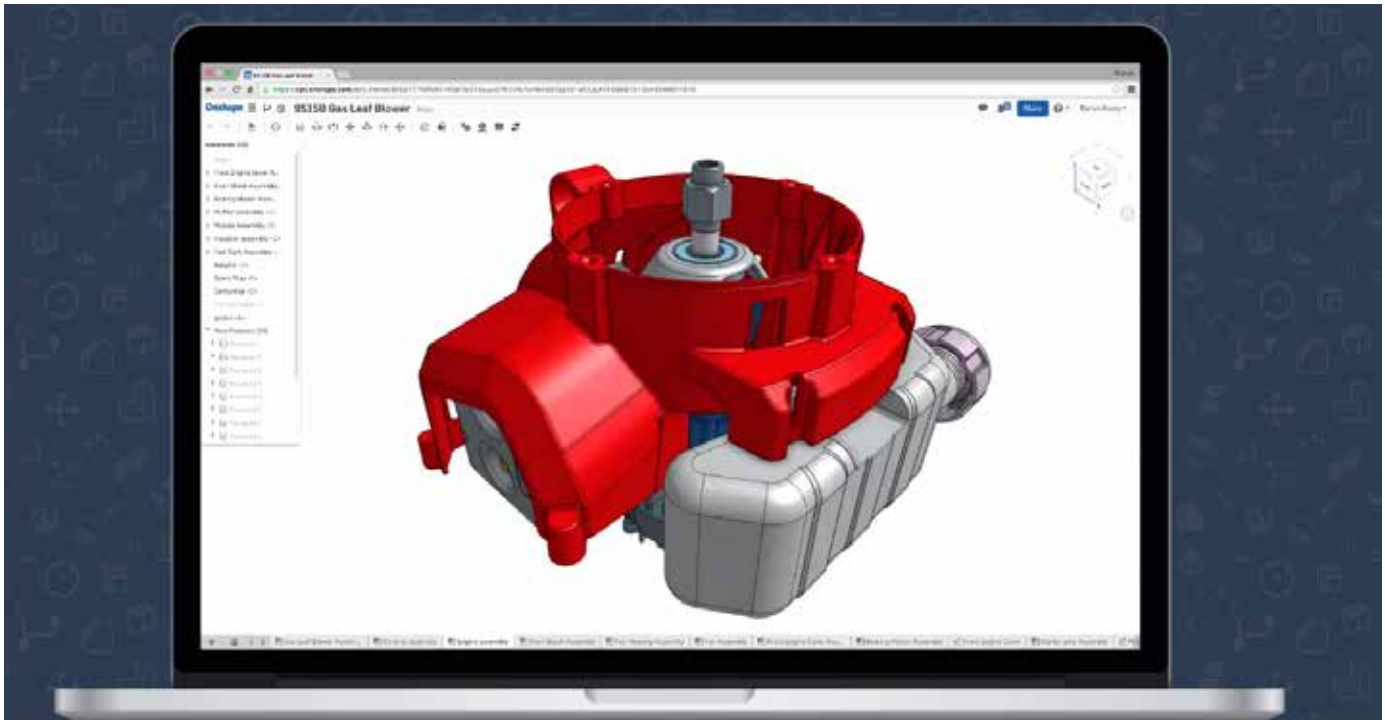
I am not interested in any program which is platform specific, because I have no desire to relearn a lot of stuff, should in time I come to appreciate Windows. Nor am I interested in paying money to learn a system. Many systems, Eagle PCB is a case in point, offer huge capability for most users, and a more professional version as well, at a price. I do believe that if you make a commitment to some open source software, you should share your experience and perhaps make a contribution towards the ongoing development of the system. Sometimes I 'get' a piece of software, sometimes I don't. It is something to do with my particular brain. I find playing with a sophisticated piece of software for about an hour will let me know whether it is likely to work for me. As there are usually several options in each functional space, I suppose that this is not uncommon.

I know this sort of stuff sounds a bit intimidating, but the acquisition of these skills, like all skills, depends on where you are coming from. For most of us of a certain age, it is probably more intimidating than learning traditional skills, but unlikely to be any harder to acquire.

Most of us can now probably set up a network system at home, coping with the router, networked printer, various connected phones, computers, TVs and tablets and our internet provider. These are skills which would have seemed mind-bogglingly complex not that long ago.

Similarly, if you have a drawing background and some computer skills, your path to using a 3D modeling program will no doubt be considerably shorter than for the rest of us.

I recently discovered OnShape and Fusion360, both of which have free versions. Of the two, I prefer Fusion360, but I am no expert and the preference is personal. Both programs rely heavily on the internet, using a brows-



er interface, so you need a pretty good internet connection. In line with my ongoing critique of Australia's attitude to innovation and industry support, the destruction of the NBN by the current federal government may mean some of you will not have the opportunity to play in this space. Another similar offering is Google Sketchup, but that is directed more towards architectural design and I did not find it appropriate for the sort of projects I had in mind. Both Fusion360 and OnShape have excellent tutorials to get you going. You might also check Tinkercad and there are others.

Should you actually want to produce the part you design there are a myriad of options. A quick Google search on CNC manufacturing produced 540,000 links. So you could simply send your file to someone who will produce your part. Fusion360 has a built-in link to a manufacturer. I do this with printed circuit board manufacture and the process works well. Or you could 3D print it yourself. While the cheap 3D printers only print in non-structural plastic, metal printers are rapidly dropping in price.

Even if you have no interest in developing expertise in this sort of program, and there is no free lunch, it is worthwhile looking at some of the tutorial videos to get some idea of the capability. It seems to me like a good way to spend an hour or so on a wet day.

If you have read this far you presumably have an interest in the evolving technology which will drive this industry. It is unfortunate this is yet another industry which is of no interest to our leaders in this country and yet it is precisely this technology which allows us to move away from an industrial structure entirely dependent on massive development shops employing hundreds of people designing for mass production, to small, innovative design and production shops.

Some interesting facts to mull over. A new Cessna 172 costs a good bit over $300,000, well over twice the cost of a Jabiru 230. Most 172s are ancient and subject to the SIDS program which is likely to take many of them

> "These skills would have seemed complex not that long ago"

out of the skies. Tesla sold 500,000 options on its new electric car in a few weeks, promises dramatic reduction in the cost of batteries and enhanced battery performance. In many regional areas it is becoming increasingly difficult to supply Avgas and increasingly easy to provide solar-generated electricity. We have a government which says it is committed to the development of the north, and yet north of the tropic of Capricorn you can count the number of all-weather roads across the country on one hand, arguably using just your thumb. The cost of design, because of the availability of sophisticated design and simulation tools, is also dropping dramatically. Low volume niche manufacture is increasingly possible. The federal government argues a case for high-tech innovation as a direction for the Australian economy, but its various agencies see no reason to support regional aviation or the industry more generally. Does all of this hang together?

JABIRU POSTSCRIPT: Before writing the Jabiru articles I submitted an Freedom of Information query to CASA to obtain the documents which led to its decision on the Jabiru operational restrictions. None were forthcoming. I had an interview with a senior CASA official who said he would double check. The only document then produced was an unfiltered list of incidents, most of which had nothing to do with engine operation. Apparently no document related to the decision-making process within CASA existed. All data quoted in my articles, including that from the ATSB is provided exactly as it appeared and attributed as such.

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251
Hours flown by Australian recreational aircraft (thousands) in 2004

307
Hours flown by Australian recreational aircraft (thousands) in 2009

298
Hours flown by Australian recreational aircraft (thousands) in 2012

31
Hours flown by Australian gyro aircraft (thousands) in 2004

36
Hours flown by Australian gyro aircraft (thousands) in 2009

49
Hours flown by Australian gyro aircraft (thousands) in 2012

137
Hours flown by Australian weight shift aircraft (thousands) in 2004

109
Hours flown by Australian weight shift aircraft (thousands) in 2009

108
Hours flown by Australian weight shift aircraft (thousands) in 2012

Source for all numbers: https://www.atsb.gov.au/media/5474110/ar2014084_final.pdf

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.

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

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- **WEB** www.davidclarkcompany.com

GYFTS launches Snowy Mountains students

BY MARTIN HUGHES
CFI ALPINE AVIATION

SNOWY Mountains Grammar School in Jindabyne has been launching its students into great lives.

The school offers an aviation program to students interested in flying as a career, or as a recreational pursuit.

The flying component of the course is offered through Alpine Aviation Australia, which operates out of Jindabyne Randall Community Aerodrome.

The program saw some notable achievements during the first term this year. On February 14, Year 11 student, Tolina Davis, went on her first solo flight and declared it was a fantastic Valentine's Day present. Since then, Toby Mallon, a Year 12 student, has achieved his Pilot Certificate – and he has yet to obtain his driver's licence. And finally, on April 13, another Year 12 student, Nick Nanninga, also flew solo for the first time. And several more students are about to begin flight training or are already working towards their first solo flights and Pilot Certificates. Regardless of whether a student wants to fly for the airlines, the defence forces or to pursue an interest in other careers in aviation, the course offers the resources and opportunities to meet their aspirations. It provides an exciting and rewarding educational process and gives students a significant advantage when applying for post school opportunities within the aviation industry.

GYFTS winner, Toby Mallon, says it's hard to believe just a few years ago he was nervous to get on board an aeroplane.

"Let alone fly a Jabiru J120," says Toby. "But I summoned the courage and, after hours of training, I was ready for my first solo flight. My Pilot Certificate followed and now I'm training for my cross country endorsement.

"This would not have been possible without the support of my parents, my flying instructor at Alpine Aviation Australia, Martin Hughes, the aviation teacher at Snowy Mountains Grammar School, Phil Ryrie, and the local Jindabyne Aero Club.

Toby (left) being congratulated by me

"I also have to thank another person, an anonymous benefactor, who assisted me financially to achieve my aims and is providing me with the means to continue my training. I am humbled by this person's generosity.

"In 2014, I was one of three disadvantaged students to receive a Jindabyne Aero Club Scholarship which gave us the opportunity to undergo five hours training and gave me confidence in my dream of becoming a pilot.

"My instructor and aviation teacher told me about GYFTS. The scholarship is very competitive, awarded to only 24 students nationally, and I didn't think I had a chance but I went for it.

"Three people in Australia received first tier scholarships, I was astounded to be one of them. With this support, I achieved my first solo and had a total of 12 dual hours and three solo hours.

"When the funds from my GYFTS scholarship were nearly exhausted, I worked the Christmas holidays in Canberra, sacrificing valuable time with my dad to earn some money to continue my flying. I was able to save like mad and qualify for my Pilot Certificate.

"But becoming a pilot doesn't end with a Pilot Certificate because there are many endorsements required.

"Amazingly an anonymous benefactor then stepped in. He or she is providing me with the extra support I need for the next stage, which is the cross country and passenger endorsements. The first passenger I'll be taking up will be my mother.

"Recently, with my new Pilot Certificate in hand and aviator sunglasses, I hired the Jabiru and took my first flight as a pilot in my own right.

"As I felt the aircraft take lift, I realised who I am - this is my dream. I am a pilot.

"What does the future hold? I hope to fly with Rex Airlines in their cadetship program. I've got a long way to go to get there and a lot of learning to do, but I'm doing it step by step and I'm committed. Not bad for a 17 year old boy not yet with a driver's licence."

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

Australian Government
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