Brisbane Valley Flyer

August - 2014

www.wattsbridge.com.au
www.bvsac.org.au

Watts Bridge Memorial Airfield, Cressbrook-Caboonbah Road, Toogoolawah, Q'ld 4313.

Scott and Chris Hendry win the Poker Run for 2014. See the rest of the story on page 2.

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The Poker Run

By Richard Faint

For as long as anyone can remember, early July sees pilots and navigators from all over S.E. Queensland battle it out to be the champion of the Brisbane Valley Sport Aviation Club's Fun Fly Poker Run. In this game of pure chance the players find their way to any three of the featured airfields: Gatton Airpark, Bradfield, Mc Carrons's Field and Kilcoy Airfield. At each of the designated landing spots a card in an envelope is picked up from underneath the primary windsock. Last stop is Watts Bridge Memorial Airfield where the player's poker hand is completed by the two cards drawn at random by the house. Best hand wins!!

This year's great flying conditions saw a record number of 34 participants from Caboolture, Redcliffe, Kilcoy, Watts Bridge, Gatton and the Gold Coast enjoying a great day's flying. Upon arrival at the BVSAC Clubrooms a great variety of BBQ treats, coffee and cold drinks were on offer. This was a wonderful opportunity for the pilots from the various airfields to get to know each other and share a story or two. However all good things come to an end and the clear winners of the coveted trophy for the Fun Fly Poker Run 2014 were Scott and Chris Hendry with a winning hand of Three 6's.

But here's where it gets even better. On the day Scott and Chris had been busy shooting a fantastic video documentary of their winning round!! It's all shot in high definition video edited to a superb sound track. This has to be one of the best YouTube flying videos you will ever see!! For maximum enjoyment point your browser at https://www.youtube.com/watch?v=5TWzH70teM8, click the video replay into full screen, pump up the volume and go flying with the Hendry's!! See the day's images following (not in any specific order).

And the Winners WERE (start drum roll)

Scott and Chris Hendry

Part of the line-up, ready to roll

Peter Pretorious from Morayfield brought his Whitman Tailwind

Bob & Robyn Dennis with their RV9A at Gatton Airpark.

Savannahs waiting patiently for their owners.

More aircraft watching and waiting.

Richard and Glenda Faint's Jabiru.

Vern Grayson's beautiful Zodiac 601XL.

Mike and Priscilla Smith and their Jabiru at Gatton Air Park.

Priscilla collects the card at Gatton.

Competitors sharing notes at Bradfield.

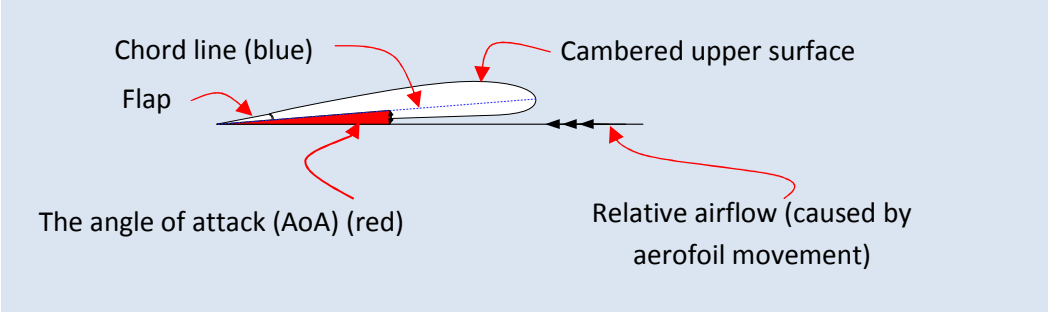
Peter Freeman's Cessna 182 was the largest aircraft that took part.

Don't be Flippant with Flaps!

Flaps - the Wright brothers didn't have them but now all aeroplanes except the most very basic are fitted with flaps. They have become an almost quintessential attachment to aeroplane wings so they must have some purposeful advantage. And they surely do!

Regardless of what specific theory of lift production you subscribe to, they all have one thread in common - it is the camber of the upper surface of an aerofoil that gives the great advantage over a flat plate in providing lift. It is also reasonable, therefore, to assume that the greater the camber (curve of the upper surface) the greater will be the lift produced by any given airflow. How ideal is that – have a nice big fat wing and take-off and land really slowly and in very short distances. But there's a snag (isn't there always) and thick wings produce a lot more drag than thin ones. Drag rises as the square of the airspeed so if we accept an increase in our aerodynamic drag we must suffer a reduction in achievable airspeed.

Here we are only discussing trailing edge flaps and to better understand them, let's look first at some basic aerofoil definitions so we know that we are talking about the same things.



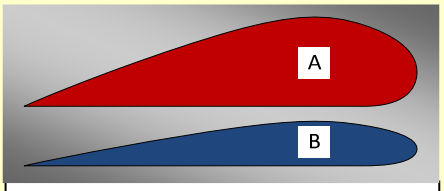
Note that:

1. The upper aerofoil surface is cambered.
2. The lower aerofoil surface is relatively flat.
3. The relative airflow is caused by the aerofoil moving through the air as the aeroplane flies.
4. The angle of attack is the angle between the relative airflow and the aerofoil chord line.

As camber gives us lift, a big fat thick wing will get us off the ground very quickly. BUT when we do so, we ain't gonna go anywhere because the drag from that big fat wing will rise very quickly and limit the speed we can cruise at.

How about, then, we look at making our wing with variable camber? If we do then we can have a fat wing for take-off and a thinner one for cruise; and that, my friends is how flaps came to be.

Flaps, when lowered, increase the C_L, the lift co-efficient – that part of the total lift provided by the wings through the factors of aerofoil shape and angle of attack. In other words, lowering flaps will provide an increase in lift without requiring an increase in airspeed or wing area.

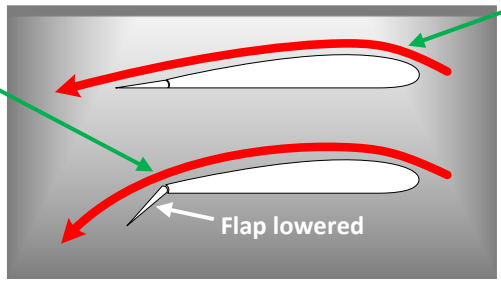


We need aerofoil A for take-off and aerofoil B for cruise.

Then, when we want to land, we need aerofoil A again so we can land at a slow speed and use just a short runway distance.

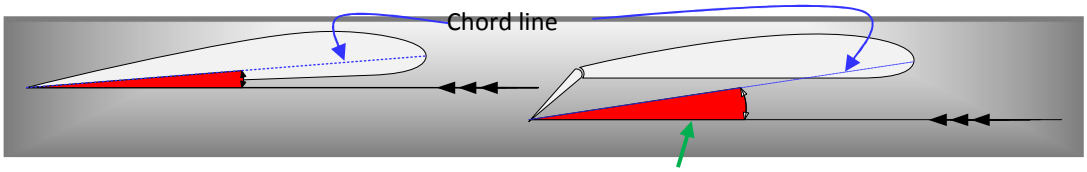
Airflow following increased curve over aerofoil with flaps lowered.

Increased camber = increased lift at same airspeed



Airflow over aerofoil following camber with flaps raised

It is easy to see that the greater the camber the thicker the aerofoil section will become to the airflow and the greater will be the lift delivered by that airflow at any given speed. Flaps also increase lift because they increase the angle of attack.

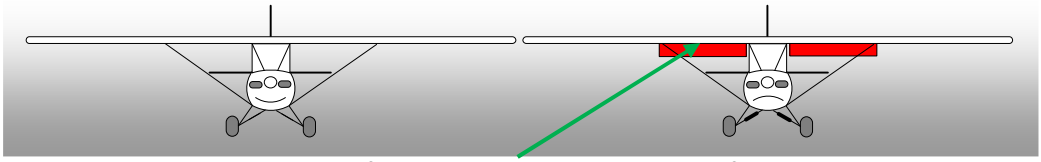


Lowering flaps will increase the angle of attack because of the change in the chord line.

So what's that down side again? If flaps are that good why don't we just fly around with them down all the time? The down side is DRAG, as we said earlier. Flaps cause an increase in both form drag and induced drag at any given airspeed and drag will reduce our cruise speed.

Form Drag

Form drag is the resistance created whenever the form of the aeroplane is being moved through the air and part of this is obviously the frontal area of the 'form' as presented to the airflow. Check the sketch below and see how lowering flaps increases the frontal area of the aeroplane.

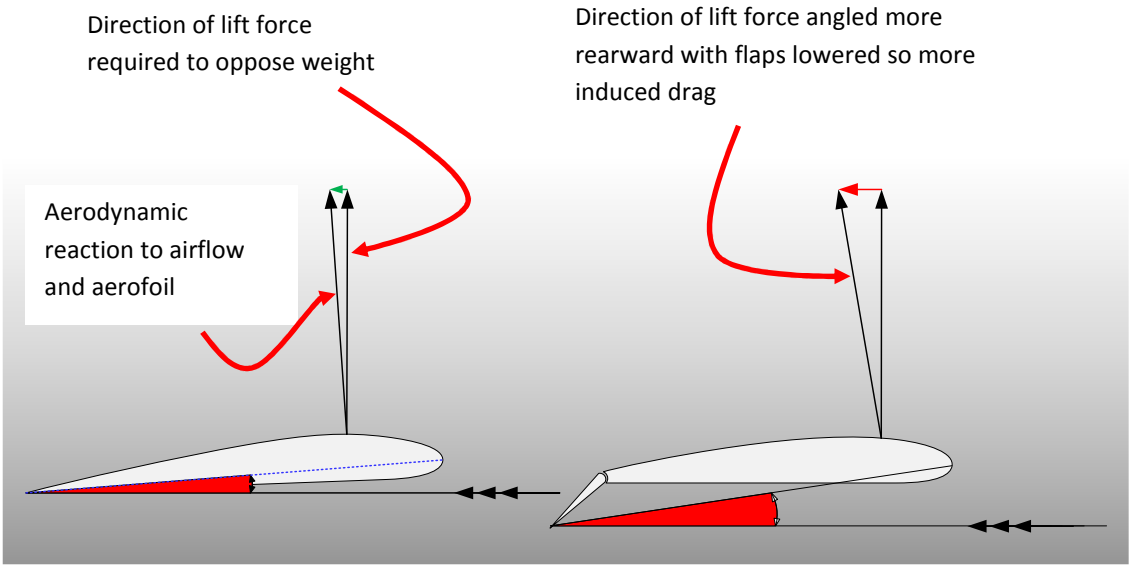


Flap increases frontal area and thus increase form drag.

Form drag rises as the square of the airspeed so, as the airspeed rises, the magnitude of the adverse effects of form drag rise exponentially. Thus the form drag at 20 knots is only ¼ of what it will be at 40 knots. In other words, if the drag at 20 knots was 20 kg, at 40 knots it would have risen to 80 kg.

Induced Drag

Sometimes called the penalty we pay for lift, induced drag is caused by the pressure differential between the upper and lower surfaces of the wing – just the very situation our wing camber is designed to enhance. Therefore, fuelled by one of the most basic tenets of nature that higher pressure gas will ALWAYS flow towards lower pressure gas, the higher pressure air UNDERNEATH the wing escapes around the tip to merge with the lower pressure air flowing over the wing. This has the ultimate effect of tilting the total aerodynamic lift force backwards and this rearward tilt provides a force against our direction of motion called *Induced Drag*.



With flap lowered the pressure differential between upper and lower surfaces is increased. This makes the total reaction lean further rearwards and so act against the direction of flight. Not only do we get more lift from the increase angle of attack but we get more form drag AND more induced drag.

The amounts of lift and drag generated by lowering flap depend essentially on two factors – the degrees of flap lowered and the type of flap (split, simple, fowler etc.) that the aeroplane has fitted to its wings. However, in general terms it is considered realistic to assume that lowering up to 15° of flap will increase the value of lift produced more than the value of drag developed in producing this extra lift. However, lowering more than 15° will see the amount of drag rise considerable more in proportion than the lift rise. This is PERFECT! It means the pilot can use a little bit of flap when they want more lift on take-off and a lot of flap when they want more drag to steepen their approach angle and a lower safe landing speed.

So what does all this mean to the poor old pilot? It simply means that lowering flaps will allow the wings to generate more lift at any given airspeed so long as they can handle the drag consequences. The Flight Manuals (POH) in most aeroplanes fitted with flaps advise that a small flap setting is advantageous when used for take-off. The use of flaps in this case will tend to shorten the distance required for take-off and make it safer because of the reduced stall speed.

For landing, flaps add drag so their use will steepen the approach angle, a very desirable trait when approaching over obstacles, especially onto a short runway. By reducing the stall speed they make the approach a little safer and allow the use of power which will enhance control effectiveness over all control surfaces exposed to the slipstream. With any reduction of power, lowered flaps will see the aeroplane decelerate more quickly so there will tend to be a shorter ground roll. All in all – flaps are a very useful tool.

The dangers of using flaps

To summarise what we have discussed so far, flaps, when lowered, decrease stall speed and cause an increase in drag. The only dangers associated with flaps relate to when their advantages work in reverse and become liabilities.

Because the unstalled aerofoil with lowered flap generates more lift at any given airspeed, then it stands to reason that it will generate the same lift at a lower speed. Therefore it is absolutely logical that lowering flaps will reduce the stall speed. It also stands to simple reasoning that the reverse occurs - **RAISING flaps will INCREASE the stall speed!**

A situation where this can be hazardous is retracting flaps during the take-off roll when doing a touch and go landing. A touch and go is a practice overshoot, simulating the pilot's actions in the event of flaring too far into a runway and being unable to safely land and stop in the remaining distance. Considering this, w*ho in their right mind would raise the flaps and thus decrease their lift and increase their stall speed in the middle of a take-off run?* Some might argue that aeroplanes don't accelerate with full flap but this is nebulous at best and not based on fact. Nor is it relevant in a touch and go and because the airspeed should not be allowed to fall significantly before full power is applied to return the aeroplane to an airborne state and little acceleration should be necessary. The added claim that aeroplanes are dangerous to fly with full flap extended is also a fallacy – they won't get certified or their design approved if that really is the case. A well trained pilot should be familiar with all their aeroplane's flight characteristics and competent to fly that aeroplane in all configurations. A failure to ensure this is a failure on the part of the flight training instructor and flight examiner.

Flaps should be raised either in a slow and planned retraction at a safe height after take-off, or after leaving the runway following a full stop landing, when the aircraft has been brought to a stop and the after landing checks carried out correctly with the pilot's full attention. If an instructor wants the student to practice take-offs with the standard take-off flap setting then they should be doing full-stop landings and not touch and goes. Reducing flaps on touch and goes trains a student into a habit of reducing flap at a time when, in a real overshoot situation, it is totally inappropriate.

Flaps are a tool in a pilot's tool box but, like all tools, they should be used correctly. A spanner used as a hammer is ineffective and may result in the spanner being damaged and rendered useless. Flaps mishandled may change from being a great asset to become a nasty liability.

Happy flying.

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Control Misrigging Blamed in Fatal Alaska Accident

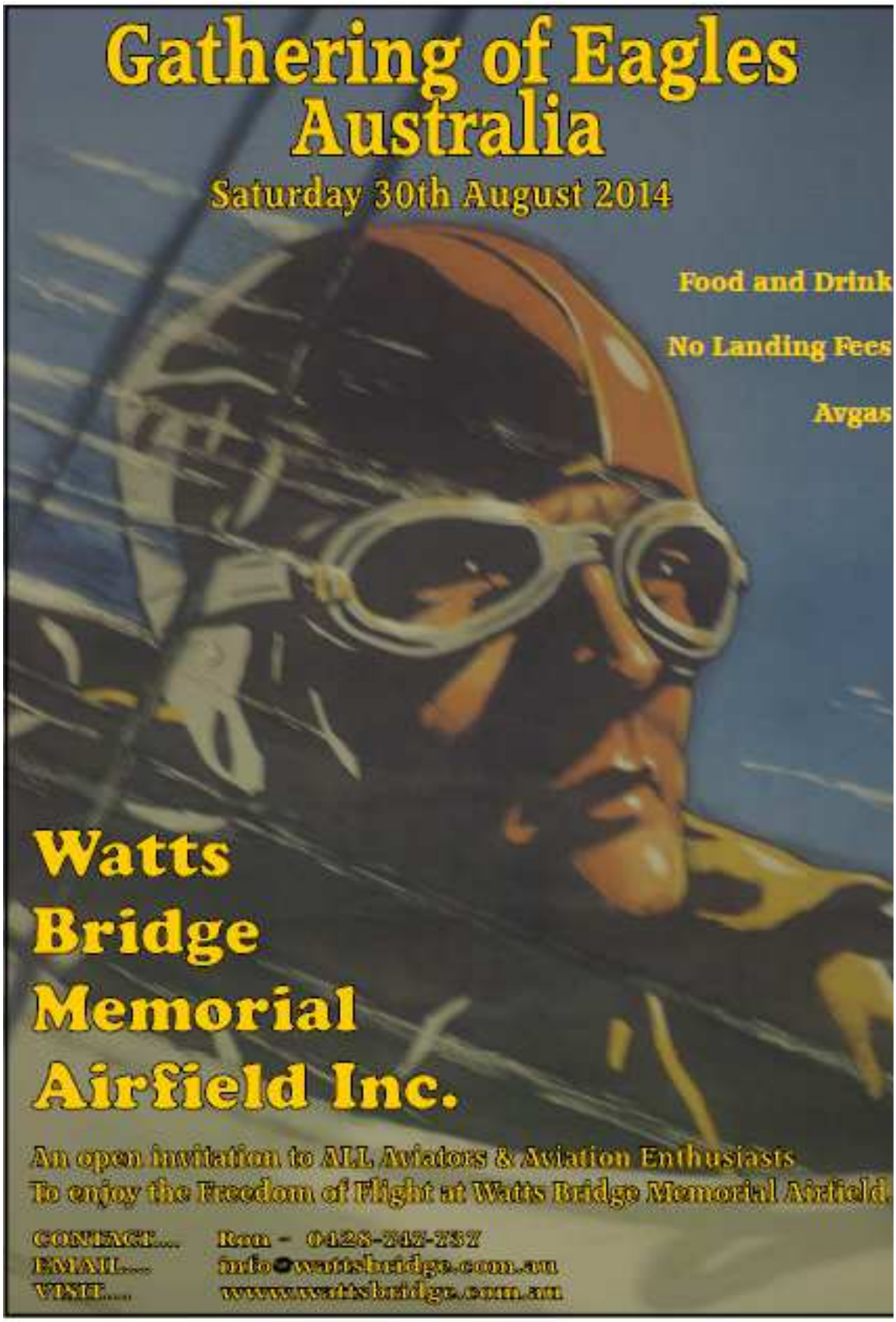
By Pia Bergqvist / Published: Jul 10, 2014

The NTSB has released a preliminary report on an accident that happened on July 1 immediately after a Piper PA-12 departed from Merrill Field Airport in Anchorage, Alaska. According to the report, a witness who saw the accident said the "airplane's angle of attack was so steep" that he knew "something was not right." Another witness said the taildragger continued to climb steeper and steeper until it stalled and pitched down, descending vertically to the ground.

After analyzing the flight controls of the crashed airplane, a mechanic assisting the NTSB investigator-in-charge concluded that the elevator control cables were incorrectly attached to the stick in the rear seat, which resulted in the elevator moving in the opposite direction when pressures were applied to the stick.

The accident serves as a reminder to all pilots to do a control check prior to every flight. Fatal accidents have also resulted in the past from ailerons being improperly attached, causing opposite response to control inputs, which can be so disorienting to the pilot that he or she may not be able to recover control of the airplane.

This is an ever–present safety issue with all aircraft including gliders and ultralights. I have seen GA mechanical engineers get aircraft logbooks countersigned by a second person who has checked the control function for safety and integrity before the first test flight after controls and wing attachments have been worked on. Personally, I have had another pilot whom I trust and respect check my controls after refurbishing my aircraft. Ed.


Gathering of Eagles
Australia
Saturday 30th August 2014
Food and Drink
No Landing Fees
Avgas
Watts
Bridge
Memorial
Airfield Inc.
An open invitation to ALL Aviators & Aviation Enthusiasts
To enjoy the Freedom of Flight at Watts Bridge Memorial Airfield.
CONTACT....
EMAIL....
VISIT....

G'Day, Wait, STOP PRESS, WHOAAA, EXTRA EXTRA EXTRA!

Not only did Scott Hendry win the Poker Run, but he is owed a debt of thanks by BVSAC members for donating a flat screen TV complete with wall mount to the BVSAC Clubrooms. Many thanks Scott; your generosity is very much appreciated.

FLY-INS Looming

05 Aug 2014	QLD Caloundra	Caloundra	BBQ Lunch
09 Aug 2014	QLD Murgon (Angelfield)	Murgon (Angelfield)	Brekkie Fly-In
16 Aug 2014	QLD Dunwich	Dunwich, North Stradbroke Is.	Breakfast Fly-In
30 Aug 2014	**QLD**	**Watts Bridge**	Gathering of Eagles Fly-In
05 Sep 2014	QLD	Birdsville	Birdsville Races 2014
06 Sep 2014	QLD	Warwick	Flying Event
13 Sep 2014	QLD	QLD Murgon (Angelfield)	Murgon (Angelfield)
13 Sep 2014	QLD	Goondiwindi	Fly-Over

Breakfast at Angelfield

Some of the BVSAC members forayed up to Murgon for a most enjoyable breakfast on their last scheduled morning. Images supplied by Mal Mckenzie including the colour changed landscape around Wivenhoe.

Breakfast with the Burnett Flyers.

Peter Freeman and Wayne Petty arrive in Peter's C182.

Glen's ultramodern flying Flea.

Wivenhoe – an oasis?

Mystery Aircraft (August Issue)

What's this?

Another month of almost got its. But no-one quite did get it!

Right: A typical CA-65 instrument panel

Mystery Aircraft (July Issue)

The mystery aircraft in the July 2014 Issue was an Aeronca Chief – CA-65 as built in 1940.

Joke for the Month

Basic Flying Rules:
1. Tell nasty children to play on the active runway
2. Always fly as dangerously as possible so your instructor will send you solo.
3. Tell your instructor that you have a beautiful blonde sister dying to meet and go out with him as soon as you have your pilot license.

BirdsiPhotography

Want an air-to-air or ground shot of you and your dream machine? It's easy to arrange and will cost less than you might think. Grab the phone and contact Peter Davies or Rob Knight on0400 89 3632, or email kni.rob@bigpond.com

Keeping up with the Play *(Test yourself – how good are you, really?)*

1. A pilot notices during the preflight inspection that the static vent is located on the left side of the fuselage only and the dynamic vent is on the right side wing strut. During a steep left sideslip, which option below is most likely to depict the ASI indication?
   A. The ASI will read correctly.
   B. The airspeed is likely to be LOWER than the instrument reading.
   C. The airspeed is likely to be HIGHER than the instrument reading.
   D. Option B or option C could be correct.

2. During a climb the elevator trim tab electric motor suffers a runaway condition and jams the trim tab so it is raised up above the elevator trailing edge. This is likely to:
   A. Cause the nose to pitch up.
   B. Cause the nose to pitch down.
   C. Not cause a pitch change.
   D. Affect the trim in level flight at cruise power and on approach at reduced speed.

3. From the following select the most correct statement.
   A. The further effect of roll is yaw about the longitudinal axis.
   B. Washout increases the angle of attack outboard along the wing.
   C. An impulse coupling provides a hot, fat, advanced spark to aid starting.
   D. With an aft Centre of Gravity, at a high angle of attach the thrust/drag couple can become more powerful than the Lift/Weight couple and the aeroplane will stall without possible recovery.

4. The atmosphere in a locality conforms to ISA. The sea level temperature is 25° C and the METAR lists the temperature and dew point at an adjacent airfield as 22/01 respectively. What is the approximate height of the airfield above sea level and the height AMSL of the cloud base?
   A. 1000 feet elevation and cloud base 8200 feet AMSL.
   B. 1500 feet elevation and cloud base 12,500 feet AMSL.
   C. 1200 feet elevation and cloud base 7400 feet AMSL.
   D. 1450 feet elevation and cloud base 8800 feet AMSL.

5. A front passes across an airfield. Which of the following options would be the best clue as to the time of the actual passage of the frontal surface?
   A. The rain intensifies.
   B. The clouds clear.
   C. The wind backs.
   D. The temperature starts to fall.

ANSWERS: 1. B, 2. A, 3. D, 4. A, 5. C.

If you have any problems with these questions, call me(in the evenings) and let's discuss it! Ed.

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For Sale

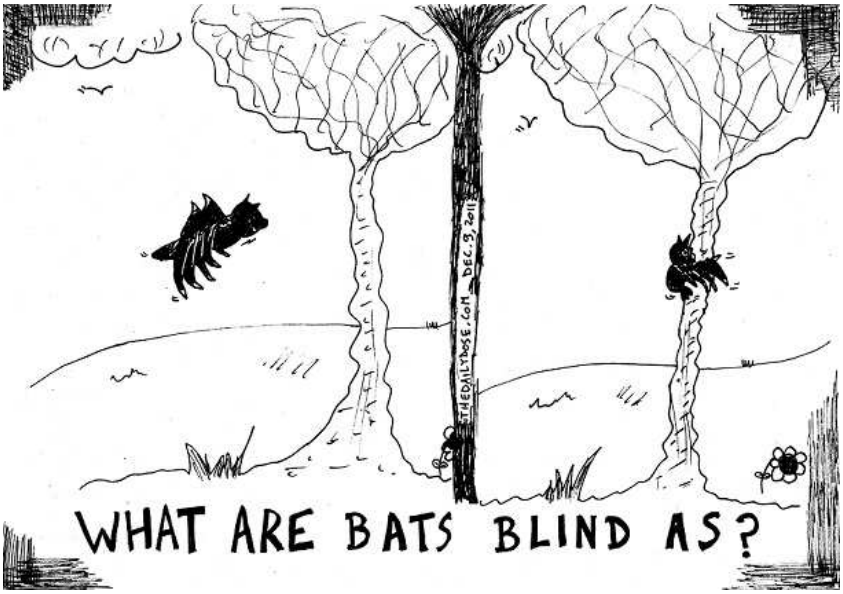
- Icom IC-A5 with 240V charger.
- Icom HM-119 Microphone / Speaker
- Lowrance AirMap 2000 (bought with great expectations) never used in anger, all of the extras, including yoke attachments, external GPS antenna.
- Flying Knee pad
- Other bits like fuel tester etc.

A fair price is negotiable. Email me for details or offers.

Roger Kelly at <mail@activeaudio.com.au>

- 2 X 20 litre plastic fuel drums. 1 never used ..... $40 pair 0R $25.00 each
- 1 X 10 litre plastic fuel drum. Never used $20.00
- 1 X Aircom pilot's headset. Surplus to requirements. $150.00

Contact Rob Knight 0400 89 3632 or email kni.rob@bigpond.com



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