BRISBANE VALLEY FLYER

August - 2022

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

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The now never-to-be, BAC - TSR2 . – see page 19.

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From the Club

As you already know, our last meeting was a no show due to the airshow being on the same day, which in turn was delayed for one week due to heavy rain.

It was a good weekend with many of our club members coming into the club house for coffee and biscuits, and to just sit down and watch the airshow. I would like to pass a big thank-you to those members for leaving the place clean, and as they found it. Well done all.

The airfield received a lot of traffic, both foot and vehicular, there was some damage to the field surfaces. Australian Air shows have made arrangements to repair the field when it dries out a little bit, so be patient, it will happen. They have already made a start but again, it has rained, and this is only making things worse.

Also don't forget our next meeting will be at Kholo gardens so come along for a good day and please bring a chair to sit on.

Hoping to see you all there for a day of fun, exercise and fellowship.

Best wishes

Peter Ratcliffe

President BVSAC

Your Passengers, Your Unknown Hazards

By Rob Knight

Although it's rare, passengers, and students for instructors, can be unknown hazards you strap into your aircraft and take flying.

The law is very clear – you may not allow another person to handle the controls of an aeroplane in flight unless they hold a current pilot license (or certificate) AND meet the recent experience requirements as required by the appropriate aviation authority. The ONLY exception to this is when the pilot in command holds a valid flight instructor rating or endorsement. Yet I regularly hear of others, most low time pilots, who regularly allow friends, acquaintances, and neighbours too, to, "Have a go," when they are flying together.

This can be a disaster. Not often, or there'd have been a spate of accidents where this was the cause, but often enough to justify the legal requirement to preclude this activity except by a select few of the flying fraternity.

Let me illustrate.
My own experiences lead me to describe two serious issues that relate to this activity. The first was whilst working for the Waitemata Aero Club at Ardmore in New Zealand. I was booked in to fly a trial flight (TIF in Australia) for a neighbour of one of my recently qualified PPL's. On the day, a pleasant young woman, aged around 18 years, presented herself to the Flight Office counter and asked for me. We met, and in the usual manner, I offered her a coffee so we could talk. I asked the standard questions about what she did for a living, did she really want to learn to fly or was this just a fun flight, all the usual preamble, and afterwards felt comfortable that she was a normal young woman, displaying no abnormal tendencies that could be an issue. We went out to the aircraft, a Victa 100, ZK-CHF. We pre-flighted it, I sat her in the cockpit and arranged for her to strap herself in securely, mouthing the usual patter all the while. I strapped in and started the engine All was apparently normal when we taxied out and doing the run-up. I did the DVAs and we were cleared for take-off. All this time she was behaving the same as the last 50000 trial flights that I had done.

With the take-off clearance in hand, we lined up and I took off. I had the controls and the climb-out to 500 feet was completely normal.

As was the practice, at 500 feet AGL I made the first turn after take-off. It was a rate 1 to the port and only through about 45° of heading change. I pattered the turn but as the left wing went down, just that few degrees, she screamed and became hysterical and leant as far across the aircraft towards me as her harness allowed. However, her flailing arms smashed my expensive sunglasses into my face and cut my eyebrow. I rolled level and pushed her away. With the wings level she returned in an instant to being a normal, intelligent person. I asked her how she was feeling and she said she was good. Then she told me that I'd cut my face, but didn't mention my sunnies.

I had decided to discontinue the flight before I levelled out at 1000 feet. By this time, I was overhead Drury, the standard VFR reporting point for joining the circuit from the training area. This time, I turned to the right. Again, she screamed and forced herself hard against the side of the cockpit and perspex canopy, trying to remain upright whilst we were banked. When I levelled the wings, she quietened down. I called Ardmore and requested an urgent rejoin as I had a distressed student. They expedited my rejoin and landing.

When we returned to the club apron, I could hardly see out of my left eye because of the blood from the cut eyebrow and, as I found later, from another cut on the side of my nose. It had flowed prominently down my face, onto my collar, and down onto my left shoulder. The flight office staff asked about it but I declined to answer, I wanted to get washed up first, so I gave them the exit meter reading from CHF and left them to do the paperwork.

When I returned, now with most of the blood cleaned away and my forehead and nose- bridge sporting band-aids, I took her into the briefing room and tried to gather some more details about her but she was completely unperturbed and oblivious to any issues. She said that she had enjoyed the experience immensely and wanted to make another booking. I said that we were frantically busy right then, and she would need to come back in a couple of months when the rush had died down.

I called my ex-student and asked, in more detail, about her history. He asked her family and they said that she's been in a bad car accident where the vehicle she was in had been T boned and rolled over at an intersection by a concrete truck. Subsequently she'd failed her driver's license five times due to panic attacks. She never contacted the Club for another flight and I neither heard from her or saw her again.

I did not allow her to touch the controls – her behaviour proved that she was a serious danger!

The second one was a PPL at the Rukuhia Flying Club where I was the CFI. She was out pre-flighting the Cessna 150 she'd booked when I overheard her large, strapping, belligerent passenger telling others that he intended to have a fly whether she would allow it or not. I went out to see her and discretely mention his comments, she was quite upset because he'd made similar comments to her. I advised her to cancel the flight but she fearfully declined so I cancelled it for her and we gave a pretext that the aircraft was unserviceable. Later she hired a similar aircraft at another Club at another field and had a serious issue in flight when he took the controls from her. She had the presence of mind to advise ATC who arranged for police to meet the aircraft on her return, obviously after he had returned the controls to her. I was later told that she had never flown again, letting her license lapse.

She was forced to relinquish the controls. However, she was warned that this man presented this risk, and she chose to ignore advice not to take the man flying at all.

As an instructor, I was always aware of the initial lack of any medical vetting of a new student. Obviously, this was further enhanced after the episode I mentioned initially in this piece. Other instructors did likewise. However, a young instructor at a coastal Aero Club in New Zealand had a new student appear, he was a bull-dozer driver, physically large and powerful, and mechanically minded. On his initial training flights, he displayed ample dexterity between hand and eye to be a promising PPL student.

Although frequently requested to get his student pilot medical and an SPL issued, he had not at the time they started the initial circuit training. The aircraft being flown was a 90 hp PA18 Cub, a tandem seated aircraft in which the student sits in the front. After the initial circuit briefing, the two, student and instructor, departed for their first dose of circuits.

All the previous flights had been morning ones but this one was a very late afternoon lesson. On their second approach, their Cub was observed to suddenly divert from a normal approach path and dive, almost vertically into the ground at a considerable distance from the near threshold.

It was later reported by the student's family that he suffered from epilepsy and was prone to have fits when exposed to strobe effect – the effect of flashing lights in front of his eyes. This would have happened in this case when on approach with an idling propeller and looking into the setting sun.

When the wreckage was examined, it was reported that the rear control column had been pulled back so hard it had torn its mount from the floor. This was considered the result of the instructor pulling back whilst the student pushed and held the front stick forward at the time of his flashing light induced fit.

> *This is a hazard that all instructors face. There is no easy fix as it's impractical to expect, nor induce, every potential student to go through a medical and pay the costs of a student pilot license before a trial is carried out.*
>
> *However, don't you think that this is pretty good reason why you don't let others fly your aeroplane if you aren't an instructor.*

In yet another example of a passenger causing a disaster, a pilot allowed a young passenger to put his hands and feet on the controls whilst he did a low-level beat up of a friend's farm. In the first run past the friend's house, the Cessna 172 suddenly swerved right and crashed at full flying speed into a stand of trees. The aircraft was totaled, but both occupants escaped with injuries.

The pilot had bruised shins and arm whilst the passenger suffered a badly broken right ankle. This was the ankle on the foot that he pushed forward trying to apply the brake when he got a fright during the low -level run past the house.

> *The pilot was grounded by NZCAA for illegal low flying, and was later sued by the Aero Club to recover the excess on the insurance policy. Also, his passenger has been left with a permanent and severe limp from the damage to his ankle restricting his foot movement.*

In my last example, a pilot was returning from a fishing trip with male family members on board. The aircraft was a PA32 Cherokee 6. The evening prior had been a fun time, with lots of beer flowing for those not piloting and the following morning hangovers were the norm.

Whilst loading their chilli bins (eskies in Australia) a teenage nephew asked if he could ride in the front. The C of G was not a problem and the pilot replied in the affirmative.

After around an hour's uneventful flight, for most of which the nephew slept off the night before, the pilot joined at their destination airfield and made a normal circuit. However, on short finals, the newly awakened and cold passenger, reached forward AND PULLED THE MIXTURE CONTROL OUT. He thought, he later said, it was the heater control (it was red- the same as the heater control in their

old Standard Vanguard car). As is common in GA aircraft, the pulling out of the mixture control shuts off the fuel and the engine stops.

Before the pilot could push the mixture control back in and regain the power, the aircraft sank heavily into pampas grass just before the airfield boundary. There were only minor injuries to people, but very substantial ones to the propeller, nose gear and engine cowls.

Although the aircraft was insured, the company concerned refused to accept a claim because the pilot in command should have ensured that his front seat passenger, still considerably over the alcohol limit to drive a car, would not touch any of the aircraft controls..

I have knowledge of a number of such incidences, but one should be sufficient, here.

So, what do you do when you take a passenger up flying with you? In some cases, you might have known that person for decades and are very well aware of any medical issues that might be hazardous. But what if you don't…….?????? Do you ensure that your passenger is briefed not to touch the controls, nor have their feet near the rudder pedals, even during a taxi?

I do accept that in almost all cases, there will be no issue, but there will always remain a chance that there could be a horrible surprise waiting, on every flight with a passenger, or a student.

Happy Flying

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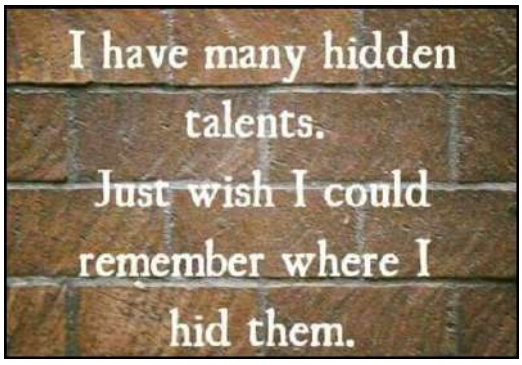

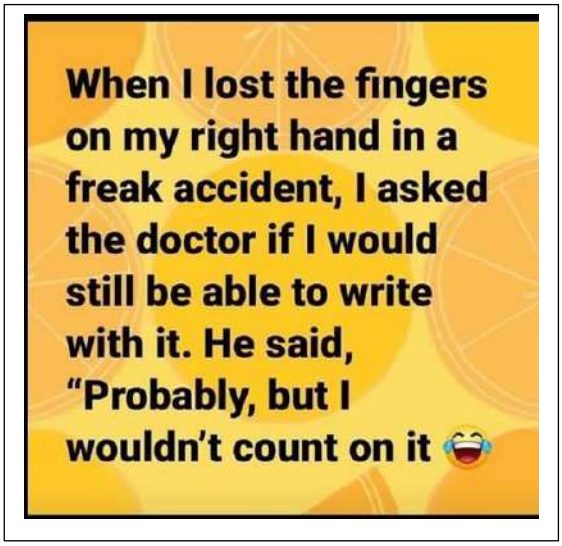

The Danger of Repeated Omissions

By Peter Garrison. April 8, 2022

A step not completed during inspections proves fatal for two senior Navy pilots who appeared to do everything right.

On a clear June afternoon in 2020, two senior Navy pilots left Jasper, Alabama (KJFX), headed for Pensacola, Florida, 200 nm distant, where they were based. They were flying a Piper Turbo Lance of which the left seat pilot was a co-owner. After a 30-minute cruise climb, the Lance levelled out at 15,000 feet.

A Piper Turbo Lance, like the one pictured here, experienced trouble on the way to Pensacola, Florida in 2020. File photo: Shutterstock

About nine minutes later, the pilot asked Atlanta Center for a descent to 10,000, which was granted. After another minute, he reported an "engine fluctuation" and requested a further descent and deviation to Selma (KSEM), which was close by. Center cleared him to 5,000. Shortly afterward, the pilot, his voice tense but calm, declared an emergency.

The center controller offered the pilot his choice of Runway 15 or 33; he was currently lined up with 15. The pilot reported two souls on board and said that the prop was turning but he could not tell whether the engine was producing power. "I may be dead-stickin' it," he said.

Three minutes after the pilot declared an emergency, the center controller advised him that Selma was at 12 o'clock, 9 miles. The pilot said that he could not make a straight in—presumably he was still too high—and would fly a pattern. Then he added, "I've got a fire, looks like as well, sir."

Half a minute later, the pilot requested the frequency for Selma. The controller gave him the CTAF frequency, 122.7.

That was the pilot's last communication. The Lance had not yet turned toward the runway, but it remained in radar contact a little while longer. The airport was now at 9 o'clock, 4 miles, the controller said. Then, "Do you copy? Radar contact lost, respond if you can."

Now then the wheels of accident response began to turn. Another controller provided the phone numbers of the police and the airport at Selma. A cropduster spotted the heavily fragmented wreckage of the Lance in a field. It had struck the ground at high speed a few miles from the runway; both pilots had died in the crash.

The National Transportation Safety Board's accident investigation naturally focused on the engine. It had failed catastrophically, the No. 6 (rearmost) connecting rod breaking, smashing a hole in the top of the crankcase and disintegrating into pieces, most of which could not be found. The No. 5 rod had also separated from the crankshaft. The camshaft was broken in two. Almost all of the connecting rod bearings were deeply scored—the crankshaft journals not so badly—and the aft end of the

crankshaft was discoloured by intense frictional heating. There were also score marks in the oil pump.

The key finding was that the perforated cylindrical screen through which the lubrication system takes in oil from the sump was 60-percent filled with a mixture of carbon flakes and metallic material. The accident report conflates “metallic” and “magnetic,” leaving some confusion about whether the “metallic” debris, which accounted for three-quarters of what was found, was entirely ferrous or not, and therefore about how much of the non-magnetic material may have been non-ferrous metal as well. In any case, however, the verdict of the NTSB was that the obstruction of the screen had led to oil starvation and to the eventual—and inevitably—failures of the rods. The investigation therefore focused its attention upon the mechanic who had maintained the airplane.

It emerged that the owners had persistently reported low oil pressure. The mechanic had removed and replaced the oil pressure relief valve, removed and flushed the oil cooler, and at least twice raised the oil pressure using the adjustment screw. In response to a direct question as to whether he had cleaned the suction screen at the last inspection, the mechanic replied that the oil cooler had been flushed. The NTSB seemed to consider this reply evasive.

Normally, every step an A&P takes during an inspection is recorded. The oil filter had been cut open and examined at every annual, and nothing unusual reported. Recently, a spectroscopic oil analysis had been performed, but the mechanic did not know the result. Significantly, however, his notes on the most recent annual inspection, less than 90 days before the accident, made no mention of removing and cleaning the suction screen, which is recommended to be done every 50 or 100 hours, depending which guidance you consult. In fact, it turned out that the most recent record of cleaning the screen was dated 11 years before the accident.

It was impossible to know how long the accumulation of debris had been there. The NTSB assumed that it had been there a long time, and was the reason for the repeated reports of low oil pressure. The investigation concluded that the engine failed because of the blockage in the screen, and identified as the probable cause of the accident “the mechanic’s failure to clean the oil suction screen during the most recent maintenance…”

All pilots imagine being in the position in which the two pilots of the Lance found themselves, and wonder how they would react. Certainly, the actions of the Lance pilots were appropriate and, as people in the business like to say, “professional.” They must have heard a great deal of alarming noise as the No. 6 connecting rod broke loose from the crankshaft and punched a big hole in the crankcase, but they remained calm, they made the correct decisions, they flew the airplane. They were lucky that there was a good airport in easy gliding range and they were already talking to a controller.

They believed that their problem was simply a power loss. A dead-stick landing, while challenging, was very likely to succeed. The reason they came down so fast is not clear—rather than buy themselves as much time aloft as possible, they descended from 15,000 feet to near sea level in nine minutes—but it turned out to have been the right thing to do when fire broke out in the cowling.

We cannot know what happened in the final minute of the flight, when the two pilots lost control of the airplane. Probably they were blinded or overcome by smoke. The NTSB’s description of the

wreckage mentions “thermal damage”—that is, the effects of fire—both ahead of the firewall and behind it. Wiring and thermal insulation under the glareshield were burned.

Frustratingly—because any inflight fire is a potential teaching tool for other pilots— the NTSB does not explain, or even speculate upon, how the fire got past the firewall or what the original source of ignition may have been. The gear and flaps were up and the mag switch turned off, but the fuel selector was on the left tank. It is possible that the continuing flow of fuel to the engine fed the fire.

The fatal crash was a sad and terrible consequence of what may have seemed, before, like a minor omission. But it was a minor omission many times repeated.

PETER GARRISON

Peter Garrison taught himself to use a slide rule and tin snips, built an airplane in his backyard, and flew it to Japan. He began contributing to FLYING in 1968, and he continues to share his columns, "Technicalities" and "Aftermath," with FLYING readers.

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RAAF Amberley – F18 Hornet Crash (cost to Taxpayer – 1,500,000).

Just last month (07-June-2022) 7NEWS published that the crash on take-off of an F18 Hornet fighter at RAAF Amberley was caused by the pilot failing to correctly carry out the required checklist.

“7NEWS has obtained a Defence Flight Safety Bureau investigative (DFSB) report into the incident. The report reveals as the aircraft was rolling for take-off, it came off the sealed runway, prompting the crew members to eject. Investigators found numerous factors resulted in the jet deviating off the runway, including the crew’s “substandard adherence” to a safety checklist prior to taking off. As a result, a “master caution” message lit up on the plane’s display “as the throttles were advanced to afterburner for take-off”. This “distracted the pilot from prioritising focus on directional control”, the report states.

Subsequently, it resulted in the “aircraft’s deviation in heading to go unnoticed/ uncorrected for several seconds”, according to the report. This was followed by a “short duration of impaired cognitive performance”. “During this period, a series of action errors were made in an attempt to correct and maintain directional control of the aircraft,” the DFSB said. “Fixating on the task of regaining direction control during a cycle of impaired performance delayed the pilot retarding the throttles back to idle. “The delay allowed the aircraft to accelerate at full afterburner for eight seconds.” The aircraft reached a top ground speed of 157km/h, according to the report. “On reaching the maximum ground speed, the aircraft’s main landing gear departed the sealed surface of the runway,” it said. That caused the plane’s nose to hit the runway edge. It briefly left the ground when it hit a concrete mound, and that’s when the crew made the decision to eject.

The report also noted since the event, “significant activity had been undertaken to address the issues leading to the crash”.

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Meet The Often-Forgotten Cessna XMC

Only one was ever built, and it was never intended for series production.

By Jason McDowell. Published by flyingmag.com. June 2022

If the average aviation enthusiast was asked to name the very first swept-wing Cessna ever built, they would likely name one of the many Citation business jets. The Citation X, for example, had one of the most highly-swept wings of any civil aircraft, enabling later models to achieve 0.935 Mach. But in fact, the first Cessna to utilize a swept wing was this unique little airplane, the Cessna XMC.

The Cessna XMC was one of the least-known and most unique Cessnas ever to take flight. [Photo: Textron Aviation, Inc.]

First flown in January 1971, only one XMC was built, and it was never intended for series production. Instead, it was intended to serve as a research aircraft, enabling the company to more thoroughly explore various concepts, technologies, and manufacturing technologies. Perhaps to remove any doubt regarding the purpose of the XMC, Cessna explained that the name was an acronym that stood for "eXperimental Magic Carpet."

But similar as the technical specifications may have been to the ubiquitous sister, the 150, the two airplanes couldn't have been more different…which was the entire point. The XMC's engine was relocated to the aft end of the fuselage, and the traditional tail was replaced with a twin-boom arrangement that resembled the much larger Skymaster twin. This resulted in a decidedly new look that was a significant departure from the existing airframes.

This rare view of the XMC—in front of Cessna's "Glass House" engineering center—highlights its diminutive size; while the cabin was said to be notably larger than the 150, the overall dimensions were very similar. [Photo: Textron Aviation, Inc.]

Because the powerplant was unchanged and the weight similar to the 150, Cessna did not expect the XMC to exhibit markedly different performance. Instead, the company used the airplane to evaluate various manufacturing methods, such as metal bonding, to reduce the cost of

production aircraft. A later modification of the XMC would see the introduction of a propeller shroud, intended to explore improvements in propeller efficiency and noise reduction.

Cessna's interest in the XMC extended beyond the technical aspects, however. In a 1971 *Popular Science* interview, Cessna president Del Raskom explained how one of the benefits to the pusher-propeller layout was the ease of cabin entry. He felt that this was more difficult in a traditional tractor-prop layout, and he touted the XMC's wider, lower cabin and comparatively massive doors.

When asked about the swept wing, Raskom claimed it was chosen for style and visibility. While the visibility from the XMC's cabin was undoubtedly fantastic, it's possible the sweep was primarily a function of the center of gravity. Many aircraft with aft-mounted engines struggle with a center of gravity that moves too far aft with an empty cabin, and the XMC's wing sweep might have actually been utilized to position the fuel tanks farther forward. This would have helped to prevent the airplane from tipping onto its tail with an empty cabin, as the Rutan EZ models will do if the nose gear isn't retracted.

The XMC had the distinction of being the first Cessna ever to utilize a swept wing.
[Photo: Textron Aviation, Inc.]

The XMC would go on to serve its purpose as a research vehicle, and then disappeared from public view entirely. Presumably scrapped, only a handful of photos remain. The photos you see here were recently located in Textron Aviation's historical archives and were subsequently cleared for public viewing.

Today, photos are apparently all that remain. There is no record of any XMC models ever being mass produced, no official company brochures appear to have ever been distributed, and detailed information about the airplane is exceedingly scarce. Perhaps the only remaining artifact of the XMC is the tail number it once wore—N7174C—which is, as of this writing, available for request from the FAA registry.

Jason McDowell

Jason McDowell is a private pilot and Cessna 170 owner based in Madison, Wisconsin. He enjoys researching obscure aviation history and serves as a judge for the National Intercollegiate Flying Association. He can be found on Instagram as @cessnateur.

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Checking the Weather Is More Than Looking Out the Window

By Rob Knight

While looking out the cockpit window constituted an adequate weather briefing during the golden olden days of flying, it just doesn't cut it now. Photo © R. Knight

"Have you checked your weather yet?"

How many times have you been asked this question? If you own your own aeroplane and aren't hiring one, then it's perhaps, how many times have you asked yourself this question?

The need to access weather information and more importantly, correctly interpret it, has never been more important to safely operate your aeroplane. Without this interpretation skill, the ability to make sound go/no-go decision is dubious at best. Sadly, the obtaining of adequate weather forecasts and briefings, and just as importantly, to correctly interpret them, is a skill that often wanes significantly after acquiring a pilot certificate or PPL because so many pilots only fly on days when the weather is fine. While this might be perfectly natural because they fly for fun and it's not fun to fly around in severe turbulence and rain, and have to clean up motion sickness deposits afterwards.

Looking out the window does not even remotely constitute a weather briefing. There's a lot more to it, and your own safety, as well as that of your passengers, requires that you do more than just that. Also – the Australian aviation law requires you to do more than that as well! It might be fashionable to disparage the law as it applied to aviation matters, but that's what you'll be prosecuted on should you become involved in a mishap and weather is an influencing factor.

The legal requirements relating to the acquisition of appropriate weather data and details is found in CASR Part 91. I prefer to use the Plain English Guide, for obvious reasons. You do need to consult this document and read these details for yourself because you are responsible for their application whenever you are the pilot in command of an aeroplane.

CASA requires that pilots use an *authorised weather forecast*, which negates the local radio station's advertises opinion of what the sky is likely to come up with. To be clear on this, the definition of an *authorised weather forecast* is available in the document, "CIVIL AVIATION SAFETY REGULATIONS 1998 – REG 202.900 Manual of Standards for PART 172", which list it as being a *"Weather forecast made by the Bureau of Meteorology for aviation purposes"*.

However, although the law is required to be satisfied, it's your neck on the line so you have to also be satisfied with the weather details that you acquire for a flight. Let me run through what I gather for my own interests.

To glean the details to develop the skill necessary to read forecasts for aviation trips, perhaps we should take a step backwards and look at the need for gathering forecasts.

Time might stand still to a flying passenger but, in reality of course, it does not, its pace is unchanging. However, the weather patterns change with time. This is the fundamental issue that causes so much distress in VFR flights. Only the most foolish of pilots allows themselves to be caught out by bad weather whilst they are withing 20 miles of their home airfield. This is because there is little time lapse between seeing the approach of bad weather, and being able to beat it back to the hangar. If only all flights could be so simple

Flying an aircraft is driving a time machine: a machine which you operate in the present but have to know, read, and predict the future weather conditions to ensure that your aircraft really can continue to be operated safely and within weather requirements when that future becomes your present. Also, you need to be sure of the weather conditions not only in the future, but in a place in the future – a place other than where you are right now unless you are in the circuit pattern. It might be comforting to know with positive surety that, as you depart on your flight, the weather along your entire route is perfect for VFR, but this knowledge is absolutely useless. What a pilot needs to know is whether it will be OK for VFR operations at the time the aircraft arrives at any particular place along the track, OR gets to the planned destination. What the pilot really needs to know is what will be the future weather conditions along the track at the time they get there. Alas, crystal balls are entirely out of stock, probably something to do with Covid, I guess!

Strato-cumulus – SC on the forecast

So, how does a pilot become clairvoyant? They obtain and read the weather forecast for the part of the landscape they anticipate flying over, of course. That's what the very name means – forecast – a forward prediction of something – in this case, the weather conditions. They will also be wise to get reports (METAR[1]) for the same areas so they can look at future reports and forecasts and develop an understanding of whether the relevant weather conditions are improving, remaining the same, or deteriorating.

Several forecasts stand out when considering aviation-specific needs. These are *Graphical Area Forecasts (GAF[2])* , *Terminal Aerodrome Forecasts (TAF[3])* and *Grid Point Wind & Temperature (GPWT) forecasts* . The GAF is obviously relevant to the *area* through which the aircraft's intended track passes, and the TAFs relate to the forecasts for the larger/busier airfields in the area to be traversed. The GPWT provides the forecast wind and temperature values for the area of the grid that is indicated on the chart from which they are extracted. Note that the QPWT presentations include the values at various but standard heights AMSL, and these include temperature values. These are important for considering the air temperature values at altitude.

Then, with the forecasts and reports for the route they wish to fly to hand, they can estimate what time they will traverse a particular point along that track, check that the progression of the forecast

[1] Meteorological Aerodrome Reports.

[2] Forecast weather conditions, presented graphically for a specified area (surface to 10,000 feet AMSL).

[3] A coded statement of meteorological conditions expected at an aerodrome and within a radius of five nautical miles of the aerodrome reference point.

weather will provide for VFR conditions at that time in the future when the pilot could expect to be at that point.

The worst thing VFR pilots can see on a forecast is an indication that the visibility will be reduced. Therefore, anything or any suggestion that a weather item will cause a reduction in a pilot's ability to see the horizon is to be noted very carefully. This is, of course, the exact reason that instrument flying and IFR OPS were developed – for those times, in flight, where a pilot can't see the horizon outside the front end of the aircraft, he/she is flying. Anytime a VFR pilot loses the horizon, the options available to them shrinks exponentially. In such cases a pilot is releasing control of their future, and that of their passengers, to pure luck. Depend on a rabbit's foot if you will, but remember- it didn't work for the rabbit.

OVC SC – Overcast (8/8ths) stratocumulus

What indications can a pilot use to see a visibility problem along a desired route? There are many.

Atmospheric visibility in this case is restricted by clouds[4] and precipitation[5]. Both are the results of water droplets in the atmosphere. In clouds, the droplets are minute and either suspended because of their low mass, or fall at an almost undiscernible rate. As tiny prisms, they reflect light and so we can't effectively see through them. In precipitation the droplets are much larger, some even frozen and fall as hail. These form a physical obstruction to light and prevent the light we need for visibility penetrating them and we are effectively blind in their direction.

Obviously, then, pilots must avoid flying in clouds. As VFR operators we are forbidden from entering cloud and to remain legal, if we are flying in Class G airspace, at or below 3000 feet AMSL, or above 3000 feet AMSL but at or below 1000 feet AGL, we must remain clear of them[6]. Following these restriction not only helps us avoid spiral dives into terrain, but also give us a better chance of seeing or being seen, to avoid mid-air collision issues.

"But", I hear you say, "Clouds are usually at height, and we can fly under them. Or, if we're brave and there's not too much of the sky covered by them, even fly over-the-top (go over them) if they're not too high".

Be careful - being stuck on top, with low fuel or fading light can ruin your whole day!

Yes, you are quite right, on both counts. So, you'd best use your forecasts to ensure that, at the time you are in their vicinity, in the future, the cloud bases are either high enough to safely fly under, considering the terrain height below them, or, the cloud tops are not too high to fly over them. In the case of the latter, you'll also need to check that the cloud cover is not too much to prevent you coming down when you need to descend at the other end of your flight. All these details will need to be gleaned from your forecast before you commit yourself.

[4] A cloud is a mass of water drops or ice crystals suspended in the atmosphere (NASA).
[5] All forms in which water falls on the land surface and open water bodies as rain, sleet, snow, hail, or drizzle.
[6] See VFRG (V7.0) Chapter 3. Page 204, or CASR 91280.

Clouds can be a serious trap. Their bases can lower, and prevent flight below, or the tops can rise to heights that light aircraft cannot aspire to. Both can ruin your day. The aim, is to figure out from that forecast whether undesirable variations in the cloud cover or heights locations can seriously affect the success of your flight. If they do, then the pilot's options are to change the timing of the flight (depart earlier of later to avoid the issue) , or change the route intended and thus laterally avoid the issues. For example, if a pilot intends to fly beneath an OVC[7] and the forecast advises of a likely lowering of the cloud base over enroute high terrain, a change of route to one over lower ground might allow the flight to continue in perfect safety. But that's what the forecast is for.

This relationship between high terrain and cloud is well founded in science. Air cools as it rises (adiabatic cooling due to the reducing air pressure with increasing altitude – and vice-versa). If air is cooled to below its dew point, it will become saturated and any further cooling will see condensation form. Clouds are formed from condensate, and so is precipitation, so any wind flowing over a mountain range can, and will, induce clouds and precipitation. When viewing an ARFOR, always consider that a given general cloudbase could be very much lower in the vicinity of high ground, particularly on the windward side where the wind is rising and thus cooling.

Another trap for unwary pilots is to find cloud forming around them in flight. Although commonly restricted to higher and thus cooler latitudes, an aircraft can be operating in an airmass that is above the given dew point under an overcast that is higher. For the cloud forming that overcast to exist, the air the overcast exists in must have a temperature lower than the dew point. Precipitation (often rain) that falls from that overcast can cool the air below to a temperature below its dew point and cloud will form in that precipitation – all around your aircraft. It's not all that funny to see your horizon going grey and getting hazy, and then, noticing the details of the ground beneath are following suit, realizing you are being encompassed in cloud against your best intentions. The only cure is to get the hell down as quickly as possible and afterwards, kicking yourself for being in that locality in the first place. To ascertain the likelihood of this happening, look for the temperature of the enroute airmass at the altitude you intend to fly, and its dew point. Then look for the air temperatures above that. If there's cloud above you, at temperatures below your dew point, such cooling from precipitation is possible. You'll need your forecast for that, you won't get such details looking out the window.

A rare (for light VFR traffic) issue is airframe ice. I have experienced airframe ice just twice in light aircraft, and both times I was IFR. While the two occasions were both under conditions that were much worse than forecast, anecdotal reports provide evidence of the collation of airframe ice under actual VFR conditions with freezing rain, but these do not relate to the general latitudes about which I am writing. Even so, who would want to fly in regions above the freezing level, unless they were acting on mother-in-law instructions?

The VFR pilot will be likely to still be under pressure at the destination. The aircraft must be descended to land, fuel levels are lower so alternate airfield options are reduced, and the pilot is tired. It is just as vital here, that the same stringent requirement in regard to anticipating the weather are met as with any other part of the flight. This makes the expectancy of appropriate weather conditions here a topic in its own right.

The primary source of data for any destination lies in the TAF and METAR (where TAF/METAR are available) or, where the destination has no specific details, a very careful interpretation/reading of the GAF and GPWT relevant to the destination. Depending on the proximity and terrain, I sometimes look at a TAF and METAR available for a nearby airfield, and use that to gather additional details that would likely reflect on my destination. For example, if I was waiting to confirm that a cold front had, indeed, passed over my non TAF/METAR destination, watching for the wind direction to back on the

[7] Overcast sky, or 8/8th cloud cover.

METAR for a nearby airfield, can provide by interpretation that backing wind indication I am seeking. If significant weather conditions are anticipated by the BOM, they will produce a Significant Weather forecast for the location in which the weather issue is predicted (SIGWX[8]). These can be routinely checked to ensure there are no misconceptions about the route or airfield safety.

Sea fog, often listed on SIGWX for coastal areas. Note – this fog is often seasonal, and can be very significant, indeed.

For flight planning, the GPWT provides the necessary wind details, along with the heights at which those wind velocities will found. Also, the temperatures relevant to those heights. After consulting the chart(s) to be used, and the most accommodating W/V from the GPWT, you can begin to lay out your flight plan.

The legislation under which I have compiled the above for VFR operations is as follows:

> *You must comply with the following flight preparation requirements.*
>
> *Forecasts for flight planning (MOS 7.02)*
>
> *10. Pre-flight planning and preparation Flight preparation requirements – weather assessment (91.230)*
>
> *You must study the authorised weather forecasts and reports for the route, and for the departure, the planned destination and any planned alternate aerodrome to be used, as well as any other reasonably available relevant weather information for your intended flight.*
>
> *If you first study the forecasts more than one hour before commencing a flight you must review an update to that information before the flight begins. Note: If the aerodrome forecasts above are not available you must nominate a destination alternate aerodrome.*
>
> *An authorised weather forecast must cover the whole period of the flight, and include a wind and temperature forecast and one of the following: › for a flight at or below 10,000 ft above mean sea level (AMSL), a graphical area forecast (GAF) or general aviation meteorological (GAMET) area forecast.*

Although not required in the above, I, personally, also like to include any significant weather (SIGWX) forecast(s) relevant to my planned route, or any destination, either interim, or final. Also, remember that many airfields today have AWIS (aerodrome weather information service) available via VHF radio. Use it to obtain the current conditions at that airfield.

How many of these details can you get by merely looking out the window?

Happy Flying

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

[8] The BOM issues SIGWX forecast details for significant weather expected in the airspace.

FLY-INS Looming

Murgon (Angelfield) (ALA)	Burnett Flyers Breakfast Fly-in	**Find Next Planned EVENT AT http://www.burnettflyers.org/?p=508**
Shute Harbour YSHR	Fly-In and Runway Dinner	**Whitsunday Airport 10/09/2022**

A BVSAC Club Visit to Oakey's Australian Army Museum.

It was recently decided by a group of BVSAC Members that a visit to the Australian Army Aviation Museum at Oakey held considerable appeal.

A tentative booking for fifteen (15) members on Saturday, 10 September 2022 has been made. This number can be changed if more wish to attend. Therefore, can members please confirm their attendance by advising the club's secretary by the end of August.

Members attending should plan to arrive at 10:15am, to be ready for the tour at 10:30am. Please check the Oakey museum's website for location details; https://www.armyflyingmuseum.com.au/.

The cost per adult is $7.00, and a child, just $2.00, plus an additional charge of $3.00 per person for the tour. BVSAC will pay members entry and tour fee – what a bargain!

The museum visit will take about 2 hours. After the museum visit, we plan to meet for lunch at the Oakey RSL. There is plenty of good food on offer, which you can check out at: https://www.oakeyrsl.com.au/our-menus/.

This sounds like a great day out to share with like-minded friends. Please contact the club secretary should you have any further questions.

The BAC TSR2

The Greatest Military Jet Never to Enter Service

BYHENRY KELSALL. PUBLISHED JUL 04, 2021

There once was a time in which Britain led the way when it came to aviation. That probably seems quite a long time ago now and almost the work of fiction, but Britain had one of the most vibrant and thriving aircraft industries of them all before the United States caught up, partly thanks to Britain selling its technology to the 'States. Despite this, Britain still built some incredible aircraft such as the Vulcan, the Lightning, and the TSR2. That last one is quite a contentious aircraft as well. Because in truth, it never entered military service.

The TSR2 was one of the most advanced aircraft ever built. When the RAF needed a fast, low-level capable and supersonic strike aircraft to deliver a nuclear weapon into the heart of the Soviet Union, the TSR2 was ultimately the design that was chosen to meet what was then General Operational Requirement 339, or GOR.339 for short. But in 1965, barely a year after the first prototype took to the skies, the project was controversially cancelled and that cancellation still rankles with many people to this very day. TSR2, they say, was the greatest military jet that never entered service.

The requirements that made up GOR.339 were at the heart of it, all about a replacement for the English Electric Canberra bomber, the first jet bomber to enter service with Britain's Royal Air Force, or RAF. The initial requirements were for a top speed of Mach 1.5, a crew of two, and a payload of at least four 1,000 lb bombs. The requirements got even more daunting, however, eventually specifying Mach 2 at a high level and Mach 1.2 at a low level, short or vertical take-off capabilities and to be able to deliver a nuclear strike.

There were various design proposals submitted by the end of January 1958. English Electric, makers of the Canberra, teamed up with Shorts Brothers to submit their P.17A aircraft and Short's P.17D vertical-lift platform. It looked space age, but the aircraft itself was not too dissimilar to what TSR2 would look like. Vickers-Armstrong submitted the Type 571 for proposal. In the end, with so many aircraft companies in general in Britain, the Government amalgamated them all into a smaller number of larger conglomerates and the contract was rewarded to English Electric and Vickers-Armstrong, who formed part of the new British Aircraft Corporation. They would develop what was now to become the BAC TSR2.

The term TSR2 stood for Tactical Strike and Reconnaissance, Mach 2. This highlighted exactly what the aircraft was meant to achieve. The new aircraft formed part of Operational Requirement 343, or OR.343 for short, and this stipulated Mach 2 should be attained at altitude. The aircraft would be powered by two Bristol-Siddeley Olympus engines similar to those found on the Vulcan, except now with reheat, and it would be able to achieve supersonic cruise, deliver tactical nukes and regular payloads, and fly at extremely low levels to avoid Soviet radar stations plus feature some incredibly advanced avionics.

It didn't take long for delays to start to slow the project down. The engines needed extra work and the decision to not create prototypes, but to create a "development batch" using producing jigs also slowed the project down further. All the while, costs were starting to overrun as BAC struggled to meet the requirements set out by OR.343 as the political landscape in the United Kingdom changed. However, in September 1964, the first TSR2, XR219, was finally ready for flight.

Eventually, famed test pilot Roland Beamont conducted the maiden test flight of TSR2 at Boscombe Down. It wasn't without fault. The landing gear failed to retract and would not do so until flight 10, and there was a vibration from a fuel pump that could cause a loss of vision for the pilot so Beamont had to throttle one engine back. Still, as the test program went on, TSR2 started to show its capabilities. It achieved Mach 1 in super-cruise mode, ie without the use of its afterburners, similar to how Concorde achieved Mach 1. With reheat engaged on one engine, Beamont rocketed away from an English Electric Lightning support aircraft, and its pilot James "Jimmy" Dell had to use both of his afterburners to simply keep up with TSR2.

It is worth remembering as well, that the Lightning was a Mach 2 capable interceptor. Flight by flight, the testing team started to iron out the issues with the aircraft. Even the horrible vibrations suffered on landing, which had plagued TSR2 since day one, were starting to be smoothed out. Beamont stated that he had no doubt that TSR2 would be able to achieve its targets and perform as hoped, even if the OR.343 requirements were eased back slightly, i.e., allowing a top speed of Mach 1.75 and a longer take-off run, although still short enough to be deployed on rough runways. In an era when some aircraft projects of the Cold War were simply bizarre, the TSR2 stood out as one of the most impressive to date. Sadly, the end was rapidly approaching for the project.

We mentioned the changing political landscape in the UK. This saw the Conservative Government, who supported TSR2, soundly beaten in the latest General Election as a Labour Government came into power for 1965. And they did not like TSR2. They already saw it outdated, with the threat of surface-to-air missiles looming large and tactical nuclear missiles being considered. Plus, the British were also interested in purchasing the new F-111 swing-wing aircraft from the United States.

On the day the second prototype XR220 was due to fly, TSR2 was cancelled. The only example to fly, XR219, was used as target practice at Shoeburyness and eventually scrapped, along with part completed XR221 and XR223. All other part-built aircraft were scrapped. Only XR219 and XR220 were fully complete aircraft. Just the two jets. The tooling jigs, production jigs, drawings, and everything in between, were publicly destroyed. The government wanted nothing left of the aircraft. XR220 was ultimately preserved at RAF Cosford's museum, and near-completed XR222 has also survived, on display at the Imperial War Museum Duxford. To rub salt into the wound of all those that believed in the jet, the F-111 project outran TSR2's ultimate projected costs, and an order placed by Britain was cancelled.

There is no doubt in the minds of all those that worked on TSR2, that the aircraft was a winner. Forget the costs and the politics. TSR2 would have done everything required of it had it entered RAF service. It was sadly, a victim of its own rising costs and political background. The controversial destruction of everything associated with the jet, including the one flying prototype, makes its cancellation even more gut-wrenching. Simply put, TSR2 should have been one of the best strategic aircraft of its time.

There is another final twist of irony. When the GOR.339 requirements were first drawn up, First Sea Lord, Lord Mountbatten tried to pressure the RAF into buying the Blackburn Buccaneer, a low-level, subsonic strike aircraft that did a similar job to what was asked of TSR2. The problem was that being jets operated by the Royal Navy, the RAF did not want to take any of their own, and so rebuffed them in favour of the TSR2. But when TSR2 was axed, guess what the RAF ended up buying? Blackburn Buccaneers.

Burning the remains after cancellation

Being towed away for cremation

R.I.P

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

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

1. Adding weight in a rear luggage compartment (behind the CofG) on an aeroplane will likely cause which set of effects?
   A. Moves the centre of gravity forward and requires nose down trim in flight.
   B. Moves the centre of gravity aft and requires nose up trim in flight.
   C. Moves the centre of gravity forward and requires nose nose-up trim in flight.
   D. Moves the centre of gravity aft and requires nose-down trim in flight.

2. When considering a GAF, to what height is the weather predicted?
   A. 7500 feet AMSL.
   B. 10,000 feet AMSL.
   C. Flight Level 140
   D. Flight Level 10,000

3. Considering the height of listed cloud bases when reading a GAF and a TAF, which of the following provides the correct and relevant datum for each forecast type?
   A. GAF – AGL, TAF - AMSL
   B. GAF - AMSL, TAF - AGL.
   C. GAF – AMSL, TAF - AMSL.
   D. GAF – AGL, TAF – AGL.

4. An aeroplane is in a steady, trimmed, descent flying in a straight line. Will its stall speed remain the same as published in the flight manual/POH?
   A. A. Yes.
   B. B. No, it is increased.
   C. No, it is decreased.

5. Most modern aeroplanes have wash out. What is washout?
   A. The twisting of the propeller blades towards the tip increasing the angle of attack of that blade.
   B. A slightly drooped leading edge on a wing to improve aircraft handling at low speeds.
   C. The change in angle of attack along the wing towards the tip to reduce tip stalling.
   D. The reduction in the angle of incidence along the wing towards the tip to cause the stall to begin at the root.

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. D is correct.
   Adding weight aft of the Centre of Gravity of an aeroplane will make it relatively tail-heavy and require nose-down trim (compared to flight without, or with a lesser weight in that rear locker).

2. C is correct. .
   See: VFRG, Version 7.0, page 205, or the top left box an any GAF.

3. B is correct.
   A GAF covers an area of geography with many elevations so heights are listed as AMSL (above mean sea-level). On the other hand, TAFs are a specific location with a known elevation so cloud heights are specified as AGL (above ground level). It's also relevant that TAFs are where landings and take-offs are made so cloud heights above the aerodrome are also pertinent.

4. C is correct. .
   Published stall speeds are always quoted as the straight line, level-flight, slow deceleration, airspeed at the stall, in various configurations. In level flight, Lift = Weight.
   In a descent, lift is less than weight. It's therefore logical that, as increasing the weight of an aeroplane increases its stall speed, decreasing weight and therefore decreasing the lift required will decrease the stall speed.

5. D is correct.
   Washout is the reduction in the angle of incidence along the wing towards the tip to cause the stall to begin at the root
   See: https://www.boldmethod.com/learn-to-fly/aircraft-systems/how-wing-washout-makes-your-airplane-and-wings-more-stable-when-flying/

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

Did you know:

- There is only one thing more painful than learning from experience, and that is not learning from experience.

- Experience enables you to recognize a mistake when you make it the second time.

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

Ribs, tubes, spats, etc

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

Or Mob: 0419 758 125

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

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

AIRCRAFT for Sale - LIGHTWING GA-55.

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 0419 607 637

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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