Redcliffe Aero Club

AirChat

No. 22 Autumn 2020

Corona virus and COVID-19
RAC's response

From RAC to RPT
One former student's story

My first flying job
Flying charter over Lake Eyre

Met does matter!
Mountain waves and VFR flight

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An initiative for teenagers

OVER 50 YEARS OF PROFESSIONAL AVIATION TRAINING
CHARTER AND QUALITY AIRCRAFT HIRE

Inside

Front cover: A storm approaches Lockhart River - Ben Yaxley

Rear Cover: Summer storm over the bay - Graham Pukallus

From the club president

Greetings to all members and staff of RAC along with your families, as we progress though this time of some uncertainty.

Our Club is evolving into new territory because of the corona virus that is sweeping the world along with COVID-19, the respiratory illness that is caused by it. We are not exempt in Australia. The virus doesn't care what age group you belong to so we all, no matter what age, have to become responsible for our actions, our movements within the community and our responsibilities as adults. In saying that it's up to us as individuals to be accountable for what we do in moving forward, protecting each other and, more importantly, our families.

RAC has implemented several measures to assist staff and flying members to ensure you can safely continue flight training and social flying.

Guidelines specify that there should be at least 1.5 metres separation between individuals in public spaces to reduce the risk of spreading the virus. Our GA aeroplane cockpits do not allow 1.5 metres separation between students and instructors. Therefore, at a meeting on the 25th March our Board of Directors instructed the Club to cease all dual instruction flights, initially for 45 days. This decision will be reviewed monthly at the Directors' meetings as we move forward. As of the end of March, until further notice, instructors are still available to ground instruct any pilot as you continue your training or social flying, with appropriate separation between students and instructors.

In addition, all our aircraft are available for private hire. It's important at this time that we all continue to support the Club in

whatever ways we can and emphasis should be placed on private hire of the Club's assets. Now's the time to remain current, and it's time to take that late arvo or early morning flight around the bay to utilise your Club's aircraft, making the most of the scenery at this time of the year. It is, after all, the best time of year to fly. The Club will provide hand sanitiser, disinfectant spray and cleaning equipment. We strongly recommend that pilots include cleaning of the door and window handles, seat belt buckles and controls as part of your pre-flight check procedure. We'd appreciate if you give them a wipe down with sanitising spray at the conclusion of your flight as well.

COVID-19 is a world pandemic, no question, however, we all need to rise above this situation, responsibly, and still enjoy life. That is most important.

I can only wish you all the very best in health, take care and please be responsible.

Safe Landings to you all.

Mike Cahill

President

CEO update

Dear Members

In my last report I noted that we were awaiting federal government approval to retain our VET Student Loan provider status. I am pleased to advise that we have indeed been successful in our application and have been granted approval for a five-year period. This allows us to forward plan an improvement to our Club's facilities and programmes.

As always in business, however, there are unforeseen challenges. The latest is in the form of the COVID-19 pandemic. It has necessitated that all dual instructional flights have been suspended due to the government's social distancing policy. It will also curtail our social programme, including monthly BBQ's. This was the decision taken by your Board at their meeting on 25th March. RAC's obligations to its members and staff under the Workplace Health and Safety Act necessitated this decision. Directives from the Australian Skills Quality Authority and CASA also reinforced the need to practise social distancing including in the cockpit of an aircraft.

Aircraft are still available for private hire and we are still carrying out charter activities as well as ground school instruction while observing the social distancing requirements. Our RTO Team has been busy rewriting individual training plans for our students so that we can keep our VET students progressing through their courses and maintain an income from training activities. The changes will allow approximately three months of ground school to be brought forward. Also, as usual, our instructors are available to answer any of your queries. The government's various subsidies and business assistance schemes will soften the economic impacts on the Club. We are confident that our income (albeit reduced) and strong cash reserves, together with government subsidies, will allow us to weather this crisis and emerge with the Club and its physical and human resources intact.

As always, I encourage you all to visit and make use of your Club's facilities, aircraft, and simulators. Once restrictions are lifted, we look forward to providing dual training and reactivating the flyaway and social program.

I wish you a happy and safe Easter and I look forward to seeing you around the Club.

Best Regards,

Stephen White

CEO

Chief pilot report

Dear Members

Welcome to the Autumn edition of Airchat. Everyone is currently affected by the corona virus and the restrictions that are being placed on us by the federal and state governments and your Club is no exception. With the implementation of "social distancing" and restrictions on non-essential activities, many people have found themselves stood down or even unemployed and my best wishes go out these of you who are feeling the brunt of these measures.

Your Club has had to adapt, and that has meant that the Board had to take the very difficult decision to suspend dual flying for now. This measure has been taken not only to comply with the government's social distancing requirements aimed at limiting the spread of the corona virus but also in the interest of occupational health and safety considerations for members and staff. No one wants to contract this virus and we have even less desire to pass it on to others, especially those less able to cope with it. So we must do our bit even though it is very painful. We all have a passion for aviation and some of you are close to achieving milestones that will leave a mark on your soul for the rest of your life. The virus has put those on hold for now but we look forward to helping you achieve them as soon as restrictions are lifted.

I feel for everyone who is paying a price to slow the spread of the virus. I would ask that you take heart from knowing that we will get though this and come out stronger on the other side. Your Club is in a good position to weather this storm and we will eventually all get together and make up for lost time.

For now we are still open and hiring aircraft, while instructors are on hand for ground instruction. Due to the suspension of dual flying we have had to make changes to the diploma courses that we are presently running and the next course starting after Easter. So that these full-time students are able to progress though the syllabus we have been working hard to reorganise the training plans so that the students can progress the ground instructional portions for their courses. For the next 3-4 months we will be converting the club room, the largest space available to us, into a class room. There will be plenty of room to provide social distancing over and above the $4m^2$ and 1.5m spacing limits.

While on the subject of ground instruction, I would like to extend a very warm welcome to our newest team member, Brett Thomson. Brett has joined us primarily to be a ground instructor, with a bit of flight instruction on the side.

Congratulations go out to Stephen White, who was successful in attaining a Grade One Training Endorsement, quite an achievement in the world of flight instructing. Well done Steve!

Joe "Papa" Martin, whom many of you have flown with while enjoying his unique style of instructing, has unfortunately left us. Joe was planning to retire at the end of March and indulge in a little travel to cross some items off his bucket list. However, the virus has intervened, travel plans are on hold and he retired a week early. I know you will all join with me in wishing Joe a long and happy retirement. We'll miss your happy smiling face and desert dry wit around here, but if you get bored Joe, there is always something you can do here, so come and see me. I'm sure we'll see you around from time to time - once an aviator, always an aviator, so don't suppress it!

Stay safe everyone. We'll get through this difficult patch and party on the other side.

Mal McAdam

Head of Operations / Chief Pilot

Editorial

Dear Reader

Welcome to another edition of AirChat.

As we collectively struggle against the corona virus it is good to remember that things will eventually improve. It may be difficult at the moment as we all attempt to "flatten the curve" but we still want to enjoy life and aviation will hopefully continue to play a significant role in our lives. During the pandemic we also need to consider that it is a requirement for pilots to remain current and could well be beneficial to our mental health, as well as to the health of the Club, to continue some private hire while observing the restrictions that we all need to comply with to reduce the impact of the virus on the community.

I hope the articles in this edition entertain you and provide you with some ideas of ways we can enjoy life and, in particular aviation, while we jointly fight to overcome the virus.

Ashley Miller is starting an exciting initiative for local high school students with interest in aviation careers. Flight Youth Engineering allows teenagers to be involved in building their own kit aircraft and then learning to fly them. Read how they're doing it and how you could help.

Some of our past students relate how they've faired since graduation. Ben Yaxley made the transition from RAC student to RAC instructor, to flying Dash 8s. Ashleigh Hodge's first job was flying charter over Lake Eyre last year. Meanwhile, Lauree Skene-Gordon summarises how some of the Club's most recent graduates have entered the workforce. Lauree also provides a summary of how the Club, as a Registered Training Organisation, has been training VET students over the past 12 months and what the new batch of students is up to.

The Club's inaugural "coffee hop" saw members drop into a number of local airfields for a cuppa just before Christmas. Janette Roberts-Thomson tells us how they went.

There's also some educational articles in this edition. Ray Vuillermin reminds us how we can calculate density altitude to work out whether or not our plane can take off from, or land at, a country airstrip. He also warns how a simple oversight can significantly reduce an aircraft's performance and discusses the relative merits of the theories of lift credited to Sir Isaac Newton and Daniel Bernoulli.

Speaking of oversights, it's well worth revisiting the danger associated with mountain waves when strong winds blow over the ranges, like those that plague us in winter in South East Queensland. Bob Tait reminds us how they can ruin your day if you're not prepared for them. As he says: "Met does matter".

And, with the grape harvest underway, I share some details of our trip this time last year to the Mudgee wine district in central NSW.

Thanks to all the members who contributed to this edition. Remember that we want to read your stories too. Please email any contributions about your aviation adventures to: airchateditor@redcliffeaeroclub.com.au

Take care.

Philip Arthur

Glossary

Following requests from some readers who are not so familiar with aviation jargon here's a glossary for some of the terminology we use:

ARO – Aerodrome Reporting Officer

ATC – Air Traffic Control

ATPL – Airline Transport Pilot Licence

CASA – Civil Aviation Safety Authority

CPL – Commercial Pilot Licence

CTAF – Common Traffic Advisory Frequency

CTR — Control Zone

FBO – Fixed Base Operator

GNSS – Global Navigation Satellite System (commonly referred to as GPS)

IFR – Instrument Flight Rules

IMC – Instrument Meteorological Conditions (no visible horizon eg in cloud or smoke haze)

ISA — International Standard Atmosphere (15°C and 1013.2hPa at sea level)

kt – knots, nautical miles per hour

LAME — Licensed Aircraft Maintenance Engineer

MEIR – Multi Engine Instrument Rating

NVFR – Night Visual Flight Rules (Rating)

POH – Pilot's Operating Handbook

PPL – Private Pilot Licence

RA – Restricted Area

RNAV – Area navigation

RPL – Restricted Pilot Licence

RPT – Regular Public Transport (normal scheduled flights)

RTO – Registered Training Organisation

RWY – Runway

TAS – True Air Speed

TAF - Terminal Area Forecast

VFR – Visual Flight Rules

VMC - Visual Meteorological Conditions

VSI — Vertical Speed Indicator

VSL – VET Student Loans

Recent achievers

Congratulations to all our students who recently completed a milestone in their training at RAC. The whole Club wishes you all well for your future endeavours in aviation.

First Solo

Lachlan Anderson

Harrison Deasy

Jacob Ingle

Ray Jonkers

Oliver Lusa

Jonathan Morgan

Alexander Palmer

Caitlin Ryan

Jake Van Der Vliet

John Wines

Alexander

Caitlin

Harrison

Restricted Pilot Licence

Jeffrey Huff

Jacob Ingle

Avery Lau

Private Pilot Licence

Thomas Hallet

Hiwa Salih

Commercial Pilot Licence

Eugene McMahon

William Read

Jack Sangster

Multi Engine Aircraft Instrument Rating

Andrew Clegg

Avery

Jonathan

Jack

Jeffrey

Oliver

Andrew

Ray

John

Jake

Thomas

Will

Eugene

Jacob

Upcoming events

Our club flyaways are always fun and a great way to meet like minded aviation lovers.

While the risk of contracting COVID-19 has made group flyaways impossible in the immediate future they will be back. We'll start planning them as soon as we can.

Keep yourself informed as to what's happening and tell us where you'd like to go by joining the RAC Flyaways Facebook group. Click on the link below:

https://www.facebook.com/67groups/678739008989427

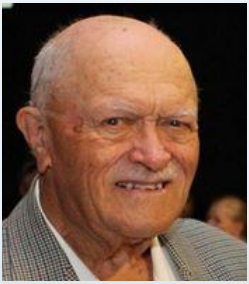
And our monthly happy hour and barbecue at the Club have also been put on hold until the virus is contained. Expect them again on the first Friday of the month once the all clear has been given.

The pandemic has also meant that many airshows that were due to be held over the coming months have been cancelled. Keep a look out for the ones below that may still continue depending on how events unfold.

July 4-5 - Brisbane Valley Airshow, Cressbrook **www.brisbaneairshow.com.au**

October 17-18 - Warbirds Downunder, Temora, NSW **https://warbirdsdownunderairshow.com.au/**

Curly's corner



A life member of the Club with a long and illustrious career in the RAAF and Air Traffic Control, Phil (Curly) Ware is always keen to share his knowledge and experience to demystify ATC for the rest of us.

The aptitude tests were long past, as was the day of interviews - and at last the letter from ATC arrived in its brown envelope with good news: "You have been accepted for training as an Air Traffic Controller, and you are to report to Mr Vin Peters at the ATC Melbourne Training College at 9am on 25th October 1968. Yippeeeee! You beauty! How good it felt. So, at 30 years of age, after 13 years in the RAAF, a new career began.

After a very gruelling "short course" of seven months (for ex Aircrew) the euphoria once again arose when I was advised of my "Pass - but you're no star" by the head of ATC training.

Then came the move from Melbourne to Brisbane. Back in those days, we did both Tower and Enroute control. I reported to the Tower for on-the job training, met my training officer, was briefed, spent time reading and absorbing the local operating instructions and then...the big first step: I was given the microphone under STRICT supervision (the understanding was that if the trainee screwed up, his training officer "went down").

Good days, bad days, and finally the big day came, and I arrived at work to find the Senior Tower Check Controller ready to begin a most harrowing day. Firstly there was the "theory side" in which lots and lots of questions were asked, and I stumbled through the answers until the final question: "Now Phil, what do you think is going to happen about this fog?"

Looking outside I didn't have a clue what the fog was going to do but the words of our old air force met man came back to me, from when I was flying out of RAAF Richmond on P2V-5 Neptunes as Radio/Radar Operator. "Old Fred" would come into the squadron briefing at 7:50am each day and in winter he'd look through the window at the fog outside and announce to all and sundry: "The sun will burn this fog off at 10 o'clock". And of course, that was exactly what would happen :-)

So in answer to the Check Controller I said: "The sun will burn off the fog at 10 o'clock". As the second hand of the big tower clock came up to exactly 10am, the Senior Tower Controller declared the aerodrome open, and the morning rush (with backlog) began.

Somehow I managed to survive my shift without getting two jets "nose to nose" on the same taxiway (easy to do if there's a runway change and something that would live on for decades in the annals of ATC if you ever did it).

Back to my check results. In the debrief, amongst other things, the Check Controller wrote: "Phil Ware has displayed an above average knowledge of local meteorological phenomena" - but the reality was that I really didn't have a clue. However, the word soon spread that "this new graduating bloke is a Guru on Met". I never dispelled the myth. When subsequently asked many questions by various people about met I'd say "will advise", and go away and research the subject. By the time it came to PPL and CPL subjects at the Redcliffe Aero Club 12 years later at 42 years of age I knew enough to pass the met exams.

So that was how I started in ATC. I loved that Tower job - an "office with a view" - but it was short lived. My lovely job was soon replaced by the stroke of a pen. Following a roster change P. Ware commenced enroute training on 1st February 1970 ...

Flight youth engineering

A local initiative for teenagers

As a result of the aging demographic of aviators in Australia and a worldwide shortage of pilots, Flight Youth Engineering (FYE) was recently launched in Redcliffe as an initiative to increase young people's interest and participation in the aviation industry. The program aims to give high school students the opportunity through teamwork to build and fly their own aeroplanes. With support from the local community, the program provides an additional STEM (Science, Technology, Engineering, Maths) activity for the students. A group of Redcliffe based aviators, led by Ashley Miller and Paul Reddish, are mentoring groups of students while they build RV12iS two seat training aircraft. The Vans aircraft are being imported in kit form from the USA and will be constructed in 12 to 18 months starting in Year 11. Once completed, the aircraft will be approved for flight training, with those students who choose to using the balance of Year 12 for learning how to fly them.

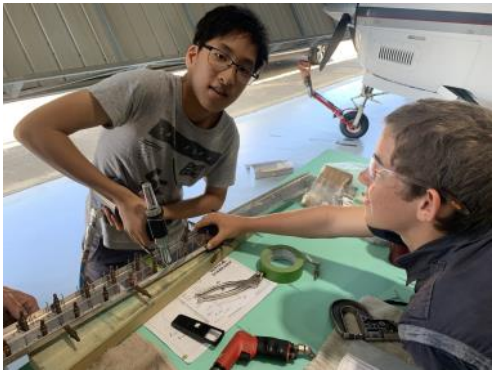
The program is designed to address the future shortage of aviation specialists by showing today's youth that there is a pathway to aviation available to them that they may not have seen before. During the two year period students will receive a broad range of engineering, maintenance, project planning and flying experience. In addition, while they're building the aircraft a range of mentors will be brought in to talk with them about various aspects of the industry such as air traffic control. In this way the students will be exposed to a variety of employment opportunities in the industry in a practical way and will be better equipped to decide which areas interest them most.

At the completion of two years, the aircraft will be sold and the proceeds used by the school to purchase the next kit for new students. The plan is for the each school group to be financially self-sufficient by the time they complete their third aircraft.

FYE is modelled on a very successful program already running in the USA where, up to the start of this year, high school students had built and flown over 80 new aircraft. The FYE directors met with some of the US groups to discuss aspects of the program during a visit to Oshkosh last year.

The "Edifyers"

Ashley Miller says the core belief of the program is to motivate and empower young men and women to dream of what is possible. FYE mentors supply their time and industry experience free of charge. FYE and its mentors do not seek any remuneration or expect membership to any society or group in return for their participation. Their number one purpose is to inspire and engage with students to highlight possible future careers in the aviation industry, such as pilots, engineers, technicians and air traffic controllers.



FYE is being launched in Queensland this year with the first launch school being St Columban's College in Caboolture. The school is providing a suitable workspace and paying for the necessary tooling that is required for the construction project. Aircraft construction will start in the coming weeks when the Tail Kit arrives from the USA, along with all the training kits and plans. The fuselage and wings will follow soon after. There is a very excited group of boys and girls just champing at the bit to get started on building their dream aircraft. Having already raised $50,000 of the funds required, St Columban's College is seeking the remaining seed money needed to complete the very first aircraft build of this type in Australia. FYE would like to form long-term relationships with communities and industry to support the projects at schools around Australia. They hope to roll out the model across Australia and are planning a school in every state by next year, growing to 15 schools within three to five years.

Meanwhile, a group of Redcliffe based home school students is already working on their own project. The "Edifyers" is a bunch of passionate fathers and sons that are building their RV12 in Ashley Miller's hangar under instruction each Saturday. Ashley says they are fully privately funded and that it is very exciting seeing these young men grow in confidence as each section is completed.

FYE were recently granted full not-for-profit status along with full tax deductibility for all donations from Australian businesses. The RAC board has decided to donate a sum of $500 towards the project. RAC President Mike Cahill said "The board members think this project is a wonderful initiative for youth in aviation and we wish Flight Youth Engineering all the best with it."

FYE personnel at Oshkosh in 2019

Ashley would love to show the construction progress to any interested Club members. Just wander down to Hangar 61 or give him a call on 0437 852 444.

You can watch an introductory video and learn more about FYE on their website by clicking on the link below or pasting it into your browser.

www.fye.org.au

FYE is seeking donations from local businesses and interested parties can donate via the website. If you would like to donate, click on the link above and then click on the "Donate here" button. All donations will go to St Columban's project at this stage. Later, when more schools are on board, it will be possible to direct the donation to your school of choice.

RV12 at Oshkosh

Instructor intro

Dave Rogers

Dave Rogers joined the club as a Grade 1 instructor during 2019.

How did you become involved in aviation?

I've always had an interest in aviation, but only started considering it as a career option towards the end of high school as I was making my subject selections. I did a trial introductory flight (TIF) in 2006 out at Coldstream Airport in Victoria and fell in love with it.

Where did you have your first flying lessons?

After the TIF, I did all my training at Moorabbin Airport, at what was then known as General Flying Services. During my time there it was acquired by Oxford Aviation, and since then CAE.

What type of licence and endorsements did you gain and over what duration?

I gained my PPL in 2008, a single engine instrument rating and CPL in 2009, and my instructor rating in 2010. In 2012 I did an endorsement on the PA44 - my first twin - and gained my multi engine instrument rating. Between 2011 and 2014 I also gained my Grade 2 and then Grade 1 instructor endorsements, and multi engine training approvals. I gained my ATPL in 2014 just prior to Part 61 (when it was a lot easier to get one!)

Where did the training take place?

Prior to 2011 all my training was conducted at Moorabbin. From there all my upgrades occurred whilst I was working as an instructor out of Mangalore, Central Victoria.

Where have you worked as a pilot?

Between 2011 and 2015 I worked as a flight instructor out of Mangalore Airport. For a short time in 2015 I worked as a flight instructor out of Mareeba, Far North Queensland. Between 2016 and 2018 I worked

as a charter pilot primarily in Goroka, PNG. From 2019 until now I've been here!

What attracted you to Redcliffe Aero Club?

Its longevity. I think it's extraordinarily rare for any entity in GA to last 50 years - a testament to the success of the Club. There's also a good variety of flying here between work with the members and our full-time students and the odd charter.

What do you love most about flying for a career?

Although it can be hard work at times, I consider myself lucky to do what I do. There are those moments, when you may be launching off on a beautiful crisp morning, or cruising home late afternoon with the sun setting off to your side, or taking in the city lights on a still night, that I pause to appreciate the job.

What are some of the challenges you've faced over the years?

I think the most challenging and rewarding flying I've done was in PNG. The weather was dynamic and could catch you out very quickly, while the airstrips I'd fly into were largely unimproved, short and steep, and emergency landing sites were few and far between. But the service was life changing for the people. Without us coming in, the schools and health centres would have shut down and the shops would be without food.

What aspects of aviation are you especially passionate about?

I have a huge amount of respect for organisations like the RFDS that are supporting regional Australia. I think that's where aviation has its most positive impact.

Which aircraft do you like to fly most and why?

Presently - the C310. It's not much to look at, but it's very nice to fly.

What would you like to achieve in the future?

Like most instructors, I aspire to end up in the airlines. That's always been a goal since beginning this journey in aviation.

What would be your dream job?

I used to work with an ex air force pilot who'd flown Mirages. His regular job was flying a Hawker 800 out of Essendon airport for high profile clients. In between trips to Hawaii and other exotic places, he'd come and do instrument rating tests for us and training in the Kingair. Not a bad balance.

What advice do you have for people wanting to learn to fly?

Save up lots of money! But definitely do it. I come across a lot of people, who when they find out what I do, say that it's something they've always wanted to do. Don't be one of them - looking back wishing you did but didn't.

What advice do you have for club members who want to improve their flying skills?

Pick the brains of the experienced pilots around you. Find a pilot who you respect and talk to them about how they operate. It's amazing the things you learn just by sitting down and chatting with another pilot. Another thing you can do is schedule some time with an instructor to work on some areas you'd like to improve.

Hop to it!

by Janette Roberts-Thomson

When Sam Keenan suggested a "coffee hop" around our local region just before Christmas it was taken up enthusiastically by a number of Club members. The idea was to fly into a number of local airfields and have a cup of coffee or other non-alcoholic beverage at each stop. Eight aircraft embarked on the adventure. Five were from the Redcliffe Aero Club and we were joined by three aircraft from Archerfield. VH-NDP was airborne from YRED by 8:55am and the weather was promising. We all met up at Kilcoy airfield, ready to continue the day.

Heck Field

From Kilcoy it was a short 9 nautical mile hop to Watts Bridge, where we were treated to cool drinks, tea & coffee. Thank you to all at Watts Bridge!

Soon we were up and away to the Gatton Airpark, where again we were welcomed royally by the airpark community who shared with us with a lovely sausage sizzle luncheon with fresh fruit and cool drinks. The huge hanger was cool and airy - perfect for a great get together.

Then we flew over the dividing range to Clifton, which can be quite tricky to find. We elected to land on RWY06 which required a right-hand circuit as Clifton is in the lee of a hill. By now it had warmed up well and truly, but our welcome was equally as warm. NDP did not take to the soft black soil and needed a helping hand to get to harder ground so she could depart.

Watts Bridge

Our next stop was Boonah. By now it was a very hot afternoon (in the low 40's) and by this stage the Archerfield contingent had headed for home. The hospitality at Boonah provided by the friendly owner and his wife from Ultimate Aero was very welcome - especially the cold drinks. Their hanger contained some very interesting classic aircraft.

Our last stop was Heck Field, which was deserted on our arrival but the cooling sea breeze was very welcome as we sat, sipped and contemplated the day in front of the Sports Flying Club. After that we headed home over our familiar patch of territory via Straddie/Moreton island. A lovely finish to an awesome day.

A special thanks to Sam Keenan for organising such a day. It was a great way to meet our local neighbouring aviation community. Thank you too to the four budding junior aviators who lasted the distance and behaved beautifully.

An Epic day!

Crossing the range

Gatton Airpark

Hot under the hood

by Ray Vuillermin

Some years ago, a Melbourne friend called and asked if I would ferry a Piper PA-22 "Tri-Pacer" he had just bought, from Mundubbera in Queensland to Coldstream, near Melbourne. I first flew it to Caboolture to be inspected and then set sail for Melbourne. The trip down, cruising in the 5500 to 6500ft altitude band went very smoothly and it was a pleasant one day trip.

My mate, Chris, had a few years of fun in it and then sold it back to a Queensland owner. He asked whether I would ferry it back to Caboolture for him. As my family are predominantly Melbourne based it provided an opportunity to spend time with them and other old friends in Melbourne.

With our 30th wedding anniversary looming I was keen to try and make it back to Caboolture in one day so planned an 0800 departure from Coldstream, where Chris had left the aeroplane, fuelled, oiled and ready to go, and had thoughtfully put two spare bottles of oil on the backseat.

I had prearranged fuel at Parkes and Moree so all looked good. I arrived at Coldstream by 7 o'clock for an 8 am departure. When I got there I found low cloud and rain showers passing through, making the hills to the north a bad proposition. By 10 o'clock it looked clear towards the Kilmore Gap so, knowing it was 8/8 blue sky north of the hills, I decided to depart. Climbing out, I could see sunshine on the Maroondah reservoir near Healesville, so slid over that way and was soon cruising up the valley past Mt Cathedral in perfect conditions, and with a fifteen knot tail wind assisting my progress.

I overflew Temora and reached Parkes, refuelled, watered myself and quickly set off for Moree.

Again I had an uneventful turnaround at Moree and I departed knowing I could reach Caboolture with an hour to spare before last light. I was feeling pretty good given the late departure - until - while climbing through 3500ft I noticed the oil temperature within limits but about twenty degrees higher than it had been during the earlier climbs. I levelled off and throttled back and the temperature stopped climbing but did not come back down, again sitting about twenty degrees higher than it had in the previous sectors. I tried powering up a bit and the temperature moved up. I advocate to trainees in aeroplanes (and to my wife in the car) - "if it smells, looks, feels or sounds different - it is different - so find out why".

Having made such good progress and with a reason to get home that day, "press-on-itus" was kicking in. I weighed up that I did not want to climb but knew I needed more height to cross the range into Brisbane safely, and at the power I now had, my ground speed was so low that I would make Caboolture just before last light - too close for comfort. Also in my mind was the thought that if I diverted and looked inside the cowl it was unlikely I would be able to spot what the problem was so would certainly need to find a LAME. By the time one of those turned up I'd be stuck there overnight, thereby missing our anniversary. But, there was only one sensible thing to do - I diverted into Goondiwindi!

After landing I opened the cowl and to my surprise, and delight, the problem was immediately obvious, easy to fix, and did not need a LAME so much as a safety counsellor.

So what was the problem? Here's the story:

It had been a very hot day and at Parkes I decided to help the engine keep cooler by adding one of the bottles of oil, even though it wasn't really necessary. I had difficulty closing the cowl as the cowl fasteners were very stiff and I barked a few knuckles. It was worthwhile however, as the engine stayed nice and cool on the next leg of the journey.

At Moree I decided to do the same again so added the oil, put the cap back on and started struggling with the fasteners. I noticed the refueller about to leave and asked him to help with the cowl. We both struggled but got it closed and went our different ways.

Now - back at Goondiwindi. As I peered under the cowling I saw sitting on top of the right hand cylinders exactly where I had left it, an empty oil bottle. It was nicely blocking an oil cooler duct. Clearly in the rush to recall the refueller, as he was already at the gate, I had put it there and simply forgot about it. You can't throw an empty plastic bottle very far but I threw it as far as I could.

It was great to see the temperature needle exactly where it should be on the climb out so I was able to coast over the hills without a worry and arrive at Caboolture with thirty minutes of light left.

All those old clichés come to mind - old bold pilots, old dogs and new tricks, never too old to learn, hasten slowly, do one thing at a time etc, etc. I'll leave it to you to work out which applies.

And watch where you put your oil bottles, funnels, spanners, rags etc.

Humble in appearance, intent, and execution, the Piper Pacers were the last steel-tube fuselage, fabric-covered Pipers and, with the exception of the PA-18 Super Cub, the last to evolve directly from the Cub. They were designed and built at a pivotal point in the history of Piper Aircraft Corporation. The company was making a difficult transition from a family-run business that was the world's most prodigious manufacturer of small, simple, inexpensive airplanes to one that had to compete in a more sophisticated market with larger, more complex, and much more expensive models. The Pacer was the first of Piper's post-war models to have flaps and dual control yokes in place of sticks. It shared separate doors for front and rear seat occupants with the Clipper. Pacers were delivered with either a 125 hp or 135 hp Lycoming engine. An adjustable-pitch propeller was an option. All told 1,120 Pacers were built before production ended in 1954.

The Pacer was joined in 1951 by the tricycle-gear Tri-Pacer. Moving the gear from tail to nose had a dramatic effect on sales. More than 7,600 Tri-Pacers were built over the model's 10-year production run. The Tri-Pacer debuted with a 125 hp O-290 but almost immediately was upgraded to 135 hp. Later models were offered with 150 hp and 160 hp O-320 engines.

Source: www.aopa.org/go-fly/aircraft-and-ownership/aircraft-fact-sheets/piper-tri-pacer

Attitudes

by Bob Tait

Mountain waves and VFR flight

Mark felt mixed emotions as he settled the last of his three passengers into the Cessna 172. The flight was to his father's station property, just west of the Great Divide and he felt excited that at last he was taking his friends to see the place he'd talked so much about - the place he knew so well as a kid. He also felt a sense of pride because he knew that his Dad would be there to watch his arrival on this, his first flight home since completing his private pilot licence training. But there was also a vague sense of anxiety because, although the weather was reasonable, there was a bracing wind blowing off the mountains and he desperately wanted this flight to be a pleasant one for his first-time passengers. At five hundred feet on climb out he turned left to circle back over the top of the familiar coastal aerodrome and turn onto his departure heading. At four and a half thousand feet the little Cessna settled into cruise beneath a layer of thickening stratocumulus.

Mark felt a twinge of disappointment as he saw that the GPS was confirming the 25 to 30 knot headwind that had been promised by the area forecast. He took some consolation in the thought that at least he wouldn't have to spend much time over the 'tiger country' because his flight planned track took him across the ridges at right angles, so he'd soon be out over rolling plains to the west. "Blast this headwind!" he thought. He couldn't do much about it because the area forecast indicated even stronger winds at higher levels, and in any case the increasing cloud cover prevented a climb to check it out.

Approaching the ridges, occasional passages of sharp turbulence alarmed both his passengers and him. It would be so disappointing if he had to turn back, but the weather wasn't all that bad except for the headwind and the turbulence. A narrow slit of sky between the hill tops and the cloud base marked his passage across the hills - not as good as he'd like, but bright sunlight shone through from the other side and there was no rain to be seen.

More sharp turbulence and the aeroplane jerked as it gained height in a strong updraft. Still more turbulence, more frequently now as it appeared to sink closer to the level of the ridge. Mark applied power to gain height as the turbulence continued. With full power and at best climb rate speed he was horrified to see the VSI indicating a rate of descent! Mark commenced a turn back but panic made the angle of bank steeper than he intended and he was subconsciously raising the nose in an attempt to halt the sink. The urgent wail of the stall warning startled him and the little Cessna almost clipped the trees as the desperate turn finally carried it back away from the ridge.

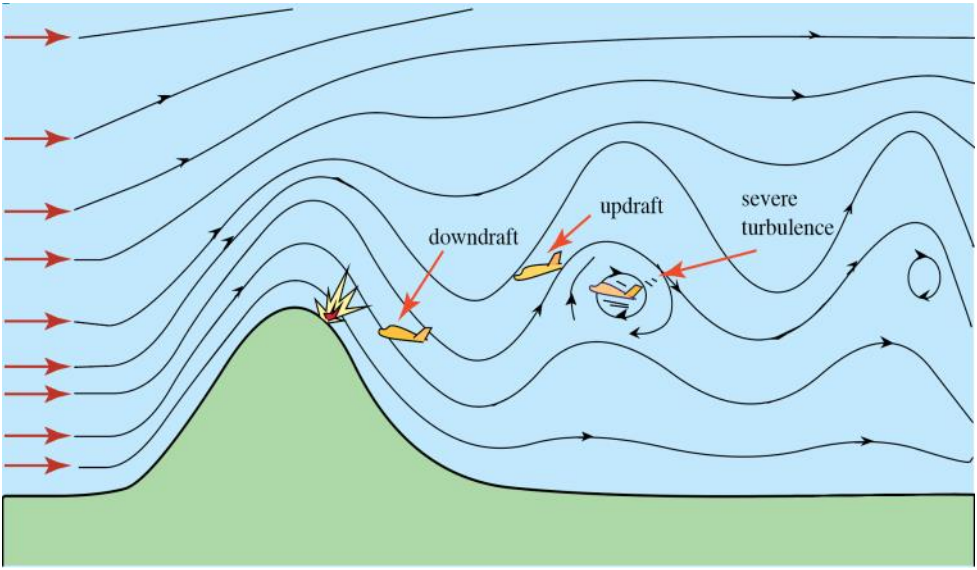
MET DOES MATTER!

There are many items covered in the syllabus for meteorology that are often presented simply as possible subjects for examination questions, rather than as having a vital importance for the safety of VFR flight. It is critical that pilots of VFR aircraft get their heads out the cockpit to consider the environmental factors that affect their flights. As winter approaches and westerlies become a feature of the eastern Australian coastal region give some thought to the possibility of mountain wave activity. The meteorologists tell us that the conditions most likely to generate mountain wave activity are:

- A relatively stable atmosphere (actually a stable layer at the height of the mountain tops sandwiched between two less stable layers is the "ideal")
- A wind strength of 25 knots or more at the height of the mountain tops
- Wind speed increasing with increased height
- A wind direction at right angles to the mountain tops.

The story which introduced this article contained all of these conditions, but if you were in Mark's position tomorrow would you read them as easily as you would have from the pages of a Met book way back when? Maybe you should go back to your theory books and read that section again!

Remember that mountain wave activity can be present with or without cloud - so it is probably safer to ignore the cloud associated with it except perhaps to consider the presence of lenticular cloud as a confirmation of its existence.



Diploma dispatch

by Lauree Skene-Gordon

The Club's staff pride ourselves on providing exceptional academic support for our diploma students throughout their aviation education journey, including providing them with a variety of instructional methods of educational development. We aim to provide unmatched support and guidance to students to accelerate their learning progression.

The Australian Qualifications Framework (AQF) is the national policy for regulated qualifications in Australian education and training. It incorporates the qualifications from each education and training sector into a single comprehensive national qualifications framework. All our Club's flight instructors, trainers and assessors and staff assist students to not only meet the AQF standards and those of the Civil Aviation Safety Authority (CASA), but to exceed them.

In 2019 we saw several students successfully complete their qualifications and graduate.

We congratulate Mark Hansen, Bryce O'Brien and Charlie Yu on the successful completion of the AVI50215 Diploma of Aviation (Commercial Pilot Licence - Aeroplane).

We also congratulate Michaela Allison, Lucas Gozzard and Bryce O'Brien on completion of the AVI50415 Diploma of Aviation (Instrument Rating).

In January 2020 our first cohort of students commenced the new AVI50219 Diploma of Aviation (Commercial Pilot Licence - Aeroplane) qualification. We welcomed Club members Ashley Grimshaw, Mark Lane and Jake Whinn as full-time diploma students as well as Ji Zhang, who relocated with his family from Victoria to commence his study as a full-time diploma student with the Club.

We look forward to seeing these students continue their aviation learning experience with the Club throughout 2020 and 2021.

Glass House Mountains - Graham Pukallus

Staff intro

Taylah Simmonds

I joined the Redcliffe Aero Club in July 2019 as a part time administration assistant while completing my Certificate III in Business Administration traineeship. Prior to joining the Club I had a background in customer service and administration, gained through working at Woolworths over the previous two years.

I've found working at the Club to be very fast paced and challenging but mainly rewarding and progressed through my studies while learning about all things related to an RTO (Registered Training Organisation).

I have learned many things since commencing with the Club especially while participating in our recent VET Student Loans and ASQA re-registration audit process.

After successfully completing my BSB30415 Certificate III in Business Administration in January 2020 I started my new position as full-time RTO Administration Officer. I look forward to gaining new skills, new knowledge and learning more about the aviation Industry in 2020. In particular, I look forward to learning more about training packages and accredited courses as well as assisting in our upcoming quality and compliance audits and our scope of registration application for additional courses. And of course working with the great team and all the students here at the Club.

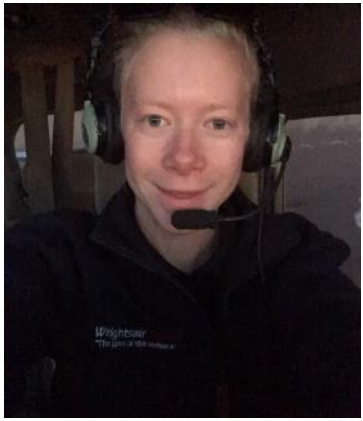
What's this? And where is it? Just one of many SE Queensland sights that you'll only see from the air!

The sky is the limit

by Lauree Skene-Gordon

The Redcliffe Aero Club is always keen to celebrate our graduating diploma students' success and we share their excitement when they gain employment in the aviation industry. Some graduating students who gained employment in 2019 are outlined below.

Dylan Morris (right), who graduated with the AVI50415 Diploma of Aviation (Instrument Rating) in 2018, continued his studies and is now a flight instructor with a Grade 2 training endorsement. He is sharing his knowledge and skills while expanding his horizons at Bunbury Aero Club in Western Australia.



Ashleigh Hodge (right), another 2018 AVI50415 Diploma of Aviation (Instrument Rating) graduate, spread her wings as a multi-engine charter pilot at award-winning charter company Wrightsair, a scenic flight & charter flight specialist based in William Creek, South Australia. With Kati Thanda (Lake Eyre) covered in water for much of 2019 there was huge demand for joy flights and Ashleigh was able to make the most of the opportunity to undertake scenic flights over this icon of the Australian outback. You can read her story later in this edition of AirChat.

Mark Hansen (right), 2019, AVI50215 Diploma of Aviation (Commercial Pilot Licence -Aeroplane) graduate is now spreading his wings with Shoal Air, flying Cessna 210's doing charter and scenic tours in and around Kununurra, Western Australia.

Juan Sperling, another 2018 AVI50415 Diploma of Aviation (Instrument Rating) graduate, is experiencing the country and coastal lifestyle in Western Australia while working for Norwest Air Work, as a single and multi-engine commercial pilot. Based in Exmouth, 1300km north of Perth, Norwest Air Work has been providing air services throughout the Gascoyne, Pilbara, Murchison and Kimberley regions for the past 30 years. Juan is employed conducting aerial spotting (mainly for whale sharks, humpback whales and manta rays), scenic and charter flights.

Bryce O'Brien, 2019, is the Club's first double diploma graduate, having completed the AVI50215 Diploma of Aviation (Commercial Pilot Licence - Aeroplane) and AVI50415 Diploma of Aviation (Instrument Rating). He recently commenced employment with Territory Air Services in Darwin, a charter business with extensive experience flying in remote areas of the Northern Territory. Their fleet includes Piper Navajo, Saratoga, Cherokee, Lance and Cessna 210 aircraft, with flights from Darwin to destinations in the Northern Territory, North Queensland and the Kimberleys in Western Australia.

Are you a past student or Club member? Where has your aviation journey taken you? Please share your story by contacting us at info@redcliffeaeroclub.com.au

My first flying job

by Ashleigh Hodge

Ashleigh Hodge completed her multi-engine command instrument rating at RAC in 2018.

Getting your first GA job can be tough with minimum hours and little experience. What you come out with once you've finished your commercial training is not even close to the high entry requirements of many operators. As a result, the chances of getting your first job in a major city are very slim. But what I found when looking for my first job was it's a very who-you-know industry. Throughout my training I was introduced to many different people within the industry, all of whom had great experience, knowledge and contacts. I used some of those contacts to land my first job working for WrightsAir in South Australia.

WrightsAir is a family company based at William Creek in the far north of South Australia, approximately 770km north of Adelaide and 160km east of Coober Pedy. The company specialises in scenic flights over Lake Eyre, especially when it floods. I was put in contact with the company via a mutual friend who knew a lady who used to work for them. She had told me that the 2019 season was extremely busy due to the amount of water that had flowed into Lake Eyre after the Queensland floods and they were still looking for extra pilots, even though it was late in the season. I contacted the owner Mr Wright and within two weeks I was on my way out to William Creek, which was an experience in itself. It isn't the easiest place to get to.

The company's aircraft maintenance is conducted in Horsham in western Victoria so I met Mr. Wright there and did my check flight. The next day I flew myself in a C182 to Hawker, about 400km north of Adelaide, changed aircraft to a C172 and made my way to William Creek.

I remember that when I first entered the circuit at William creek there was a lot more air traffic on the radio than I expected. One was on approach and two were about to depart and there were multiple aircraft over Lake Eyre. I had been told how small and remote the town was but to see it for real put it all into perspective. It comprises two runways (the main one sealed and the cross strip dirt), one pub, the flight office, a pilot house, hangar and a caravan park. This is all surrounded by the red desert sand.

Queuing for fuel

Living in such a remote town can sometimes be challenging, but it was also a great learning experience and character building. Good problem solving skills are a must as there are no shops or skilled trades around. You're expected to do many things that you wouldn't expect in the city, from doing your 50 hourly oil changes for yourself to your basic aircraft maintenance.

The job itself is like no other with so many different experiences. Our main operations are conducting scenic flights over Lake Eyre and the Anna Creek Painted Hills. Both are magnificent sights. When I arrived the lake was approximately 70% full but was quickly evaporating. The Anna Creek Painted Hills are a spectacular sight made up of many different coloured layers of rock. Landing at the painted hills could often be challenging being a narrow dirt runway with hills at one end and trees at the other and relatively soft and rocky ground to land on. If there was a strong cross wind, which there often was, it made it even more interesting. We were often hit with strong wind conditions and dust storms. You certainly learned to improve your crosswind technique pretty quickly out there.

Views of Lake Eyre

End of another hard day at the office

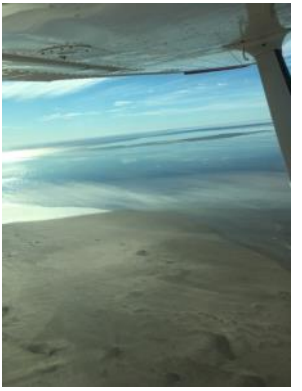
Anna Creek Painted Hills

The flights each day were always different to the ones on the previous days, from the variety of passengers to the sights of the lake. They were usually one or two hour flights and the sight of the lake was always changing with the evaporation and wind moving the water.

I was also fortunate enough to do a trip out to Dalhousie Springs, located on the western fringe of the Simpson Desert. It is a super group of around 60 natural springs that spill from the Great Artesian Basin with a water temperature between 38 and 43 degrees. Also, each year WrightsAir and the William Creek Hotel hold an annual fly-in to the town over the AFL Grand Final weekend. It was great to be a part of the organisation and running of the event. We had over 50 aircraft visit over the weekend. There were seminars from CASA and many scenic flights, with a great evening of entertainment. I highly recommend it to all of you.

https://www.williamcreekhotel.com/events/william-creek-fly-in-2019/

In summary, I would encourage all students to make as many contacts as you can during your training and keep in touch them. They are really important for winning that first job.



Fly-in aircraft parked along the Oodnadatta Track

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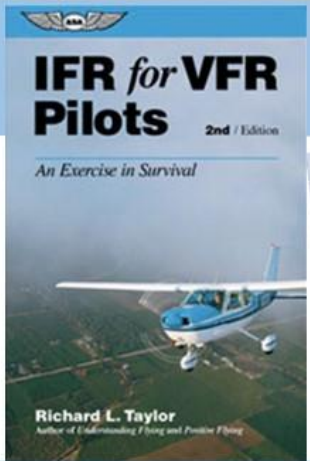

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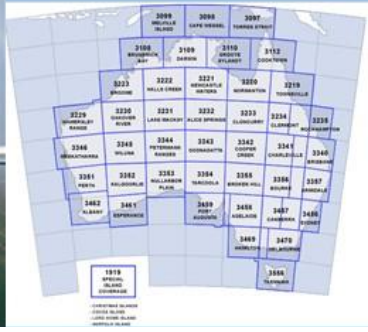


From RAC to RPT

BenYaxley's journey from student to check captain

Ben Yaxley was a student and instructor at RAC in the early 2000's. He shares with us some of his experiences and career highlights as well as advice for up and coming aviators.

How did you become involved in aviation?

At the age of 6, my sister and I were travelling on an Ansett flight to Adelaide to stay with my grandparents for the school holidays. During the flight we were invited to visit the cockpit and I can still remember it like it was yesterday. From that point on every time an aircraft passed overhead I'd be outside with eyes skyward. I knew that I wanted to be a pilot. Through school I was determined to get my commercial pilot's licence; that was my motivation to do well and get a job to start saving for lessons. After leaving school I worked two jobs to raise the money to pay for lessons, usually completing one lesson per week.

How did you become involved in RAC?

I first became involved in the Club in September 2001. I did a trial instructional flight with Jack Collins in VH-BUE, the Cessna 152. I'm proud to say I went on to complete all my flying training with RAC, completing my GFPT, PPL, NVFR, CPL, MECIR and flight instructor rating. I remained a Club member up until I was employed as a full time instructor in 2008. During my time at RAC I was involved in volunteer work including organising BBQs, night flying socials, various working bees, washing aircraft and mowing. I also became a committee member and Club secretary. My paid work included office/administration, taking scenic flights, charter flights and as a full time flight instructor.

What are your fondest memories of RAC?

The night flying socials and night city flights were special. Also the BBQ's, and generally spending a lot of weekends out at the Club where there was always something interesting going on! I also enjoyed the impromptu flights with my friends who were at similar levels in their training - hour building fun! Sending students on their first solo was always memorable too. Seeing students progress through their training and get their first jobs always made me proud.

First line flight in the Fokker

How has your career developed since leaving RAC? What roles have you had in what companies?

My skills (personal and flying) learnt as an instructor have been so valuable for my career to date. After leaving RAC my first role was with Skytrans Airlines flying both RPT and FIFO while based in Brisbane and Cairns. I progressed through Dash 8 First Officer, Captain, Training Captain and Check Captain (including simulator checks). More recently I've been based in Brisbane with Alliance Airlines employed as a First Officer on Fokker 70/100, both RPT and FIFO.

What are some of the challenges you've faced during your career?

Whilst learning, the work/life/study balance was sometimes difficult but worth it in the end! Relocating to Cairns and living away from family was a tough decision but having said that it was good to experience life in a different city and make the most of that.

How has the aviation industry changed since you learned to fly?

The biggest change is probably the increased demand for pilots these days as compared to when I began learning to fly. From what I understand, currently the world as a whole cannot train pilots at a rate that is required to fill positions. Immediate job prospects were not great when I completed my commercial licence as there were not as many jobs available, cadetships were not as readily available and the minimum entry hour requirements for jobs were much higher as well. I was still completing my electrical apprenticeship with Energex while I completed my CPL. I chose to complete my apprenticeship and gain some experience in my trade before actively looking for full time work in aviation. I would have still completed my licence regardless as I had set this as a goal. At that time RAC offered me the opportunity to take an instructor rating course together with prospects of a full time instructor position. It was an opportunity too good to pass by.

How has the approach to training pilots changed over your time in the industry?

There's definitely more emphasis on human factors/non technical skills. We operate some complex systems with varying levels of automation, flying with different people and in different conditions day in, day out. As pilots we are human and susceptible to making errors. Although this cannot be entirely mitigated having an awareness and being able to implement control measures can sure help.

Last Skytrans flight with former RAC student Josie

Flying the aircraft is a technical skill and is obviously important but only one part of the getting the job done. Other important non-technical skills such as decision making, communication and interpersonal relationships are just as important for getting the job done as safely and efficiently as possible.

To address these issues we complete regular company-wide human factor training. We also we do thorough briefings to identify threats and to identify control measures to reduce or eliminate risk before take off and prior to descent. Pilots are also encouraged to communicate with the rest of the crew and keep the other pilot in the loop with what they are doing and thinking.

What parts of aviation are you passionate about?

Enjoying everyday, safety first! Although it is a serious job with huge responsibility there is always time for some fun and a laugh along the way.

What do you love most about flying as a career?

I love that we get to fly all over the country in interesting aircraft and no two days are the same. There are new challenges and always new things to learn along the way. I also love meeting and working with different people and talking with them about their experiences.

Simulator centre in Brisbane

Which aircraft do you like to fly most and why?

My favourite single engine aircraft was the Beech Bonanza, fast and stable. My favourite piston twin was the Cessna 414. It was fast and had a great sound from the turbocharged continental engines, a beautiful aircraft to fly. The Dash 8 100/300 is probably my favourite overall because it is the plane I've flown the most and am most familiar with.

What other aircraft would you like to fly?

Have always wanted to fly a 747.

What else would you like to achieve in your flying career?

I would like to be involved with training again (Airline and General Aviation) in the future. I really enjoyed this side of my career and it is very satisfying to be able to pass on knowledge and tips and help others along the way.

Storm approaching Lockhart River

What advice do you have for young people wanting to learn to fly?

Start lessons as soon as you can and get studying! Immerse yourself in aviation so you learn as much as you can. Talk to your instructors and other pilots about your career goals. Your contacts in the aviation industry are your biggest asset.

What do you see as the main challenges for the industry going forward?

Maybe the rising cost of aviation discouraging people from learning for fun or career. We could attract more people into the GA field by reducing costs of learning and hiring aircraft. Making more use of RA aircraft would make owning an aircraft more affordable. We should also make people aware there are many rewarding GA career paths available and that there is more to aviation than flying for an airline. There is the flight instructor career path that will have you teaching ab initio to cross country through to multi engine instrument ratings. It is an extremely rewarding career helping students achieve their milestones throughout their training. The skill set learned as an instructor can also be translated into training and checking in other general aviation fields as well as in the airline environment. The Royal Flying Doctor Service is another highly regarded career path available that is both extremely challenging and rewarding.

Any closing comments?

I formed many friendships with other Club members and instructors at RAC. I have worked with, or currently work with, some of these people outside of RAC. Aviation is such a small world and it's great to continue these friendships as I progress through my career.

With former RAC instructor Dan Crompton on Dash 8

Dash 8 simulator shenanigans with former RAC instructors John O'Brien and Brendan Power. Photo courtesy of John O'Brien.

RTO round up

2019 in review

by Lauree Skene-Gordon

Lauree Skene-Gordon is our Registered Training Organisation (RTO) Co-Ordinator. Part of her role is to ensure that the club meets all its compliance obligations including ASQA (Australian Skills Quality Authority), Vocational Education and Training, VET Student Loans, Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS) etc. Lauree is a BSB and TAE trainer & assessor and mentors the flight instructors in training and assessment components for the various diploma courses.

The Redcliffe Aero Club is registered by the federal government as Registered Training Organisation (RTO) No. 40971. Registration is a prerequisite for the Club to conduct pilot training under the Vocational Education and Training (VET) scheme. The VET scheme allows student pilots to obtain loans from the Australian federal government for their tuition fees. As with university fee loans, the students must pay back the amounts they borrow once they complete their training and are in paid employment.

As an RTO, we had a very challenging but successful past 12 months. 2019 saw our Club begin to strengthen its VET knowledge, with the whole team participating in a high volume of industry currency training activities, professional development, webinars, seminars, and much more.

The RTO team consisting of Lauree, Taylah and Shawn, in consultation with the flight instructors, spent a considerable amount of time in 2019 creating and reviewing over 300 policies, procedures, forms and documents and over 430 training and assessment resources, as we strive to maintain the Club's VET compliance and the exceptional quality of training for all of our students.

ASQA is the national regulator for Australia's VET sector. RTO's need to renew their registration on a regular basis. During 2019 the Club underwent a formal re-registration audit to ensure its compliance with ASQA regulations, in preparation for our RTO status renewal. The audit was conducted over a four week period by Lauree Skene-Gordon and an independent quality auditor, Paulette Thacker, from external provider Pro-Com Services. Both ladies hold the nationally accredited qualification, BSB51615 Diploma of Quality Auditing, so were well qualified to review all aspects of the RTO registration including delivery of intensive workshops and development sessions with the flight instructors, trainers and assessors and RTO staff.

The audit focused not only on compliance with industry regulations and industry currency but on the students' training and learning experience, their continued professional development, learning outcomes and the employment opportunities they would have after becoming CASA (Civil Aviation Safety Authority) licensed commercial pilot and diploma graduates.

The audit was a great platform for the Club's staff to work collaboratively to improve our ASQA compliance and student experience. Many of the findings were translated into items for improvement on our "Continuous Improvement Register" and "Rectification Action Plan".

Collaboratively Stephen White, Mal McAdam and Lauree brought all of the team's efforts together and worked towards submitting our re -registration application. As a result, all of the team's hard work was rewarded with our Club being awarded a new registration that is valid until July 2026, a great achievement.

However, re-registration is only one part of the process. After a quick celebration of our achievements it was back to "pedal to the metal", as we continued our momentum in the preparation of renewing our VET Student Loan Scheme (VSL) application. The VSL application is a further requirement to allow the Club to continue to be a VET Student Loan approved provider. It must be submitted to the federal government's Department of Employment, Skills, Small and Family Business. This department's role is to support economic growth, by delivering policies and programs that assist job seekers to find work, encourage small and family businesses to grow, and maximise opportunity through access to quality skills and training. To assist with our application, the team continued to focus on maintaining and enhancing our compliance targets, students overall training experience, our training material, student participation and engagement and much more . After many months of hard work and dedication from the team we submitted our application. Several months later we were rewarded with acceptance of our application in late December. The Redcliffe Aero Club (RTO No. 40971) was approved for VET Student Loan funding under the VET Student Loans Act 2016 for the period of 1st January 2020 to 31st December 2024. We were also advised that the approved provider fee limit for each year had also been increased, enabling us to train more students in the future.

2019 also saw the introduction of some significant changes within the VET sector, including updates and reviews of training package requirements and recommendations within the Aviation (AVI) training package. As a result the previous qualification AVI50215 Diploma of Aviation (Commercial Pilot Licence - Aeroplane) was superseded by qualification AVI50219 Diploma of Aviation (Commercial Pilot Licence - Aeroplane) on 12/08/2019. This update resulted in changes to many aspects of the course, including costings, duration, course overview and training plans.

The previous qualification AVI50415 Diploma of Aviation (Instrument Rating) was also superseded on 12/08/2019, this time by qualification AVI50519 Diploma of Aviation (Instrument Rating). The changes included the introduction of additional units of competency

to the training package, changing the costings, duration, course overview and training plans.

However, the qualification AVI50516 Diploma of Aviation (Flight Instructor), which was also superseded on 12/08/2019, has been the biggest change, with the qualification being replaced by qualification AVI50419 Diploma of Aviation (Flight Instructor). The updated qualification includes the introduction of several additional units of competency and consists of a large volume of training and assessment units of competency.

Although the Club does not presently offer the AVI50419 qualification, we are currently in the process of preparing our training resources in support of our intention to submit an application to the Department of Employment, Skills, Small and Family Business for consideration to have the qualification added to our scope of registration.

The RTO team anticipate that this will be an approximately four to six month process, so full steam ahead!

2019 also saw the RTO team grow. Taylah Simmonds joined on a part time basis as a Certificate III in Business Administration trainee, adding to the skills and dynamics of the team. Since completing here studies in January, Taylah has become a full time staff member.

Lauree Skene-Gordon also gained her Double Diplomas TAE50216 Diploma of Training Design and Development and TAE5116 Diploma of Vocational Education and Training, enabling her to become a Nationally Accredited Trainer and Assessor, to continue to support and mentor other staff.

Negotiating Gold Coast airspace

by Philip Arthur

Some people have mentioned to me from time to time that they tend to avoid flying down the coast past the Gold Coast Airport because of the hassle of flying through the control zone. I find that a shame, because it's such a spectacular coastline to fly down at 1500ft, past the islands, the Broadwater, Surfers Paradise, Coolangatta and the mountainous hinterland and also an easy way to access northern New South Wales and places like Evans Head, Ballina and Coffs Harbour without going inland. I understand their reluctance though, given my trepidation when I first flew into the Gold Coast with an instructor during my PPL training. In those days any dealing with ATC was a stressful one and I had difficulty getting my head around what was required to fly into or through the control zone under the VFR.

So what was my problem? I suppose it was that I was given a set of rules to follow when flying down the coast but not really provided with reasons. I find it easiest to follow instructions or procedures when I understand the logic behind them and much of the logic in this case only became apparent to me once I'd started flying IFR. So here I will try to set out the logic as I understand it for those of you who may still be uncertain of what's required in the hope it encourages you to give it a go.

First, why do we need a clearance to fly past Coolangatta? We need to be separated from other traffic flying into, out of and around the airport. The CTR, sandwiched between the coast and the mountains of the Gold Coast hinterland, is controlled by the Gold Coast Tower so we need to let them know that we are coming and what our intentions are so that they can slot us in between the other traffic. The question is how do we best do that?

As with most things in aviation, preparation is the key. The Tower guys are often very busy so we want to make their job as easy as possible for them. Before departing Redcliffe we will have submitted a flight plan via Naips, so that they are expecting us to drop by at around the time we are scheduled to. Before we do submit the flight notification, we could also phone up Gold Coast Tower, to ask what would be the best time for our proposed transit through the zone. There are busy times when there is no way we will get a clearance through the zone and will have to track clear of it. Once airborne, and after flying over Dunwich, we will need to adjust our altitude so we're no higher than 1500ft by the time we're passing South Stradbroke. That way we'll stay under the overlying controlled airspace.

Next, we need to contact Brisbane Centre on 119.5MHz. Why do we first need to talk to Brisbane Centre you may ask? (I certainly used to). Phil Ware uses the analogy of "Centre" as a doctor's receptionist. You enter a virtual waiting room, the "receptionist" identifies you, retrieves your file with all your details and advises the "doctor" (AKA Gold Coast Tower) that you are ready to see him or her. The doctor then invites you in (gives you your clearance) when it's your turn.

So, before we approach the zone, Centre issue us with a discrete code that we can input to our transponder. That code allows them to identify us on radar and confirm that our position matches their radar paint, before we get anywhere near the control zone. The procedure takes a lot of pressure off the Tower guys when we approach the zone. Of course, on first contact we have to tell Centre where we are so they can find us on their radar and confirm our intentions so they know what to pass on to the Tower controller so that he/she can start slotting us in amongst the various aircraft in the vicinity. Centre also have to warn us to avoid controlled airspace prior to reaching the control zone and obtaining our clearance from Tower. As soon as we notify Centre of our presence the controller just types our call sign into the blank flight plan window on his screen, and the complete flight plan details magically appear.

So how could our exchange with Brisbane Centre go? It might be:

> *Pilot: Brisbane Centre, India Victor Whisky, Cessna 172, Russell Island, one thousand five hundred, request code.*
>
> *Centre: India Victor Whisky, remain outside controlled airspace, squawk 3476*
>
> *Pilot: Remain outside controlled airspace, squawk 3476, India Victor Whisky*

We then set our transponder to the required code and once we are identified on radar Centre will respond.

> *Centre: India Victor Whisky, identified two miles north of Jacobs Well, verify level*
>
> *Pilot: One thousand five hundred, India Victor Whisky*
>
> *Centre: India Victor Whisky, abeam Que 1 contact Gold Coast Tower on 118.7 for clearance*
>
> *Pilot: Abeam Que 1, Tower 118.7, India Victor Whisky*

So we now have our transponder code and have been identified on radar. With those initial steps completed, we're all set to continue towards the zone and ready to call up the Tower when we reach the approach point (Q1 - the tallest building on the coast is easy to spot), and TOWER SHOULD BE EXPECTING US. We tune the radio to the Tower frequency and listen to what is going on in the control zone as we fly towards it. That way we can build a mental image of what other traffic we may have to contend with.

Of course we don't know what the tower guys will ask us to do when we arrive at Q1. They may simply tell us to continue over water at not higher than 1500ft or if we're unlucky they may tell us to track to Robina Town Centre and we won't fly down the coast after all. Or maybe they'll advise that there is a Jetstar Airbus on final approach for RWY 14 and ask us to sight it before giving us further instructions. Or they may ask us to orbit around Q1 twice while we wait for a flight to depart from RWY 32. Whatever happens, it won't be too challenging and if we don't understand first time we just call "Say again tower, unfamiliar with the airspace, India Victor Whisky" and they will give us a better explanation or vectors to guide us. When changing to Gold Coast Tower, we listen out first, so as not to transmit over anyone else at the same time.

So what sort of exchange can we expect once we have tuned our radio to the tower frequency 118.7 and are approaching Q1?

Pilot: Gold Coast Tower, India Victor Whisky, request clearance

Tower: India Victor Whisky, Gold Coast Tower, clearance: enter Gold Coast Control Zone tracking coastal over water, maintain one thousand five hundred

PIlot: Over water, one thousand five hundred, India Victor Whisky

So now we can continue into the control zone, enjoying the view as we fly past Surfers and down the coast to Coolangatta and beyond. While we're in the zone Tower may give us additional instructions to follow such as traffic to sight or a particular heading to fly so we have to make sure we're listening out for our call sign.

Once we're approaching the far side of the control zone around Kingscliff/Cudgen Headland the tower will contact us again.

Tower: India Victor Whisky, you have 2 miles to the airspace boundary, at the boundary control services terminate, frequency change approved

Pilot: India Victor Whisky

The Broadwater north of Q1

Tweed River Valley south of the CTR with Mt Warning

Note that for readbacks, anything with numbers in it must be read back, eg QNH, altitudes, runways, route tracking details, headings, and frequencies. On the other hand, readback of "frequency change approved" is extra verbiage, that the busy controller can do without.

We then tune the radio to 126.7 (while continuing to monitor the Brisbane Centre area frequency on the second radio) to keep a listening watch on Murwillumbah and other CTAF traffic down the coast. Unlike D Class airspace, when we have to change the transponder back to 1200 on leaving, when leaving C Class we can leave our discrete code dialled in until we complete the flight.

So, in summary:

1. Consider phoning Gold Coast Tower to check the best time for a transit flight
2. Submit a flight plan to Naips before departure
3. Before reaching South Stradbroke at 1500ft contact Brisbane Centre for a discrete transponder code so you're identified on radar
4. Contact Gold Coast Tower abeam Q1 and request a clearance
5. Follow the tower instructions in line with your clearance
6. React to any further instructions from tower while in the zone
7. Acknowledge the tower on departing the zone and revert to CTAF frequencies.

Heading back up the coast is a similar procedure in reverse. The only difference is that the approach point is Hastings Point.

So why not give it a try? Go for a flight down the coast to Evans Head or Ballina or Lismore. Or fly down to Murwillumbah and track via the Scenic Rim over Mount Warning to Mount Lindsay and fly back up the inland route. Either way, it's definitely worth the effort.

Thanks to Phil Ware for his assistance with writing this article.

Q1 and Surfers Paradise

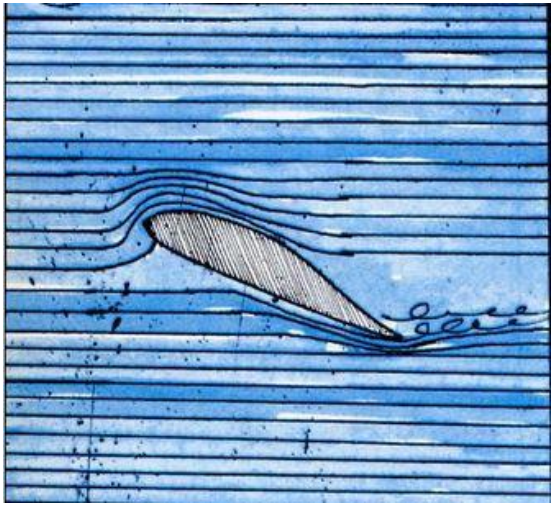
Have faith in lift

by Ray Vuillermin

Bernoulli's theorem has served us well as a theory of lift over the years. It not only explained how lift was generated, but provided a logical explanation for slow and high speed flight, stalling and movement of the Centre of Pressure (CoP). It helped us understand how an aerofoil's performance was enhanced by the Coanda effect and to understand how man made improvements such as slats, slots, fences, vortex generators and bleed air systems help to stabilise the boundary layer. Despite out knowledge there were always nagging questions, such as when air approaches the forward stagnation point of an aerofoil (the point where air must decide to take the high road or the low road, one to go under and the other over) what is the law that says they must attempt to meet again at the rear of the wing?

More and more lately we see the credit for lift being transferred from Bernoulli to Sir Isaac Newton. This change of heart is based on the notion that the aerofoil directs a mass of air downward as the air passes over it. This redirection represents an action that produces an equal and opposite reaction, in accordance with Newtons third law of motion, pushing the wing up, aka Lift. This is not a new thought. In his 1944 book, "Stick and Rudder", Wolfgang Langewiesche wrote, in large letters, in the first chapter: "FORGET BERNOULLI!"

The either/or acceptance of Bernoulli or Newton does not seem logical to me as there are weaknesses in both. It seems that both are in play on a wing. Newton's law of action and reaction is quoted by explaining that the airstream being deflected downward off the back of the wing produces an upward reaction - lift. In my scientific ignorance this seems a bit odd too me. It seems to me the reaction should originate at the point of the initial force, not somewhere behind the wing. The oft used example being letting an inflated balloon loose and watching it be propelled away opposite to the escaping air. It's the same way a jet engine creates its thrust. On that basis I would think the lift source on the lower surface would be where the airflow strikes the surface and is deflected downwards. If Newton alone were being credited how does one explain stalling, caused by the separation of the laminar flow, or disruption of the boundary layer, on the upper surface? I think Messrs Newton and Bernoulli should receive equal billing when it comes to producing lift. Their theories seem to operate together, with Newton pushing up and Bernoulli reducing the pressure on the upper surface.



That Bernoulli's theorem works seems to be illustrated by the paper planes we used to make as kids. Launched, it gradually goes nose up as the CoP moves forward until approaching the stalling angle when the CoP abruptly moves back behind the Centre of Gravity and the nose pitches down to start the sequence again.

When we study a curve of lift and drag against angle of attack (α) we see lift increasing up to the stalling angle and then dropping but drag continuing upwards as α increases. Consider holding your hand out of the window of your car and gradually turning it from horizontal to vertical.

Routinely we study aerodynamics with a stationary aerofoil and moving air. In reality it is the other way around. The placid stationary air is suddenly smashed through by a wing. Is there a law of fluid dynamics that says fluid acts the same in both cases? How much warning does a fluid get that it is about to be smashed through? How much chance to streamline? Perhaps a question for a yacht hull designer.

Given the fabulous sophistication of aerofoils these days I imagine the scientists who design them could better explain the basics of lift.

Having had a religious education I learned that a question about the meaning of life or eternity "caused the vapours" ie induced certain mental or physical states such as hysteria, mania or clinical depression. The standard response to such questions was that "one must have faith". As an old friend reminded me recently, a cardinal once said "there is a difference between knowledge and faith". My long years of aviation have been rewarded by my faith in aerofoils.

Mudgee magic

by Philip Arthur

About a year ago my wife Sigi and I, along with our friends Anne and Harpur, flew down to the Mudgee wine district west of Sydney for a few nights. Sigi and I had stayed overnight at Mudgee on a previous trip and had been amazed at the number and variety of wineries within a short drive of the airport. Also, we'd been impressed by the natural beauty of the area, with the city nestled in a ring of hills and surrounded by rolling green fields and vineyards. On our previous stay we'd overnighted in the "Hangar House" a modern bed and breakfast located on the airport grounds and connected to the apron by a hangar, where we could park our aircraft. Mudgee is a very popular weekend destination for Sydneysiders however. It's usually booked out on weekends and I hadn't found any suitable accommodation in the Mudgee area for the Saturday we headed out of Redcliffe. Therefore our first night's stop was Gulgong. About 40km northwest of Mudgee, Gulgong is one of the towns where Australian poet Henry Lawson grew up. That's one reason why its streetscape was featured on the original $10 note. The other reason is that it has one of the best-preserved colonial town centres in Australia. Narrow streets wind between a variety of quaint old buildings and a few good pubs. An added feature, since 2018, is a 1000m long sealed airstrip.

The airstrip was easy to spot to the north of and about 5km out of town. I'd rung the owner of the strip a few days before and he'd told me that he'd be out of town but just to leave the $10 landing fee in the honesty box at the "terminal building".

The accommodation selection had been pretty limited in Gulgong, as it's also the fall back option for Sydneysiders who don't get a room in Mudgee, so we'd settled on the Commercial Hotel in the main street, despite mixed reviews on Trip Advisor. Kim, who ran the hotel, was more than happy to pick us up from the airstrip and drop us back. It turned out she was putting the hotel on the market after spending the past 13 years attempting to tart it up a bit. Husband Andy worked in one of the local coal mines and they apparently didn't have the time or resources to restore the hotel properly so they'd really just scratched the surface. The hotel at $80/night definitely needed work and had great potential for someone wanting a tree change.

We had a good look around Gulgong that afternoon. The Pioneer Museum is very impressive with a huge range of articles and displays dating back to Cobb and Co coaches from the gold rush days. The town's narrow, winding streets were originally bullock tracks, and apparently there are still cobble stones under the tarmac surface. We enjoyed the ambience of the old town centre and had a cold beer in the garden of the Prince of Wales Hotel, one of several watering holes that line the main street. The most impressive building though was the Prince of Wales Opera House, graced by no less than Dame Nellie Melba on one occasion and by the Welsh National Men's Choir in the week prior to our visit. Allegedly it's the oldest music venue in Australia that is still used for its original purpose.

After an interesting night with lots of noisy traffic echoing through the narrow streets at all hours and loud and jolly inebriated patrons being loaded into the free community bus at closing time, Sigi and I rose before dawn for a walk up to "Flirtation Hill", the town's highest point, to watch the sun rise and work up an appetite for breakfast.

After breakfast Kim drove us out to the airstrip and after pre-flighting the aircraft I went for a walk to the other end of the 1000m long runway. It was in very good condition and super smooth as you'd hope as it was less than one year old. We took off and enjoyed the view of the green rolling hills on the six minute hop over to Mudgee. There had been just enough rain to turn everything green but not enough to fill the dams and soak into the soil so the locals called it a "green drought".

On landing we were met by Gary and Denise Chapman from the Mudgee Aero Club who Sigi and I met when we in Winton two years before. They proudly showed us around the club house and accommodation the club hires out to visiting aviators. There are four rooms, including one family room that you can stay in for less than $100 per night. There's also a common area and kitchen you can use while staying there.

Philip Van Gent, another aero club member, landed in his Piper Pacer and joined us for a chat. His family own one of the wineries nearby so we promised to drop in while we were in the area. Gary offered us the loan of the club's Camry but we'd already arranged a hire car so said we'd consider the club car on our next visit. The local Thrifty franchisee handed over our hire car and we headed off to Robert Stein's winery and the Pipeclay Pumphouse restaurant, about 5 km up the road, for a long lunch.

The Pumphouse is a local institution and well known by Sydney foodies for its epicurean delights. I'd heard about it from friends and taken their advice and booked a couple of weeks before and with good reason - it was full. We were impressed by the quality of the food and, although we had planned to visit another winery, by the time we'd finished the five course degustation with matching wines (Sigi was the designated driver so didn't have the wines) and had a quick visit to Robert Stein's vintage motorcycle collection next door, we decided it was time to head into Mudgee to check into our accommodation. The Hangar House was changing owners at the time and hadn't responded to my emails and calls so I'd booked us into a self contained cottage in town. The Tannery is a two bedroom colonial era cottage

that was close to the main street and arguably a better base when spending a few days in the region than the Hangar House that is located out at the airport. We wandered into the town centre and had a good look at some of the magnificent old buildings. Chancing on the Mudgee Brewery, Harpur and I were forced to sample the local ales while Sigi and Anne enjoyed a local wine.

Mudgee used to be a bit of poor cousin to the Hunter Valley but in recent years has taken off. The biggest question facing us as Monday dawned bright and blue was "How should we choose which wineries to visit?" We decided to talk to some locals over breakfast at one of the cafes downtown and noted down their recommendations. With those under our belt we were ready to hit the road.

Pipe Clay Pumphouse Restaurant

Lowe Winery

The first stop was the Lowe family winery, where they specialise in organic wines and follow Steiner rules like harvesting only by the full moon etc. They have a lovely wine tasting area with a view over the vineyards to the hills around Mudgee. It's home of "Jodie", Sigi's favourite sparkling rosé. After tasting a few of their wines (and making good use of the spittoons) we drove over to Rylstone, about 50km east where we dropped into the DeBeaurepaire Winery. The family has French heritage and they make Champagne style wines, including a Blanc de Blanc sparkling and a Botrytis Semillon that goes well with cheese. We had a good explanation of their wine making philosophy from one of the family members and stocked up on a few bottles that were shipped back to Brisbane by road. Then it was back to Mudgee to sample a few of the wines at Moojee Wines. This was a newer winery that has a very smart tasting room with a great view over the valley. Heading back into Mudgee we dropped the car at the Tannery and walked back into town to one of the many restaurants for dinner.

Tuesday dawned as another fine blue sky day so we decided we should get some exercise before launching into further wine tasting. We drove about 40km north to the Drip Gorge, a great little one hour walk through the bush alongside a creek. Returning to the car we drove a couple of km up the road to the Hands on Rock cave painting site and viewed the many Aboriginal hand paintings that date back thousands of years.

Having worked up an appetite it was back towards Mudgee and a few miles north of the airport we dropped into Di Lusso Wines, choosing a crisp rosé to have with the light lunch they served in the gardens. Next we dropped by the Pieter Van Gent Winery (owned by the father of Philip the pilot) who specialise in ports including a couple of pleasant ones that we arranged to have shipped back home, followed by Craigmoor (owned by Oatley) who make a very nice pinot grigio. Needless to say, we bought a couple of bottles to accompany the barbecue that we had on the back verandah at the Tannery that evening.

Wednesday it was time to head home. After breakfast we dropped the car at the airport and boarded the plane for our first leg to Armidale. A departing QLink Dash 8 waited for us at the

holding point as we landed. By the time we had refuelled and gone over to the airport café it had shut until the next RPT arrival so we had to make do with coffee from the neighbouring petrol station.

As we climbed out towards the north and headed for the dividing range the clouds gathered below us. There wasn't a lot to see down below and soon we were in and out of cloud at 7000ft. The forecast for Brisbane was for clear skies but we had a bit of cloud ahead of us so I obtained a clearance to climb to 9000ft and that put us above most of the it. Still there was not much to see below with about $^{7}/_{8}$ cloud. We did catch a glimpse of Mt Barney as we passed over it though. Descending into Brisbane we were back in IMC. ATC vectored us to the west over the Brisbane Forest Park to avoid traffic from Brisbane International and we emerged from the clouds at 4000ft passing over Keperra. Arriving at Redcliffe we had the 12-15 knot crosswind on final all to ourselves. A fitting ending to a great trip.

Di Lusso Winery

WOT the ??

by David Brown

Old wives tales take a lot of killing off, so I'd like to have a crack at what I believe is possibly the strangest of notions still being taught by many instructors to this day in light aircraft - the arbitrary "25/25 after take-off" rule. By this I mean reducing manifold pressure and RPM after reaching a certain height on climb out rather than climbing with Wide Open Throttle (WOT). I'm sure there will be people who beg to differ but I feel it is time to stop promoting practices that are carried out just because "that's the way it's always been taught" in favour of practices backed by the laws of physics. When you understand how these ideas came about, it becomes easier to accept the science.

So I suggest you stop retarding the throttle to 25" or 23" and the RPM to 2500/2300 on climb out. And for the fixed pitch folks among us, stop pulling back to some fictitious good RPM number your LAME, instructor or hangar buddy once preached to you. You can and should climb with wide open throttle and high RPM.

I must make a couple of caveats however. First, in a built up area like Redcliffe we are subject to "fly neighbourly" regulations and these include limiting noise levels on take-off. Therefore there is an argument to reduce power somewhat for the climb to circuit height here. Second, there are some engine or propeller combinations that do have limitations for good reason. This may be due to a harmonic causing vibration, and aircraft with engines that are 2850 RPM short rated or those with turbo engines with a specified manifold pressure limit of several minutes have such limitations that MUST be observed. These will be clearly spelled out in section 2 - Limitations - of the relevant POH however. Check yours and see whether it's the case. Outside of those few, the vast majority of the GA piston fleet is rated to operate at 100% power all day long.

So, you may ask, what is wrong with an unnecessary power reduction on take-off in a piston aircraft? Doesn't it take some strain off the engine and therefore preserve it for longer life? Won't it save fuel and be more economical in the long run? Well, there may be some very small saving in fuel but it does nothing helpful in terms of achieving our goal of flying as best we can. It may help the engine out if you have a poorly set up aircraft and you need to reduce power to control CHT's but if that's the case there's a problem with the set up and you need to get the problem fixed.

In any flight profile a reduction in power means a longer time to altitude. If you have a desire to climb to altitude due to weather, terrain or airspace requirements, doing so at a lower power setting will likely require climbing at a greater pitch angle and greatly reduced airspeed. You can go test this for yourself. Pick a country airstrip with no traffic or airspace constraints, take off and climb to say 5500ft using the 25/25 full rich method. Hold the target airspeed and look at the time to altitude, the distance from origin, the fuel used and look at the various CHTs. Then go back and do another climb. Start with the same engine temperatures on the take-off roll and climb out at Wide Open Throttle and 2700 RPM full rich and at the same air speed as the first time. Compare the results. I guarantee you will get to your desired altitude more quickly. Next do a third test WOT/2700 and lean in the climb (normally aspirated engines only) using a target EGT in the 1280-1320°F range, and compare the results again. It will be faster still.

A benefit for engines operating at WOT is that faster climbs and those with higher IAS for cooling are actually better for the engine in the long term. If your concern is terrain clearance or better glide options in any environment then surely the more altitude sooner the better. Therefore I see no benefit in power reductions after take-off apart from in the situations mentioned above.

So where did the 25/25 technique originate? Most of us are not old enough to remember back that far, however my colleague John Deakin is, and his description of history goes something like this. The post WWII era of general aviation saw most of the instructors of the day coming from the ranks of former military pilots. They had flown big heavy machines, now called warbirds, during the war. The warbirds were powered by big radial engines, usually turbo or supercharged, some both. They had also flown aircraft with power recovery turbines like the DC-7 and Super Constellations. These machines hauled heavy payloads and getting airborne they ran very high manifold pressures and RPM. Their designers had provided them with a little bit extra to help get the show on the road (or off the road to be more precise), and shortly after take-off they would reduce the engine power to what was called METO (Maximum Except Take Off).

Naturally enough all these former military pilots had been well drilled in these procedures during their training and METO was very much entrenched in their "standard operating procedures". During the post war years Cessna, Beech and Piper developed their new little GA machines. Their models started with basic trainers, then moved up to four and six-seater models. It was a booming period for general aviation. These new planes had flat, horizontally opposed engines from Lycoming and Continental, and they were all flat rated at 100% power … all day long. There was no such thing as METO for these engines.

But alas the instructors felt they needed a METO to teach the ballooning number of young and eager students. Studying the POH diligently they couldn't find a METO in the limitations, but thought that surely there must be one! Unfortunately, some manufacturers had published an alternative procedure for a quieter (no noise cancelling headsets in those days) and slightly more economical cruise climb. It was not a mandatory requirement but a baseline example with published fuel burn data that could be used with some reliability long before the days of GPS and engine monitors.

BINGO! The old air force pilots had found their METO!!! There it was hidden in the normal operations section and they immediately concluded that the sneaky manufacturers had buried it and renamed it just to trick them. So, suddenly the concept of 25/25 after take-off was born that still holds sway today. I argue that it was a bad idea conceived out of ignorance and over time has for some become the accepted norm, despite in my opinion having no rational justification.

So in summary my advice is that you consider carefully how you operate your engines on climb out. Read the POH and check whether there really is a need to retard the throttle and RPM. There most probably won't be.

And be careful up there.

Extract from POH C210 VH-ELS

ENROUTE CLIMB.

NORMAL CLIMB.

(1) Airspeed -- 120 to 140 MPH.
(2) Power -- 25 inches and 2550 RPM.
(3) Mixture -- Lean to 108 lbs/hr. fuel flow.
(4) Cowl Flaps -- Open as required.

MAXIMUM PERFORMANCE CLIMB.

(1) Airspeed -- 109 MPH (sea level) to 102 MPH (10, 000 feet).
(2) Power -- Full throttle and 2700 RPM.
(3) Mixture -- Lean for altitude per fuel flow indicator placard.
(4) Cowl Flaps -- Full "OPEN."

It helps to be dense

by Ray Vuillermin

Density altitude. Ugh! It brings back memories of one's high school physics, when we were first coming to terms with the world of fluids - volume, mass, density, weight, pressure, temperature, and the laws of Charles, Boyle, etc that govern the relationships of one to another. It's something we learned about as novice aviators but it's worth those of us who've been around for a while revisiting the subject from time to time. Whilst the manipulation of those laws, and others, results in the enormous thrust produced within a jet engine, we in our "puddle jumpers" need only concern ourselves with density altitude so let's keep it simple with an old but good one line definition":

"Density altitude is an equivalent altitude in the International Standard Atmosphere (ISA)".

Let's explore that.

An aircraft manufacturer must specify the performance capabilities of his product to a customer. What take-off and landing distance does it require? How is that performance affected by the weight of the aircraft? How fast will it climb and cruise, etc. In some respects I find the American term of airplane, rather than aeroplane, to be more relevant. Our aeroplanes are all about air: from the pressure in the tyres, to the air in the fuel/air mixture going into the engine to produce power, the flow around the wings producing lift, over the control surfaces allowing us to manoeuvre, and the thrust produced by the propeller.

Now, here's the rub. We need to know these performance figures before we take off, but not all air is the same!

So how does the manufacturer give us the data? The manufacturer's test pilots and engineers assume all air conforms to the parameters of the ISA where the temperature at all levels are known (at this stage anyway), and sea level air pressure is assumed. Good, except we find air has a mind of its own and does not always conform to ISA. Our airports are not always at a standard sea level temperature of 15°C (ISA Temp) and pressure of 1013 hPa (ISA Pressure).

The aircraft manufacturer may list performance data for us (tables or graphs) using entry arguments of pressure altitude, temperature and sea level pressure. These entry arguments effectively give the correct performance for the actual density altitude.

In the absence of such tables, however, we must apply some simple, but important, corrections ourselves. These are the steps we must take:

1. First, we need to correct for pressure. Find the local temperature and sea level pressure (QNH). QNH is available from AWIS, ATIS, ATC or the met forecast. Or set your altimeter to the aerodrome elevation and read the pressure off the sub-scale.

2. Knowing the local QNH, calculate the difference between it and the ISA Pressure of 1013hPa. Add 30ft to your actual altitude for every hPa that the ambient pressure is lower than ISA Pressure. That gives you the Pressure Altitude (PA). So:

   (1013 – QNH) x 30 + Elevation = PA

3. Next, we need to correct for temperature. Knowing the Pressure Altitude, calculate the corresponding ISA Temp. Start by using 15°C at sea level. Reduce the temperature by 2°C per thousand feet the Pressure Altitude is above mean sea level.

   15 – (2 x Elevation/1000) = ISA Temp

4. Next, work out the ISA deviation, ie the difference between Isa Temp and the actual temperature. Then add 120ft per degree the actual temperature is above the Isa Temp to the Pressure Altitude to calculate the Density Altitude (DA)

   120 x (T_{actual} – Isa Temp) + PA = DA

The Density Altitude figure you now have is an equivalent altitude in the ISA and it is the figure you must use for your performance calculations.

Here's an example to highlight the significant effect. It's illustrated in the diagram below.

An airport is at an elevation of 5000ft. The temperature is 30°C and local QNH is 1000hPa (not at all unusual in South Africa for example).

The QNH at 1000hPa is (1013 - 1000) = 13hPa lower than ISA Pressure, so

Pressure Altitude is PA = (13 x 30) + 5000 = 390 + 5000 = 5390ft

At 5390ft the Isa Temp would be:

(15 – (5390 / 1000 x 2)) = 4.2°C

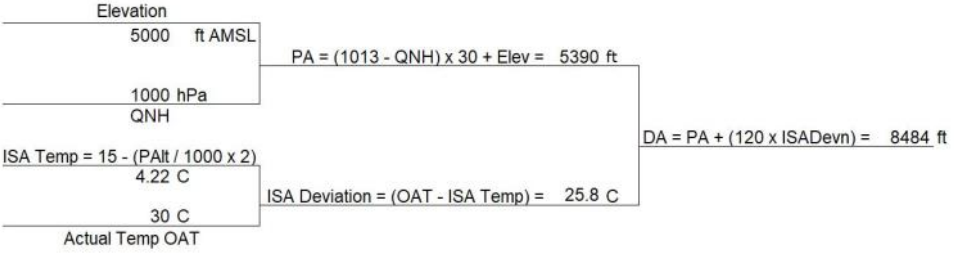
Now the actual outside temperature of 30°C is 25.8 greater than 4.2°C so the ISA Deviation is 25.8 and the temperature correction is 120 x 25.8 = 3094 ft

Therefore the Density Altitude is DA = PA + 3094 = 5390 + 3094 = 8484ft

It is a stunning difference, is it not?

Having calculated our density altitude, we must consider any necessary corrections for the other factors that will affect our take off performance such as runway length, slope and type of surface, wind component and weight. These may be found in the POH in tabulated or graphical form to enable your calculations. These additional corrections are made after calculation of density altitude. The data may be tabulated for specific altitudes in which case interpolate as necessary. When using graphical data carefully check what data is called for and practise using the scale lines to move across for the correct answer. Sometimes it is a fine grid of curves and even the width of a pencil line is enough to affect the result.

Once done, and then using the correct flight manual handling technique, you can rely upon the aircraft to perform as advertised.



This article is intended as a general refresher for experienced pilots. Beginners should always refer to the relevant text books and discuss such matters with your instructors.

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