BRISBANE VALLEY FLYER

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BRISBANE VALLEY SPORT AVIATION CLUB INC

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

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Pilot Proficiency, it's in Your Own Hands – see page 12.

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From the Club

Hello all,

The weather has not been kind to flyers with lots of rain and strong winds and the closure of the runways due to water on the field has not helped.

Our last meeting was very light on members due to some members having the flu, and others hearing all the forecast of flooding and road closures and opted to stay at home.

We had more apologies for the meeting than we had members attend. Despite this we had a very good meeting and the members lunch that followed with some very welcome companionship.

As you are probably aware, the airfield at Watts Bridge has experienced severe surface flooding, to the extent that the airfield is closed at the time of writing. Should you intend to use the airfield at any time in the near future, please contact Peter Biddle, the Secretary for the airfield management team, either by email at secretary@wattsbridge.com.au, or by phone, 0427 699 239, so you can get up-to-date information on YWSG's serviceability status.

Let's hope the weather clears again soon so we can get back to flying.

Our next meeting will be on the 4th June 2022, and we look forward to seeing you all there.

Peter Ratcliffe
President BVSAC

Dissection of a Turnback

By Rob Knight

Perhaps the most obstinate mishap statistic in light, single engined aeroplane operations, relates to the so-called "Turn-back" after suffering an engine failure soon after take-off. It's always topical and is aired in all flying magazines from time to time so maybe a closer look at the issues and strategies to deal with this topic would help. Unfortunately, some publications that should know better actually promote the exercise, the writers proclaiming that it's quite achievable. Perhaps it is, but when even very experienced pilots, with many thousands of hours logged, kill themselves, what chance do weekend pilots have that fly now and again for fun. Look closely at the odds of surviving a turn back.

- If you don't turn back, you have at least a 95% chance of surviving.
- ***BUT, if you DO turn back, there's, perhaps, a 95% chance YOU WON'T SURVIVE.***

So, what are we talking about? A turn-back in the sense of this discussion is the act of turning back and attempt to land on the runway just used for take-off after an engine failure – either partial or complete. The common instructor advice is to land on the best available site straight ahead, or within about 30 degrees each side of that but, too frequently, in the stress of the moment, this is ignored and the afflicted pilot attempts to carry out a 180^{o} turn, back to land downwind on the runway just departed. This, all too often, ends with fatal results.

Let's take the issues apart and look at them to see if a better understanding of the dangers will allow a turn in the statistics.

Is the turn-back as dangerous as it is painted? Must it be ruled out at all costs, or is there room for maybe attempting it under certain circumstances? Let's examine all the pertinent factors and then you, as reader/pilots, can make up your own minds.

The problem starts with the failure of the engine. This, in itself, is not the cause of the accident. The cause lies in the subsequent actions taken by the pilot after that silence ensues.

The fundamental cause of the accident is the inability of the pilot to ensure that the aeroplane maintains sufficient airspeed to maintain controlled flight after the engine fails. To some extent this is addressed in the mantra passed on by instructors when teaching this EFATO[1] exercise as the standard patter for the very first act by the pilot after recognizing that the engine has failed is to press the stick forward. Keeping the aeroplane under full pilot control is absolutely paramount to making a safe landing after the event. In the historic words of Bob Hoover, "If you're faced with a forced landing, fly the thing as far into the crash as possible." Without sufficient airspeed for control this can never happen and the statistics tell us just how seldom adequate airspeed is retained.

In light of the obvious clarity and importance of the statement above, why is it so often that the issue of airspeed is not addressed? Speaking from both the experience I have gained in the events of my own engine failures, and from watching students and candidates for pilot licenses under pressure on

[1] EFATO = Engine Failure After Take-Off.

flight tests, there are four factors that conspire to act against airspeed preservation, and all are human bar one.

These factors are:

1. The time it takes us humans to recognise the engine has failed.
2. The time it takes us humans to consider potential responses and to take emergency measures.
3. The absolutely burning desire we, as humans, have to return to a place of safety in a threatening situation -and the runway was the last place we recognise as being safe.
4. How much airspeed decay is experienced by the aeroplane whilst the pilot is making up his/her mind about things.

We'll look at each of these in turn and maybe gather a better understanding of the issue and the human element.

For this discussion, let's assume that an aeroplane suffers a complete engine failure at 300 feet above the runway. We can assume that the established airspeed for the climb at the time of failure is around 1.3 Vs[2]. Chronologically, the subsequent events are likely to be:

The engine fails.

1. Nothing happens until the pilot realizes what happened and starts to take corrective action. This delay is likely to be longer than many might imagine.

    The pilot realizes that something has happened, but it will take him/her time to figure out and understand exactly what it is that has happened. One of the most surprising factors in occurrences of this kind relates to a simulator study carried out some years ago (Kentley, 1975). This study found that the average time from engine failure to brake application in an aborted take-off situation was 4.45 seconds. Note that this was for a pilot under checkout conditions so the subject was fully anticipating the emergency event to occur. In the real occurrence, adding the element of surprise will inevitably increase the delay increase. This failure-to-brake-action time will be similar to the time required between engine failure and lowering the nose to repair the falling airspeed.

2. The next section of the event begins at the point the pilot recognizes that a problem exists. After the pilot recognizes that a problem exists, they must then identify the specific problem and decide an appropriate response to the threat the problem provides. Then, lastly, that response action must be instigated. Now, these things also take time to be processed.

    Further research has shown that the recognition of an emergency and the time to respond to that realization varies greatly between individual people, but averages at least 3 seconds for most of the untrained population when the emergency is unexpected. So now, in addition to the 5 seconds it took for the pilot to realize that a problem exists, another 3 seconds will possibly pass before he/she may even begin to move the controls and attempt to restore the airspeed. This means that, for potentially eight seconds, the aeroplane has been sitting nose high and with no power applied. Herein lies the crux of this whole issue - what airspeed will be

[2] Vs = Stall Speed.

retained when the pilot finally gets to push the stick forward supposedly to enter the glide attitude?

Because of the potentially 8 seconds it has taken for the pilot to realize that there is a problem, the airspeed has decayed. In a high mass/low drag aeroplane such as an A36 Bonanza, this fall in airspeed might be as little as a mere 15 knots from the 96 knot Vy for the Bonanza. This decay leaves the pilot seeing about 80 knots on the ASI which is fine for this aircraft because its normal approach speed is 80 knots. The same will generally apply for the Cherokee 6 and the Cessna 206, although with fixed undercarriage on these latter, the airspeed decay may be a little more severe.

However…….. For a light, lower mass and higher drag aeroplane, it will be quite a different story. In my GR Lightwing, closing the throttle in a trimmed steady climb at 65 knots (Vy) my ASI indicates a mere 47 KIAS after 5 seconds, or about 41 KIAS if I still have take-off flap applied - and this is right on the GRs stall speed at MAUW. Note that I use a 5 second time interval: I am disregarding the additional time it might take me to respond after I recognise the engine has failed. Adding this extra 3 seconds would only serve to ensure that I was well and truly stalled by the time I stuffed the stick forward when the stopwatch read 8 seconds. In reality, the GRs nose would have automatically dropped well before I was in a position to push it down.

3. Now I am sitting at 300 feet, effectively in a stalled aeroplane. In reality, to regain my lost airspeed, I need to get the nose well down, far below the normal glide attitude to accelerate the aeroplane. At, or even close to the stall, the drag value is so high the aeroplane cannot accelerate quickly and it is unlikely that it will ever regain the minimum speed I am trying to re-establish if I only lower the nose to the glide attitude. I now have to make a decision as to what I am going to do about the situation.

My brain is screaming for me to restore myself to safety and the last safe place was, as stated earlier, back on the runway. Herein lies the potentially overwhelming situational response from the pilot to roll into a VERY steeply banked turn and attempt to return to the safety of the runway.

But I am stalled, or so close to it that it's irrelevant. Applying aileron to roll into my panicked turn will cause the stall on my INTENDED UPGOING WING to instantly deepen because the aileron has to go down to increase the camber AND INCREASE THE ANGLE OF ATTACK to cause that wing to rise. The result will be a violent roll the opposite direction to my intended turn.

I am now, still at 300 feet, in a stalled aeroplane that is completely unexpectedly autorotating in the opposite direction to my intended turn back to safety. I had barely caught up with the fact my engine had failed, and now I am overwhelmed by my spin out of my turn. I have no way to even catch-up with situational circumstance let alone exit from it. The pen of fate begins recording my name on the statistics list.

Note that, even if I didn't use a massive amount of aileron to roll into my panicked turn, at 300 feet there is not enough potential energy remaining in the aeroplane to complete the turnback, let alone still have sufficient airspeed to retain sufficient control to make a successful flare for a landing.

So, what options do I really have. Firstly, I must regain as much of my lost airspeed as I possibly can. Without that airspeed I am a passenger in an out-of-control aeroplane that's crashing – airspeed is the only thing that MIGHT give me back that control. I push the stick forward and the nose down into an attitude that is lower than that for the normal glide, and attempt to get back my delinquent aeroplane back to a minimum airspeed. What is my next priority?

> *Where to land? I can't turn. With no airspeed and the limited height in hand, a turn is impossible and therefore I must aim to land close to whatever heading I currently have. In other words – pretty well straight ahead. The GR Lightwing POH advises a calculatable rate of descent of 13FPS at its best glide speed. Therefore, being at 300 feet will give me 23 seconds before I am on the ground. But that doesn't work here, it will be a very much shorter time because I am not at my best L/D glide speed and have to sacrifice some of the 300 feet in exchange it for airspeed.*
>
> *With the aeroplane being in such a precarious position re airspeed, I will have about half that time, perhaps as little as a mere 10 seconds, before I am at the flare height. That's not enough time to get the speed back up to the glide speed, and probably not enough to ensure that I can stop the descent in the flare when I am back at ground level.*

In Issue 86 of the Flyer, published in November 2020, I produced an article on this same topic entitled, The Improbable Turn"; improbable because, if the pilot didn't have bags of experience and was very, very current, it was improbable the turn could be completed safely. The following is an excerpt from that article, reproduced because its message is just as significant here as it was there.

> *In 1974, whilst a line Instructor at the Waitemata Aero Club at Ardmore, New Zealand, Maurice Parsons, another instructor and I took out a Victa 100 to experiment. We hoped to ascertain a reasonable minimum height necessary to achieve a successful turn-back after an EFATO. Our findings were that, for us, two professional pilots, experienced, and very current on type, we needed to be at least 400 feet above the runway elevation to have any chance of successfully returning to the runway at all. The two primary issues were:*
>
> 1. *Not wasting altitude and immediately lowering the nose to retain 70 KIAS as the engine was throttled back (doesn't happen in a real one), and*
> 2. *Actually, getting the nose down far enough to achieve and maintain that speed whilst the aircraft was loaded when banked during the turn.*
>
> *We found that the whole windscreen had to be filled with ground to maintain 70 KIAS in the steep descending turn necessary to get back to the runway and, for students and PPLs at least, this was likely to be too intimidating for them to realistically achieve. Thus, any attempt below at least 400 feet above the runway literally doomed the aircraft and its occupants. We settled on teaching no turnback on climb out below 700 feet above the runway.*
>
> *Once established on the crosswind leg, a return to the runway was as safe as any other field selected at low level because of the extra altitude and the reduced heading change required to return to the runway. We also tried it in a PA28-140 with similar results. I must add, though, that we did the Cherokee testing with just the two of us in it for safety reasons, but agreed that the turn-back on initial climb out was to be discouraged and was only to be carried out after turning crosswind. This would be safe and quite appropriate for that aircraft type based on our experience on the PA28 with a full load.*

Conventional pilot training takes into account the shortage of time available to respond to the recognition of an EFATO by deliberately overlearning the procedure to adopt in the event of its occurring. The purpose of overlearning is to produce an automated reaction that best uses the time available by minimizing delays after the initial surprise or shock of the failure and enhancing the decision-making process. Thus, once the realization has sunk in that a real EFATO has occurred, the subsequent actions are delivered from rote learning and no thought process is required. There is no time for a written checklist, and no time to even think about it. Just time for a set of practiced actions.

As a retired professional pilot, I believe that it is a better decision, in most circumstances, to make a controlled landing onto less than hospitable terrain, than to run the risk of stalling and spinning in an attempt to return to the runway should my engine fail after take-off. In my flying life I have had three EFATOs. As an instructor, one failure was the disconnection of the carburettor heat cable in a Cessna 150, and ZK-CSW could not maintain height with two up and full tanks with the resulting over-rich mixture. Although this control is supposed to be sprung loaded so a failure would hold the control in the carburettor heat cold position, it did not and so we suffered a serious partial engine failure. I did not turn back – I landed on the cross runway. The second was in a Piper PA38-112 Tomahawk ZK-PAH where we suffered an engine-driven pump failure. When the electric pump was turned off at 300 feet in the climb-out, we saw the pressure drop on the fuel pressure gauge. Turning it back ON restored the pressure so the student under PPL flight test immediately aborted the flight and we returned, doing a conventional circuit. Needless to say, the electric pump remained on for the duration of that circuit. The student easily passed the subsequent test after the pump was replaced. He grinned when I advised him that had he not aborted the flight when the failure occurred, he'd have failed. Here we didn't turn back, but the inevitable power loss was averted by restoring the back-up system which we then relied on to get us back for a safe landing in the same direction on the same runway from which we departed. When time permits, trouble checks can have a big advantage.

My third EFATO was in a Fletcher, crop dusting, when, on my fourth flight for the day, a hermit ram ran out of the scrub and across the strip as I took off. The aeroplane was heavy - I was carrying an overload of powdered lime, and there was not enough runway to stop, take-off was compulsory, either controlled, or uncontrolled when I went off the end of the strip. With the dump system in full operation, I staggered off the end, sinking as I flew across the drop-off, the dump gate wide open but less effective with the aircraft sinking. The engine-power was greatly reduced and only when the hopper was empty could I really stop sinking and start to totter up to the elevation of the strip so I could return. This power loss was caused by the impact of the sheep sliding up the nose leg to crush the underside of the cowl and substantially shrink the diameter of the flexible hose carrying the air supply from the air scoop on top of the cowling to the inlet manifold air inlet underneath.

Why have I included these? Merely to indicate that every EFATO will be different and every EFATO, after the initial actions have been completed, will require different decisions to be made to safely land. Whilst the choice of landing site may not pose an easy question, by not turning back and, instead, planning to land on the best location within an arc of 30° either side of the *nose, in my opinion, is likely to improve your chances of survival tremendously in MOST EFATOs.*

Remember, time really is of the essence when thinking about your reactions in the event of an EFATO. Practice the immediate actions you were taught in your training and never second guess them if faced by a failure.

Also remember that, in the occurrence, the sole aim really is to survive. I have tried to present in this article, that it is likely to be a very poor decision to turn back when so many statistics on turn-backs are also recorded as fatalities. A landing on rocky terrain under full control is far more likely to be survivable than a stall/spin approach onto a runway that's out of reach anyway.

A turn-back for real is like playing Russian roulette with 5½ chambers loaded.

While a man with a high-end ego and a word processer can suggest anything they want that will place them on an intellectual pedestal, you must make your own decisions when you are the pilot in command. Yes, I do agree that there are cases where pilots have indeed landed after doing a 180 degree turn when the engine stopped. Statistically though, these are extremely the exceptions.

In reality, your best chance of getting home safely is to maintain control of your aberrant aeroplane, and land as close to straight ahead as the particular circumstances of your predicament allow.

When you read the work of writers advocating a turn-back after an EFATO, just ask yourself why, if it's such a good option, aren't there loads of turn-back survivors applauding the suggestion. There's not even a whisper from a survivor – the dead can't be heard – only counted.

However, as the pilot in command – it's entirely your call! You make the decision. But if you elect to turn back and are wrong, it may be the last decision that you ever make. Also, it's a pity if you had a passenger – they never had any choice!

Happy Flying

------ ooOOoo ------

Flying loaded: what could possibly go wrong?

By R. C Thompson

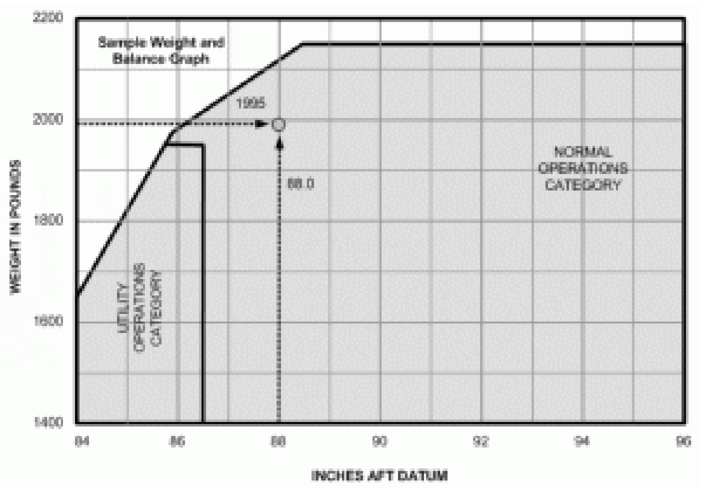
I was a brand-new Private Pilot, my head was in the sky, eager to build my flying skills, and a perfect opportunity arose. The Barbershop Singing Lancaster, Pennsylvania, chapter needed some help transporting gear to Ocean City, Maryland, and my buddy Bob (always the organizer) we could fly the stuff from Lancaster to an airport closer to the destination.

The proposed load was professional PA equipment: big loudspeakers, mics, amplifiers, stands, cables, etc. Being a former engineering major, I was hesitant about the weight involved, and requested a complete list of every single item, showing all dimensions and weight of each one.

Having no aircraft of my own, my plan was to rent a Cessna 172 and take out the back seat. I would then carefully calculate where every item would have to fit, and the location of the center of mass of each item. The list of items arrived and I drew a layout where the huge loudspeakers and each of the other items had to go. Then I ran the weight and balance calculations, three independent times, to be sure it was right. It came out that with me and Bob in the front seats (both heavyweights back then; no offense, Bob), we would be at full maximum weight and just within the rear CG limit.

I know you must be curious: had I ever flown that make and model of plane before? Well… err… no. Had I ever flown any plane at maximum weight *and* maximum aft center of gravity? Err… no again. Wait—maybe in the trainer? It was a tiny Tomahawk two-seater, barely enough room for me and my 6-foot 3-inch instructor, and we always had around 10 gallons fuel (I always wondered about that).

But the math said we were OK, and as a former engineer I was very sure of my math. The deal was on, to fly the stuff from Lancaster to the Cambridge, Maryland, airport where others would pick up items and drive the rest of the way.



Weight and balance is important, but only if you follow the plan when you load the airplane.

When the day came, our initial trip to Lancaster in the rental plane was a piece of cake. We were real light and real fast (no back seat), the weather was grand, and I was happy to be adding a new airport to my logbook.

We met the Lancaster guy with all the stuff, and as he handed each piece to me, I carefully identified and loaded each item into the plane in exactly the place I had planned. Everything fit perfectly, and I walked away to sign the bill for fuel top-off (the *second* not so smart idea?), made a final weather check, and soon we were cleared for take-off.

I knew we were very heavy and would need much more runway than usual to take off, but was really surprised when the nose lifted off before we were even at 40 knots. I pushed the yoke forward and quickly dialled in nose down trim, but it happened again almost immediately—and more down trim went in. We were gaining speed slowly, but it needed a lot more nose down trim, and finally at around 110 knots airspeed we lifted off the runway, at the exact moment I ran out of forward trim. I told my friend Bob to lean forward as far as he could, but “don’t touch the yoke or the pedals”. We were in a very, very slow climb, long out of runway, and I had to keep pushing hard on the yoke to keep the nose down and the airspeed up.

By now I knew something was critically wrong. Foolishly, I pushed on to Cambridge—perhaps because I was very familiar with the airspace, there was ordinarily almost no traffic, and that was where the plane lived.

Approaching Cambridge, I called on the radio to ask for help from an instructor or anyone, but no one answered. I brought her on down, but as we crossed the approach end of the runway, I realized we were much too high and way too fast to ever get down and stopped before going off into the marsh. I aborted the landing, and now I had to somehow climb again, very slowly and carefully, just to clear the terrain and not smack into grass, trees, sailboat masts, etc.

At full power we were inching up, just missing the big stuff, and it seemed like it took 20 minutes coming back around in a very large very low circle, with arms now weakening. This time, at full speed, I planted the wheels right onto the runway at the numbers, cut the throttle, and braked like hell. When we finally got stopped, we had 30 feet left of the 3000-foot runway.

After shutdown ,I was out pulling shredded tall grass out of the wheel pants when the owner came out of his repair shop, apologized for not answering the call, and asked what the problem was. He half listened, and then replied, “no problem—just do a normal landing.”

That would have been sure disaster. I’d like to think that I wouldn’t have followed that advice anyway, based on my understanding of the problem, the feel of the controls, and the plane’s behaviour.

But the math was right—wasn’t it??

Investigating together, Bob and I discovered that after I left to pay the bill, the guy had either miscounted or just threw in an extra professional mic stand, the kind with a gigantic, heavy, round foot. When I was busy signing the fuel ticket, he slipped the heavy base into the only place left, the worst possible—the hat rack!

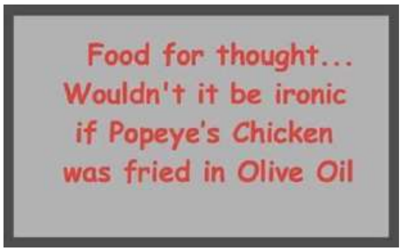
Recalculating, I found we were more than 6 inches beyond the aft limit and around 40 pounds over gross. I believe that if my friend Bob and I were not as heavy as we were at that time, then once aloft the legendary farm would have been ours.

Thank you, Great Spirit, thank you.!

------ooOOoo ------

Friendly message from Vlad Putin to Finland.

Being intelligent and of sound mind, I must now advise you that if you don’t trust me, I’ll blast your country into eternity with my Nukes. It’ll take me 10 minutes!



You Have Control –

of Both the Aeroplane and your own Personal Proficiency

By Rob Knight

Once you take the controls of an aeroplane, you are also taking on the responsibility of being in control of your personal flying proficiency as well.

I'm sure that you have never forgotten that magic moment when your instructor said to you for the first time, "You have control."

I do! No-one forgets that moment in time, suspended on silvered wings, bright against a backdrop of the bright blue sky. Your pulse races at those pilot-making words, "You have control."

Years may pass, ratings and endorsements accrue, but you'll still recall those very words that mean so much to every pilot that has ever lived.

Taking the controls of an aeroplane for the first time is more than a rite of passage; it is a responsibility you will carry with you for as long as you are a qualified pilot and continue to fly. At that moment it occurs, your flight instructor passes onto you the accountability for lifelong learning, improvement, sound judgment, and safety.

These piloting characteristics comprise but a small part of this nebulous thing called proficiency which is an essential entry left off far too many pre-flight checklists in aviation. While most pilots would claim to clearly understand the need for proficiency, accident statistics and accident probable causes totally suggest that something stands firmly in the way of us gaining and maintaining it.

To understand why, first we must get to the bottom of measuring proficiency. And this is easier said than done. Let's look at an example.

- Pilots that hone their skills recovering from a power-on stall so expertly that the ball never wavers, and their altitude barely changes, can be said to be proficient in all power-on stall recoveries that they intentionally perform. In other words, if there's no surprise factor, they know a stall is coming, they have the stick and rudder skills to perform the recovery extremely well.
- Pilots that hone their skills and experience to recover safely from inadvertent stalls whilst on approach can be said to be proficient in stall recognition and recovery with minimum height loss on stall events that surprise them – and in remaining calm in a crisis. That is a big difference compared to recovering from an intentional stall performed in training.
- Pilots honing their skills to avoid distractions that could lead to an approach stall in the first place can be said to be proficient in situational awareness and in adhering to safe flight skills and techniques. Regardless of their recovery skills from a practice stall or an unintentional departure stall, they are adept at creating circumstances that result in a safe flight.

In light of the above, stopping here and asking three different pilots what defines proficiency based on this example, you will get three different answers and each one, in its own right, is perfectly correct. You will go crazy debating with other pilots how not getting into an approach stall in the first place is the most critical factor. Or with another pilot who might respond by simply stating that no-one should assume that it will happen in the first place so merely emphasizing stall detection and recovery skills is the most important.

In reality, all and none of these situations can clearly determine proficiency. Alone, they each represent components of a proficient pilot, the pilot will only appear proficient based on the specific situation. It's only collectively where they begin to paint a comprehensive portrait of proficiency in which a pilot has the required knowledge and practiced skills to operate safely and effectively despite the scenario. It is the latter that comprises the standard you should hold yourself to in the cockpit.

However, this type of collective and comprehensive proficiency is very challenging to attain. Traditional proficiency retention courses and workshops can help refresh your knowledge and skills, but even they can fail to identify and address the weakest areas of your flying to ensure you are prepared for any scenario. It is your duty as pilot in command to take it upon yourself to uncover those areas requiring improvement. Following are some simple but proven steps to assist in finding those weakest links, and to develop the proficiency you need for a safe flight every time.

Regularly Exercise your Flying Skills

Some say that flying is like riding a bicycle. Well, it is and it isn't. I had a decade and a half spell from the controls and was surprised when I came back by two things, how much I remembered, but also how much necessary detail I thought that I should have remembered but, in reality, had forgotten. It wasn't just a smooth ride after the time out where I drifted effortlessly between lofty TCU under some high ST. If I really was on that bicycle, I would have been rather wobbly, and not the smooth performer that I used to be.

Currency (aka recency) is arguably the most perilous component of proficiency because it enables you to appreciate your abilities and limitations at a particular moment, modify your minimums accordingly, and be able to then operate safely and effectively within them.

Don't Settle for Second-Best in Your Performance

Anyone saying that practice makes perfect is only half right. Practice is important, but only if you are practicing to meet the best standards possible and your performance is actually improving. Practice for the sake of it without any improvement is merely practicing failure.

There is actually no sin stuffing up a landing PROVIDED that you execute a go-around before damage to either pride or aircraft occurs. The sin occurs if you do not dedicate yourself to analysing and addressing the cause(s) of your less-than-ideal landing. Perhaps you need to read up on crosswind technique (assuming your technique is what caused the problem), have a chat with a friendly instructor, or, if you reckon after some thought that you can fix the issue yourself, follow up with sufficient practice until you reach your STANDARD of consistently greasing it on.

An important part of aiming for perfection also to understanding that you will never reach it. There is a very good reason why pilots with between 80 and 500 hours logged time tend to crash more aeroplanes than newly qualified pilots. The former starts to develop confidence in their abilities without understanding what true proficiency looks like; the latter understands they are still working toward proficiency. Remember, only practicing towards perfect can make perfect, practicing something imperfectly without raising the standard will only make the pilot good at doing it imperfectly.

Do not become over-confident, this is the primary cause of too many light aircraft accidents. If you even begin to feel perfect in the left seat, don't sew chevrons on your sleeves, you need to look harder at what you are doing – *there ain't no perfect pilot wot's bin born!*

Never Stop Learning – Assess Every Flight for Potential Up-Skilling

At the conclusion of every flight you make, take a moment and consider if there's any aspect or part that you would like to do better next time. It could be just a small thing like a hesitation over an item on a memorised checklist, or a touch-down that was gentle, but 20 feet further down the runway than you intended. Take a few minutes and ponder your performance. Make notes, mental or with pen and paper, and plan to address these items as soon as possible. Or, where necessary or relevant, take time out to read-up on past briefings and lesson notes to correct the issues. Even consult an instructor or mentor, if the situation requires such action. Consistency is vitally important for the establishment and maintenance of high proficiency.

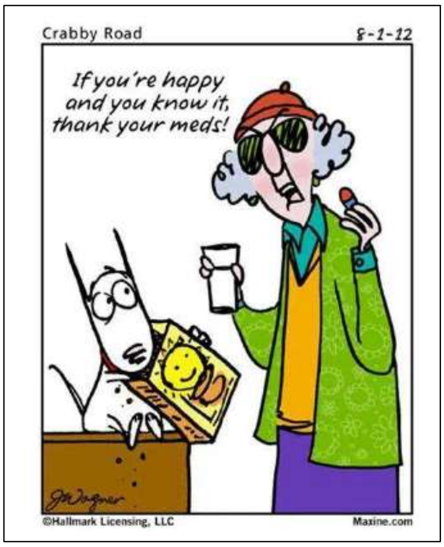
Remember, it's you that has control. Your flight instructor has passed along to you the responsibility to gain and maintain your pilot proficiency. What you actually do with it is up to you – and you alone.

So, in a nutshell, what are we talking about? The term proficiency as applied to pilots is really multifaceted. It's not just a question of being able to recover from a stall on approach with alacrity and minimal height loss, but to have been knowledgeable enough to be aware of the increasing possibility of such a stall at that stage of a flight, and to be sufficiently aware to take early action to ensure that it never eventuates. More than a single aspect of every stage of flight must be covered, a bit like a cross-fire situation in military combat. This way, surprises are less likely, and even if one does occur, anticipation is on high alert for an early recognition of symptoms, and the remedial requirements are already there to immediately impose on the situation. Flight safety is enhanced by proficiency.

The most proficient pilots are those learned ones – not just good stick wagglers, but those pilots who continue to read and learn after they qualify, and thus understand more about their aircraft, their aviation environment, and themselves for the rest of their flying lives.

Remember – at the time you qualified, you held just the most miniscule amounts of handling skills and knowledge to CALL YOURSELF A PILOT. If, in 10 years, no further learning/revision is undertaken, how much will you retain? How will your skill and knowledge levels compare with your performance at flight test? And how proficient at the necessary piloting skills will you REALLY be? Will you still be safe?

Happy Flying.



The Future of Aviation Is Steam Power

By Jerry Gregoire. Published: February 2022

Attention, investors: I've decided to design and build an airplane powered entirely by steam engine. The target market for such an aircraft is, of course, flight schools and any pilots looking to avoid the high cost of avgas by chopping their own firewood. Exciting, huh? I'm just a few years from building my conforming prototype and looking for investors with an insatiable appetite for socially responsible nonsense and too polite to wonder out loud how long it takes the boiler to build up a head of steam.

The fatal flaw standing in the way of effective use of electric-powered aircraft is very well understood and easily summed up in two words: energy density. [Photo: Air]

Yeah, sticks of wood are a kind of fossil fuel, but they are unleaded, so my engine is definitely greener than yours, sort of. And yes, a steam engine can spin a propeller. Now, enough of your pesky questions.

If you think my idea is just too dumb to invest in, then you haven't been following what's happening with electric aircraft, an investor-targeted fraud not unlike the Theranos mess from just a few years ago. For those not familiar with the name Theranos, suffice to say hundreds of millions of investor dollars were squandered on what appeared to be a beneficial idea with no hope of ever delivering a usable product or a return to investors. Of course, investment in less-than-great ideas happens all the time—think timeshare—but what makes Theranos and electric aircraft development stand out is how, while in the process of gathering and dispersing millions, they manage to avoid even a cursory level of sceptical review. For the most part, the coverage is breathlessly positive, merely reprints of glossy press releases in an impressive show of "suspension of common sense."

Do electric airplanes fly? Well, of course they do! We've known that since the early 1970s. Spin a propeller fast enough, even if you use a giant rubber band to do it, and you'll create enough thrust to get a light airplane off the ground. The fatal flaw—that single thing standing in the way of effective use of electric powered aircraft—is very well understood and easily summed up in two words: energy density.

Before I go on, a small confession. About eight or nine years ago, I invested a large sum in an electric aircraft company that promised to have a prototype flying within two to three years. Naturally, that didn't happen. About five years in, they hung an electric motor on a kit plane and hauled it around to events like EAA AirVenture in a shockingly successful search for more investors. Ten years have gone by now and that company is in the process of building a conforming prototype, they say. While these guys may not be good at building airplanes, they are absolute savants at issuing press releases. Appearing at an average rate of about one a week, a third of them announce the selection of some parts supplier, a third discuss details of future versions of an airplane they haven't yet built, and the rest proudly announce that this or that university or organization has "committed" to buy their electric airplanes for their training fleets.

This last group is a bit of a mystery to me. Beyond the obvious social credits, a university might receive for embracing electric over gasoline, one has to wonder what type of spreadsheet gymnastics they had to perform to justify investing in a fleet of aircraft two or three times larger than the fleet they operate today. More on why that's true later.

The amount of energy that can be stored and released on demand, be it in a battery or avgas or a twisted rubber band, per unit of mass is known as specific energy.

Es = E/m
(Specific energy = kilowatt hours / pounds)

What this means is, the higher the specific energy, the more energy you will get out of a pound of whatever it is you're storing it in. This is the "fatal flaw" I mentioned earlier. The specific energy of 100LL avgas is about 47, while the best lithium-ion battery around is about 1. Put another way, 10 pounds of battery will store 1,200 watt/hours of energy while 10 pounds (1.66 gallons) of 100LL contains 48,000 watt/hours. No clue on the rubber band.

For example, a fully-fuelled Boeing 787-10 Dreamliner can fly roughly 8,000 miles while ferrying 300 or so passengers and their luggage. A battery with the energy equivalent to that fuel would weigh about 6.6 million pounds.

Let's look at this in real-world terms. We'll use a Cessna 172 for this because the performance specs are well-known and it represents the optimal flight-training platform. Fuel capacity on a 172 is about 56 gallons weighing 336 pounds. Its engine, a Lycoming IO-360, weighs about 260 pounds. Cruising at 75 percent power, we can fly about five hours before the engine gets quiet. With max fuel aboard, that leaves us with about 500 pounds of useful load, or three medium-sized adults with no bags. If we replaced the avgas and engine with 550 pounds of fully charged lithium-ion batteries and a 50-pound electric motor, our cruise time to exhaustion drops to an hour and 20 minutes. Not terrible for many training scenarios, but that 80 minutes assumes we're not flying at night, that the temperature is not dropping as we climb, we're keeping our radio transmissions to a minimum, and the airplane is not booked for two-plus hours after we get back because it's going to take at least that long to recharge the batteries. Oh yes, one other thing: We're not flying anywhere north of Missouri in January because we may freeze to death.

Picture, for a moment, flight training in North Dakota in winter. According to a Forbes article, the batteries in Tesla automobiles lose at least 30 percent of their range once the temperature nears 0 degrees Fahrenheit. Eighty minutes of flight time immediately goes down to 56, assuming you don't attempt to heat the cabin—barely enough time for a complete flight lesson, but plenty of time for a good old-fashioned case of frostbite.

Inside the lithium batteries, ions are traveling between the positive and negative electrodes through a liquid electrolyte. As it gets colder, the liquid becomes thicker, resistance goes up, and the ions move more slowly. The more the resistance goes up, the faster you lose power. To deal with this, you have to keep the battery warm somehow, but the battery itself is where heat comes from.

High temperatures also cut into battery range. According to tests run on electric cars, at 95 degrees F, the range dropped 4 percent without use of air conditioning, and fell by 17 percent when the cabin was cooled. This is a sloppy way to estimate the effects on electric airplanes, and I'd use the battery stats from the electric airplane manufacturers if I could get them, but they're not sharing.

The wonderful thing about the internal combustion engine on a 172—besides its ability to go from Dallas to Atlanta in a single hop and then on to Philadelphia after a 15-minute refuel—is it makes enough heat to keep the cabin warm whenever needed. Fossil fuel engines make all kinds of beneficial "by-products" such as electricity for lights, avionics, autopilots, pitot heat and air conditioning, cabin pressurization for high-altitude flight, and a means to drive hydraulic and vacuum pumps without reducing range.

So, are there workable solutions for electric airplanes on the horizon? Well, that depends on how tall a mountain you're standing on. For airplanes, at least, it's going to have to be something other than lithium-ion batteries. Energy density in these batteries is quickly reaching its theoretical limit, which means that more storage will only come in bigger and heavier packages. Bigger and heavier works fine for cars, to a point, but does nothing to improve time aloft. This is a game of diminishing returns wherein tripling the batteries in a 172 would actually reduce the endurance and take the airplane well over its max gross weight.

The most promising short-term improvement appears to be the development of solid-state batteries. Where lithium-ion batteries have a liquid electrolyte, solid state batteries use a solid metal composition as their ion transport mechanism. This switch has a number of benefits, including a higher safety profile in that they are less likely to catch fire, can be made without costly materials like cobalt and nickel, and feature twice the energy density of the lithium-ion batteries. Problem is, besides the fact that doubling the available energy is still not enough, these solid-state batteries are too expensive to use at current production rates. Making our way down the cost curve will take a long time, perhaps 10 years or more, while the industry looks to add customers that are as weight sensitive as aviation.

Farther down the road, for aviation anyway, is the promise of hydrogen fuel cells. You can use hydrogen to spin a propeller, either by running it through an existing internal combustion engine just like it was avgas, or you can use it to fuel a chemical reaction that makes electricity. Hydrogen has a specific energy about one-fourth of jet-A, not bad, and its only by-product from a fuel cell is water. There are cars and buses already using this technology, and there are even a few experimental aircraft using a hybrid version, meaning they also carry batteries to supplement high-power requirements during take-off. There are lots of technical issues to work out, of course, like bigger, heavier fuel tanks that would be located in the fuselage instead of the wings, producing enough electrical output to get rid of the batteries, and an infrastructure to store and deliver the hydrogen into the airplane. Big problems, indeed, but the biggest of all is the high cost of actually producing the hydrogen. Without getting too far into the weeds here, it takes a lot of electrical energy to make liquid hydrogen, meaning more generating plants burning fossil fuels, wind and solar farms, and more nukes. Practical applications for aviation, 10 years-plus.

The shame here is that the people writing the press releases about the imminent arrival of fleets of electric aircraft, making promises about capability and delivery dates, know that they are … ummm, (*what's a polite word for lying?*). For the Boeings and the Airbuses and the other deep-pocket companies, the cost of funding this research is well worth the PR alone. For the training institutions expressing interest in adding electric aircraft to their programs, I would chalk this up to a combination of wishful thinking and an honest interest in the preservation of the environment. For the rest, those tapping investors that will never see their money returned, I take it they don't believe in karma.

So, that's it then. Steam. As long as there are investors out there that are willing to drop millions on electric, I'd say my chances of finally getting that Ferrari are pretty darn good. So, how's this for a slogan?

Steam, not a better idea, but not much worse.

__Jerry Gregoire__ is the founder and co-chairman of Redbird Flight Simulations, the former chief information officer for Dell Computer Corporation, and vice president of information systems for the Pepsi-Cola Company. He currently flies a Cessna Citation CJ3 and a Beech 18.

Notes. Steam is not a new idea.

A couple of attempts at steam powered flight

1. The aerial steam carriage, also named Ariel, was a flying machine patented in England in 1842 that was supposed to carry passengers into the air. It was, in practice, incapable of flight since it had insufficient power from its heavy steam engine to fly. A more successful model was built in 1848 which was able to fly for small distances within a hangar. The aerial steam carriage was significant because it was a transition from glider experimentation to powered flight experimentation.
2. On April 12, 1933 at Oakland, California, William J. Besler made the first flight with his Besler steam engine installed in a Travel Air 2000 aircraft. The engine was a two-cylinder V-type engine that generated 150 hp. The engine weighed 180 lb and the boilers and condensers weighed an additional 300 lb (3.2 lb/hp).

   The steam boiler that was so quiet that spectators on the ground could hear the pilot calling to them. Ten gallons of water were sufficient for a flight of 400 miles. The advantages of the "Besler System" that were claimed at the time included the elimination of noise and vibration, greater efficiency at low engine speeds, more power at high altitudes (where lower air temperatures assisted condensation), a reduced likelihood of engine failure, reduced maintenance costs, reduced fuel costs (fuel oil was used in place of petrol), reduced fire hazard (oil is less volatile and operating temperatures were lower) and a lack of need for radio shielding.

   Alas, it's very poor power to weight ratio doomed it to being a mere quirk in the twisting annals of history.

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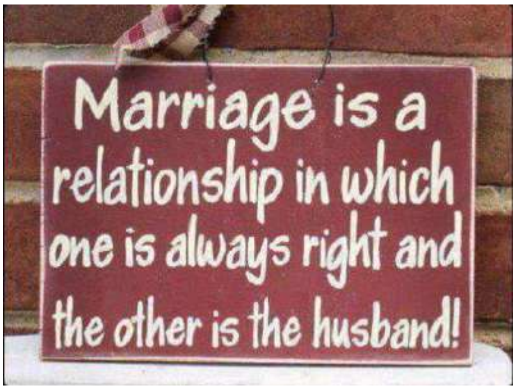
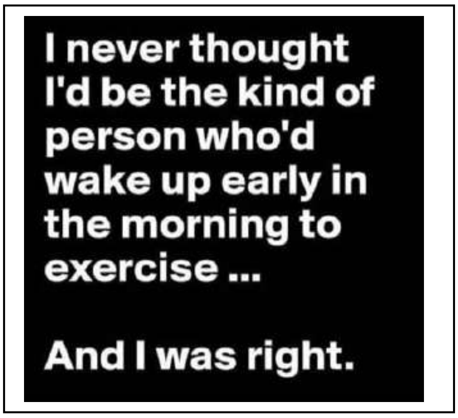
As I get older, people think I'm becoming lazy. I maintain that I'm merely being more energy efficient.

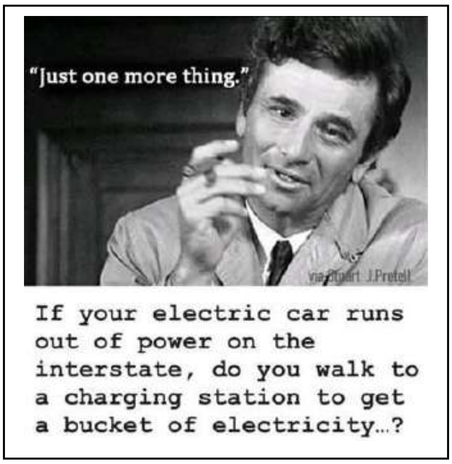


Scientists have yet to explain why Woolworths can have 300 staff working, but only four checkouts manned

FLY-INS Looming

Murgon (Angelfield) (ALA)	Burnett Flyers Breakfast Fly-in	**Next Planned – June 12th, confirm at http://www.burnettflyers.org/?p=508**
Shute Harbour YSHR	Fly-In and Runway Dinner	**Whitsunday Airport 10/09/2022**





Too Late - it's Happened – the YGAS Breakfast Fly-in On Mother's Day

Details from Marty Hone

A good line-up considering the predicted weather forecast

Despite the weather conditions predicted by the 'experts', , we had cloud and periods of clear sunny skies, but no rain or wind. Aircraft from Boonah, Kilcoy, Coominya and other local airfields arrived throughout the morning, totalling around 20, with a similar number of arriving by car.

Over 140 cappuccinos and a similar number of egg and bacon rolls were dispensed by the volunteers, and with plenty of smiling faces. It proved that the decision to go ahead with the event in light of the suggested weather was certainly justified.

See you next year!

Warbird: Dornier Do 335 A-O Pfeil (Arrow)

The Smithsonian National Air and Space Museum

The Dornier Do 335 was one of the fastest propeller-driven aircraft ever flown. The Germans claimed that a pilot flew a Do 335 at a speed of 846 km/h (474 mph) in level flight at a time when the official world speed record was 755 km/h (469 mph). two liquid-cooled engines each developing about 1,750 hp powered the Do 335. Dornier mounted one engine in the nose and the other in the tail in a unique low-drag push-pull configuration similar to the civil aviation Cessna 336/337 *Push Me - Pull You* aircraft of the 1970s. However, this innovative German wartime design also featured an ejection seat, a tail fin which the pilot could jettison, and tricycle landing gear. for a fighter airplane, the Do 335 was enormous: tall enough that a person of normal height could walk beneath it and very heavy at 9,600 kg (21,000 lb) loaded. But serious flaws also plagued the design. The rear engine overheated often, and the landing gear was weak and prone to failure.

Dornier Do 335 Aircraft

Do 335 Pfeil, Germany, c. 1945

Claudius Dornier patented the push-pull engine layout in 1937, which was innovative because it offered the power of two engines but less drag and greater manoeuvrability than other twin-engine configurations. The RLM (German Aviation Ministry) wanted to support development of push-pull aircraft but initially only as seaplanes and bombers. By 1942, the Luftwaffe needed multi-role fighters and after submitting a proposal in January 1943 for a Schnellbomber (fast bomber), Dornier built a prototype Do 335 V-1 ('V' for Versuchs or experimental) and the aircraft completed its first flight in September 1943. Following initial testing, the RLM ordered 14 prototypes, ten preproduction aircraft with the suffix designation A-0, eleven production A-1 single-seat aircraft, and 3 A-10 and A-12 two-seat trainers.

Dornier selected two Daimler-Benz DB-603 V-12-cylinder engines to propel the four different versions of the Do 335. Each engine displaced 44.5 litres (2,670 cu in) and weighed 910 kg (2,006 lb). Unlike conventional twin-engine aircraft with wing-mounted engines, the Do 335 would not yaw sharply to one side if one engine

DO 335 with engine covers removed. Each engine had a capacity of 44.5 litres and weighted 910kg failed, and single-engine flying speed remained respectable at about 300 knots (620 km/h - 345 mph). Pilots reported exceptional flight performance in acceleration and turning radius, and docile handling with no dangerous spin characteristics. In an emergency, however, the pilot could detonate explosive bolts and jettison the pusher three-blade propeller and dorsal fin to increase the chances of successfully bailing out using the pneumatic ejection seat. When fired, the seat pushed the pilot away from the aircraft with a force of about 20 Gs.

Dornier finished building as many as 48 Do 335 airplanes and another nine or so were under construction when the war ended. One of many plans issued by the RLM called for Dornier to build 310 Do 335s by late 1945. Although combat conversion units received several pre-production aircraft about 10 months before the war ended, no pilots flew Do 335s in combat. Only one example of the first production version Do 335A-1 rolled off the Dornier assembly line at Friedrichshafen just before the war ended. One 30 mm MK-103 cannon (70 rounds were carried) firing through the propeller hub and two 15 mm MG-151/15 cannon (200 rounds per gun) firing from the top cowling of the forward engine armed this model, and an internal bomb load of 500 kg (1,100 lb) could be carried.

The NASM displays at the Steven F. Udvar-Hazy Center the second Do 335 A-0 built. Dornier designated this airframe construction number 240102 and gave it the aircraft identification code VG + PH and A-02. Crafts persons completed the aircraft at Dornier's plant at Mengen, Germany, on 30 September 1944, and then test-flew the airplane during the winter of 1944-45. From 20-23 April 1945, German test pilot Hans Werner Lerche flew the Do 335 from Rechlin back to Oberpfaffenhofen near Münich, via Prague, Czechoslovakia, and Lechfeld, Germany. Allied forces found the Do 335 at Oberpfaffenhofen on April 29.

In mid-June, pilots ferried two Do 335s, including the NASM aircraft piloted by German test pilot Hans Padell, from Oberpfaffenhofen to Cherbourg, France, for shipment to the USA aboard the British aircraft carrier HMS Reaper. Following testing from 1945-48, the U. S. Navy transferred the Do 335 to the Smithsonian's National Air Museum in 1961. The Do 335 remained stored at Naval Air Station Norfolk until 1974 when the Smithsonian returned it to Oberpfaffenhofen, Germany, where the Dornier company preserved and restored the airplane in 1975. Dornier crafts persons, many of them factory employees since World War II, were surprised to find still attached to the aircraft the explosive bolts designed to blow off the tail fin and rear propeller. Dornier displayed the preserved airplane at the May 1976 Hannover Airshow, and then moved the artifact to the Deutsches Museum in Munich until the aircraft was returned to the Paul E. Garber Facility for storage in 1986.

The DO 335 cockpit layout

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Do 335 Specifications

Aircraft design Purpose:	Air-to-air combat fighter
Dimensions:	Wingspan: 45 ft, 1 in (13.7414m) Length: 45 ft, 5 in (13.843m) Height: 15 ft (4.572m) Wing area: 592 ft² (55 m²)
Weights:	Empty: 16,314 lb (7400kg) MTOW: 21,164 lb (9670kg)
Power Plants:	2 × 1,726 hp Daimler-Benz DB 603A 12-cylinder inverted liquid cooled engines
Performance:	Maximum speed: 474 mph (412 knots) Rate of Climb: 1750 fpm Ceiling: 37,400 ft Maximum range: 857 mi (1380km)
Armament:	1 × 30 mm calibre cannon 2 × 20 mm calibre autocannons 2,200 lb (1000kg) of bombs
Number Produced:	48
Service Dates:	1944–1945

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

1. A pilot intending to land on runway 07 has a surface wind of 100(M)/20. What cross wind component is the pilot likely to experience as the landing occurs at this W/V?
   A. 5 knots.
   B. 10 knots.
   C. 15 knots.
   D. 20 knots.

2. On a clear evening, the surface wind tends to veer and decrease. What causes the change in wind direction?
   A. Surface obstructions and obstacles cause the changes to wind speed and direction.
   B. The decrease in thermal activity at the day's end causes a wind direction change.
   C. Diurnal changes to the isobaric pressure pattern cause. the wind direction change.
   D. With the decrease in wind speed, Coriolis force causes the wind to veer.

3. A pilot knows that the 1000 ft wind forecast on his GPW&T is 090/15. He is 60 nm west of Brisbane and his destination is 15 nm ahead. If the elevation of the destination airfield is 1000 feet AMSL, which runway alignment would provide the least crosswind?
   A. 09/27.
   B. 04/22.
   C. 08/26.
   D. 12/30.

4. As the flaps are retracted after take-off, what happens to the centre of pressure if the nose attitude remains unchanged?
   A. It remains stationary on the chord line.
   B. It moves aft along the chord line as the angle of attack decreases.
   C. It moves forward along the chord line as the angle of attack increases.
   D. It moves aft along the chord line as the angle of attack increases.
   E. It moves forward along the chord line as the angle of attack decreases.

5. Is an aeroplane in a steady, constant airspeed climb, in equilibrium?
   A. Yes.
   B. No.
   C. Only at full throttle.
   D. Only when the correct climb power setting is applied.

See answers and explanations overleaf

If you have any problems with these questions, See Notes below or call me (in the evening) and let's discuss them. Rob Knight: 0400 89 3632 (International +64 400 89 3632), or email me at kni.rob@bigpond.com.

1. B is correct. Note: runway alignments are to the nearest whole 10° magnetic so we must assume that the runway is heading is 070°M. The difference in heading between the wind direction and the runway direction is 30°, and when the wind blows at an angle of 30° to the runway, half (50%) of the wind speed value will be crosswind. Therefore, the aircraft in question will have a 10knot crosswind. Incidentally, in this case the headwind will be 18knots. *(Note: if the wind direction happened to be 60° to the runway, the component values would be reversed, the headwind would be half the wind speed (10knots) and the crosswind would be 18 knots.)*

2. D is correct. When a fluid moves across the earth's surface, Coriolis effect will occur and the fluid speed will modify the flow direction. In the southern hemisphere, increasing the fluid flow speed will cause the direction of the flow to veer (change direction to the right) and vice versa. Thus, the decreasing speed of the wind caused by the loss in thermal activity drawing down faster flowing air from aloft in the early evening will allow the Coriolis effect to change the wind direction to the left i.e., the wind will back as its speed decreases.
   See: https://www.nationalgeographic.org/encyclopedia/coriolis-effect/

3. C is correct. 08/26. The variation west of Brisbane is 11°E. A GPW&T grid provides the wind direction in degrees True so, when converted to a magnetic wind direction the 1000 ft wind will be (090 -11°E =) 080 degrees. Thus, for no crosswind, the best runway alignment will be 080/26 because 08 will be directly into the wind.

4. B is correct. This is really two questions. One relates to the effect on the angle of attack as flaps are extended/retracted, the other question relates to the effect of angle of attack changes on the location of the centre of pressure on the chord line.
   Q1, As trailing edge flaps are lowered, the angle of attack increases and vice versa.
   Q2, As the angle of attack on an unstalled wing increases, the centre of pressure moves forward along the chord line. At the stall it moves abruptly rearward.
   In light of the above, raising/retracting flaps will reduce the angle of attack and reducing the angle of attack will cause the centre of pressure to move aft/rearwards along the chord line.

5. A is correct. In a steady climb at a constant airspeed the lift/weight couple equals the thrust/drag couple so there is no acceleration and the aeroplane is in equilibrium.
   See: http://dictionary.dauntless-soft.com/definitions/GroundSchoolFAA/Equilibrium

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Aircraft Books, Parts, and Tools etc.

Books (Aviation)

Item	Condition	Price
As the Pro Flies (by John R. Hoyt)	Excellent	**$20.00**

Parts and Tools

Item	Condition	Price
VDO Volt Readout instrument	Brand New	**$70.00**
Altimeter. Simple – single hand	As new	**$50.00**
Oil Pressure indicator, (gauge and sender)	New – still in box	**$80.00**

Tow Bars

Tailwheel tow bar.	Good condition	**$50.00**

Propeller Parts

Propeller spacers, Assorted depths, all to fit Rotax 912 UL/ULS propeller flanges	Excellent	**$100.00 each**
Spinner and propeller backing plate to suit a Kiev, 3 blade propeller, on a Rotax 912 engine flange.	Excellent	**100.00**

Contact Rob Knight via either kni.rob@bigpond.com, or **0400 89 3632**.

Kitset Aircraft for Sale

Build it Yourself

$2,200.00 neg

DESCRIPTION

All of the major components needed to build your own aircraft similar to a Thruster, Cricket or MW5.

- Basic plans are included, also
- Hard to obtain 4" x 3" box section, 2 @ 4.5 metres long.
- Wing spar & lift strut material - 6 tubes of 28 dia. x 2 wall.
- 20 fibreglass ribs plus the moulds,
- 16 spar webs plus the moulds,
- 2 fibreglass flat sheets for the leading edges - 4 metres long x 1.1 metres wide.
- All instruments including,
- A Navman flow meter,
- A Powermate rectifier regulator,
- A ballistic parachute,
- A 4-point harness,
- Set fibreglass wheel pants, and
- More.

Box sections and tubes

Flow Meter, Navman, Ballistic Chute, etc

A very comprehensive kit of materials

Colin Thorpe. Tel: LL (07) 3200 1442,

Or Mob: 0419 758 125

Ribs, tubes, spats, etc

Aircraft for Sale

¾ scale replica Spitfire

$55,000 neg

This aircraft is airworthy, flown regularly, and always hangared. Registered 19-1993, it is powered by a 6-cylinder Jabiru engine (number 33a-23) with 300 hours TTIS. The airframe has logged a mere 320 hours TTIS. This delightful aircraft has recently been fitted with new mounting rubber, a new alternator and regulator, a new fuel pump, and jack stands. It is fully registered and ready to fly away by a lucky new owner

Hangared at Kentville in the Lockyer Valley, parties interested in this lovely and unique aircraft should contact either:

Kev Walters on Tel. **0488540011** or

William Watson on Tel., **0447 186 336**

Single Seat T84 Thruster, disassembled and ready for rebuild.

I have a T84 single seat Thruster project in my hanger at Watts bridge.

The fuselage is on its undercarriage, the wing assemblies are folded up and the skins are with them.

Included is a fully rebuilt Rotax 503 dual ignition engine and propeller.

And, most importantly – the aircraft logbook!

Asking price $5000.00

Contact John Innes on **0417 643 610**

More Aircraft for Sale

$ 2000 ONO $

Cobham Cobra

An opportunity to buy a unique aircraft.

I now have a Foxbat, and can't to afford to keep 2 aircraft. The Cobra was advertised for about a year in Sport Pilot, with many enquiries, but no resulting sale. Rather than continuing to spend on hangarage and advertising I decided to de-register it, remove the wings, and trailer it home to my shed. I don't intend to ever fly it again so, make me an offer. It provides very cheap and enjoyable flying.

It is a one-off design, a single seater with a fully enclosed cockpit. It has a 24-foot wing-span, and is powered by a VW engine that provides sporty performance and superb handling. The airframe has logged 653 hours and the engine 553 since installation. It is easy to start, but requires hand-propping.

To see it in action, go to
https://www.youtube.com/watch?v=V5Qx4csNw_A&list=PLpBv2A6hk66Tg9DiCsjEtt4o4o8ygcTju&index=1&t=22s

It cruises at around 80 kts at 11-12 litres/hr. The tanks hold 48 litres so it has a very reasonable range. For my approaches I use 50 kts on my initial approach down to 40 kts on short final. You will want a fair bit of tailwheel time.

For further details contact Tony Meggs on (02) 66891009 or tonymeggs@fastmail.fm

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Slipstream Genesis for Sale

$12,000.00 neg

Imported and built 2001. Two seats side by side, powered by 80 hp 912UL Rotax, driving a Warp Drive 3 bladed prop. Cruise 70-75 kts. Empty weight 304kg, MTOW 544 kg, Payload 240 kg. Fuel tanks hold 78 litres. With fuel burn averaging 16 litres/hr, still air endurance (nil reserve) is theoretically 5 hours, or 350 nm. Aircraft always hangared. It has been set up for stock control/ mustering or photography, and is not fitted with doors. Registered until 13 October 2021, currently flying, and ready to fly away.

Total Hours Airframe: 144.6. Current, up-to-date, logbook.

Total Hours Engine: 1673.9. Annuals/100 hourly inspection due 10/09/22. Sprag clutch replaced January 2020, gearbox overhauled January 2020.Just undergone ignition system overhaul. One CDI Ignition unit replaced PLUS brand-new spare unit included in sale. Easy aircraft to maintain - everything is in the open. Comes with spare main undercarriage legs, spare main wheel, and nosewheel with other assorted spare parts included.

Fabric good, seats are good, interior is tidy. Fitted with XCOM radio/intercom. Basic VFR panel with appropriate engine instruments, and compass.

An article on this aircraft was published in Sport Pilot, June 2019 issue. See front cover and pilot report within.

Must sell: two aeroplanes are one too many. Quick sale - Fly it away for $12,000 neg.

Contact **Rob Knight tel. 0400 89 3632**, **or email** **kni.rob@bigpond.com** for details and POH.

AIRCRAFT for Sale

LIGHTWING GA-55. **$25,000.00 (Neg)**

Registered 25-0374

Engine ROTAX 912, 80HP, 853.3 Hours

Reluctant sale of this great aircraft, I have owned her from June 2004.

Excellent fabric, Red and Yellow, always hangered, and comes with the following extras:

* 2 Radios
* Lowrange GPS
* EPIRB
* Aircraft Dust Covers.
* Manuals – various
* Fuel Pressure Gauge
* Extra Tachometer
* New Headsets
* Paint
* Oil

Work performed at Lightwing Ballina:

* Wings recovered, tanks resealed, new brakes, wheel bearings and hubs, new wing tips.

Other work carried out:

* Windscreen replaced, door panel replaced, choke cables replaced, ignition upgrade.

Rotax:

* Engine modifications, gearbox rebuild.

Currently hangared at Boonah in Queensland.

Contact Kevin or Natalie McDonald on 07 54638285

Aircraft Engines for Sale

Continental O200 D1B aircraft engine

Currently inhibited but complete with all accessories including,

- Magneto's,
- Carburettor,
- Alternator,
- Starter motor,
- Baffles and Exhaust system, and
- Engine mounting bolts and rubbers.

Total time 944.8 hours. Continental log book and engine log are included.

Phone John on 0417 643 610

ROTAX 582 motor.

Ex flying school, TTIS 600 hours, and running faultlessly when removed from aircraft for compulsory replacement.

No gearbox, but one may be negotiated by separate sale if required.

Interested parties should contact…..

Kev Walters on Tel. **0488540011**

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