SPORT PILOT

FOR RECREATIONAL PILOTS

DEC 2012 VOL 19 (12)

RECREATIONAL AVIATION AUSTRALIA

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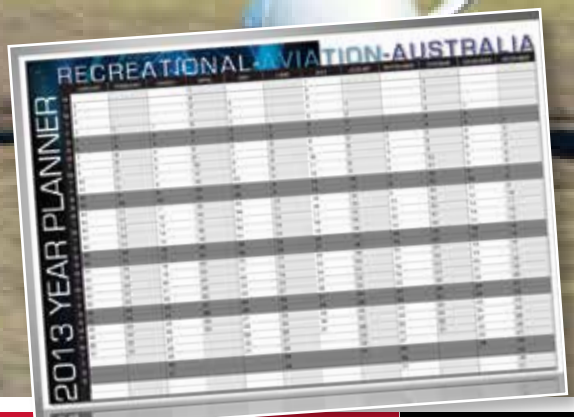

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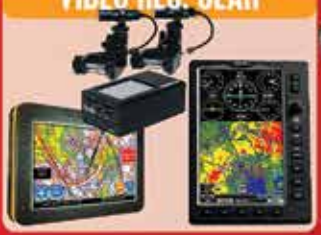

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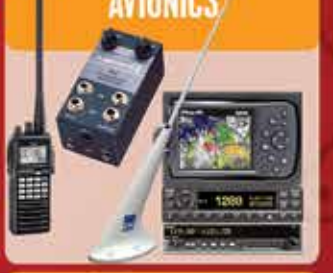

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>> RV3 departing Gatton: Photograph by Scott Richardson

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It is fair to say the past few weeks have presented a number of issues for RA-Aus.

SPORT PILOT

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President's Report

STEVE RUNCIMAN

This is the final edition of the magazine for 2012, where has the time gone?

I have delayed the printing of this edition, so I can report on recent events. I thank the Editor for agreeing to do this.

It is fair to say the past few weeks have presented a number of issues for RA-Aus.

Unfortunately, we continue to be plagued by issues regarding aircraft registration. These issues have affected many members, aircraft importers and manufacturers.

As a result of the latest audit by CASA in October, RA-Aus was issued a Safety Alert. We had our registration authority withdrawn until we could satisfy CASA we had a robust plan in place to address the issues highlighted in the Safety Alert - although I hasten to add the issues are more about administration than safety.

The issues are the result of overly complicated procedures in the office and a lack of understanding about what is required with each particular type of aircraft.

Our new plan includes a requirement to introduce new systems and procedures, to simplify our existing processes and to train our staff to ensure the issues are not repeated.

The executive and staff members worked tirelessly on the plan, which was finally accepted by CASA.

The restrictions on renewing and transferring registrations were eventually lifted, but at the time of writing, the restriction on new aircraft registrations remains in place.

We have been working on this and hope to have had it resolved by the last week in November.

Because of these issues, RA-Aus recruited a technical consultant. Neville Probert began working with us in early November and will be with us for as long as it takes us to assure CASA we are fully able to register aircraft unaided.

I take this opportunity to formally welcome Neville to the team and thank him for agreeing to assist us with this crucial task.

A special thank you must go to RA-Aus Secretary, Paul Middleton, for his huge contribution towards getting the issues resolved. Paul worked long hours in the office and put aside his personal plans a number of times over the past few weeks.

There have been emails from members offering to help too.

Thank you. Your offers have been noted and you will be contacted if the need arises.

We have also received a number of emails offering advice and guidance.

Again, thank you. The board has read them all and the advice has been gratefully received.

I have no doubt the organisation will come out of this stronger and we will find ourselves in a better position to conduct aircraft registrations more effectively.

It is always important, but never more so than now, to ensure you complete your paperwork correctly and return it to the office as soon as possible after receiving your renewal notice.

Until further notice, Neville is the final authority for registrations and, depending on his workload, you might experience a delay before your application is authorised.

You might also receive a request to supply additional information or paperwork. I would ask you for your full cooperation.

Because of the delay in the publication of the magazine, I am also able to report on the Victorian by-election. It was a close contest, won by Jim Tatlock.

Well done Jim. I look forward to working with you and I am sure you have already realised you join the board at a very interesting time. Having Jim on the team brings the 13 member board up to full strength.

During the festive season we will keep you informed of important things via the website. Don't forget, of course, you can always contact your local board member to discuss issues of concern to you.

I look forward to continuing to work with the board towards a better and brighter future for this great organisation.

It just remains for me to wish you all a very Happy Christmas and all the best for the New Year. And, as always, remember to commit to remaining safe while enjoying your passion for aviation.

calendar of events

Great Eastern Fly-In
4-6 January, 2013

The big event at Evans Head is back after two years of major site difficulties. Come and see the plans for the new aviation centre being planned for the aerodrome, including an air park, a centre for major aviation industry, a new club house, a new aviation museum, new hangars for all types of aircraft, accommodation for visiting pilots and more.

The museum will have a display on the war graves of Evans Head. For more information: Gai Taylor 0427 825 202 or info@greateasternflyin.com

Clifton Fly-In
10 March, 2013

The Darling Downs Sport Aircraft Assn. Inc. annual fly-in has become an iconic event in the region and is the premier attraction for all types of aviation in southern Queensland. See various types, shapes, sizes and models of recreational, ultralight and homebuilt aircraft including sport, vintage, general aviation and any other flying machine. Come late pm Saturday, 9th for BBQ and drinks. Fly or drive in, see ERSA. On field camping, bring your swag. Advise for catering. Note, 2013 will be the 50th anniversary of our CFI obtaining his Pilot's Licence. For more information: Trevor Bange 0429 378 370, (07) 4695 8541 or trevorbange@bigpond.com.

Loxton Aero Club Fly-In
13 April, 2013

At YLOX in South Australia. Hangar dinner on the night. For info and bookings Kerrie (08) 8584 7790.

Barossa Airshow
14 April, 2013

The Fly-In at Rowland Flat in the Barossa Valley will be a full day of things to do for the aviation enthusiast. Aerobatic displays, joy rides, amusements, static displays, stalls, food and wine. If you are not familiar with the 600m strip, contact Steve Ahrens Phone 0427 244 930.

Cutting red tape

I hope your editorial about coded weather forecasts was read by the met office. Why make things difficult and time consuming?

The same goes for ERSA. At least they could put all the acronyms used on one easy-to-find page, not a few in each section. Having four numbers in call signs is another issue. It just makes it harder to concentrate on the actual message and is not needed even at a Jabiru fly-in, unless it is intended for policing, in which case I suggest we include the licence number of the pilot.

I would like to point out that Norm Sanders' comments in the August Magazine, had some truths, even if he wasn't very diplomatic and offended a couple of readers. RA-Aus has to be careful not to become too bureaucratic and regulated. Lawyers make their living from laws and regulations and that was the downfall of GA.

Darrell Ingham in the September Magazine confuses rules with law and equates them with safety, which is often not true. When driving on a winding mountain road, if you can see the road beyond the next bend, it is better and safer to cut the corner, even crossing a double line and breaking the law, because the passengers get a smoother ride and the car stays away from the road edge. Of course cutting corners when the road disappears behind the mountain is dangerous.

Red tape is not cutting corners when it is safe to do so. The Road and Traffic Authority in NSW is an outfit which does not cut corners ever. That's why Moree has now half of a $26m bypass at a cost of $50m - and it's not even particularly good or safe. Red tape costs the community a lot of money. Sometimes people get upset when they are booked for cutting red tape.

Rules and education are what we need. The exception confirms the rule. In situations where the law becomes an ass, the rule just makes an exception. Regulation is too close to litigation and should be avoided by RA-Aus. It's not recreational. Red tape does not increase safety.

Some people fly because they love being up in the sky. Others are realising a childhood dream of being a real pilot. They should continue on to the PPL and CPL, where there is plenty of procedure and regulation.

Fostering the perception that recreational flying is totally safe, invites litigation in case of an accident. I don't think many bystanders have been hurt in accidents with ultralights. Pilots and their families should be prepared to accept the risks involved.

Safety has become a holy cow and a new and costly industry. Not everything peddled in the name of safety is worthwhile.

I hope this letter is not considered a rant. There are a few decades of experience behind it.

-Henry Schneebeli

Weather it's clear

I have just been reading the letters to the editor in the November issue of Sport Pilot regarding plain language weather forecast and would like to let readers know there is a great website, www.pemet.com.au which gives plain language aviation forecasts and best of all it's free. Since a friend put me on to this, I don't bother even trying to understand the others. It's in a language you can't fail to understand.

-Peter Dettloff.

Editor's choice

Brian Bigg

Weather it's clear or not

We don't use Morse code any more. When I did my GA licence, I had to study it, but I have never used it. And apart from SOS (dit, dit, dot, dash, dash, dash, dot, dot, dot) I cannot remember any of it and I have no idea under what circumstances these days I would possibly ever use it. Or how.

Morse code was a terrific way of communicating back when wires over long distances were scratchy or shortwave radio unreliable. Technology has moved on. Our radios now are almost perfect, we have good coverage over most of the country and any few kids coming through the system these days could contemplate using anything else.

Morse code? What's that?

Same with navigating. I had an overwhelmingly positive response to a recent editorial where I suggested that regulators need to start accepting that GPS is here to stay for most recreational fliers. Yes maps, watches and compasses are vital ways to find your way around, but it's so much easier, when the GPS points a particular way, to just follow it. The odds of the machine breaking down at a critical time are not likely on most recreational flights.

The technology has moved on and aviation is notoriously slow to follow it.

The same can be said for weather forecasts, isn't it about time we accepted the fact that our forecasts are no longer sent and received by telegrams, telex machines or faxes?

Anyone trained in the GA system will know how to read the following –

TAF YFLI 080100Z 0802/0814
26030G45KT 9999 SHRA BKN025
INTER 0802/0806 4000 SHRA SCT010 BKN030
BECMG 0808/0810 2602G40KT 9999 SCT015
RMK FM0802200 MOD TURB BLW 5000FT
T 13 13 11 11 Q 1005 1006 1008 1010
SPECI YFLI 080403Z AUTO 27032G42KT 9999 // SCT025 BKN030 33/08 Q1005
RMK RF/////////

But hands up how many people out there under the age of 40 are confident they would put themselves and their passenger's lives on the line after reading it? It may have been a terrific form of communication back when we paid by the letter, but for today's attention-challenged youth and for people who don't fly all that regularly, I have no doubt this forecast is difficult, confusing and open to misinterpretation.

We don't have to be economical with our letters and numbers anymore. Thanks to the Internet we are drowning in them. So why not spell out weather forecasts clearly and comprehensively so there's much less chance of a mistake being made?

It is a growing issue in the pilot community. How do I know? By the number of sites springing up offering to decode weather forecasts. Flightsitties.com is one of them. There are Apps available now for both Apple and Android phones. And the government's own aviation website provides an alphabetical list of abbreviations used in forecasts. These sites would not exist if there was not a problem to solve.

For a start, don't get me wound up about using Zulu time. It makes a lot of sense if you're flying internationally or interstate. But I hate it when I have a flight of a couple of hours leaving early in the morning. Try to work out the correct time and date on the east coast of Australia as it is listed in Zulu time on the forecast issued the night before – always leaves me with a feeling I have got wrong. I have learned to check it three or four times before being satisfied I have it right. Why can't forecasts ask me if I want it in AEDT or Z and give me the correct date and time accordingly?

Instead of making me try to remember what INTER and TEMPO mean (I always have to look it up), why not just tell me? And rather than have the forecast skip around in time, why not lay it out chronologically? That way I know what sort of weather I am likely to face at the time I want to fly. In the forecast above, the big issues for me would be the showers, the very strong winds and the moderate turbulence expected below 5000ft, but not only are these things buried down in the message, they do not stand out all. Put them in red if you want my attention. And the time reference when the turbulence is likely to happen had me double-checking the times all over again.

Weather-related incidents are common in aviation and we are constantly told we need to be extra careful checking the weather during the flight planning phase.

Wouldn't it help if the powers-that-be did their bit by making a weather forecast easy to understand rather than a code only the initiated can solve? SP

More fuel for thought

Avgas vs Mogas, from Johann Stock (Sport Pilot August 2012) made a very good point, but more importantly, both should be available at all airfields. Probably 80% of sport aircraft require Mogas and some GA aircraft can use it as well on low compression engines with an STC.

One of the biggest problems facing pilots in Australia is lack of fuel availability at our airfields which restricts our cross country flying and causes a safety problem.

CASA is always talking up the case for safety to justify their existence - what could possibly be more important to flight safety than fuel availability.

Both Avgas & Premium 98 Mogas (forget 95, one level of Mogas will do) and ethanol free, should be available at all airfields, with credit card access for ease of use.

Now this won't happen unless enough people put pressure on CASA to do something about it, with over 13,000 members in RA-Aus the push should start now.

Besides the green element of reducing the lead in our atmosphere, the safety element such as mechanical problems from lead contamination, plus the very real danger of running out of fuel when trying to stretch the flight between airfields with fuel available.

As taxpayers, pilots have votes. You would not accept this situation as a car driver. Why do you accept it as a pilot? This is the sort of issue RA-Aus should be dealing with as a priority. Unless you want to carry cans for the rest of your days.

-Jim Crocker

Ed- *Good call to arms, Jim, but CASA doesn't control airports. The Department of Infrastructure would have to get involved and it would have to deal with the petrol companies and the thousands of private companies and councils which now do control the fields upon which we land. That would be a big job.*

RA-Aus needs you

Traditionally the end of the year is a good time to reflect on what has gone on in the past 12 months and ponder what lies ahead. At the end of my first year as a Board member, I would like to appeal to all members to get more involved, in particular to consider standing for the Board at the next election.

RA-Aus is not an aero club. It is a large business. With over 11,000 members and an annual income around $2 million, it needs to be run efficiently for the benefit of all of us.

Among our members are many who have skills we need and people who have retired and may have time to offer the association.

There are small businessmen like myself, lawyers, public servants, doctors and a multitude of others. Some on the Board have been there for years and, though corporate knowledge is necessary and advantageous, I believe we also need young, enthusiastic new blood to meet the challenges of the next exciting decade and ensure growth.

Why don't you offer your organisation a term on the Board?

We don't need another organisation; we need to fix this one. It is not rocket science to work out that if we get 200 volunteers instead of 20, we stand a better chance of getting the sort of management you want and deserve.

In the meantime I would like to wish each and every one of you a very Merry Christmas and a happier and more positive 2013.

-Michael Apps

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In Reply To Don

I was not at the 2012 AGM, so I can't comment on much of what Don Ramsay said in his letter to the Editor in the November edition of Sport Pilot.

However, I feel some of what he said deserves a reply.

Firstly, however, I would like to say thanks to everybody for turning up the AGM and I am glad it was such a success.

I would like to respond to Don's comments on my AGM President's report.

Don was present at the Aerosafe workshop which the board and CEO attended in February 2011, during which an assurance plan was produced. Part of this assurance plan was an action list. One of the action items was the production of one and five year strategic plans for the organisation, which were tasked to the CEO. Although I was not at the board meeting which followed the 2012 AGM, I did put forward a number of points to be discussed - the action list was one of them. At the meeting, the CEO reported that the points from the action list had not been completed because of conflicting priorities.

The board has given the CEO until the February, 2013 board meeting to complete the task. Once the strategic plan has been produced, it will be discussed, altered where necessary and accepted by the board. Then it will be presented to the members, probably via the magazine and on the website. Don also stated there had been a 'lack of reporting on major issues from the past 12 months'.

So I went back to my report to check what issues I had covered.

I listed the CASA audit, the aircraft registration issues, the Junior Membership, board activities, the website, NATFLY, GYFTS, the constitution review, the current legal matters, the future passage of information and communication with board members, my time as President and finally, I finished off with a thank you to the staff and board members.

I may have missed some issues, but in my opinion, I covered all the important ones. Other people might disagree, but I wrote it as best I could at the time - covering the points I thought important.

However, I will take the criticism on board when next I write a report.

The next point Don made was the 'response by the Board to the questions on notice from David Isaac.'

Don said in his view 'the response sounded like a white-wash'.

I wrote the response to Mr Isaac's questions and presented it to the board before the AGM.

A board member did tell me one of my answers was slightly wrong, so it was amended before it was read to the AGM.

I too was disappointed, as were the members, that it was not printed and handed out; I did request for that to happen but I am told there was a logistics problem. However, the questions and the responses were put on the website soon after the AGM.

I also emailed a copy to Mr Isaac on 29 September and told him I was more than happy to discuss my response with him. He said he would review my answers and get back to me if he had a problem – to date I have had no further correspondence from him.

Apparently, issues raised in the questions from Mr Isaac are part of the reason for a move for a General Meeting to be held concurrently with the February 2013 board meeting.

It surprises me slightly that for such an important issue, some members appear to be unwilling to discuss the matter but are prepared to wait five months until the General Meeting.

However, I look forward to hearing these issues and being afforded the opportunity to clarify them. In the meantime I repeat my offer to discuss the matter with any member at any time.

Also feel free to contact me to discuss any other issues.

My contact details are at the front of the magazine.

-Steve Runciman
RA-Aus President

Practicing human factors

Members can use this link for practicing human factors issues for their tests.

http://www.ozquiz.net/uploads/9/4/1/8/9418059/human_factors_for_ra-aus_health_and_wellbeing..htm

-Trevor McGowan

Call for General Meeting

Further to my letter in the November edition, we now find that the situation for RA-Aus has deteriorated to a level previously unimaginable. There have now been four consecutive CASA audit failures over a 12 month period. CASA has thus been forced into taking the unprecedented step of suspending new aircraft registrations, transfers and renewals (since partially lifted – Ed).

This is not CASA's fault. They are not the 'bad guys' here.

At the time of writing, we still have not seen the full Financial Reports including the Auditor's Report, nor any explanation of the blowout in costs in the financial year (Financial report is included as an insert with this edition – Ed). The Minutes of the AGM have not been published, even on the RA-Aus website. These two failures demonstrate that the current Executive is in contempt of the Constitution.

RA-Aus has arrived at this point with virtually no communication from the Board with the members prior to CASA's action. Communication since the suspension has been paltry and wildly optimistic, showing a lack of appreciation for the seriousness of the situation and what was required to remedy the situation.

It is now time for members to access our new Constitutional right to call a General Meeting and hold the Board accountable for the worst year in the history of RA-Aus/AUF.

By the time you read this, a Requisition for a General Meeting of Members will have been widely circulated with the aim of having a General Meeting as soon as possible and certainly before the end of 2012.

Members who are not satisfied with the way RA-Aus has been managed over the past 12 months should attend the General Meeting or ensure they use the new Proxy system to have their vote counted at the General Meeting.

-Don Ramsay

Another Reply To Don Ramsay

This is another letter from Mr Ramsay, in which he is very critical of the board and the actions taken to resolve the situation of the aircraft registrations. It deserves another reply.

Firstly, to make things clear, nobody from the staff or the board of RA-Aus is blaming CASA for what has gone on.

As stated by the editor, the financials are enclosed in this magazine. It is accepted these are later than we would have liked and we will strive to improve in this area. The Treasurer is happy to answer any questions on the budget and financials. The point about the AGM minutes is taken on board, but all effort has been directed at resolving the aircraft registrations issue, because it was felt this is a higher priority task than producing and publishing the AGM minutes. The minutes will be published on the website in the near future. I personally take offence at Mr Ramsay suggesting anyone from the Executive has contempt of the constitution; this could not be further from the truth. Mr Ramsay, himself, while Treasurer, pointed out that the change to the constitution regarding supplying the financials at the time stated in the constitution, would be virtually impossible.

RA-Aus has communicated to its members via the website and I would refute what Mr Ramsay is saying. I suggest that, while it is not perfect and there is still work to be done, the communication to the members has been better over the past 12 months than it ever has been.

We certainly do not have a lack of appreciation for the seriousness of the situation and can assure members, the Executive has been doing all it can, working long hours, altering personal plans and more, to get the situation resolved in a timely manner. To suggest otherwise is insulting. The lack of communication to the members prior to the action taken by CASA was simply because the staff and board had virtually no indication that CASA was going to take the action it did until we were handed the Safety Alert.

I cannot speak for other board members but I personally look forward to a General Meeting, whenever it is held, and I look forward to being given the opportunity to defend the board's actions.

Mr Ramsay, in his letter to the editor, is pushing the attendance of members at the General Meeting and the use of proxy system to have their vote counted at the General Meeting only for 'members who are not satisfied with the way RA-Aus has been managed over the past 12 months.'

I would strongly suggest this is very one-sided. The attendance at the General Meeting and the use of the new proxy system DOES NOT merely refer only to those not satisfied but, of course, refers to ALL members of the organisation. I would suggest that all members, no matter how they currently feel about the way the organisation is managed, either attend the meeting or use the proxy forms to have their say.

Finally, I would like to remind Mr Ramsay that he, too, was a board member during the period he believes it has deteriorated and I would like to suggest to him that he considers his own performance while he was a member of the board.

-STEVE RUNCIMAN
President RA-Aus

GIVING YOUNG FLYERS TRAINING SUPPORT

(GYFTS) Scholarships for 2013

Applications will be accepted until 31 January 2013 for scholarships kindly provided by AirServices and the generosity of RA-Aus members.

Details may be found on the RA-Aus website - www.raa.asn.au

The AirServices scholarships will be available for ten RA-Aus members between the ages of 15 and 21. Scholarships for additional RA-Aus members between the ages of 15 and 25 will also be available from the RA-Aus GYFTS funds.

Applications with full supporting documentation must be received at the RA-Aus Office by 31 January 2013.

Watch your step

I read the article "Mayday, Mayday, Mayday" (Sport Pilot October 2012) with a degree of interest as I do any safety related aviation articles, and was largely impressed with the content and advice I found. One thing which was said, though, caused me to refer to my reality meter.

Make sure you always cruise on 'the step'. I have heard this term before in aviation, and researched it somewhat. It actually comes from the boating world, and refers to a boat, which has transitioned from a 'displacement' hull to a 'planing' hull, as a result of increased speed. This is easily observed by watching any speed boat accelerate from rest. Riding 'On the step' greatly improves the efficiency of a boat, due to the reduced friction between the hull and water. Ian McDonald, in his article, implies a similar belief relating to aircraft.

It is complete nonsense that there is some magical 'step' for an aircraft to climb over, like a boat on water. For one thing the aircraft is surrounded by air, while a boat travels on top of the water. A quick reference to the power required curve in your flight manual clearly shows the amount of power required at any given speed. Simply alter the 0 kts line to reflect your head or tail wind component, then draw a line from 0,0 which just touches the bottom of the curve, and there is your most efficient cruise speed, which will give you the minimum fuel burn per nautical mile. There is no magic 'step' involved, and hopefully this is how your competent instructor will answer your query.

-Duane Stace


FEATURE

>> If you go down near the coast, this bloke will become your best friend

by Ian McDonald

Mayday, Mayday, Mayday

THE three words a pilot hopes he'll never ever hear are the very words a friend and I recently heard... It's a very sobering moment.

A small group of friends, flying recreational aircraft, recently ventured east of Wentworth NSW. It began with a foggy start to the day, but patience was rewarded with a beautiful clear sky arising from the mist. Off we flew with not a care in the world. The flotilla landed at the predetermined location, enjoyed a nice lunch and one by one departed for Wentworth. My friend and I were the last to leave.

The country below was predominantly low scrub and not a place where one would want to put down in an emergency. Ten miles from Wentworth, with radio traffic cluttering the Mildura CTAF, we heard "mayday, mayday, mayday, engine failure..."

The CTAF radio traffic chatter continued unabated with traffic in Wentworth, Mildura and the One of our group, flying just ahead of us had decided they were making an emergency landing approximately 10 miles east of Wentworth. That cold dread feeling overcame over us.

How would you react in a similar situation? What can be learned from this experience? Here are a few suggestions:

TAKE YOUR ELT

Take on board an Emergency Locator Transmitter (ELT), preferably with built-in GPS. It makes the job of search and rescue so much easier. We are required by law to carry them. They are not optional if you are travelling more than 50nm from home.

Make sure the ELT registration is current. It's free to do that. Check its battery is still good. Have it on the checklist for every 50 or 100 hourly.

It is also possible to register your trip intentions on the AMSA (Australian Maritime Safety Authority) web site - http://www.amsa.gov.au.

>> out here, you're a long way from home in more ways than one

doesn't actually monitor your plan, but if your beacon is deployed, they will verify your flight detail. The AMSA 24 hour aviation response number is 1800 815 257.

Deploy ELT immediately regardless of danger. It can always be cancelled

PACK SOME PROVISIONS

Sounds simple enough... but I wonder how many of us actually have a grab bag at the ready items to include -

- Torch
- Space blankets
- Non perishable food
- Mirror - to direct the sun's reflection at a passing aircraft or ground search party, simply extend your arm and point a finger at the passing plane. Position the mirror so the reflected sunlight hits the extended finger
- First aid kit
- Newspaper and weatherproof matches. Smoke attracts attention. Fire will keep you warm
- Water
- Toilet paper
- Insect repellent/ sunscreen
- Hat
- A copy of the survival guide from ERSA

SEARCH AND RESCUE

Be conversant with use of latitude and longitude on your map. It became apparent that while we use them to record locations, we are often not able to translate them accurately when communicating with search and rescue teams.

Understand the full ramifications of flight over rugged country. If you must fly over it, maintain the highest possible level. Otherwise fly around it as if your life (and that of your passenger) depended on it.

Read the section in ERSA "Aircraft Emergency Procedures". Everything from how to fly a search pattern to survival is covered in this section. Practice conducting a search grid, including ideal height and grid pattern. (We found 2500ft AGL proved the most effective). If you are using a GPS unit make sure you have the "bread trail" turned on if it's a feature on your unit. It helps you identify exactly where you have already flown and avoids duplication.

COMMUNICATIONS

Make a Mayday call immediately you strike a problem. Repeat it as often as possible to gain the attention of other pilots. If you are involved in the search, ask for everyone else to shut up to allow you clear contact with the distressed pilot.

Become familiar with calling ATC (Multi Centre etc) and procedures. We don't train for this in

While we use standard phraseology in our day-to-day transmissions, just talk with ATC in normal language. They understand the significance of the event. Make sure you write down instructions and repeat any relevant information they provide. They will want your current location, POB (no of people onboard) and other basic information.

Monitor appropriate frequencies. Use known CTAF frequency 10 miles out. Outside that area, use Area Frequencies from YMC and ERC. Low, if all else fails, use the frequency 121.5 (national emergency frequency). This might gain the attention of aircraft not on the standard area frequencies.

You are also required to advise the ATSB on 1800 011 034, RA-Aus Operations on 0428 282870 or 0400 280087 and the local police after an accident.

FLIGHT PLAN

Do your standard calculations in your flight plan.

Fuel management: It's not enough to say that because you normally burn 15 litres/hr and have flown two hours, therefore you have burned 30 litres. Do two calculations. It will tell you exactly how much fuel you should have consumed and the calculated fuel left in the tank at each waypoint.

Then compare with the tank. From a previous experience when I inadvertently left the fuel cap off, I can tell you your burn and consumption rates may not be the same.

Always make a MTOW check before departure and calculate fuel with a 45 minute reserve (this is usually only about 10 litres in typical recreational aircraft). This reserve is not to get you to your destination; it is to get you out of trouble.

Do not scrimp on fuel. Fuel left in the bowsers is wasted. Refuel as often as you can to ensure you have enough for the flight and diversion should one be necessary.

With many aircraft using Mogas (usually jerry cans from service) make sure you are familiar with using an airport fuel bowser.

Make sure you always cruise on "the step". If you don't know how to do that, have a chat with your flying instructor. It will ensure you are flying economically.

Ensure a comprehensive plan is left with a responsible person. Preferably a pilot.

Add the contact phone number for the Rescue Coordination Centre (RCC) (formerly ALS-SAR) 1800 815257 to the flight plan. If you are overdue, the responsible person will know who to

Put the various state Met O your mobile phone. The service

FINALLY - STAY SAI

Ensure you see and avoid other the search with you. Above all your aircraft. We found that the did lead to less attention bein craft's operation.

So how did this emerge tion resolve itself?

The response by other pilots w The response from Search an lance, fire brigade and police w fessional. Search and Rescue scrambled from Adelaide and craft from Victoria within minu made us feel very proud that as this amazing support happene radio call to ATC. Yes it's their j fan out front stops spinning, the right there with us.

The pilot and his wife m gency landing in a "best chanc aircraft was damaged but c Both occupants walked away without a scratch.

The cause of the failure wi

WEATHER

Fully understand the con likelihood of the conditions b your destination. The Bureau provides pilots with a dedicate service. The number for each displayed in every Area Briefin the remarks section.

More on lift

Lest this start a never-ending discourse and explanation about lift, here is another take. There probably are not too many flying architects, but it should be very easy for them to understand lift on an aeroplane wing. Every young architect, certainly on the east coast of Australia has it knocked into them that one of the biggest structural hazards for any building is for the roof to come off under wind load.

It is not that the wind will pick the roof up by the eaves and rip it off, although it helps a little. Rule No1 about wind load over the top is that the suction created on the lee side of the slope will suck it off – simple as that.

Certainly in Australia's northern regions, the most important structural precaution is to provide sufficient tie-downs for the roof – the roof structure itself as well as the sheeting.

If you want a fireplace to draw well (but who builds those today?), put it and the chimney on the lee side of the roof of the prevailing winds. The smoke will tend to be sucked out. While in the case of a wing, there is, of course, air flowing under it as well as on top, but it is almost unnecessary to complicate the picture with differential air speeds etc.

The lee side of any slope, especially gentle ones, will experience suction when wind flows over it.

-Juris Greste

Resignation of CEO

Members and friends

I have only had six jobs in my fifty year working life and it is now time for me to look at the more satisfying aspects of employment. To me that satisfaction comes from researching and writing up complex issues that every aviation organisation is frequently required to do.

There is a crying need within RA-Aus for someone to write up much that has been on the back-burner for years due to time constraints, as indicated above. I feel I achieved a lot in the period I worked on these issues before becoming CEO and now wish to return to that role on a part time basis. This will free up time to spend with grandchildren and other interests I have in life that have been thwarted by the working routine of a CEO.

In view of the above I will relinquish the CEO position on Friday 4 January 2013.
Kindest regards to all.
Steve Tizzard

Notice to members

To clarify certain matters the subject of current rumour the Board has released the following statement.

RA-Aus is currently a defendant with CASA and the Executor of the Estate of the late John Guthrie in Supreme Court of NSW proceedings maintained by Mrs Carol Smith.

Mrs Smith is seeking damages arising from the death of her husband Neville Smith in an ultralight aircraft accident which occurred on 6 January 2007. Also killed in the accident was John Guthrie. Both Neville Smith and John Guthrie were members of RA-Aus.

In summary, it is alleged that the negligence of RA-Aus and the late John Guthrie caused the death of Neville Smith and that CASA is liable for RA-Aus' negligence.

The case is ongoing and is being strenuously defended by RA-Aus and the other defendants. RA-Aus is sympathetic to Mrs Smith in the circumstances but does not accept it has any liability at all arising from the accident .

RA-Aus has limited insurance funds available to defend the case and to fund any settlement or judgment.
Appropriate provision is being made by RA Aus in the circumstances.

POSITION VACANT
GENERAL MANAGER

Recreational Aviation Australia Inc. (RA-Aus) is Australia's largest Sports Aviation Organisation, supporting close to 12,000 members and more than 3,500 recreational aircraft.

RA-Aus requires a suitably qualified and experienced person in the role of General Manager, based in Canberra and willing to travel. The person is accountable to the RA-Aus Board through the Executive.

The General Manager is responsible for the day to day running of the organisation and implementing policy set by the Board. A duty statement is available upon request to the Administration Manager.

To succeed in this role you will have a professional, proactive approach and be committed to the development of robust management systems that ensure high quality results. You will have a strong customer service philosophy with a passion for developing a commitment to our members. You will have a strong background in financial management.

To achieve your deadlines, you will need to have developed strong time management and prioritisation skills; use of record management systems and the MS Office suite; have experience in management; and possess sound budgeting and forecasting skills. Knowledge of appropriate legislation, and the RA-Aus role in Australian aviation, are essential.

This role offers a challenging and rewarding opportunity for the successful applicant. Further details can be obtained from the Administration Manager.

To apply, forward your letter of application and résumé, to the Secretary, RA-Aus, PO Box 1265, Fyshwick, ACT 2609 or e-mail them to admin@raa.asn.au before COB Friday 11 January, 2013.

POSITION VACANT
TECHNICAL MANAGER

Recreational Aviation Australia Inc. (RA-Aus) is Australia's largest Sports Aviation Organisation, supporting close to 12,000 members and more than 3,500 recreational aircraft.

RA-Aus requires a suitably qualified and experienced person in the role of Technical Manager, based in Canberra and willing to travel. The person will be accountable to the RA-Aus Executive through the General Manager.

The Technical Manager contributes to the development of, and operates under, the RA-Aus Technical Manual. A duty statement is available upon request to the Administration Manager.

To succeed in this role you must have a professional, proactive approach and be committed to the development of robust management systems that ensure high quality results. You will have a strong customer service philosophy with a passion for maintaining and enhancing safe recreational aviation.

To achieve your deadlines you will need to have developed strong time management and prioritisation skills; use of record management systems and the MS Office suite; have experience in the training and development of aircraft maintenance personnel; and possess sound budgeting and forecasting skills.

Knowledge of relevant legislation, including the RA-Aus Technical Manual, is essential.

This role offers a challenging and rewarding opportunity for the successful applicant. Further detail may be obtained from the Administration Manager.

To apply, forward your letter of application and résumé, to the Secretary, RA-Aus, PO Box 1265, Fyshwick, ACT 2609 or e-mail them to admin@raa.asn.au before COB Friday 11 January, 2013.

CHRISTMAS CLOSURES

There will be no January 2013 edition of Sport Pilot magazine as the staff take a well earned break.
Deadline for articles and advertising for the February edition will be Janary 7, 2013

Members are advised that the RA-Aus Head Office will be closed during the festive season from 1300hrs Monday, December 24 and will re-open Wednesday, January 2, 2013.

We would like to take this opportunity to wish every-one a happy and very safe Christmas and enjoyable New Year.

ROBOTS ARE COMING

Robots are about to start to push pilots out of the cockpit.

The first approved Robotics Training Academy, with CASA's blessing, will commence operations in Brisbane in early 2013.

The Australian Unmanned Systems Academy, owned by V-TOL Aerospace, will start training pilots in the control of unmanned aircraft (UA).

UA are taking to the skies at Marburg, west of Brisbane where a dedicated tract of land and 40km² airspace has been set aside for training and equipment testing.

The training program comprises a UA specific BAK, Air Legislation and Human Factors as well as a week of simulator and hands on training.

V-TOL Aerospace Aerial devices are controlled on the ground by a computer and tracking device (satellite or digital). Height, track, payload deployment and activation are all predetermined and activate at the touch of a button. The ground based computer can control many UA simultaneously.

V-TOL Aerospace is currently working in partnership with Surf Life Saving Australia to deploy UAs at beaches around the country. The devices can send back real-time video of what is happening between the beach and outer surf zone and can drop flotation devices to people in distress or warn of approaching sharks. Cameras can also be programmed to scan for sharks and report back to the pilot. UAVs can lock on to a target and stay with that target for hours if fuel or batteries allow. Video or still photos can be sent live to any computer in the world.

Small UAVs with 1 to 2 meter wingspans, which will be used at low levels in built up areas (with CASA approval) are built of advanced foam-like material.

V-TOL Aerospace has two winged and two VTOL devices. The fixed wing aircraft mainly carries camera equipment. Endurance is up to 90 minutes. The two V-TOL (helicopter type) aircraft have payload capabilities of between 2kg and 120kg. Endurance can be more than 8 hours.

Currently most non-military UAs use the airspace up to 400ft but UA activity above 400ft can be undertaken in certain locations with CASA approval.

There is a growing demand for UAS pilots. Like most aviation prerequisites, hours at the controls are what you need. You can gain hours by either practicing on your own UAS (if it's certified), or fly for free for organisations which already use UAs. For more information www.ausacademy.org

>> Lifesavers Jack Kelly, Douglas Simpson and Jessica Simpson

>> Arrow

>> Warrigal

BERT FLOOD IMPORTS

AUTHORISED DISTRIBUTOR ROTAX AIRCRAFT ENGINES

914 SERIES 115 h.p

4-cylinder, 4-stroke liquid/air cooled engine with opposed cylinders, with turbo charger with automatic waste-gate control, dry sump forced lubrication with separate 3 litre oil tank, automatic adjustment by hydraulic valve tappet, 2 CD carburettors, electronic dual ignition, airintake system, electric starter, integrated reduction gear i=2.43. Weight 70kg including exhaust system and engine truss assembly.

914 UL 3 - DCDI with options

2,000 hrs. TBO
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4-cylinder, 4-stroke liquid/air cooled engine with opposed cylinders, dry sump forced lubrication with separate 3 litre oil tank, automatic adjustment by hydraulic valve tappet, 2 CD carburettors, mechanical fuel pump, electronic dual ignition, electric starter, integrated reduction gear i=2.43. Weight 62.6kg including exhaust system and engine truss assembly.

"The Sky Is The Limit!"

582 UL DCDI 65 h.p

582 UL - DCDI with options

2-cylinder, 2-stroke liquid cooled engine with rotary valve inlet, electronic dual ignition, integrated water pump and thermostat, exhaust system, carburettors, rewind starter. Weight 47.2kg including exhaust, gearbox with integrated electric start.

Also available:

912 UL DCDI (80 h.p)

See our website for more info: www.bertfloodimports.com.au

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New Bionix for Yarrawong Flight Training

The Air Creation Co. of France has celebrated 30 years of designing and manufacturing light sport micro-lights with the release of the new BioniX Tanarg 912s.

Australian importer for Air Creation, Chris Brandon, says the two seat sport aircraft has been designed for comfort, performance and versatility without compromise.

Chris recently established an official agency agreement with Peter and Anne McLean, owner/operators of Yarrawonga Flight Training.

They were due to have taken delivery of the first of the new aircraft in November.

The Tanarg 912s BioniX 13, is powered by the 100hp Rotax 912, with a 3 blade Arplast propeller - the quiet version for low noise emissions.

Air Creation also produces a Tanarg 912es, which is certificated as the quietest microlight in Germany.

The Tanarg has a very low centre of gravity, strutted suspension and 3 wheel disc brakes with large Michellin tyres.

The cockpit features Enigma Instrumentation, adjustable foot controls, low airflow buffeting and comfortable seating for both pilot and passenger.

Fuel economy is 10 ltrs per hour and 60kts.

For more information www.aircreation.com.au

FAA TSO Acceptance

New Lights

Aveo Engineering has announced FAA TSO acceptance of its Ultra Galactica series of 2 and 3 function wingtip lights, and the Red Baron anti-collision beacon.

The Ultra wingtip lights combine red or green navigation, strobe, and rear white position lights, and the Ultra Embedded version removes the rear position light function in anticipation of being installed under a recessed wing-tip lens.

The Red Baron is suitable for fuselage or vertical stabiliser mounting, and all Aveo airframe lights are completely self contained with no external power supply needed.
Aveo lights are known for being nearly unbreakable and weather-proof.

Vale
Rodney Hewitt-Cook
13.10.1938 – 14.10.2012

We regret to advise the passing of former RA-Aus Technical Manager, Rod Hewitt-Cook. Rod worked with RA-Aus from November 1998 until September 2002.
Our thoughts are with his family and friends.

RECREATIONAL AVIATION AUSTRALIA INC

RESULTS OF VICTORIA BY-ELECTION 2012

The opening and counting of the ballot was carried out in accordance with By-Law 1.

The Association's mailbox was cleared on Frday 16th November 2012 to include Ballot papers received by the 4.00pm deadline detailed on the ballot paper.
The results are as follows
Brent Christensen – 128
Jim Tatlock - 151

Congratulations to Jim Tatlock In total 304 votes were received There were 25 invalid votes

Sue Perakovic
Returning Officer

the CONVERTIBLE twins

Open cockpit freedom, or snug closed canopy...

Quickly convert either to your style on the day!

FK14 Le Mans

For high speed, long distance cruising and sheer good looks, nothing matches the FK14 Le Mans. The interchangeable dual canopy/turtle deck providing a quick transition from a streamlined open cockpit joy to a 130 knot/75% power high speed closed canopy luxury cruiser. Available in tri-gear or tail-dragger, with Rotax power and quick remove 'auto-coupled' wings as standard. FK14 Polaris also available with standard closed canopy.

FK12 Comet

Two aircraft for the price of one! Chose the Comet aerobatic bi-plane (Lycoming engine/tail dragger) and make an open cockpit return to the barnstorming days (twin or single open canopy available) or cruise this same agile beauty, snug in its quick change twin seat, closed canopy. Available with Rotax power for fuel economy or Lycoming for aerobatics and featuring folding wings.

FK LIGHTPLANES

German engineering and innovation

FK9 ELA – $103,500*

FK12 Comet – $129,000*

FK14 Polaris – $121,000*

FK14 Le Mans – $144,000*

FK51 Mustang – $152,000*

*All prices are fly-away GST paid.

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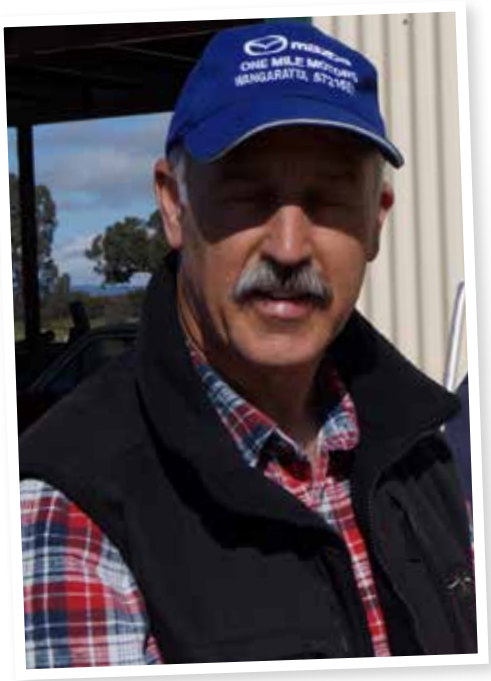


DOES SIZE REALLY MATTER?

by Bob Hayward

I am sure most readers will have been to some excellent and highly organised fly-ins and air-shows over the years, but sometimes it is the little events you remember with most affection and good memories. An event I attended recently would certainly rate as one of those.

For the past six years, my CH701, named 'Nancy Bird', has resided in a hangar on a property with a 500m strip owned by my friend, Paul, near Wangaratta.

My aircraft is actually named after Nancy-Bird Walton who signed the tail in black texta in 2000 at Bourke while she was on a historic visit. Bourke was where 'Nancy Bird' was built by Jack Buster and friends on Darling Farms.

by Bob Hayward Cont.

However, there have been some intrepid souls who braved the elements and arrived at LIA (Londrigan International Airport) with dripping noses and stiff fingers (especially the trike flyers).

Finally, this time we actually held a fly-in in ideal weather. The day before the event, I was the gloom and doom-sayer, because of local predictions.

To his credit, Paul stayed optimistic saying he had great faith the weather would turn out well. He was right and it was a great day all round. We ended up with seven aircraft in total. (Well, two flew in to the home strip, three flew into a neighbour's strip, because they needed a little more dirt to get in, and two were pulled out of the shed to swell the ranks) People-wise, there were twenty nine souls and two dogs, all of whom enjoyed a hearty breakfast.

But what stood out, and has held true over the past six years, is the real heart of what this is about.

The people ranged from aircraft owners to pilots of all shades; from wives and partners to those who just enjoy a good flying yarn. And from family members to neighbours who have become good friends. As an example, I took one photo of Paul at the BBQ plate being ably assisted by his dad, his uncle, and his brother. Inside the shed were his mum and wife, equally busy.

As a bonus, some of those who have attended over the years will surprise you with an amazing life story.

I recall one time I invited an elderly man from town who was very lonely after the loss of his wife of fifty plus years. Bill was English. I got to know him from our local bus run and as time went by, we became good mates. He was always bringing up little items from the news about aircraft events and one day he mentioned the De Havilland Comet. It turns out he was an

DOES SIZE REALLY MATTER?

engineer who was part of the Comet build team. Bill often referred to those 'terrible windows'. Before WW2, Bill had been part of the Sydney Camm team which built the Hawker Hurricane.

During the war, he joined the RAF and worked on Spitfires, Mosquitos, and Lancasters. He really loved the fly-in breakfast. Finally, not long after this event, I was privileged to deliver the eulogy at Bill's funeral.

This time, we had Keith who was a Catalina maintenance engineer during WW2, two ex-RAAF pilots, two senior (age and experience) flying instructors, two pilots who have flown extensively in the US and two L2s.

I also decided to make up a time-line board of photos and captions from my own passion for flying. I titled it "If it flies, I'll be there". This title reflected my almost reckless volunteerism while serving in Vietnam, where I would hang around Luscombe strip at Nui-Dat.

There I would hitch a lift with anyone flying anything who was willing to take me anywhere. As a result, I was able to take many incredible photos while acting as an air observer. I also included a file photo of Les Nixon's DH84a in which I took my first fixed-wing flight as a teenager, along with a shot taken 53 years ago with my brother about to take our first chopper flight in an Ansett ANA Bell.

In conclusion, I would encourage anyone with a strip, whether private or not, to try a breakfast fly-in or something similar. It may not rate a mention on the national flying fraternity calendar but you might be surprised who will turn up.

Paul does his advertising by SMS and word-of-mouth. It is a great time for a yarn. You get to hear some great stories and, of course, I have found I often get some valuable pieces of information from some very wise and experienced heads. And remember if you persist, you'll eventually get those perfect fly-in flying conditions.

How to survive your next CRASH

by By Norm Sanders
(who has survived several)

Two words - DON'T PANIC!

Easy to say, but hard to do.

The best way to avoid panic is to be confident through mental preparation and practice. It is not good enough to say an emergency will never happen.
It isn't a question IF the engine will quit, but WHEN. Think of all those metal parts whizzing around, all the electrical connections, all the hoses....it's a miracle the machine flies at all.

Have a plan

An essential part of avoiding panic is to always have a plan. The foundation of the plan is to avoid flying over tiger country, large bodies of water or above continuous cloud cover. The second part is to have a landing field selected before the engine fails. A suitable landing site, or the best possible landing site, should constantly be identified while flying. A good mental exercise is to say "The engine just quit, where can I land?"

Australia is blessed with a great number of paddocks - some good, some bad. Ideal would be a 1000m long, recently grazed (but with no animals present), level field with no rocks and no power lines - suitable for a takeoff when the engine is repaired. This perfect paddock would also be equipped with a nearby farmhouse, complete with friendly farmer, a phone and a cold beer.

Paddocks can't be paddocks without fences, and these are potential killers. They are often hard to spot from the air, but stock may graze the grass to different heights on each side of the wire.

How to survive your next

Powerlines, like fences, can be difficult to see. The wires themselves are all but invisible. Look for lines of poles (or fence posts.) Out west, there are the infamous SWER lines (Single Wire, Earth Return) and the poles may be 500m or more apart. Many a crop duster has tangled with them.

Long strips of attractive green 'grass' can be deceptive anywhere north of the Tweed. These are probably sugar cane fields and are a last resort, unless recently harvested or ploughed.

Landing in a mature sugarcane field with the crop two meters high will probably damage the aircraft and make the farmer angry.

The beach can also be a trap. If the aircraft can't be removed before the tide comes in, it will be a write-off. But the beach would be better than putting it down in the scrub. At least the passengers would be uninjured.

Always land with the furrows in a ploughed field. This may not be as easy as it sounds if the field has had recently harvested wheat.

Headers will follow fence lines and the furrows for a while, but may deviate in the middle of the field. In this situation, land along the fence line.

Of course, paddocks don't have to be on level ground. Hillsides are perfectly useable. Crop dusters do it all the time. Their strips are on hills by choice so they can land uphill, load, and take off downhill. The technique for landing on a hillside is to pull the nose up and stall like a fly landing on a wall. A short landing roll is guaranteed, but don't forget to set the wheel brake.

CRASH

A major factor in emergency landings is wind direction. Clues are smoke, ripples on dams, (smooth water against the wall is the windward side), windmills, blowing dust, etc. It is best to land into the wind, but sometimes terrain or other considerations make this impossible. Downwind landings aren't difficult and have the advantage of positive wind sheer. The biggest problem is the visual sensation of traveling very fast over the ground, which causes a reflex action of pulling back on the controls to slow down. Not a good idea.

It is essential to make a normal circuit, not so close to the paddock that you need to make steep turns. Be aware of the tendency for inexperienced dead-stick pilots to be too high on final, which can lead to an irretrievable overshoot. New factors can become apparent on final, such as obstructions, rocks, kangaroos, sheep, etc. Get ready to avoid them if you need to. I once hit a sheep which ran in front of my plane while I was landing in a Tasmanian paddock.

If you are rapidly approaching a fence, don't just keep rolling. Pilots have been beheaded by fence wire. One option is to aim at the post with your prop hub, which should push it over, pull down the wires and thus keep them from cutting into the aircraft. This may or may not work.

Another approach involves deliberately ground looping the aircraft by kicking hard brake and rudder. Damage could range from nil, (the aircraft should be inspected anyway) to the aircraft being a write off.

How to survive your next crash Cont.

But your head should still be attached.

If the only available paddock is obviously too short for a normal landing, the only option is to get the wheels onto the ground and ground loop.

Hopefully, the impact energy will be absorbed by the wings as they crumple. We are all very worried about damaging, or even scratching our aircraft. And so we should be. But there comes a time when life is more important than an insured machine. In the final analysis, aircraft are replaceable, people are not.

Most fatalities in crashes come from stall-spin situations. As the pilot gets lower, he/she instinctively pulls back on the controls and maybe attempts a skidding turn at the same time. These are moves which are guaranteed to produce a vertical impact. The best approach is a normal approach. Aerobatic legend Bob Hoover says, "Just land the airplane as usual, no matter what is in front of you." Why? The landing stall speed of RA-Aus aircraft is 45kts or less. Any head wind will make it even lower. The cockpit is strongly built to protect well strapped in passengers. (Cinch up the straps tightly before impact.) A controlled crash beats a stall-spin anytime.

We used to sit around in hangars in Alaska discussing the best way to survive a landing on the tundra. A normal touchdown would be sure to result with the airplane on its back. Some pilots advocated sideslipping into the ground so the wing would collapse, like in a ground loop. I think I would rather be upside down.

But the bottom line is to always have a plan. If the chosen paddock's farmhouse is abandoned, as many are, there may be no landline phone (and no cold beer) and mobiles are often out of range. A MAYDAY call on 121.5 while still in the air might get some attention. Even on the ground, it could be useful. I once heard a Qantas jet on 122.7 directing a ground crew to an outlanded glider. The pilot had sent out a call on 121.5, which all airliners monitor. The Qantas driver, also a glider pilot, came to the rescue. Contact on 121.5 would be a better option or firing off a PLB / ELT beacon, which causes all sorts of expensive things to happen but is.

Personal Locator Beacons (PLB's) are cheap insurance if all else fails. (A meter square of aluminum foil makes a good ground plane.) And remember to stay with your plane!

The PLB and mobile phone should be kept in a place which will be accessible if the aircraft finishes up on it's back and/or if the occupants are injured. It is also essential to have something available to shatter the canopy if it jams or if the aircraft ends up inverted. This could be a heavy hammer or strong, heavy knife securely fastened with provision for quick release. The hammer can be part of the tie down kit. In addition, the plane should always carry plenty of water, matches, a flashlight, a Leatherman type multitool, rope and a packet of those high visibility orange garden waste bags to

spread on the ground for search and rescue.

SARTIMES

Search and rescue operations are greatly helped by the use of SARTIMES. Search And Rescue Times are used by AirServices Australia as a trigger to start looking for you if you don't turn up as expected. You nominate a time you expect to arrive at your destination. If your SARTIME is not cancelled, a search is begun. The first step is to attempt to contact you (or the aircraft owner) by phone. If these attempts fail, an Emergency Uncertainty Phase will be declared and the full search and rescue operation may be initiated.

If you nominate a SARTIME, it must cover the duration of the flight itself and the time you will need to cancel it. The best way to lodge, change, or cancel a SARTIME is by phone on 1800 814 931. SARTIMES can also be lodged over the internet using NAIPS and over the radio. Before take-off, set the alarm on your phone or watch for five minutes before your SARWATCH time to remind you to cancel it. All hell breaks loose if you forget.

As an alternative, nominate someone you know to watch for your arrival. They will need a description of the aircraft, including registration number, flight details and relevant contact details. If the flight is overdue, they should call AirServices on 1800 814 931 or the police on 000.

The main danger to a successful forced landing is the pilot's fixation on restarting the engine. Once the normal procedures are completed and the engine stays quiet, your attention must be completely focused on landing.

The engine may be dead, but the wings are still attached and the flight controls are all hooked up.

As they say in the Hitchhiker's Guide to the Galaxy,

Loose head

1. Bolt Thread ease

"Not the usual 120 eager horses under the cowls, more like 120 comatose sheep.

By Mark Pearce

I live in an airpark. It's the ideal environment for any pilot. However, there are some drawbacks.

Many years ago, I spent much of my youth building Mini Cooper engines and Chevrolet 454cu in. drag boat race motors. In recent times I have built a couple of Jabiru aircraft kits, including one with a short motor I built up to current specs at the Bundaberg factory. Now, with another ten years of maintenance experience on Jabs behind me, I thought I knew more than most about these motors and heaps about others in general. Perhaps I do, but that never means you know everything.

Recently, I encountered a problem. After completing all the usual checks to eliminate other possibilities, I had to accept the engine I was working on had a sticky valve.

This manifested itself in idling like a hairy goat and, on occasions, stopping altogether.

The engine had wanted to stop on short final a few times and had actually cut out on me during rollout after landing. Although it ran normally in the cruise and take-off, it was clear to me this would put me into the trees on approach in the very near future. "No problem", I thought. "I'll just whip the heads off, clean them and the valves and I'll be back in the air before the next lot of barbecue guests arrive in a few day's time". After all, I'd done this sort of thing many times before.

The rubbish was caked inside the cylinder head, on the valves and on top of the piston.

Scraping away this Avgas lead and other remaining impurities was fairly easy. Only the thick, heavy material and that which was easy to remove without damaging the soft aluminium from inside the heads was sent to the dustbin. The aim was not to bring these surfaces back to shiny new aluminium. Damage can occur if you are overzealous. I delicately scraped the valves then finely polished them with 1500 grade 'wet and dry' paper.

2. Feeler gauge

3. Spring Compressor adapter

4. Tappet adjuster

This took most of the time, because it was important to remove all foreign matter, particularly around the valve neck while not damaging the valve mating surfaces. Seats and seals were mostly like new with only one valve lapped a little - although it could easily have not. Valve guides were lightly run through by hand with a drill bit wrapped in 'wet and dry'

After completing the job, I test ran the engine. Viola! The newly discovered Jabiru stick shaker feature had completely disappeared. A feeling of relief and satisfaction came over me. The coughing and spluttering at idle was gone.

Still patting myself on the back for a job well done, I embarked on a test flight. I needed to feel confident enough to again allow passengers to resume sharing my passion after such open heart engine surgery.

I had diagnosed the problem (with reassurance from 'Uncle' Don at Jabiru over the phone and the Jabiru Overhaul Manual), then solved the problem, and now responsibly tested my work.

What a professional I was. It had also cost me nothing, so the family treasurer was happy.

Initially, things appeared fine, but I noticed there was something still just not quite right.

A funny sound came from the engine and there appeared not to be the usual 120 or so eager horses under the cowls. More like 120 comatose sheep. I was frustrated. Had I actually had two problems at the same time?

I had checked the pistons for play when I was cleaning them down.

There was no scoring on the cylinder walls from a failed piston ring, but the symptom remained. Hand turning the prop, I could feel the soft spot which existed when I had the sticky valve. Bugger. How hard could it be? These motors are really simple compared to others I have worked on. Resigned to my fate, I psyched myself up.

Once again, off came the cowls, ram air ducts and... instantly, without going any further, there it was. I couldn't believe my eyes!

Professor Avius was always going on about them. Pilots may live or die by them. Checklists. However, a checklist is not the exclusive realm of pilots. One could have been more than useful in my engineering project.

I had failed to keep close tabs on the progress of my work, double checking that every task had been completed.

Instead, I had relied on my memory, faulty as it must now be.

Staring me in the face, was a cylinder head with its uppermost head bolt just sitting there, not screwed in – not even finger tight - just placed there ready to be engaged with the hex drive and torque wrench. Were the gasses escaping around the seal where this bolt should have been engaged? It could easily have just fallen out. If that wasn't bad enough, worse was to come.

I shuddered to think what else I had overlooked. Had I been disturbed half way through the job? I began to recall some pivotal moments during the project:

"Honey, can you start the edger for me?"

"You're wanted on the phone";

"I really, really need you to glue this doll's head back on";

"There's a snake in the kid's bedroom. No pressure but I think it's a Western Taipan!"

Hmm, maybe there really were advantages in having the aircraft hangared away from home after all.

Disgusted at my now seemingly lack of professionalism, I started checking all cylinder head bolts, tappet gaps, oil way clips, etc. On the cylinder with the unscrewed head bolt, I proceeded to check the other bolts. I could already see they were engaged in the thread so it would be just a matter of re-checking the 24ft/lbs of torque. Wrong. It became apparent as I went from bolt to bolt on this cylinder that none of the bolts had been torqued at all – just screwed in finger tight... and only five of the six at that!

Jabiru engines may be tough little critters, but I think how lucky I was not to have the head blow off, resulting in certain engine failure. Surprisingly, by design, there is a requirement to align the heads flush on the cylinder lip and aligned with the surrounding cylinder cooling fins and oil tubes. The latter simply can't be connected otherwise. This design foresight meant that the head was always going to be mounted squarely and hard up against the top of the cylinder so that finger tightening these bolts, lubricated with thread ease, would see them inserted a long way with enough threads engaged to stop the head becoming a projectile. Consequently, there was actually some compression.

Lessons learned:

1. you never have too much experience;
2. try incorporating checklists;
3. take steps to eliminate or, at least, minimise work disturbances;
4. get a peer to check your work.

I can now happily report that the sheep have now been sent to the slaughter house and replaced by more than 120 Melbourne Cup winners. The guests have arrived, the barbecue beckons.

Lamb chops, anyone?

178 seconds t0 live is it a myth?

by Arthur Marcel

The media coverage of the VH-UXG tragedy made headlines out of the "178 seconds to live" conviction held by many pilots about VFR pilots inadvertently flying into cloud.

This belief has its origins in a University of Illinois study that was done back in 1954. There appears to be information on the Internet about a subsequent 1991 study; however, the numbers quoted are identical to those from the 1954 study, so it can be assumed that there was no 1991 follow-up study.

A common problem in academia is for original research to be quoted out of context. There can then be a tendency for this out-of-context information to become a consensual norm, especially if it contains an emotively appealing element that complies with prevailing culturally-conferred logic. This tendency is often reinforced by coverage in the popular media.

Many older Australian pilots remember the Bureau of Air Safety Investigation (now the Australian Transport Safety Board) during the 70s, in issue after issue of the Aviation Safety Digest, drumming it into pilots' heads that if they accidentally flew into cloud they were as good as dead. The BASI writers repeatedly quoted the numbers from the 1954 study. These numbers continue to be quoted in highly emotive and dramatic style today. Witness this shortened (but current) article from the FAA:

http://www.faa.gov/about/office_org/field_offices/fsdo/fai/local_more/alaskan_articles/media/178%20Seconds%20to%20Live.pdf (DOT pamphlet)

"Here is the fatal scenario: The sky is overcast and the visibility poor. You have flown into worse weather than this, so you press on. With no warning you are in the soup!

You now have 178 seconds to live. Your aircraft feels on an even keel, but your compass turns slowly. You push a little rudder and add a little pressure on the controls to stop the turn, but this feels unnatural and you return the controls to their original position. This feels better, but your compass is now turning a little faster and your airspeed is increasing slightly.

You scan your instrument panel for help, but what you see is just a bad spot. You will break out in a few minutes. (But you don't have a few minutes left.)

You now have 100 seconds to live. You glance at your altimeter and are shocked to see it unwinding. You are already down to 1200ft. Instinctively, you pull back on the controls, but the altimeter still unwinds.

The engine is into the red, and the airspeed, nearly so. You have 45 seconds to live. Now you're sweating and shaking. There must be something wrong with the controls; pulling back only moves that airspeed indicator further into the red. You can hear the wind tearing at the aircraft.

You have 10 seconds to live. Suddenly, you see the ground. The trees rush up at you. You can see the horizon if you turn your head far enough, but it's at an unusual angle -- you're almost inverted. You open your mouth to scream, but -- you have no seconds left!"

Clearly, the logic behind the "178 seconds to live" scare campaign is to frighten the living daylights out of VFR pilots in the hope they will never go near cloud. Such logic is reminiscent of the 1980s Australian Grim Reaper AIDS prevention campaign, referred to by many health professionals as the paradigm of ineffective public health campaigns. The idea is also similar to telling teenage girls not to have sex or they will immediately fall pregnant. There are strong arguments to say that education and skill development are far more effective at improving outcomes than scaring people. That is not to say that VFR pilots should not be educated about the dangers of losing visual reference, but they should also be encouraged to prepare for such hopefully avoidable situations instead of developing a paralysing fear of them.

However, the "178 seconds to live" scenario is flawed for other reasons.

We are not talking here about instrument departures, ILS approaches, holding patterns, the operation of radio-navigation aids, special radio procedures and all those other complications associated with instrument flying.

The required manoeuvre is to hold the wings straight and level while climbing up and out of trouble, executing a gradual 180 degree turn and going back the way we came. The only extra (non-VFR only) instrument required is an Artificial Horizon, and many RA-Aus aircraft have this instrument. Let us now go back to the original 1954

paper and examine the conditions from which the "178 seconds to live" conclusions emerged. This study was done by the University of Illinois Institute of Aviation. It is entitled "180-Degree Turn Experiment" and a scan of the original paper is available from:

http://www.humanfactors.illinois.edu/Reports&PapersPDFs/JournalPubs/180%20Degree%20Turn.pdf

The researchers set themselves the task to develop an optimal technique for teaching a non-instrument rated pilot in a VFR-only instrument equipped aircraft to execute a 180 degree turn after entering cloud and then head safely back to where they had come from. Twenty VFR pilots who had had absolutely no previous instrument flying experience (neither simulated nor actual) were initially tested in worst case conditions, and all of them quickly put their aircraft into "incipient dangerous flight conditions", the average time taken being 178 seconds. There are at least three features of this study, however, which indicate that for nearly 60 years its findings have been taken out of context:

Firstly, the aircraft chosen for the study was a Beechcraft Bonanza. Researchers chose this aircraft for two reasons, these being that it was thought to be the most difficult to fly of all the light aircraft available at the time, and also because none of the test pilots had had any solo experience in this type of aircraft.

"The Beechcraft Bonanza C-35 was selected for use in these case studies upon the basis of the preliminary flight testing, which indicated that the technique would be most difficult to accomplish in the Bonanza. ...In addition, it was desirable to use an airplane with which the subject had had the least amount of experience. In short, ...the subjects, none of whom had soloed in a Bonanza,..."

Secondly, the Bonanza test aircraft had a very limited panel. There was a Turn and Bank Indicator but no Artificial Horizon, no Directional Gyro and no Rate of Climb Indicator. The tests were also conducted in such reduced lighting that pilots "found it difficult to read the trim tab indicator."

"In the experiment it was decided to use only those instruments and equipment specified in CAR 43.30 for visual flight rules, plus a turn indicator. Therefore in equipping a standard Beechcraft C-35 for these case studies, the artificial horizon, the directional gyro, and the rate-of-climb indicators were covered. ....most subjects found it difficult to read the trim-tab indicator."

Thirdly, the Bonanza test aircraft (which, remember, the test pilots had never previously flown solo) was loaded to maximum gross weight under the most rearward allowable centre of gravity conditions.

"For the purposes of the case studies, the airplane was loaded in the most rearward allowable centre of gravity (c.g.) conditions. The airplane was loaded to maximum gross weight, 2700 lbs, ..."

Hard to believe

Can this really be the study from which nearly sixty years of paranoiac finger wagging have arisen? It does indeed seem to be the case. Neither has it just been a process of creating mind-numbing fear. It can be plausibly argued that the training mindset created over those 60 years has not been encouraging for VFR pilots to play with blind flying as it would only make them more likely to flirt with assured death. Rather it has been a "do the rating or don't do anything" attitude, which is, ironically, exactly the opposite outcome the original researchers appear to have been hoping for when they say (page 6) that non-professional pilots place too little emphasis on proper training in the use of instruments.

In short, this iconic study seems almost as if it had been set up in a way that guaranteed those 20 subjects would fail their initial flight test. They had absolutely no prior instrument flight experience, they were flying a sophisticated aircraft in which they had had no solo experience, an aircraft loaded fully aft at MTOW and therefore in its least easy to fly condition, and they had limited instrument panels with no attitude reference! Furthermore, the emphatic (and consequently emotive) conclusiveness of this study seems to have put paid to more realistically follow-up research ever since.

To repeat: the claim being made here is not that VFR pilots should not be educated about the dangers of losing visual reference. Rather, it is that they should be encouraged to prepare for such hopefully avoidable situations instead of developing a paralysing fear of them.

VFR pilots have always pushed their luck at times of marginal visibility and no amount of Grim Reaper preaching from on high is likely to ever stop them. Rather than trying to instil the fear of God with misquoted 60-year-old research, today's training information needs to be up-to-date and factual.

VFR pilots should be encouraged to do an hour or two under the hood from time to time. The installation of Attitude Indicators also needs to be encouraged. The "178 seconds to live" myth needs to be dispelled; forever vanquished from pilot's minds and replaced with informed confidence in their ability to do what is a reasonably easy task. It needs to be accepted that the risks associated with a few minutes flying in cloud early on in an aircraft equipped with attitude indication are far less than those associated with trying to out-climb a mountain gully ten minutes later.

Comments by the CEO

RA-Aus in no way supports the notion that deliberate entry to cloud is likely to be a sensible option. Readers should get on the internet and read the ATSB document titled: General Aviation Pilot Behaviours in the Face of Adverse Weather (AVIATION RESEARCH INVESTIGATION REPORT B2005/0127) dated June 2005 for a contrasting opinion.

What do you think?

Email editor@sportpilot.net.au with your views on the subject.

Editor's choice

Brian Bigg

CLEANING OFF THE DESK

It's Christmas time again. Even though it only seems like six months since it was last here. And the hard-working crew at Sport Pilot will be taking some time off. There won't be a January edition, but the magazine will be back as big and bright as ever in February.

In the meantime, here are a few random thoughts I've had banging around in the top drawer.

When flying becomes a job

Wouldn't it be terrible to be a professional pilot? Especially working for the major airlines. Every day you go to work, it is the same old - same old. Sydney to Brisbane, Brisbane to Sydney, Sydney to Melbourne, Melbourne to Sydney (or variations thereof). Then home to do it all again tomorrow. No chance of flying somewhere unexpectedly for lunch, or circling a few times over something interesting on the ground (not without getting hundreds of complaints at least).

Pilots get into the business because they love flying, but I reckon that sort of aviation would kill your passion for it in no time at all.

I guess it's true that everything we humans do as a job, even piloting an aeroplane, must eventually become a chore. Eating chocolate is a treat, but if you do it every single day, it won't take long until you are sick to death of chocolate. Even porn stars must get up in the morning and go 'Oh no, I don't want to do that again today'.

I prefer to keep my flying to the times when the weather is great and ideally I have no specific plan in mind. So you can keep your airline job.

What do you think?

High wing versus low wing

Why is it that if the first aeroplane you fly as a student is a low winged aircraft, you have a preference for low wing aircraft for the rest of your life? And vice versa for high wing aircraft? Yes, I know there are many clever people who can jump in either just as comfortably, but for the vast majority of pilots, it is a clear preference for one or the other.

I have flown a number of hours in Cessnas, but would not willingly rent one to fly unless there was no other choice. I flew a Foxbat quite happily for my BFR the other week, but I didn't feel at home until I got back into my own low winged Zephyr.

Perhaps it has something to do with the imprint of fear. I first started to fly in a low winged Piper Tomahawk.

The early flights were marked by my death grip on the stick. My first terrifying 30 hours were in that aircraft and perhaps it left an indelible mark on my psyche.

Is there a scientific reason? Or is it just a comfort thing? I might try and find out.

Knowing when to head home

One of the joys of attending a fly-in is planning the trip in the days beforehand. I check the weather and I make a clear timetable, outlining what time I will leave home and what time I will return.

If the forecast is good, leaving home usually happens on schedule. But the time to return home almost never does.

At home I know the weather, where it will come from and what it's like to do, regardless of what the forecast says.

But when I'm hundreds of miles from home, I'm a lot less confident of, yet more reliant on, that forecast.

I tend to start asking around the local pilots. "What's this weather likely to do?" "Which direction do you normally get your storms from?"

You notice at fly-ins that visiting pilots act a lot like a flock of birds. We start to get twitchy if the weather turns funny - we group together, chattering amongst ourselves with our heads popping up at regular intervals to sniff the wind. Then, despite there being no obvious signal, one of the flock will take wing, and you can be sure the rest of the flock will soon follow suit. The flight line will be deserted in an hour and you can be sure that bad weather is not far off.

Caution wake turbulence

I was prowling through controlled airspace the other day when ATC came on the blower and asked me to do a quick hold to allow a jet to get in front of me. Once I did that, ATC got me to resume my previous navigation and added the words "caution wake turbulence". It struck me as very strange warning. I was following ATC instructions as to my height and track, so what good would it do to warn me that I might be flying in big trouble? What could I do about it? I wouldn't know it was there until I hit it and in controlled airspace I couldn't just wander off onto a new track to avoid it. So I just said "thanks" and tightened my seat belt. I guess I would be able to ask for a new track if I suddenly found myself upside down.

Merry Christmas and happy New Year from the staff of Sport Pilot magazine.

SIDE SLIPPING AWAY

LEARNING TO FLY

Dr Gerry Considine

On the drive around the Spencer Gulf for my next day of flying, the weather started to look dicey. Driving rain and low level cloud ominously obscured the nearby southern Flinders ranges.

The flying gods must have been looking out for me though, because the weather gradually cleared as the odometer clicked towards Port Pirie. By 10am, I had reached the aerodrome. The sky was clear but there was no sign of the Jabiru. 30 minutes later, I had my answer. My instructor had been up with a local lad for a trial introductory flight. And it must have gone well because from the moment he climbed out of the plane until he drove away, the young fellow had an ear-to-ear grin plastered on his face. I remember my face hurt after my first day of flying too.

Seeing someone at the very start of the process also made me reflect on my own progress. Even though I had done only 12 or so hours spread over six days, it felt like I had been learning for ages - there was often a month or so between those flying training days.

Instructor, Earl and I jumped into the still warm Jabiru and conducted a few circuits. The idea was to double check I hadn't forgotten anything drastic in the month since I had last flown before I would spend time consolidating my solo training. After 25 minutes fine-tuning, it was time for me to go solo again.

This time I logged a solid 1.8 hours, with a break in the middle, of course.

Most of the circuits felt like routine by now, but the biggest improvement and refinement to my flying came in the final stages of landing. I had, up until this point, been a bit cagey about handling the controls just before touch down.

But with the repeated practice, I became more confident and this, in turn, led to me being more positive with the controls.

I became happier to flick the joystick around or kick the rudder pedals with gusto. It meant my landings became more consistent. Which was good news for my nerves.

After lunch, it was time to tackle glide approaches. It meant climbing to 2500ft above the runway and cutting the power.

First I trimmed for best glide speed, which in this case was 65kts. Then I went through a quick FMOST checklist, which in a real emergency, would hopefully diagnose and cure the problem. If this didn't help, it was time for a mayday call. I was taught that if I had a passenger on board, it would be a good idea to quickly brief them first before scaring them by calling for help on the radio. This meant explaining to my passenger that I was well practiced in forced landings, what to do when we landed and, above all, not to panic when I made the distress call. For me, it felt a lot like explaining a medical procedure.

"Now Steve, today we are going to remove this wart from your head. No need to worry. I've done this plenty of times."

The actual mayday call was fun too, I just had to make sure I didn't press the transmit button when practicing. Imagine the hullaballoo:

"Mayday, mayday, mayday. Jabiru 7265, 7265, 7265. Currently over the field at Port Pirie descending through 2000ft. Jabiru 160-D, engine failure. Conducting glide approach to runway one seven. 2 POB, will call when on ground."

The next part of the approach was to get to the low key point, 1500ft abeam the aim point. If I was too high turning final, two maneuvers were available: side slipping and s-turns.

Side slipping enables the aircraft to increase the vertical descent without altering pitch. The pilot of the Gimli glider (an Air Canada 767) famously used this technique in 1983. S-turns were slightly simpler. They involve making sweeping turns, losing more height for the distance travelled directly towards the runway. It's a technique used by space shuttle pilots.

I practiced both techniques over and over again. The Jabiru wasn't like a 767 or re-usable spacecraft, but I eventually learned how to guide it back to ground without propulsion.

I, too, ended the day with a big grin plastered to my face. Next: Steep turns, spirals and exams.

6th Catalina Festival Flying Bo

by Bill Hitchcock

A good gathering of recreational flying boats, led by Rohan Whittington, turned up for the 6th Catalina Festival at Rathmines on Lake Macquarie, near Newcastle.

Four Super Petrels, four Seareys and two Buccaneers participated in the traditional flypast as a salute to the Catalina crews who served at Rathmines RAAF Flying Boat Base in World War 2.

The flypast was done in a line astern configuration and was quite striking.

The HARS Catalina was on its first visit to Rathmines and 15,000 people turned out to see its arrival at the historic site. The huge crowd demonstrated that Rathmines really is the spiritual home of marine aviation in Australia.

Two Float Plane Cessnas were there. Judy Hodges in her Cessna 182 and Phil Dulhunty's 185 but, the big black Cat was the star of the show.

Tiger Moth formations, flown by the Luskintyre Aviator's Club and a Wirraway flyby, with warbird pilot Paul Bennet at the controls, was another highlight.

oats take off

Re

>> Main Photo
Bedson Resurgam Mk1

charging Our past

By Chris Conroy

An article in Sport Pilot late last year lamented the fact that, even though our movement has essentially reinvented light aviation over the past 30 years or so, we have lost contact with our roots, namely 95:10 and the freedoms we enjoyed back then.

It struck a chord with me so I called head office and volunteered to deliver a talk at Natfly on those memorable times. It also presented me with an opportunity to display my own projects and see if the market had any renewed interest in a locally designed traditional style composite aircraft, engineered specifically for our harsh conditions and which can be quickly and cost-effectively assembled from a kit. Friday afternoon at Temora and the hangar rapidly filled; the subject had obviously generated interest. I started with our history.

Back then

Because of the tyranny of distance, development of the ultralight movement in Australia took place in a number of centres. While there was some communication, they were virtually independent of each other but, surprisingly parallel to a large extent. The process was enlivened by a number of radical individuals who caused the more moderate of us considerable embarrassment.

Much of our building and flying was done without the umbrella of government oversight and, as a result, when the bureaucracy could no longer ignore it, it was decided legislation had to be written to cover an activity which was basically anarchic but was already so well established it could not be ignored.

The late Brian Creer and I spent several weeks writing submissions to Elaine Darling who headed up the House of Representatives Standing Committee on Transport Safety. Along with submissions from a number of other individuals, the authorities could see we were serious and responsible and respect for the movement began to grow within the government.

After the AUF was formed at Mangalore in the early 1980s we had an organisation with the corporate structure and credibility to represent the members in any matters relating to the government. Things looked very much better than previously, when we were constantly under the threat of visits from the police at whatever paddock from which we flew.

I largely avoided these vexations by building a float plane based on the Winton Jackaroo and flew it all over the waterways of South East Queensland and Northern N.S.W. for several years.

In South East Queensland we formed the Gold Coast Ultralight Flying Club, one of the first in the country. I served as its president for four years and was fortunate to participate in its rapid growth.

Australia led the US by a long way when it came to writing legislation. The early rules, such as a 300' ceiling and not flying over built up areas or sealed roads, were silly. But at least we avoided the problems faced in the US where fragile, foot launched powered hang gliders suffered catastrophic structural failures while temporarily airborne and broke many ankles and legs before an outbreak of common sense struck the FAA.

Recharging our past cont.

Early in 1985, I spent a couple of weeks at Oshkosh as the guest of Paul Poberezny, founder of the EAA. Along with Steve Whittman, John Monnet and others, we discussed the early days of the EAA in detail. Their advice as to the best ways to approach and relate to the government was invaluable.

We were not accepted with open arms by GA pilots, resentful of the comparative ease with which we could gain a certificate and fly. But the movement is now very popular with those GA pilots denied their licences on medical grounds but who can continue to economically fly our modern, reliable aircraft, many of which are more advanced than their GA counterparts, on our more liberal (and realistic) medical requirements.

We also had to contend with a hostile and sensationalist media which, in its studied ignorance of all things aviation, seized upon the slightest accident or problem and characterised us as irresponsible, suicidal maniacs who flew 'ultralight' aircraft and put the general public at risk of being killed in their thousands as we descended from the skies like a hailstorm.

This had great appeal to an equally ignorant and hostile general public who did everything in their power to deny us flying fields and stifle the movement. This has led to the lamentable elimination of the word "ultralight" from our identity.

Back to Temora

The consensus in the hangar was that because of the rapid growth of RA-Aus and the ever increasing amount of legislation covering our activities (the result of expanding membership and developments in aircraft technology), we have moved ever closer to General Aviation and risk losing touch with the basic philosophy of the movement - that of simple aircraft and freedom to fly under the uncomplicated rules of 95:10.

The consensus was that, with 95:10 still available, we should look at promoting and revitalising it.

This can be achieved in a number of ways. A committee within RA-Aus to promote and oversee it, a section within this magazine dedicated to it, renewed availability of plans or kits of some of the better early aircraft under the 51% rule, sourcing of suitable new or used

>> Wheeler Scout Mk111

>> Javelin

>> Labahn Hitchhiker

2 stroke engines, regional fly-ins dedicated to 95:10 and I'm sure there are many more options.

All we wanted to do in the early years was to get our bums off the ground. A cross country of 100nm was almost unthinkable because of fuel capacity, weather, hypothermia and snail-like speeds. We just wanted to fly and this we did, even if it was almost always in sight of our departure point.

With the advent of modern, high performance ready-to-fly aircraft, the skills that go with building an aircraft, along with the enormous satisfaction of achieving flight in a machine of your own creation, are being lost. 95:10 can once again provide people with these benefits and preserve the skill base.

The birth of our movement was an epiphany for me, enabling me to realise an ambition I thought was beyond my reach and greatly enhancing my quality of life.

I have watched and participated in the growth of our movement with a combination of delight and despair, seeing what to me was an ideal circumstance progressively stifled by rules and regulations. It has done a far better job of providing modern, safe, high performance aircraft and bringing flying within the reach of many thousands of people who had been denied it.

We had no radio in 1956, our airfield movements were dictated by red or green lights aimed at us from the tower. Our cross countries, even the solo one during training, were navigated by dead reckoning and we had no communication with the ground or other aircraft for the duration of the flight. We avoided collision by the 'see and be seen' principle and I have no recollection of problems caused by our lack of these modern facilities.

95:10 is very similar in its dynamics to those early years and would operate happily and quite safely under that system. I can see no reason to complicate it.

Many younger people have now joined the movement, most of whom would be either ignorant of, or have no interest in the beginnings, but we should make sure that the early days are not forgotten.

Tradition is integral to a healthy society and the reinvention of 95:10 can form the basis of this and provide the movement as a whole with an invaluable asset.

Do you agree with Chris? Email editor@sportpilot.net.au with your opinion on how we can keep 95.10 alive.

PILOT TALK

Zane Tully & Jill Bailey
RA-Aus Operations team

RECENTLY, while flying home from an airshow and monitoring both the local CTAF and the area frequency (thanks to the wonders of modern radio), I heard a Mayday call from a pilot whose aircraft's engine had stopped.

It is amazing how, even though you are not directly involved, your heart begins racing while your attention becomes very focused on listening for a positive outcome. Fortunately, in this instance the pilot was able to restart the engine and subsequently advised ATS that they no longer intended to make an emergency landing and did not require further assistance. This was the correct course of action in this circumstance. But what happens next - is this a reportable matter?

Yes. Good clear communication is the key. ATS will have tracked the pilot's progress where possible and may have requested the pilot phone them when safely on the ground. An incident report is required to be sent to RA-Aus within 72hrs. RA-Aus uses the data from incident reports to identify any trends which may impact on safety. Reports are also used to ensure clear lines of communication are established between us and other organisations on the types of incidents and accidents that are occurring.

We can assure all pilots that ATS and Rescue Coordination Centre (RCC formally AUSSAR) would rather have received the Mayday call and subsequent cancellation, than have to institute an alert Search and Rescue (SAR) phase. With no information to go on, SAR must potentially search a wide area for a missing aircraft which could take quite some time. Having clear details of the flight from the pilot will always improve the response time. Pilots should never think they are being a hindrance nor should pilots back away from communicating because of embarrassment or fear of the potential cost. SAR is a service to the community and rarely is a pilot requested to pay for its activation (fraudulent use of the service would probably need to be proven).

Some believe Mayday and Pan calls should be avoided. After all, if the situation resolves itself and no further action is required, they haven't made a nuisance of themselves. But this may not result in the best outcomes. Furthermore, this is definitely NOT the stance taken by ATS, RCC or any other emergency service. Under their duty of care, SAR is required to respond to any situation which potentially places people at harm.

Pilots are taught to aviate, navigate and then communicate. Establish the aircraft at its best glide speed, adopt a safe profile to land into an appropriate landing area and then prioritise trouble checks and communications with consideration of height and time available. As pilots are aware, VHF radio works best on line of sight, so leaving the emergency call until too late can limit the chance of being heard and responded to. While radio calls are last on the priority list, they are still a very important component of a forced landing.

In the past, there were forced landings conducted without emergency calls which saw an equal number of successful outlandings. But in this modern age, technology has made communication easier and quicker. With the number of people owning mobile phones these days, a report can by quickly and easily relayed to the police or other emergency service if something 'does not look quite right' (like an aeroplane landing in an area not designated as a runway).

Given that the emergency services are required to respond in accordance with their duty of care; their tenacity to ensure there is no imminent danger to a pilot or their passenger has bewildered and confused some members.

The tenacity of the SAR teams is important to ensure every possible scenario has been assessed and the risk mitigated. This apparent doggedness by the SAR personnel is not intended to cause the pilot frustration after having conducted a successful forced landing, but is designed to ensure safety. Here are some examples to ponder.

Mayday, Mayday, Mayday!

• A pilot attempted to cancel the SAR prior to touching down. ATS declined the cancellation of the SAR until the pilot had contacted them by telephone from the ground;

• A pilot, experiencing an engine failure, made a mayday call and ATS alerted a helicopter rescue team to assist. The pilot landed successfully and contacted both the ATS and RCC to cancel the requirement for assistance. The SAR was called off and the helicopter returned to its base. The pilot, who was familiar with the aircraft, identified the problem and fixed it. Having selected a decent sized paddock, the pilot attempted to takeoff. The long grass stubble affected the aircraft's takeoff roll and it clipped a tree on climb out. The aircraft tumbled to the ground leaving the pilot unconscious and bleeding. The pilot was not expected home until dinner time;

• A pilot, whose aircraft engine failed, successfully landed on a farmer's paddock, a long way from civilization. The pilot had not made a mayday call but, once on the ground, used his mobile phone to call a family member to inform them he was OK. The family member then drove out to pick up the pilot. The next morning, a local driving along a road in the vicinity of the farmer's paddock, noticed the wrecked aeroplane. The local immediately called the police and a full scale SAR was initiated;

• A pilot noticed an engine temperature gauge indicating a potential problem, and conducted a precautionary landing. He landed successfully but had not made a Pan call and was stunned a short time later to see a rescue helicopter arrive overhead. The helicopter was dispatched after a call from a local who knew that aeroplanes were not permitted to land where this pilot had. Given there had been no communication from the pilot, the rescue services were required to respond. In this instance, a simple Pan call by the pilot advising ATS he had a problem, then cancellation of the alert once safely on the ground, would have saved significant time and resources.

Hopefully, it is glaringly obvious that clear communication is the key. ATS is there to assist, and can provide significant help to pilots in such situations. It is far better to communicate and let a suitable authority know there is a potential problem, than possibly create a bigger problem when an aircraft is reported overdue.

This also leads to a further item to consider, the notification of a SAR time with a suitably responsible person. As CFI, I would often be contacted by pilots who intended to undertake a cross country flight, asking if I would act as the pilot's SAR watch. If a partner or close friend holds a pilot's flight note, do they know who to contact and what phone number to use if the pilot becomes overdue? Do they know the aircraft call sign, colour and where the pilot planned to fly? Do they know if the pilot has an EPIRB or PLB, or do they even know what these things are? Do they know that they can call RA-Aus Operations? By the way, save this number in your phone now! RCC 1800 815 257.

Natfly

While Natfly is still a number of months away, preliminary planning and scheduling are already underway. The Natfly team is very focused on ensuring the areas which have caused concern in the past are resolved. The trade display area, aircraft judging and parking and other displays have been re-arranged to try and reduce the walking distance and we intend to hold a smaller number of forums in closer locations to reduce walking distances. The courtesy train, affectionately known as Thomas the Tank Engine, is undergoing a full overhaul to ensure he doesn't run out of puff and we intend to have several shuttles operating. Keep reading the magazine for updates and remember to check the Natfly website www.natfly.com.au for more information. It is constantly being updated.

Operations would like to take this opportunity to wish you all a safe holiday season and a prosperous new year.

Flight instructor's forum

Facilitated by the aviation guru - Professor Avius

Forcing the issue

This month's article is the final instalment of a trilogy covering tips and hints for briefing students on the topic of the four forces of flight. In the context of briefings, this topic is usually introduced during the second, long briefing associated with straight and level flight.

When endeavouring to explain to students the finer details of the four forces of flight, it is of utmost importance to clarify the differences between forces and the cumulative effects of each.

This month we'll take a closer look at the forces Thrust and Weight, as well as putting it all together with the topics already covered, being Lift and Drag.

The terms associated with the force of Thrust are often confused and at times explained incorrectly. It's important to have students gain a thorough and clear understanding of associated words, terms and definitions from the start.

Thrust is a generated force.

'A fixed wing aircraft generates forward thrust when air is pushed in the direction opposite to flight'. In light sports and piston engine aircraft thrust force is generated by the spinning blades of a propeller.

The propeller blade can be re seen as an aerofoil. The back of the propeller, from where you sit in the aircraft, is cambered much the same way as a cambered wing.

For the rotating propeller the total action acting on the blade is broken into two components;

Propeller torque: acts parallel to the plane of rotation of the propeller and in the opposite direction of rotation;

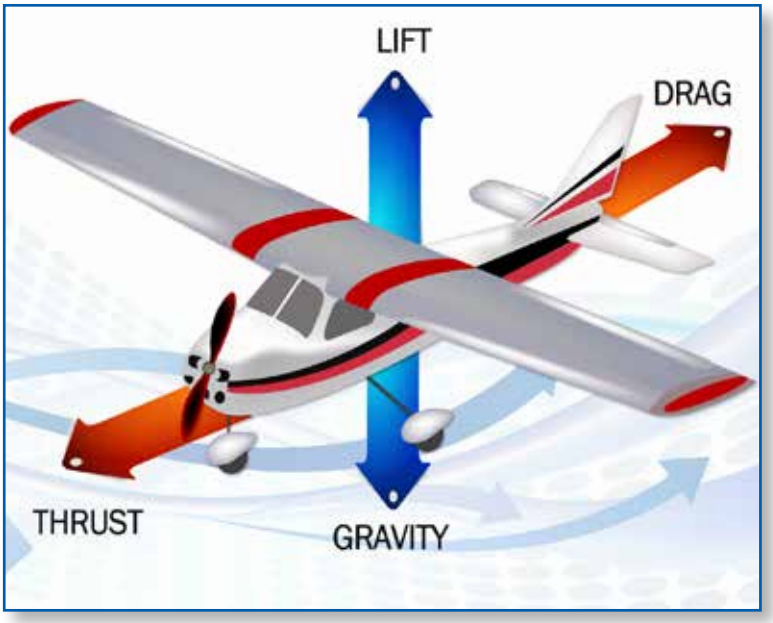
Thrust acts forwards and at right angles to the plane of rotation;

Helix angle, also known as angle of advance or pitch angle. It is the angle between the plane of rotation and the blade's resultant velocity.

The pitch of the propeller is the distance it will move forward during one complete revolution of the propeller. Planes have either a fixed pitch or variable pitch propeller.

A fixed pitch propeller can be at its most efficient at one combination of RPM and airspeed.

In aircraft with a variable pitch propeller, the blade angle and therefore the velocity of the propeller blade through the air can be altered, using a constant speed unit.



This propeller can be adjusted to its most efficient angle of attack over a large range of airspeeds and RPM.

Thrust is often explained incorrectly as power. The engine delivers power to the propeller. The quantity of power delivered is basically dependent upon the throttle setting, up to the maximum output at which the engine is rated.

Technically speaking power 'is the force it takes to move an object over a distance divided by the time it takes to move that distance; ie P = F d/t'.

The fourth force is weight.

Weight includes passengers, the aircraft, baggage and fuel. Weight can therefore be seen to vary throughout the flight (eg as fuel is used). Weight acts through the Centre of Gravity – C of G (where as lift acts through the Centre of Pressure – C of P)

It is important to present to the students the fact the opposing forces thrust and drag and lift and weight work through couplings: Another concept that instructor needs to place emphasise on is that of the tailplane.

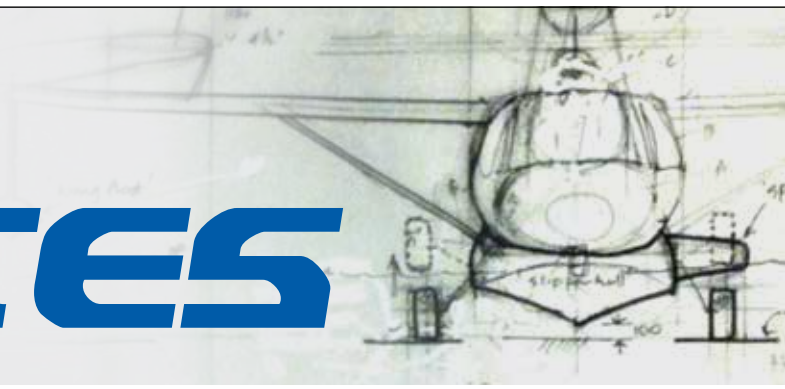
In an ideal world, the four forces, lift/weight,thrust/drag would be always in balance. But with the changing position of C of P and C of G this is not so. To supply variable balance inputs, the tailplane has been introduced. This lifting tailplane (regardless of the direction of lift) can be called upon to supply more or less continuous balancing forces, either upward or downward.

As an instructor, it is important you extend your knowledge on these concepts, terms and definitions. There are many expensive and educational texts books available, but a great source of readily available information can be found on the RA-Aus website. John Brandon's "Fly Safe!" tutorials provide an excellent source of thorough, comprehensive and valuable information for expanding one's knowledge on the intricacies of flight theory. Take the time to have a read.

References: **Wikipedia/thrust.**
Principles of Flight for Commercial Pilots – RE.Birch
www.nasa/thrust/propellers
CPL Aerodynamics Bob Tait Issue 1 April 2002

Email contributions to guruavius@gmail.com or editor@sportpilot.net.au

PILOT NOTES



Tecnam P92S Echo

Conditions: Light wind, nil turbulence.

On a training flight with a student and instructor on board, a simulated engine failure after take-off (EFATO) was initiated at approximately 300ft. AGL. Insufficient speed was maintained during the recovery and the aircraft touched down heavily in a level attitude before becoming airborne again.Full power was applied and the aircraft climbed away but a departing aircraft advised that the nose wheel had become detached. The aircraft was subsequently landed on a grass runway with no further damage and the crew exited uninjured.

Jabiru LSA

Engine: Jabiru 2200, 186hrs ttis.

While the aircraft was at a height of approximately 150ft. AGL on a forced landing exercise, the engine began to run roughly and then failed.During the rollout after landing, the aircraft entered the overrun area and the nose wheel collapsed, causing further damage to the propeller and cowl.

The engine was started after the accident and ran normally, so the reporter believes carburettor ice was probably the cause of the power loss.

Sirius TL3000

Conditions: Light wind, nil turbulence.
Pilot experience: 101hrs, all on type.

As the aircraft touched down, brakes were applied but the left brake was ineffective and the aircraft ran off the runway and into a paddock where it struck a mound of soil. The nose gear was bent and the left main wheel gear failed and broke away from the airframe allowing the left wingtip to contact the ground. The pilot was not injured.

Tecnam Bravo

Conditions: Moderate turbulence.

The aircraft was parked outside a hangar while the pilot went to open the doors. A sudden unexpected wind gust lifted the aircraft, causing the right wing tip and tail to contact the ground with enough force to cause considerable damage.

The lower surface of the right hand aileron and wingtip were scuffed and the outer top wing skin was rippled with possible deformation of a wing rib.

Karato J6-8

Engine: Subaru EA 81, 389hrs ttis.

The aircraft had descended to approximately 500ft. AGL and the fuel pump had been switched on, when the engine lost power. The pilot changed fuel tanks and cycled the fuel pump switch but the engine would not produce enough power to maintain flight. During the ensuing forced landing, the aircraft stalled at about 4m above the ground and landed heavily, breaking off the landing gear and sliding a short distance before coming to rest inverted.

The pilot was not injured but the passenger sustained moderate facial injuries.

Aeroprakt Foxbat A22LS

Conditions: Light wind, nil turbulence.
Pilot experience: 199hrs, 23 on type.

The pilot was practicing circuits on a grass strip and had carried out four successful landings. On the fifth landing, the brakes locked and the aircraft began to skid. Repeated attempts to slow the aircraft resulted in further skidding and, after running through a fence, it came to rest in a small ditch with damage to the nose wheel leg, propeller, spinner and the left wing. The pilot was not injured.

Pioneer 300

Pilot experience: 15000hrs, 3 on type.

After landing, the aircraft smoothly on a grass strip the pilot was taxying while checking the strip surface and also looking out for livestock. He went to raise the flaps but inadvertently actuated the undercarriage switch and the wheels retracted.

The aircraft sustained damage to its propeller, nose leg actuator rod and nose wheel well cover, but was otherwise undamaged.

Flight Design CT-SW

Conditions: Light wind, nil turbulence.
Pilot experience: 5000hrs. plus.

The aircraft was being landed with full flap and touched down firmly on its left main wheel in a side slipping attitude. It then bounced and touched down on the nose wheel before slowing down.

An inspection did not discover any obvious faults but both the left main wheel and nose wheel tyres later deflated due to cuts in the sidewalls.

Zenith CH 701

Conditions: Light wind, nil turbulence.
Pilot experience: 214hrs, 145 on type.

The pilot was practicing take-offs and landings on a grass strip. As he was about to touch down, he realised he was going to hit a runway light. He applied power but was unable to prevent the aircraft landing heavily at a slight angle to the strip. The aircraft bounced and then landed on the front wheel and the nose gear collapsed, allowing the propeller to strike the ground. The left and right wing tips then struck the ground and the aircraft came to rest on its nose with further damage to the propeller, wings, cowling and spinner. The pilot was not injured.

Jabiru J170 D

Pilot experience: 16hrs, all on type.
Conditions: Light wind, nil turbulence.

A student pilot was on his third session of solo circuits. On the last landing the aircraft began to bounce and the propeller contacted the runway. The propeller and nose wheel spat were considerably damaged.

Aircraft de-identified

Pilot experience 130hrs, half on type.

The pilot's departure for the long flight home from an airshow was delayed. While hurriedly refuelling for the last leg he forgot to change charts in the cockpit. A half-hour into the 90 minute leg, he realised he had badly miscalculated last light. With a dirty screen, turning back into the sunset was not considered wise, so an alternate airport was required. ERSA had slipped out of reach and the wrong chart was on the map table, however the pilot used an additional electronic resource in the cockpit, which is not intended to be used as a primary source of navigation, but which provided the pilot with an alternate. The dusk landing was successful at this previously unknown airport. Rushing, very poor flight planning and preparation could easily have led to disaster. His wife was following his progress on Instamapper and was quite worried.

Operations Note: *Obviously this is a perfect example of the 6P principle, however a cool head and clear thinking averted a potentially disastrous landing after last light. Pilots should plan alternates, ensure cockpits are organised and remember if you are rushing....you are in danger.*

members' market

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Isa 2200, engine time 100 hrs, total 1380, normal dash transponder, icom radio, absolutely a pleasure to fly, E-mail dippy-dave@hotmail.com or call 0403 871 451, located Byron Bay NSW $35,000 includes GST

3090 SUIT NEW BUYER

53 hours, top of the line Airborne XT 912 SST. Ex factory January 2010, SST wing, Disk Brakes, Tundra Wheels, High windscreen, SKY DAT G2X avionics, Training Bars, Log Books. Microair M760 radio dual channel monitoring, 2 x Icaro helmets, 2 x Lynx head sets, pilot/passenger intercom, dust covers, engine cowl, wing bag. Rotax 912 engine, carby heating, electric start, Bolly prop. CASA approved and tested to 6G +ve and 3G –ve. Always hangered, checked over by Airborne, now stored at their factory. Price $55,000. Frank 0439 496 562

3093 EVEKTOR SPORTSTAR MAX

New Dec 2009, 360 hours, Excellent Condition, always hangared, Rotax 912ULS, In flight adjustable prop, leather seats, Dynon D100, Landing Light, Garmin GPS Mount, Icom Radio, Mode C Transponder, Additional vents, toe brakes, 115Kts TAS, superb aircraft to fly. L2 maintained. Brisbane. $118,000 offers Ph: 0421 278 580

3095 SONERAI 11L

For sale $40,000.00 or swap for lightwing, kitfox, Gazelle or similar price ads.
Phone 0400 594 886

3098 TECNAM BRAVO P2004

Serial No. 069 ,TT171 hours - one owner. Rotax 912ULS engine 100hp, TAS 115-120kts at 19LPH, 100 litres Premium unleaded or Avgas. As new condition - 2 place all metal aircraft. Has been GA registered - now RAAus registered. Fully maintained by qualified LAME with all log books Nil damage history. Airmaster constant speed unit, Variable pitch propeller, Fuel flow meter, Vacuum Pump, Artificial Horizon, Turn Co-ordinator, Altimeter, Air Speed Indicator, Vertical Speed Indicator, Compass & Directional Gyro, King Transponder Mode C. Intercom, King VHF Radio, XCOM VHF Radio, Strobes & Nav Lights, 406 MHz EPIRB distress beacon, AVmap EKPIV large screen colour GPS. Cost $125,000 (no GST applicable)
Phone: 0428 878 505

3099 PACIFIC HAVEN AIRPARK

Own a share in a 3000ft. Bitumen runway with pal lighting @ bitumen taxiways. Near hervey bay. 3 Bedroom house with 15x14 metre hangar. On 2.5 Acres, established gardens and lawn with friut trees. 2 Dams, 2 tanks. No body corp. Fees. For enquires phone 07 4129 0651. or donlee@ y7mail .com

3100 ESQUAL-VM-1

Reg. 19-4744. F/glass kit, built by experienced builder to 544kg MTOW. Only 94 hrs.eng.,fuz, Rotax 912 100 hp.Cruise 115 Kt.18 Lt/hr Glass C/pit. Dynon EMS & EFIS.Const/spd or Inflt.adjust.prop. Garmin SL40 radio & 296 GPS.2 Dav/Clark H/sets. 3 strobes,2 Land/lts. Constantly hangared. Best offer over $60,000(no GST) as other hobbies pending. Phone 03 5241 2002 or 0410 524 129

3102 LIGHTNING AIRCRAFT

Choice of two 1. 19 Registered - Dynon glass cockpit and auto pilot - lowrance 2000c colour gps garmin VHF radio and garmin T/ponder. Jabiru 3300 engine. 2. LSA Registered - GRT glass cockpit and auto pilot - garmin VHF radio and garmin T/ponder - garmin 695 colour GPS. Jabiru 3300 engine. $120,000 (negotiable)
Dennis Brorchardt 0408 813 501
Goolwa Airport SA.

3103 ZENAIR CH 701

912 80hp 850Hours tt. Retractable slats, stol wings. Tundra tyres, micro air radio, fuel flow meter and all other appropriate gauges. Magellan GPS, Powerfin 3 blade propeller, electric trim, 80 Litres fuel. Hangared Bundaberg. $35,000.00 ono
Phone 0414 535 232 or
email kroozin@optusnet.com.au.

3108 SAVANNAH

Rotax 912 - 100hp, XCOM radio/intercom, 300 hours engine and airframe. Always hangered, MOGAS used 95%, regular servicing by LAME. Fuel flow meter. $52,000 ONO, 0417 141 542

3109 X AIR

TT 135 hrs, rotax blue head 582, micro air avionics XCOM intercom, sky dart. G x 1 panel, cummins spinner, lexon doors. Spats exl-condition. $22,000 ono, hangared wentworth. Ph Geoff 0448 001 825.

3115 DTA VOYAGEUR II

If you are looking for comfort from a trike, then you have found it. The DTA Voyageur II is overflowing with features to make you and you passenger as comfortable as possible whilst airborne. The 100hp Rotax 912 delivers over 6000 rpm when you need it most. The aircraft comes with full carbon fibre faring and wheel spats, 2 XXL side carry bags and one under seat pilot bag. Full travel bag for the wing. $53,000 including a Garmin Pilot II GPS system. Contact Tim 0417 217 806 or view full ad at moore-pictures.com

3117 2004 EVEKTOR SPORTSTAR

Reg 24-4399 certified for 12000 hrs TT 3300Hrs, Rotax 912ULS TT920 hrs. Three blade wood comp prop. Standard instrument pack plus Bendix radio, Transponder mode A and C, Tru track GPS and horizon. Always hangared, level 2 maintained. $65,000. John 0412 965 407

3125 BRUMBY LOW WING J600

(Experimental) Jabiru 3300 engine. TTSN 100hrs. Standard Instrumentation. Call Paul 0414 677 971 or 02 6341 1635

3126 EUROPA XS CLASSIC

Rotax 912s engine Airmaster constant speed propeller. Endurance 3 hours 2 adults and luggage. 1700 hrs to next major engine overhaul. Excellent condition only 260 hours, 130 knot cruise. Extra avionics, GPS included and custom built trailer. Offers around $80,000. Contact David King on 0429 042 740 or 02 4421 2721

3129 EUROPA ES KIT

60% complete. Tricycle undercarriage conversion kit included, some instruments included - ALT, ASI Icon radio and other. Offers around $30,000. Contact David King 0429 042 740 or 02 4421 2721 (home)

3130 JABIRU SK

TT 214hrs, 2200 engine overhauled by Jabiru at 140hrs. New prop, good panel, includes VSI, DG& EGT. Icom radio, Garmin GPS III Pilot, 2 headsets, strobe, custom stripes. Wheel spats, always kept in hangar. Located Bunbury WA, $36,000 ono. Hangar also for sale $20,000. Ph Greg 08 9586 3964 or 0408 746 391.

3132 2007 FLY SYNTHESIS

2007 Fly Synthesis storch S rotax 912UL 80hp, 340hrs always hangered and serviced, 100kts cruise, stalls 35kts, electric flaps, UHF, VHF, headsets, can fly with doors off. Good allrounder, $65,000 Phone 0428 589 516

3136 FOXBAT A-22L

24-4621, Excellent condition, 660hrs, std instruments, X-com radio, transponder, Garmin 296GPS, Fuel Flow, auto pilot, BRS chute. New tyres, doors. Hangared Mittagong. $67,400 Phone Victor 0400 505 451

3138 FLIGHTSTAR IISC

Must sell brand new, never flown Flightstar IISC, put together with excellent attention to detail. Willing to part with it for cost of kit from the USA. Plane has been completed with a fully enclosed cabin, dual controls, custom carpet interior, Falcon instruments, in-flight trim, brakes and mylar coverings. Plane does not have engine but can be fitted with one of buyer's choice or sold as is. Phone 0412 506 242

3143 TITAN TORNADO 2

2 seat, Rotax 912 UL, Tundra tires , Matco disc brakes (inc.small wheels spare legs and spats) radio, intercom,headsets ,EIS engine monitor. 296 hours $27,000 0428 216 754

3148 JABIRU J160-C J170 & J230

Factory Built Dynon D100 EFIS, D10 EMS,Avmap GPS, 2 x TSO Radios and Transponder, Electric Turn and Bank, Dual Control,Adjustable rudder pedals, Cabin Heater, Long Range Fuel Tanks, Seat Cushions, CarpetFloor Mats, Weather Cover, LAME Maintained, Approx 800 hours total, Latest modstatus including door gutters fitted and external power support plugs installed. Phone Graeme 0414 379 818
E: admin@leaseair.com.au

3151 XT912 TRIKE

80hp 4 stroke rotax, Streak 3 wing, ballistic parachute, Lynx headset and helmets, microair indash radio, training bars, wing bag and covers, full log books and rego, just serviced new battery/ stone guard/tyres TTIS 480hrs $32,000 Ipswich QLD Phone 0425 000 785

3152 JABIRU J230

May 2011 Factory built Jabiru 230. Always hangared, professionally maintained and serviced every 25 hours. Nil accidents. Complete with, Booster seat, large instrument panel, Dynon EFIS D100, AvMap EKPIV, ICOM radio, transponder, Garmin GTX327A, keyed master switch, snap air vent 3 1/4 and 2 landing lights. Has done 145 hours, in excellent as new condition and still under factory warranty. For sale at $95,000, originally purchased for $111,000. For enquiries please contact Jeff on 0418 335 839

3153 2007 AIRBORNE XT

912 tourer, streak 3 wing. TT 635 hours, M760
Microair dual comms radio, 2 helmets, freezer suit. Excellend condition, logbook, manuals, registered to 27/09/2013. Lots of extras $40,000 Phone 0429 619 987

3154 JABIRU J230

3300 Rego 24-7370. Factory Built Dec 09 TT275Hrs
All engine mods and AD current
Factory Option 6 Panel. Dynon 180 EFIS Garmin 495, Microair Radio and Transponder
Led Navigation and Strobe Lights. Always kept in Hanger Nil damage. Full window covers included.
Would suit a new buyer. $88,000 ono.
Phone David on 0407 008 896 or
Email davifg@fnoc.com.au

3155 SONNEX AND RV3 KIT

Ser n 0025, reg 19-4657, first flight 15/02/07, based at Gympie, ttis 96hrs, jab 2.2, garmin 296, $38,000

ono. Also rv3 kit, arrived 16/4/12, tail fin & elev built, wings built, came built from factory $24,000. Phone Rob 0417 833 648

3156 JABIRU J160

TT 553 Excellent Condition. Factory assist built, Reconditioned heads, barrels and new rings at 405hrs. Nil accidents. Always hangared. Garmin 296 GPS. Microair mode C transponder. 2 David Clark headsets. Xcom 760 radio & intercom. Grand Rapids Engine Management System. L2 maintained. $57,500. 0419 654 048. For more details see: http://athertonairport.com.au/atherton/forsale/J160

3158 10-3025 KARAONE

Reluctant sale due to ill health, Rotax 503 two stroke electric start. Single seat, GPS, Icom Radio. Hangered at Narrogin Western Australia. Good condition. $15,000.00 ono. For more information phone 08 9419 3408

3159 LIGHTWING GR912S

T/Dragger, 260hrs TT, Rotax 912's 100hp, 3 blade Brogla prop,Microair VHF radio & Mode C Transponder, bubble doors with large entry. Long range fuel tank, strobe lights, electric turn coordinator. Contact Gareth Lloyd on 0402 845 244 or Email: blue_sky@live.com.au

3160 JABIRU LSA 55-3705

Factory built, good condition, always hangared. LAME maintained, TTAF ~2600hrs, TTE 18hrs brand new hydraulic lifter engine (not recon, brand new). Microair VHF & transponder. Spare propeller.All new control cables, main gear, tires, J120 brakes. $35,000. Located YBUD contact FlyBondy@exemail.com.au 0420 750 710 or 0434 082 023

3161 SV12 ONE SEATER

250cc Robin Engine in good condition. $8500.00 ONO, phone for all info. 0412 413 046

3162 X-AIR

Unfinished project, 95% complete, Jabiru engine, all instruments. $18,000, blyarrow@bigpond.com or 07 3409 8421

3163 KR-2SX

(extended) W/S 26' 6" length 18' 6" hor.stab 8',steerable nose wheel, Matco Hyd.brakes& wheels+ p/brake ,Subaru EA81 Stratus type conv,dual bing carbs, dual spark,Amax PSRU,3 blade 68"warp drive grnd adj prop,3 fuel tanks 70ltr, Mgl Flight 2 primary flight inst,T30 digtacho,egt,oil psi,coolant temp,bat. volts, 3 fuel gauges,fuel flo,skid ball,elect flaps&elev. trim,compass,ameter,King KX 175Bcom/navspare engine,parts& manuals!! $28,000 ONO Phone Harry 02 4997 1500

3164 J200-6CYL

Still the best Jab around. Only 290TT TAS 125kts, 19.5lts, one owner pilot, nil accidents. Multi adwarded, best Jab Narromine, SAAA best homebuilt Cowra, best home built Jabiru factory award, multi adwarded peoples choices. The aircraft has been hangared since new and full service history. Tim 0468 345 972 pics at drifter11742@matilda.net.au

3165 RANS S1

2 seats side by side, Rotax 582 100 hrs, 70 kts cruise, 70 lts fuel. 3 stage flaps, disc brakes, pitch trim, electronic engine information with warning. Usual instruments, easy to land with steerable nosewheel and a delight to fly. Nice plane at a nice price. $26,500 Phone 0447 975 433.

3166 SKYRANGER SWIFT 19-5001

Built 2008, 170 hrs TT. Rotax 912S, 100hp 1810h, new sprag clutch and housing at 1800h by Floods. Xlam skins, 58L aluminium tanks, Powerfin prop, standard panel with Icom radio, new mains tyres, new battery. Good condition, located Melbourne area. $34,000 Chrisoz@gmx.net or 0418 493 989

3167 STING S 4

2011 immaculate condition, only 30 hours TT, Rotax 912. Ground Adj prop, Dynon EFIS-D6, BRS (parachute) full carbon fibre, new design. Cruise 135kt, 120L fuel more than 6 hours flying, LSA 600kg,very comfortable birds eye view. POA contact Vic from Sport & Recreational Aviation Australia Pty Ltd. M: 0408 227 269 or email vic.sraa@gmail.com

3168 AIRBORNE XT 912 OUTBACK

Reg 32-4980 302 hrs Comms and radio, helmets, rear ½ spats, spare Bolly prop blade, Silva compass. Always hangared. Maintained by Level 2. Very good condition. $35,000 ONO MUST SELL Phone Gordon 0419 942 645 (Western Australia)

Deadline for articles and advertising for the February edition will be Janary 7, 2013

3169 **LIGHTWING GR**

912sNose wheeled, 550hrs TT, Rotax 912s 100hp, Flaps, Icom A200 VHF radio, electric turn coordinator, GPS (basic non aviation type, large screen), 3 blade Brolga prop. Contact Gareth Lloyd on 0402 845 244

3170 **RANS S4**

Good Condition T15. 345h. 50 hours since top o/haul. All log books and factory construction manual. Trailer included, will deliver. $9,900. Contact Darrell (03) 57 65 2126.

3171 **JABIRU 230D**

Factory pick up May 2011 , air frame 31hrs, Engine 31hrs, L2 Maintenance, UHF and VHF radio's,Garmin 296 colour GPS, Fuel flow meter. Analogue instruments, Transponder, Window vents , Fin strobe and nav lights, Headsets, Jump start external socket and leads. Outside temp gauge, Always hangared, As new, still under factory warranties. Suit new buyer and Nil accidents. Contact Roger Davies (08)9963 6516, mob 0417 184 329, email maranalgo@bigpond.com. Price $92,000 ono

3172 **PEGASUS TRIKE**

32-3908 - X1-Q is 2 place microlight. Has 347 TT on Rotax 462 engine and airframe - registered to May 2013. Trike in very good condition and always hangared. Helmets intercom and base covers with sale. Full history of maintenance. $8,000.00 Phone Ben on 0417 262 330. For pics bennyd@live.com.au

3173 **SPACEWALKER**

Plans and parts wanted.
Contact dhardie@pacific.net.au

3174 **QUAD-CITY CHALLENGER II**

19-3391. 503 Rotex Eng & Air Frame 229hrs, Radio, Headsets, Intercom nice to fly. Tennessee Prop recently reconditioned fibre-glassed and static balanced. Currently stored in Garage (No Hanger available) Priced to sell need garage back. $13,000ono Phone 0429 995 649

3175 **JABIRU J230-D**

Nov 2010, this beautiful aircraft has flown 140 hours around outback NSW and is currently hangared in Alice Springs. Fitted with Leather seats, amazing red upholstery, Dynon Skyview 10" (with pocketfms GPS mapping), radio and transponder, strobe and landing light. Has been serviced every 25 hours with LAME service at 50 and 100 hours. Will deliver to purchaser anywhere in Australia. Asking price $115,000 ono. Call Bill Palmer 0427 392 059

3176 **STORM 300 SPECIAL**

Level 2 owned and maintained. 912S 100hp Rotax 780 hours. In flight adjust prop - King KT79 transponder, duel VHF radios - Icom 200 and Delcom 960 - Aerocom III intercom, Lightspeed ANR headsets - cabin heat - AH (Vac) Garmin 196 GPS, compass Gauges - Manifold pressure, ASI, ALT, Vertical speed, clock, volt, CHT, RPM, fuel, oil temp and pressure with audible and visual alarms $65,000 no GST for quick sale 0419 348 288 or pbugg@onthenet.com.au

3177 **SEAREY AMPHIBIAN**

TT 320 hrs. Rotax 912 100hp. Major $52K rebuild by LAMES just completed. Excellent condition. Full covers. Always hangared.Bendix-King com and Tx. Registered VH Exp. Probably RAA registerable under 19-XXXXX $77,0000 Phone 0419 424 127

3178 **JABIRU J120 24-7002**

Factory built in December 2008. 400 hour service just completed, hydraulic lifter engine, all AD's complied with. Extras include, 6 inch wheels, cabin heater, transponder, VSI.. A great first aeroplane.. Hangared Northam WA. . Will relocate for buyer if required.Asking Price $45,000 ONO. Contact Steve on 0428 864 831

3179 AIRBORNE EDGE EXECUTIVE 582

TT 364hr. One owner, Full service history. Excellent condition. ICOM VHF radio, Raptor headsets (2), intercom. Saddle bags (2), stone net, pod storage bag, Full trike covers, Wing cover, IVO prop, strobe light, Full instruments, Altimeter, Hour meter, Tacho, Vertical airspeed, Clock, Fuel Gauge, Dual EGT, Water temp. Good entry level trike $13,900 Ph Ian (03) 9762 1364.

3180 SKYFOX GAZELLE

24- 4131 Factory built. Rotax 912 80hp. Hyd toe brakes ASI, VSI, Alt, T&B Co-ord, pitch and roll, full engine gauges ICOM VHF, UHF, intercom, 2 x Dave Clark Headsets, Garmin GPS. All Ad's done. Recent 100hrly. Hangared at Heckfield, Jacobs Well Qld. $23,750 Phone 0409 968 421

3181 SKYFOX GAZELLE

One third share Skyfox Gazelle located at Caloundra. Price $10,000. Contact Peter phone 0429 144 991

3182 SIERRA 100 JAB 2.2A (NEW)

Thompson Prop. Matco toe brakes, Icom 210 V.H.F all inst. Test hrs only exp, builder (4) cost $50K must sell. Make an offer. Gawler S.A 08 8522 2505

3183 BENSEN GYRO PARTS FOR SALE

1835 HAPI VW Low hours engine, wunderlich prerotator Troyer prop. Needs a few minor parts to complete. All or no deal. $4,000.00 OBO Contact John eca1@dodo.com.au 07 5423 0452

3184 GYROCOPTER

$15,000 has spare blades rebuilt 2ltr+ engine has purpose built trailer ph. 0408 612 621

3185 THRUSTER 2 SEAT

AF 475 hrs TT,582 Rotax 250 hrs. Aircraft was rebuilt by Brisbane Valley Leisure Centre in 1998. Near new wing skins, new tyres, good condition, always hangared.
Cruise 55 kts, usual instruments, headsets, intercom, radio (transmission distances need improvement). Very cheap two seat flying $12,000 ONO. Phone 02 6847 2733

3186 XAIR HANUMAN ULTRALIGHT

¼ share available. Great plane. Cruise 80kt, fuel 16lph, low monthly and hourly costs. Located Lethbridge YLED. Overhauled Jab 2.2 powered. 4 hours duration. Good condition. Cost $8000 ono. Phone 0403 228 986.

3187 SKY FOX GAZELLE CA25N

24-3569 Lame maintained, 80HP Rotax powered, Bolly 3 Bladed Propeller, Folding Wings, GPS factory fitted, flys well, 1919 hours, all ADs up to date. Hangared at Tyabb, VIC. $33,000 contact Roger 0419 891 431.

3188 PIETENPOL AIR CAMPER

Beautifully kept and maintained by very proud owner. Rolls Royce Continental C85 (330hrs since overhaul) Unfortunate and very reluctant sale $23,500 neg call 0428 981 184

3191 ROTAX 503

Complete motor with electric start, reduction box and 60inch prop (see running in aircraft) 123hours $3,500 Phone 07 4061 8029
Email bo-cher@bigpond.com.

3192 JABIRU 230C

24-4822 Factory built. 252 hrs. only.
Excellent. condition, never damaged, Garmin 296. White/red with burgundy interior.
Full service history $77,000 Hanger rental space in Bundaberg with this aircraft if required. Phone 0437 823 327 or 0428 265 777

3193 WANTED

Aircraft maintenance and paint restoration work on a degraded gel coat glider. Accommodation and food provided at a magic location in the Capertee Valley. Landing strip available about 3 hours by road from Sydney. For details phone 0413 963 438 or Email adshedsyd@hotmail.com

3194 THRUSTER T 500

Oil injected Rotax 582, 3 blade brolga prop, brakes, storage compartments, heavy duty undercaraige and springs, tie down hooks, wing covers,radio, intercom and headsets. $12,500 ono. Phone Andrew 0419 244 739 or apsservices1@hotmail.com

3195 2010 PARADISE P1

Total hours 460, beautifully finished and well instrumented including Dynon D10, AirMap EKP iv GPS, PCAS, IC-210 dual channel radio, Garmin mode C transponder and A/P. Rotax 912 ULS engine with Airmaster constant speed propeller, cruises at 100 kts burning 17.5 l/hr, 2x50 l tanks, Mogas or Avgas. Plenty of luggage space. Contact 0439 620 158 $110,000

3196 AUSTFLIGHT A582 DRIFTER

25-415 Airframe 3000hrs, wire braced, wide pod, 582 blue head Rotax engine with approx 300hrs. Compression and bearing checks good. Helmets, headsets, spats and spares included. $14,000. Phone or text 0487 755 225.

3197 JABIRU SK.19-1963

TT 145hrs. Good panel of instruments. Vacuum / Electric. Bendix King flip flop radio. Always hangared. Nil accidents. Price $27,500
Phone 0428 538 306

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3198 TRIKE TRAILER

Purpose built Trike Trailer . ACT registered. Has 4 x 20L jerry can holders (included are 4 steel 20L jerry cans). Has racks for carrying wing. Price $1900. ONO. Additionally available for sale is a Garmin GPS Model 111, a GME PLB MT410G (GPS Model) , a Vertex Pro V1 (hand held VHF). Also 2 steel lockable storage boxes plus a range of trike spares, oil, equipment and parts. Located Canberra area. Contact Rick 02 6258 5579 Mob 0409 847 680

3199 RARE AND NO LONGER AVAILABLE

503cc Rotax Dual ignition 53 hP. Still in aircraft and runs well. Low hrs. Well in factory tollerances. $2001 Ph Peter 0418 278 012

3200 RANS COYOTE II S6ES

19-0901. 220 hours. Dacron covering. Rotax 582 blue head 60 hours. Woodcomp ground adjustable prop, covers. Engine, aviation gauges. Latest ICA 210, dual headsets. New Zaon MRX PCAS. Generous head, legroom! Recent services, upgrades by L2. Extras. Hangared and flying at Moruya Airport NSW. Photos, videos, logs emailed. $38,000 Phone Jeff 0405 569 205, govo49@hotmail.com

3201 J160C 24-4669

Rotax powered J160c 24-4669 A/H TX Avmap gps $68k ono phone 0425 840 120 for further details.

3202 2007 DOVA SKYLARK

Factory Built, All metal, Rotax 912ULS,Cruise 110kts+, Stall 36kts. Electric Trim, Avmap EKP-IV GPS, Icom A-200, Garmin GTX 320, Galaxy Rescue System, Kasper Inflight Adjust Prop Approx 400hrs TT, L2 owned & maintained.Needs new paint. Must sell medical reasons.Cost to replace - $140k, sell $95,000 inc GST. Can deliver. Ph Mick 0419 123 933

3203 FLIGHT DESIGN CTS

430 hrs TT engine and airframe, 7+ hrs endurance @ 18 lph, 110-120kts cruise, VHF, Dynon EFIS, Mode C, 50kg luggage. Owned & maintained by L2. $99,950 No GST. There is no better aircraft advertised here. 0407 761 619

3204 AEROPUP 24-5774

With Trailer 2 seat folding wing Built 2008TTIS160 hours.Jabiru2200hydrauic engine; cruise 80 knots. Instruments include; virt card compass; fuel pressure; CHT,EGT,oil pressure&temp Magellan315GPS;Xcom radio; Dave Clark headset. Tandem enclosed trailer, registered & professionally built.$48K. Always hangered, phone Russell 0488 938 050

3205 ROTAX ULS 100HP ENGINE

TTIS 2000hrs, excellent engine that has always been LAME maintained as per log book. $6,500 ono. For information please call Jamie 0439 708 806

3206 HANGAR 12 X 15 MTR

With amenities, air park 16 Teneft Street Temora, close to all the action. $125,000. Phone 02 4421 3980

3207 ROTAX 912 (80HP)

Never used, still in box. Engine mount, engine radiator, engine bay hose. Fluid tank, air filters, oil fitler, spark plugs, CHT guage, oil temp guage. $15,450 Phone 02 4928 2285

Advertisers index

First Solo

Geshan Wijayasekara, a student studying at Brentwood Secondary college in Victoria, flew his first solo in September. Along with 10 other students from Brentwood, he started flying training in March, as one of his subjects for year 10. Brentwood is the only school in Victoria which allows students to undertake flying training as a subject. Geshan said "I am very lucky to get a chance like this".

After finishing the course at the end of the semester, although many other students stopped, Geshan decided to continue flying and now has done nearly 20 hours. Geshan trains in Jabiru J170s at Tooradin Airfield. He has always been fascinated about planes and is very happy not only because he got the chance to learn about aircraft in more depth, but also the chance to learn how to fly them. Geshan's other interests include Information Technology and Mechanical Engineering. Both his mother and father have worked in the Sri Lankan Airforce and share his interests. Geshan wants to pursue a career in the aviation industry and preferably as an airline pilot.

A model performance

Elle Macpherson has achieved her goal, qualifying for her Recreational Aviation Pilot's Certificate and Navigation qualification together in September.

Elle, 23, who shares a famous name with the 'The Body' is a Goondiwindi, Queensland, girl. She is an Agronomist in her father's business, Macpherson Ag Consultants. She plans to use her pilot's Certificate in her northern NSW farm advisory role.

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

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Contact: Rob Loneragan Mobile: 0411 816 300 Email: rob@rylstone.com.au

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GPSMAP 695 .... **$1895**
GDU370 ..... **$2995**
GPSMAP 196 .... **$650**
GPSMAP96C **$525**
NEW GLO Bluetooth GPS for Mobile Devices **$119**

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GI 106A Course Deviation ind **$2495**
GTX 327 transponder **$2150**
SL 40 VHF Comm **$2195**
SL 30 VHF Nav/Comm **$4595**
GMA 240 Audio panel .... **$ 975**
GMA 340 Audio panel **$1595**
G3X EFIS/EMS System **$6995**

AIR GIZMO

NEW iPad Knee Dock **$199**
NEW Panel Dock for ÆRA 795 **$275**
Panel Dock ÆRA 500 ..... **$195**
Panel Dock for 196/296/495 **$195**
Panel Dock for Garmin 695 .. **$275**

AIRBOX - AIRSPACE WARNING DEVICE & GPS

Aware is Australia's first airspace warning GPS complete with digital charts from Airservices Australia (*NZ ver. also available).

The multi-award winning Aware takes situational awareness to the next level with 3D warnings displayed over digital versions of the maps pilots most often fly with.

- **Airservices Australia (or *NZ Airways) digital charts as standard**
- **Moving map GPS**
- **Unique airspace alerting system**
- **Ready to use straight from box**
- **Free airspace updates for life**

NEW

Aware **$279**
Aware 5 ..... **$399**
Aware+ upgrade..... **$189**
Foresight **$1259**
Aware+ **$399**
Aware 5+ **$549**
Clarity 3.0 ..... **$899**
Foresight 3 ..... **$1495**

HEADSETS

ZULU 2

- Improved comfort
- better noise attenuation
- bluetooth connectivity
- auxiliary music input

Zulu.2 ANR GA version ..... **$ 895**
Zulu.2 ANR Helicopter ver. **$ 895**
Zulu.2 ANR Lemo panel ver. **$ 895**
Sierra ANR GA version ... **$ 695**
with blue tooth and music input

HM40 GA H/set **$179**
HM51 child headset **$199**
Peltor 8006 GA H/set **$350**
Sennheiser HME95 ... **$299**
Sennheiser HME100 .. **$399**
Sennheiser HMEC250 **$599**
David Clark H10-13.4 **$399**
David Clark H10-60 **$449**
David Clark H10-13H **$425**

Bose A20 Headset
A20 GA twin plug w/bluetooth **$1275**
A20 GA twin no bluetooth **$1175**
A20 Helicopter w/bluetooth **$1275**
A20 Lemo w/bluetooth **$1275**
Installed wiring harness **$75**

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DYNON AVIONICS

AFFORDABLE GLASS COCKPIT AVIONICS

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NEW
Portable true attitude indicator that can be used by all pilots

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EFIS-D6 ..... **$1760**
EFIS-D100 ... **$2695**
EMS-D10 .. **$1870**
EMS-D120 ... **$2387**
FlightDEK-D180 **$3575**

Auto Pilot Systems
SV32 servo (36in/lb) **$825***
SV42 servo (55in/lb) **$825***
AP74 Interface module **$715***
EFIS-D10A +2 servos **$3995**
*requires D10A/100/180

SkyView
SV-D700 7" display **$2871**
SV-D1000 10" display **$3861**
SV-ADAHRS-200... **$1320**
SV-EMS-220/A **$660**
SV-XNPDR-262 Mode S transponder Module **$1980**

MICRO AVIONICS

MM001B Integral helmet **$795**
MM001C Integral helmet with VOX electronics **$995**
MM020A Helmet only **$349**
MM001 UL100 headset **$440**
MM001A UL200 ANR headset **$575**
MM005 Powered Radio Interface **$440**
MM030 Single Head Strobe **$165**
MM032 High Power Double Strobe **$395**
MM033 High Power Triple Strobe **$495**

GNS and BAD ELF

MFI GPS Bluetooth receiver
GNS 5870 for iPhone/iPad **$119**

GNS 5890 ADS-B USB stick **$250**
The world's smallest ADS-B receiver displays ADS-B equipped aircraft within 300 kilometres radius on your PC

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NEW Bad Elf Pro **$199**

NFLIGHT CAMERAS

COCKPIT VIDEO CAMERA

NFLIGHTCAM+ HD GPS Camera **$649**
NFLIGHTCAM Helicopter adaptor **$ 99**

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AK-350 altitude encoder **$295**

AK-451 ELT (406 MHz) **$899**
FAA/ETSO approved 406 MHz ELT

BENDIX/KING

KMD 250 panel mount ...**$3695**
KY 97A VHF (OHC) 14v ...**$1695**
KN 64 DME (OHC) **$2095**
KR 76A transponder (OHC) **$900**
KT 78A transponder (OHC) **$700**
KR 87 ADF (OHC) system **$2495**
For New BK Avionics please call

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*Now interfaces with Garmin 495/695/Aera500/550/795, Dynon, Avmap EKP4 / Geopilot2, and Bendix AV80R

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ICOM

IC-A15 ..... **$375**
IC-A6 Sport **$395**
IC-A6 Pro **$595**
IC-A24 Sport **$495**
IC-A24 Pro **$695**
Sport versions come with cigar lead and alkaline battery case. Pro version comes with rechargeable battery rapid charger, cigar lead, and headset adapter
IC-A210 (panel mount VHF) **$1299**
IC-A110 (vehicle VHF) **$1195**

MICHEL/TKM

MX11 Comm **$1195**
MX170C Nav/Com **$1895**
MX300 Nav/Com **$1895**
MX385 Nav/Com **$1895**

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RC ALLEN
(TSO approved)

RCA 2600 digital horizon (electric) **$3150**
RCA22-7 horizon (vacuum) ..... **$ 995**
RCA82A Turn Coordinator (electric) **$ 995**
RCA15 series D.G. (electric) from **$2495**
RCA22-11A-8 D.G. (vacuum) ..... **$ 995**

MID-CONTINENT (TSO approved)
4300-411 LIFESAVER Electric Horizon with 1 hour emergency battery **$3995**
MD200-306 Course Dev. Ind **$1995**
1394T100-7Z Turn Coordinator **$ 925**
7000C.31 Vertical Speed Ind. .... **$ 695**
MD90 Quartz clock from ..... **$ 295**

JP INSTRUMENTS
FS450 FUEL FLOW
With Transducer, fittings, Firesleeve and GPS interface **$850**

PRECISION vertical card compass **$429**

NON APPROVED INSTRUMENTS
GH030 (vacuum) Artifical Horizon **$475**
GH025 (electric) Artifical Horizon 14v .. **$1195**
GD031 (vacuum) DG **$475**
DG023 (electric) DG 14v **$1195**
BZW-4B turn coordinator **$399**
BG-3E Altimeter 20,000 ft **$299**
Vertical Speed Indicator **$199**
Magnetic compasses **$150**
Vertical card compass **$299**
Air Speed Indicators from **$199**

INTERCOMS

HM

2 place portable **$175**
2 place for Icom **$175**
4 place portable **$250**

PS ENGINEERING

PM500EX panel mount 4 place I/C **$350**
PM 1000II 4 place **$395**
PMA 4000 audio panel & I/C **$895**
PM 3000 4 place I/C **$525**
PCD7100-I CD player & I/C **$895**

SIGTRONICS

SPA 400 panel mount **$295**
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SURVIVAL EQUIPMENT

SURVIVAL PRODUCTS

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TSO'd raft with canopy .. **$2995**
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Specially designed for light aircraft
"The lightest most compact rafts in the world"

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5 Year Service Life
(HM Survivor pictured)

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Approved life jacket in sealed bag 10 year service life ... **$199**

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