SPORTPILOT

RECREATIONAL AVIATION AUSTRALIA / DECEMBER 2015 VOL 52 [12]

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RAAus businesses confident about the year ahead. Photo: Anderson Aviation

ON THE COVER

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

STAMPILS PUBLISHING
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MAGAZINE SUBSCRIPTIONS
Non-member annual subscription rates – postage included – are $110 (Australia) and $500 (international), being for 12 issues. Payments to be made out to Recreational Aviation Australia Inc. Po Box 1265, Fyshwick, A.C.T, 2609 Australia and related enquires to admin@raa.asn.au.

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CATEGORY	6 MONTHS (6 ISSUES)	12 MONTHS (12 ISSUES)	24 MONTHS (24 ISSUES)
Member (flying)	$50	$90	$160
Member (non-flying)	$50	$90	$160
Non-member (Magazine Sub only)	$60	$110	$220

Prices include GST.
Email RAAus headquarters at admin@raa.asn.au.

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TERMS AND CONDITIONS

The changing face

BY MICHAEL MONCK

MOST of you would have seen over the past weeks that the public face of RAAus, our website, has undergone a significant revamp. This is just a small part of our ongoing efforts to improve your organisation, so I think it's worth talking about it a little.

The project has been running for a number of months now and a great deal of effort has been put in by the staff. I'd love to say the board deserves credit but the only thing that happened at our level was making the decision to do it. I'd also love to credit the CEO for a job well done, but that's not entirely true either, although he's done a lot more than the board.

The true credit lies with the staff who analysed all our many internal processes and wrote them up for the developers. Then they tested the ideas and processes put together by the developers. They wrote reports about the bugs they found in those processes and sent them back to the developers who improved them and sent them back to the staff for more testing. Then... well you get the picture.

> "If we're really lucky we'll get to combine the two - loved ones plus flying"

The same staff have also been working through a raft of issues since the site went live too. There's been a host of queries from members with a lot of criticism, most of which, I am glad to say, has been constructive and respectful. That is all positive...but.

Problems have emerged in the data the staff and developers have had to work with. The whole exercise has revealed a pretty bleak picture about our data management procedures in years gone by. I, for one, have some pretty spurious data relating to my own flying hours and it is demonstrative of how unreliable the system has been up to now.

Some people have suggested we should simply cleanse the data and start again. I've spent hours on the phone talking to members who recommended this approach, but for the most part once they understand the state of the data, they have conceded defeat! We just have to work harder in future to ensure we don't repeat the mistakes of the past.

Some of this will come down to you. Each year when you renew your membership we will count on you to give us accurate data. Data which will reflect the true state of the organisation and capture an accurate picture of our activities. We need you to tell us how many hours you've flown, lodge incident reports and so forth. None of this is intended to be used against you - in fact quite the opposite.

We want to build and grow our organisation and help others to enjoy aviation as much as we do. To do that we need to understand our part of the sport aviation spectrum even better, so we need to have you tell us about your experiences. Tell us how much you fly and tell us when something goes wrong, so we can all learn from it. We can use that knowledge to make us even better. Just like we've done with the website.

The new look web presence is designed to be more user friendly and informative. Right now you can manage your membership online and renew instantly. Over time we'll be adding more functionality such as the ability for our schools to add endorsements to your Certificate on the spot. We are working to eliminate the paperwork and its associated delays, you'll get these things with immediate effect soon. We also have plans to make it easier to find our schools. After all, everyone needs to learn somewhere (or convert an existing qualification).

On top of that we are working towards simplifying aircraft registrations and making it easier for maintainers to learn, process aircraft inspections and so on.

The goal with all of these measures is to make life easier for pilots and maintainers. So we need your help.

Our organisation is built on a community of likeminded people doing what they love and helping each other. When I go to an airfield, be it my home airfield or one far away, there is inevitably a bunch of people wanting to chat, ask questions and help out. That's what we need right now. We need for that helpful attitude common to all aviators to pervade.

As we progress we will become an even bigger, better organisation, but the only way for this to happen is if we all pull in the same direction. So next time someone asks for feedback, comments or input from the office, treat them like the person in the hangar next door who needs some help to pull his plane out to go flying – lend them a hand.

Together, we can make RAAus into an even greater organisation which not only allows us to go flying, but makes this privilege available to others around us.

In the meantime this is the time of the year when Christmas cheer is spread and we get to spend much wanted time with our loved ones. The weather is generally nice as well and that means flying over the holiday period. If we're really lucky we'll get to combine the two - loved ones plus flying. I'd like to urge everyone to be careful when they go flying to ensure we get more time with those we treasure.

Have a merry Christmas and I look forward to seeing everyone in the new year.

A. 9-10 JANUARY 2016
GREAT EASTERN FLY-IN

Evans Head Memorial Aerodrome, NSW. Every sort of flying machine welcome. Lots to see and do, markets, classic cars, model boats, classic movie, pilot's dinner, re-enactment group, air displays and adventure flights. Underwing camping and caravan and motorhome camping for the flight crew. Have a flying summer holiday at the Great Eastern. For more information, Gai Taylor 0427 825 202 or www.greateasternflyin.com.

B. 26 JANUARY 2016
AUSTRALIA DAY BBQ

Yarrawonga Flight Training will be a great place to spend the public holiday. Fly, drive, swim or grab your walking frame but get there for the BBQ (bring a plate). For more information, (03) 5744 1466 or yft@yarrawongaflighttraining.com.au.

C. 5-6 MARCH 2016
AEROFEST

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

D. 13 MARCH 2016
TYABB AIRSHOW

The theme for the show will be Winged Warriors. Aerial displays, antique aircraft, static display, new LSA display, classic cars, model aircraft display. Food and drinks. For more information, pac@pac.asn.au or (03) 5977 4406.

E. 13 MARCH 2016
CLIFTON FLY-IN

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

F. 26-27 MARCH 2016
BACK TO HOLBROOK FLY-IN

Holbrook Ultralight Club reminds you to put its annual event in your diary for Easter next year. Forums on Saturday afternoon and a planned local fly-out Sunday morning. Dinner plus award presentation Saturday evening and BBQ breakfast Sunday. Underwing camping and transport to and from Holbrook township for accommodation and fuel available. For more information, John Harley 0456 357 735 or www.holbrookultralightclub.asn.au

G. 23 APRIL 2016
MERIMBULA RED BARON BALL

Gala Night. Oompahpah band, cabaret, fancy dress, comedy, food. $65 ticket includes dinner and entertainment. Other planned activities will be oyster tours, golf tours, Eden Whale museum tour and Bega Valley cheese tour. There's also a fly-in at Frogs Hollow planned on Sunday. Monday will have big ANZAC activity at the Merimbula RSL. For more information, (02) 6495 1306.

LETTERS TO THE EDITOR

ASIC PROBLEMS

My recent experience: Because the JP who signed my paperwork didn't date my photos, RAAus sent all the paperwork back to me. I thought (grumble grumble) fair enough. After getting the photos dated, I sent the paperwork back for processing.

Next I got an email telling me the ASIC had been approved, but I had to send back my old ASIC before they would send out the new one. Why? From my experience this could take from one to two weeks even with express post.

By this time my ASIC had expired and, because I am a professional pilot and require an ASIC, I couldn't go onto GA airside and faced losing income. Or I could have still gone onto GA airside and committed an offense (I only need to go onto GA aprons).

I ask why? I haven't had to send back the old ASIC first previously and I have been getting ASICs since they were introduced. I am told this is what RAAus is required by the Australian government to do.

I ask why do we need an ASIC at all when we are only going onto GA airside? And if we still require an ASIC, why is it only valid for two years when our driver's licence (NSW) is valid for five years and our passport for 10 years, both of which are used as a primary means of ID.

I ask again, why do we need an ASIC anyway, if we are only going onto GA airside? I understand and agree we should have one for security if going onto RPT aprons. And anyway, a slip of a girl and/or an overweight gentleman in a high-viz-vest with the word 'Security' on the back, a wire fence, gate and a piece of plastic isn't going to stop the baddies. What will stop the baddies are honest observant people who know aviation.

I applied for my ASIC through RAAus not only because it is a bit cheaper, but, as a member I want to support RAAus. Rethink next time.

RAAus is a big organisation and growing. I continually get the impression that it has good staff and a board which is working hard to make RAAus better. With around 10,000 members RAAus has a big voting lever. When unfair and costly rules and regulations are imposed upon its members, RAAus should take all steps to stop these rules and regulations - even if we have to resort to using our voting lever to lobby our politicians.

STEPHEN HASSALL

FROM THE CEO */ RAAus made a submission to the discussion paper on ASIC in early 2015 and the effect of the requirements of the card on our members. RAAus was later invited to discuss the future of ASIC, currently being reviewed by the Aviation Safety Regulation Review. At this stage consultation with all aviation bodies is ongoing. We will keep you updated as information comes to light. ASIC is controlled by the Department of Infrastructure and Transport and is therefore subject to significant political input.*

WHAT A GREAT SPLASHDOWN

This year's Splashdown at Rathmines in October was the best Splashdown ever in the history of Splashdown.

Great presentations. Great audience involvement. Great discussions. Great atmosphere. Great dancing. Great fun. Great weather. An absolutely fabulous Splashdown that everyone involved should be very proud of. A great big thank you to everyone who attended but specially Malcolm, David, Donna, Rohan, Adam and Ben without whom the event would never have happened.

KEITH CLARK

FROM THE CEO */ RAAus was pleased to have been invited to participate in Splashdown, and thoroughly enjoyed meeting and talking to seaplane pilots, learning more about this very specialised area of RAAus flight and fostering closer ties between Seaplane Pilots Association of Australia and RAAus. Well done SPAA.*

ONLINE SERVICES

As a younger person (in my early 20's), having access to information online is really what I work with best. Having RAAus choose to develop an online services feature for their members is fantastic. I have been flying for a couple of years now, and the process of trying to access required documents and information has often been difficult to navigate. It was like a breath of fresh air when I logged in to my RAAus account for the first time - I was presented with instant (and easy) access to *Sport Pilot*, news, documents, FAQs and loads of other very helpful information, all in the one place. I am also very excited to see the Online Learning tab up there - I can't wait to try that out when it starts next year! Overall, I just wanted to congratulate the RAAus team for the impressive new feature - I look forward to using it regularly.

LAURA KOERBIN

AGM NOTES

Having just returned with mixed feelings from the AGM in Bundaberg, a 10 minute or so flight each way in the Jab, I am both saddened and relieved.

Firstly, I was concerned at the lack of attendees. As a vocal supporter of spreading events like this out to the regions, "where the members are", there was a glaring shortage of bums on seats. The AGM was held this year in RAAus heartland, yet few turned up. However, it should be noted that these numbers still represented a notable increase over last year.

I have to say you get a far clearer picture when talking to staff personally than from any report. As a retired computer analyst, I was impressed by the new RAAus online member's portal. We truly are moving into the 21st century. I also feel happier about our financial state compared to a couple of years ago.

The Annual Report highlighted many interesting statistics. The obvious one to me was the number of aircraft types and the number of individual registrations of each on our register. Jabiru is by far the most common type with more than five times the number of registrations attributed to the second place getter. In this light, the full impact of the recent unfair treatment of Jabiru by the Federal Government through CASA becomes evident. No Jabiru, no RAAus – at least not as we know it. The impositions on Jabiru haven't gone away and still continue to damage the image of our industry, restricting growth and reducing the chance of future privileges and economies. That affects us all.

The issue of Level 1 Maintenance training was also raised. Looking again at Jabiru's massive share of the RAAus fleet, it seems to me one of the best kept secrets within the industry could be utilised here. The little known three-day engine maintenance course run by Jabiru at its factory (A great course - I've done it) could surely be adapted to include RAAus requirements. Viola! Most of our fleet training covered and done well with huge manufacturer input. That is as good as it gets and would encourage other manufacturers/distributors/dealers to do likewise.

Finally, I commend the staff and board for turning up and making themselves available. The meeting wasn't that long or demanding. Indeed, it was informative and entertaining – and that really must be the main aim because without this, topics such as safety, financial position, constitutional changes, etc. are completely lost on the target audience.

MARK PEARCE

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).

COME ON BACK

THE RAAus general amnesty for lapsed members has begun.

The amnesty was first announced in *Sport Pilot* in November, and will run from December 1 to February 29, 2016.

People flying illegally, or in non-registered aircraft, have been given the opportunity to return to the fold without penalty, provided no serious safety issue is discovered.

During the amnesty, pilots flying in RAAus aircraft, without holding current membership or a current BFR, can rejoin, complete any missing compliance and be free to fly legally again.

During a recent meeting with the CASA Director of Aviation Safety, Mark Skidmore and the Associate Director of Aviation Safety, Dr Jonathan Aleck, RAAus requested support for the initiative, which the two regulators gave.

The endorsement by CASA is a massive benefit to members, old and new, but will only be in place until the end of February. After that the usual rules will re-apply so RAAus has asked members to touch base with anyone they know who might need help to return to RAAus.

The first step is to use the Membership Reactivation application on the website. Once you are current again, contact your local CFI for a BFR, retraining for a specific endorsement, or help ensuring your aircraft is registered and compliant.

During the amnesty, RAAus Operations and Technical Managers are committed to helping you get back to compliance and are ready to assist you as required.

NEW FREQUENCY

PILOTS operating around Caloundra and Caboolture should note there is a new CTAF frequency.

Pilots in these areas should use 125.85 (effective November 12). Consult ERSA.

MERRY CHRISTMAS

ON behalf of the staff of RAAus and *Sport Pilot* magazine, we'd like to wish all members a safe and happy Christmas and New Year.

Sport Pilot will be printed in January for the first time in a number of years.

The office will be closed from 12pm December 24 and reopen on January 4.

The planes parked on the strip, and (inset), the birthday party L-R. Phil Simms, Ian Wells (birthday boy) Julie Hands, Sissy and Ian Bishop, Rogin Taylor, Tania, Ross Millard, Murray Hingsten, and Geno

BIRTHDAY AT BOWEN RIVER

BY JULIE HANDS

WHAT do you do for a boy's birthday party?

Something different that's for sure. The weather was good so we phoned around our friends. Arrangements were made to fly over to Bowen River Pub for the night - approx 60nm. There were six aircraft totaling 11 people.

Some of us set up camp on the strip as the full moon came up, some settled into the cabins at the pub.

We all enjoyed a lovely evening and good food. The strip, approx 600m long, is not marked anywhere because its not official, but it has been there for years. It runs along the outside of the rodeo grounds and is only about 200m from the pub.

Thank you to Ringo and staff for making us so welcome and Ian's birthday a really good one.

ANOTHER GREAT EASTERN ON THE WAY

THE 2016 Great Eastern Fly-In at Evans Head looks like being another great reason to spend January on the east coast of Australia.

The fly-in has become one of the most popular aviation events on the calendar. Last year's 75th anniversary celebrations of the aerodrome attracted thousands of people, many of whom experienced the fly-in for the first time.

Indefatigable organiser, Gai Taylor, has had some health problems recently but still promises lots of fun for everyone on the weekend of 9-10 January

Last year there were big contingents from RAAus, GA, warbirds, helicopters, motor gliders and even a large group from the Seaplane Association, including a Petrel. Two of their aircraft did an impromptu landing on the Richmond River at Woodburn on Saturday afternoon, to check out the river for a possible Splash-In as an add-on to GEFI 2016.

As usual this year there will be lots of flying highlights, as well as all the other weekend activities, markets, car clubs, model boats and aircraft, museum displays and more.

RAAus representatives will also be on hand again for talks and to answer your questions. Last year they ran a very popular information and feedback session.

Support for the fly-in continues to grow, from participants, visitors and volunteers. If you want to volunteer for the fly-in this year, visit the website www.greateasternflyin.com.

WHAT DO YOU THINK OF THE NEW WEBSITE?

THE RAAus' new look website launched at the end of October on schedule.

The new portal brings a host of new features through a redesigned member's area, online occurrence reporting and a whole new look. Over time even more features will be added. There are also handy feedback forms so you can tell us what you'd like to see included as we further develop the online suite of products.

By now you may have already received an email with your new log in details. We migrated 10,000 member records across to the new system. Once your record has been migrated, you will get a welcome email with login details.

The first thing you should do is log in and check your contact details for accuracy. If there are errors or omissions, simply update the details.

Also if you find an error or omission elsewhere on the site, use the contact form on the website to let us know so we can fix it for you.

In the new member's portal you'll be able to renew your membership, register your aircraft, renew your subscription to *Sport Pilot*, check on due dates and monitor any occurrences you've been involved in.

In the same area you will have access to a raft of information about RAAus, tools and documentation.

For the general public and budding recreational aviation enthusiasts the new website incorporates a responsive design so it is easy to access on all screen sizes across a range of devices, tablets and smartphones. The website also showcases critical information about RAAus and is a great launch pad for anyone interested in joining RAAus or finding out more about sport and recreational aviation.

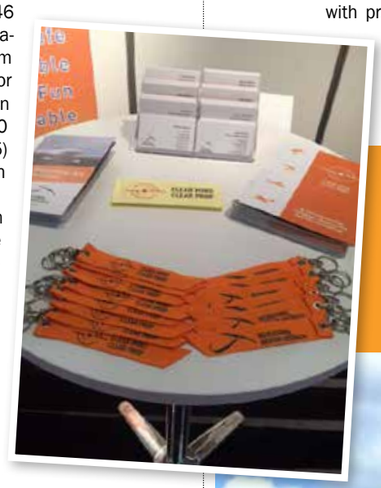
Safety Month a good start

BY KATIE JENKINS **NATIONAL SAFETY MANAGER**

RAAUS' first ever National Safety Month initiative in October was well received and considered to be a solid basis for future growth.

National Safety Month came about after we identified a growing number of significant safety related trends and risk factors.

Over the past five years, there have been 46 fatal accidents in RAAus aircraft. Our investigations and analysis determined 39 (84%) of them were attributed directly to human factors and/or poor pilot decision making. The article written by Operations Manager Jill Bailey '5 years, 40 deaths – It's time to talk' (*Sport Pilot* July 2015) gave some insight into the key areas on which RAAus needed to focus.



Planning for National Safety Month began back in July with the main aim to reopen the conversation about safety, focusing specifically on Human Factors and decision making.

The official launch took place on September 18 at Canberra Airport. The guest speaker, Matt Hall, gave the keynote address. Matt spoke about the importance of planning and how it related to all sorts of flying, whether it was pylon racing or just for a local flight. The event was attended by the head of CASA, Mark Skidmore and key personnel from the ATSB and Canberra Airport.

By encouraging members back into their local schools and clubs, RAAus wants to instill consistent safety messages throughout the organisation.

We need to remain focused on Human Factors in order to reduce the number of serious accidents. RAAus will continue to provide schools with presentations which emerge from analysis of our online reporting. If you have recently been to a 'Hangar Talk' and have feedback or photos, send them to safety@raa.asn.au so we can put them on the RAAus social media sites.

> "The idea is to bring members together to think about safety"

'CLEAR MIND, CLEAR PROP'

RAAus also launched its own key safety message during National Safety Month - 'Clear Mind, Clear Prop'.

The idea of the message is to focus a pilot's mind. To ensure before we fly we have cleared ourselves of distractions which may impact on our ability to safely complete our flight. The slogan has been included on Safety Initiative booklets (mailed out with the October printed edition of *Sport Pilot* and available online at the website). We've also distributed 'Clear Mind, Clear Prop' high viz vests to all RAAus schools to make the message a constant reminder for students and instructors. We've also printed up a bunch of promotional stickers which we will be handing out to anyone who wants them, for placement on aircraft dashboards to remind personnel to clear their mind of distractions before starting the engine. And RAAus CFIs and members who attend 'Hangar Talk' sessions will all get free keyrings as a promotional item.

HANGAR TALKS

The 'Hangar Talks' which have already taken place, have been very well received. The idea is to bring members together, no matter where they live, to think about safety and what it means to each of us. (Don't forget everyone who attends also gets a free keyring). RAAus provides CFIs with three presentations to deliver to local pilots. These presentations cover the areas highlighted from accident and incident reports including: Low Flying, Fuel to Go and RAAus Safety Tips.

RAAus advertises 'Hangar Talks' through electronic newsletters and social media. These will continue to take place over months ahead. Early in 2016 the focus will move to maintenance related safety information. Keep up to date on events in your area online at the RAAus website https://www.raa.asn.au/

Matt Hall launched National Safety Month

The busy airfield where everyone flew in for the first hangar talk

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

Lone Eagle Flying School Hangar Talk. CFI Trevor Bange delivering the presentation

Students flying the simulator. Photo: Stephen Turner

A good partnership

BY GEOFF GASIOR

IN 2011 the Coonabarabran Aero Club decided to create a flight training facility.

But we found it difficult to hire a Chief Flying Instructor, mainly because we had no CFIs living close to Coonabarabran. Then we learned the Coonabarabran High School was teaching Aeronautical Engineering to its year 12 students. Because of the difficulties we found trying to start up a flying school, we decided to approach the school, let them know our concerns with ageing club members and offer the school our aeronautical knowledge to help the students with their studies and to encourage those young people to consider joining our club. The school could see the advantages of having aviators assisting its students.

About the same time the aero club decided a flight simulator would also help students with their studies. We presented the idea to the principal, who could also could see the benefits.

After researching various versions, we found a simulator we liked, but financing the project presented another challenge. We were fortunate at the time the National Australia Bank was offering a $15,000 grant to schools. The Bank's requirement for a school to apply for the grant was that the school present a program showing how the money would assist students and the school, but also benefit the wider community.

So CAC and CHS formed a partnership and applied for a grant, which was officially known as the 2013 NAB School's First Seed Fund Award. In August 2013 we were notified the bank had approved the grant and an official presentation was held in Melbourne three months later.

The money went immediately to purchasing a locally designed and built flight simulator, which has now operated at the school from the beginning of 2014. Once a week, two club members go to the school to supervise the students on the simulator. So for the past two years we have assisted the students and the school in the Aeronautical studies program. The students seem to really appreciate what we have done.

Coonabarabran high students being instructed by Col Mercer (left) and Geoff Gasior

We now have two students who've shown interest in taking up up flying training. It's a good partnership.

JABIRU POWERS AHEAD

STORY AND PICTURES BY ALAN BETTERIDGE

No your eyes aren't deceiving you. It's a Jab twin!

IT'S fair to say Rodney Stiff has earned his place in the history of Australian aviation.

His innovative approach to the design and construction of sport aircraft, not only in Australia, but indeed the world, helped fuel the boom in recreational flying we enjoy today.

Rod, along with Phil Ainsworth, co-founded Jabiru Aircraft in 1988 in the Queensland city of Bundaberg.

Rod had been involved with the design and manufacturing of harvesting equipment for over 25 years and, when he parted with Toft Brothers, he decided to go into the aviation industry.

Rod's daughter Sue Woods, who is now the company's business manager, explained why her father made that decision.

"I did ask Dad that question and he just replied; "The fishing was no good. No, the primary reason was to bring an element of safety to the recreational aviation sector and make aircraft ownership affordable. At the time, GA aircraft were very expensive and rag and tube aircraft were the only other option."

In October 1991, the company's first aircraft (a Jabiru LSA 55/2k) was certified by the Civil Aviation Safety Authority.

> "Owners are keen to learn more"

This aircraft was not Rod's first dalliance into manufacturing aircraft however.

He once famously designed and built a composite canard winged aircraft, which he attempted to test fly himself.

When he was unable to get the aircraft airborne, he enlisted the help of another of his daughters, (he has three) who was of slighter build and a highly qualified airline pilot, to test fly it.

After getting the machine airborne she just as quickly landed it – and vowed never to fly it again!

Early Jabiru aircraft were powered by an engine built by Italian manufacturer KFM but, when that company ceased to build that engine type, Rod made the decision to design and build his own.

By 1993 the first true Jabiru engine, a horizontally opposed four cylinder 1600cc engine, producing a genuine 60hp, was certified.

Since that time Jabiru has added the certified four cylinder 2200cc engine of 80hp, a six cylinder engine of 120hp and an eight cylinder of 180hp (although that engine is no longer in production due to commercial considerations).

The company went from success to success and, by 2007/08, with a world-wide reputation, it was operating two production lines.

"Then came the Global Financial Crisis (GFC) and sales plummeted," Sue said.

"Most of our Australian customers were (and remain) self-funded retirees and the GFC hit them hard.

"But it wasn't only us who suffered, many companies who produced other 'big boy's toys' also experienced a major downturn.

"For some it spelled the end and they no longer exist," she added.

"We knew we needed to re-organise the way we operated and so that's what we did."

But the GFC wasn't the only thing to have a huge impact on the company and its well-deserved reputation.

In late 2014 CASA issued Document 1425 which proposed banning the use of Jabiru powered aircraft for carrying passengers and for solo student training.

The proposed restrictions also included a constraints on flying over populated areas and the need to placard the aircraft with operating limitations.

After much debate CASA amended the limitations to:

Restrict flights to day time under the visual flight rules;

Require aircraft to be flown so they can at all times glide clear of a populous area;

Require passengers and trainee pilots flying solo to sign a statement saying they were aware of and accepted the risk of an engine failure;

Require trainee pilots to have recently and successfully completed engine failure exercises before solo flights.

The basis for the CASA intervention was the supposed high number of Jabiru partial or complete engine failures when compared to another manufacturer's statistics. Rod argues those numbers were at best spurious.

"I have tried to build a strong and safe aircraft and I reluctantly boast that in 23 years no one has been killed or seriously injured as a result of my doing," he said at the time.

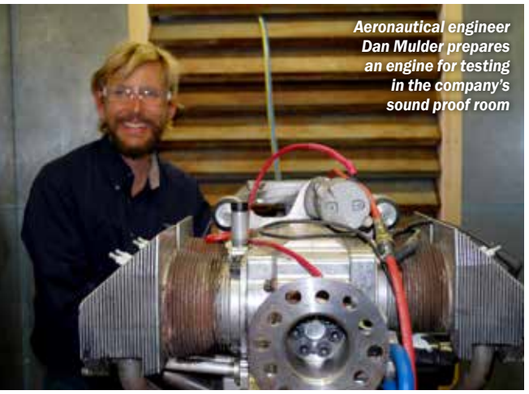
"Jabiru is the safest light sport aircraft in Australia."

Rod says he believes CASA acted with undue haste, giving owner/operators, Jabiru and RAAus only one day to reply to its proposal and without having made any approaches to Jabiru in the preceding months regarding it's concerns.

Sue says the company recognises education about operational and maintenance issues is very important and has now directed significantly more resources to owner workshops each month which focus on maintenance and operations.

"The workshops provide Jabiru owners and maintenance providers an insight into the workings of our engine," Sue said.

"Previously, the workshops were a five day orientation to a full overhaul and 100 hourly



Aeronautical engineer Dan Mulder prepares an engine for testing in the company's sound proof room

Pallet load of new Jabiru 3300 engines ready to go

Company founder and CEO Rod Stiff with daughter and business manager Sue Woods

Seeing double – the interior of the Jabiru twin

airframe inspections. These were limited to a couple per year.

"Jabiru has since recognised many more owners and maintainers are keen to get their hands into an engine to learn more under supervised conditions, so we have increased the frequency to one or two per month.

"The engine workshops are now three days and cover general maintenance of the engine, service bulletins and letters, how to do a cylinder head inspection, remove a cylinder head, lap a valve, reinstall a cylinder head, fault finding and engine management.

"Since their introduction early this year, 63 people have attended.

Despite the restrictions, including the silly 'Acknowledgment and Acceptance of Risk – Potential Engine Malfunction during Flight Time', waiver requirement, Jabiru is powering ahead.

The company is working on a twin engine variant of the J430 for the South African market where it will complement other Jabiru aircraft already operating in poaching surveillance.

Jabiru production manager, Jamie Cook, has converted his own J430 into the twin engine configuration.

"The design is basically a firewall forward, bolt on without any additional changes needed for the structure," Jamie said.

The engines (two standard Jabiru 2200s) are bolted to a canard style structure, which in turn is bolted to the firewall.

"The engines are close mounted which reduces the engine out torque factor, making it much easier to handle in the event of an engine failure," he said.

"The variant has also been designed without constant speed or feathering propellers which simplifies flying, reduces weight and complexity and, as a consequence, reduces maintenance issues."

The aircraft is being produced in the 'Experimental' category and is likely to be available only as a kit in Australia.

Jamie has been very particular with the construction of this aircraft, because it is not only his but he will be the test pilot when it makes its first flight.

"I have the utmost faith in it, after all it was designed by arguably the best designer in Australia" he said.

Along with the twin engine project, Jabiru continues along its path into the future with orders still arriving and the overseas markets buoyed by the low Australian dollar.

After spending the day at the company's Bundaberg base and talking to the team, it is hard not to feel enthusiasm for what they have achieved and what they will undoubtedly achieve in the future.

Aircraft awaiting factory servicing at the immaculately clean Jabiru maintenance facility

Matt Norgrove (left), Phil Usher, Jason Korn (workshop facilitator), Dave Barwick and Ray Davies get their hands dirty during a Jabiru engine workshop

State-of-the-art CNC machine

The dreaded nose wobbles

BY NORM EDMUNDS **RAAUS TECHNICAL WRITER**

MID last year, I had the opportunity to do some flying in an RV. I've flown in a couple, but never under my own steam. So I arranged with good mate Warren to give me some coaching and come along for the ride.

I told Warren to tell me whatever crossed his mind regarding my flying skills – that he wasn't going to hurt my feelings if he told me I should stick to aeroplanes with a tail-wheel. So off we went and did a few flights together until I felt comfortable. It's a slippery little sucker to slow down. The RV is truly delightful to fly and I was beginning to understand the big attraction to them. But I wasn't going to get any more time in this one.

The RV-9A we were flying was built by Darcy, who flew helicopters with Ansett – a Sikorsky S-61 in the Whitsundays, and later, shuffling Sir Reg around in the Jet Ranger. Sadly, Darcy passed away. A local then purchased the plane with the idea of learning to fly in it. Our CFI was comfortable with that, he had flown the aircraft. The insurer was comfortable with that too. Everybody knew the aircraft was great, but everyone also knows you just can't give an RV a beating like a Cessna or a Warrior. Lessons began on the club 172 then progressed on to the RV, which has beautiful crisp handling compared to the old Cessna. The owner did his first solo, ever, in the RV-9A late last year.

As 2015 dawned, the owner was up for more solo time. After a refresher session of dual, he was sent off for a couple solo circuits. First one – nice. On lift-off on the second time around though, a problem! The flaps refused to retract. He had practiced full flap flight and, as we all know, that's not a big drama for anyone experienced, but our mate was low time. It was something he just did not need. The CFI on the radio calmly advised "just fly the plane, standard circuit, come back around and land". So where was I when all this was happening? Sitting up above at 4,000ft, watching it all unfold.

As all this was developing, three other aircraft announced they were inbound to the field. Arrrgghhh! Not now! Very calmly I made a general broadcast on the CTAF that we had a student with a flap issue and asked everyone to stay clear for a few minutes. And they did. Not much more I could do really. I deemed it not appropriate to start yapping on the radio telling him what he should or shouldn't do. The CFI was on the radio and, as far as I could tell, was confident he'd make it back in one piece.

So the pilot flew the circuit. His radio calls went to hell and his approach was untidy. To his credit, he did not accept it and did another fully flapped go-around. We had been drumming in to him that there is no shame in a go-around, or a dozen. Our old Mozzie pilot Colin used to say "History doesn't record the number of go-arounds you do. It only records the one you didn't do, but should have!"

How would you get out of this?

Back to base leg on approach number two. He turned a slightly longer final, as instructed by the CFI, then touched down. Looked fast to me from 4,000ft. The CFI thinks he may have relaxed the stick either too much, too early, or both, and the RV nose gear collywobbles began in earnest. He kept the thing on the centre line, used about 2/3rds of the runway and just as I thought he'd made it, over she went, A over T. This is the second flying mishap I've ever seen first-hand and I don't care to see any more.

I saw some guys heading to the wreckage, and thought I should also get there fast. I asked one of the other pilots up there to take over the air support and I went into emergency descent. I landed on another runway and ran over. The pilot was still in the aircraft, not injured, no fuel was leaking, but we had to get him out. Two of us lifted the tail and another guy tried to slide the canopy open, but because the pilot had already undone his belts, (not a good idea folks) he was standing on the canopy, so it wouldn't budge. Luckily, Warren had grabbed something large and damaging, and he issued an order for the pilot to roll over and brace for impact. SMASH! One canopy gone in a flash and the pilot was plucked to safety with just a scratch or two.

The ambulance was soon on scene, one of the guys had called for backup. You don't wait to see if you need it before making the call. Next, two local CFA trucks arrived, sirens wailing. That woke up the anti-airfield locals. The CFA sprayed foam around the area to wet it down. Then the SES and police arrived. I asked the officer if he'd pump a few bullets into the RV to finish it off. Police were the site controllers until the word was given that we could move the aircraft.

The CFI made the required call to ATSB. They required no further action and released the aircraft immediately. The insurance agent was called and quickly released the aircraft also.

With lots of man-power and a quick briefing by our two local LAMEs who were familiar with the aircraft, we got some ropes and manhandled the aircraft back onto its wheels - just as the Channel Seven news helicopter arrived overhead. The RV was pushed back into the hangar and its doors closed. As the dust settled, we made our way to the clubhouse to see how pilot was doing. Mrs Pilot had arrived, with daughter, and both were glad to see him okay.

We don't want to go down the what-should-we-have-done-differently path. That won't change things. The plane was insured, the pilot was not hurt – that is all that matters. But there are some lessons here for all.

How would you escape from an overturned aircraft with no help coming? Forget kicking your way out – An RV canopy is 3/16 Perspex and tough as hell. You'll need some sort of crash axe.

Do you wear a flying helmet? I do.

Do you consciously give the seat belts a good pull on downwind?

On an associated note, the pilot had found the AntiSplat Aero RV upgrade parts on the internet. They make two great items, a nose gear leg brace and a skid plate that goes under the front knuckle of the nose leg. BUT! He had not yet purchased them. Both of these items apparently go a long way towards preventing the dreaded RV nose gear tuck-under. There are detailed videos on their website showing how each works. If I had an RV, I'd get them right away. They are direct bolt-on parts, with no modifications to the aircraft required.

And what of the RV? The carcass was sold by the insurer and I have a strong feeling it will be back in the air sometime next year. Significant damage, but perfectly repairable if enough money is dipped in glue and thrown at it.

THE STATE OF THE INDUSTRY

- BY BRIAN BIGG -

AS 2015 draws to its inevitable conclusion, it's a good time to look back on the RAAus year and see what lessons we can draw for 2016. For most of us the year was similar to the marching procession of those which went before. Some flying (not enough, never enough), a fair bit of maintenance and a reasonable amount of paperwork. As we do every year, we lost some friends doing what they love, but hopefully we also met some of the young ones coming through who will make RAAus grow and prosper when our turn has passed.

RAAus appears to definitely be over its decade-long boom. Membership is gradually sliding-9,822 in 2013 - 9,762 in 2014 - 9,367 this year. The organisation is signing up new members at a rate of 130 a month, so the old guys must be dropping off at an alarming rate.

But what has it been like for the people who hold recreational aviation on their shoulders? The companies who buy and sell the products we need to get into the air and for whom the industry is not just casual interest, but a vital part of their livelihood.

Sport Pilot asked a few of the bigger players for their view of what 2015 was like and what they expect next year.

WHAT HAS THE MARKET BEEN LIKE FOR YOU IN THE PAST YEAR OR TWO?

BRETT ANDERSON, ANDERSON AVIATION – "The market has remained reasonably consistent for me over the past year or two. Because Bristell is at the higher end of the market, most of my prospective clients are the types who want an aircraft with the quality of finish and performance the Bristell has to offer."

PETER HARLOW, FOXBAT AUSTRALIA – "Over the 11 years since the first Foxbat delivery in Australia, I've come to expect sales, on average, of around one aircraft a month. 2014 was a slightly below average year for sales, with 10 A22 Foxbats sold and delivered. However, 2015 has been a bumper year, with 19 aircraft sold so far. The introduction of the new A32 Vixxen accounts for some of the increase, but A22 Foxbat sales are also strong. I believe three major negatives affected the aviation market over the past few years - the debacle at RAAus, the problems at Jabiru and the introduction of CASA's new RPL. I think the first two, in particular, affect the perceived safety and quality of our aircraft and therefore impinge on sales and overall interest in our types of aircraft."

SUE WOODS, JABIRU AUSTRALIA – "It has been no secret that the last couple of years have been slower for Jabiru aircraft sales. While the dollar was high there was a plethora of makes and models of sharp and shiny Light Sport Aircraft available, a buyers' delight."

ROD BIRRELL, AIRSPORTS FLYING SCHOOL – "We have a good mix of a flying school, an aircraft sales department and a spare parts business. Unfortunately in any market you can suffer the perfect storm of challenges. In our case an aggressive competitor operating on site, a falling Australian dollar and staff illness gave us that perfect

WHAT HAS THE MARKET BEEN LIKE FOR YOU IN THE PAST YEAR OR TWO?

storm. The Jabiru instrument has scared the sport aviation market, driving down second hand prices for all aircraft. Proposed increased regulatory complexities and costs are not helping. The shift of training to the Recreational Pilot Licence is/will have an adverse impact on RAAus. Also we have an ageing training base of instructors and maintainers. There is just not enough remuneration in our industry to attract young operators into the field, a long term problem for our industry."

DEXTER BURKILL, ATEC AIRCRAFT - "Our market has been non-existent for the past two years, with only a few enquiries. I can only surmise the state of the economy is having a serious impact, although I know that some aircraft are selling, even at significantly higher prices than the ATEC range. There may have been some apprehension with our Faeta only having a 550kg MTOW. However the overall low empty weight of around 300kg gives it a possible 250kg payload which puts it above many other aircraft. Of course, the ATEC factory has now advised that the Faeta can now be certified for 600kg MTOW. We are also proud that, even after 16 years, all eight ATEC Zephyrs in Australia are still flying."

ERROL VAN RENSBURG, SLING AIRCRAFT - "The market has been slightly down from last year, and I would think that the weakening Australian dollar definitely had an impact on new aircraft sales in general. However, having said that, Sling had a whopping year in 2014, so we still had a great 2015 to date, with factory build and kit build sales going very strong. The market is currently swamped with good quality used aircraft and, as the economy is in a slight downturn and the dollar not performing so well, people tend to hold onto discretionary funds. It should also be noted that current Sling owners have an aircraft that actually is worth more than they paid for a year ago."

CHRIS BRANDON, AIR CREATION -"The current Australian trike industry is stable, with pro-active design growth of aircraft design, cockpit ergonomics and flight performances. Safety remains foremost, with individual flight characteristics unavailable years ago."

GREG DOYLE, SILENT WINGS AVIATION - "The major impact for us in 2013 and 2014 was the European financial crisis and consequential factory output restrictions, which hurt in a local market that was fairly good. The key issue was maintaining delivery promises, meaning we had to buffer demand by raising stock levels. In 2014 production started to improve from our major suppliers Fk-Lightplanes and Fly Synthesis, some product innovation started to emerge, like the new Mustang SW51 and, at the other end of that scale, the Jungmann replica biplane and the introduction of the new diesel in the high wing FK9, while Fly Synthesis released the high speed SYNCRO high wing and a new lower cost Catalina seaplane. Sales wise 2015 was a very successful year."

Sling

Topaz

AT THE END OF 2015 WHERE IS YOUR BUSINESS PLACED AND HOW IS THE VALUE OF AUSSIE DOLLAR AFFECTING IT?

BRETT ANDERSON, ANDERSON AVIATION - The market is very positive with genuine interest from many areas. Breakdown of prospective clients appears to be maintaining approximately 1/3 retired military pilots, 1/3 flight schools and 1/3 private operators ranging from Ab Initio to experienced pilots wanting to move over to RAAus or who wish to have an aircraft relatively cheap to operate and maintain compared to their current or previous GA aircraft. Strangely enough when the exchange rate was at its premium some years ago, the apparent lack of confidence in where Australia might be heading had a bigger effect on decision-making than the current state of play with the lower dollar. If the confidence was back and the dollar better, I think there would be clients who might commit to the purchase of a new aircraft.

PETER HARLOW, FOXBAT AUSTRALIA - "I think the ultralight/LSA market is quite fragile at the moment - due to rising A$ prices and a perceived weakening of the economy. For importers, the reducing value of the A$ against other currencies is making our products more expensive in Australia. Even home-market manufacturers face higher costs for imported items like engines and components. At the same time, other countries are beginning to see an improvement in their economies, so aircraft manufacturers will not be too concerned if the relatively small Australian market cools off, as they are finding it easier to sell elsewhere. As a result, wholesale prices are hardening and manufacturer discounts etc are becoming more difficult to negotiate. I have managed to keep the all-in cost of the A22LS Foxbat under the psychological AUD$100,000 level for a long time. I also have a policy not to change prices more than once or twice a year, as I believe customers want stability in new prices and thus in the used value of their aircraft. Over many years, I have just about broken even on exchange rates - swings and roundabouts have ensured any losses have been balanced by gains. Recently, the A$ has declined quite rapidly against the Euro, leaving a bit of a hole in my accounts. However, volume sales have held up quite well, so things could be worse."

SUE WOODS, JABIRU AUSTRALIA - "There is a maturing of the market. The market is changing from the adventurous, fun loving to more risk adverse, considered flyers."

ROD BIRRELL, AIRSPORTS FLYING SCHOOL - "A low value of the dollar is not helping aircraft sales.'

DEXTER BURKILL, ATEC AIRCRAFT - "The dollar is having a huge impact given the Euro/AUD conversion currently, which of course, is affecting all imported aircraft equally but seriously widening the gap on the local products, depending on engine/avionics selections."

ERROL VAN RENSBURG, SLING AIRCRAFT - "The value of the Aussie dollar has unfortunately forced us to increase our prices, but we decided to rather take a much smaller margin so we could still offer value for money.

Tecnam Astore

AT THE END OF 2015 WHERE IS YOUR BUSINESS PLACED AND HOW IS THE VALUE OF AUSSIE DOLLAR AFFECTING IT?

CHRIS BRANDON, AIR CREATION - The currency exchange rate has moved us to higher prices for imported aircraft. In 1996, you could buy an imported trike for approx $35K. Today the price is more towards $90k, albeit with improved features and safer attributes. Buyers also have to consider additional charges for aircraft quality control acceptability by the importer, to which import compliance documentation must satisfy a governing body – RAAus or HGFA. Today, compliance standards for imported aircraft have dramatically altered, requiring importers to step up to control of the quality compliance data.

GREG DOYLE, SILENT WINGS AVIATION - "The local market improved for us through 2014 and 2015, especially for high end products. The wide range certainly helped. The standing of local manufacturers declined for well-known reasons at the same time. As an importer, we are always subject to the impact of high exchange rates, but the European sources were always more stable and economical than US sourced products, so that helps us stay competitive."

BRUCE STARK, TECNAM - "Plenty of interest at the moment, particularly in second hand aircraft, also from Tecnam buyers upgrading to a later model. Sales are becoming more linked to helping buyers sell their existing aircraft. Because we deal in Euros, our pricing is not as volatile as it is for dealers paying in USD. At the signing of a sales agreement we lock in the price in Australian dollars so the customers have an exact final fly-away cost."

WHERE DO YOU SEE THE MARKET HEADING IN THE NEXT 2 MONTHS/TWO YEARS?

BRETT ANDERSON, ANDERSON AVIATION - "The road ahead for Anderson Aircraft appears to be favourable. BRM Aero is expanding its factory and production lines to try to keep up with the expanding world-wide market. The more Bristells that make it onto the market, the more people get to experience them and appreciate how good they are. BRM also has new designs on the drawing board, so the future appears to be very interesting."

PETER HARLOW, FOXBAT AUSTRALIA - "I see the next few months and years as potentially very challenging for our ultralight/LSA market, for these reasons: public negative perceptions of the very light end of the market need to change a lot. RAAus needs to work hard on the image of our sector and really get rid of the old 'she'll be right' attitude to safety. That's not just by holding safety seminars and specially themed safety exercises, but by publicly clamping down on deliberate and serial offenders. There's been a lax approach to safety, which has become embedded over many years, and it will take a monumental effort from everyone involved to change attitudes. Jabiru needs to make more headlines, not for negative reasons, but for their 'fix it' response to their problems. It might cost in the short term, but in the long term they and the rest of our market will benefit from leadership from them; after all, they are the top selling aircraft in Australia. The federal government's policy to drive down the value of the A$ can only be a negative for us. Our aircraft are already perceived to be expensive and adding another 5-10% or worse through depreciation will only make sales even more difficult to achieve."

SUE WOODS, JABIRU AUSTRALIA -"Anywhere around 70 cents to the US$ is promising for Jabiru. The next two months are looking promising while the $Aus is low. We expect a slight improvement over the next two years if the $Aus stays low and self-funded retiree funds remain stable ie the stock market remains relatively stable."

ROD BIRRELL, AIRSPORTS FLYING SCHOOL - "The interest and demand for our Topaz aircraft is growing significantly. Being a next generation aircraft, carbon fibre, no struts, Rotax 100hp engine and a comfortable cockpit, it has a lot going for it. In our own aircraft sales area we expect continued solid growth."

DEXTER BURKILL, ATEC AIRCRAFT -"I think the market will improve, but in the immediate short term I do not see this happening. Certainly the new stability and direction with RAAus will flow through to greater confidence in the sector."

LightWing

Chris Stott (CFI Central West) showing people the Bristell used for training at his school in Bathurst

Jabiru

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ERROL VAN RENSBURG, SLING AIRCRAFT –"The aviation arena is very small and we see a lot of new designs and manufacturers entering the market almost monthly. But we need to remember the Australian market is also very competitive. Prospective owners will become more selective in their choices. As has always been the case the distributors with the best back-up service, spares back-up and value for money, will remain in business for a long time. The market is too small to have a bad product, or not to supply your clients with spares as and when they require them. I believe that Sling aircraft has built a great reputation in all these areas, so I am looking forward to the next two years."

CHRIS BRANDON, AIR CREATION –"Opportunity awaits those who wants to fly an affordable, reliable portable aircraft, almost anywhere in Australia. As long as product representatives support the owners, with sound advice and support. In my opinion, today we fly safer, more versatile trikes at a fair price, with a bigger price tag than in the beginning of the industry. In the end, you only get what you pay for. Nothing good, is ever cheap – Nothing cheap, is ever good."

GREG DOYLE, SILENT WINGS AVIATION – "Overall we are very positive in outlook, as we see the new market slots for diesel powered aircraft, generally strengthening LSA to GA, higher spec/speed LSAs combined with improved an improved market for routine training and private use aircraft sales."

A good day to stay home

TOCUMWAL AIRFIELD

BY ROBERT PYNE

To buy a copy of this photograph
contact Robert Pyne Photography
robert.pyne@gmail.com or http://robertpyne.net

A REAL PUSSYCAT

BY BRIAN BIGG

The Moth attracts admiring glances

VISITORS to the Gathering of Eagles fly-in at Watts Bridge this year couldn't help but stop and admire one of the prettiest vintage aircraft parked at the field.

It was a Gypsy Moth, a restoration project by Boonah local, Bill Finlen, who admits he's been mucking around with Tiger Moths for the past 10 years.

Bill has been working on this aircraft on and off for five years, the past 12 months full-time. His attention to detail and quality of work is astonishing.

"The project actually started when I bought a heap of Tiger Moth parts from a deceased estate," says Bill. "Among all the parts there was a Gypsy One engine, very rare. I decided to set about finding an aeroplane to put the engine in."

"There wasn't much of the aircraft to begin with. It had started life as VH-UMR back in 1929. A mining company bought it to help in the search for Lassiter's reef. They called the aircraft 'Golden Quest'. It was crashed a few times then exported to New Zealand in 1931 where it was crashed again. It sat in New Zealand neglected since 1933. Colin Smith at Croydon Aircraft Company began the restoration about 10 years ago and I bought it from them five years ago to finish the job."

"I have a set of original plans for the Gypsy Moth. It has a lot of original metal parts, but anything wooden is new, because there was not much left of the old aircraft. The fuselage and wings had to be completely rebuilt.

"I'm lucky there are people with good skills at Boonah, who've been able to help with things like the fabric and wood, which are a lost art.

"The Gypsy Moth was the precursor to the more famous Tiger Moth. The wings can fold in and the engine is upright instead of upside down like in a Tiger. There are many other differences as well.

"Apparently the front seat of the Gypsy was hard to climb in and out of, so they modify the design and gave it a bigger engine, which eventually became the Tiger Moth.

"You fly it from the back seat like a Tiger Moth, and there are no instruments in the front seat, just the joystick and rudders and a mechanical airspeed indicator on the strut. I guess the instructor must have been in the front seat and the student in the back."

Bill says the Gypsy is a real pussycat to fly once you get it off the ground.

"It's awful on the ground. Just like a Tiger Moth you can't see anything when you taxi. It has no brakes and no steering.

"But when you get it into the air it's wonderful, it's a very safe aeroplane and really docile.

"It travels about 70 to 80kts, a bit faster than a Tiger even though it has less horsepower-100 hp to the Tiger's 130 hp," says Bill.


few instruments in the front


Air Speed Indicator

It doesn't look like it but it's awful on the ground

The Gypsy engine needs a lot more work than the Tiger's too. You have to grease the rockers before every flight because they are not sitting in oil like in a Tiger.

"I've had the engine wanting to quit on me during a landing. I even took the carburetors to the UK this year to get the specialists there to overhaul them, but it didn't improve things."

The aircraft stalls about 35 miles an hour. Like most aircraft of this vintage it, it does not have flaps, but the Gypsy did have a concept revolutionary at the time. Look closely at the photographs. At the front of the upper wing, there is a series of black slats.

"You unlock them before you take off," says Bill. "When the speed drops, they pop out automatically, change the shape of the airfoil and lower the stalling speed."

The Gypsy had its first test flight on Anzac Day this year and it's second over the Anzac Day parade in Boonah.

Bill wasn't able to get the original registration letters for the Gypsy, so he settled for the next best thing VH-UMK, which turned out to be a mistake. There had been a another Gypsy Moth with that registration, which had also crashed in New Zealand. The names have caused no end of confusion for those who track the histories of vintage aircraft.

UMK is no museum piece. Bill flies it most weeks and, surprisingly, he lets other people fly it as well.

"There are probably half a dozen Gypsy Moths flying or being restored in Australia," says Bill. "It's a very rare aircraft. I'm going to take it to Luskintyre to the next Gathering of the Moths."

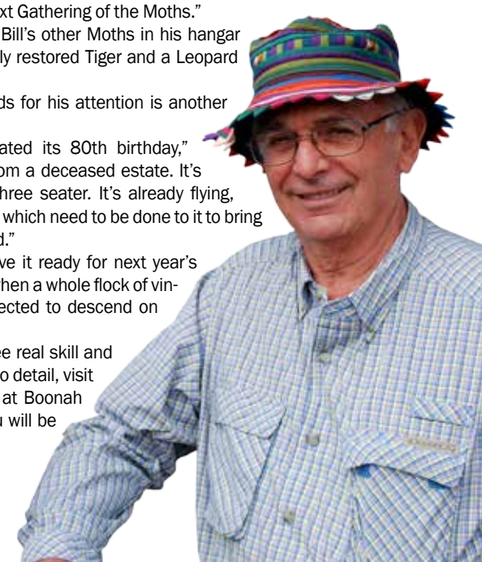
The Gypsy joins Bill's other Moths in his hangar - he has a beautifully restored Tiger and a Leopard as well.

Next on the cards for his attention is another Leopard Moth.

"It's just celebrated its 80th birthday," says Bill. "I got it from a deceased estate. It's called Lulu. It's a three seater. It's already flying, there are just things which need to be done to it to bring it up to fully restored."

Bill hopes to have it ready for next year's Anzac Day parade when a whole flock of vintage aircraft is expected to descend on Boonah again.

If you want to see real skill and beautiful attention to detail, visit Bill and his friends at Boonah next Anzac Day. You will be impressed.



EDITOR'S CHOICE

There and back

BY BRIAN BIGG

THE forecast was ordinary for later in the day, but the morning was nice enough. My niece was visiting from WA and had expressed an interest in seeing the region from the air. So we decided to go for a joy flight early the next morning.

But, as happens with these things, there was a lot of dithering before we finally got to the airport. I could see the wind had started to pick up ahead of the front due later in the day, but figured it would still be alreight.

By the time we pushed the plane out and the relatives got the chance to take a lot of photographs, the windsock had started to dance. At Ballina when the windsock dances, it usually points directly at the runway. In an area where the winds are normally north-south, for some reason our airport faces east-west (If you can't handle crosswinds, don't come visit us). But, by the look of the windsock and the flags above the airport terminal, it was still manageable. I have lived here for many years and I know what the local weather is like. According to the weather report, the front was still a few hours away.

> " I could have easily ended up with a bent aircraft full of vomit"

The hint that it wasn't a few hours away started to become obvious when the wheels left the ground. Just above tree height, I discovered there was a strong southerly blowing which hadn't reached the ground yet. We had obviously been in a heat inversion and it was already starting to blow away. As we climbed to 1,000ft the air was clear but bumpy and it wasn't until we got to about 1,300ft that we hit smooth air.

At that height, the trip along the coast was great. There were whales in the water, which looked wonderful from overhead. Byron Bay Lighthouse is iconic, the water was blue and my niece kept busy taking photographs through the Perspex (some of them actually turned out good, which was a surprise - the Zephyr is not a great camera platform).

But the air began to get bumpier even at the height we were cruising and, when I turned for home, I could tell from the GPS it was now blowing a gale, directly from the south. I asked my niece how sensitive her stomach was to bumps and she gave me a grimace. "Not great," she replied. "Well this could get interesting," I thought to myself.

As we returned to the airport into the teeth of the breeze, our ground speed had dropped to a crawl. I ran through my mental checklist. At the top was an early decision to abandon a landing at Ballina and instead go to Lismore which has a north-south runway. We would face the problem of how to get home from there, but safely on the ground, a lot of problems seem a lot less important.

I reasoned (hoped?) that the strength of the wind we faced at 1,0000ft would be more than it was close to the ground. I expected (hoped?) that, as we descended, it would get easier. In the Zephyr, you don't try to crab an approach. The aircraft is too light and doesn't have enough inertia. Instead you use the rudder to maintain direction and the aileron to keep the wings turned into the wind. The aircraft feels a lot more stable and it's relatively easy to hold it on a line, even in a fairly stiff crosswind. Its many years since I've fretted about crosswind landings.

At the top of final when I lined up the nose, the wings felt like they were 45° to the ground and, as we got lower, it became even gustier. My hands and feet were dancing to keep us on the profile. "Ooh, I don't feel so well," I heard from next to me. "Uh oh," I thought.

At Ballina, on the eastern end of the strip, there is a small hill made up of the dirt they had left over when they levelled the field. Every local knows that, in a strong southerly, you plan to land past this hill because the air becomes a nightmare anywhere near it. Despite my best interests though, our up and down and side-to-side wobble down final had us descending towards the runway adjacent to the hill. About 300ft off the ground we hit its lee and the air suddenly dropped from underneath us. I hauled back on the stick and wobbled the back wheels onto the runway. We bounced and I added power before wobbling the wheels back onto the runway, as the aircraft, now with its wings level started to wander laterally across the runway. The second time the wheels touched we stuck, thank goodness. We were down but it hadn't been pretty. Worst landing I've done in 10 years I reckon.

My niece crawled out of the plane and had to sit down for a few minutes before she could trust herself to stand. I spent 15 minutes apologising to her for having put her through that ordeal.

Her sister, who had been planning to come up with me the next day, changed her mind.

It's pretty obvious where I went wrong- feel free to write in and nag me about it – the bloody front came early. But I also realise that my early, sensible decision to possibly divert to Lismore had ceased to become an option as soon as I started to do battle with the crosswind on final. I was totally preoccupied with making a safe landing and I didn't even contemplate abandoning it. I could have easily ended up with a bent aircraft full of vomit.

"There's a lesson I won't forget the while," I thought to myself. But you won't believe it. It happened to me again a week later.

NEXT MONTH **There and back 2 - into the valley of death.**

READER STORY

High above the ground

BY REBECCA GIBBONS

I'VE always wanted to be able to fly. After researching my options, I found flying by Aerochute was one of the safest modes of air travel accessible to me at the age of 15.

From my first exciting dual flight, until my recent first solo, I have gained a love of being up in the air. Throughout each flight I have been building up my skills and confidence. I am able to enjoy the scenery and experience the satisfaction that comes from being high above the ground.

I started my training in winter, so it has been a challenge getting out of bed through the many cold and dark mornings, but when I am up in the air, I feel that flying is worth the initial discomfort and I am able to fully reap the rewards of this simple yet safe way of flight.

"I am looking forward to what is to come"

I am lucky to have a father with whom I can enjoy the experience of flying. He has helped me with the theory and made the early mornings more bearable. I am also lucky to have a great teacher and to have met many great people, all of whom have a passion for flying.

I am looking forward to what is to come in the future. After I receive my Certificate I wish to take other people up into the sky with me to experience the wonderful sensations of flight I have grown to love.

Which rope goes with which?

With a little help from dad (Peter)

Another successful RAAus pilot

Staying outside the lines

BY THE OPS TEAM

THE old saying that it's better to ask for forgiveness than permission should only apply to situations other than violating controlled airspace.

Straying into controlled airspace, including active restricted military airspace, may cause airline diversions, managing of unplanned separation, refocussing of ATC resources to resolve the unidentified aircraft and sometimes scrambling fighter interception as happened during the G20 summit in Brisbane last year.

The breach presents very real and costly consequences for ATC and the operators affected – even without considering the most disastrous possible outcome of all - a mid-air collision.

WE'RE DOING OUR BIT

RAAus interacts closely and regularly with Air Services, CASA, the Defence department and aerodrome operators. We get told about all violations and act on individual cases as required. Investigations are then conducted for the continued safety of all airspace users and the public. We are pleased to report that, in the majority of cases, ATC is more interested in educating and informing the pilot in order to prevent a recurrence. When we contact pilots after receiving a report, if the response is genuine and education will solve the issue, this is generally the end of the matter. Deliberate breaches are another issue and disciplinary action can be the result. Pilots may be unaware they have even committed a breach and this is where education and retraining will have the most ongoing benefit.

Formalised representation by RAAus at the nine Regional Airspace and Procedure Forums (RAPAC) around the country is also a regular event. These meetings are designed to provide a forum to review proposals and industry insight involving airspace design and management to encourage practical flight operations for uncontrolled aircraft movements. Recent examples include Wellcamp in the Darling Downs, The Pinnacles in Far NQ, and East Sale in Victoria, along with the recent revision to the use of the multicom 126.7 frequency.

As we speak, RAAus is developing a robust and safe proposal to put to the regulator to allow our members access into controlled airspace. In the meantime you can help us by maintaining continued awareness of, and avoiding, unplanned airspace violations. It is up to all pilots to do their part to remain outside active controlled airspace at all times unless appropriately qualified and with an airways clearance.

So let's look at some of the more common examples that lead to these unplanned occurrences.

FAILURE TO PLAN

This is one of the key reasons pilots end up on the wrong end of an awkward situation. When we plan to drive somewhere in the car we get to know the one-way roads, the potholes and other traps. We need to apply the same principles to our flights.

The attached extract from Amberley's Restricted Airspace latest safety brief shows poor planning ranks highly in almost every occurrence. There were 25 recorded violations in the most recent quarter, including a number of recreational aircraft, which is significantly more than for the same period last year. Planning is not difficult, there are many resources available including referencing your planned track on a navigation chart, using NAIPS and talking to local CFIs and instructors. Inadequate or even worse, no planning, also ranks highly in causes of serious accidents, so appropriate planning is an area that's going to pay big dividends in safety right from the start.

See extract from July-Sept 2015 YAMB airspace brief opposite.

> "If in doubt, speak up. ATC is happy to assist"

DISTRACTIONS

The most famous example of this was the airline crew who overflew their destination by nearly 20 miles when they were both busy sending company emails. Distractions are dangerous. Your eyes and brain need to be constantly involved in making sure of the aircraft position during the flight (not relying on the pink line on the GPS). Distractions are the killer of situational awareness in the cockpit and it can be from a variety of sources including passengers, other cockpit tasks, changing weather conditions or being overloaded. Whatever it is, remember 'eyes on the road'. Apply the rule of 80/20 for dividing your attention, keep your focus on the task and eyes mostly outside the cockpit.

NAVIGATIONAL UNCERTAINTY

It can happen to all of us. Particularly when in unfamiliar territory, despite all the best practices and habits. Planning flights close to known boundaries is a sure fire way to reduce your safety buffer and risk an incursion. Giving yourself not just the minimum buffer required, but enough to provide extra breathing space, will reduce the possibility of human error when under pressure.

If in doubt, speak up. ATC is more than happy to assist in correcting a tracking error before a violation event occurs. Rest assured they will certainly become more involved if you continue blindly into their airspace.

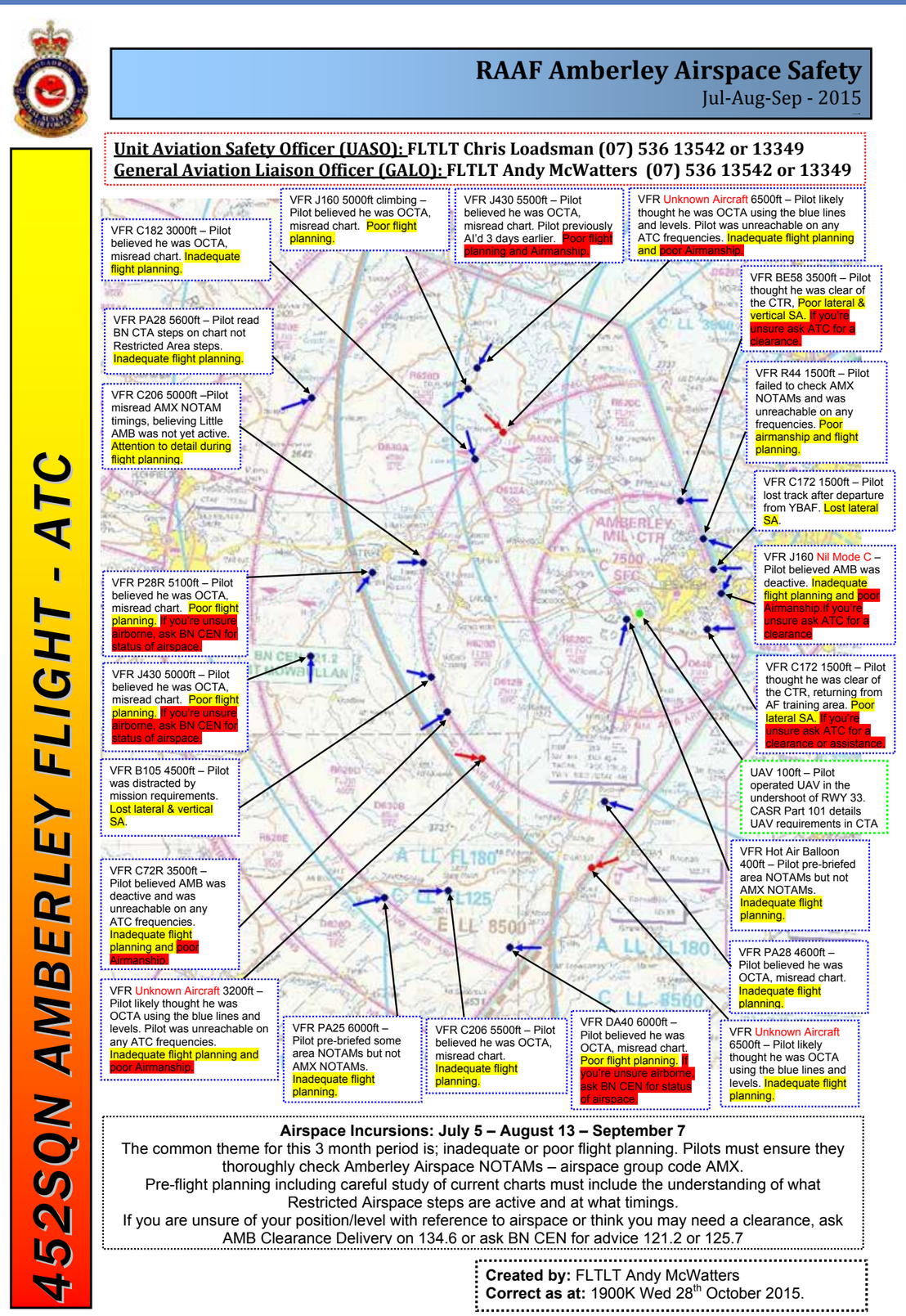
And, as mentioned before in 'A tablet for everything' (*Sport Pilot* July'14), relying on the plasma screen pilot to get you there may be fashionable but is not infallible. ATC highlights numerous examples where appropriate tracking tolerances were compromised by reliance on electronic devices.

PUSHED INTO A CORNER

It's a cruel fact that our coastal corridor (commonly called the J curve) is jam packed with CTA. Of course it is - that's where most of us live, bordered by the Great Divide or other mountains. It can be a tight squeeze between the hills and the blue or red lines when weather plays its hand. It's not surprising that airspace violations often occur in these areas. Operations has investigated a number of incursions where pilots pushed on during known marginal weather or turbulence and breached airspace while overloaded or forced there by deteriorating weather. Once again there were other options, the most obvious being to delay the flight or choose a suitable alternative route. Make your plan easy so it never becomes hard to execute.

PLANNING FOR SUCCESS

So, just as planning and focus are the key to a successful flight and remaining outside controlled airspace, so is the vigilance required by all pilots. If you want to help support our case for formalised privileges to access CTA remember the behaviour and knowledge you exhibit today will have a big impact on the privileges you request tomorrow, making the task of asking for permission a whole lot easier for all of us. Asking for permission isn't that hard after all.



OLD VS NEW

OLD VS NEW

BY NICK SIGLEY

DO you need another good reason to fly RAAus rather than GA?

I was talking to the owner of this Cessna 150 yesterday and he said that by the middle of next year his aircraft would need a Supplemental Inspection Document inspection done and would be out of engine hours.

Total outlay to keep the aircraft in the air and legal? Somewhere around $50,000.

And even after paying all that money, he will still have an aircraft which is more than 40 years old.

Going RAAus makes a lot more sense.

"Total outlay somewhere around $50,000"

Shouldering the Load

DESIGNING YOUR OWN AIRCRAFT BY DAVE DANIEL

IT is an annoying fact of life that sometimes things break. So if you operate a complex machine, such as an aeroplane, for a period of years it is virtually inevitable you will experience a component failure at some point.

What's more, when it does break there's a good chance you'll be cursing the ineptitude of the designer responsible for producing such a flimsy engineering abomination! Thankfully though, although components do inevitably wear out, major structural failures are almost unheard of. So the engineers must be getting it right most of the time. But how are they doing it?

One thing that has always stuck with me from my earliest days as an engineering student was one of the professors cautioning the new intake of students with the words, "Remember, 99% of engineering failures are a failure of imagination, not calculation!" He was right. Failures are not uncommon, but when they do occur, it is incredibly rare for them to be a direct result of an error in calculation or analysis. Ask most engineers about their biggest challenge when they produce a design and the answer won't be, "the analysis". Nine times out of 10 it will be "The assumptions I have to make to perform the analysis". This concern is with good reason, because when a component fails the cause is almost always one of two things: Either it was exposed to a condition which wasn't allowed for in the design or there was a defect in the manufacturing or materials which meant the part didn't meet its assumed strength. I'm going to start with the first of these problems and examine the problem of getting the loading right.

> "The engineers must be getting it right most of the time"

Given the nature of this publication it's fair to assume you are familiar with aeroplanes and so have probably noticed that, unlike bridges or buildings, aircraft are not fixed to the ground. This fact certainly makes them more interesting to be around, but also rather trickier to design. It's true that bridges and aeroplanes both have to support their own weight, plus the weight of whatever they are carrying and they also both have to deal with aerodynamic gust loads (although a civil engineer would probably just call it 'wind loading'). But what really sets aircraft apart are acceleration loads. Thanks to their mobility, aircraft can experience acceleration in almost any direction. A significant point because, as Isaac Newton pointed out (probably via your high school physics teacher), force = mass × acceleration, so the forces acting on your aeroplane depend directly on its mass and how much that mass is being accelerated.

For static structures like bridges there is only one acceleration to worry about (ignoring earthquakes!) and that's the effect of gravity. On the earth's surface, gravity is constantly trying to accelerate you, and everything around you, towards the centre of the planet. The rate of this acceleration is 9.81m/s² but it is more commonly referred to as '1g'. Multiply this 1g acceleration by your mass and you will get the force which acts on the bottom of your feet, conveniently stopping you from accelerating towards the centre of the earth - better known as your weight! For a bridge or a house that's pretty much the end of the story as far as loads go; they have weight, plus some loading and they transfer it to the ground which provides support. Clearly for an aircraft there's rather more to think about.

From a loading point of view, flying straight and level is much like standing on the ground; gravity applies 1g and the wings generate a lift force equal to the plane's weight, holding everything up. Pull a sharp turn or hit an updraft however and, as the seat of your pants will tell you, you will experience more than just gravity. This is because you are accelerating, and more acceleration means more force. This is where the concept of 'load factor' comes in. Although gravitational and maneuvering acceleration come from completely different sources, as far as the aeroplane's structure is concerned the effects are indistinguishable and can be combined; perform a 1g pull-up from straight-and-level flight and you will experience 1g of gravity plus the 1g of manoeuver load, so the airframe (and your bum) will experience a load factor equal to 2g – i.e. you will feel like your weight has doubled. This relationship is linear, so if you now double the load factor again and pull 4g, you double the lift required by the wings and double the external loads applied to the aircraft. Pull 8g and the wings may snap off.

Because aircraft weight is critical and carbon fibre is expensive, it's usually not practical to make a plane unbreakable, so some rational decisions have to be made about what loading the aircraft will be designed to withstand. Of course, as a designer of an experimental the choice is yours, but there are some minimums defined in FAR part 23 that are mandatory for certified aircraft and which you would be foolish not to follow. These minimums, shown in Table 1, specify the limit load factors an aeroplane must meet to qualify in each of three categories: Normal, Utility & Aerobatic.

Regulations like the FARs are a lifesaver when it comes to estimating loading and they go a long way to explaining why structural failures in aircraft are so rare. A hundred years of hard-won aviation design experience is distilled into these documents, which provide direction about design loads, gust loads, landing gear loads, asymmetric conditions, flutter and much more. Unfortunately regulations seldom give any explanation as to why a particular requirement exists, but at risk of sounding melodramatic, they tend to be written in blood from previous accidents, so even though they are not mandatory for experimental aircraft, you would need to have a very good reason not to comply.

Having consulted the FARs and selected the limit load factors for a design, they can then be combined with some of the aeroplane's basic performance data to produce what is called a V-n Diagram (Table 2). This plots load factors against calibrated airspeeds and so captures the flight envelope in which the plane is designed to operate, and thus the loads it will have to withstand. An example V-n diagram is given in Table 1 for an ultralight aircraft designed to meet the Utility category with limit loads of +4.4g and -2.2g. So let's take a look and see what this diagram tells us:

Firstly, the vertical line at the left hand side of the envelope marks Vs, the unaccelerated stall speed with flaps retracted. This represents the lowest speed at which the aircraft can fly in the clean configuration. As speed increases above Vs, the maximum load the plane can experience increases exponentially until point A on the envelope is reached, marking the point where performance becomes limited by the aircraft's structure rather than its aerodynamics. Below Va (the design maneuvering speed), even the most vigorous 'positive g' manoeuvre will be unable to overstress the airframe, as the wing will enter an accelerated stall before it can develop the rated limit load.

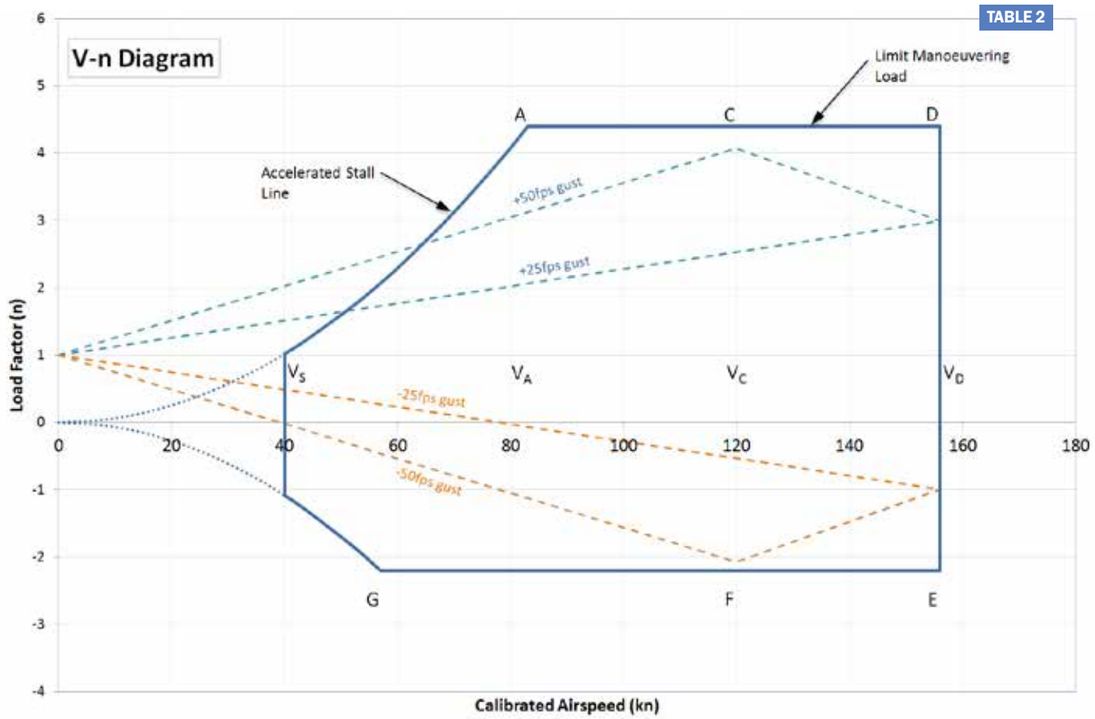
For this particular example the line between points A, C and D is constant at +4.4g (the selected design limit load), however this is not the case for all aircraft. The diagonal dashed lines within the envelope represent the load factor that would be produced by 50 foot per second and 25 foot per second vertical gusts. Years of data collection by the regulating authorities have shown these gust values to be suitably conservative for

TABLE 1

	Normal Category	Utility Category	Aerobatic Category
Positive – Flaps up	+3.8	+4.4	+6.0
Negative – Flaps up[1]	-1.9	-2.2	-3.0
Positive – Flaps down[2]	+1.9	+2.2	+3.0
Negative – Flaps down[3]	0	0	0

1 - Defined as -0.5× the Positive-Flaps up value
2 - Defined as 0.5× the Positive-Flaps up value
3 - Vertical wing load may be assumed equal to zero and only the flap part of the wing need be checked for this condition.

TABLE 2



design purposes and the practice is for the 50fps gust line to apply up to the design cruising speed (Vc) and the 25fps line to apply at the maximum dive speed (Vd). These two lines are then joined to give a decreasing limit gust load between Vc & Vd, representing the expectation that pilots will fly slower in turbulent conditions. For aircraft in the Normal category with high cruise speeds, or low wing loadings, the 50fps gust line will often extend above the line between A and D and thus cause a peak to be added to the envelope centred around point C. In addition aircraft POHs will often specify a Vno speed, the maximum structural cruising speed, which applies in turbulent conditions to mitigate the risk of airframe damage from gust loading.

	Speed	Comment
V_S	Stall speed	In clean configuration
V_{FE}	Maximum flap extended speed	Do not exceed this speed with flaps extended
V_A	Manoeuvring speed	Do not make full or abrupt control movements above this speed.
V_{NO}	Maximum structural cruising speed	Do not exceed this speed except in smooth air, and then only with caution
V_C	Design cruising speed	A design speed defined in the regulations – frequently used to define other limits, e.g. V_D must not be less than 1.25×V_C
V_{NE}	Never exceed speed	Do not exceed this speed in any operation
V_D	Design diving speed	A design speed - provides a margin above V_{NE} for gusts or piloting error

The far right of the V-n diagram is bounded by a vertical line at Vd, the design diving speed, which is a little over the placarded Vne to give some margin for horizontal gusts etc. Bear in mind this margin is for the designer not the pilot, so don't go flying at more than Vne "because the design is good for Vd", as you may well pay the price!

Finally, we get to the bottom of the envelope. This is close to a mirror image of the top half, only the negative limit loads are substantially smaller than the positive ones. This is for two reasons, firstly because most planes spend their time flying the right way up and so are likely to be flying at close to +1g load when a gust hits, and secondly, pilots are much less tolerant of negative g; not many of us would deliberately choose to support twice our own body weight on our harness shoulder straps!

NEXT MONTH: What these load factors mean for the aeroplane's structure and the concept of 'factors of safety'.

Ramblings

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

IT appears some members are still not clear about when they should act on Airworthiness Notices. You should read every AN carefully and, if your aircraft type and serial number is affected, make sure you comply with it as soon as possible.

AN's are NOT issued only for school aircraft. They apply to the Type and Model designation of the aircraft specified, regardless of its registration. It's important you comply with the requirements of the AN within the time limit specified on it. If in doubt, ask a level 2 or contact the Tech department.

It is the responsibility of the owner to keep an eye on manufacturers' website for the latest releases of Airworthiness Notices. The RAAus website does not list the ANs for all aircraft types but we do have a plan to provide the ANs and SBs for those RAAus aircraft which are orphans (they don't have a manufacturer any more, e.g Thruster, Drifter or Gazelle).

But for all other aircraft it is a simple matter to do a Google search to find the manufacturer's website to check up on the latest ANs or SBs for your model.

MAINTENANCE RECORD

RAAus has developed a new maintenance record so owners can note the time flown and record all maintenance done. Filling out the form is voluntary at the moment but helps owners keep track of the hours/landings. A 'maintenance due' section also makes it easy to see what maintenance still needs to be done and when it is due. It also has a section for pilots to note minor and major defects they discover when doing a pre- or post flight inspections.

The form will be sent out shortly with renewals under the RAAus modernisation plans and is incorporated in the new Tech Manual. The process is a good system to adopt. Members are also reminded that performing 100 hourly and annual inspections is mandatory.

The Tech department is currently conducting random audits of all aircraft files. Sadly, we have evidence to show more than 90% of maintenance is either not completed correctly, on time, or recorded inappropriately in the logbook. Some audits have even found there were no logbooks maintained for some aircraft. Because we are seeking increased privileges, such as increases in MTOW and access to CTA, not only is it every registered aircraft operator's mandatory requirement to maintain their aircraft in accordance with a system of maintenance, but it will provide a better safety case to the regulator.

> "Maintenance logs can be audited by RAAus at any time"

LEVEL 2 CHECKS

The keeping of 'maintenance performed' logs by a Level 2 is mandatory as per Tech Manual 4.1 – 6 and can be audited by RAAus at any time without prior notice.

This article is intended to officially inform every Level 2 authority holder that they should have their logs in order, all the time. It only take a few minutes to complete the entries required. Filling it out once a year is not enough anymore.

A clarification note here. If you conduct maintenance on an aircraft, it must be recorded in the aircraft logbook. No matter how trivial. I have accompanied the Operations Manager on a few flying training school checks and have been looking at maintenance recording. For the benefit of our flying school level 2s, be aware that checks like these have started to happen. Work sheets and logbook entries of all maintenance and repairs/modifications must be recorded.

It is impractical for me to visit every school, so I will be using the services of other L2s and the Assistant Tech Manager, Jared Smith, to help me out. The CASA audit of RAAus showed this area had been a deficiency in our system and needed to be fixed. Every L2 knows the requirements.

If in doubt, refer to the Tech Manual.

OWNER MAINTENANCE

Members are reminded that just because they own a 19- or 10-category aircraft and can legally maintain it themselves, does not mean they do not have to do maintenance, or only do it when something goes wrong. Maintenance and any modifications must be written up in the aircraft logbook. If the engine manufacturer's schedule says 'Change the spark plugs', then please, change the spark plugs.

BAD MANNERS

It has been mentioned before, but there are a few pilots who do not seem to understand the inevitable consequences of their actions. One of these involves behaviour at public events. Do not be fooled into thinking that because you fly under the banner of RAAus, you are in a bubble of bliss and cannot be touched. Our freedoms have all been hard won and even harder fought to keep and protect, so please think about your actions and consider your fellow pilots and the organisation as a whole.

It does not do our organisation or our reputation any good if you are seen to deliberately breach the rules at public events. Don't forget that at most events these days you can expect to see the management of the sporting bodies, including RAAus, as well as CASA officials. You make yourself quite unpopular and it can quite easily lead to restrictions on all our freedoms.

AMATEUR BUILDERS

I often get complaints from builders about some of the test hour procedures we have in place. Let's break it down - aircraft of unproven design must be subject to 40 hours of test flying. If it is a first of type, amateur built, it's also 40 hours. In the past it was not uncommon to describe a short journey in a new aircraft as being within an 'oversized test area'. The new Tech Manual will address this loophole, without stopping you exploring your amateur built process.

Big Birdsville Birds

BY GARY FAULKS

Posties present novelty oversized cheque to the cero club

RECORD crowds travelled to Birdsville this year with increased numbers through the airport. Strong winds were experienced up until midday Thursday after which the weather conditions improved and turned out to be quite good for the whole weekend. The aviators included Pauline Hanson who flew in from the East Coast for the weekend in a Jabiru.

The sealing of the runway and apron since last year was a great improvement appreciated by aircraft operators. The aircraft this year ranged from Jabiru, RV2, RV 6, Evector Sportstar and GA including light twins such as Cessna Citations, Cessna Caravan 208, Chieftains, Super Kingair and Partenavia, through to Fokker 50 and SAAB 340 B.

An added feature this year was the attendance by Ballina's Pelican Posties Team who rode the 1,800kms from Ballina in northern NSW on postie bikes. The ride took five days with the final day across the Birdsville Development Road a real challenge on the little bikes.

"A must do bucket list experience"

Charter operators Calibre Aviation and Wrightsair were kept busy during the weekend with flights to the desert and Lake Eyre areas.

Cirrus Aircraft was there again this year with its demonstrator aircraft.

A drone operated by Rapax Aerial Services was in the air again this year recording from low over the airport and the racetrack.

Ballina Aero Club had a good weekend controlling the airport and will be entering into discussions with Diamantina Shire regarding future involvement in coming years.

Rated as a must do 'bucket list' experience, the Birdsville races event is gaining popularity and becoming an internationally recognised event in the Western Queensland calendar of iconic activities.

For further information, contact Ballina Aero Club at ballinaaeroclub@bigpond.com.


Michael happy his long journey is over


Longreach welcoming party

Around the world at 80 knots

BY JULIE HANDS AND IAN WELLS

WE first heard about Michael Smith and the Southern Sun adventure back in April when Michael set off to fly his Searey across the world following the QANTAS flying boat route, Sydney to London and then on from there till he got home to Australia.

To think a plane that size could do such a journey made us take notice.

No one we knew had heard of him, but we were impressed by his sense of adventure and the easy going way he wrote, so we followed his blog and enjoyed the destinations and history as he travelled.

When we realised the completion of his 'Round the world at 80 knots' would be at Longreach, only four hours flying from us, we decided to fly out to meet him.

We also decided to have a night at the Mount Coolon Pub (see country strips), another great country destination with all we needed - runway, pub, food and accommodation for those who don't camp.

David Geers and Doug from the Seaplane Pilots Association also flew out to meet him and we all caught up on stories while we waited for Michael to arrive.

> "Months of quiet planning"

There was a delay when Michael's Searey had an engine problem at Weipa, but a fellow Searey pilot in Innisvale came through with the parts and got them to him fast via an RPT flight from Cairns.

QANTAS Founder's Museum is a great destination and Michael arrived there at last light and was welcomed by us all and quite a few locals too.

He told us of the months of quiet planning he had done and how he had obtained the permits he needed and all the complex arrangements he'd had to make.

His plane is US GA registered.

This allowed him to fly internationally and follow official flight corridors, which turns out to be the only way to get all the way round.

Then he told us stories from along the way and showed us all some fantastic photos.

This bloke certainly deserves our recognition as a great adventurer and aviator.

I look forward to flying in company with him around our home in The Whitsundays whenever he wants to visit.

Check out his blog: Southern Sun travelpod.com.

LEARNING TO FLY

Weekend High

BY ANTHONY SIBARY

LIKE most recreational aviators, it amazes me the best flying weather is always on the days I am at work. And when I am able to go flying (not at work), it is the weather which spoils my fun.

Luckily for me, recently everything came together and I was able to spend a good amount of time in the left seat at The Oaks.

As I always do, I consulted NAIPS early Saturday morning and the forecast was great for flying, with a slight breeze out of the north west and some scattered cloud above 7,000ft…perfect!

07/36 was available and, after I completed my pre-flight and re-checked the windsocks, I taxied out to the 36 run-up bay. It had been a while since I had flown on a Saturday, so I was aware of the aircraft already in the circuit and those preparing to get airborne. And yes, of course I always do this, but on weekdays at YOAS, it is generally very quiet with few aircraft in the circuit.

For as long as I can remember, I have loved aircraft. I can remember getting distracted in class as a primary school student, straining to see the planes I could hear out of the classroom window. I grew up just near Badgery's Creek in Western Sydney. Wanting to be a pilot and living under the training area meant that on weekends I would spend hours watching the aircraft flying over our house. Listening to the pilots adjusting the throttle, hearing the engine noise change as the little planes climbed and completed a variety of manoeuvres. Wanting so very much to be up there flying.

And here I sat, in John's fantastic little Jabiru, some 30 years later, still just as happy to see lots of different aircraft on the ground and in the circuit at YOAS. Foxbats, Jabirus, a Bristell and several immaculate homebuilt aircraft; just to name a few. RAAus is definitely in great shape at The Oaks.

After departing on 36L, I headed north into the training area and climbed to 3,500ft. After deciding that Warragamba Dam looked much better full of water, I made my way back to YOAS. I always monitor Sydney Centre on 124.55 when I am in the training area and always keep a lookout for other aircraft. Where it becomes interesting is nearer to YOAS where the CTAF is 126.7. I broadcast my intentions on the CTAF as I planned to enter the circuit for 36.

On this day there were two Foxbats in the circuit and a Jabiru lining up on 36L. I let the other PICs know I was joining early downwind for 36. Intentions were confirmed as we were all planning on touch and goes via 36. I extended my downwind leg to give me greater separation and also to allow the Jabiru to get airborne.

I was busy in the cockpit, especially given that there were four aircraft in the circuit. During the week I am often the only aircraft in the circuit. It was great, transmitting messages and acknowledging the other aircraft. Maintaining separation and flying what I consider to be a good circuit. By that I mean staying consistent, making turns at the appropriate heights and maintaining the correct throttle and flap settings.

An hour passed by quickly and before I knew it I was back on the ground chatting with the other guys and girls who had made the trip to YOAS. That is another bonus of flying on the weekend, the great atmosphere you get from a group of like-minded aviators. Robust discussion about this magazine, that other regulator and good old fashioned hangar talk…all outstanding stuff.

Spending time in a busy circuit has reaffirmed several things to me. Clear and concise radio transmissions are essential, because it leaves PICs in no doubt about where other aircraft are and their intentions.

Flying an accurate circuit consistently ensures good separation and I believe it is another example of good airmanship. Like so much of my aviation journey, my recent Saturday flight time was fun and it gave me the chance to work on flying good approaches. I have also learned they are the key to good landings.

What did you learn on your last flight?

See you in the pilots lounge for cocktails and debriefing.

***Sport Pilot* is on the lookout for other students, like Anthony, who can recount their lessons for readers. Just starting out would be preferable, because we want to follow your entire journey. Email editor@sportpilot.net.au.**

The problem with steam gauges

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS

THERE is not much point in having an instrument in your cockpit if it just makes a rough guess as to what is going on. A case in point is analog, i.e. steam gauge CHT and EGT instruments.

A lot of electrically-conductive materials, such as copper wire, develop a voltage between their ends when the ends are at a different temperature. If you dip one end of a piece of copper wire into boiling water and the other end into melting-ice water, a voltage of around 6.5mV is developed between the ends. This is known as the Seebeck effect. You could try and measure this by placing the probes of a sensitive meter across the ends of the wire, but then the probes will exhibit the same voltage difference as the wire you are trying to measure as they too experience the temperature difference.

So, the solution is to use a piece of wire made from something different, connected at one end to the piece of copper. Such a device is called a thermocouple. Actually, copper is not used in common thermocouples. The wires used are usually different nickel alloys.

There are many different types, but for our purposes we want a combination which produces a non-trivial voltage, can withstand considerable temperatures, has a sensible reference point, produces a fairly linear response and is not expensive.

In aviation only two types are popular. These are known as J type and K type thermocouples. The K type is considerably more popular.

> "There is not much point in having an instrument which just makes a rough guess"

There is a common misconception that the tip of the thermocouple actually detects temperature, but this is wrong, and it is fundamental to understanding these devices to realise that the voltage is developed along the length of the wire and is dependent on the temperature difference between the connection at the end to be measured and the other end of the wire. If you have two different wires connected together at one end, then the different voltages generated by the two different wires will result in a measurable voltage difference between the two wires at the end which is not tied together.

You can make your own thermocouple by simply twisting together the ends of a piece of thermocouple wire.

Thermocouples are defined in terms of the voltage produced in response to a temperature difference. K type thermocouples produce 41 microvolts per degree centigrade and J type thermocouples produce 50 microvolts per degree centigrade. The metals used in these thermocouples are chosen in part as the output at 0°C is 0V, which is pretty convenient.

So, if you have a K type thermocouple and you want to know the temperature of something, all you need to know is the temperature at the other end of the thermocouple wire. For example, if you measured 410 microvolts, and the measured end (usually referred to as the cold end), was at 20°C, then the temperature at the measuring end is 20 + 410/41 = 30°C.

It would be really great if life was that simple. There are two problems. Simple CHT or EGT gauges, and this is what this is all about, are just voltmeters. They are calibrated assuming the temperature of the cold end is around 20°C, and the response of the thermocouples is linear. Of course, both of these assumptions are wrong most of the time. Linearity is not such a problem for our purposes, but the assumption that the cold end is at 20°C is a problem.

If the ambient temperature at the cold end is actually 40°C, you need to add the 20°C difference to the displayed result, assuming of course you knew it was actually 40°C. It would be nice if the reading of a CHT gauge erred on the safe side, but it does not. This is not such a problem with EGT gauges because the change in the cold end is a much smaller fraction of the measured temperature.

In my aircraft, the temperature forward of the firewall, where the thermocouple is terminated, is around 8°C higher than the cockpit. So, on a 25°C day, the cold end of the thermocouple is around 33°C. So, you have to add 13°C to whatever the analog steam gauge is saying, more or less. I have found that with an outside air temperature of 17.7°C, my steam gauge CHT measures 7°C too low. As the OAT rises, the error also rises.

These gauges are obsolete.

There is a range of digital gauges now available at good prices which overcome these problems. They measure their own temperature and adjust their output accordingly. This is called 'cold compensation'. To ensure accuracy, it is important the thermocouple cable or a thermocouple extension cable is attached directly to the instrument, to ensure the compensation is correct. That is, the thermocouple cable must be taken through the firewall and terminated at the instrument. If you do not do this you introduce an error equal to the difference in temperature between the instrument and wherever the thermocouple is terminated. It does not affect accuracy to connect bits of thermocouple wire together, so this is preferable to terminating the thermocouple forward of the firewall and using copper wire to connect to your gauge.

As a side note, one side of a K type thermocouple cable is coloured red, the other yellow. If your instrument doesn't work, reverse the connections. There is some inconsistency in colour coding here. J type thermocouples have red and white wires. VDO CHT gauges use J type thermocouples. An easy way to work out which way the wires to a digital gauge should be connected is to warm the tip with your fingers. The displayed temperature will drop as the tip warms up if the thermocouple is connected backwards.

And another thing. Cylinder and exhaust temperatures may vary considerably from one cylinder to another. In my aircraft the CHT's vary by 15°C from the coolest to the hottest. The original steam gauge was fitted to the equal hottest cylinder, but there is considerable variability from one aircraft to another.

If you compound the errors discussed in this article, on a hot day you could easily be reading CHTs 30°C too low, and that is potentially a big problem.

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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. Rene has promised to recount the story for *Sport Pilot* of how they came to get it.

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

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

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

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

David Carroll and John Gotts at Bathurst Airport

ADVERTISERS INDEX

RAAus at a glance

ALL ABOUT YOUR ORGANISATION

13
The number of pilots killed in April, May and June in the past five years, the most deadly time of year for RAAus.

285
The number of Airborne aircraft on the register in 2015.

104
The number of Hughes Engineering aircraft on the register in 2015.

383
The fewer aircraft on the register in 2015 compared to 2013.

67
The number of RAAus affiliated flying schools in NSW.

52
The number of *Sport Pilot* magazines (including this one) since the title was launched in June 2011.

$10 MILLION
The amount of public liability RAAus pilots are insured for.

1.7m HOURS
The amount flown by Australian GA pilots in 2012. RAAus pilots flew 195,000 hours during the same period.

28.8%
Hours flown by NSW RAAus pilots in 2012. Qld 25.8 per cent, Victoria 20.8 per cent, SA 11.1 per cent. Source ATSB.

A GYFTS scholarship sends me solo!

BY TOBY MALLON

BECOMING a pilot has been my aspiration for such a long time. I was fortunate to have experienced many flights in commercial aircraft from an early age and this fired up my enthusiasm for wanting to learn to fly. On my first trip on my own to Thailand (where dad lives) I was taken into the cockpit by the captain before other passengers were boarded and I got to have a feel of the controls and a look at the complexity of the instruments. That's when I knew I really wanted to fly commercially.

I attended a very competitive work defence program in Nowra. Only 15 people were accepted out of 600 applicants. I also got to attend the prestigious Snowy Mountains Grammar School at Jindabyne, which has an aviation program. Half way through I was given a trial introductory flight, to see if it was as amazing as I thought. It really was!

In my third year, I was selected for a flying scholarship worth $750 from the Jindabyne Aero Club. This began my journey in the left seat of a Jabiru J120C with my flying instructor, Martin Hughes, and Alpine Aviation, based at Jindabyne Randall Community Aerodrome. This scholarship allowed me up to five hours of flying to a level where I was learning to fly circuits. When the scholarship money ran out, I faced the prospect of stopping my training.

Then Martin brought my attention to the RAAus GYFTS scholarships and you can imagine my surprise and delight on receiving notification I had been awarded one of the $2,500 scholarships so I could continue my training. I am extremely grateful to the RAAus membership and the members' generosity in providing the funds for these scholarships which have now taken me through to my first solo flight and towards my goal of becoming a commercial pilot through a Rex Airlines cadetship program.

Toby Mallon, (R) with instructor Martin Hughes after his first solo

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

Sharon Mallon accepting the GYFTS scholarship on behalf of Toby, who was overseas at the time, from Michael Monck

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