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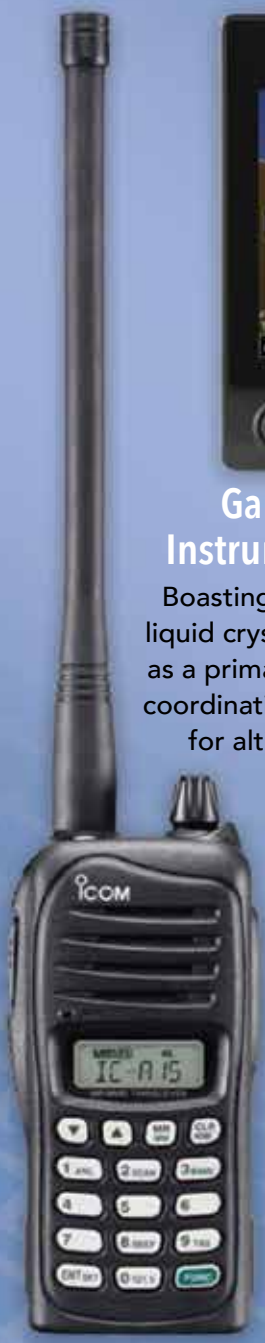

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ON THE COVER

28 Ultralight Concepts SV4-RS

"'Time will tell if Ultralight Concept's plan to put an 100% scale vintage aircraft replica into the market, occupied by 'young pensioners with a budget and some handiness', will be an enduring success."

Photo: Stefan Degraef

REGULARS

COLUMNISTS

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NEWS

FEATURES

EXTRAS

AIRVENTURE

NATIONAL SAFETY MONTH

FLY-INS

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The next three years

BY MICHAEL MONCK

WHEN we run our elections, we try to run them as transparently, and as honestly, as possible. It probably wouldn't hold up to scrutiny if our process was used to elect a US President but hey, we didn't end up with Donald Trump, so it can't be all bad, right?

We have volunteer vote counters and scrutineers, who all take the job quite seriously, and I would like to thank them for their efforts.

Max Brown is one of those volunteers. He is a stalwart in our organisation. I go into the office a couple of times a week on average and his face is a common sight. He is often there doing things on behalf of members. He never complains and is a huge help to us. During the elections once a year he is also there to hold us to account. I would like to say thanks to him for his efforts and also to the others who take the time to help us during these periods when we, as a collective, choose who represents us.

I would also like to say thanks to everyone who made the effort to vote. In total this time around, we had 1,792 votes. Some of our peers in the sport aviation and advocacy space don't even have that many members, so we should feel privileged we had such a good turnout. I'd love to see it even higher, but I am proud it is this high.

What I am even more aware of, is the fact that about two thirds of those votes were for me. I have to say, I am pretty awed and humbled about that.

It says to me people trust in my decision making and are happy to continue to let me lead the board and the organisation. It also says to me members are happy with the direction RAAus has taken over the past few years. And it tells me I still have a great challenge ahead.

The main one will be to continue leading and accept the responsibility which has again been placed on me. I have enjoyed the past four years in the role and look forward to another three, but I also acknowledge that getting onto the board is the easy part. As well as having to demonstrate to the board I am worthy of retaining the position of Chairman, I have to continue to demonstrate to members, to you, that I am worthy of holding a position on the board at all.

Being on the board is not about status. It is not about roaming the country enjoying trips on the company tab. It is not about turning up to meetings and being AWOL in between times. It requires dedication and hard work.

Most weeks, I give up the equivalent of a solid day or two to RAAus. At points throughout the year when it gets busy, I can spend almost the entire week doing RAAus work. But it isn't just challenging, it is also rewarding.

In the past couple of weeks, I have spent time with people in the broader industry discussing the future of aviation in Australia.

I have sat with government department heads talking policy, I have spent time with the current Director of Aviation Safety, Shane Carmody, chatting about regulation, Part 149 and other topics like medical standards for pilots. And I have also discussed these and other topics with industry leaders including Virgin and Qantas, the Chair of the Australian Aviation Associations Forum, the Chair of Rex Aviation and other key figures.

This part is rewarding, partly because of the work RAAus is doing, but also because of the recognition we are now getting. Many of these conversations in recent times have begun with a congratulations to me for being reappointed to the board.

The comment isn't noteworthy because I have been reappointed, it is noteworthy that they knew we were even having an election. Aviation industry leaders actually appear to be paying attention to RAAus and what is happening with us.

The key players in the sector are noticing that we are not a bunch of cowboys. They see we are now reporting more often and they understand this is not a reflection of a bad safety record. They know it is, instead, the sign of a membership which understands the importance of sharing knowledge. They see a mature organisation, mindful of its own responsibilities, while also respecting the responsibilities and rights of those around us.

> "They see a mature organisation mindful of its own responsibilities"

It used to be we would get attacked by general aviation for being shoddy or dangerous. This has changed. No longer are we the careless fence-hoppers we once were. We are serious aviators with serious aircraft. Those who do still launch attacks in our direction have a clear lack of knowledge about what it is that we do and how we go about doing it.

We have grown from a handful of enthusiasts to a well-respected organisation which is growing at a rate of six per cent per year. We are the strong part of aviation and we are leading the way. This is the part I recognise most poignantly when I look back at the votes I received. It is a huge responsibility to keep this growth and development going and one I will work hard to continue doing.

So, thank you for having confidence in me to do this role for another three years.

I also want to say a special thank you to Barry Windle for his time on the board. Barry brings a lot of wisdom and knowledge to the organisation and has agreed to continue as a member of our risk and audit committee. He will be missed at the board meetings for his considered thoughts and input and I look forward to him providing the same quality input on the sub-committee.

DIGITAL DIRECTIONS

There are many ways to interact with RAAus these days.

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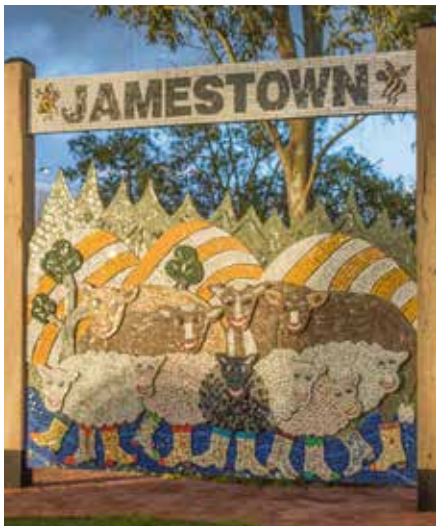


A. 7-8 OCTOBER
JAMESTOWN FLYING GROUP

30th Anniversary. A weekend celebration to mark the founding of the group. Sir Hubert Wilkins Aerodrome, Jamestown SA. Saturday dinner, Sunday fly-in and BBQ. For more information, Chris Bretag 0428 485 651 or Danny Keller 0428 385 907.

B. 19-21 OCTOBER
AIRVENTURE AUSTRALIA

Narromine airport. Matt Hall, Roulettes, aerobatics, buy, sell, trade. Free seminars. Biggest fly-in of the year. For more information, airventureaustralia.com.au. See elsewhere this edition for full details.

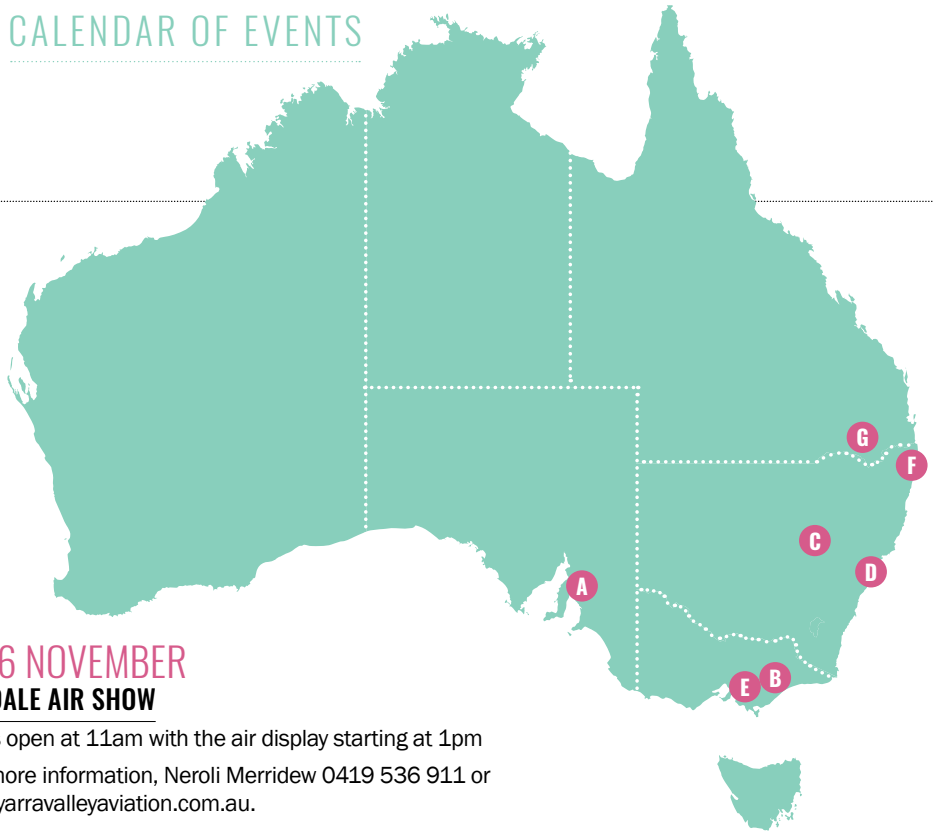
C. 25 NOVEMBER
GATHERING OF THE MOTHS

Mount Beauty airport. Be part of a unique air sports event at the finest mountain airstrip in the Victorian alps. Fly-in to share, experience, learn and demonstrate with a unique mix of sport aircraft. A wide variety of aircraft and fantastic collection of vintage and veteran cars on display. Stay overnight on the Saturday to join in the unique runway dinner event. Lunch, dinner and breakfast all available at the the airfield. We are limited in the number of aircraft we can accommodate – so check our website to register, For more information, www.ymbt.org.au or Ross Rynehart 0417 002 886.

D. 26 NOVEMBER
SPLASHDOWN RATHMINES

The Seaplane Pilots Association invites you to join with seaplane pilots and enthusiasts for the 2017 Splashdown Conference at Rathmines, NSW. Hear key industry speakers talk on vital seaplane issues. Learn how to be safe on the water in floating hull or on floats. Enjoy camaraderie and fun evening events. Inspect the visiting seaplanes at this WW2 RAAF Flying Boat Base. Stay for the Rathmines Catalina Festival on Sunday after the conference. Registration Is essential. For more information www.seaplanes.org.au or Malcolm Burns 0448 744 763.

CALENDAR OF EVENTS



E. 26 NOVEMBER
LILYDALE AIR SHOW

Gates open at 11am with the air display starting at 1pm

For more information, Neroli Merridew 0419 536 911 or www.yarravalleyaviation.com.au.

F. 6-7 JANUARY 2018
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G. 11 MARCH 2018
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THE EXACT TIME

I've just read Professor Avius' column, 'Making Radio Waves' (*Sport Pilot*, August 2017). Once again, an excellent read of another flying topic. The Prof is explaining in simple terms how easy our mandatory radio calls are.


Making radio waves

It occurred to me that some of our newer pilots or even non-pilots who might read this article may not have understood what was meant by "estimating the circuit at 52". This was not taught to me 25 years ago and, in fact, it's probably only in the last few years that I understood its meaning and added it to my inbound calls.

What it means is the inbound pilot is expecting to arrive in the destination circuit at 52 minutes past the current hour at that location. For example, if it is 52 minutes past 10am then the pilot is arriving at eight minutes to 11. There are in fact 60 times in one hour that this arrival time could occur. First is on the hour then 01 to 59.

For simplicity, I round my calls to a five minute interval, i.e. 35, 40, 45 etc. I seriously doubt any pilot (except me) is flying around with an old analogue watch on their wrist that is exactly set to the correct time. When I hear a call from another pilot using this simple system, I know if his or her arrival is about to coincide with mine.

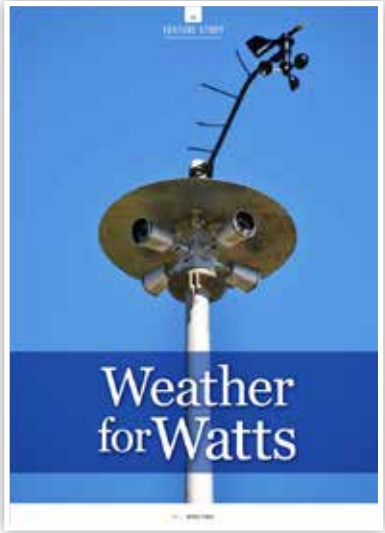
Please correct me if I'm wrong.

DAVE KING.

From the Ops dept *- Just to enhance the good work in your continued learning on recommended radio calls at non-controlled aerodromes, the correct call format referencing arrival time should be paraphrased e.g. "..... estimate circuit at TIME FIFE TOO" followed by the original station identifier. Reference AIP GEN 3.4 4.12.5-7. Professor Avius, like many others, has also fallen into the trap of stating that a base call is mandatory, as the table in his excellent article shows. The base call is recommended but not mandatory. As the Professor says, always go to the source. In this case Reg 166C with the supporting guidance provided both in AIP GEN and CAAP 166-1(4).*

WIND AND THE WILLOWS

With all due respect to the Watts Bridge volunteers who installed the weather station, the camera system and the on-line readings, I


Weather for Watts

must take them to task.

1. I cannot find one runway or one windsock on any of the camera views, plenty of hangars though.
2. The site for the weather station has probably been selected due to economic reasons however I fail to see how an accurate wind reading can possibly be obtained with buildings in such close proximity.
3. I believe that the weather station and anemometer should have been located according to B.O.M. aerodrome weather station guidelines.

Regarding the story 'A Simple Trip' (*Sport Pilot* July 2017) I pass the following comments.

1. Wyndham is not, "close to the ocean". It is very close to water but not the ocean (Timor Sea).
2. The distance from Wyndham to Kununurra is around 35nm, not 60.
3. 126.5 is not an emergency frequency.

Mr Rohrbach told us earlier in the article that instructor Norm stayed in Wyndham for a few days, awarded him his Pilot Certificate and all his endorsements. I can't see how it would be possible to achieve all of this in such a short space of time. What about theory examinations? Cross Country flight tests dual and solo? Ten hours PIC for PAX endorsement? Radio Operator tests?

One thing I'll say for Charles Rohrbach is that he has got plenty of guts to submit his story.

EDWARD REES

From the Ops dept: *If a pilot holds qualifications with another organisation, a different process for conversion is conducted, which only requires five hours minimum flight hours and confirmation of competency, along with a specific exam to ensure all theoretical requirements are met and recent changes understood. The cross country, radio and other endorsements can also be recognised from previous training.*


A simple trip

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).

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By watching the lessons in 360 degree video via the headset, the students can simply turn their head to see what is to the left, right or above, as the instructor narrates the lesson.

Owner and CFI at GoFly Aviation, Damien Wills, says young pilots have grown up with video games, iPads and Virtual Reality technology in their homes.

"They respond to interactive technologies more so than textbooks and classroom training. I decided to create the world's first online 360 degree lessons to save myself from having to repeat the same lessons over and over, and to also save our students time and money by cutting down on the hours of actual flight training they require.

As well as being included free with every flying lesson, the GoFly360 lessons are also available for budding pilots to stream and watch as often as required, at **https://vimeo.com/ondemand/gofly.**

Test it for yourself at **https://vimeo.com/219249998.**

UNDO

In the caption of the photo in Tech Talk, (*Sport Pilot* September 2017) it should have read Mick Wright not Nick.


Mick (second from the left)

'A dog of an afternoon' Editor's Choice (*Sport Pilot* September 2017) was meant to include the following.

'CASR 91.045 does not prohibit the carriage of animals, nor prescribe the manner in which they may be carried. Section 6.2.4 says, in part, if a domestic pet is to be carried unrestrained in the cockpit, the pilot must take into consideration the reaction of other passengers, who may have allergies or phobias, and with excreta containment. As with every flight, the operator is responsible for the safety of the aircraft and all people on board, while an animal is being carried."

For more information, CASA Advisory Circular AC-91-045.


A dog of an afternoon

"The only cloud on the horizon was the pooch"

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V1	COFFEE JUST ROCKS
V2	JAPHERS FINE FOODS
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H3	SEMINAR HALL 3

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2017 AIRVENTURE PROGRAM

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12:00	RAAUS MEMBER FORUM	Michael Linke, Mick Monck			
13:00	RAAUS MEET THE MANAGERS	RAAus Management Team	GARMIN'S NEWEST AVIATION PRODUCTS	Patrick Coleman	
14:00	OZRUNWAYS 2017 UPDATE	Scott Bretland			
15:00					
16:00	CAMGUARD ADDITIVES	Randy Bibb			
FRIDAY 20 OCTOBER					
9:00	PLANNING MASTER CLASS	Scott Bretland			
10:00			RAAUS MEMBER FORUM	Michael Linke, Mick Monck	FLYING RVS SAFELY
11:00	PART 149 OVERVIEW	Lee Ungermann	RAAUS WHAT'S IN A NUMBER?	Jared Smith	C-BUS GAUGES - KANARD
12:00	MAZDA ENGINES AND MY EXPERIENCE	Paul Lamar	RAAUS SAFETY, WHAT'S NEXT?	Philip Fox, Michael Linke	FK RE-INVENTION
13:00	THE LIFE SAVING EFB	Scott Bretland			SAAA SAFETY FIRST!
14:00	SAAA RISK RADAR	John Smith	RAAUS, USING THE MEMBER'S PORTAL	Kelly Stirton, Jared Smith, Hayley Wilson	PLANNING YOUR BUILD
15:00	SAAA FLYING OPS	Gary Weeks	ALL ABOUT AMSA	Peter Myers	HAND STARTING AN ENGIN
16:00	SAAA CHAPTER PRESIDENTS FORUM	Tony White	RAAUS, THE ROAD TO CTA	Jill Bailey	AVPLAN EFB
17:00	SAAA AP AND TC FORUM	Norm Edmunds	RAAUS TRAINING, WHAT'S NEXT?	Hayley Wilson	
SATURDAY 21 OCTOBER					
9:00	EFB AIRMANSHIP	Scott Bretland	RAAUS MEMBER FORUM	Michael Linke, Mick Monck	WHAT'S NEW AND EXCITIN
10:00	QBE MATT HALL SAFETY SEMINAR	Matt Hall			
11:00	BUILDIING A SLING 2/4	Errol van Rensberg	RAAUS SAFETY, WHAT'S NEXT?	Philip Fox, Michael Linke	CASA AVSAFETY - LIFE LES
12:00	INTRO TO PIPISTREL AIRCRAFT AND FUTURE PROJECTS	Michael Coates	RAAUS OPS, WHAT'S NEXT	Jill Bailey	SAAA OCCURRENCE MANA
13:00	AIRSHOW		AIRSHOW		AIRSHOW
14:00	AIRSHOW		AIRSHOW		AIRSHOW
15:00	JET AIRCRAFT IN THE MAKING	Terry Burton	RAAUS, WEIGHT INCREASE	Jared Smith	SAAA RISK RADAR WORKS
16:00	GARMIN'S NEWEST PRODUCTS	Patrick Coleman	ALL ABOUT AMSA	Sheridan Howell	SAAA OCCURRENCE MANA
17:00					

EMINAR ROOM 2		SEMINAR ROOM 3		SAAA HANGAR	
	Brian Moore			COMPOSITES WORKSHOP PT1	Lindsay Danes
IA.	Greg Doyle	CAMGUARD ADDITIVES	Randy Bibb		
	Greg Doyle			WE ARE SAAA	Andy George
	Martin Daniell	BUILDING A BUSH CAT	Errol van Rensberg		
	Andrew Long	INTRO TO ELECTIRC AIRCRAFT	Michael Coates		
NE	Steve Curtis	INTRO TO TOPAZ	Rod Birrell		
	Peter Derick				
NG AT JABIRU	Rod Stiff	CAMGUARD ADDITIVES	Randy Bibb		
SSONS	Teraya Miller	SPORT PILOT -ALL ABOUT THE MAGAZINE	Brian Bigg	ENGINE WORKSHOP	Richard & Rob
AGEMENT SYS	Martin Daniell			ENGINE WORKSHOP	Richard & Rob
		AIRSHOW		AIRSHOW	
		AIRSHOW		AIRSHOW	
SHOP	John Smith			COMPOSITES WORKSHOP PT2	Lindsay Danes
AGEMENT SYS	Andy George	TURBO INJEC ON DIESEL & HYBRID BA ERY/DIESEL POWER	Greg Doyle		
		FOXBAT AIRCRAFT	Peter Harlow		

Meet the new head of CASA

BY BRIAN BIGG

SHANE Carmody looks like a normal person and he certainly sounds like a normal person, but there must be something deeply wrong with him.

He's just taken on the job as CASA's Director of Aviation Safety, a task which has chewed up and spat out a number of very good men over the years.

He's been there before. He worked for the organisation for three years from 2006 and says it was a surprise to him when he was chosen for the top job this time around.

"It was a steep learning curve during those years, but I got positive feedback from quite a few people within the organisation."

Unlike most of the previous CASA bosses Shane is not a flyer himself. But he is an administrator and the one thing that everyone would agree is that the never-ending job of reorganising CASA needs to continue and improve.

"I'm lucky because CASA's image has been slowly improving over the years and has probably never been better than it is at the moment," Shane says. "It's probably 75/25 positive nowadays". He sees his main role as further improving the relations between the regulator and the regulated.

I want the relationship to be more respectful."I want to close out some of the issues that have been around a long time which are irritating everyone. Such as the medicals, RPAVs' and frequencies in low-level airspace.

"Fatigue is another one. It has polarised the industry and I want to clear the books of all these things to make sure CASA can reach a better standing within the industry."

So what does he think about the recreational sector?

"RAAus has done a lot of work on governance over recent years. Every organisation needs good governance and I appreciate what RAAus has done. Especially in the fields of risk management and becoming a more professional organisation. I see RAAus as the gateway to the industry. People don't like learning in an old aircraft and being able to do it at a lower cost is obviously the way everyone will want to go. It doesn't mean, though, it has to be less professional.

"The current board of RAAus has a very good relationship with CASA and I am very supportive of it. I can't give RAAus more money, my budget isn't that large, but I can support the organisation through technical assistance and at the business levels.

So where does our 9,000 member organisation fit within CASA's priorities? "Obviously safety in RPT aircraft is where I spend a lot of my time. On behalf of the government I have to pay attention to the big end of town. Then comes the risk space - managing RPT and charter organisations where fatigue and cutting corners can be issues. Then comes aerial work, where again there is a lot of fatigue and risk.

"And then comes RAAus, which obviously has a lot of pilots, but they're not in airspace and RAAus has developed a structure and an acceptance of risk which allows me to let them get on with it. There is still a certain element within RAAus which is resistant to the changes, but RAAus is managing that." On the subject of RAAus access to controlled airspace, Shane was polite but realistic.

"There is a pathway for RAAus pilots to get access to controlled airspace, but there will be resistance from the other stakeholders. There are those who say the idea is risky. AirServices Australia has a strong view as well. It will be a tough path and it won't happen in six months. I will need to see increased confidence from all players that we have looked at all the risks before it can go ahead.

"But I don't see why we can't get there."

The issue of an increased weight limit for RAAus aircraft appears to be less contentious for him. The big issue will be passenger numbers. If your aeroplane can take more weight, the obvious thing to do will be to fill it up with more people. For Shane that becomes a risk and maintenance issue as much as anything.

"We have to find a way to prepare a set of rules for everyone so the risks are mitigated."

He agreed, though, that a weight limit increase will be easier to get through than the CTA approval and more likely to get past the objections of all the heavy hitter stakeholders.

And, even though these issues might be important to us, for Shane they have to take their place in his much bigger picture.

"First I have to get Part 149 through (self-administering sport aviation organisations) which should be in the first quarter of next year. Then Part 103 (all the new rules relating to recreational flying). It's not going to happen as fast as everyone would want. With my priority on getting Part 149 through, other things will have to wait their turn."

I've spoken to the past four heads of CASA as they began their roles in the top job. Each of them had the confidence that they could make a difference. The fact that CASA is undoubtedly improving its governance indicates they must have indeed had an impact on the organisation during their terms. But the fact is none of the former CASA bosses signed up for a second term, which tells you something about how hard it must be to wrangle such a big and dangerous bureaucracy. And if you asked them quietly, which I did to a couple of them, what it had been like in there, they just shook their heads and politely declined to comment.

CASA is still a difficult workplace, with quite a few people who don't want to change and who see themselves as the keepers of the flame. To me, it's just as likely that the organisation is improving more because these old moustaches are getting old and retiring, than because of anything the bosses might be doing to improve the culture.

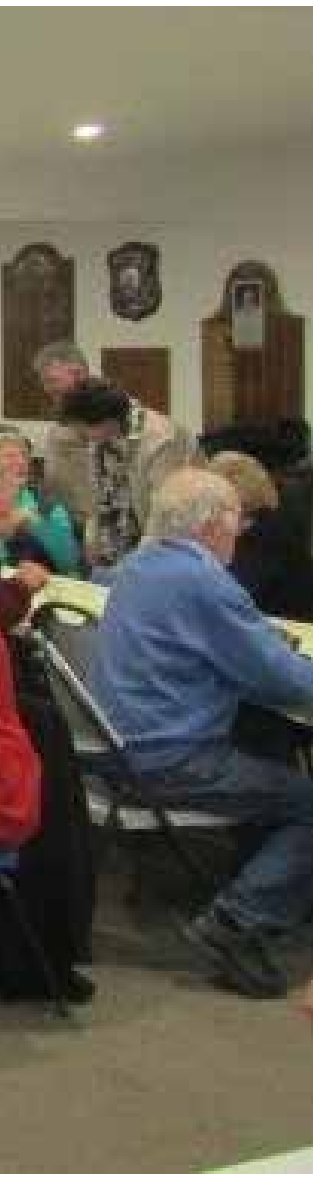
As with the previous bosses, Shane has a hard task ahead of him. As you would expect, he appears confident he can make a difference. He didn't try to oversell his view of RAAus to me. He put us fairly and accurately within his list of priorities. After all, the flying public and the politicians jump all over him when 'safety' is called into question. It was quite clear during my interview with him that if RAAus can professionally manage itself, he would gladly leave us alone so he can fry the bigger fish. It will be up to us to give him that confidence. And, although we might be able to get heavier weight limits for our aircraft in the near future, we face a much more protracted debate over CTA access. The 20 RAAus schools already within CTA boundaries will have to keep turning out students who can show everyone that they can be trusted playing with the big boys. Then we might have a chance of convincing the public and the politicians to let CASA push the go button for the rest of us. At least the new boss of CASA appears willing to give us a chance.

"There are those who say the idea is risky"

"Glorious weather on Saturday but cloud on Sunday"

The popular clubhouse dinner

Andrew Pitcher's yellow Tiger Moth



A beaut Saturday arvo

The public could get up close

Top time in Tumut

BY ROD BLUNDELL, **SECRETARY**

TUMUT Aero Club hosted a fly-in weekend on 26-27th August. There was glorious weather on Saturday but cloud on Sunday prevented any new arrivals. However, the pilots who did make it through and who stayed overnight enjoyed a sumptuous breakfast. Even if you got up late, an all-day BBQ of steaks and sausages kept everyone satisfied.

About 30 aircraft were lined up on the apron and made an impressive sight. Members of the public were allowed to walk among the aircraft.

As well as being able examine the flying machines, they were able to admire a display of aircraft under construction, including a timber framed glider from the 1950s, which is being refurbished.

Several hot air balloons enthralled the public early in the day, while members from True North Helicopters and a paramotor provided scenic flights up the valley and over Blowering Dam. Andrew Pitcher in his yellow Tiger Moth also drew a lot of interest.

On Saturday night, the clubhouse dinner drew 55 people. They were addressed by guest speakers, Catherine Fitzsimons and Shelley Ross.

Next year, our fly-in will move to October long weekend (6-7th) and we hope to have a feature event.

30 aircraft lined the apron

National Safety Month

The most important month

BY PHILIP FOX **SAFETY, RISK AND COMPLIANCE MANAGER**

NATIONAL Safety Month has evolved since its first inception in 2015. Today the National Safety Month initiative holds true to its original tenant, that is, to identify and focus on the most significant operational and technical elements that our analysis provides through open reporting in our Occurrence Management System for RAAus.

Human factors continue to rate highly as a contributing cause of incidents and accidents. This years' National Safety Month will challenge CFIs, instructors and members to facilitate and embrace open dialogue. This initiative provides a necessary forum for members to refocus on the role human factors play in decision making and the physiological effects it has on flying an aircraft.

As we embark on our recreational flying activities, we are encouraged to consider the IMSAFE message. This message is part of an overarching fitness-to-fly theme which RAAus has developed in direct response to incident reporting.

The month of October brings together members across the nation to hold safety talks, promote reporting and to share new and old lessons learned. This team orientated approach to safety and an overarching respect that we all operate in a risk prevalent industry, allows many to reflect, some to realign their safety compass and others to simply enjoy frank and open discussion with a group of likeminded individuals.

It does not matter what level of contribution you give at one of the many locations which will hold a Safety initiative this month. What is important is you are there.

No-one gets to choose when an in-flight emergency will unfold, you can't cancel the weather just because it unexpectedly sets in below your VFR minima and you rarely get a second chance to learn about loss of control issues when they occur on short final, during the flare or as you commence your landing roll.

If these initiatives don't save you , it will likely be your presence and input which ultimately saves another.

I intend to use this October as an opportunity to openly share my experiences and to draw on the lessons learned from others as I actively seek to develop my personal toolkit of knowledge and experience. So I, too, am ready should I ever be faced with an untimely or ugly in-flight emergency situation. I commend October Safety Month to you all and encourage you to embrace it, as I will.

Say hello to Philip

RAAus' new National Safety, Compliance and Risk Manager

It is an absolute pleasure to commence working with RAAus. I acknowledge the excellent contribution my predecessor, Katie has made to the organisation and I thank her for this.

From the foundation Katie has set, I look forward to working alongside each and every one of you as we collectively meet our common objective, which is continued and ongoing safe flights and maintenance for RAAus members.

Despite the challenges, current and those yet to come, I would like to set aside potential differences or competing commercial objectives, and work together with you to ensure operational success for all. RAAus and the sports and recreational industry are in the midst of profound transformation. The coming year is set to be jam packed with exciting advancements. 2018 will see the final roll-out of the Safety Management System (SMS).

As part of this roll out, I expect to meet a large number of you in a short space of time. I also expect frank discussion and mutual respect as we work through a diverse range of issues and at times, differences of opinion.

I bring to RAAus almost 14 years of military experience and expertise as an air traffic controller. I have served in Canberra, East Sale, Williamtown, Richmond, Pearce and Tindal. My experience also includes five years working as an Aviation Safety Officer within the Air Force Safety Management System. This system is one of the most advanced Safety Management Systems in the world. In addition to my Air Force career, I have also spent time working at Tamworth Tower with AirServices.

This work has further enhanced my understanding of general and recreational aviation and the problems training organisations face in high density traffic environments.

My experience as an ATC working in class C and D civil and military airspace provides another layer of experience and knowledge within RAAus as we work towards gaining greater accessibility to controlled airspace.

While my aviation experience is broadly military based, I am ready and willing to listen and learn what RAAus members need, want and are concerned about. An SMS is not a set-and-forget or externally imposed system. It requires engagement and collaboration from all participants. RAAus members have already committed to this with the increase in reports through the Occurrence Management System and a willingness to tell their stories to assist all RAAus members.

I would like to thank Neil Schaefer for taking me on my first ever ultralight flight in his Savannah S over the magnificent Glasshouse Mountains. How lucky we are to be able to enjoy such a beautiful and diverse country.

As part of the team at RAAus, I look forward to facilitating and participating in Safe, Affordable, Fun and Enjoyable aviation with you all as we explore this great country and the opportunities it affords.

I would like to thank the board for selecting me for this role, I would like to acknowledge the excellent staff who work behind the scenes in the office at Fyshwick on a daily basis.

I would like to thank CEO, Michael Linke for leading RAAus over the past three years through a truly magnificent transformation and finally, I would like to thank each and every one of you for being part of the RAAus community and in advance for your loyalty and support as we approach what is set to be a truly exciting 2018.

RAAus new National Safety Manager, Philip Fox, (left) with Assistant Operations Manager, Neil Schaefer

National Safety Month

Wake-Up!

BY LUKE BAYLY

Cockpit stress is something we have all experienced in one form or another. To some extent, it is useful for sharpening you up during a sequence requiring your full attention. But how well do we understand the effects of this human factor?

AT the moment your brain reaches a point of saturation and unable to process additional information, you have the potential to become dangerous to yourself and your passenger.

I learned to fly recreational aircraft during my vacation from university. I had saved up for two years working through bartending and then, as I was completing my exams for the year, got in touch with the local school (Adelaide Biplanes) and began the journey to my Certificate.

Because I had limited time to complete my Certificate during the holidays, my lessons were held almost daily through the week with a one hour drive each way and the study for the Basic Aeronautical exams on top. Midway through the process, there came a day where the pressure meant I hadn't slept very well the previous night. I wearily made the long trip down to the airfield and found that, because of the ideal weather, there was no turning back from flying that day, even though I was a little tired.

Plus, I was a student, so it meant flying with an instructor and my education hadn't quite reached the point of consideration for 'fit to fly'.

So with about 15 hours of flight time under my belt, I was completing circuit training and learning the process for cross-wind landings. After the instructor had identified the correct sequence and demonstrated the correct attitude crossing of the controls, it was my turn to attempt a landing. The first two attempts were good with minimal fine tuning required to my technique, but on my third attempt, things went pear shaped.

A finals call was made and crossing of controls had been initiated as we turned towards runway 21. Speed, runway, cross controls, into-wind wing drop, check speed again, 100ft AGL, on runway center-line, check speed, don't stall, into-wind wing, check speed, over the fence and here comes the.....

> "I could not get the information from my head to my hands."

My mind at this stage reached critical mass and, despite making sure my speed, position and direction were all aligned, I had no capacity to include the flare for landing. It was incredible, because I knew what I needed to do, but could not get the information from my head to my hands.

So, instead of focusing on what was most important, everything just stopped as we headed for terra firma and I just watched as if I were a passenger.

"Wake up!" yelled my instructor which instantly snapped me out of my glazed state. "Are you going to pull up?" he questioned as he assisted with the flare and we carried on to a non-eventful landing slightly off-centre of the runway.

Had there not been an instructor assisting me with that landing, I admit I would have driven that aircraft hard into the ground and, while I probably would have survived the landing, there would have been substantial damage.

So now, when I go flying, part of my pre-take off checks includes a quick assessment of my current mental state to make sure I can handle the load required to pilot safely. In addition, a part of my downwind checks and especially when turning final, is to complete a bit of a mental check and ensure I am relaxed enough to handle th load of getting the aircraft safely back on the ground.

Remember the hierarchy of priorities is to Aviate, Navigate and then Communicate. When the stress is high during periods of training, adverse conditions or emergencies, delay the other two for that instant and just focus on flying the plane.

Can you save a life?

First Aid Training can save lives.

Life is unpredictable, and you never know when an accident will happen. Unfortunately, accidents can and do happen. Knowing how to perform simple procedures to keep a person breathing and how to administer basic treatment to stop a person from bleeding excessively, can help save a life, or at least reduce the severity of an incident until professional medical help arrives.

Special offer to RAAus members

As part of National Safety Month we are pleased to announce a new Memorandum of Understanding (MOU) between RAAus and Australian Red Cross. This MOU provides us the opportunity to offer all RAAus members discounted first aid training including the following courses:

HLTAID001
Provide Cardiopulmonary Resuscitation
HLTAID002
Provide Basic Emergency Life Support
HLTAID003
Provide First Aid

To book a course near you call the Red Cross on 1300 367 428 (option 2) and quote RAAUS. Or visit the Red Cross Course locations to find a course near you:
https://college.redcross.org.au/courselocation.aspx?state=nsw&_ga=1.11695030.327912042.1470707646

the power of humanity

AUSTRALIAN RED CROSS TRAINING SERVICES

Save Lives. Learn First Aid.

Red Cross is the preferred first aid training provider for Recreational Aviation Australia.

Members discount applies to first aid training including:

HLTAID001 Provide Cardiopulmonary Resuscitation
HLTAID002 Provide Basic Emergency Life Support
HLTAID003 Provide First Aid

Call **1300 367 428** (option 2) and quote 'RAAUS' to book into a course near you.

Red Cross training programs generate income to support our ongoing humanitarian work.

RTOID 3605

Nationally Recognised Training

National Safety Month

OMS reports

The Safety section of the RAAus website provides de-identified information regarding accidents, incidents and defects which have occurred since the launch of the Occurrence Management System in October 2015.

In the 23 months since, members have reported over 600 times. And for those who contributed, thank you. The reports are not only a requirement under the Australian Transport Safety Act, but are also an important part of RAAus' responsible safety culture under Section 4.08 of the RAAus Operations Manual. The reports assist in a variety of ways to detect potential systemic problems with an aircraft, a training system or the safety culture at an airfield or within a club.

Any one of these reports could involve further action or follow up. As such, they are all analysed. The analysis could affect policy decisions regarding the assessment of pilot experience or conditions, aircraft design or training, or simply added to an archive for even more analysis in the future.

RAAus operates an open and fair reporting culture and believes education provides better outcomes than punishment.

Please report all occurrences. We can all learn from your experiences.

AIRCRAFT: RAGWING STORK
PILOT EXPERIENCE: 97.4HRS
A new motor propeller combination was set to 2,300rpm as per manufacturer's specifications, reducing pitch by one degree from the previous flight. A ground run was completed and take-off with 10 degrees of flap. Take-off was uneventful but the aircraft would not climb out of ground effect. By the time the pilot realised, it was too late to land back at the airfield. The aircraft continued straight ahead at full power and not climbing at about 35kts (with stall about 30kts). The pilot attempted to turn east and follow low country and retracted flaps to try and increase speed. The aircraft started to descend at full power and the pilot conducted an emergency landing in a field between poplar trees, over a road and power lines, with a limited landing run because there were trees at the end of the field. The aircraft cleared the electricity wires by 5-8m at full power and with a high angle of incidence. Once the aircraft was over the wires, the pilot, sitting in rear of cockpit which made it difficult to see the landing area, throttled back for landing. This caused an instant stall from approximately 15-20m with impact to ground with the main gear and then propeller.

OUTCOME: The pilot suffered serious injuries. He indicated he had learned some lessons and made a few incorrect assumptions regarding the engine and the aircraft. No pull testing was conducted with the new engine combination. Because the pilot had limited flight hours on the aircraft he was unable to tell subtle differences in performance in flight testing. The pilot has written an article regarding the lessons that he learned from this accident which will be published in the RAAus Safety Booklet issued to all members in October 2017.

AIRCRAFT: JABIRU J200
PILOT EXPERIENCE: 2,000HRS
Fuel mismanagement. The pilot turned off wrong fuel tap.


For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: Pilot confirmed fuel starvation was the result of incorrect fuel system management. The pilot/owner reports the aircraft has a modified fuel tank system incorporating three separate fuel cells. Two x 50L wing tanks and a centre fuselage 50L tank. All are separately tapped to allow the pilot to regulate flow from wing tanks to the primary tank. Pilot confirmed that having all tanks selected ON can overflow main tank and, if wing tanks are empty and in ON position, air may be introduced into the system.

AIRCRAFT: TECNAM P92
PILOT EXPERIENCE: 57.2HRS
Left wing petrol cap was left off the aircraft after refuelling.

OUTCOME: Pilot stated there had been a change to where the pre-flight checks were normally completed and he had done things slightly different to his normal routine. The aircraft was located in a different position and on grass, making it more difficult to manoeuvre the petrol drum trolley. Pilot was aware of the human factors involved in how the fuel cap was forgotten. Was advised to follow a pre-flight check list to ensure petrol caps are secured and visually verified.

AIRCRAFT: CORVUS FUSION
DEFECT: Significant leakage of fuel under pressure along the length of the fuel line from pump to injector rail. Fuel forced out under pressure through the stainless steel over-braid. Aircraft had previously flown, during factory flight test however had not flown since then for more than two years. Examination of a small length of core rubber hose from which over-braid had been removed showed a multitude of cracks and tears in the hose. Leakage estimated at one litre during 30 secs of pressurisation.

OUTCOME: Tech reviewed report and appears the issues regarding the fuel line caused by the extended storage period. Tech recommends a full inspection of aircraft after long storage periods to identify any corrosion which may have occurred.

AIRCRAFT: SLING 2
PILOT EXPERIENCE: 244.9HRS
An aircraft was given instructions and clearance to land by ATC on RWY28L however the pilot mistakenly lined up and landed on RWY28R.

CLEAR MIND CLEAR PROP

OUTCOME: The pilot was aware he had been distracted by a conversation with the passenger during landing. During the approach, the pilot had confirmed with the tower that he was cleared to land on runway left, not right. The pilot was given instruction to contact the tower and gave a rundown of their situation from hisperspective. The tower staff informed the pilot the incident would be reported, however stated that no harm had been done and the pilot could take it on board as a lesson, never to be repeated. The pilot says he will now check his clearance, visualise the runways (left and right), mentally assigning the correct runway then recheck his read back.

AIRCRAFT: AEROPRAKT A22 FOXBAT

The pilot and passenger were tracking east returning to Caboolture Aerodrome when the windscreen blew in and broke up without warning - simultaneously both doors blew open and also broke up. The pilot then made a 'MAYDAY' call and carried out a successful forced landing into a field. The landing resulted in suspected damage to the port main undercarriage. Both pilot and passenger exited the aircraft with no injuries. Pilot phoned for assistance and to cancel any Search and Rescue efforts launched in response to the 'MAYDAY' transmission and also for recovery from the scene.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: Both Operations and Technical departments reviewed this report:

OPERATIONAL ELEMENTS: The training flight was conducted in marginal weather conditions with respect to wind, turbulence and expected VMC enroute. The senior instructor was interviewed in relation to flight planning and decision making for the flight and confirmed the navigation training exercise was conducted to assess the pilot's decision making and in-flight assessment based on VMC criteria, which was successfully executed. The in-flight fracturing of the windscreen and associated airframe could not be directly related to any operational elements but investigation of the effects of wind shear and dynamic pressure changes may have been contributing factors outside the scope of the investigation. The flight actions by the crew following the in-flight event were deemed satisfactory and performed to a high standard.

TECHNICAL ELEMENTS: The windscreen appears to have broken due to a combination of a few small cracks in the windshield (which were not addressed with a replacement of the screen) and the weather conditions. The small holes were stop drilled which is an acceptable practice. The weather played a considerable part in this incident. The factory and Australian agent have expressed their willingness to prevent this from happening again.

AIRCRAFT: LITEFLITE DRAGONFLY
PILOT EXPERIENCE: 498HRS

On take-off from a narrow strip in a cropped paddock, the pilot misjudged directional control of the aircraft. The aircraft veered off towards the side of the cleared strip and the undercarriage dragged through a heavy crop. The pilot immediately closed the throttle to abort the take-off. The drag of the crop on the undercarriage caused the aircraft to flip upside down.

OUTCOME: The pilot had previously operated from the paddock, but it had been sown with a different crop this time. The crop this year had a thicker and bushier growth, which caught the pilot out, resulting in the runway-loss of control (R-LOC) event. The pilot has also correctly identified this as an example of normalisation of deviance.

AIRCRAFT: JABIRU J120C
PILOT EXPERIENCE: 205HRS

While taxiing, the aircraft became unstable. As the pilot was returning to the apron, a wind gust upset the plane which resulted in a wingtip and propeller touching the surface of the runway.

OUTCOME: The pilot advised that from this incident he learned to have better aileron control and situational awareness when ground handling the aircraft. RAAus Operations has reviewed the information and proposed corrective actions.

AIRCRAFT: ICP SRL SAVANNAH
PILOT EXPERIENCE: 269.2HRS

While completing a BFR flight, the pilot was demonstrating a simulated engine failure glide approach. Due to a high sink rate, the pilot intended to apply full power, however removed all power by mistake which resulted in a heavy landing. The aircraft bounced on the nose gear, which collapsed, resulting in the aircraft flipping over.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: The pilot will complete his BFR prior to further flight. RAAus reminds pilots who also operate farm machinery to carefully apply power, due to the possibility they could inadvertantly reverse throttle input while under stress or pressure.

AIRCRAFT: AEROPRAKT A22LS FOXBAT
PILOT EXPERIENCE: 650HRS

While at Kununurra a group of four Savannah pilots consulted with a local tour operator about to how flights around the Bungle Bungles were to be conducted. During the flight, a comfort stop at Turkey Creek was necessary. The pilot checked ERSA and Turkey Creek was not listed so he was unable to discover the local airspace rules. Being some distance from the Bungles, the pilot assumed 126.7 would apply for the circuit. The pilot was surprised at the amount of air traffic at Turkey Creek, considering it was not listed in the ERSA. Upon return to Kununurra, a Chief Pilot pointed out to the four pilots of the Savannahs that Turkey Creek falls within the special CTAF zone of the Bungle Bungles.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: Operations reviewed this report and advises that, when travelling to remote areas, or any flights into unfamiliar areas, pilots should contact local operators where possible beforehand for helpful local information and procedures. Many ALAs are unlisted in ERSA and the relevant state Country Airstrips guide published by AOPA is a useful resource in these instances.

National Safety Month

AIRCRAFT: JABIRU J120C
PILOT EXPERIENCE: 118.7HRS
Coming in for full stop landing on runway 17, just prior to touchdown the aircraft lost directional control due to gusting wind. As the pilot tried to correct the aircraft back onto the runway, it hit a culvert running parallel to the runway and, as a result, crossed the taxiway and ended up in a hedge.
OUTCOME: Possible factors include the pilot's age and the differences he may have experienced with this aircraft compared to the aircraft used to gain his Pilot Certificate.
The pilot will complete further flights with an instructor, particularly because an order has been placed for a different brand of aircraft as a replacement.
RAAus Operations reminds pilots of the importance of type training when flying a new aircraft and encourages them to seek assistance from instructors if required.

AIRCRAFT: TECNAM P92 ECHO
PILOT EXPERIENCE: 1,778.8HRS
Pilot had set up to land and flared. As he pulled on the control stick to flare, a drink container cooler (located between his passenger's legs) prevented the stick from further backwards movement. The plane landed heavily on the nose wheel first.
Then the pilot felt the tail hit the runway and the plane veered to the left of the runway. The pilot began to brake hard and steer back to the centre of the runway, however the plane did not change course and continued into the trees. The left wing hit the trees, the aircraft went sideways and stopped.


For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: Pilot was unable to correctly flare the aircraft during the landing due to the passenger having a small drinks container on his lap. The pilot says his future operations will ensure an adequate passenger briefing is conducted and he will confirm items are correctly stowed as part of pre-landing checks.

AIRCRAFT: ICP SAVANNAH S
PILOT EXPERIENCE: 2,000HRS
Due to bushfire smoke, the pilot was unable to get visual landmarks until virtually over the top of them. As a result, map reading became virtually impossible. This, coupled with the failure of a backup GPS, plus an increase in the severity of the turbulence, resulted in the pilot becoming uncertain of his position. Rather than letting the situation progress to a more dangerous situation, and because the aircraft was transponder mode S equipped, the pilot requested assistance and a radar vector from Brisbane Centre. The pilot was vectored to the circuit area Chinchilla where the aircraft landed safely.


For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: This is a classic 'Swiss cheese' scenario about which pilots should be aware when managing flights in smoke affected areas. The pilot noted he was only using GPS for assistance and all navigation should have been completed using basic navigation and dead reckoning practices, increased smoke in the area was a major factor for a potential flight into IMC conditions. The lessons here for all pilots is to consider smoke haze as similar to cloud when planning flights. The pilot completed appropriate actions and prevented the holes in the Swiss cheese from lining up by engaging the assistance of Airservices which resulted in a positive outcome.

AIRCRAFT: AEROPRAKT A22LS FOXBAT
AIRCRAFT HRS: 450HRS
While on base leg (instructor conducting circuits with a student) the pilot suggested bringing on power to slow the aircraft rate of descent. They were about to turn final and did not want to drop below 500ft (the aircraft altitude was approximately 600ft). As power was increased, the engine shook violently and stopped. After identifying a safe place to set it down, the pilot then turned on both fuel taps and managed to restart the engine. The pilot returned to the airfield with no further incident.
OUTCOME: Technical Manager noted the possible cause may have been either the fuel taps being turned off or an issue with the fuel return line. This aircraft has recently had issues highlighted regarding the fuel return line which have been addressed by manufacturer. The manufacturer has provided service kits to owners to address issues regarding the fuel return line.

AIRCRAFT: JABIRU J160C
PILOT EXPERIENCE: 143.5HRS
Shortly after landing in a crosswind, the aircraft suddenly veered left while still traveling approximately 50kts. This sharp turn resulted in the aircraft rolling to starboard and running off the left-hand side of strip onto the shoulder. As the pilot corrected and turned right, the prop struck the tarmac.
OUTCOME: While landing at a tarmac airport, the pilot, who had previously been trained at a grass aerodrome, may not have corrected for the crosswind and straightened the nose wheel prior to touching down. The pilot is completing further revision of crosswind technique and practicing landing at hard surfaced runways.

AIRCRAFT: AIRCRAFT KITS HORNET STOL
PILOT EXPERIENCE: 990HRS
There was a strong gusty northerly wind in the circuit area. When the aircraft was approximately one metre off the ground, a strong gust of wind hit the nose which caused the nose to rise. On correction, the aircraft nosedived into the ground and somersaulted.
OUTCOME: Pilot was competent and experienced in aircraft operation and aware of conditions at the time of the incident and correctly applied appropriate landing technique based on the situation. While completing the landing roll, and 'pinning' the tail wheel, a severe gust caused the aircraft to pitch and become airborne, finally inverting on impact. The aircraft was destroyed, however no one was injured. High lift, lightweight recreational tail wheel aircraft which are often used for off-airport operations are more susceptible to thermic turbulence and wind gusts during take-off, and particularly landing, and require appropriate decision making regarding operation and use during these conditions.

AIRCRAFT: TECNAM P2002 SIERRA
AIRCRAFT HRS: 1,299.3
DEFECT: While carrying out an annual maintenance inspection on the airframe, one lateral undercarriage retaining bolt was found to be broken. The bolt had sheared at the base of the retaining nut and also at the head of the bolt.

CLEAR MIND CLEAR PROP

The only remaining part was the nut, the rest had fallen out of the airframe. At each of the previous annual/ 100hr inspections the nuts had been checked, torque loaded and the nuts checked to comply with Tecnam Service Bulletin No23-UL and RAAus Airworthy Notice 070807-1 dated 9 Sept 2007.

OUTCOME: Appropriate service bulletins and notifications have been issued to draw attention to this. Members are reminded that other factors such as a heavy landing or incorrect torque procedures (even un-calibrated torque wrenches) can also cause the bolts to fail.

AIRCRAFT: FLYSYNTHESIS TEXAN 550

The passenger inadvertently unlatched one side of the bubble canopy of the aircraft while in flight. A precautionary landing was safely carried out at local airfield.

OUTCOME: No further action or comment is required. Members are reminded to ensure passengers have a pre-flight briefing.

AIRCRAFT: JABIRU J160C

PILOT EXPERIENCE: 975HRS

The pilot was issued instructions to join the circuit and follow a C172. The pilot turned and mistakenly followed the wrong aircraft. When the error was detected, the pilot was instructed to go around and rejoin the circuit on mid downwind.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: Pilots are reminded to remain vigilant in the circuit at all times to avoid possible conflict with other circuit traffic.

AIRCRAFT: AEROPRAKT A22LS FOXBAT

During a navigation exercise, the student made a call at 10nm inbound for circuits, to which no response was heard. The student followed correct procedure and checked the pattern for traffic and traffic was seen on the final for runway 35. The student elected to join crosswind and tried to make contact with the aircraft in the circuit. However no response was heard. The student then made a general broadcast that he was joining crosswind. The second aircraft turned towards the student aircraft - when they got to around 200m, the student took evasive action and joined upwind.

OUTCOME: The pilot of the joining aircraft took appropriate evasive action to avoid collision. Operations at non-controlled aerodromes present environments of high risk for aircraft in close proximity.

The use of radio, while sometimes effective in providing alerted see and avoid, should not be relied on to determine circuit traffic or positioning. Pilots are reminded to apply effective lookout and appropriate circuit joining practices to minimise potential for collisions.

AIRCRAFT: THE AIRCRAFT FACTORY SLING 2

BIRDSTRIKE: On final, a Masked Lapwing (Vanellus miles) flew up from the grass during the hold off phase prior to touchdown and was struck by either the left wing or left undercarriage. The aircraft was undamaged but the birds' health is unknown.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: This aerodrome has a high rate of bird strikes,which is noted in the ERSA. Members are reminded that during the mating season birds may display territorial behaviour to aerial predators.

AIRCRAFT: TECNAM P2004 BRAVO

PILOT EXPERIENCE: 1,180HRS

After departing the airport, the aircraft climbed out to the north west and inadvertently entered Class C airspace. The pilot exited Class C as soon as he became aware of the incursion.

OUTCOME: The pilot self-assessed his actions, stating that the departure to the north west had been unexpected and not part of the original flight plan. By not revising the flight plan to accommodate for a new position, it led to a breakdown of situational awareness.

AIRCRAFT: JABIRU SK

PILOT EXPERIENCE: 3,474HRS

An aircraft landed on the closed runway. The runway was marked with closure markers (white crosses) as defined by the Method of Work Practices (MOWP) and a NOTAM had been issued.

OUTCOME: The pilot was aware of the requirement to obtain NOTAMs, however did not do this for this flight. He was also aware of the significance of the white crosses, however he did not observe these until late final. He did not conduct a go-around because he felt there was no conflict with the machinery. Pilot was counselled on the importance of obtaining and preplanning flights. He will ensure to obtain NOTAMs before future flights.

AIRCRAFT: SEAMAX M22

AIRCRAFT HRS: 250HRS

The aircraft touched down on the water at the correct speed and attitude with a slightly high vertical rate. It remained on top of the water normally for approximately three seconds, then had a high deceleration and rotated forward, coming to rest inverted.

For illustration purposes only. Not an aircraft involved in an incident

OUTCOME: It was identified that the aircraft had a number of previous wheel up landing incidents, which had been reported to RAAus. These incidents, however, had not been logged into the airframe logbook.

It is possible that a previous repair following a wheels up landing may have failed during this landing. Members are reminded to ensure appropriate information regarding incidents is entered into the aircraft logbook.

AIRCRAFT: RANS S19 VENTERRA

PILOT EXPERIENCE: 1,505.5

The pilot preformed a precautionary landing in a paddock due to deteriorating weather.

OUTCOME: After a long trip from a fly-in event, the pilot was returning home. The final leg was less than 80 minutes over terrain familiar to the pilot. Possible complacency due to familiarity with the local area may have resulted in the pilot delaying his departure or failing to take into account the weather conditions.

The pilot made a good decision to conduct a precautionary forced landing into a paddock, rather than continuing on. The aircraft was retrieved the next day with no damage.

STAMPE on a diet

BY STEFAN DEGRAEF

“An easy-to-build, sleek and eye-catching airplane”

“A revived interest in vintage aviation and nostalgic ‘compass and stopwatch’ based flying”

Raoul Severin

Stampe on a diet

IN the post-World War II years, the Belgium-designed but France-built sleek Stampe-Vertongen SV-4C open cockpit biplane training aircraft was in wide use by the French armed forces.

Constructed under licence by SNCAN (Societe Nationale de Constructions Aeronautiques du Nord) and the Algeria based Atelier Industriel de l'Aeronautique d'Alger, some 940 aircraft saw operational service within the various (North Africa-located) elementary flying schools of the French Armee de l'Air (Air Force), Aeronavale (NavalAviation) and ALAT/Aviation Légère de l'Armée de Terre. Similar to the pre-World War II A-variants, these C-models were equipped with a 140hp Renault 4-P engine.

Simultaneously the 'Service de la Formation Aeronautique de la Direction General de l'Aviation Civile' (Civil Aviation Directorate's Training Centre) operated SV-4s in their various 'Centres Nationaux de Vol à Moteur' for initial aerobatics and instructor training, spread all over France.

The excellent flying characteristics and easy maintainability of these biplanes triggered the French 'Service de l'Aviation Légère et Sportive' (Light and Sport Aviation Directorate) to offer the widespread and omnipresent SV-4s to various aéro clubs at bargain prices. The future of the SV-4C as France's dedicated civilian pilot training aircraft seemed settled well into infinity. However, the unstopable quest for technical and performance enhancement, and the availability of more advanced and better equipped general aviation and training aircraft, quickly made the 'old biplane' too obsolete for training purposes. Luckily, a revived interest in vintage aviation and nostalgic compass and stopwatch based flying in France and all over Western Europe made the (at that time) low-priced SV-4 variants well-sought and desired flying collectors items for a new generation of private and professional pilots.

Since then the SV-4 community is well-settled within today's European vintage aviation scene with a vast number of aircraft still flying all over Western Europe, witnessed by frequent well-attended Stampe dedicated come-togethers of SV-4-owners in Belgium and France and attendences at a multitude of local fly-ins. On each occasion, the SV-4s attract a lot of interest from aircraft affectionados and owners alike.

However, the increasing popularity and resultant increase in the purchase price of vintage biplanes (incl. DH-82 TigerMoth and Bucker Jungmann aircraft), increasing PPL training costs and operational and maintenance expenses made these aircraft financially out of reach for the average recreational pilot.

These pilots looked for more financially sound hobby flying alternatives, gradually becoming omnipresent in Europe's skies - modern and well-equipped ultralight aircraft.

Since the conception of micro/ultralight aviation in the eighties, the development and variety of aircraft, depending on and fully compliant with the various national regulations, saw the creation of a multitude of companies all offering a wide array of modern, user friendly, well-equipped ergonomical aircraft at budget-friendly and competitive prices.

In recent years the renewed quest for vintage-like but financially sound ultralight aircraft has triggered various small companies to try and develop, replicas of the old masters. One of these niche market ultralight companies is Belgium-based Ultralight Concept, which has developed the eye-catching SV-4RS replica, based on the orginal SV-4C trainer.

SV-4RS CONCEPTION

Ultralight Concept and its SV4RS microlight biplane are the brainchild of Raoul Severin, a former Belgian Army Aviation and Air Force helicopter and fixed-wing pilot. At the end of his active army carreer, he created his own metal distribution company, also specialising in aviation materials. Raoul's first step in the world of ultralight/microlight aviation was the construction of a Platzer Kiebitz biplane, based on and using the plans bought from Michael Platzer.

Distributing welded steel tubing, usable for Kietibz and other amateur-build aircraft, he quickly became familiar with the needs and desires of a large number (mostly German) ULM affectionados. Once proficient with building self-build barn-made aircraft, the self-builder community slowly shifted to more realistic replicas of existing vintage aircraft.

Sensing a business opportunity, and having good contacts within the German and French amateur building groups, Raoul started to conceive his own ULM/Microlight-design.

In order to make his business plan and objectives work, he had to choose as the basis for this brainchild an easy-to-build, sleek and eye-catching airplane. The decision to use the Belgium-

designed vintage SV-4C biplane trainer as the replica of choice was straightforward because a large number of the originals are still flying all over Europe.

The plan suceeded. The French and German aviation communities, many of which were within driving distance of Raoul's eastern Belgium homebase, witnessed an increase in homebuilding activity. By ensuring his design met the prevailing microlight/ULM regulations, he was also able to boost the aircraft's exposure and make it easily sellable and marketable in other (more remote) countries.

The kick-off of the ambituous SV4-RS project started in 2007 with the purchase of the original manufacturing blueprints from the Angers (France) based Espace Air Passion museum. Based at Angers Loire airport, this museum houses one of France's most important collection of aircraft manuals and technical archives of unequaled importance within France's vintage aviation community.

Gradually deciphering and remeasuring in detail all the dimensions (overall length, wingspan etc) of the original SV-4 biplane, Raoul quickly concluded the widely available pre-welded metal tubes in his possession, used for Kiebitz biplanes, were of limited use in the new design. Kiebitz-like tubes have a standard length of five metres and the original SV-4C measures 5.15 metres so the only option for Raoul to build and market a 100% scaled ultralight-replica was to acquire new sets of metal tubes and send the available undersized tubes to the dust bin.

Correctly convinced that a smaller, 97% scaled replica, would deter future customers and home-builders, the decision was quickly taken to focus on a 100% replica and being first in class to offer this type of ultralight in the growing recreational aviation sector. Since Raoul was still part-time active as a military and medical helicopter pilot, the development of the SV4-RS proceeded slowly. In 2013 the first set of the fuselage, ailerons and tailplane were constructed.

Soon afterwards he was contacted by the RWTH Aachen University to allow students attending the university's aerospace syllabus to use various technical aspects of the SV4-RS as topics in their masters degree graduation papers. The influx and technical input of these young motivated engineering students boosted the development process. Various components were designed by the students, they even calculated in advance all the technical and structural characteristics and limits they'd need to supply when the aircraft was submitted for official validation. Finally, in 2015, an engineless SV4-RS with winged fuselage, ailerons and undercarriage was demonstrated at the 2015 edition of the AERO Friedrichshaven (Germany) and Festival International de l'Aviation Ultralegere in Blois (France). In the aftermath of these well known events 10 SV4-RS kits were sold at competitive launch prices to trigger the official kick-off of the SV4-RS and gain international exposure within the microlight fraternity. Aero2016 saw the presence of a non-flyable, but complete, Rotax 912 engined aircraft.

> "Inspections need to be performed by an Ultralight Concept staff member"

FIRST FLIGHT

Finally all necessary ground tests were successfully done and the SV4-RS prototype made its maiden flight at the end of 2016 at Büllingen airfield, close to the Belgo-German border.

Raoul and his team then quickly began the process of getting the aircraft certified in his markets of interest (Belgium, France, Germany).

They aimed at German certification first because that country's requirements were the most complex. They knew once they had successfully passed the German tests, they they could use the details as the basis for similar certification processes in other countries.

In February this year, two complete spare fuselages and wings were manufactured and tested to their limits in 60 structural tests on the airframe and its components (wingload, ailerons, seats, sticks, harnasses, landing-gear).

To pass German microlight weight limits, the SV4-RS could not exceed 297.5kgs empty and have a maximum 472.5kgs take-off weight. Initially planned to be +4/-2G capable, the aircraft limits were increased as a result of the tests to +6/-3G. When the ground certification tests were done, Raoul conducted the first test flights, monitored by his German university students and GoPro cameras mounted in the cockpit.

During the Aero2017 event, Ultralight Concept's SV4-RS replica passed its final test, a noise test and received its German permit to fly. The process of obtaining Belgian and French type certifications have also begun with planned acceptances by late 2017.

HITTING THE MARKETPLACE

In order to be able to successfully target its SV4-RS as the only full-scale vintage biplane replica on the market, Ultralight Concept created an diverse package, allowing customers to choose out of three kit alternatives. Kit One includes all blueprints, documentation and materials. Ultralight Concept would still need to inspect the overall structure of the build before the builder applied the canvas. Once fully assembled and ground tested, the maiden flight would also to be flown by an UC representative.

The more elaborate kit Two includes all elements of the first kit plus two four-day long workshops at the UC hangar. During the workshops clients will be helped to build their own fuselage, four individuals wings, wingspars and ailerons.

The third kit option is a completed 'boned' aircraft, still to be covered. The owner has to install his own engine (most likely a Rotax 912), avionics and wiring. Whichever option is chosen, all halfway inspections need to be performed and the maiden flight flown by an Ultralight Concept staff member.

By mid 2017, 52 kits have been sold to clients in Belgium, Germany, France, Poland, Czech Republic and Lithuania.

The builder is, on average, in its early/mid-sixties. With a planned from scratch to first flight-building time of around 1,000 manhours (depending on the kit selection), means the first SV4RS replica-biplanes may well take the air in 2019. There are already options available of a SV4B model closed canopy and a glider tow connector. Two other engines will soon also be certified for use.

Time will tell if Ultralight Concept's plan to put an 100% scale vintage aircraft replica into the market, occupied by 'young pensioners with a budget and some handiness', will be an enduring success. The immediate sale of 52 kits may well provide a hint of the answer.

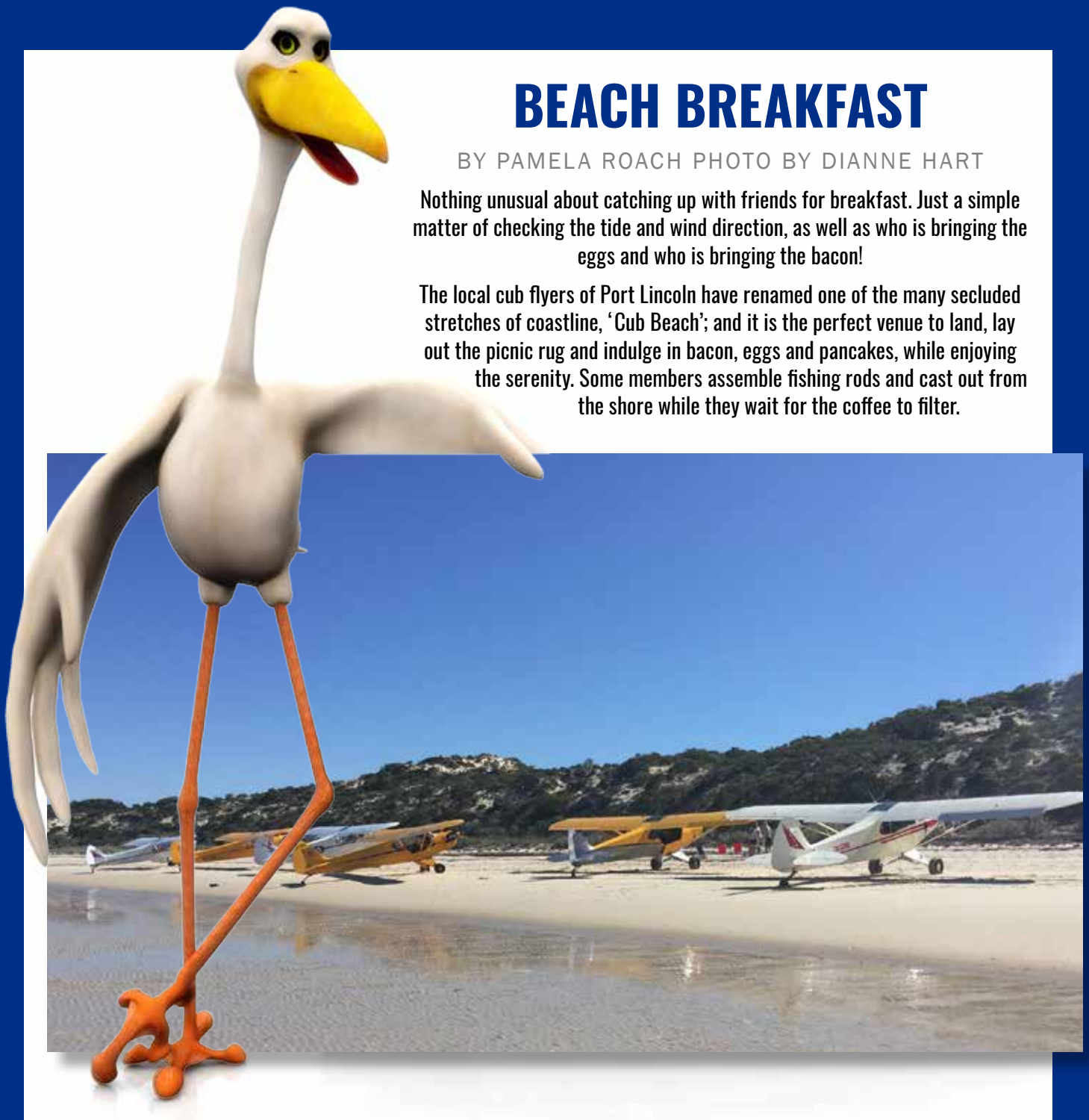

24-5285

BEACH BREAKFAST

BY PAMELA ROACH PHOTO BY DIANNE HART

Nothing unusual about catching up with friends for breakfast. Just a simple matter of checking the tide and wind direction, as well as who is bringing the eggs and who is bringing the bacon!

The local cub flyers of Port Lincoln have renamed one of the many secluded stretches of coastline, 'Cub Beach'; and it is the perfect venue to land, lay out the picnic rug and indulge in bacon, eggs and pancakes, while enjoying the serenity. Some members assemble fishing rods and cast out from the shore while they wait for the coffee to filter.



POSTER OPPORTUNITY

Want to see yourself or your aircraft larger than life on your clubhouse or bedroom wall?

Sport Pilot **is offering subscribers the chance to show off their favourite aviation photo in this double page centre spread of the magazine each month.**

Each edition one photo will be chosen (We will try and make sure every photo sent in gets a run). If you are an aircraft seller, it's a great chance to show off your product.

If you have a fancy paint job, now is the time to show it off. And if you have a great photograph of you and your mates at a fly-in, it will make a good memento.

Send your photos (as separate jpeg attachments) to editor@sportpilot.net.au. It obviously has to be in landscape, not portrait, mode and be as big a file as possible please.

The flight review

BY THE OPS TEAM

I can't speak for all pilots, but in my early days each lesson was met with the usual trepidation. But I was always excited about what I would learn. I was comfortable in the knowledge that my instructor wanted me to succeed, be safe and ensure my safety and that this was part of a never-ending journey in aviation that sets us apart from so many other pursuits. There were always pearls of wisdom on offer to add to my understanding and knowledge.

So why would this change when it comes to any flight review? Remember a review is not a test, but a confirmation that a pilot continues to meet at least a minimum standard for an RAAus pilot.

The concept of independent assessment in aviation is one of the cornerstones in how standards are maintained. As you move throughout your flying activities over time it's possible, and some say inevitable, you will become complacent or comfortable. You may not be as motivated as when you started. Rules, regulations or procedures will also have changed since your initial training.

An effective flight review should include review of ground and practical elements, no matter what level of certificate or rating you hold. While going to the same examiner time after time may be convenient and comfortable, it may normalise behaviours or normalise a deviance, which a fresh set of eyes and ears will quickly identify. Just like when you flew with a different instructor for the first time and he or she seemed to have a different set of 'hot buttons', inevitably you came away with a broader and sometimes better understanding of your own flying.

Here is a good example of where a pilot could have benefitted from a more comprehensive BFR, particularly in understanding and avoiding controlled airspace. This pilot breached active controlled airspace and failed to communicate on the appropriate frequency, due to misunderstanding and misinterpreting ERSA. It highlights the fact that taking advice from other pilots can be more dangerous than confirming information from the appropriate source.

"The pilot believed that the D on the VTC meant danger airspace and not D class airspace. The pilot also mentioned that he had spoken to other pilots who said he could just go through without needing a clearance."

Ironically this was just a month after the pilot had completed a BFR for his Pilot Certificate with a local RAAus school. Did the pilot gain the most benefit from this review? Did the examiner do the right thing by the pilot in not exploring more of the pilot's understanding?

These questions lead nicely into the review process for instructors and higher approval holders. An instructor has to balance many functions. Of course he or she should be a competent pilot, that goes without saying, but they must also be able to do much more.

RAAus Biennial Pilot Flight Review checklist.

1. Administration.		
Has RAAus membership been verified & card sighted	Yes_	No_
Are endorsements confirmed as appropriate for member?	Yes_	No_
Is the applicant's certificate current?	Yes_	No_
Review of logbook, flight activity and revision conducted	Yes_	No_
Is the aircraft being utilised compliant including registration?	Yes_	No_
2. Ground based assessment.		
Assessing Instructor determines any pilot identified areas for specific review or advancement.	Yes_	No_
Assess the applicants understanding of Air legislation IAW with CAO's appropriate to group rating/s (Oral).	Yes_	No_
Confirmation of understanding of any regulatory changes.	Yes_	No_
Review of Human Factors key elements confirmed?	Yes_	No_
Review and question pilot regarding flight planning requirements For: a) Local Flight b) Cross country flight	Yes_	No_
Review of Visual flight Rules and Meteorology.	Yes_	No_
Review of radio procedures at Non-Controlled Aerodromes.	Yes_	No_
Review of Controlled Airspace avoidance.	Yes_	No_
3. Flight assessment & post flight review.		
All pre-flight and flight sequences assessed as competent.	Yes_	No_
Confirmations of all requirements of section 2.07-5 have been met?	Yes_	No_
4. Administration completion.		
Logbook authorised and appropriate form/s completed/Submitted?	Yes_	No_

While working in the specific RAAus framework provided by our exemptions, an instructor must be able to effectively deliver the flight training syllabus, both on the ground and in the air. He or she must constantly apply well developed teaching principles and behavioural concepts, as well as be fully conversant with a vast array of theoretical knowledge and how to practically apply it. The instructor also needs to be able to easily identify errors in a pilot's skills and behaviour and effectively tailor solutions for each individual pilot.

If all this wasn't enough for our often part –time enthusiast, they also have to oversee administration and compliance, as well as commercial considerations.

This only becomes more complex as the instructor moves from Flight Instructor, through Senior and possibly eventually CFI.

Clearly a review of instructor level practices and skills must be far more complex than a BFR for a Pilot Certificate holder and generally will take substantially more time for the assessment.

Now all this may sound like a lot of hard work, but remember it is only once every two years. Not a big request or is it? Hardly an imposition on any pilot or instructor when you consider the ongoing value it can provide. Which raises the question - if you did not learn something new or were not challenged in your last BFR or instructor renewal, was there any real value? Or was it just a box ticking exercise? Do you approach a BFR or instructor renewal as just a task to be met to gain the entry in your logbook?

As a pilot you owe it to yourself to be the best you can be. No, you don't have to know everything, that's impossible, but a good cross section of applied knowledge and demonstrated skills is a great place to start.

GETTING THE HELP YOU NEED

RAAus has developed a range of resources which can help both pilots and instructors in the respective flight review process. Left is an example of the one for a Pilot Certificate BFR. Clearly if the last item in the ground based assessment was understood and completed appropriately, the wandering pilot from above may have saved himself some embarrassment and potential danger.

There is also a new set of advisory publications to assist both pilots and instructors via the RAAus website and CFI portal. These can be found in the following respective links.

RAAP 5 What to expect from your BFR:
https://tinyurl.com/ybnelpop
RAAP 6 Conduct of BFRs by instructors:
https://tinyurl.com/y9wbtmhn
RAAP 7 Conduct of renewals:
https://tinyurl.com/yb4m9fhy

Think about your review as an opportunity to learn, improve and discover areas of your flying where complacency or change has left you vulnerable or maybe even unsafe. Work with the examiner to ensure you are as up to date as you can be and enjoy the process.

Aubrey McInnes Coote

20.5.1925 - 27.8.2017

BY VAUN MONCUR

Aub Coote was possibly RAAus' oldest CFI, still flying and instructing at 90 years of age. Aub was also possibly RAAus' longest standing member. His service and love of recreational aviation is unmatched.

THROUGHOUT World War Two, Aub flew in Liberators as a navigator and air bomber. In 1947 he obtained his student pilot's licence. In 1948 he gained his PPL. By 1951 he had a commercial licence, then followed four instructor ratings. As a student of Aub's, I remember he was a man who never stopped grinning and laughing. In Aub's 72 year aviation career, he flew 111 different types of aircraft, often test flying home built aircraft. In his 20,000 hours, including 13,000 hours of instructing, he never once had an engine failure. He built his own aerobics aircraft, a KR2 powered by an air -cooled VW engine. He flew hundreds of joy flights from numerous coastal airstrips and paddocks from Merimbula NSW to Apollo Bay in Victoria.

Aub also flew aerobics at many air shows and low-level aerobatics at Rippleside on Corio Bay for Australia Day. He taught aerobics from Bacchus Marsh airport. He also had endorsements in gliding. Aub taught countless farmers and their families to fly, all over the country, and even flew ambulance flights into Bankstown.

His reliable ground crew was always his wife Barbara, often with the kids all piled into the old HD Holden towing a caravan across sometimes hundreds of kilometres of dirt roads to bring in spare parts to where his plane had broken down. Summer school holidays were mostly at Merimbula NSW where he ran a flying school, or to holiday beach locations as far south as Apollo Bay in Victoria. Aub did hundreds of joy flights, from rough paddocks to small strips. Barb and the kids would follow, towing the caravan. His son Martin would help load passengers. Some weekends Aub would fly to Port Welshpool, to do training and joy flights by the road into town. Aub was a man who freely shared his knowledge and offered advice.

In later years Aub and his wife, Barb, were inseparable. Barb would run the flying school office at Barwon Heads airport while Aub was in the air. They were both so friendly, I always made it part of my flying day to call into their office after flying. Never did I leave that office without learning something more about aviation. If Aub was busy, Barbara could often answer a student's questions herself. Over a lifetime with Aub, her aviation knowledge was amazing.

Barb told me she first met Aub when he was working in the family bakery business in Casino, NSW. Aub just 19, had an infectious wide smile, he was good looking and was strongly built, she said. Despite competition from many local girls, Barb succeeded in scoring a first date. Aub offered her a local joy flight.

Barb was apprehensive, but thought Aub was pretty handsome so she took a chance. The rest is history, they married and had five children. Barb told me there were times Aub would fly with his young family, the baby in Barb's arms, the older ones kneeling on the floor if they didn't score a seat.

Times have changed. Be assured, Aub Coote was no cowboy. He was disciplined, thorough and he followed all the rules.

His happy demeanour relaxed his students and made learning a very pleasant experience. Over the years, I've seen instructors who have a policeman's attitude. They could have learned a lot from Aub. He was responsible for starting the careers of hundreds of commercial pilots flying around the world today and possibly a thousand recreational pilots.

As a CFI, Aub never wanted his students to spend more money than was necessary and, if he was convinced they were competent, he would send them off solo. However, he always kept a close eye on them with post flight discussions. He taught two school boys I knew well, Eddy and Angus. Aub sent them both off solo at just 12 hours.

He said to me "those boys remembered everything first time, and they did everything I asked". Now, of course, instructors have much less discretion in these things. Angus became a commercial helicopter pilot. Whenever a student thanked Aub at the end of a lesson, Aub would always reply, "no, thank you for allowing me to fly".

Throughout his career, Aub taught at 12 different flying schools across eastern Australia, more recently in Victoria at Latrobe Valley, Lethbridge, Barwon Heads, Geelong and Colac. In his early career, he even did a paper run out of Wagga, releasing his bundle of papers with a cord.

For his entire flying career, Aub never used any electronic navigation, he only trusted his charts, watch and compass.

I remember when he was around 80 years old, he ferried a Jabiru 170 from Bundaberg to Barwon Heads. He told me on that trip he encountered turbulence crossing the Great Divide and hit his head on the cockpit ceiling. I asked, "what did you do?" With a big grin he said, "I tightened my seat belt". Aub Coote amazingly was still flying and training at 90 years of age.

His funeral was attended by about 150 people, many of whom were pilots, a testament to the respect in which he was held by the aviation community.

Aub, you will always be warmly remembered for your lifetime contribution to aviation.

A change in the weather

BY BRIAN BIGG

WE'VE COMPLAINED ABOUT IT LONG ENOUGH. NOW THE BUREAU OF METEOROLOGY HAS ANNOUNCED IT'S CHANGING THE WAY PILOTS WILL RECEIVE WEATHER BRIEFINGS.

FROM November 9, the venerable ARFOR (Area Forecast) will be no more. In its place will be the Graphical Area Forecast (GAF). The GAF will be a combination of graphical and textual information. The graphic will be divided into areas that share common weather characteristics. To be honest, at first glance it looks like a dog's breakfast. But once you get past the fact that it looks completely different from what we are used to and drill down, it should be much simpler to understand. The bureau has obviously put a lot of thought into this new presentation and consulted with pilots.

Proposed area QNH and GAF boundaries

It's also obviously taking advantage of the fact the bureau has more sophisticated weather prediction systems than when the ARFOR was introduced.

The number of forecast areas will be reduced considerably (10 GAFs compared to 28 ARFORs) and gone will be the region numbers. Instead the GAF regions will be called by name (for example NSW-E, NSW-W, NT, QLD-N, QLD-S, SA, TAS, VIC, WA-S, WA-N). The number of QNH regions will be the same, but they will now align directly with the new GAF boundaries.

The weather validity periods will halve from 12 hours in ARFORS to six hours in GAFs but for some reason GAFs will only be valid for three hours. A GAF will not be amended once released. Any unexpected change in the weather conditions will spark an AIRMET.

> "At first glance it looks like a dog's breakfast"

Instead of the ARFOR's one very long and complicated forecast, the new GAF will be broken up into two sections. The first chart will explain the visibility and cloud forecast. It couldn't be clearer or easier to use.

But probably the most noticeable change of all will also be the most confusing. The GAF won't contain any information about wind or temperatures. That information will be presented in a separate Grid Point Wind and Temperature (GPWT) graphic.

At first glance this graphic looks horrible. It provides wind and temperature information for vertical levels of 1,000ft, 2,000ft, 5,000ft, 7,000ft and higher. The data is presented in latitude and longitude squares (either 5°

by 5°, 2.5° by 2.5°, or 1.5° by 1.5°) overlaid on a geographic background. The values given represent the wind and temperature at specific heights for the mid-point of each square. It only starts to make sense when you read the key to each square. They are given in the formats ddffftTT, where: dd is the wind direction in degrees true to the nearest ten degrees; fff is the wind speed in knots; t is the temperature; and TT is the temperature.

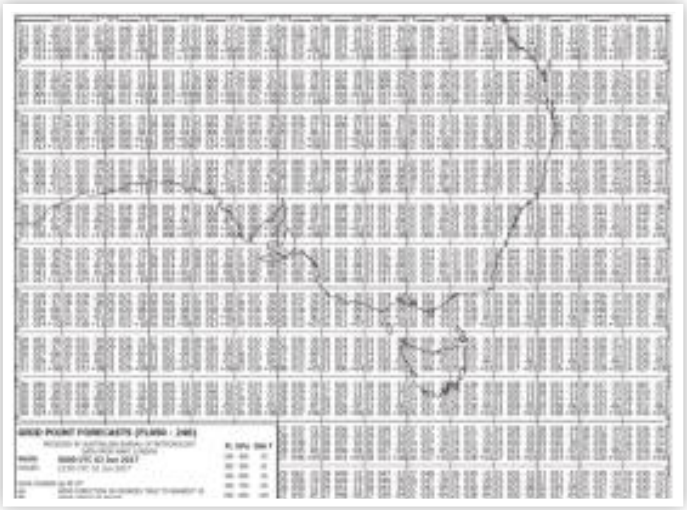
Once you work that out, the graphic actually looks like it will probably be useful. You can see at a glance what the weather will be like for the next three hours where you plan to fly.

But having been through the information provided by the bureau, several questions remain. What wind do I use for planning a long cross country trip? Do I have to go through each square and write down the wind direction of each of the squares on my plan and come up with a sort of average wind speed and direction for that leg? And how do I look ahead to what the weather might be like for my return journey? Going to a fly-in at dawn and coming home about 2pm – what will be the trend? Often I won't leave home if the return journey looks dodgy. I can't seem to work out from this yet what the day will be like. Will the next GAF, the one to be valid six hours from now, be available when I'm reading the current one? Perhaps I'm not reading it right.

No doubt there will be other questions as the new system is introduced. What do you think about the GAF? It's going to affect the way you fly so you better get to know it.

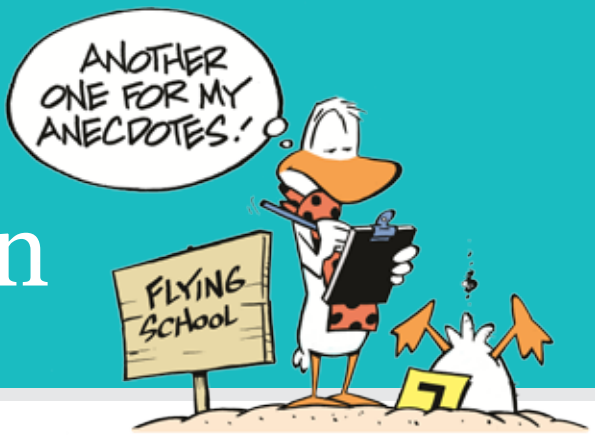
http://www.bom.gov.au/aviation/gaf/index.shtml

Let us know what you think of the new layout. Have they got it right? Do you have a question we should ask the bureau?
Email editor@sportpilot.net.au.



Dark premonition

BY DAVID P. EYRE



UNFORTUNATELY, THIS IS A TRUE STORY. I HAVE NOT USED THE REAL NAMES OF THE PEOPLE INVOLVED.

MANY years ago, I was instructing Sven in a Victa Airtourer at a place called Angoram. Angoram is situated on the banks of the Sepik River in New Guinea and has a nice grassed airstrip with good approach and initial legs.

Sven, a Scandinavian, had a wife called Helen, who was English. Because Angoram was a long way from my base in Lae, I would fly up and give instruction for a few days each month. This arrangement worked quite well because it gave Sven time to study the theory subjects for his PPL.

Naturally enough, I stayed with Sven and his wife whenever I was in Angoram. Their house was constructed of native materials and was quite comfortable during the hot sticky days. Being situated right at the edge of the river, we had mosquito nets over our beds at night to save us from the binatangs (Pidgin English for insect). There was also a problem with animals in the house. Helen was a great animal lover and there were wallabies, possums and birds strutting around. It would not have surprised me if the odd crocodile had come swaggering around the corner. I am also an animal lover, but the problem was the smell of their droppings. Even though Helen kept the place clean, the smell of cleaned up droppings and antiseptic was quite overpowering.

But, to get back to the flying.

One day I offered to take Helen flying, but she wouldn't be in it. It turned out she had a morbid fear of flying. She had arrived in New Guinea in a boat even though Sven had flown in. She told me she had a premonition something would go wrong if she went flying. So strong was this premonition, that she would not even come to the airstrip to watch Sven flying.

Eventually Sven gained his Restricted Pilot Licence and began studying for his Unrestricted, which involved navigational flying. Sven stated he was interested in buying a four place aircraft and I offered to fly with him to ferry any aircraft he bought back to Angoram from Australia.

There were special rules in place before you could fly in commercial operations in New Guinea and, of course, training is a commercial operation. These special rules involved flying at least five times over a route with an approved pilot before being let loose. These rules applied to each new route over which the neophyte was to operate. Although restrictive, these rules ensured new pilots to New Guinea were made aware of the hazards, the weather, the density height problems and other difficulties they would encounter.

One day the dreadful news came through to me that an aircraft had crashed on take-off from Mount Hagen and had killed all on board, the instructor, Sven and Helen. Evidently the aircraft became airborne but failed to gain height.

Mount Hagen is about 5,000ft elevation and, on that day, the temperature was about 32 degrees. All aircraft registered in PNG had performance charts specially calibrated for high density height operations. It is assumed the charts were based on the Australian charts.

The New Guinea 'P' charts showed that the aircraft could not have taken off in the prevailing conditions. The instructor was a well-known Australian pilot who had no experience in PNG operations. Because of his experience and being a well-known instructor, he was granted a dispensation to undertake the navigational training for Sven.

What can be learned from this tragic accident?

1.Be cautious when flying in conditions outside your experience;

2.Always be aware of the 'P' charts and make sure your operations do not take place outside the envelope;

3.Just because an instructor is well-known and experienced does not prove competence in different conditions.

Maybe, just maybe, in this story, they should have paid attention to Helen's premonition.

David welcomes your own aviation anecdotes.
Email them to editor@sportpilot.net.au

Sniffing glue

BY BRIAN BIGG

I have no idea why some young people would consider getting high by sniffing glue.The bloody stuff has put me on my back for a couple of days and put me off any idea I might have developed for a late career as an upholsterer to the rich and famous.

The problem started to emerge several months ago and was a function of age. The original upholstery for my aircraft was chosen soon after I had just laid out what was, for me at the time, big cash for the basic Zephyr kit. I had also just shelled out another big lump of cash for the Rotax engine from Melbourne and then reluctantly parted with even more cash to get the stupid kit into a container and onto a boat from Europe to Brisbane. The whole thing had cost a lot more than I had expected. Doesn't it always, I hear you smile. Yes, yes, it does. Just like any house renovation, come up with an accurate estimate, double it, then add 50 percent and you might get close to the finished amount you'll pay. No different to aeroplanes in that regard.

But the result was that I was broke. With all the scrimping and saving I had to do, and the fibbing to the wife about where the money was going, I ended up with almost nothing left over for expensive but necessary things like instruments or fancy upholstery. The instruments I was forced to buy were meant to be installed in old cars. They came from China and were dirt cheap. It's been a bit of a surprise to discover over the years that, with a couple of exceptions, they have performed far beyond what I expected

I chose for upholstery some cheap blue coloured fabric which had started life some years before as the inside of a Subaru. It was very cheap. It looked awful, but I was assured it would be hard wearing. And it was cheap. Did I mention that? With all the building being done on the aeroplane at the time, the upholstery didn't stand out in my mind.

The fabric has actually worked as advertised, it's been ugly and hard wearing. But, over time, the normal wear and tear and the impact of sweaty bodies under a hot canopy has taken its toll.

The seats looked particularly ratty and my more recent passengers each felt the need to try and brush the excess off before sitting down.

As well, the original glue started to break down about a year ago and, inch by inch, the fabric has been prying itself loose a corner at a time.

I have been busier than a one-legged man this year, but I promised myself I would fix it up as soon as I could spare a block of time. The panel (with my original cheap Chinese instruments) needs redoing too and the damned brakes are giving me trouble again (groan). It all built up to the point that I was too frightened to go near the plane because I knew I would feel guilty for not having paid it enough attention (like with my nan).

A few months ago, I saw Sean Griffin's immaculate Zephyr cockpit and realised that, because of my neglect, the inside of mine by comparison, looked like a homeless people's shelter on a Sunday morning before the council clean-up crew has arrived with the high pressure water hose. Something had to be done. So I made a list, which is my way of pretending to act while actually putting things off for a while longer. Several weeks later, though, my time actually opened up and I have launched myself into 'Operation renovation', which will no doubt be a multi month long project and which will, no doubt, spawn several Editor's Choice columns where I will look like a goose, as usual.

First stop was a marine upholstery factory. The choice of fabric was bewildering. And I'm not good with choice. Like most men, I walk into a department store, pick out a shirt in the size I know I am and I'm in the queue at the checkout 12 seconds later. If a salesperson makes the mistake of offering me a choice between two shirts, I get flustered and usually flee without buying anything.

On this day, however, I took the easy route. I chose the same sort as Sean had done (he'd written me a list) in a beautiful ruby red colour. When I told the salesman I needed glue for it, he lugged out a tin which had more hazard warnings written on it than product name.

"I suddenly felt a burst of poisonous fumes in my throat."

Those warnings forced me to stop at Bunnings for gloves, safety goggles and masks. Back at the hangar and looking like two hazmat officials, my son and I approached the glue like it was a live grenade.

We'd measured and cut enough fabric to re-upholster the Sydney Opera House before getting it right (more about this later) and it was time to start glueing. It took most of the day and we slopped the glue around with abandon. The stuff was like poison but did its job and we stupidly got comfortable around it.

Then late in the day with the light failing, we decided to do one more piece before calling it quits, even though I was pretty tired by this stage. This piece of fabric was allocated for down in the footwell and after several minutes to-ing and fro-ing, I found myself head down, arse up, in the cockpit with my son handing me the fabric, then holding the glue tin and brush towards me. My mask must have come loose because I suddenly felt a burst of poisonous fumes in my throat. I yelled 'get it out!' and my son quickly withdrew the glue tin. I scrambled out of the cockpit and ran to the tap. I drank and spat several mouthfuls of water. No lasting damage I felt, but I was done for the day.

For the next two days, I had a burning sensation in my throat. It finally went away thank goodness. Turns out those warning labels weren't just printed on the tin for a laugh. When we came to finish the job a week later, we looked more hazmat than human and we received several odd glances from people walking past.

But the upholstery looks great, if I do say so myself. There is a bubble or two in a couple of out of the way places, but nothing hopefully you'd notice. Better than before at any rate. I hope this fabric lasts, though, because I don't want to have to do that again any time soon.

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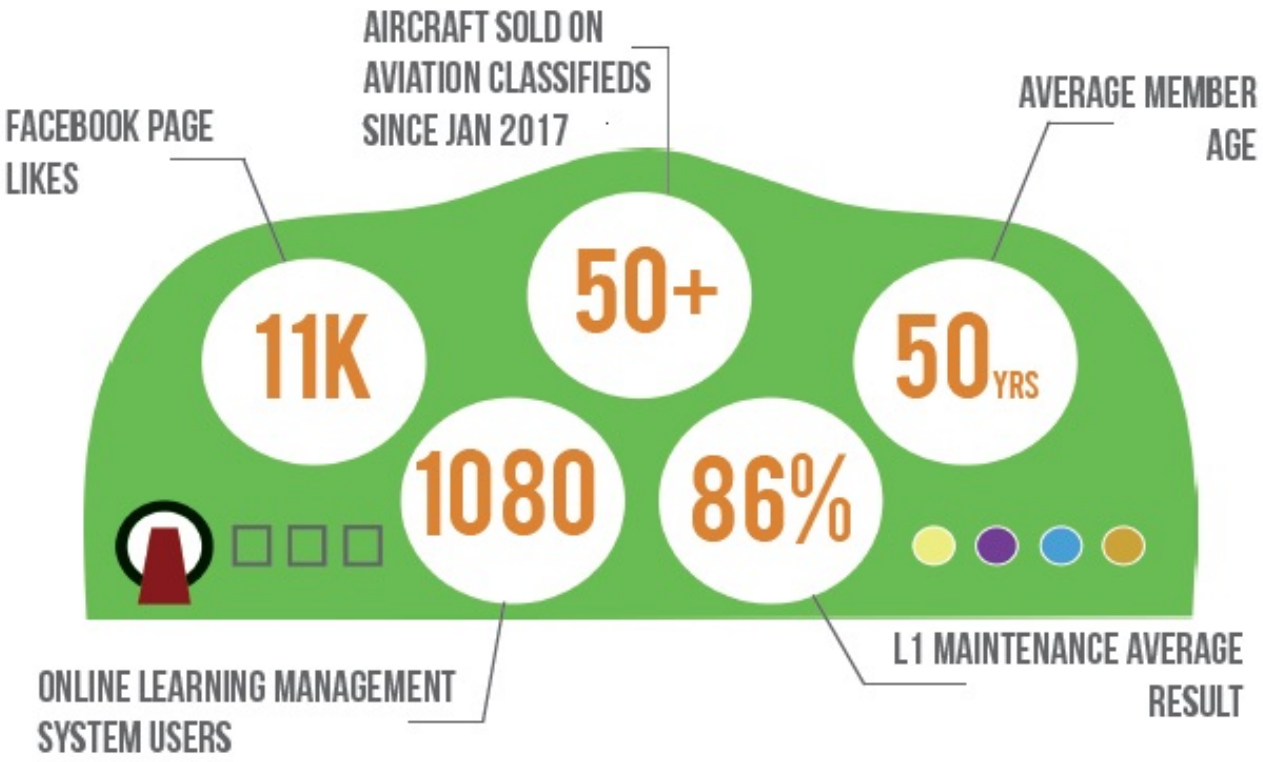

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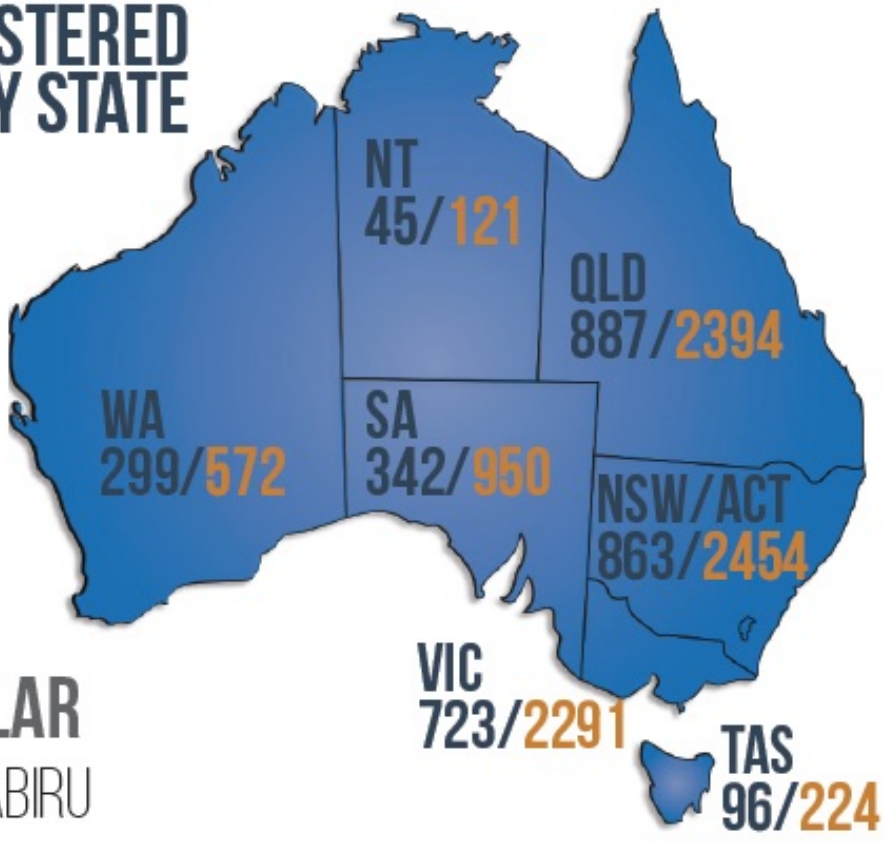
SINCE RAAUS BEGAN

RAAUS REGISTERED AIRCRAFT BY STATE
* AS OF 30 JUNE 2017

RAAUS MEMBERS BY STATE



MOST POPULAR AIRCRAFT JABIRU

Roughing it at Raglan

BY ALAN BETTERIDGE

AFTER my experience of camping in a tent at the Brisbane Valley fly-in last year – which was an utter disaster from start to finish – I vowed to never again be tempted into a tent.

For those of you who didn't read my sad tale ('A night to forget' – *Sport Pilot* November 2016), let me just say tents which are too small, air beds which leak, camp stretchers with unforgiving springs in near freezing weather, is no way to spend a night – let alone two.

Around three weeks prior to setting out to The Old Station Fly-In and Heritage Show in our lovely Roma caravan, my beloved informed me she wouldn't be going this year due to her volunteering to work at the Customs House Museum in Maryborough.

She did say I should still take the van to make my life a bit easier, but to tow a 21ft caravan on a nearly 700km round trip to Old Station for just one person seemed a bit excessive.

So against my better judgement, I made the decision (fateful as it was to turn out) to once again try the tenting thing. After all, I reasoned, after my last attempt at tenting surely I would now be better prepared. Oh, how wrong I was.

First order of business – a new tent. The previous three person version (very small people I might add), proved to have been woefully inadequate. Off I went to the camping place in search of a more suitable model. I got lucky. They were having a discontinued model sale and I was able to secure a six person tent for a reasonable price.

Next up a new air mattress, the last one having long be dispatched to air mattress heaven after its poor performance at the Brisbane Valley fly-in. The price of a decent air mattress, I discovered, was directly proportional to the price of gold and I knew my wife, the lovely understanding creature that she is, would not be pleased for me to be spending such an amount on something that might never be used again. What to do? It was then Aldi came to the rescue by advertising a single air mattress, with a built in pump, for a less than $20. How could I go wrong?

I was now set to tackle whatever the previously vindictive camping Gods had in mind for


A night to remember - forget

"Being a male made the reading of instructions unnecessary"

me this time around.

One week before departure, my beloved asked me if I had put the tent up to ensure I knew how to do it.

"No problems," I said, "I have checked the instructions and it is the same as the last one, only a bit bigger."

"Then don't blame me if something goes wrong just because you didn't check it out first," she said with a more than just a touch of sarcasm.

Of course I had lied. Being a male made the reading of instructions unnecessary and I knew a mere glance at the picture on the side of the box would be sufficient.

With my new tent and air mattress (which I also failed to check out before departure) packed I was ready for the weekend ahead.

Arriving at the Old Station and paying my $60 for two nights of camping, I started to set the whole site up.

First, I decided to inflate the air mattress. After removing it from its packaging, I set about using the new 'improved, high performance inbuilt pump' to inflate it.

After about 15 minutes, it became clear to me that trying to blow up this air mattress with its new 'improved, high performance inbuilt pump' was similar to trying to empty a bath tub with a straw – it could be done but the glaciers would melt before it was done.

"The glaciers would melt before it was done"

Seeing my plight, another camper took pity and offered me the loan of his cordless air compressor to do the job.

This took no time at all and I made a mental note to get a cordless air compressor upon my arrival home.

Then I turned my attention to the tent.

Unpacking it brought forth all the usual bits and pieces of fibreglass poles, bits of rope and exceptionally small tent pegs.

It wasn't long after I started the construction that an awful reality struck me.

Although the construction was similar to the last tent I owned, this one had a major flaw. Two of the four required fibreglass poles were missing from the package, making construction of the tent an impossible task.

There was only one thing to do - either spend the night in the car or admit defeat and return to the nearest caravan park to seek a cabin for the night.

I decided on the latter and, with my beloved's words still ringing in my ears, I headed back to the Mt Larcom Caravan Park 15km away, a defeated and broken man.

Arriving home on Sunday afternoon, I was greeted by wife with the question: "How did it all go then". "No problems at all," I lied. "Everything went just fine."

Do you want to take it for a fly?

BY LUKE BAYLY

SITTING in the car on the drive away from the airfield, I discussed my most recent flight with RAAus National Operations Manager, Jill Bailey. We had travelled to Ingham for the memorial fly-in held for past RAAus director, Ross Millard. While speaking with several members, I was lucky enough to be offered a quick flight in a Gazelle. I had never flown one before, so I eagerly jumped into the left seat and was soon up buzzing over the cane fields and experiencing the brilliant little machine owned by instructor, Andrew Mann. Andy had just moved up to Townsville and is in the process of helping set up a flying school at Bluewater airport.

The flight itself was fantastic, with some low cloud at about 2,000ft and smooth air the whole way. I adjusted to the nuances of the new aircraft type and, aside from a bit of high float at landing, the flight was nothing out of the ordinary. Walking away from the plane left me with elated feelings of enjoyment and satisfaction however, it was only the conversation on the drive back from Ingham that it dawned on me how readily I had passed up some of my typical safety checks.

The first thing I realised was that I had just jumped into an aircraft with a person I did not know. Jill had mentioned Andy was used to flying from the right seat, so I assumed he was an instructor.

But I had not sighted any credentials, licence or even identified his flying style. Was he the type who said "she'll be right" or the careful and methodical instructor type whose experience was rooted in safe practices? Luckily for me, Andy is a very professional instructor and maintained a strict adherence to all procedures, such as correctly joining the circuit on downwind, even after I had suggested an extended base approach. But I should have asked him.

> "I didn't know the aircraft in which I was flying"

Secondly, I didn't know the aircraft in which I was flying. When was the last time it had its maintenance completed and what sort of maintainer was looking after it? A quick check of the logbook would have told me this information, however I hadn't thought to look for it or even ask when the last inspection had occurred. Even more alarming, I had jumped into the aircraft without going through a pre-flight check which is something I do before every flight. This fundamental lack of flying discipline shocked me the most because I am typically very careful to check the airplane before take-off.

Finally, I hadn't given much thought to 'clear mind, clear prop' or assessed my own ability to fly the plane before hopping into the left seat. I might have sent a probe up to my brain to say "are we okay to go?" but nothing to consider the 5.5hr journey I had just made from Mackay or the poor sleep I had the previous night.

These factors may have been determined as okay in my usual aircraft,

Luke (right) with Andrew Mann

but I had not considered that the additional load of unfamiliar controls and instrument locations would have increased the risk of making mistakes during the flight.

After working through these failings with Jill, I started to understand some of the reasons I had abandoned many of my personal minimums to get up and fly.

• My first problem was that I was so excited at the offer to try out a different type of aircraft and raced to get in the left seat. While I encourage every pilot to try new aircraft, I should have also taken note of my mindset. I should have slowed down and worked my way through the processes because I was are in unfamiliar circumstances.

• I had taken Jill's recommendation of Andrews fitness to fly and trusted her judgement not to put me in a dangerous situation. I also have experience in Savannah aircraft and thought the differences should be minimal enough that I could safely pilot the aircraft if I had to.

• I hadn't questioned the maintenance status of the aircraft because I had just seen it land and take-off and assumed it was in an airworthy condition. I didn't check logbooks or even ask the question regarding currency of the airframe.

• I hadn't conducted the preflight check because the owner (Andy) hadn't prompted me to do so. Given that it was his airplane, he had already pre-flight the aircraft that day, I was blindly following his procedures without thinking of my own.

• I hadn't assessed my own status. Most of the flights I do are planned in excess of 24hrs in advance and so there is ample time to consider my fitness to fly. In this instance, about two minutes after the offer was made and I was sitting in the left seat with yoke in hand,

Because of Andy's elevated position of authority, not only as the owner of the plane but as an instructor, I had handed over all of my responsibility to him. This is something I have identified as having done before. I am genuinely more fearful of flying the airplane I am currently rebuilding than the one I hire and fly locally.

This is strange, because I am carefully going through every control and system on the aircraft in my shed, but have never even removed the cowling of the school airplane. So why would I feel safer in the school plane I have never inspected?

The answer is the allocation of responsibility and the ideology of "out of sight, out of mind".

All in all, the flight was fantastic and I really enjoyed the Gazelle. I was disappointed with my own Airmanship and intend to use this experience the next time someone offers to take me for a flight in their aircraft. Given the next opportunity to do so, I would intend to:

1. Talk to the pilots about his or her and the aircraft's, fitness to fly;
2. Accept the offer (with many thanks for the owner's generosity);
3. Pause to consider and calm my mind;
4. Work through all of my typical checks as if I was solely responsible for the flight;
5. Enjoy the experience of piloting a different aircraft.

My sincere thanks to Andrew Mann from Bluewater airport for the opportunity.

To other pilots who are offered to try a new aircraft, remember to calm yourself and think about your personal minimum standards.

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Waiting for Santa

BY PROFESSOR AVIUS **AVIATION GURU**

IT doesn't seem like 12 months since Safety Month was last here. As we get older, time seems to go by faster but it's really all about putting things into perspective.

As a four or five-year-old waiting for Santa Claus or a birthday, a month is a long time - around 2% of their life and they probably don't remember much about the first year. But as time passes, the years roll by and a month becomes an ever decreasing period in our lifetime; just maybe that's why the years pass so quickly as we age. So to find time in our busy schedules to run, or participate in, a presentation during Safety Month (but it doesn't need to be specifically during Safety Month) shouldn't be that big a deal. As a flying school, when and where the safety sessions are held, is up to you – the CFI and your instructor team.

However, as CFIs, we all need to be on the front foot and make it happen, and in doing so ensure we spread the net and get as many as possible involved. Think of it as just doing your bit to promote RAAus safety.

The primary safety topics for 2017 are:

- Fitness to fly;
- Daily inspections;
- Maintenance log books.

Plenty of meat in these topics for discussion. The secondary subjects should be what you see as priorities in your area.

On the local scene - the biggest issue with Safety Talks is often the fact that those pilots who most need to attend are the ones who are not attending. So how do we get to these pilots and get them to engage? Should it mandatory to have attended (or organised/conducted) an official RAAus supported safety session in the two-year period prior to completing a BFR?

RAAPS

Instructors should be referencing these aids and encouraging pilots to use them too. But RAAPs do not replace specific requirements contained in the Operations or Technical Manuals or Operations Bulletins, Service Bulletins or Technical Advisories.

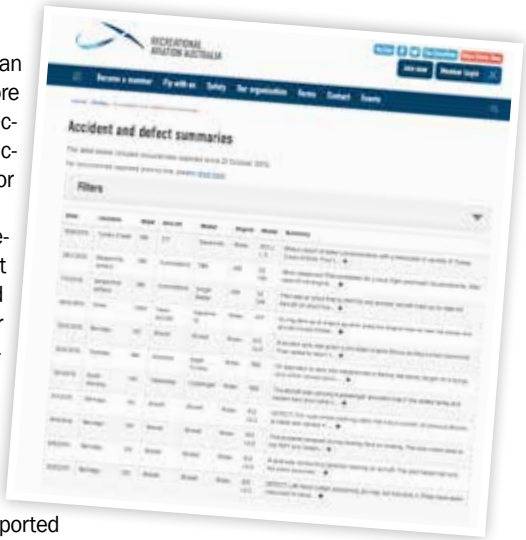
There are three recent additions regarding BFRs (RAAPs 5, 6 and 7). These will be extremely useful tools. There are other concessions which have been clarified for instructors.

COMPLETION OF A RENEWAL (TIMEFRAME)

A recent Operations clarification to RAAus Instructor and Senior Instructor rating holders, CFIs and higher approval holders provided that, if a renewal was completed up to 90 days prior to the due date, or with extension, up to 90 days after, the renewal would be processed as completed on the anniversary date of the rating or approval. This effectively provides a window of six months to complete a renewal and maintains the renewal date as a fixed date. A single 90 day extension is available in the Operations Manual for Instructor and Senior Instructor ratings, which will also provide a 90 day extension to any approvals such as CFI, PE or ROC. This is intended to assist instructors manage scheduling or weather related issues. Only one 90 day extension can be issued and, once the rating or approval has lapsed, no further flight training is permitted until a renewal is completed.

ACCIDENT & DEFECT SUMMARIES

These are available on the RAAus website under Safety. The summary often provides prompts which can be useful in a training environment. RAAus members are doing a great job reporting accidents and defects. As instructors, it might seem there is not much we can do about defects, but there is - listen/read and learn.



Defect reporting can be the catalyst for more detailed pre-flight inspections, especially referencing the aircraft we use for training.

Accident/Incident reporting and the impact on instructors can and should be a trigger for continuous improvement in the training environment. Often the accident/incident report focusses on a freak event but, in reality, what is being reported as freak, when analysed across a number of similar events, can more often be described as a deficiency of one sort or another. I can still hear an old instructor saying "Aviate – Navigate- Communicate" in that order.

The Aviate aspect is the first priority and often this doesn't get the attention it deserves. It includes everything relating to the operation of the aircraft, from the time the aircraft starts to be moved from the hangar, the flight being conducted in accordance with the aircraft pilot handling limitations, RAAus limitations, until the time it is safely positioned back in the hangar. Or, more simply put, the landing ain't over until the aircraft is safely parked or hangared. The Navigate part, is applicable to both local and cross country fights, staying clear of controlled airspace, circuit departure/entry and PRDs. Then comes the Communicate. The modern radio is generally reliable and most issues seem to relate to microphones/power voltage/antenna and if it's not right, get it fixed. In Aviate we reference see and be seen. In Communicate it's all about hearing and being heard. Think about what you are going to say and then say it slowly and clearly with a concise message.

NAVIGATE/COMMUNICATE

CFIs and Instructors are reminded to ensure students and pilots under review are conversant with the current limitations for flight into controlled airspace.

Occasionally, when pilots engage in two way communication with ATC they may be offered a clearance; all pilots should be aware of CAO requirements as part of any air legislation training and reviews.

Until our CTA endorsement is approved, CAO 95.55 and CAO 95.32 only allow access to Class C or D airspace if all conditions set out in paragraph 7.3 are met. This can only be accepted if the pilot holds a current CASA Flight Crew Licence with the appropriate endorsements, has an appropriately certified aircraft, equipment and follows the correct procedures contained within the AIP.

In closing, spare a thought for the Communicate part, in the following reported incident:

The instructor in the RAAus aircraft looked behind and saw the Warrior close behind in a 6.30 clock position getting bigger. The controller asked the Warrior to break left and go around. The RAAus aircraft did not hear anything further before the controller instructed the RAAus aircraft to dive. The instructor took over and dived 200-300ft before proceeding to regain approach profile and land without further incident.

Calculating the atmosphere

BY BILL WHITNEY

THIS ARTICLE IS A LITTLE BIT MATHEMATICAL. IF YOU DON'T KNOW MATHEMATICS IT WILL LOOK LIKE A CHINESE SHOPPING LIST. HOWEVER, I AM AWARE THAT MANY RAAUS MEMBERS HAVE SOME MATHEMATICS TRAINING, SO THIS ARTICLE IS FOR YOU. YOU WILL NEED A SCIENTIFIC CALCULATOR.

I will show how to calculate relative density(τ), density height(h_d) and true airspeed (V_{TAS}) from first principles using pressure altitude (h_p), outside air temperature (T) and indicated airspeed (V). I will assume our aircraft instruments and systems are error free.

Firstly, the altimeter in your aircraft is simply a clever pressure measuring gauge. It measures surrounding air pressure and converts this pressure via a set of gears and levers into an indicated height. It assumes it is in a standard atmosphere, although there is a subscale which can be used to adjust the starting pressure, depending on ambient (non-standard) conditions. The air speed indicator (ASI) likewise measures dynamic pressure and converts it into airspeed, the ASI will only indicate true airspeed when the air density is equal to the air density at sea level in a standard atmosphere.

The standard atmosphere is based on an assumed atmospheric pressure at sea level (P_o = 29.92"Hg) and an assumed linear temperature gradient starting at T_o (15°C = 15 + 273 = 288°K) and reducing with a thermal gradient (α = 0.0019811°C/foot). In all of the following I will use the subscript 'o' to indicate standard atmosphere conditions.

"The ASI will only indicate True Airspeed when the air density is equal to the density at sea level"

Note that as we will be dealing with the fundamental gas law, we must use absolute temperature (degrees Kelvin) which is found by adding 273 to degrees Centigrade.

STANDARD ATMOSPHERE

The standard atmosphere is described by three equations, these are –

Archimedes Principle in differential form

1 $dP = -\rho g\, dh$

WHERE dp= Increment of pressure

ρ = Air density

g= Gravitational acceleration (32.2 feet/second^2)

dh= Increment of height

and where the minus sign is applied as height is measured positively upwards, that is, pressure falls with height.

The thermal gradient mentioned earlier which is given as

2 $T = T_o - \alpha h$

WHERE T= Temperature at altitude

T_o= Standard sea level temperature (288 oK)

α = Standard atmosphere thermal gradient (0.0019811 °K / foot)

h= Height in feet

The universal gas law (for low temperatures and pressures)

3 $P/\rho = R\,T$

WHERE R= Universal gas constant (3092 ft lbf / (slug °K))

Doing the mathematics

$$dP = -\rho g\, dh$$

$$= -\frac{P}{RT} g\, dh$$

$$= -\frac{P\, g\, dh}{R(T_o - \alpha h)}$$

Rearranging

$$\frac{dP}{P} = \frac{-g}{R} \frac{dh}{(T_o - \alpha h)}$$

$$= \frac{g}{\alpha R} \frac{d(-\alpha h)}{(T_o - \alpha h)}$$

Integrating from sea level where h = 0,

4 $$\frac{\log_c P}{P_o} = \frac{g}{(\alpha R)} \frac{\log_c T_o - \alpha h}{T_o}$$

$$\frac{P}{P_o} = \left[\frac{T_o - \alpha h}{T_o}\right]^{g/\alpha R}$$

Now with our altimeter sub-scale set on 1013mb, we can take the pressure height hp and calculate the pressure at any height in any atmosphere using the above equation (4).

Going back to the gas equation (3), we may compare a standard atmosphere to any atmosphere using the common gas constant, namely

$$\frac{P}{\rho T} = \frac{P_o}{\rho_o T_o} = R$$

Or expressing in terms of relative density for any atmosphere

5 $$\tau = \frac{\rho}{\rho_o} = \frac{PT_o}{P_o T}$$

$$= \frac{T_o}{T} \left[\frac{T_o - \alpha h}{T_o}\right]^{g/(\alpha R)}$$

$$= \frac{288}{(273 + T)} \left[\frac{288 - 0.0019811hp}{288}\right]^{32.2/(0.0019811 \times 3092)}$$

$$= \frac{288}{(273 + T)} \left[1 - \frac{0.0019811hp}{288}\right]^{5.2567}$$

Using the above equation for τ and substituting for T, we get the density ratio for a standard atmosphere, noting that in a standard atmosphere, pressure height and density height are the same.

$$\tau = \left[\frac{T_o}{T_o - \alpha h}\right]\left[\frac{T_o - \alpha h}{T_o}\right]^{g/(\alpha R)}$$

$$= \left[\frac{T_o - \alpha h}{T_o}\right]^{(g - \alpha R)/(\alpha R)}$$

This equation may be rearranged, now calling the height, density height.

6 $$h_d = \frac{T_o}{\alpha}\left(1 - \tau^{\alpha R/(g - \alpha R)}\right)$$

$$= \frac{288}{0.0019811}\left(1 - \tau^{0.0019811 \times 3092/(32.2 - 0.0019811 \times 3092)}\right)$$

$$= \frac{288}{0.0019811} (1 - \tau\ 0.2349)$$

Now let's put all of this to work. Out with your calculators.

EXAMPLE

We are operating from Toowoomba, setting the altimeter sub-scale to 1013mb and we read 2,100ft on the altimeter. The outside air temperature is 35°C. What is the density ratio and what is the density height?
Substituting for the variables in (5)

$$\tau = \frac{288}{273 + 35}\left[\frac{1 - 0.0019811 \times 2100}{288}\right]^{5.2567}$$

$$= 0.8662$$

Substituting for τ in (6)

$$h_d = \frac{288}{0.0019811}(1 - 0.8662^{0.2349})$$

$$= 4{,}823\text{ft}$$

The important thing to note is that aircraft performance depends almost entirely on density height, thus simple use of pressure height can be very deceiving.

AIRSPEED

The airspeed indicator (ASI) reads dynamic pressure and converts this into velocity. It is a very useful instrument during take-off and landing where lift is controlled by dynamic pressure and direct use of the instrument is quite okay.
However direct use of the ASI to calculate point to point velocities at altitude can lead to errors.

Dynamic pressure is given by

$$P_d = 1/2\ \rho V^2$$

Comparing the sea level indicated dynamic pressure with the actual pressure

$$1/2\ \rho V^2 = 1/2\ \rho_o V_1^2$$

Rearranging this equation, we get

$$7 \quad V = (\rho_o / \rho)^{0.5} V_1$$

$$= V_1 / \tau^{0.5}$$

EXAMPLE

A Storch is cruising at 8,000ft pressure altitude with an OAT of 10°C. The ASI indicates 70kts. What is the true airspeed?
Firstly calculate relative density using equation (5).

$$\tau = \frac{288}{273+10}\ \frac{1 - 0.0019811 \times 8000}{288}^{5.2567}$$

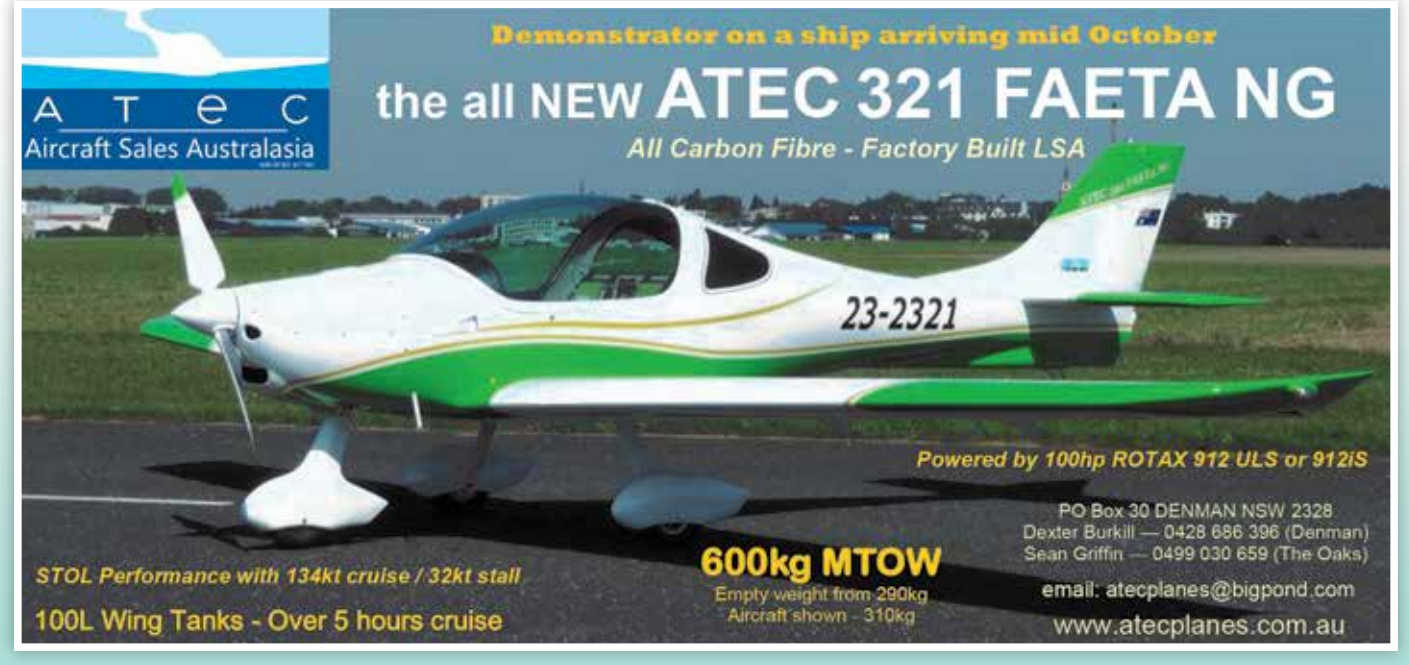
$$= 0.7558$$

$$V = 70 / 0.7558^{0.5}$$

$$= 80.5\text{kts}$$

CONCLUSION

Well how do you like my Chinese shopping list? For the young maths whiz kids within RAAus, you can construct a nomogram giving a solution to the above equations in graphical form. Why not have a crack at it?

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Major and minor modifications

THE BEST BITS ABOUT BUILDING YOUR OWN BY DAVE EDMUNDS

SOME years ago, pilots turned up in far fewer numbers than expected to a couple of fly-ins at Narromine and Temora. The likely reason was an announcement by CASA that they would be conducting ramp checks.

Now, it is likely that many of our aircraft do not comply fully with their Type Certificates, if they have one. Most of us have a few tweaks which, in our opinion, are trivial but add to the safety of our aircraft. For example, you may have adjusted the cooling ducts to reduce or increase temperatures, or perhaps changed your seat so you could reach the rudder pedals. It is likely that changes of this sort will have invalidated the Type Certificate and therefore the right to fly your aircraft. So, perhaps you stayed away so as not to create an issue. This, of course, does not apply to home-built aircraft or others not flying under a manufacturer's Type Certificate. Under the current regulations, a CASA officer, if formally aware of such a change, would be required to act on that knowledge.

The Civil Aviation Safety Regulations (CASR) Part 21 defines a process for modification of your aircraft. It explains in particularly impenetrable language how you may go about getting certification if, to provide one of their examples, you wish to fit your Boeing 737 with higher-by-pass turbines. I asked to speak to someone in CASA about how they might approach the sort of issue I mentioned above and they kindly sent me a couple of Aviation Circulars, that were of no use at all.

Part 21(M) defines a process whereby an engineering order can be obtained for a variation to the Type Certificate. This is expensive, because an engineer has to be engaged and he has to carry the liability for any consequence resulting from his work.

RAAus worked with CASA to define the Modification and Repair Approval Process (MARAP). This is a mechanism whereby a request for a modification is made to our Technical Manager. RAAus has a contract with an engineer to consider the modification and a delegation from CASA to approve it. Liability is covered by an RAAus insurance policy. This is a much cheaper and more streamlined process than a direct application under Part 21(M) and has been used very successfully, but it still does not cover the everyday and trivial common sense changes we might wish to make. A modification approved under MARAP is available to other aircraft owners of the same type who wish to make the same modification. RAAus has a proposal with CASA to deal with minor changes based on a US model, but so far has not had approval.

It is all very well to expect the aircraft manufacturer to apply to amend the Type Certificate, but any manufacturer who has been in business for more than a few years has usually produced a number of aircraft variants, and the cost of individually amending all Type Certificates to allow all possible upgrades would be prohibitively expensive. For example, a propeller upgrade to a particular aircraft type does not flow through to all of its very similar variants within the fleet. A separate process has to be undergone for each variant, and processed individually.

No doubt CASA would argue, if they were interested in meeting to mount such an argument, that there are liability issues around what they would consider a more relaxed process, but consider this: I wrote about my appalling brakes recently. There is a simple upgrade which is approved for some Jabirus, but not my particular aircraft. I could spend a considerable amount of money and put the modification through the MARAP. If I do not do this and install the brakes anyway, CASA or its delegate, RAAus, is obliged to cancel my aircraft registration until I remove the upgrade. If I then have an accident because I ran out of brakes, the liability issues would get interesting. CASA would argue that I had a choice to certify my upgraded brakes, and it therefore was not their fault.

I would argue that CASA demanded that I change my plane to reduced its safety and knew full well the likely consequences. Further, CASA had substantially identical Type Certificates registered which covered just such a modification and their failure to act in the interests of safety and amend their legislation and practice accordingly wastantamount to negligence. It might not work legally, but probably would pass the pub test.

It is not difficult to conceive of a process which allows trivial modifications, and approved modifications, to flow through to substantially similar aircraft. This is a particular issue because the equipment fitted on aircraft changes over time, potentially leaving older aircraft orphaned off. RAAus is working on this, but CASA has not yet come to the party.

With good reason, we fly in a highly regulated environment with the objective of maintaining safety. I have written in the past about obsolete rules relating to the use of GPS which reduce operational safety and fly in the face of established practice. The process related to the accreditation of modifications similarly reduces operational safety.

Aviation is a highly technical and evolving technology that is not best served by a deeply conservative culture which mitigates against safety. As pilots, we are a privileged lot involved in an arcane activity and there are not an awful lot of us, so we lack political clout.

I think the best we can do is hope, and for those of you so inclined, pray, that someone will come along in CASA who will breathe some life into the organisation, work to build general aviation in our country, and actually address these entrenched problems.

AND ANOTHER THING

Before I started this series of columns some four years ago, I wrote an article about the sheer stupidity of the ASIC requirement for recreational pilots. I found that not one of the 11,209 applicants for an ASIC in 2011 and 2012 had been refused. In 2016 the data is as follows:

- The number of ASIC applications received from pilots - 8,019;
- The number of ASIC applications removed, no current medical – 380;
- The number of ASIC applications submitted to Auscheck - 6,844;
- The number of ASIC applications with adverse outcomes, conditional ASIC issued – 50;
- The number of ASIC applications refused – 1.

I would love to know about the one who was refused. I think we just have to assume he was an honest terrorist who would not consider extreme action without an ASIC around his neck.

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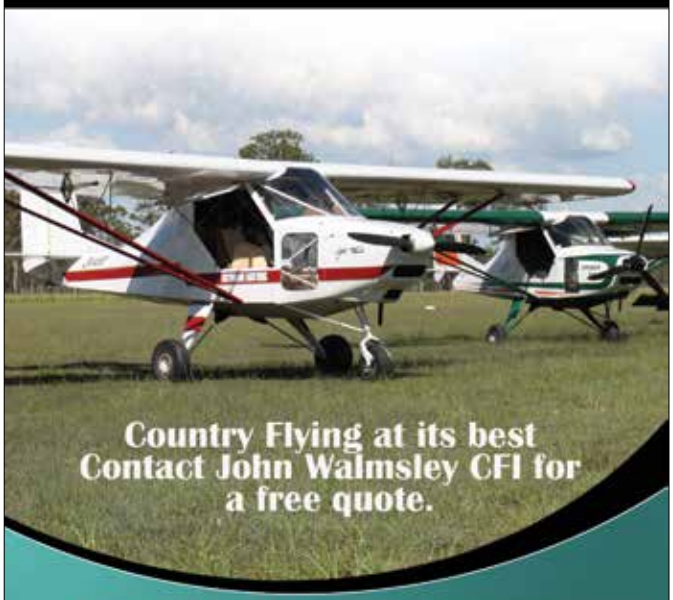

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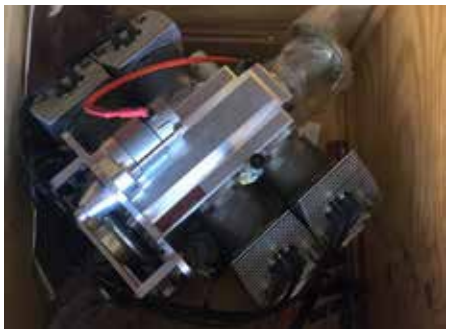

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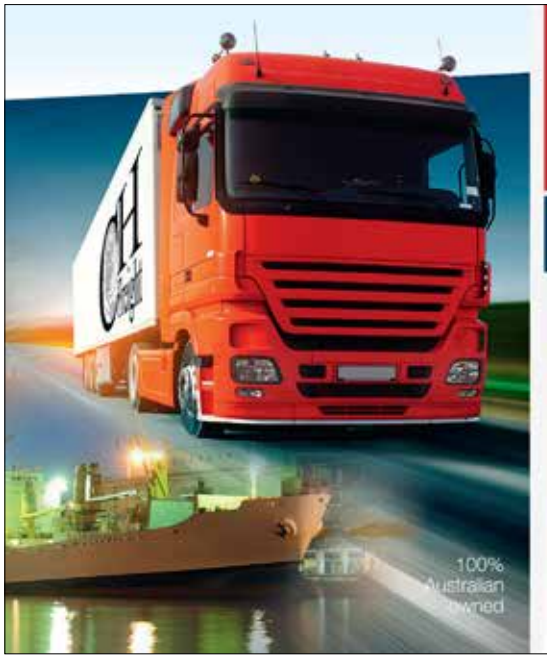

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A QUESTION OR TWO

TEST YOUR AVIATION KNOWLEDGE

1 **1.Statement: "Some say that, in level flight, at a constant airspeed, an aeroplane is in equilibrium and its thrust applied = drag created". If this is the case, then what maintains the aeroplane's airspeed?**

a. The above is incorrect and thrust must exceed drag for airspeed to be maintained.
b.The above is correct and airspeed is maintained as a function of the aeroplane's momentum.
c. The above statement is incorrect because thrust and drag are not interrelated in level flight.
d. The above is correct and air speed is maintained as a function of the aeroplane's inertia.

2 **In flight, a pilot reduces the angle of attack from 9° to 4°. What effect will this have on the Centre of Pressure?**

a. Move rearward along the chord line.
b. Move forward along the chord line.
c. Rise above the active chord line.
d. Descend below the active chord line.

3 **From the following select the most correct statement.**

a.The thrust line must always remain above the drag line to give a nose-up couple.
b. All other things being equal, a wing with a higher taper has more induced drag than a non-tapered wing.
c. Carrying additional fuel when gliding in still air will always decrease gliding range.
d. Increasing power makes the lift/weight couple less effective.

4 **The temperature at an airfield is 20°C and the TAF lists the dew point as 14°C What is the likely height of the cloud base if the airfield is at sea level?**

a. 500ft AMSL.
b. 1,000ft AMSL.
c.1,500ft AMSL.
d. 2,000ft AMSL.

5 **A cold front passes across an airfield. Which of the following options would be the best clue as to the time of the actual passage of the frontal surface?**

a. The rain intensifies.
b. The clouds clear.
c. The wind backs.
d. The temperature starts to fall.

ANSWERS

1. D 2. A 3. D 4. D 5. C

Are you an aviation quiz compiler? *Sport Pilot* is looking for someone with the time and patience to compile questions each month just like the ones listed above to test us all on our aviation knowledge. If you are interested in taking on this role, send an email to editor@sportpilot.net.au.

WHERE IS CAGIT?

CAGIT STILL IN THE WEST

Against all the odds, the highly sought after Come And Get It Trophy remains firmly lodged in the west of the country.
At the time this magazine went to the printers, John Reymond still retained possession of the trophy at Karakin (10nm east of Lancelin) in southern W.A.

If you, or your crew, are contemplating a high-speed heist of recreational aviation's most coveted prize, it's best to keep up-to-date with its latest location by checking the CAGIT hunter's Facebook page, administered by Dexter Burkill, Peter Zweck and David Carroll - Facebook.com/cagithunters.

For a full list of rules about how you can grab CAGIT for yourself, check out the RAAus website.

ADVERTISERS INDEX

Passing of the baton

BY IVAN TYSON

A tale of two young men, Liam Morey and Luc Richards. At just 14 years old, both were drawn to learn to fly and came to the Sunshine Coast Aero Club to fulfil the dream.

Before they started on their aviation journey, they didn't know each other but they have since bonded in friendship while volunteering at some of the club's charity events during their training.

A few months ago, Liam became the youngest RPC holder in Australia when he passed his flight test at just 15 years and five weeks old. Luc is younger than Liam and, not to be outdone, and as competitive as boys can be, Luc set his sights on the title.

Last month, Luc successfully passed his RPC Flight Test with CFI Tom Petersen and he now holds the record of the youngest RPC holder in Australia, beating Liam's record by two days. Not an easy task because the flying school operates out of a Class D airport and, both young men had to achieve the uncompromising high standards the school sets in their curriculum.

It has been my pleasure to have been involved in both of these boys flight training and along with the other instructors at the Sunshine Coast Aero Club, wish them both happy and safe flying careers.

Liam Morey (L) and Luc Richards

SEND IN YOUR STORIES

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

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Sincerely,
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Managing Director

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